Clean Water Act Section 106 Tribal Guidance

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Notice

This document identifies Agency policies and recommended procedures for conducting activities related to assistance agreements awarded under the authority in Section 106 of the Clean Water Act. The document discusses binding requirements contained in the Clean Water Act and its implementing regulations. The reader is directed to the statute and the regulations for a full and complete statement of those requirements. Tribes are encouraged to consult with their tribal attorney general or equivalent regarding the application of these requirements to tribal activities. This document does not substitute for other binding requirements and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits to any person. In the event of a conflict between the discussion in this document and any legally binding requirement, this document would not be controlling.

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Chapter 1: Introduction

Read this chapter…

- For an introduction to the CWA Section 106 Program.
- To understand the purpose of this guidance.
- For a description of the chapters ahead.

Chapter highlights:

- Scope of this guidance.
- Overview of the common pathways for a tribal water quality program.

The Clean Water Act (CWA) Section 106 authorizes the Environmental Protection Agency (EPA) to award federal grants to assist states and interstate agencies in administering water quality programs to prevent, reduce, and eliminate water pollution. Section 518(e) of the CWA authorizes EPA to treat federally recognized Tribes[1] in a similar manner as a state (TAS). This allows federally recognized Tribes that meet the CWA criteria the option to administer portions of the CWA, including to develop their own water quality programs and standards to address water quality issues using Section 106 funding. EPA sets aside a portion of the total Section 106 funds appropriated by Congress for Tribes with TAS for Section 106. EPA allocates the Section 106 set-aside funds for Tribes to the EPA regions. Each EPA region then makes Section 106 grant awards to Tribes consistent with statutory limitations, EPA regulations, and EPA guidance. Many tribal water quality programs receive some or all their funding to implement water quality protection activities through Section 106 grants.

Tribes can use Section 106 grants to fund a wide range of eligible water pollution control activities, including the following:

- Establish and implement water quality programs.
- Identify water quality priorities.
- Conduct education and outreach on the importance of protecting tribal waters.
- Develop and implement water quality monitoring and assessment programs.
- Develop water quality standards (WQS).

While there are many terms that federally recognized Indian Tribal Governments (Tribes) may use to describe their culture, history, and geography, including Tribe, Village, Nation, Band, and Pueblo, EPA uses the terms Tribe and tribal government in this guidance.

This guidance supersedes EPA's 2007 *Final Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act*.

Purpose of the Guidance

The purpose of this guidance is to help tribal water quality program managers, staff, and other tribal environmental decision makers design and implement effective and successful water quality programs.

[1] Federally recognized Tribes refer to any Indian Tribe, band, nation, or other organized group or community, including any Alaska Native village, recognized as eligible by the U.S. Department of the Interior.

The guidance also provides EPA regional offices with guidelines for awarding and administering grants to federally recognized Tribes under the authority of Section 106 of the CWA. EPA developed this guidance recognizing that every Tribe has unique water quality priorities, challenges, and resource limitations. Based on those circumstances, a Tribe might only need to use the parts of this guidance that are applicable and helpful in managing their program.

EPA recognizes the importance of strong tribal water quality programs and the EPA-tribal government to government relationship that supports Tribes in implementing those programs. The guidance provides information to enhance these relationships.

This guidance recommends all tribal water quality programs develop and establish competency in a set of activities that are common across all Section 106 tribal programs. Conducting these activities is necessary to manage a water quality program before considering expanding into other Section 106-funded activities or seeking other CWA authorities. A foundational Section 106 tribal program effectively conducts activities in three areas:

- Program initiation, planning, and administration.
- Water quality monitoring and data management, assessment, and analysis.
- Grant and programmatic reporting.

The scale and complexity of these activities will vary across tribal programs depending on a variety of factors, such as the Tribe's goals and priorities, extent of water resources, interest in pursuing other CWA activities, potential threats to water resources, and availability of funding to carry out the program.

Scope of the Guidance

The scope of this guidance is generally limited to issues and activities related to Section 106 grants to Tribes and the development and implementation of tribal water quality protection programs. The exception is Chapter 9, which includes general information on other federal funding programs that support water quality activities.

Organization of the Guidance

The chapters are designed to guide Tribes through developing and implementing successful water quality programs using Section 106 funding. The list below provides a description of each chapter.

- **Chapter 2: Overview of the Clean Water Act** describes the CWA and explains how its many sections can work together, including how Tribes can use Section 106 funds to support other program activities.
- **Chapter 3: Grant Requirements** provides an overview of federal requirements to guide Tribes through the Section 106 grant application and administration process.
- **Chapter 4: Program Development** describes the foundational activities for Tribes to establish and initiate water quality programs.
- **Indigenous Knowledge Text Box** provides information on how Tribes can use Section 106 funding to incorporate Indigenous Knowledge in their programs.
- **Chapter 5: Development and Implementation of a Monitoring Program** helps Tribes establish and implement a foundational water quality monitoring program to meet their program goals. The chapter addresses water quality monitoring as well as data management, assessment, and

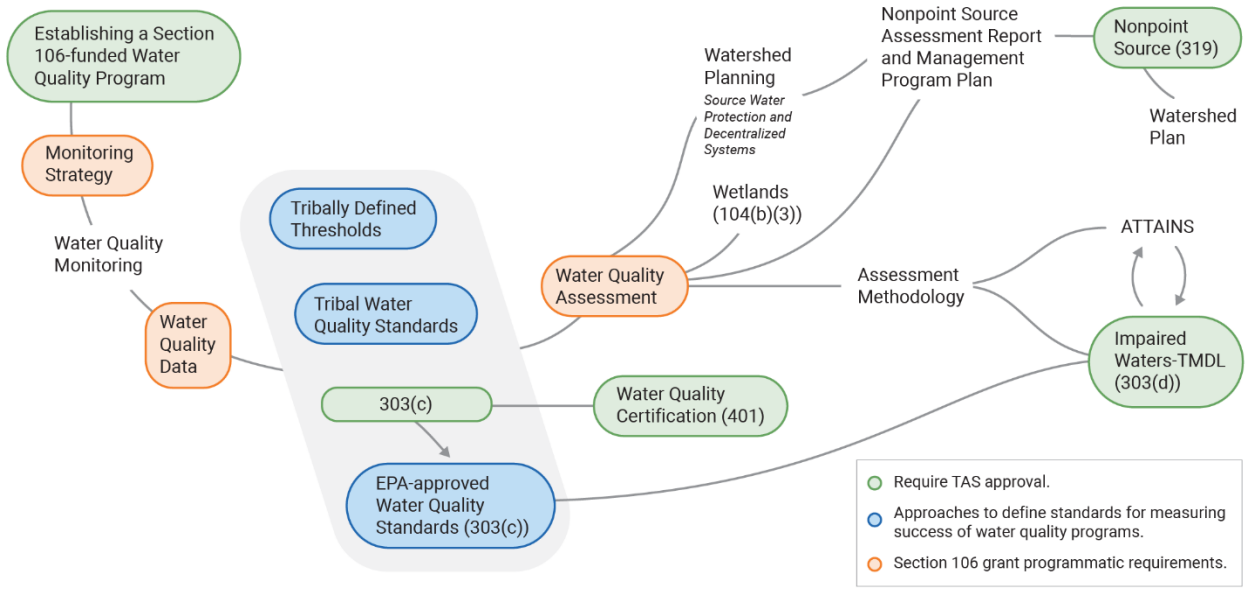
analysis. The chapter also includes information on how Tribes can expand their water quality program activities once they have developed an effective foundational program.

- **Chapter 6: Programmatic Reporting Requirements** discusses the three required Section 106 programmatic reporting deliverables and includes a table of all grant reporting requirements.
- **Chapter 7: Program Expansion – Additional Activities** contains information on additional, optional activities that Tribes can implement to expand their water quality protection efforts.
- **Chapter 8: Program Expansion – Regulatory Authorities** includes information Tribes may want to consider when expanding their water quality program activities using Section 106 funds by seeking other CWA authorities.
- **Chapter 9: Other Funding Options** provides examples of common government programs that provide technical and financial assistance that support tribal water quality programs.

Common Pathways for a Water Quality Program

Figure 1 shows some of the common pathways for Tribes to implement and expand their water quality programs using Section 106 funding.

Figure 1. Common pathways for implementing CWA Section 106-funded water quality programs



ATTAINS: Assessment and TMDL Tracking and Implementation System
CWA: Clean Water Act
TAS: Treatment in a Similar Manner as a State
TMDL: Total Maximum Daily Load

Starting from the left side of the figure, a Tribe must demonstrate that they meet the TAS criteria applicable for purposes of Section 106 funding. After receiving a Section 106 grant, the Tribe will begin administering the requirements of the grant and establishing their water quality program. The Tribe will start by developing their Monitoring Strategy which is their long-term plan for meeting water resource goals. (See Chapter 3 for more information about grant requirements, Chapter 4 for more information on establishing a water quality program, and Chapter 6 for more information about the Monitoring Strategy.)

The Tribe will then begin monitoring the quality of waters on their reservation and gather water quality data. The Tribe will also select thresholds or standards to evaluate their water quality results against. (See Chapters 5 and 8 for more information on monitoring, thresholds, and standards.)

Tribes provide their water quality data to EPA's Water Quality Exchange (WQX). Tribes use this data to develop Water Quality Assessments describing their water quality monitoring activities, their assessment decisions, and how their program is meeting the goals and objectives. Water Quality Assessments help track progress toward attaining the Tribe's thresholds or standards. (See Chapters 5 and 6 for more information about data management and the Water Quality Assessment.)

At this point, the Tribe has established a water quality program according to their needs and can consider options to expand their water quality activities. Figure 1 identifies some potential paths for expansion:

- If the Tribe chooses to pursue EPA-approved WQS, they must apply for Section 303(c) TAS and submit their WQS for EPA approval. The Tribe may also be interested in applying for TAS for other CWA authorities such as Section 303(d) listing impaired waters and developing total maximum daily loads (TMDLs), Section 401 water quality certification, and Sections 402 and 404 permitting programs. (See Chapter 8 for more information about Sections 303(c), 303(d), 401, 402, and 404.)
- The Tribe may want to start completing an assessment methodology. Creating assessment methodologies helps develop capacity to receive TAS authorization for Section 303(d). Voluntarily publishing water quality reports to the Assessment and TMDL Tracking and Implementation System (ATTAINS) helps further develop capacity. (See Chapter 5 for more information about assessment methodologies and Chapter 8 for more information on Section 303(d).)
- The Tribe may want to begin implementing strategies to address nonpoint source (NPS) pollution including source water protection, failing decentralized wastewater treatment systems, and developing an NPS Assessment Report and NPS Management Program Plan (See Chapter 7 for more information about watershed planning and Chapter 9 for more information on 319 grants.)
- The Tribe may want to apply for a Wetland Program Development Grant (WPDG) under Section 104(b)(3). A wetland program can help conserve, restore, and improve wetlands. (See Chapter 9 for more information about wetland programs.)

Chapter 2: Overview of the Clean Water Act

Read this chapter…

- For an introduction to the CWA and its sections.
- To learn how the CWA Section 106 Program relates to other sections of the CWA.

Chapter highlights:

- History of the CWA.
- Description of each CWA section relevant to tribal water quality programs.

The following chapter provides general information on the structure of the CWA with more specific information on the CWA titles that support the water quality activities discussed in this guidance. For more information on the CWA see EPA's *Summary of the Clean Water Act*.

The Federal Water Pollution Control Act, commonly known as the "Clean Water Act" (CWA), is the federal law that establishes goals for protection of the chemical, physical, and biological integrity of the nation's waters and authorizes implementation of programs to achieve those goals. The overarching strategy for water pollution control is set by the federal government and administered by states.[2] The CWA was amended in 1987 to include Section 518. This section authorized EPA to treat federally recognized Indian Tribes in a similar manner as a state (TAS) for specific sections of the CWA, giving some Tribes the option to apply for grants and request authorization to administer portions of the CWA.

History of the Clean Water Act

1948 – The Federal Water Pollution Control Act (known as the Clean Water Act) was enacted as the first United States law to address water pollution.

1965 – Water Quality Standards (WQS) were added.

1966 – Reporting requirements for water pollution discharges were added.

1972 – Amendments expanded the CWA into what it is today. Many existing requirements for protecting interstate waters were expanded to cover intrastate waters. These amendments:

- Established the structure for regulating pollutant discharge.
- Gave EPA the authority to oversee water pollution control programs.
- Required permits for pollutant discharges.
- Recognized the need to address nonpoint source (NPS) pollution.
- Established the Section 106 Water Pollution Control Grants.

1987 – The Water Quality Act of 1987 added Section 518 to the CWA, giving Tribes the option to request authority to administer portions of, and receive grants under, the CWA.

[2] The term "state" means a state, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Trust Territory of the Pacific Islands (33 U.S.C. 1362(3)).

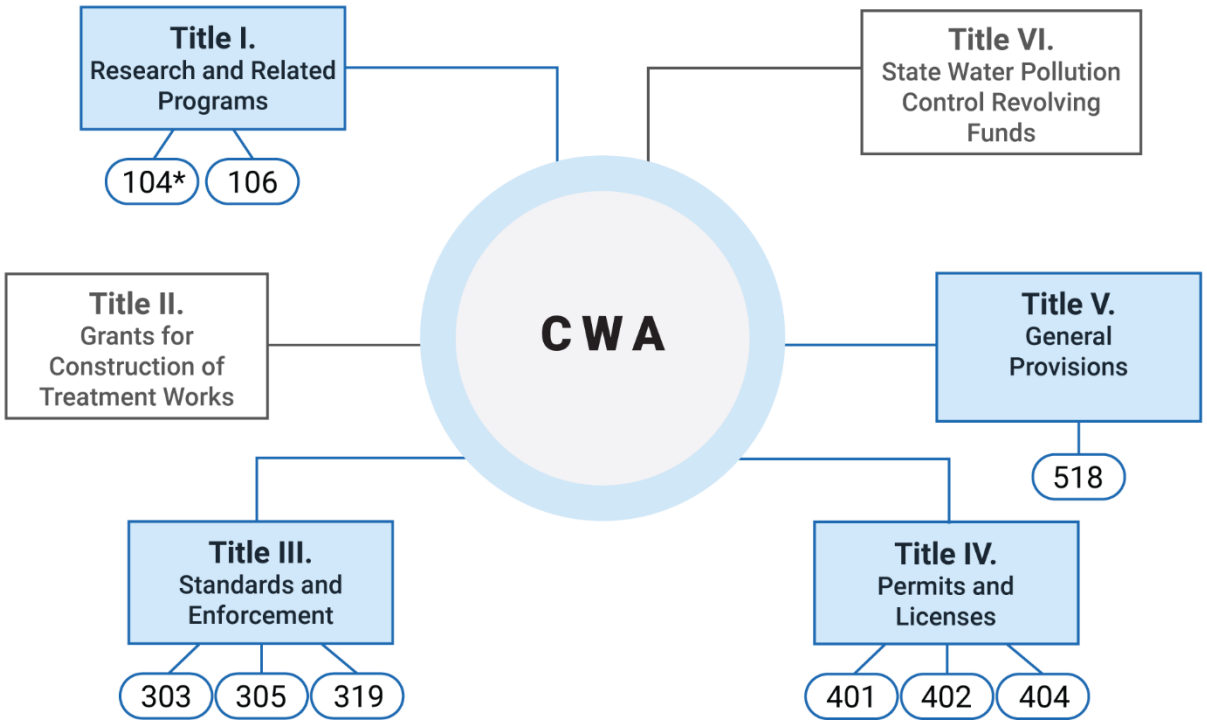
The CWA provides a framework to identify, address, and prevent water quality problems. The CWA also defines the structure for regulating water pollutant discharges to protect water quality in the United States. The CWA also calls for development of programs to control NPS pollution so that water quality goals are met through control of both point source and NPS pollution. EPA has the responsibility for overseeing the CWA and works with Tribes and states to implement and enforce the CWA. Tribes who are interested in applying for grants and requesting program authorization are required to meet CWA requirements for each section they are interested in administering.[3]

The CWA has six titles, each with multiple sections (Figure 2).

The water quality sections under Titles I, III, IV, and V are shown in blue in Figure 2 and are described below in more detail. Some sections under these titles also authorize grants. For example, Section 106 authorizes Water Pollution Control Grants under Title I, and Section 319 authorizes grant funding to address NPS pollution under Title III. These titles work in conjunction with Section 106 funding to support water quality activities. Implementation activities for many of these titles are eligible for Section 106 funding. The other two titles of the CWA, Titles II and VI, authorize funding for wastewater treatment plant construction and are not covered in this guidance as they do not work in conjunction with Section 106 or otherwise support Section 106-funded activities.

[3] Tribes may submit separate applications for each eligibility/authority, or a Tribe may combine requests such as TAS for Section 106 and 319. Tribes that receive TAS for Section 303(c) are immediately eligible for Section 401 as well. See 40 CFR 131.4(c).

Figure 2. The six titles of the CWA



Titles in shaded blue boxes work in conjunction with Section 106 funding to support water quality activities

Titles in white boxes are not covered in this guidance as they do not work in conjunction with Section 106

* Section 104 does not require treatment in a similar manner as a state (TAS) authorization

Title I. Research and Related Programs

Section 101(a) – Declaration of Goals and Policy

Section 101(a) outlines the major goals for the CWA and for water quality in the United States. The ultimate objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (CWA Section 101(a)). The interim, short-term goal is to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water. (This is referred to as the **fishable** and **swimmable** goal.) Additional 101(a) goals address elimination of point source and NPS pollution.

Section 104 – Research, Investigations, Training, and Information

Section 104(b)(3) authorizes EPA to provide grants for investigations, experiments, training, demonstrations, surveys, and studies to investigate the causes, effects, extent, prevention, reduction, and elimination of pollution. The Wetland Program uses this authority to fund Wetland Program Development Grants (WPDGs) for Tribes and states. WPDGs assist tribal, state, and local government agencies and intertribal and interstate entities in building programs to protect, manage, and restore wetlands. Tribes do not need authorization to apply for WPDG funds (see Section 518 below).

More information about Section 104(b)(3) and how it supports tribal water quality activities is in Chapter 9: Other Funding Options.

Section 106 – Grants for Water Pollution Control Programs

Section 106 authorizes EPA to award grants that assist authorized Tribes, states, and interstate agencies in administering their water pollution control programs for the prevention, reduction, and elimination of water pollution. EPA allocates Section 106 grants based on the extent of the pollution problem. Tribes and intertribal consortia with TAS for Section 106 may apply for Section 106 funds. Tribes and states use Section 106 funds to conduct a wide range of water quality activities including: conduct water quality monitoring and assessment, report on the condition of their waters, develop WQS, and issue and enforce permits.

This guidance focuses on how Tribes can effectively develop, implement, and expand their water quality programs using Section 106 funds.

Title III. Standards and Enforcement

Section 303 – WQS and Implementation Plans

Section 303(c)

Section 303(c) requires authorized Tribes (those with TAS for Section 303(c)) and states to develop WQS, review them at least every three years, and revise as needed. WQS translate the broad goals of the CWA into waterbody-specific, measurable objectives. WQS also serve as a regulatory basis for establishing water quality-based treatment controls. These controls include Section 401 certification, Section 402 National Pollutant Discharge Elimination System (NPDES) permits, Section 404 dredge and fill permits, and enforcement actions (see below).

More information about Section 303(c) and how WQS support water quality programs is in Chapter 8: Program Expansion – Regulatory Authorities.

Section 303(d)

Section 303(d) requires authorized Tribes (those with TAS for Section 303(d)) and states to list any waters that do not meet, or are expected to not meet, one or more WQS. The 303(d) list includes both threatened waters (those with a water quality trend indicating they will not be meeting WQS within two years) and impaired waters (those not meeting WQS). Authorized Tribes and states submit the list to EPA every two years.

Section 303(d) also requires authorized Tribes and states to prioritize waters on the 303(d) list and develop Total Maximum Daily Loads (TMDLs), which calculate the maximum pollutant loads allowable to meet WQS. Listing threatened and impaired waters, and prioritizing waters for pollutant load reductions through TMDLs, is critical to get waters back on track to meeting WQS.

More information about how Section 303(d) programs support water quality programs is in Chapter 8: Program Expansion – Regulatory Authorities.

Section 305 – Water Quality Inventory

Section 305(b) requires states to develop a report describing their monitoring program, assessment methods, and the extent of waters supporting the goals of the CWA to provide for balanced population of fish, shellfish, and wildlife and for recreational activities. 305(b) reporting identifies water quality conditions (healthy, impaired, or poor) and the key causes of water impairment. In lieu of a 305(b) report, Tribes report on the conditions of their waters through their Section 106 Water Quality Assessment report.

EPA submits a report describing the status of the nation's water quality and key stressors across the nation using information reported electronically by Tribes and states through participation in the National Aquatic Resource Surveys and the Assessment and TMDL Tracking and Implementation System (ATTAINS).

Section 319 – Nonpoint Source Management Programs

Section 319 establishes a program to address pollution from diffuse sources (such as agricultural lands and urban areas) that runs into waters. NPS pollution is the leading source of U.S. water pollution. Section 319 also authorizes EPA to award grants that assist authorized Tribes (those with TAS for Section 319), states, and territories in administering their NPS programs.

More information about Section 319 and how Section 106 funds can support NPS efforts is in Chapter 8: Program Expansion – Regulatory Authorities.

Title IV. Permits and Licenses

Section 401 – Certification

Section 401 is a powerful tool for authorized Tribes (those with TAS for Section 401), states, and interstate agencies to protect their waters from adverse impacts caused by federally licensed or permitted projects. Under Section 401, a federal agency may not issue a license or permit for an entity to discharge into navigable waters,[4] unless the authorized Tribe, state, or interstate agency where the discharge originates or will originate either issues a Section 401 water quality certification or waives certification.

More information on Section 401 and how tribal participation in 401 certification can support water quality program goals is in Chapter 8: Program Expansion – Regulatory Authorities.

Section 402 – National Pollutant Discharge Elimination System

Section 402 authorizes Tribes (those with TAS for Section 402 and who have been approved to administer the program), states, and interstate agencies to grant or deny permission for point source pollution discharges into their waters in their jurisdiction. Point source pollution is any single identifiable source of pollution from which pollutants are discharged. NPDES permits set limits on the amounts of various pollutants that a point source can discharge in a given period of time.

More information about Section 402 and how it supports water quality programs is in Chapter 8: Program Expansion – Regulatory Authorities.

Section 404 – Permits for Dredged or Fill Material

Section 404 is a permitting and enforcement program which requires a permit be issued prior to the discharge of dredged or fill material into "waters of the United States." Section 404(g) provides eligible Tribes (those with TAS for Section 404(g)), states, and interstate agencies the option to assume permitting authority to grant or deny permits for discharges of dredged or fill material into waters within their jurisdiction.

[4] The term "navigable waters" means the "waters of the United States," including the territorial seas (33 U.S.C. 1362(7)).

More information about Section 404 and how it supports water quality programs is in Chapter 8: Program Expansion – Regulatory Authorities.

Title V. General Provisions

Section 518 – General Authorization

Section 518(e) sets the criteria for federally recognized Tribes to request TAS to administer and receive grants under CWA Sections 106 and 319. Tribes also need TAS to be authorized to carry out other CWA programs such as Sections 303(c), 303(d), 401, 402, and 404. In the absence of a Tribe assuming authority for a CWA regulatory program, EPA generally directly implements the program in Indian Country.

Section 104 is not referenced in Section 518(e), therefore, Tribes do not need TAS to receive WPDG funds under Section 104.

More information about how Tribes can attain TAS is in Chapter 3: Grant Requirements (for Section 106), Chapter 8: Program Expansion – Regulatory Authorities (for Sections 303(c), 401, 303(d), 402, and 404(g)), and Chapter 9: Other Funding Options (Section 319).

Chapter 3: Grant Requirements

Read this chapter…

- To learn how to apply for TAS eligibility for the CWA Section 106 Program.
- For an overview of the CWA Section 106 grant application and administration process.
- To understand pre-award activities and post-award requirements.

Chapter highlights:

- Flowchart depicting relationship between strategic planning and agency guidance.
- Table of grant options for accessing Section 106 funds.
- Flowchart depicting the grant application process.

This chapter provides an overview of federal requirements to guide Tribes through the Section 106 grant application and administration process. The legal, administrative, financial, and programmatic requirements in this document are designed to ensure consistency among tribal grants.

This chapter provides information about the grant process but does not address all requirements codified in law or EPA program guidelines. EPA Project Officers may ask for additional information based on Section 106 guidance or updated requirements. Tribes interested in applying for Section 106 funds should work with their EPA Project Officer to ensure they meet all grant requirements.

Table 1. Requirements applicable to tribal Section 106 grants

Categories of Requirements	Sections Relevant to Section 106 Grants
Statutory provisions	CWA Sections 106, 305, 504, and 518(e).
Regulations	2 CFR Parts 200 and 1500. 40 CFR Parts 7, 29, 33, 34, 35, and 130.
EPA Grant Guidelines	EPA's *National Water Program Guidance*. EPA's Guidance on the *Water Pollution Control (Section 106) Grants* website.

Federal Grant Requirements

All grants awarded by EPA must meet the requirements described in the Code of Federal Regulations (CFR) Title 2 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for federal awards (commonly called "Uniform Grant Guidance" or “UGG”) and Title 40 Part 35 Protection of Environment. Throughout this chapter, the section of the CFR is referenced to indicate regulatory requirements.

The UGG is a "government-wide framework for grants management," an authoritative set of rules and requirements for federal awards that synthesizes and supersedes guidance from earlier Office of Management and Budget (OMB) circulars. The UGG aims to reduce the administrative burden on award recipients and, at the same time, guard against the risk of waste and misuse of federal funds.

EPA sets out the requirements for all grants at 40 CFR Part 35. Information specific to tribal grants is at 40 CFR 35 Subpart B.

EPA’s Office of Grants and Debarment provides Grants Policy Issuances and other policy documents on the *EPA Grants Policy Resources* website to support the implementation of grants.

Applying for TAS for the Section 106 Program

The treatment in a similar manner as a state (TAS) requirements to receive Section 106 grants ensure that Tribes have the legal, financial, technical, and managerial resources to successfully establish and administer a Section 106-funded water quality program. EPA finding that a Tribe meets the TAS criteria authorizes the Tribe to apply for Section 106 grants.

The general requirements for TAS are in CWA Section 518(e) and specific information for Section 106 is in regulation at 40 CFR 130.6(d) and 40 CFR 35.583. The CWA Section 518 statutory requirements are summarized below.

1. The Tribe is recognized by the Secretary of the Interior.
2. The Tribe has a governing body carrying out substantial governmental duties and powers.
3. The functions to be exercised by the Tribe pertain to the management and protection of water resources that are held by an Indian Tribe, held by the United States in trust for Indians, held by a member of an Indian Tribe if such property interest is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation.
4. The Tribe is reasonably expected to be capable, in EPA’s judgment, of carrying out the functions to be exercised in a manner consistent with the terms and purposes of the CWA and all applicable regulations.

Tribes seeking TAS submit a Section 106 TAS application to their EPA region.[5] Because Tribes will not have access to Section 106 funds until EPA approves their TAS application, many Tribes have used Indian

[5] Tribes can submit their demonstrations that they meet the TAS eligibility criteria with a Section 106 grant application, but Tribes cannot receive the grant unless EPA finds that the Tribe meets the TAS requirements.

Environmental General Assistance Program (GAP) grants to build capacity while undergoing the Section 106 TAS application process. See Chapter 9: Other Funding Options for more information on GAP grants.

Tribes with TAS may be a valuable resource to Tribes who are considering applying for Section 106 TAS. EPA regional offices may be able to provide contact information for other tribal water quality programs in the region.

Intertribal Consortia

Governing bodies of two or more Tribes can authorize a partnership, called an intertribal consortium or consortia, to apply for and receive assistance under one or more of the programs listed in 40 CFR 35.501. Intertribal consortia can receive grants under Section 106 if they demonstrate that each member Tribe authorizing the consortium to act on their behalf is federally recognized and has met the requirements for Section 106 TAS (40 CFR 35.583). A consortium must adequately document the partnership's existence and the authorization to apply for and receive assistance (40 CFR 35.504). Tribes may receive grants, both as an individual Tribe and as a part of an intertribal consortium, as long as the grants do not fund the same projects.

Amending a TAS Application to Include Supplemental Lands

Tribes whose reservation lands consist of individual trust parcels that are not part of a formal Indian reservation, or who have acquired lands that have been put into trust outside the exterior boundaries of a formal reservation, may wish to amend their existing TAS approved application. These amendments can include new reservation lands such as lands transferred into federal trust status since the original application was approved.[6]

A Tribe that has previously qualified for TAS need only provide the required information that they have not submitted in a previous application (40 CFR 131.8(b)(6)). Examples of information that can transfer from a prior application include federal recognition and descriptions of the Tribe's governmental functions, as well as descriptions of lands and waters covered by the original approval. An application to amend an existing TAS approval would, however, include information regarding the new reservation lands, such as lands transferred into federal trust lands and associated waters.

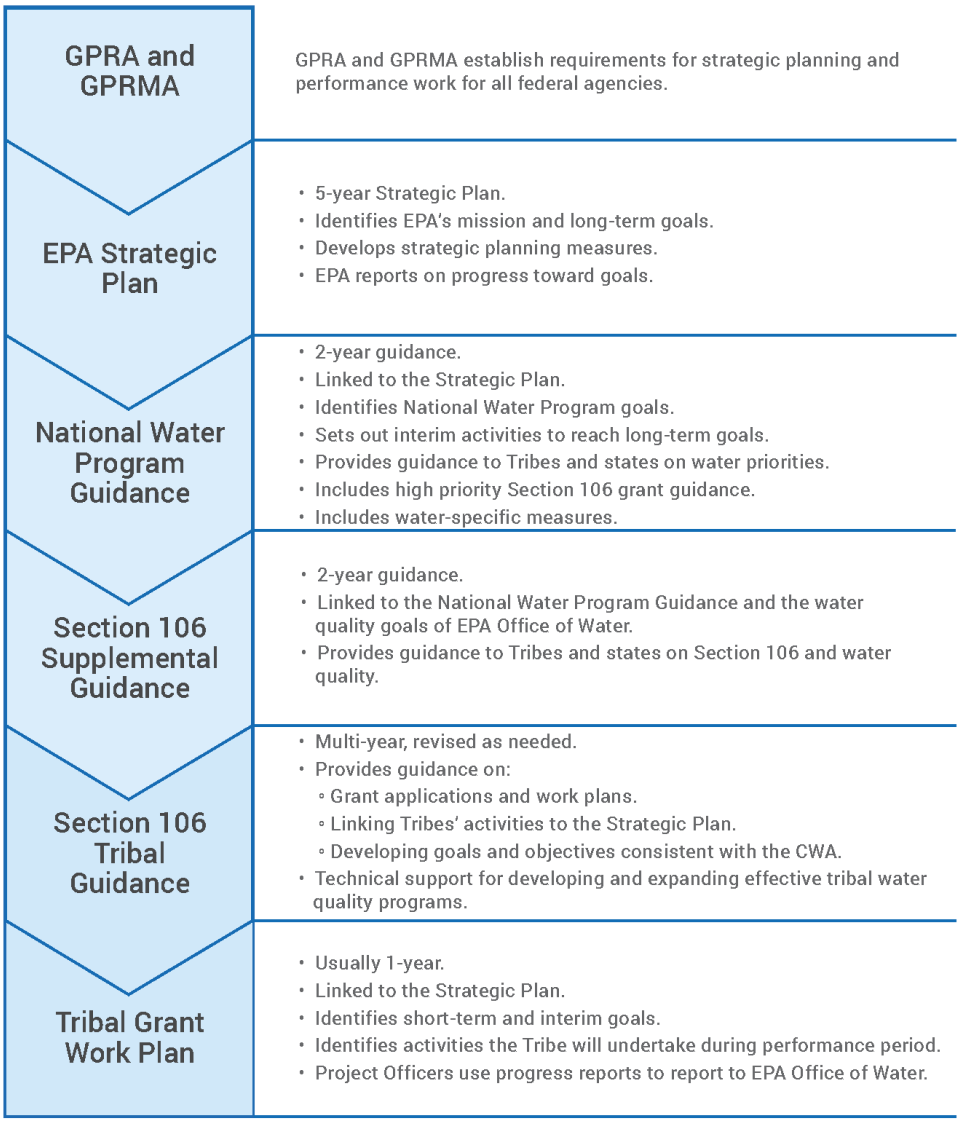
GPRA and Strategic Plans

The Government Performance and Results Act (GPRA) (PL 103-62), later amended by the Government Performance and Results Modernization Act (GPRMA) of 2010, requires federal agencies to set strategic goals, measure performance, and report on the degree to which they met their goals. GPRA requires each federal agency to develop strategic plans to cover a period of at least five years and to include a mission statement, long-term strategic goals, and information on how the goals will be achieved. Strategic plans are the starting point for federal agencies to set annual goals for programs and to measure their performance in achieving those goals. Individual program activities within agencies are

[6] Consistent with EPA's longstanding approach, properties located outside the boundaries of formal, federally recognized Indian reservations that are held in tribal trust status are informal reservations and are eligible for inclusion in a Tribe's application for CWA program authority. See, for example, Amendments to the Water Quality Standards Regulations that pertain to Standards on Indian Reservations 56 FR 64876, 64881 (December 12, 1991).

linked to their priorities, strategic goals, annual goals, and measures described in their strategic plans. One way EPA implements its strategic plan is through the awarding of grants. Accordingly, Tribes' grant applications must include work plans that link work plan activities to EPA's current strategic plan, available on the *EPA Strategic Plan* website, and the activities they are requesting be funded. See Figure 3 for more information.

Figure 3. Strategic planning and grant performance



GPRA: Government Performance and Results Act

GPRMA: Government Performance and Results Modernization Act

Establishing Output- and Outcome-Based Activities: Environmental Results

EPA considers the links between grant activities and the EPA Strategic Plan goals and objectives and how environmental results from the activities will further EPA's goals and objectives (EPA Order Number 5700.7A1 Environmental Results under EPA Assistance Agreements). EPA ensures that grant activities identify outputs and outcomes. Each Tribe's grant work plan needs to describe the link between the

proposed activities and EPA's strategic plan, as well as any expected outputs or outcomes. *EPA Order Number 5700.7A1* includes guidance on complying with the order.

Outputs reflect the environmental efforts, products, or services a program will provide. Outputs may be qualitative or quantitative, but they must be measurable. Examples of outputs include number of staff trained, number of community outreach events, and number of samples collected.

Environmental **outcomes** are quantifiable changes or benefits resulting from the activities or outputs of the program. Examples of outcomes are measurable improvements in water quality and increases in the number of facilities that meet effluent limits.

Although a Tribe's program should strive to produce outcomes, in some cases outputs will be the most appropriate goals for their work plan activities, especially early in the program's development. For instance, outcomes may take many years to achieve and may occur after a grant period ends. Additionally, even if a Tribe achieves a desired outcome, linking the outcome to the environmental activities may be difficult.

Examples of Outputs and Outcomes for Environmental Activities

Monitoring
- Outputs: Number of samples collected.
- Outcomes: Improved understanding of waterbody condition.

Research and development, studies, surveys, investigations, and experiments
- Outputs: Number of experiments or samples collected, number of reports or publications.
- Outcomes: Advanced knowledge on the effects of water pollution as reflected in a peer-reviewed scientific journal article.

Training and outreach
- Outputs: Number of training sessions, number of persons trained.
- Outcomes: Increase in knowledge as demonstrated by pre- and post-training surveys.

Compliance and enforcement
- Outputs: Number of inspections or enforcement actions.
- Outcomes: Increase in number of facilities that reduce discharge or other pollutants, quantity of discharge, or pollutants reduced.

Establishing Adequate Financial Management Systems and Managerial and Technical Capacity

Before applying for a Section 106 grant, a Tribe must be able to adequately track grant expenditures and establish and maintain effective accounting procedures to comply with grant requirements (2 CFR 200.208). Tribes are also required to register with the *System for Award Management (SAM.gov)* to be eligible for a federal grant and submit annual grant Financial Reports.

Tribes should have the capacity and capabilities to accept and manage federal funds, while also ensuring managerial and technical capabilities are in place to complete their work plan tasks. As part of the

annual and final evaluation process, EPA assesses the capacity and capabilities of Tribes to achieve and complete tasks. Capacity and capabilities include internal controls under 2 CFR 200 Part E:

1. Tribes design and implement processes to provide reasonable assurance that the objectives in the following categories can be met:
   i. Effective and efficient operations.
   ii. Reliable reporting for internal and external use.
   iii. Compliance with applicable laws and regulations.
2. Federal awarding agencies must follow internal control compliance requirements in accordance with UGG Cost Principles (2 CFR 200 Subpart E).

Identifying the Best Vehicle for a Section 106 Grant

Before submitting a grant application, Tribes should consider all the possible Section 106 grant application options and discuss with their Project Officer which is best for the Tribe's program. Table 2 summarizes three options for accessing Section 106 grants and their key features.

Performance Partnership Grants (PPGs)

Section 106 grants are one of many grants eligible for inclusion in PPGs (*40 CFR Part 35.101a*). EPA's *National Environmental Performance Partnership System (NEPPS)* website can be used as a resource to identify other programs that are also eligible for PPGs. PPGs combine funds from two or more environmental programs into a single grant application with a single budget to reduce administrative burden. Tribes that are interested in pursuing PPGs should work with their EPA regional office to develop a PPG that meets EPA statutory and program requirements. EPA's *NEPPS: Guidance, Policies, & Regulations* website contains more information on PPGs.

Table 2. Options for awarding tribal grants

Options for Awarding Tribal Grants	Key Features

Section 106 Grant	• Tribes submit a Section 106 specific grant application, work plan, and budget.
	  ○ Can easily track and report the specific activities they conduct and the outcomes.
	  ○ Tribes and EPA can track funds easily.
	• Tribes can work with EPA to tailor the period of performance to the scope of their Section 106 activities.
	• Tribes have flexibility in the work plan format.
	• Tribes do not have the 5 percent match requirement (waived).

Section 106 as part of a water-focused PPG (Section 106, 319, 104(b)(3), Beaches Environmental Assessment and Coastal Health (BEACH) Act)	• Tribes combine water-focused grants into one application, work plan, and budget. • Tribes need to establish the link between Section 106-funded activities in the work plan and track and report on the specific activities they accomplish and the outcomes. • Tribes can work with EPA to tailor the period of performance to the water programs they include.

Options for Awarding Tribal Grants	Key Features
	• Tribes will not be required to provide a financial report outlining how funds were used to support water quality activities. • Tribes have flexibility in the work plan format. • Tribes can work with EPA to unify reporting frequencies. • Tribes may allocate any remaining funds to other eligible PPG activities after completion of all work plan activities. • Tribes do not have match requirements (waived).
Section 106 as part of a multi-media PPG (GAP Funds and Other Media Programs)	• Tribes can combine PPG eligible programs into one application, work plan, and budget. • Tribes need to establish the link between Section 106-funded activities in the work plan and track and report on the specific activities they accomplish and the outcomes. • Tribes will not be required to provide a financial report outlining how funds were used to support water quality activities. • Programmatic requirements for some programs in the PPG may impact the grant's period of performance. • Tribes may allocate any remaining funds to other eligible PPG activities after completion of all work plan activities. • Tribes do not have match requirements (waived).

Applying for and Administering a Grant

This section provides an overview of the grant lifecycle and requirements at each stage of the grant. "Grants" in this section refers to either grants or cooperative agreements, awarded to Tribes or intertribal consortia in the form of Section 106 individual grants or PPGs that include Section 106 funding. The Section 106 Program manages grants consistent with *Grant Policy Issuance (GPI) 13-02: Streamlining Tribal Grants Management*. Figure 4 outlines the grant life cycle.

Figure 4. Grant life cycle

* If Tribes cannot submit their data directly to WQX, Tribes can submit their data in a WQX compatible format directly to EPA regional staff along with a justification of why they could not load data to WQX.

Pre-Award Activities

During the pre-award phase, EPA encourages Tribes to:

- Seek informal or formal assistance to answer questions concerning the technical or administrative requirements of the work plan.
- Respond to inquiries from the EPA Project Officer and EPA Grants Management Office concerning the application.
- Revise the application based on comments from the EPA Project Officer and EPA Grants Management Office.

Understanding Grant Application Package Requirements

A Tribe's grant application package includes (2 CFR 200 Subpart C, 40 CFR 35.507):

- **Grant application form SF 424.** This form, in addition to all required forms and certifications, can be obtained from EPA's *Grantee Forms* website. Additional training opportunities are on EPA's *Grants Management Training for Applicants and Recipients* website.
- **Proposed work plan**. More information on developing a work plan, including estimated costs, is provided in the Understanding Work Plan Requirements section of this chapter. Tribes should contact their EPA Project Officer for EPA region-specific requirements.
    - **Meet the requirements of 40 CFR Part 35.507**. These requirements specify content Tribes must include in their work plan and are described in the following subsection.
- **Proposed budget**. More information on developing a budget is in the Developing a Budget section of this chapter. Tribes should discuss any funding amount limitations with their Project Officer prior to developing a budget.
- **Requirements in 2 CFR 200.208**. These requirements include special conditions that may apply to specific situations (for example, grants to Special Condition grantees). EPA regional offices will have more information.

Tribes must submit a complete application via Grants.gov. To begin the process, Tribes first create a Grants.gov account by visiting the *Registering with Grants.gov* website. More information is in Appendix A: Accessing the Section 106 and PPG Grant Application.

The EPA regional Project Officer can assist with questions regarding the grant application process and work plan due dates.

Understanding Work Plan Requirements

The work plan is the basis for EPA and the Tribe to manage, plan, and evaluate performance under the grant agreement. Tribes should submit their draft work plan to their Project Officer before starting the grant application to ensure EPA can approve the work plan before the scheduled grant start date. In accordance with GPI 11-03, the work plan needs to consider factors such as EPA's Strategic Plan, national program guidance; tribal goals, objectives, and priorities; and other joint needs or priorities.

For individual grants and PPGs, final work plans must meet the requirements of 2 CFR 200 Subpart C, 40 CFR 35.507, applicable federal statutes, circulars, executive orders, and delegation or authorization agreements. At a minimum, the final work plan must specify:

- Work plan components that the grant will fund. A work plan component is a set of tasks that the Tribe and EPA negotiate. A work plan may have one or more work plan components.
- Estimated work years, or personnel time, and estimated funding amounts for each work plan component.
- Environmental outputs which are the activities or efforts and associated work products related to an environmental goal or objective.
- Environmental outcomes which are the results, effects, or consequences from the environmental program or activity.
- A performance evaluation process and reporting schedule, in accordance with 40 CFR 35.115.
- The roles and responsibilities of the Tribe in carrying out the work plan components.

Appendix B: Work Plan Template includes a sample work plan template.

Additional Funding

If the Project Officer notifies a Tribe that additional funds are available **after a Tribe has submitted a grant application through Grants.gov but before final approval of the grant application package**, additional information may be required. Tribes submit all requested information directly to the Project Officer, *not* through Grants.gov.

Match Requirements

Direct Categorical Section 106 grants: The EPA Office of Water received a regulatory exception from the 5 percent tribal match requirements for Section 106 grants. Tribes are no longer required to provide a match and can receive 100 percent of the work plan costs (*Memorandum on Class Exemption from 40 CFR 35.585, Maximum Federal Share*).

If Tribes choose to voluntarily contribute funds to support additional water quality activities, contributions towards eligible work plan activities should only be reported in the recipient's FFRs. This amount can be reported in "line j. Recipient share of expenditures." This additional funding is considered overmatch and can be used to replace any EPA-funded work plan costs that may be disallowed over the course of the grant period. This approach is recommended to minimize any potential repayments.

Media-Specific or Multi-Media PPGs: The EPA Office of Congressional and Intergovernmental Affairs received a regulatory exception from the tribal match requirements in a PPG. Tribes are no longer required to provide a match and can receive 100 percent of the work plan costs for all programs, including Section 106, in the PPG. Tribes can choose to contribute an overmatch, as described above, if funds are available. (*RAIN-2022-G01: Class Exception to the Cost Share Requirements for Tribal and Intertribal Consortia Performance Partnership Grants (PPGs) at 40 CFR 35.536*)

Developing a Budget

Each Tribe's application must include a budget, which provides the total cost by category associated with completing the activities in the work plan. A Tribe's budget will reflect the federal dollars that are within the grant work plan. EPA regional offices can help Tribes develop their budgets.

In their program budgets, Tribes include estimated costs to accomplish the activities in their work plans. The costs must be allowable, allocable, and reasonable, as defined by federal cost principles and policies. The cost principles are identified in *2 CFR Part 200 Subpart E*.

When developing a budget, Tribes should refer to EPA's Grants website for information on how to structure their budget and the details needed for justification (the *EPA Office of Grants and Debarment Guidance on Selected Items of Cost for Recipients* has more information). Tribes must identify allowable costs (2 CFR Part 200 Subpart E) in the following cost categories:

1. **Personnel costs** include only direct costs for the salaries, wages, and allowable incentive compensation for those individuals who are employees of the tribal agency who will perform work directly for the project. Employees receive W-2 forms for federal tax purposes. The costs should be broken down by job classification, such as laborer, scientist, or volunteer. Multiplying cost per hour by number of hours worked yields the total personnel costs. (2 CFR 200.430)

2. **Fringe costs** are benefits, allowances, and services that employers provide to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave (vacation, family-related, sick, or military), employee insurance, pensions, and unemployment benefit plans. (2 CFR 200.431)
3. **Travel costs** are expenses for transportation, mileage, lodging, subsistence, and related items that employees on official travel incur while conducting grant funded activities. (2 CFR 200.475)
4. **Equipment** with a unit cost greater than $5,000 per unit must have prior EPA approval (2 CFR 200.313 and 200.439). Tribes should discuss equipment purchases with their EPA Project Officer early in the application process.
5. **Supplies** include materials and equipment with a unit cost under $5,000 necessary for conducting activities in the work plan. Examples include monitoring supplies, computers, paper, and pens.
6. **Contractual costs** include costs for obtaining contractor support to conduct grant activities. These costs include contracts with outside laboratories to analyze water quality samples.
7. **Construction costs** to build or construct structures are not eligible under Section 106.
8. **Other costs** include those costs that do not fit into the above categories. These costs include subawards, telephone and internet services, and utilities; occasional document copying; rent or lease of equipment, office space, or conference facilities; participant support costs (for example, travel costs for interns and other non-employees); conference registration fees; and vehicle maintenance (unless it is under a contract).
9. **Total direct costs** directly relate to accomplishing the project. They are the sum of personnel, fringe, equipment, supplies, contracts, travel, and potentially administrative costs.
10. **Indirect costs** are costs that are incurred to support the overall operation of the organization. Indirect costs may be both administrative and programmatic. The Tribe must have an approved indirect cost rate proposal and provide a copy to EPA. This document substantiates the basis for costs that are common or joint to more than one cost objective (2 CFR 200.414). The Tribe should use the 10 percent de minimis indirect cost rate if they do not have an approved indirect cost rate.

EPA's *Interim General Budget Development Guidance for Applicants and Recipients of EPA Financial Assistance* provides additional information for recipients of EPA funds when preparing proposed work plans, budgets, and budget narratives for EPA assistance agreements for project grants and cooperative agreements.

Programmatic and Administrative Terms and Conditions

EPA attaches programmatic terms and conditions to each Tribe's grant award. Example terms and conditions include having a Quality Assurance Project Plan (QAPP) and providing water quality data electronically to EPA via WQX. There may be additional terms and conditions as agreed to by Tribes and their EPA region. EPA's *General Terms and Conditions* apply to all EPA grants.

Notice of Award

The Notice of Award section of each Tribe's grant agreement includes language allowing recipients to demonstrate their commitment to carry out an award by either 1) drawing down funds within 21 days after the EPA award or amendment mailing date, or 2) not filing a notice of disagreement with the

award terms and conditions within 21 days after the EPA award mailing date. If the Tribe does not notify EPA within 21 days, or draws down funds, the Tribe automatically accepts the grant and all terms and conditions.

Post-Award Requirements

Quality Assurance

All Section 106-funded programs need to establish and maintain a quality system which ensures that any EPA-funded projects that include data collection establish quality assurance (QA) and quality control (QC) procedures. Information about *How EPA Manages the Quality of its Environmental Information* is available online. At a minimum, a Section 106-funded program must have an EPA-approved QAPP before any water quality monitoring activities may begin. More information on developing QAPPs is in Chapter 5: Development and Implementation of a Monitoring Program and on EPA's *Quality Assurance Project Plan Development Tool* website.

Competency Policy

If Tribes generate or use environmental data as part of their Section 106-funded activities and receive over $200,000 in total EPA assistance, they must submit documentation of their competency prior to award of the agreement, or if that is not practicable, prior to beginning any work involving the generation or use of environmental data under the agreement. Generation or use of environmental data includes environmental sampling, field measurements, and laboratory analyses under Agency-funded agreements. See EPA's *Documents about Measurement Competency Under Assistance Agreements*. The grantee shall maintain competency for the duration of the project period of this agreement and this will be documented during the annual performance evaluation process.

Financial and Performance Reporting

In addition to any work plan requirements, there are financial and performance reporting requirements associated with grants. At a minimum, all performance reports must contain the required elements listed in 2 CFR 200 or 40 CFR 35, Subpart B:

- Accomplishments against work plan objectives.
- An explanation if any objectives were not met.
- Any additional pertinent information, such as analyses or explanations of cost overruns.

In their reports, Tribes must also discuss how the activities they performed under their Section 106 work plan addressed water quality problems on their reservation. Tribes have 120 days post project and budget expiration date to submit a final performance report. Each Tribe's EPA region can grant an extension, if needed.

Receiving Payment for Eligible Costs

EPA enrolls grant recipients in the Automated Standard Application for Payments (ASAP) system at *ASAP.gov* to transfer authorized payments quickly and securely. Grant recipients request reimbursements from their accounts and should submit, at a minimum, quarterly requests for payment reimbursement. All requests must include only eligible, allowable, allocable, necessary, and reasonable costs the recipient incurred in that quarter. Recipients can also submit more frequent payment requests (such as weekly, bi-monthly, monthly requests) as they incur those costs. *GPI 11-01 Managing Unliquidated Obligations and Ensuring Progress under EPA Assistance Agreements* provides additional detail on these requirements.

Each Tribe's EPA region may have additional reporting requirements; work plans may establish additional commitments and deliverables based on a Tribe's negotiations with their EPA region. Tribes should check with their EPA regional office for more information on reporting requirements and schedules and check the terms and conditions of their grant award carefully.

Conducting Joint Program Evaluations

Tribes and their EPA regional office develop a joint process for evaluating work plan progress and accomplishments as part of their approved work plan (40 CFR 35.515). During the evaluation process, Tribes must discuss:

- Accomplishments against work plan commitments.
- Cumulative effectiveness of the work performed under each of the work plan components.
- Existing and potential problem areas.
- Suggestions for improvement and, where feasible, schedules for making improvements.

The joint program evaluation may also include a discussion on water quality problems and the status of the budget. EPA and the Tribe perform the required joint evaluation of performance according to a schedule that the Tribe and EPA negotiate. EPA places copies of the evaluation in official files and provides them to the tribal recipient (40 CFR 35.115(d)).

Post-Award Changes

Amendments and other changes to grants are governed by 40 CFR 35.514 and 2 CFR 200.308. For changes to the work plan commitments and budget components, Tribes must obtain prior approval from EPA in writing. EPA, in consultation with Tribes, will document these revisions, including budgeted amounts associated with the revisions.

Federal Requirements for Project Closeout Phase

At the end of the grant project period and budget period, Tribes must complete several steps to close out the program grant (2 CFR 200.344).

The first step is for the Tribe to confirm that they completed all tasks and projects in the grant work plan. If they completed these tasks and projects, the Tribes have 120 days post project and budget expiration date to submit to EPA items outlined in the below checklist. A Tribe's final performance progress report must describe project activities and the extent to which they achieved project goals. The

project closeout checklist (see text box) provides a quick guide to help Tribes through the closeout process.

Project Closeout Checklist

- ✓ Verify completion of work plan tasks.
- ✓ Reconcile any remaining or outstanding grant funds.
- ✓ Negotiate with EPA regarding disposition of property purchased with grant funds (if needed).
- ✓ Submit final performance report.
- ✓ Submit final programmatic deliverables (examples include scheduled submission of the Monitoring Strategy, Water Quality Assessment, and data via WQX).
- ✓ Request final payment from EPA.
- ✓ Submit FFR.

Prior to grant closeout, EPA conducts a grant evaluation. During this phase, Tribes are responsible for responding to any inquiries from the EPA Project Officer or EPA Grants Management Specialist. Tribes should ensure they have invoiced and expensed all funds. Tribes should also verify whether unused grant funds may be de-obligated from the grant. Once the EPA Project Officer confirms that the Tribe met all grant commitments, the EPA region's Grants Management Office will complete the closeout process for the grant. Tribal agencies must retain all records for three years after submission of the FFR (2 CFR 200.334). EPA's *Office of Grants and Debarment* website contains tutorials, forms, policies and regulations, and other resources to help Tribes navigate the grant application process.

Chapter 4: Program Development

Read this chapter…

- For an overview of activities that are consistent across tribal water quality programs.
- To understand how to identify reservation water resources and tribal water quality program needs.
- To understand how to develop program goals, objectives, and milestones; submit work plans; and conduct community education activities.

Chapter highlights:

- Table of eligible and ineligible Section 106 activities.
- List of eligible ways to use Section 106 funds for ground water protection programs.
- Section on eligible water quality sampling locations.
- Followed by a section on Indigenous Knowledge and integrating it into water quality programs.

This chapter describes some of the activities that are consistent across all tribal water quality programs and form the foundation needed to support the implementation and expansion of a water quality program using Section 106 funding.

Benefits of Developing a Section 106-Funded Water Quality Program

Section 106 provides critical funding for tribal water quality programs. More than 280 Tribes have received treatment in a similar manner as a state (TAS) for purposes of Section 106 to protect, preserve, and restore water quality in Indian Country. Tribes can use Section 106 funds for:

- Water quality planning, assessments, and studies.
- Ambient water quality monitoring.
- Community outreach and education activities.
- Source water, surface water, ground water, and wetland protection activities.
- Nonpoint source (NPS) control planning activities (including NPS assessments and management plans).
- Monitoring for the effectiveness of NPS activities.
- Developing tribal and EPA-approved water quality standards (WQS).
- Developing and implementing a National Pollutant Discharge Elimination System (NPDES) program.
- Evaluating the impacts of climate change on water quality.

After establishing a water quality program, a Tribe may wish to expand the program to include other CWA program activities, including to address NPS pollution and protect wetlands. Chapter 7: Program Expansion – Additional Activities and Chapter 8: Program Expansion – Regulatory Authorities have information on options to expand a program.

Eligible Uses of Section 106 Funds

Section 106 grant funds support tribal water quality programs to prevent and reduce point source and NPS surface and ground water pollution. Table 3 lists examples of eligible Section 106 activities and Table 4 lists examples of ineligible Section 106 activities. Each EPA region's annual tribal Section 106

funding opportunity announcement may include other important information relevant to the use of program funds.

Table 3. Examples of eligible Section 106 activities

Category	Eligible Activity
Program Management	Building capacity to manage a water quality program.
	Managing the financial aspects of the Section 106 grant including the budgeting and record-keeping.
	Planning, developing, improving, or maintaining a water quality program.
	Supporting personnel and office equipment costs for Section 106 eligible activities.
	Networking and coordinating with watershed stakeholders to protect and restore water quality.
	Completing grant reporting activities.
	Attending training opportunities related to the Tribe's water quality program.
	Conducting water quality planning, assessments, and studies (for example, source water, surface water, ground water, climate change/adaptation, and wetland protection assessments or plans).
	Developing a Section 401 Certification Program.
Monitoring	Developing a Quality Assurance Project Plan (QAPP).
	Developing a Monitoring Strategy.
	Purchasing monitoring and laboratory equipment and supplies.
	Conducting monitoring activities to determine water quality of source water, surface water, ground water, and wetlands.
	Collecting data and performing related quality assurance (QA).
	Managing water quality data and data management systems.
	Conducting or contracting laboratory analysis.
	Conducting data analysis and assessment including to develop an assessment methodology.
	Conducting research, investigations, surveys, and special studies to characterize water quality.
Standards-based Activities	Developing TAS packages for WQS, Listing and Total Maximum Daily Loads (TMDLs), and permitting.
	Developing WQS and conducting triennial reviews.
	Reviewing and commenting on NPDES permits.
	Conducting violation enforcement activities to correct violations, deter future violations, and promote equal treatment of the regulated community.

Category	Eligible Activity
	Developing TMDLs.
NPS	Attending NPS meetings and training opportunities.
	Developing non-structural controls to reduce NPS pollution (for example, education and outreach, code development).
	Forming partnerships to address NPS issues.
	Developing NPS inventories, assessments, and management plans.
	Conducting watershed-based planning.
	Developing a TAS package for Section 319.
	Monitoring on reservation and trust lands to support the Section 319 program.
Community Related Activities	Conducting community or tribal outreach, education, and public awareness activities, including social media.
	Involving the public in program development.
	Establishing voluntary programs.
	Collecting Indigenous Knowledge to support water quality goals and objectives through interviews and meetings with the tribal community.

Table 4. Examples of ineligible Section 106 activities

Ineligible Activity
Performing activities defined as ineligible in the *Uniform Grant Guidance (UGG) (2 CFR 200)*.
Constructing, operating, or maintaining wastewater treatment plants, wastewater lagoon systems, and regulatory or required monitoring, including compliance monitoring, of such systems.
Constructing, operating, or maintaining drinking water systems and conducting regulatory or required monitoring (including compliance monitoring) of such systems.
Installing, operating, or maintaining NPS structural controls (or "on the ground" management measures) that require construction.
Performing the same tasks funded under another work plan or grant (for example, Tribes may not use Section 106 funds for tasks that are already financed by other federal grants such as a General Assistance Program (GAP) or Section 319 grant).

Ground Water

Many Tribes use Section 106 funds to develop and implement their ground water protection programs. The following are examples of eligible uses of Section 106 funds for ground water programs:

- Develop ground water protection strategies:

    - Develop a ground water monitoring strategy and program to collect data to make management decisions and evaluate controls.
    - Develop or modify a QAPP to include ground water monitoring.
    - Conduct ground water assessments: describe hydrologic flow system, describe connections between ground water and surface water and ground water quality, and identify sources of contamination.
    - Assess the tribal legal and fiscal resources to analyze effectiveness of existing controls, problems, and gaps.
    - Adopt a ground water classification system.
    - Identify and develop controls necessary to manage ground water resources; address the legal, fiscal, technical, and institutional aspects; and integrate quality management for surface water and ground water.
    - Develop a source water assessment and protection strategy.
- Conduct ground water sampling to determine ambient water quality:
    - Collect samples.
    - Analyze samples.
    - Drill wells to conduct Section 106-funded ground water sampling.
    - Cap wells that were drilled for Section 106-funded ground water sampling.

The following sampling locations may be used to collect raw ground water:

- Private drinking water well (before any treatment, softening, filtering, or aeration).
- Public water system well (before any treatment, softening, filtering, or aeration).
- Monitoring well drilled to collect ground water samples and detect flow direction.

The following are examples of ineligible uses of Section 106 funds:

- Activities primarily related to determining ground water quantity for water allocation purposes.
- Activities for drinking water compliance, including to test private water wells for drinking water quality and to conduct outreach and communication for drinking water compliance.
- Sampling treated ground water (for example, ground water treated with reverse osmosis or softening).

Eligible Water Quality Monitoring Locations

CWA Section 518(e)(2) specifies that Section 106 funds can be used to conduct sampling on waters located within the borders of a reservation or on tribally held trust lands:

The functions to be exercised by the Indian Tribe pertain to the management and protection of water resources which are held by an Indian Tribe, held by the United States in trust for Indians, held by a member of an Indian Tribe if such property interest is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation.

The Section 106 Program has interpreted the language in CWA Section 518(e)(2) to allow Section 106 funding to be used for sampling and monitoring on waters that have a direct connection between the waters being sampled and the waters located within the borders or a reservation or on tribally held trust lands.

Some examples of eligible and ineligible sampling locations include:

Waters within the borders of the reservation: Sampling of waters within the borders of an Indian reservation and tribally held trust lands is an eligible activity under Section 106. This would include those tribally held trust lands located outside the border of the reservation. Tribes may not own or control all lands within the borders of an Indian reservation, thus tribal representatives may need to obtain access to sample some waters. Section 106 does not provide authority for access.

Sampling in the watershed in support of 319 projects: Tribes that implement NPS Control (319) Programs often use Section 106 funds for water quality sampling before and after the project. Sampling is eligible for those waters within the borders of the reservation, on waters located on tribally held trust lands outside reservation borders, and where there is a direct connection to waters on these formal or informal reservation waters.

Waters located in ceded territory where Tribes hold reserved rights (but outside reservation borders): These waters are not within the definition of CWA Section 518(e). Section 106 funds cannot be used to sample these waters unless the water being sampled has a direct connection to waters on reservation or trust lands.

Tribally owned land that is outside external boundaries of a reservation and that is not held in tribal trust: Waters located on lands outside the reservation that is owned by Tribes but is not held in tribal trust status would not be eligible for Section 106-funded activities unless the water being sampled has a direct connection to reservation waters. Once such lands have been placed in tribal trust status, Section 106-funded activities for waters located on these lands would be allowed.

All other waters: In addition to the aforementioned examples, Tribes may be allowed to use Section 106 funds to sample and monitor waters located outside reservation and trust lands where the Tribe meets three conditions: 1) demonstrate that there is a direct connection between the water being sampled and the waters within reservation or trust lands (for example, waters that are upstream or downstream of waters on such reservation or trust lands), 2) include a description of such sampling in their Monitoring Strategy, and 3) receive an agreement for access from the relevant regulatory agency (for public lands) or private landowner (for private lands) to conduct sampling/monitoring, if necessary.

Minnesota: The Shakopee Mdewakanton Sioux Community

Section 106 funds support diverse ground water protection activities to maintain high-quality ground water for the drinking water supply of the Shakopee Mdewakanton Sioux Community (SMSC).

The SMSC has over 5,100 acres of trust and fee land. The SMSC relies solely on ground water from one bedrock aquifer for drinking water. The SMSC's public works department frequently monitors raw well water from public supply wells. Monitoring has shown that the local aquifers are producing high-quality water. The ground water quality is important to the continued existence of the SMSC. With a high-quality water supply, the SMSC can continue to provide safe residential land and economic opportunities for SMSC members.

The Shakopee has two community water systems serving about 15,000 people daily. The primary potential sources of contamination for each system are petroleum storage of more than 25 gallons and any unknown abandoned wells that penetrate the aquifer.

The SMSC has received Section 106 funding for a wide range of ground water related activities, including:

- Develop and maintain their own ground water model to plan for well locations and predict aquifer behavior.
- Conduct an analysis of their Wellhead Protection Plan.
- Host a summer education series for area tribal and non-tribal children that stresses the importance of water quality. Usually, 2–4 sessions per summer for the last 20 years.
- Support staff travel to regional and national conferences to keep current on ground water issues.
- Host a variety of water related education activities during "Earth Week" that are geared toward tribal members and employees who may live and work in ground water management areas.
- Support staff time to locate abandoned wells and coordinate proper well sealing.

Establishing a Water Quality Program

When establishing a water quality program, Tribes consider the hiring and training needs for their staff and also identify their priorities for the program. Specifically, they identify their water resources, needs, and goals.

Hiring Staff

When considering staffing needs, Tribes should develop job descriptions that identify the skills needed to achieve their program goals. The program's scope and financial resources will determine how many and what kind of staff the Tribe needs. Depending on the program's size and goals, the Tribe may need the skills of environmental and water quality specialists, biologists, lab technicians, administrative assistants, among others. A single person may carry out multiple program implementation activities.

Major program implementation activities might include:

- **Program Coordination:** Oversee program tasks to ensure they are performed as needed.

- **Quality Assurance:** Ensure the Tribe is carrying out their QA measures according to the QAPP. This could be the program coordinator, lab coordinator, or a person outside of the Tribe's program.
- **Water Quality Sampling:** Collect and record samples, observations, and measurements in the field and deliver samples to a drop-off point or lab.
- **Data Entry:** Enter the field and lab data into a computer. Work under the supervision of the data management coordinator. May also validate data entered by other staff.
- **Data Management and Analysis:** Assure that all the field and lab data are computerized for summary and analysis. This may include setting up the software for data entry, overseeing staff who enter the data, validating the data, creating an assessment methodology, and producing the Water Quality Assessment against applicable thresholds or criteria.
- **Lab Coordination:** Oversee and coordinate lab analysis of samples and train lab staff. If a Tribe contracts with outside labs to analyze samples, they should identify the person in that lab who is responsible for reporting to the Tribe.
- **Laboratory Analysis:** Analyze and record the results for field samples. Lab technicians work under the supervision of the lab coordinator.

EPA Project Officers may be able to connect Tribes to other nearby tribal water quality programs for technical assistance. Tribes with established water quality programs may be willing to serve as program mentors. EPA Project Officers may also be able to identify volunteer networks to potentially help carry out relevant work plan activities. Volunteer networks may include volunteers from the community, local high schools, tribally sponsored internship programs, community colleges, or university programs.

Using Contractors to Support Water Quality Programs

Tribes can use their Section 106 funds to support program activities through contractor support. Contractors can help Tribes develop their program and perform program functions, such as sample collection. Tribes may find contractor support for complex activities, such as sample analysis, information technology (IT) support, training, and legal analysis, among others, especially helpful in the early stages of program development. Procurement for contractor services must be consistent with 2 CFR Part 200.331(b).

Training Staff

Staff training is important to develop and expand capacity for water quality program management, including QA procedures for sampling, sample collection and analysis, computer use, and data collection and management. EPA Project Officers can verify which training costs qualify as program expenses. Other Tribes, states, EPA Headquarters, EPA regions, colleges and universities, and stakeholder groups offer training opportunities, workshops, and symposia to support water quality staff in acquiring necessary knowledge. Tribes may want to contact neighboring Tribes and states, as well as their EPA regional office, to see if these organizations offer training opportunities.

Identifying Reservation Water Resources

The first step in creating a water quality program is to assess reservation water resources. The most effective programs incorporate all types of waterbodies on the Tribe's reservation, even if they cannot immediately address every type of waterbody. Types of water resources include:

- **Streams and Rivers:** A stream is a natural body of flowing water; a river is a large stream.
- **Oceans, Coasts, and Coastal Waters:** Coastal waters include shore miles, near coastal waters, and estuaries.
- **Lakes:** Lakes are inland bodies of salt water or fresh water.
- **Wetlands:** Wetlands include swamps, marshes, bogs, and similar areas. Wetlands serve many important functions including flood mitigation, water storage, habitat, and natural water filtration.
- **Ground Water:** Ground water is part of the hydrologic cycle. When rain and snow fall to the earth, some water soaks into the ground and flows downward. Ground water refers to water in the "saturated zone"—the area in which the spaces between rocks, gravel, sand, or soil are filled with water. Aquifers are areas where ground water exists in sufficient quantities to supply wells or springs.

Information and resources are available to assist Tribes in identifying and mapping their water resources, including:

- EPA's *Watershed Assessment, Tracking, and Environmental Results System (WATERS)* reach files, a series of national hydrologic data layers that identify and interconnect the stream segments or "reaches" that compose the country's surface water drainage system.
- EPA's *How's My Waterway* provides information about the condition of local waters based on data that tribal, state, federal, local agencies, and others have provided to EPA. Water quality information is displayed on three scales in How's My Waterway: Community, State & Tribal, and National.
- The *United States Geological Survey* (USGS), in particular the *National Hydrography Dataset* (NHD), which is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs, and wells. USGS and EPA also maintain *NHDPlus*, which includes the NHD and other datasets.
- The United States Department of Agriculture's (USDA's) *Natural Resources Conservation Service* (NRCS).
- The United States Fish and Wildlife Service's (USFWS) *National Wetlands Inventory* (NWI).
- Regulatory agencies for neighboring states or Tribes, such as departments of health, environment, parks and recreation, natural resources, forestry, and fish and wildlife.
- Local colleges or universities.
- EPA Project Officers.

Identifying Tribal Water Quality Program Needs

Identifying a Tribe's environmental and water quality needs is the most essential part of developing a water quality program. A Tribe's environmental and water quality needs define the program priorities, scope, staffing needs, direction, and projects and activities to implement.

Tribes may need to start by understanding the environmental condition of their waterbodies (for example, the condition of their rivers and other water resources). There may be resources available as a starting point such as data in the Water Quality Portal and assessments conducted by other federal, state, regional, or volunteer monitoring programs. These existing data sources can then be supplemented to fully represent the quality and condition of tribal waters. To understand the condition of their rivers, Tribes may hire and train staff, develop a Monitoring Strategy, develop a QAPP, and

conduct new or supplementary assessments if any existing assessments do not adequately capture the current water quality. If the community needs to protect ground water for their drinking water, the Tribe might start by determining the location of septic systems, identifying system malfunctions, identifying health and water risks, and implementing a management program to reduce the threats to water quality.

Prioritizing needs helps Tribes determine which activities require urgent attention, what is needed to achieve the priority, which activities they cannot or do not need to address immediately, and how to address changing needs of the program. Some factors to consider include:

- What needs are most important to the Tribe? How do the needs relate to one another? For example, in what order should the Tribe address the needs?
- Do the needs pose a threat to public health, safety, or the environment?
- What are the potential benefits of addressing the needs?
- What is the cost to address the needs?
- What needs do the Tribe have control over versus what needs are from off reservation or out of tribal control such as climate change impacts?

This prioritization will also shape each Tribe's water quality program implementation goals. Tribes will include this prioritization in their Monitoring Strategy as described in Chapter 5: Development and Implementation of a Monitoring Program.

Identifying Program Goals and Objectives

The goal of the CWA is to protect, maintain, and restore the physical, chemical, and biological integrity of the nation's waters. Each tribal water quality program will select the activities that support their own specific goals and objectives consistent with the CWA goals.

Goals are the Tribe's desired outcomes for their program, based on their water quality needs. For example, if a Tribe identified needing to assess the condition of their rivers, one of the program goals should be to develop these assessments.

Objectives are the Tribe's activities to achieve their goals. For example, if a Tribe's goal is to develop a water quality baseline assessment, the objective should be to monitor waterbodies on their reservation. The goals and objectives Tribes identify shape the water quality program by informing the work plan activities they will undertake to develop their program.

In cases where a Tribe's waters are healthy, the Tribe should consider including a goal to protect water quality from degradation. An objective or action to support this goal would be to develop a cost-effective monitoring program to document sustained water quality. Another objective might be to review and consider potential water quality impacts of various activities in and around the water to protect high-quality waters.

Establishing Program Milestones

Milestones are the actions that mark a significant change or stage in a project and a timeline for achieving each of them. Milestones can be an effective tool for tracking progress toward long term goals. Milestones enable Tribes to track significant accomplishments toward achieving tribal goals and objectives. Below is an example of a goal and supporting milestones:

- **Example Goal:** Complete an assessment for all waterbodies on a Tribe's reservation.
- **Example Milestones:** Hire staff, develop a Monitoring Strategy, complete an assessment for 10 percent of waterbodies.

A Tribe's work plan should include milestones, especially if more than one grant cycle is needed to achieve the goals and objectives. Milestones help Tribes and EPA track performance. These milestones may also support Tribes' Monitoring Strategies.

Early Community Outreach on Program Establishment and Direction

Tribes in the early stages of program development should consider informing their communities when they have begun developing a water quality program and share information such as program needs, goals, objectives, and plans for meeting those objectives. Tribes could then continue to inform communities about their milestones and achievements as the program progresses.

Developing a Multi-Year Plan

Tribes may want to consider developing a multi-year plan for their overall water quality program and periodically reassessing their programmatic needs, objectives, and goals. During this process, Tribes may uncover new insights into other needs or problems. Utilizing this information, Tribes can incorporate more complex projects that build on previous work plan results. For instance, a Tribe that identified a nutrient pollution problem may wish to locate the source of those nutrients as a next step in a more complex project. Similarly, Tribes may find climate impacts are beginning to influence their water resources and may want to consider incorporating climate adaptation and mitigation in their multi-year plans.

Developing a multi-year plan helps Tribes focus on meeting their long-term goals. Rather than providing detailed activities, this plan will describe programmatic goals, the tribal needs behind those goals, and how the Tribe will achieve them.

Indigenous Knowledge

"Indigenous Knowledge is a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through direct contact and experience with the environment. [7] *It is applied to phenomena across biological, physical, social, cultural, and spiritual systems.* [8] *Indigenous Knowledge can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation.* [9] *Indigenous Knowledge is developed by Indigenous Peoples including, but not limited to, Tribal Nations, American Indians, Alaska Natives, and Native Hawaiians. Each Tribe or Indigenous community has its own place-based body of knowledge that may overlap with that of other Tribes"* (*Guidance for Federal Departments and Agencies on Indigenous Knowledge*).

Figure 5. Sharon Day, Water Walker, on Spirit Island, MN, a place of spiritual and cultural significance to the Ojibwe people. Credit: Photo courtesy of Lucas Reynolds.

The goal of including Indigenous Knowledge into the Section 106 Tribal Guidance is to:

1. Recognize the value Indigenous Knowledge adds to water resources management.
2. Establish the Section 106 Program's responsibilities and commitment to the inclusion of Indigenous Knowledge in water quality programs.
3. Identify opportunities to utilize Section 106 grant funding to support inclusion of Indigenous Knowledge into water quality programs.
4. Acknowledge tribal flexibility in adopting Indigenous Knowledge into water quality programs.
5. Provide case studies on how Indigenous Knowledge has been incorporated into water quality programs.

Recognition of the Value of Indigenous Knowledge

Practically, Indigenous Knowledge offers techniques and stewardship principles to guide tribal interactions with the natural world, such as hunting, fishing, plant collection, ceremonial practice, cultivation, harvesting, and forestry. Embedded within Indigenous Knowledge is the awareness that humans are part of the natural world, not "apart from" it, and that there are beneficial connections between humans and nature that are founded upon a framework of reciprocity. Water resources hold a key place within Indigenous Knowledge and nurture healthy, traditional foods; plants used for medicinal, healing, and ceremonial purposes; reeds, grasses, and other plant materials for weaving baskets and making textiles; for ceremonial bathing and consumption purposes; and fish and wildlife. The health of

[7] U.S. Fish and Wildlife Service's *Traditional Ecological Knowledge for Application by Service Scientists* document and the Inuit Circumpolar Council Activities' *Indigenous Knowledge* website.
[8] U.S. Fish and Wildlife Service's *Traditional Ecological Knowledge for Application by Service Scientists* document.
[9] U.S. Fish and Wildlife Service's *Traditional Ecological Knowledge for Application by Service Scientists* document.

these resources, all of which everyone is in relationship with, affects every aspect of tribal life. The Indigenous framework of reciprocity means that it is an individual and collective responsibility to care for the species—"our relatives"—who have given themselves to benefit humans.

Indigenous Knowledge and the western scientific tradition share some important fundamental beliefs: a desire to make natural sense of the world around us; the importance of practical and inquisitive-driven investigations to learn useful practices; and the need to update information as conditions and knowledge change. There are also differences. In general, western science strives to be objective, intellectual, quantitative, exclusive, and avoid value judgments; people apart from nature. Indigenous Knowledge on the other hand, is communal knowledge based, qualitative, holistic, intuitive, and spiritual (social values); people are a part of nature (reciprocity) (*Listening and learning from traditional knowledge and western science: A dialogue on contemporary challenges of forest health and wildfire*). There are times when the two systems are at odds, but they can complement each other, by providing important information and perspectives that help create a realistic understanding of the natural world and its relationship with human activity.

"*When I stare too long at the world with science eyes, I see an afterimage of traditional knowledge … We see the world more fully when we use both*" -Robin Wall Kimmerer, "Braiding Sweetgrass."

Integrating Indigenous Knowledge in Water Quality Programs

Many Tribes use Indigenous Knowledge to inform water quality program implementation as another form of evidence that is on par with quantitative data. Indigenous Knowledge holders are essentially "long-term datasets" representing both personal and intergenerational experience with water. Often, Tribes incorporate Indigenous Knowledge in the foundation of program operations such as defining water quality goals and cultural uses for tribal waters. Additional examples include:

- Sampling locations often align where cultural ceremonies occur to better understand water quality to ensure safe exposure.
- Gaining a local understanding of watershed processes, seasonality, and environmental variability.
- Tribal water uses can be significantly driven by Indigenous Knowledge. For example: Concepts like "first foods" are representative of the environmental goals Tribes employ to monitor and protect their cultural traditional foods with their water quality monitoring.
- Water quality program outreach materials may contain Indigenous Knowledge to better reflect tribal goals and needs for their waters.
- Water quality standards (WQS) may be created or revised to represent sustenance fishing rates which are informed by Indigenous Knowledge.

Figure 6. Canoeing to Wild Rice monitoring location to take sediment cores (Lac du Flambeau Band of Lake Superior Chippewa Reservation). Credit: Photo courtesy of Madeline Nyblade.

Opportunities to Use Section 106 Funding for Indigenous Knowledge

"Agencies should consider Indigenous Knowledge in promulgating regulations, issuing guidance, or adopting policies with Tribal or Indigenous implications, consistent with legal authorities" (*Guidance for Federal Departments and Agencies on Indigenous Knowledge*).

Tribes use their Section 106 grant funds to develop, maintain, and expand water quality programs designed to prevent, control, and eliminate water pollution and educate tribal members and the public. Therefore, the collection of Indigenous Knowledge for use by tribal water quality programs to inform and support CWA program activities and actions can be funded by Section 106 grants. Activities and actions include, but are not limited to:

- Documenting Indigenous Knowledge holder information and the collection (for example, funding travel and hosting meetings) of Indigenous Knowledge holder stories to support current and future tribal environmental staff in water quality goal setting and determining the status of those goals.
- Using Indigenous Knowledge along with scientific methodologies in assessing water quality.
- Supporting tribal environmental staff in developing approaches for how Indigenous Knowledge and monitoring data can be paired to create and complement comprehensive water quality goals, assessments, and decisions. This can include in-person training, courses, and reading materials.
- Developing communication materials for the tribal community to inform Indigenous Knowledge sharing and identify how Indigenous Knowledge supports tribal water quality programs. This can include the creation and participation in academic literature.

"*Science can be a way of forming intimacy and respect with other species that is rivaled only by the observations of traditional knowledge holders. It can be a path to kinship*" -Robin Wall Kimmerer, "Braiding Sweetgrass."

"We cannot change our [indigenous] knowledge, but we have to work to make it acceptable in western science approaches" -Mervin Wright, Pyramid Lake Paiute Tribe.

Figure 7. Pyramid Lake, NV. Credit: Photo courtesy of Pyramid Lake Paiute Tribe.

Tribal Sovereignty When Adopting Indigenous Knowledge Into Water Quality Programs

Indigenous Knowledge is reflective of individual knowledge holder experiences and intuition. The application of that knowledge is unique to every circumstance. While the Section 106 Program supports the inclusion of Indigenous Knowledge into tribal water quality programs, the use or sharing of Indigenous Knowledge is optional. Sovereignty, protection of tribal cultural practices, and distrust are just some of the reasons why Tribes may not want to include Indigenous Knowledge into their water quality programs or share the knowledge outside of their Tribe. Tribal leadership and staff are often faced with the important and sometimes challenging task of educating their potential partners about the meaning and the role of Indigenous Knowledge in their respective culture. Often, they must do so while honoring the confidentiality of sensitive cultural information and respecting the boundaries of the privacy of tribal members.

The Section 106 Program is committed to respecting tribal Indigenous Knowledge sovereignty practices. Indigenous Knowledge informs many aspects of tribal water quality programs and the information shared by Indigenous Knowledge holders is owned by them. Tribes that use Section 106 funds to collect Indigenous Knowledge will not be required to report that shared knowledge as part of their grant requirements. Tribes are expected to meet the three reporting requirements (Monitoring Strategy, water quality data submitted through WQX, and Water Quality Assessment, as described in Chapter 6) but are not expected to share the underlying Indigenous Knowledge used to inform water quality objectives and management practices. Programmatic activities that reflect decisions based on Indigenous Knowledge, such as location of sampling sites and monitoring data, are still subject to grant reporting requirements; however, the Indigenous Knowledge-based rationale for site selection does not have to be reported to EPA. Where applicable, Tribes should engage with their Project Officers early to discuss how Indigenous Knowledge can be protected if it is used to influence policy and regulatory decision making.

Case Studies for Indigenous Knowledge Inclusion in Water Quality Programs

Dan Mosley, Northern Paiute, Nevada

Native peoples are connected to their Creator, and as stewards live in harmony with their environment, air, land, water, and ecosystems. Elders are the knowledge keepers, story tellers, and cultural bearers, which have been passed down through many generations in the original languages of the people. In this way, Native peoples can live in community in order to survive and subsist off the land.

Indigenous Knowledge is passed on when spending time with elders as they share their stories, songs, insights, and lessons learned when demonstrating or teaching the survival skills needed. For example, to fish, hunt, trap, construct shelters, canoes, fish weirs, and regalia; and when gathering traditional foods, medicines, and basket making materials.

I incorporate Indigenous Knowledge principles when teaching “learners” how to conduct water quality monitoring and physical habitat or biological assessments. Here are some examples of Indigenous Knowledge principles I share: “Our elders teach us that everything is alive, the land, the plants, water … and they can speak to us. So, let the wetlands, river teach us, the plants, animals, and aquatic life speak to us. Be quiet and listen as you walk in the field. And they will let you know if they are in a good place, or not. Then we can take the course of action needed to bring everything back in harmony again. As caretakers, we can speak ‘life’ over the waters, and over the land.”

Denise Jensen, Winnebago Tribe
When I first started working with the Winnebago Tribe, I approached a Water Spirit Clan Elder asking how I should approach the water. He stated, "Never curse the water for it never sleeps." Those words have remained in my heart throughout all these years.

The water is a person deserving of respect and honor. When approaching the water, I greet the water by name, such as "good morning, Omaha Creek"; request permission to step into its channel where upon we, the water and myself have a conversation. Mostly I think I do most of the talking and the water listens while still revealing things to me. As the water folds around my body, notice the temperature, speed, presence of floating debris. Notice how the banks are doing, presence of animal tracks, and anything else the water wants to tell me. After sampling is finished, thank the water for allowing me to intrude upon its solitude and thank the water and the Creator for another safe sampling session while leaving the area.

Nancy Schuldt, Fond du Lac Band of Lake Superior Chippewa
When I came to work for the Band, I had just finished grad school and moved to northern Minnesota for the job, knowing very little about either Anishinaabe culture or the Northern Lakes and Forest ecosystem. Within my first few weeks here, I attended a meeting of tribal staff working together on Lake Superior-wide issues alongside state, federal, and provincial agencies. I learned from the Red Cliff Band's cultural specialist that, "in Ojibwe culture (as in other Indigenous cultures), women are considered the 'keepers of the water.' Women carry the sacred water to ceremonies and act on its behalf; women have a unique bond with water in that both are life-bearers. It is women's responsibility to safeguard the water for all our relations."

In setting up the Band's WQS and monitoring program, that perspective has been an important guide. Although I came to this place with training only in science, it has been through tribal members and their willingness to share their knowledge of these waters with me that we have been able to define beneficial uses and establish standards to protect those traditional practices; to know where and when and how to respectfully access lakes, streams, and especially manoomin (wild rice) beds so that they are not damaged by our paddles or probes; to pay close attention to "all the relatives" in the ecosystem, not just the target species. They all have stories to tell us about the conditions they are experiencing, in the short term (like a recent road construction project) and the long term (like a changing climate and alterations to seasonal patterns).

Maddy Nyblade, Graduate Student in Earth and Environmental Sciences at the University of Minnesota
Upper Great Lakes Tribes, intertribal treaty organizations, and University of Minnesota-Twin Cities have come together to protect wild rice as the *Kawe Gidaa-naanaagadawendaamin Manoomin* (First We Must Consider Wild Rice) research collaborative. Wild Rice (Ojibwe: manoomin, Dakota: psiŋ, scientific name: *Zizania palustris*) grows naturally throughout the shallow lakes and streams of the upper Great Lakes region and is dependent on clean waters for survival. This plant provides spiritual, cultural, and physical sustenance as a sacred food for Anishinaabe, Dakota, Menominee, and many other Indigenous Peoples in this region. This research collaborative centers tribal priorities and approaches in researching Wild Rice and its waters. Both the partnership process and the scientific practice of this research collaborative have been informed and led by the Indigenous Knowledge and Indigenous methodologies,

as detailed in our paper, *Transforming research and relationships through collaborative tribal-university partnerships on Manoomin (wild rice)*.

Our emerging methodology centers humility, reciprocity, personal connection, interrelatedness, spirit, and healing. Our values take shape through our practices, such as constructing Memoranda of Understanding and Data Sharing Agreements between tribal governments and university researchers; hosting knowledge-exchange workshops between tribal members and university researchers; learning through observation and interactions on collective fieldwork outings; collaboratively building conceptual models based in Ojibwe and western worldviews; engaging together in ceremony to respect the water before sampling; and sharing gratitude before starting each meeting. Our co-production methodology allows our science to connect to deeper understandings of the physical and relational dimensions of the environment. We have shifted and expanded research based on Indigenous Knowledge and the priorities of our tribal partners to encompass sites of cultural significance and to consider more environmental dimensions such as the role of sediment deposition, climate change, and human relationships.

Chapter 5: Development and Implementation of a Monitoring Program

Read this chapter…

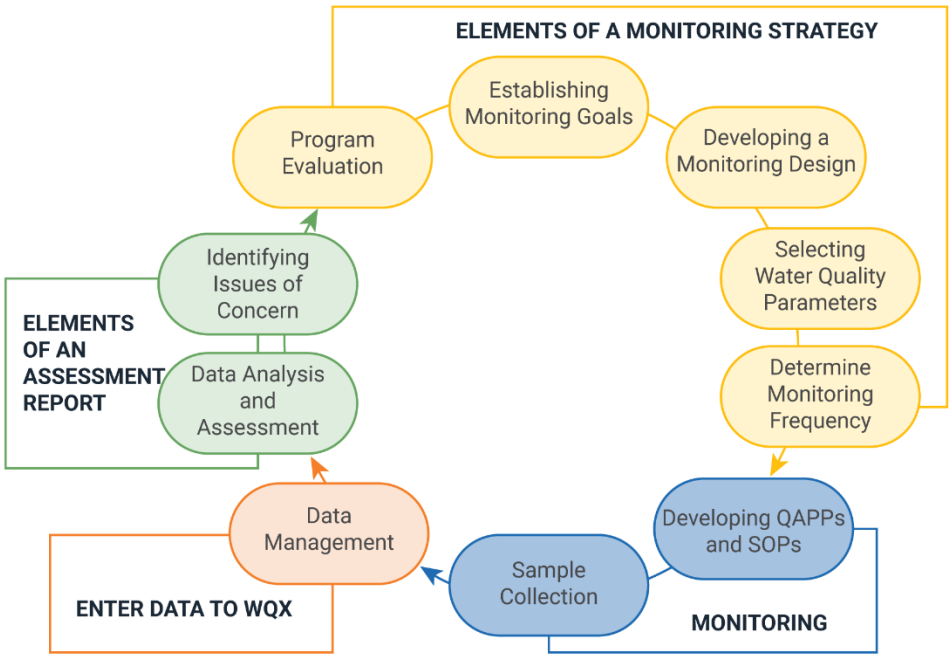
- To learn what a Monitoring Strategy is and about its role in a water quality program.
- For an overview of how to implement a water quality monitoring program.
- To identify water quality parameters to monitor.
- To learn the importance of QAPPs and SOPs.
- To learn about collecting, managing, and analyzing data and conducting program evaluations.

Chapter highlights:

- Table of water quality parameters used to assess designated uses.
- Content from EPA's water quality parameter factsheets.
- Options for documenting assessment processes and participating in How's My Waterway.

This chapter is designed to help Tribes establish and implement a water quality monitoring program (monitoring program). Conducting a monitoring program is a key component of a Tribe's overall water quality program and is an ongoing and iterative process (Figure 8). An effective monitoring program consists of several activities: developing water quality goals and a monitoring design to inform those goals; monitoring water quality parameters; managing, analyzing, and assessing data; and evaluating the effectiveness of the program. Tribes revisit each of these activities as they learn from and expand their monitoring program. Together, these activities make up the components of a Section 106 Monitoring Strategy (Figure 8).

Figure 8. Monitoring program cycle



QAPPs: Quality Assurance Project Plans
SOPs: Standard Operating Procedures
WQX: Water Quality Exchange

Monitoring Strategy

A Monitoring Strategy is a long-term plan for meeting water resource goals. The document includes current and future monitoring plans and incorporates a timeline for implementation including milestones to accomplish tribal monitoring goals. The Monitoring Strategy is comprehensive in scope, serving all water quality management goals and decision needs. It includes all tribal waters and all waterbody types (for example, streams, rivers, lakes, Great Lakes, reservoirs, estuaries, coastal areas, wetlands, and ground water). The Monitoring Strategy also identifies the technical issues and resource needs that are current impediments to a Tribe's monitoring program. Where possible, a Monitoring Strategy will document plans and needed resources such as field and lab equipment, for filling current gaps and weaknesses in a monitoring program. A Monitoring Strategy can also help continuity in a program (when staff change) and may be useful as a communication tool for other programs, management, and the community. Tribes should review their Monitoring Strategy annually and revise the document to incorporate program changes. Tribes should submit their Monitoring Strategy for EPA review at least every 5 years.

Additional information and examples to assist Tribes in developing Monitoring Strategies can be found in the *Developing a Tribal Water Quality Program Monitoring Strategy* supplement. Figure 8 also identifies the components that contribute to the three grant programmatic deliverables described in Chapter 6: Programmatic Reporting Requirements.

Establishing Monitoring Goals

The primary purpose of a water quality monitoring program is to determine if the physical, chemical, and biological conditions of tribal waters support tribal water quality monitoring goals. Tribes can base their monitoring goals on historic knowledge, Indigenous Knowledge, and data they collect on or near tribal waters. The monitoring goals, documented in the Tribe's Monitoring Strategy, help determine the direction of the program and may evolve over time. Monitoring goals are one aspect of the program goals referenced in Chapter 4: Program Development.

Monitoring goals will vary given geography, environmental conditions, history, values, and program objectives. Tribes may want to consider the uses of tribal waters and include special cultural uses when developing monitoring goals. Additionally, Tribes may seek elder and community input, and use Indigenous Knowledge to help prioritize goals.

Defining Monitoring Goals

The Monitoring Strategy includes descriptions of the goals and the data needed to determine if the water meets the corresponding goal. For example, if a goal is to determine whether the water is safe for swimming, the Monitoring Strategy will include monitoring for pathogen indicators in waters used for swimming. It may also include who will use the data and how the data will be used to inform decision making for the Tribe and external partners where necessary.

EPA identifies five basic questions for a monitoring program to address. Tribes do not need to answer all the questions immediately but may want to keep them in mind when developing their monitoring goals and use them to help guide the direction of their monitoring program. The questions are:

1. **What is the overall water quality of the waterbodies?** The Tribe determines the extent to which tribal waters meet the program goals. These may include the objectives of the CWA; attainment of any applicable water quality standards (WQS) and designated uses; protection and propagation of balanced populations of fish, shellfish, and wildlife; water quality; protection of ecosystem health; maintenance of pristine waters; or protection of public health. Indigenous Knowledge can make important contributions to defining tribal water quality goals.
2. **To what extent is water quality changing over time?** The Tribe monitors to understand if and how water quality has changed over time. This may help identify areas of concern and determine whether the program's protection or restoration activities are working. Indigenous Knowledge may be very useful for this evaluation.
3. **What areas need protection, what are the problem areas?** The Tribe identifies high-quality, pristine waters that need protection from degradation and waters that have water quality problems to address. If WQS are in place (EPA-approved or tribal), the Tribe uses them to identify impaired or problem areas. If no WQS are in place, the Tribe uses proxies to determine impairment (such as WQS from neighboring Tribes or states, regional thresholds, and EPA's nationally recommended *Water Quality Criteria* where applicable for waterbody types).
4. **What level of protection do these areas need?** Current monitoring results combined with historical water quality information help the Tribe develop appropriate levels of protection for tribal waters and create WQS or other thresholds to evaluate monitoring results. These thresholds serve as a guide for developing plans to reduce pollution entering tribal waters. For example, a Tribe that has established water quality goals could use monitoring results to

determine which waterbodies are not meeting the goals and identify which management strategies for nonpoint sources (NPS) are most appropriate.

5. **How are clean water projects and programs addressing tribal goals?** Tribes with established water quality programs regularly reflect on program accomplishments and determine how the program supports water quality goals. The Tribe can then consider any program adjustments necessary to help accomplish the goals.

Hoopa Valley Tribe: Example in Setting and Assessing Goals

The Hoopa Valley Tribe uses Section 106 funding to support their goal of protecting tribal cultural needs and the community drinking water supply, the Trinity River.

The Trinity River bisects the lush valley that is home to the Hoopa Valley Indian Reservation in Northern California and is the community's sole source of drinking water. The Hupa people have used it since time immemorial for ceremonial bathing, sacred world renewal ceremonies, and the Tribe's boat dance ceremony, which is conducted to heal the Earth.

Hoopa's Tribal Environmental Protection Agency (TEPA) is the department delegated with safeguarding the reservation's natural resources and water quality. From approximately 2010 to 2020, exceptional drought has exacerbated other related climate change-induced stressors such as elevated water temperatures and low water flows in the Trinity River and its tributaries. These conditions have caused a substantial increase of cyanotoxins in the free-flowing river, increasing risks to the Tribe's drinking water system. Additionally, the cyanotoxins present a potential hazard to those who have contact through recreational and ceremonial uses.

TEPA uses Section 106 funding for sampling activities necessary to identify toxic cyanotoxin levels in the Tribe's drinking water source. During low flows and high river temperature conditions, TEPA monitors for blue-green algae (BGA) concentrations utilizing a multiparameter sonde. TEPA also tests water samples weekly for microcystin using Eurofins Abraxis test strips, and biweekly, using nutrient and BGA samples. A lab also analyzes these samples for cyanotoxin concentrations. In addition to these sampling activities, TEPA works with the Tribe's Public Utilities District (PUD) to implement a treatment plan that is effective in combating and eliminating BGA toxins from the Tribe's drinking water source.

TEPA also uses Section 106 funding to analyze current data about cyanotoxins, informs the community about associated health risks, updates tribal members and decision makers on the causes and effects of cyanotoxins in the watershed, and provides potential remedial options.

In 2006, EPA approved the Hoopa Tribe's nutrient criteria for the neighboring Klamath River and set standards for cyanobacteria and associated toxins for the protection of recreational users. The Hoopa Tribe is preparing a similar plan of action for the Trinity River to address cyanotoxin occurrences and develop standards that are protective of recreational uses and cultural practices. The Tribe's program will assist in developing this new regulatory framework to protect water quality on the sacred Trinity River.

Figure 9. Cyanotoxin sampling on the Trinity River. Credit: Photo courtesy of Hoopa Valley Tribe

Collecting Existing Information

As a first step, each Tribe may consider collecting as much existing information as possible about all the waterbodies on the reservation to inform the monitoring program goals. (Information about identifying basic tribal water resources and tribal water quality needs is in Chapter 4: Program Development.) Tribes can find information in historical environmental data and can supplement it with existing tribal, state, and federal data found on EPA's *How's My Waterway* application. Additionally, Tribes can use maps, aerial photos, Indigenous Knowledge, and reports to support the quantitative information. As Tribes collect existing information, the Tribe can identify information gaps and fill those gaps through their monitoring program. To find additional existing data resources, examples can be found in the *Listening to Watersheds* document.

Developing a Monitoring Design

A monitoring design is developed to address the monitoring goals the Tribe has identified. The monitoring design should include:

- Priority areas for monitoring.
- Waterbodies monitored.
- Uses to assess.
- Parameters to monitor.
- Frequency and timing of monitoring.
- Sampling design.

Priority areas: When Tribes are prioritizing areas for addressing water quality problems, they should consider all aspects of influence on the waterbody. Cultural significance, biological and ecological factors, partner buy-in on the project, the cost and feasibility of possible solutions, and tribal members' concerns are all factors which contribute to prioritizing areas in the monitoring design. For instance, Tribes may want to consider prioritizing the protection of a high-quality water resource that is vulnerable to threats by NPS pollution. Preventing pollution is often more cost-effective than restoring impaired waterbodies.

Waterbodies differ in topography, degree of surrounding urbanization, and land use which can impact the waterbody's susceptibility to pollution. Tribes may want to consider prioritizing more vulnerable waters for monitoring. For instance, if a source water assessment shows that ground water sources are vulnerable to contamination, monitoring and protection of wellhead areas may be prioritized.

Waterbodies Monitored: Each waterbody type outlined in the Monitoring Strategy may need a unique sampling design to effectively assess for tribal monitoring goals and designated uses. For example, lakes may require depth profile sampling and large rivers may require samples collected from equal width increments across the width of the stream to be representative of the water quality at that station. For more information see the Source Water Protection section in Chapter 7: Program Expansion – Additional Activities.

Tribal Goals or Designated Uses: As part of developing a monitoring design, Tribes identify designated uses for the waterbodies they plan to monitor. Designated uses are the goals for the waterbody and can be used by Tribes with or without WQS. Both tribal goals and designated uses will help a Tribe

determine the parameters to monitor, how to assess the locations, and sampling design(s) to implement.

Parameters to Monitor: The Tribe's monitoring design will identify which water quality parameters to sample and how often to sample. More information on sampling for common parameters is in the Determine Monitoring Frequency section of this chapter.

Frequency and Timing of Monitoring: The frequency of monitoring is determined by tribal water quality goals. For example, if a Tribe is interested in measuring pathogen exceedances for swimming and recreational waters, monitoring frequency and times should align with the tribal thresholds or WQS and the times of year those locations are used for recreation. The monitoring frequency should support the amount of data needed to perform assessments of the waters to achieve tribal monitoring goals (for example, 5 samples in 30 days to calculate a geomean).

Sampling Design: A sampling design is the type of monitoring approach the Tribe will implement to successfully meet their monitoring goals. Depending on the number of waters on tribal lands, a Tribe may be able to conduct a census to monitor and assess all waters every year. This sampling design type can address all tribal goals when paired appropriately with sample collection method, location, frequency, parameters, and spatial scale. Where Tribes have many water resources, they may consider other monitoring designs to evaluate their designated uses. Table 5 shows four types of sampling designs that Tribes can use to achieve water quality monitoring goals: targeted, fixed-site, statistical, and census. Furthermore, Tribes may choose to focus on one watershed or a subset of watersheds each year, known as the rotating basin approach.

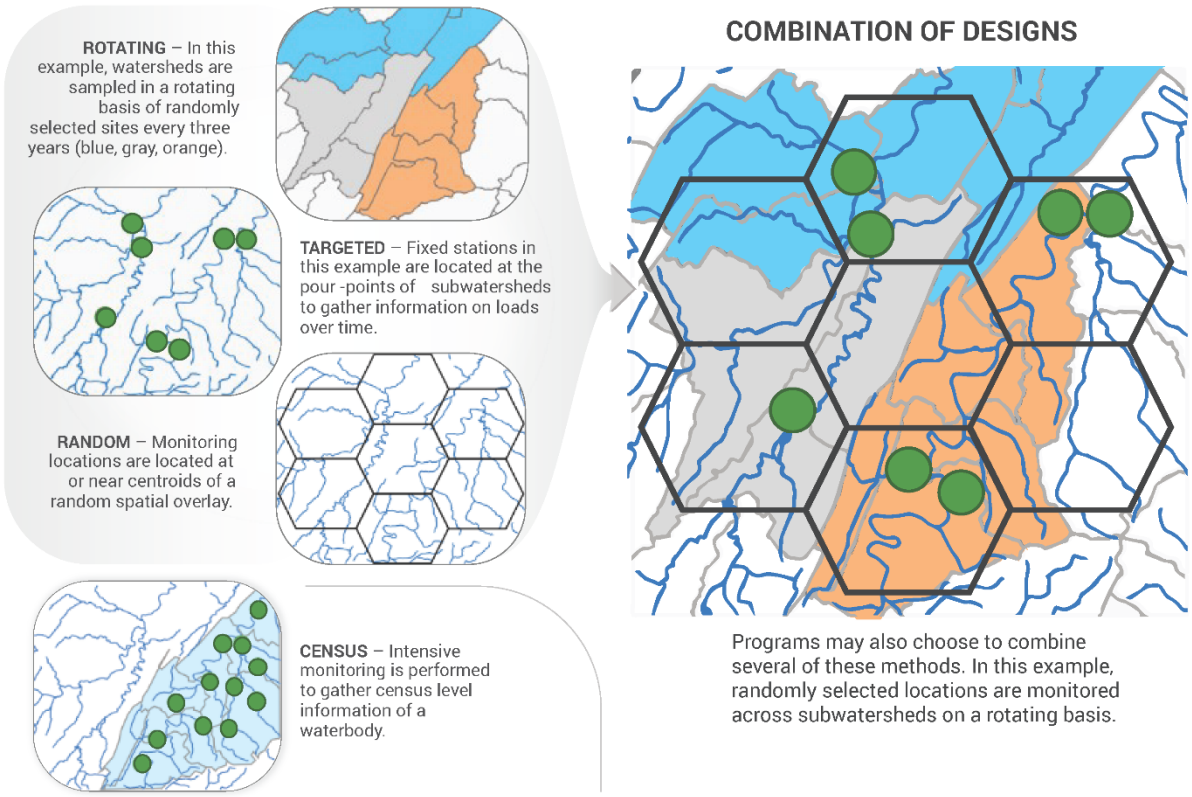
Table 5. Sampling design summary

Sampling Design Type	Strengths	Products	Limitations
Targeted	In-depth collection of data for area(s) of interest.	• Decisions about individual assessment units. • Local action plan like total maximum daily loads (TMDLs). • Effect of permitted discharges.	Generates site specific data with limited ability to extrapolate beyond sample location.
Fixed-site	Long-term, routine water quality data supports site-specific trends like flow and flux at a basin outlet.	• Historical record of water quality trends. • Loads (or amounts) of key parameters like nutrients.	Not designed to represent trends beyond specific monitoring locations.
Statistical	Cost-effective, statistically representative method for assessing condition of a broad population and tracking changes over time.	• Broad, unbiased assessments of status and trends across multiple scales. • Analysis of patterns in stressor-response relationships.	Not designed for localized site assessments, except for the sites sampled.

Sampling Design Type	Strengths	Products	Limitations
Census	Monitor and assess all waterbodies every year — common when Tribes have limited water resources.	• A complete assessment of status and trends within waterbodies.	Potentially expensive and resource intensive.

A mix of sampling designs may be useful to inform various aspects of water quality. As shown in Figure 10, Tribes can pair statistical surveys (representative sampling) with a rotating basin survey approach to better predict local water quality conditions and determine overall condition. This can inform the need for a targeted sample design to assess specific areas, determine impairments, and identify possible sources.

Figure 10. An example of how multiple sampling designs can be used together to inform water quality protection and restoration



Updating Monitoring Designs

As water quality programs grow and program priorities change, monitoring designs should be updated to better represent the Tribe's monitoring goals. Additionally, Tribes may choose to include effectiveness monitoring in their monitoring design to track water quality improvement, evaluate the success of water quality restoration projects where applicable, and consider whether they need to modify restoration projects.

The Tribe's Monitoring Strategy may include multiple sampling designs to allow for flexibility in shaping monitoring to the different waterbodies and waterbody goals.

Confederated Salish and Kootenai Tribes

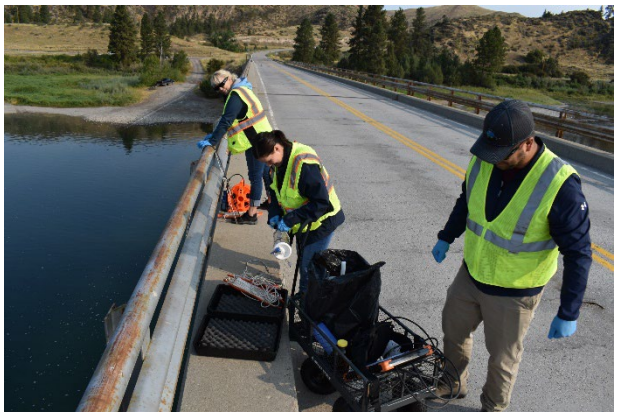
The Flathead Indian Reservation is the native homeland of the Confederated Salish and Kootenai Tribes (CSKT). The Kootenai, the Salish, and the Pend d'Oreille peoples comprise the Tribes of the Flathead Reservation.

Water resources on the Flathead Indian Reservation are extensive and varied. The Reservation is located within the lower portion of the Flathead River watershed in western Montana. Approximately 1,317,399 acres lie within its exterior boundaries. There are approximately 76,155 acres of major waterbodies. This includes approximately 65,086 acres of the south half of Flathead Lake. Additionally, the boundaries of the Reservation contain more than 1,200 miles of irrigation canals and 17 reservoirs. Extensive wetland complexes are associated with these systems and over 10,000 individual pothole wetlands comprise the glacial pothole complex of the Mission Valley. Over 4,000 miles of streams and approximately 103,133 National Wetland Inventory wetland acres make up the steam complex across the Reservation.

CSKT performs routine surface water quality sampling (Figure 11) within seven sub-basins on the Reservation. Along with physical parameters, CSKT also collects samples that they ship to a laboratory for analysis 182 miles away. Due to the rural status of Montana, the only location to drop off samples is on the northern half of the Reservation. This shipping issue limits the amount of time the field crew can spend collecting samples and make the same day shipping time requirements.

Due to the size of the Reservation, the number of sites that CSKT can sample within a working day is limited. The Tribe not only samples sites that are within the Water Quality Program but also the Non-Point Source Program restoration projects. A typical sampling day for the program is to have the vehicles and equipment ready by early morning, drive to the sites, and collect samples. The samples must be at the shipping company by early afternoon, or they will not ship that day. The ability to collect samples and make the shipping deadline dictates the Water Quality Program's sampling plan.

Figure 11. CSKT performing water quality sampling. Credit: Photo courtesy of CSKT



Conducting Special Studies

Tribes may need to conduct special studies, a type of targeted monitoring, if through their routine monitoring they identify areas of particular concern or interest that their routine monitoring does not fully address. As areas of interest arise, Tribes should consider monitoring to identify the source of impacts to a waterbody, such as new construction. Tribes may need to perform special studies to track best management plan progress, determine loads for TMDLs, and identify pollution sources. They should ensure existing project elements such as the QAPP, lab protocols, sampling design, and Monitoring Strategy support special study designs.

Selecting Water Quality Parameters

The monitoring design identifies the parameters the Tribe plans to monitor to assess water quality and meet monitoring goals. “Parameters” are properties of water quality. For use in this guidance, the terms analytes, characteristics, and constituents are synonymous with parameters.

Table 6 highlights common and additional parameters Tribes monitor to assess their tribal goals or designated uses. The common parameters provide basic information about the aquatic environment and are usually less costly than more lab intensive parameters. Additional parameters may include waterbody-specific pollutants, ambient and sediment toxicity, health of organisms, and nutrients. This distinction may be useful when selecting parameters to monitor.

Adding or replacing parameters may also provide a more complete picture of water quality. As Tribes analyze their monitoring data, they may partner with their EPA regional office, neighboring Tribes, neighboring states, and appropriate federal agencies to help identify supplemental parameters. In some cases, Tribes might consider reducing or eliminating monitoring parameters at sites where data indicate there is no water pollution problem for the sampled parameter. However, Tribes should consider the impact to long-term data records on parameters of interest when reducing or eliminating monitoring parameters, and consider when to revisit those parameters to ensure there continue to be no water pollution problems.

Table 6. Common and additional parameters to assess tribal goals or designated uses

Parameters	Aquatic Life	Recreation	Drinking Water Source	Fish/Shellfish Consumption
Common Parameters	• Dissolved oxygen (DO). • Temperature. • Conductivity. • pH. • Nutrients (total phosphorus (TP), total nitrogen (TN)). • Turbidity. • Biological communities. • Secchi depth. • Habitat assessment.	• Pathogen (*E. coli*, enterococci). • Turbidity. • Secchi depth. • Harmful algal blooms (HABs), algal toxins.	• Metals. • Pathogens. • Total dissolved solids (TDS), total suspended solids (TSS). • Nutrients. • Salinity. • HABs, algal toxins.	Fish tissue contaminant levels for: • Mercury. • Polychlorinated biphenyls (PCBs). • Polycyclic aromatic hydrocarbons (PAHs). • Legacy pesticides.
Additional Parameters	• Flow. • Sediment toxicity. • Eutrophic condition in lakes. • Nutrients (NH_3, DIN, DIP, PO_4). • Chlorophyll *a*. • Pesticides. • TSS. • Emerging contaminants. • Floristic quality. • Metals. • Ions (Ca, Cl, Mg, Na, K, SO_4). • Continuous (high frequency sensor) monitoring.	• Nuisance plant growth. • Aesthetics. • Hazardous chemicals.	• Flow. • Volatile organic carbons (VOCs). • Pesticides. • Emerging contaminants.	• DDT. • Chlordane. • Select Per- and polyfluoroalkyl substances (PFAS), Perfluorooctanoic acid (PFOA). • Emerging contaminants. • Metals.

Top 15 Parameters Reported by Tribes
Reflective of results at the release of this guidance

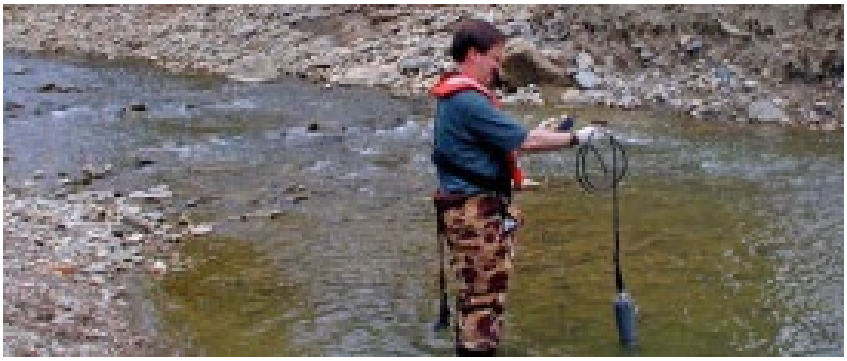
1. Water temperature.
2. DO.
3. pH.
4. Turbidity.
5. Specific conductance/conductivity.
6. Salinity.
7. TSS.
8. Air temperature.
9. Fecal coliform.
10. Flow.
11. *E. coli*.
12. Phosphorus.
13. Nitrogen.
14. Benthic macroinvertebrates.
15. Fish assemblage.

The following sections provide information on how and why Tribes sample the most common parameters. Factsheets for each parameter are available on EPA's *Factsheets on Water Quality Parameters* website.

Water Temperature

Water temperature influences the majority of physical, biological, chemical, and ecosystem processes in aquatic environments. Altered stream temperature is a significant cause of water quality impairment in the United States and influences other water quality parameters. Measuring temperature helps to understand the magnitude and variability of temperature fluctuations and anticipate the consequences for water quality and ecosystem health (Figure 12).

Figure 12. Measuring temperature in the field. Credit: Photo courtesy of USGS



In general, increased water temperature can result in:

- Decreased DO available to aquatic life.
- Increased solubility of metals and other toxins in water.

- Possible increased toxicity of some substances to aquatic organisms.
- Algal blooms, which typically occur during the summer season or periods of unusually warm temperatures.

Dissolved Oxygen

DO is an important parameter of the overall biological health of a waterbody and is required for a waterbody to support aquatic life. It is generally measured in the field along with water temperature, turbidity (clarity), specific conductance, and pH using a water quality probe. This information is then assessed against thresholds or WQS to determine whether the water is fit for aquatic life.

DO affects fish health and sensitivities vary by species. A high DO is needed to be "supportive" of fish spawning, growth, and activity. Different levels of DO are required to support aquatic life depending on the species present and their stages of life (such as spawning, larvae). Trout, for example, require a high DO, while carp can survive in lower DO conditions. Among the macroinvertebrates, many immature insects require a high DO content, while other species, such as aquatic worms and snails, can tolerate lower DO concentrations. Hypoxic (low DO concentration) or anoxic (virtually no DO) conditions do not support fish or macroinvertebrate populations.

pH

pH is an important parameter of chemical, physical, and biological changes in a waterbody and plays a critical role in chemical processes in natural waters. pH values are on a scale from 0 to 14, with 7.0 considered neutral. Solutions with a pH below 7.0 are considered acidic, and those with a pH above 7.0 are considered basic. The pH scale is logarithmic, meaning that every one-unit change represents a ten-fold change in pH. In other words, pH 6.0 is ten times more acidic than pH 7.0; pH 5.0 is one hundred times mores acidic than pH 7.0.

pH is a key factor in water chemistry and toxicity. A change in pH can alter the concentrations and forms of toxic chemicals in water. Metals such as aluminum, lead, mercury, copper, and arsenic are generally more soluble at a lower pH. Therefore, higher concentrations can be absorbed into the tissues of organisms, rendering these metals more toxic to aquatic life. In more basic waters (pH > 8.5), the conversion of the nontoxic form of ammonia to the toxic form is increased.

pH also plays a key role in aquatic health by affecting biochemical processes and the metabolism of aquatic organisms. Generally, if water is too acidic or too basic, damage can occur to an organism's gills, exoskeleton, fins, and other critical components. Of particular concern are pH-sensitive macroinvertebrates (small organisms without a backbone), fish eggs (most fish eggs cannot hatch at a pH less than 5), and juvenile fish. Organisms vary in the pH ranges they can tolerate. Furthermore, even though an organism itself may tolerate a more extreme pH, its food source may not.

Turbidity

Turbidity and TSS are different ways to measure similar water quality characteristics. Turbidity is the clarity of the water and TSS is the concentration of suspended particles, which include soil particles (clay, silt, organic matter), algae, and microscopic organisms.

An increase in turbidity or suspended solids can also negatively affect aquatic health by:

- Clogging fish gills or the filter-feeding systems of other aquatic animals.
- Hindering visibility, making it difficult for predators to find prey.

- Decreasing light penetration into water and thereby the ability of submerged aquatic plants to photosynthesize, reducing biomass and growth rates of aquatic plants.
- Reducing fish resistance to disease.
- Altering egg and larval development.

Changes in turbidity can also affect other water quality parameters; increased turbidity is likely to be accompanied by the following:

- Higher temperature and reduced DO due to increased heat absorption of the water.
- Reduced DO due to decreased light penetration into the water and an associated decrease in photosynthesis by aquatic plants.

Suspended solids contributing to turbidity can affect water chemistry and microbiology. The particles can adsorb (take up on their surfaces) pollutants, including nutrients, metals, and organic compounds. If the particles settle on the bottom of the waterbody, then the pollutants settle with them. If bottom sediments are subsequently disturbed and resuspended, the aquatic community can be exposed to any adsorbed toxins or nutrients.

E. coli or Enterococci

Water samples are collected to measure *E. coli* to make sure water is safe for public recreation, such as swimming, fishing, or canoeing. *E. coli* is considered a parameter organism, used to identify fecal contamination in freshwater and indicate the possible presence of disease-causing bacteria and viruses (pathogens). Individuals that swim or come into contact with water containing elevated levels of *E. coli* and other fecal parameter organisms such as enterococci are at an increased risk of getting sick because of potential exposure to fecal pathogens. Common symptoms of ingesting a pathogenic strain of *E. coli* include vomiting and diarrhea. High numbers of *E. coli* (and other) bacteria may contribute to cloudy water, unpleasant odors, and increased oxygen demand (which may reduce levels of DO in the water).

E. coli concentrations may be linked with other parameters such as high TSS and turbidity concentrations because the bacteria tend to be found with particles. *E. coli* concentrations may also be linked with high phosphorus, nitrate, and biological oxygen demand (BOD) concentrations.

Nutrients

Excess (or elevated) nutrients is among the most common water pollution problems affecting waterbodies in the United States. High nutrient concentrations resulting from human activities can diminish ecosystem health. Excess nutrients in a waterbody can lead to excess biological growth (eutrophication) and HABs. In freshwater, HABs are often caused by cyanobacteria (for example, blue-green algae) and may have negative effects on humans and ecosystems.

Certain types of cyanobacteria can produce toxins that are harmful to humans and animals through recreational exposure or through consumption of drinking water. Toxins can also work their way into the aquatic and terrestrial food webs and potentially harm animals and humans. Additionally, algal blooms can lead to hypoxia, or low DO in the water, either through algal respiration or consumption of oxygen by decomposers when the algae die off. Persistently low DO can harm sensitive aquatic animals, resulting in chronic stress or even mortality.

Nutrient concentrations are highly variable in waterbodies across the United States. To interpret monitoring data, it is helpful to be familiar with typical nutrient concentrations for healthy and disturbed

waterbodies in the area. When nutrient concentrations are higher than an aquatic system's natural background concentrations, the water has most likely been affected by urban or agricultural activities, including both point source and NPS contributions.

Metals

It is important to measure metals because all metals can be toxic at high concentrations, even those that are nutritionally essential for sustaining life in aquatic ecosystems in small amounts (such as copper and manganese). Metal toxicity negatively affects the health of aquatic organisms. For example, metal toxicity:

- Decreases abundance and diversity of species.
- Changes reproduction, juvenile growth, and behavior.
- Causes spinal abnormalities, gill damage, and death.

In a waterbody, metals are either dissolved or in particulate form. Dissolved metals are small enough to pass through a 0.45 micron (µm) filter and are more easily absorbed by organisms. Metals can bind to particulates such as clay, sand, or organic matter. Particulate metals are larger and typically less bioavailable than dissolved metals, but organisms can still uptake particulate metals through their gut.

Over time, dissolved and particulate metals in the water can build up in the tissue of fish and other aquatic organisms. This process, called bioaccumulation, occurs when an organism absorbs or uptakes metals more quickly than their body can eliminate them.

Biomagnification of some metals (such as mercury) can also occur in an aquatic ecosystem. Biomagnification occurs when concentrations of metals increase from transfer up through the food chain as larger organisms feed on many smaller organisms who have each bioaccumulated metals in their bodies. Biomagnification and bioaccumulation can cause concentrations of metals in larger aquatic organisms to be toxic to humans, and to the birds and other wildlife, that consume them.

Macroinvertebrates

Insects are the most common macroinvertebrates in aquatic systems, living in water as nymphs or larvae until they reach their adult stages. Common insects in aquatic systems include dragonflies, caddisflies, stoneflies, beetles, midges, and mayflies. Others, such as aquatic worms, leeches, and small crustaceans (crayfish and fairy shrimp), live entirely in water. Most species live in the bottom sediments of the waterbody or attached to rocks, vegetation, logs, and sticks.

Lifespans range from a few weeks to several years. Macroinvertebrates are most frequently used for biological monitoring, or "biomonitoring," because of their prevalence in aquatic habitats and their differing sensitivities to chemical pollution and physical disturbances. Biomonitoring is the use of organisms to assess the overall quality of their environment or habitat. Because they generally have limited mobility and cannot escape pollution, macroinvertebrates better reflect the long-term water quality of a site compared to a single sample of chemical constituents that only provides a snapshot in time. Table 7 shows examples of generalized pollution sensitivity (tolerant or intolerant of pollution) for several common macroinvertebrates.

Table 7. Examples of macroinvertebrates and their pollution sensitivity levels

Macroinvertebrate	Pollution Sensitivity
Stonefly	Intolerant
Mayfly	Intolerant
Crayfish	Range
Leech	Tolerant
Aquatic worm	Tolerant

Source: Maine Department of Education *Outdoor Learning Opportunities: Macroinvertebrates*.

Knowing the typical variety and abundance of macroinvertebrates in a healthy waterbody in a region can help when evaluating waterbodies for signs of poor ecosystem health. Generally, healthy waterbodies support a diverse population of macroinvertebrates. Samples yielding only pollution tolerant species, a low abundance of organisms, or very little diversity (primarily one or two species) might indicate a degraded waterbody. Figure 13 shows an example of a mayfly, a type of pollution sensitive macroinvertebrate.

Figure 13. The mayfly, a type of insect, under the view of a microscope. Credit: Photo courtesy of USGS

Basic Habitat Information

Healthy and intact habitat is critical for supporting biological communities, protecting water quality, and preserving the overall ecological integrity of aquatic ecosystems. Fish, insects, and other organisms find food and shelter near and in streams, lakes, and wetlands. Vegetation growing in the riparian zone provides shade, stabilizes sediment, and can filter pollutants before they enter the waterbody.

Alterations to the physical structure of the habitat surrounding waterbodies can negatively impact instream physical characteristics, water chemistry, and aquatic communities. Specifically, if vegetation in the riparian zone is removed, runoff of sediment into the stream can increase. As a result, stream embeddedness (the amount of sediment covering "substrate," or bottom material) changes as excess sediment fills pools and reduces the available substrate for fish and other aquatic organisms to shelter. The water chemistry may also change as the excess sediment alters turbidity and pH levels. These changes affect the potential for the habitat to support the aquatic community.

Habitat assessments help determine whether alterations to the riparian zone or instream features may negatively impact water quality and aquatic communities. Rapid Bioassessment Protocols (RBPs) is a popular, efficient, and cost-effective method to assess habitat. Evaluating changes in the condition of habitat parameters helps anticipate potential effects on the aquatic ecosystem, provides clues toward sources of degradation, and can inform restoration projects and waterbody management strategies.

Determine Monitoring Frequency

When determining the monitoring frequency for each parameter, consider factors such as cost, time, resources, accessibility of monitoring site(s), seasonal flows and conditions, and the desired level of confidence in the data and the decision it supports. Waterbody conditions change over the course of a day, from season to season, and from year to year. These changes can be the result of natural variability

or human activities. *Listening to Watersheds* contains some general information that will help in deciding when and how often to collect monitoring samples.

Fort Belknap Indian Community Water Quality Program Development – Lake Monitoring Training

The Fort Belknap Indian Community (FBIC) Water Quality (WQ) Program strives to incorporate and implement new methodologies and strategies that ensure the water quality of their tribal waters remains healthy, supports designated uses, and protects tribal members from harmful levels of pollution. To further this on-going effort, the WQ Program partnered with EPA and the USGS, resulting in a successful experience that gave FBIC more insight on the future direction of their WQ Program.

The FBIC WQ Program first reached out to USGS in June 2018 for guidance on lake monitoring. This led to a joint funding agreement using Section 106 grant funds and a working relationship.

The WQ Program gained momentum to develop tribal WQS. They first needed to collect water quality data. Several reservoirs and ponds on the reservation have limited recreational uses. For this project, they selected two highly used recreational reservoirs: Snake Butte Reservoir and Strike Reservoir. The WQ Program and USGS then coordinated a training on lake monitoring, which included:

- Vertical profiling.
- Photic zones measurements.
- Water samples:
    - Nutrients – assessing the N:P ratio and harmful algal blooms.
    - *E. coli* – using the on-site filtering and dilution method.
- Cyanobacteria.
- Fish tissue.
- Quality control (QC) samples – replicate data.
- Collected parameters with a multiparameter sonde.
- Chlorophyll *a* sample demonstration.
- Depth readings.

The WQ Program discovered new monitoring concepts to support future monitoring goals for their tribal reservoirs. They also discovered more information to investigate. They developed a fish tissue collection project for the Snake Butte Reservoir and Strike Reservoir, including an analysis for mercury, selenium, and arsenic. They also initiated an *E.coli* sampling project with the local Aaniiih Nakoda College laboratory. This greatly increased the opportunity to collect more water samples from both reservoirs in May, July, and September, and supported their goal to develop tribal WQS.

Figure 14. FBIC WQ Program conducting lake monitoring. Credit: Photo courtesy of FBIC

Developing QAPPs and SOPs

Developing QAPPs

A QAPP is a written document that outlines the procedures the Tribe will follow to meet the monitoring program goals and ensure sufficient quality of the samples collected and analyzed, how the data are stored and managed, and the reports produced. The QAPP outlines the technical and quality aspects of a project (for example, monitoring data collection, detection limits, analytical methods, data management, data analysis, reporting) and provides a blueprint for obtaining the type and quality of environmental data and information needed. Any EPA-funded project that includes the collection and analysis of data must have an EPA-approved QAPP before any monitoring activities may begin (2 CFR 1500.12).

The QAPP must include data quality objectives (DQOs).

DQOs are the qualitative and quantitative statements that:

- Clarify monitoring goals.
- Define the appropriate type of data to meet the goals.
- Specify tolerable levels of potential decision errors that Tribes will use as the basis for establishing the quality and quantity of data they need to support decisions.

Data validation procedures should also be included in the QAPP. Chapter 4 of EPA's *The Volunteer Monitor's Guide to Quality Assurance Project Plans* and EPA's *Managing the Quality of Environmental Data in EPA Region 9* document contain further information on data validation and QAPPs. Data should be validated according to tribal program procedures before submission to EPA.

Additionally, QAPPs may include data quality indicators (DQIs). DQIs are an entity, process, or community whose characteristics show the presence of specific environmental conditions. DQIs are based on the DQOs and are meant to help assess the sufficiency of using a particular dataset for a particular purpose. There are six DQIs:

- **Accuracy** – A measure of confidence that describes how close a measurement is to its true value. It is a combination of systemic errors associated with bias and random errors associated with precision, or imprecision.
- **Bias** – A systemic error in a method or measurement system that can affect all results. It is coupled with precision to determine data accuracy.
- **Comparability** – The degree to which data can be compared directly to similar studies.
- **Completeness** – Comparison between the amounts of usable data collected versus the amount of data called for in the sampling plan. This is measured as a target percentage of valid results obtained compared to the total number of samples taken for a parameter.
- **Precision** – An assessment of the degree that two or more replicate measurements are in agreement. It is coupled with bias to determine data accuracy.
- **Representativeness** – The extent to which measurements characterize the true environmental condition or population at the time a sample was collected.

EPA has guidance for developing QAPPs for all types of monitoring programs, from a simple volunteer monitoring initiative to established state programs. Some additional tools include EPA's:

- *Requirements for Quality Assurance Project Plans*.
- *Guidance for Quality Assurance Project Plans*.
- *Quality Assurance Project Plan Development Tool*.

More information on DQIs can be found in *Listening to Watersheds* and Tribes can contact their EPA regional office and Quality Assurance (QA) Manager for more information on developing a QAPP. EPA's *Guidance for Data Quality Objectives Process* contains more information on DQOs and DQIs.

QAPPs for Ground Water Monitoring

Because of regional variations in geology and hydrology, there are multiple methods for ground water monitoring. By establishing a comprehensive ground water QAPP with field, sampling, lab, and assessment protocols, Tribes can effectively sample wells for contaminants such as metals, volatile organic compounds, and nutrients. Research into past land use as well as hydrogeological surveys of the area will supply knowledge regarding the characteristics of aquifers as well as potential sources of contamination. Sound data collection will help Tribes develop the foundation they need to determine their ground water protection needs. Additional information on eligible ground water sampling activities is in Chapter 4: Program Development.

EPA Review and Approval of QAPPs

The Tribe will submit the QAPP to the EPA regional Project Officer who will then forward it to the appropriate EPA regional staff for review and approval (EPA Order 5360.1 A2). QAPPS should be submitted to EPA approximately 60 days before the start of the sampling activity to ensure it is approved prior to sampling. Once EPA has approved the QAPP, the Tribe can begin implementing their tribal water quality monitoring program. Monitoring activities must be described in the approved QAPP.

Over time, Tribes may need to modify or refine their water quality monitoring program to address new water quality issues or concerns. If changes to the QAPP are needed, contact the EPA Project Officer to determine if the changes are substantive, requiring a revision to the QAPP, or non-substantive. Non-substantive changes can be documented in the QAPP as a pen and ink change but must be noted in the progress report. A Tribe may have several QAPPs covering different aspects of their monitoring program (for example, wetlands, surface water, and fish tissue). If the Tribe does not follow the procedures outlined in the QAPP, the quality of the data may not meet the tribal water quality expectations or be adequate for the analysis and assessment activities. The *Tribal Assessment Modules* on EPA's Ambient Water Monitoring and Assessment website includes additional information on QAPPs.

Developing SOPs

Once Tribes have determined the monitoring goals, sampling design, and parameters to collect as outlined in their QAPP, it will be important to document how the information collected will remain consistent through time. Tribes can document this information in SOPs, checklists, or other internal operation documents. Tribes develop SOPs to achieve consistency, uniformity, and program continuity when performing monitoring tasks. SOPs are particularly useful to maintain tribal program continuity through staff turnover. Some of the information that Tribes will develop and document includes proper procedures for:

- Sample collection: equipment needed, sampling plan, frequency, and timing for sample collection.
- Storage: bottle types and sizes, labels, refrigerator or freezer space, use of coolers.
- Preservation methods and holding times: ice (wet or dry), chemicals.
- Accessibility of sampling locations and permission to access locations.
- Tracking: databases, forms.
- Shipping: time needed to transport samples to the lab or shipping center, shipping drop off times, and the analytical lab's receiving days.
- Chain of custody: forms needed to ensure proper documentation for the handoff of samples.
- Data validation: ensuring the data are accurate (for example, no out-of-range data, decimals in the wrong place for a result value, or incorrect units associated with the result).
- QA: spikes, duplicates, blind samples.
- Analysis: the use of the data for assessment purposes.

In addition, the SOPs should document the maintenance of their equipment, including how the equipment is calibrated and used. SOPs may align with a field or laboratory manual and can help specify implementation of tasks, such as frequency of calibrating equipment. Tribes typically develop separate Field SOPs for monitoring equipment, including parameters they measure on-site using *in-situ* field instruments (for example, water temperature and stream flow). If the Tribe is performing sample analysis in its own laboratory, they will have lab SOPs describing their analytical and preparation methods and the level of precision and accuracy they can provide.

The *National Environmental Methods Index* database website may include many field and analytical methods. The website is searchable, useful for finding and comparing analytical and field methods for all phases of environmental monitoring.

Wetlands Monitoring

Because of their composition, wetlands are more complicated to monitor than most surface water bodies. A wetland monitoring program can consist of several components:

- Establishing the current condition of wetlands, including their extent and condition.
- Measuring the physical and chemical properties of the wetland, including pH, color, turbidity, DO, total phosphorus, and sediment/soil samples.
- Determining the hydrogeomorphic setting and function.
- Cataloguing biodiversity, the presence of rare or endangered species, and items of cultural significance.
- Inventorying potential local contamination sources, such as stormwater culverts and septic fields.

Tribes conducting wetlands monitoring can consult EPA Region 9's *Wetlands Quality Assurance Project Plan Guidance and Template*, which is designed to assist in documenting procedural and data requirements for projects involving environmental measurements and wetlands monitoring. For information on beginning a wetland monitoring program, refer to EPA's *Volunteer Monitoring Can Protect Wetlands* website to find "Volunteer Wetland Monitoring: An Introduction and Resource Guide" and other resources. Tribes can view EPA's *Wetlands Monitoring and Assessment* website and *Protecting Waters and Wetlands in Indian Country: A Guide for Developing Tribal Wetland Management Programs* for additional information.

Analyzing Monitoring Samples Using Outside Laboratories

Many water quality programs use outside laboratories to analyze water quality samples and provide taxonomy identification of biological samples. Outside laboratories are also used to complete QC checks such as verification of taxonomy on a subset of samples. The Tribe's QAPP should document how the laboratory will carry out these activities. It is helpful to communicate with laboratories on how each entity will track samples; how Tribes need to preserve, pack, and ship samples; the reporting limits the lab can meet and what corrective actions they will take if there are issues; and how and when laboratories will confirm sample receipt to ensure the samples are processed efficiently and accurately.

When tribal water quality programs are choosing a laboratory to analyze their water quality samples, consider providing the laboratory with a list of questions regarding the analyses they anticipate and talk directly with the laboratory manager. When developing a contract, factors to consider include: the specific period that the contract will cover, the scope of work (including materials the laboratory will furnish), terms for payment, a provision for giving both the Tribe and EPA the right to audit the laboratory, and other terms and conditions as required or recommended by the tribal water quality program. Programs will need to agree on documentation of analytical methods and turnaround time in advance. When contracting with a laboratory, the tribal water quality program will need to obtain a copy of the laboratory's QA/QC plan.

The tribal water quality program should consider requiring the lab supply the data in a format compatible with the Tribe's data management system or WQX. At a minimum, the data should be provided in an electronic data deliverable (such as an Excel or CSV file). Receiving data elements and

results from the lab in a WQX-compatible format will reduce a Tribe's data management burden. EPA's *Water Quality Exchange Web Template Files* website contains WQX templates. EPA regional technical advisors or other Tribes in the region can help identify qualified labs in an area that may be able to provide sample analysis. See Chapter 6: Programmatic Reporting Requirements for more information on data reporting requirements.

Sample Collection

Sample collection methods will vary depending on the monitoring purpose, parameters collected, waterbody type, and geography. Details that are necessary to consider when planning a collection activity include:

- Planning out the full sampling season.
- Organizing field crew training and sampling QA checks.
- Evaluating the potential sites to be sampled.
- Procuring supplies and equipment suitable for sampling needs.
- Instrument cleaning and calibration.
- Creating a sampling plan to execute the collection of the samples.

For more information on how to plan out and execute sample collection, please see *USGS National Field Manual for the Collection of Water-Quality Data* and the *Manuals Used in the National Aquatic Resource Surveys*.

Data Management

Data management is the process of managing, storing, and maintaining monitoring results in a format that allows Tribes to use the data to make decisions about their water quality programs. Monitoring data results and metadata are most useful when they are in a format that Tribes can manipulate, summarize, and analyze. This section provides information on managing data, including how to compile useful datasets, store and manage data in an electronic format, validate data, and report the results.

Understanding Metadata and Compiling Useful Datasets

Metadata are "data about data" that include information about a specific water quality sample that provides context for the sampling activity. Metadata contain information about when, where, why, and how the Tribe collected a water quality sample. When monitoring, record the necessary metadata. For example:

- The location where each sample was collected, such as longitude and latitude and the waterbody name.
- The conditions at the time of collection: such as water temperature, flow, atmospheric conditions.
- The units for each parameter.
- Any replicate data, which are data from two or more samples collected at the same time.
- The date and time of sample collection.
- The reason the sample was collected: such as to determine if phosphorus threatens the waterbody.
- The sample and analytical methods used to collect and analyze the sample.
- The method's detection limit.

Recording metadata is valuable for three primary reasons:

1. Metadata are important for the immediate use of the data by the Tribe because it provides more information for making decisions.
2. With the necessary metadata, the Tribe can continue to use the data in the future while identifying changes to monitoring goals, determining restoration activities, and identifying sources of water quality pollution.
3. Metadata are valuable beyond the original collection purpose and data re-users (those who did not originally collect the data but are using them for a separate purpose) can determine if the samples are comparable and thus reusable for their environmental needs.

Certain metadata are required when collecting and reporting data to EPA as part of the Section 106 programmatic reporting requirements, discussed in more detail in Chapter 6: Programmatic Reporting Requirements. Templates and other resources are available on EPA's *Water Quality Data Upload with WQX* website to ensure Tribes include required metadata with their data submittal.

Developing Electronic Data Storage Capacity

Data should be stored so Tribes can easily organize, summarize, and manipulate the data. Electronic spreadsheets allow the Tribes to easily store data in tables where they can rearrange, sort, search, and perform calculations for analyses. Many spreadsheet-based software programs are commercially available for Tribes to use (for example, Microsoft Excel). Some of these programs also include tools (for example, graph-building, calculator, modeling functions) that help analyze, manipulate, and report data. Managing data in spreadsheets may be most appropriate for Tribes that are just beginning to monitor or that do not have large datasets (for example, few sampling locations, few parameters, infrequent monitoring).

Databases organize data in tables and can be set up to make interactions simple. Data entry screens ensure that data entry follows a structure and can automatically check user entries for correct data types (numbers versus text) or range of data (such as pH must be greater than 0 and less than 14). Although a database takes a considerable amount of time to set up, it can ultimately make it very easy to enter, store, retrieve, and report data, and to perform relationship queries. Microsoft Access and Oracle are examples of database programs. Managing data in a database makes more sense for larger, more complex datasets, such as those with many sampling locations, parameters, or frequent monitoring.

Geographic Information System (GIS) Software is a tool that can be used to display data in a map. GIS is a computer system for capturing, storing, manipulating, analyzing, and displaying data related to positions on the Earth's surface. This is equivalent to displaying a monitoring location's latitude and longitude measurements as a point on a map. These points, along with their results and metadata, create a set of map events for display and analysis.

Performing Data Validation

Data validation is the process of evaluating field, lab, and data management activities, organizations (such as labs), and personnel. This can include evaluating performance, such as sample collection techniques; systems, such as equipment and analytical procedures; and data quality, such as comparisons of actual data results with project quality goals. Examples of data validation procedures include:

- Reviewing field data sheets for completeness and accuracy before leaving the field.
- Ensuring entries copied from field data sheets into electronic spreadsheets are accurate.
- Examining unexpectedly high or low results (outliers) and investigating for possible issues.
- Checking calculations.
- Correcting errors such as decimal places in the wrong spot and incorrect units.
- Comparing project data to specific QA/QC criteria (DQOs and DQIs).
- Calculating precision and accuracy of instruments and placing this information in the metadata file.
- Reviewing QC sample results to ensure attainment of acceptance criteria (either established by the Tribe or defined in the laboratory's QA plan and SOPs).

As described in the section above on Developing SOPs, Tribes should consider documenting the data validation process so they can replicate the process each time data are validated.

Backing Up Electronic Data

Regularly backing up data ensures information is not completely lost if the Tribe ever has a computer failure, software problem, user error, or office damage. A Tribe can back up data in several ways, such as by copying the information to an external hard drive or backing up documents to a cloud service. Some computer systems include built-in backup tools. Tribes that collect water quality data using Section 106 funds must upload that data to WQX and can also use WQX as an off-site data repository backup.

Uploading Data to the Water Quality Exchange

Templates and guidance for submitting data into WQX are available on EPA's *Water Quality Data Upload with WQX* website. Once Tribes submit data to WQX, the data are available in the *Water Quality Portal*, a cooperative data service sponsored by the USGS, EPA, and the National Water Quality Monitoring Council (NWQMC). Metadata accompany each sampling result in the Water Quality Portal. Additional information on submitting information to WQX can be found in the *Tribal Data Management for WQX Submission* supplement.

Data reporting requirements are discussed further in Chapter 6: Programmatic Reporting Requirements.

Updating and Upgrading Electronic Data Systems

Manufacturers of hardware (such as computers and monitors) and software (such as spreadsheet and database programs) often develop new and improved products that, over time, might make the existing system obsolete. Periodically investing in new hardware and software products is necessary, and Tribes should build those costs into the work plan. The grant budget should account for the entire life-cycle of work and the associated tools and technology needed to ensure grant work plan activities can be accomplished. Tribes can regularly check manufacturers' websites or product centers to see if any upgrades are available. Many times, software manufacturers issue product upgrades or modifications free of charge.

As Tribes accumulate years of data and add more monitoring parameters, the amount of data they collect and store increases. Tribes may find their hardware and software tools no longer address all their data management needs. In this case, Tribes may consider upgrading to a more powerful computer with greater storage space, processing capacity, or a more powerful software package. Tribes may need to upgrade from a spreadsheet-based program to a database management system. When investing in new software, consider how best to transfer data from the existing system into a new software program.

Database management systems allow programs to easily import spreadsheets and verify that the transferred information is compatible with the new software. Data management procedures will naturally evolve when programs gain new software, hardware, parameters, or other significant updates. Tribes that plan to use Section 106 funds to upgrade computer systems may work with their EPA Project Officer to understand any budget proposals or modifications.

The Exchange Network grants are a funding source to leverage when updating and upgrading electronic data systems and are discussed further in Chapter 9: Other Funding Options. For additional information on data management, please see the *Tribal Data Management for WQX Submission* supplement.

Data Analysis and Assessment

Data analysis and assessment is the process of performing statistical summaries, assessing data against water quality thresholds or WQS, determining if waters are meeting designated uses, and describing water quality trends. These analyses identify whether tribal waters are meeting tribal goals for the waters and inform future water quality protection, preservation, and restoration practices. During data analysis, Tribes also evaluate whether they need additional data. *Listening to Watersheds* lists some typical ways in which Tribes analyze data, including:

- Status: comparing parameters against WQS or water quality thresholds that the Tribe establishes for a waterbody.
- Trends/changes over time: comparing parameter(s) at a site over time.

The *Tribal Assessment Modules* on EPA's Ambient Water Monitoring and Assessment website have more information on data validation, analysis, and assessment.

Documenting Assessment Processes

Preparing for data analysis begins with documenting a process to utilize the data to make water quality management decisions. The assessment process is the pinnacle of the water quality program because it is the process of evaluating monitoring results against thresholds or WQS and determining whether waters are meeting tribal goals.

Tribes will need to document how they can make decisions with small sample sizes, how conflicting parameter assessments contribute to overall water quality status decisions, the percent exceedances allowed while still meeting thresholds or WQS, and how other types of best professional judgements will be used during the assessment processes. By documenting assessment decision processes, Tribes can be confident that they are assessing and reporting data in a consistent way.

One way to document assessment processes is to develop an assessment methodology documenting how the current tribal staff perform assessments and how others can reproduce the results. Documenting the assessment process also ensures consistency in data interpretation from year to year and provides transparency to stakeholders. The assessment methodology should describe:

- How the Tribe will aggregate data and information relevant to tribal use assessments.
- The extent of the waters to which the decision is applicable.
- How the Tribe evaluates the suitability of the data or information for decision making.
- How the Tribe analyzes and interprets the data to make attainment or nonattainment decisions.

To start, the assessment methodology should include four common elements to inform the water quality decision processes:

1. The waterbodies monitored: assessment units (AUs).
    - AUs are the location of the decision and the extent to which it applies. For example, when a station is monitored, is the data representative of a single point in the stream or the water quality of a reach of the stream? AUs include monitoring locations, lengths of stream, and polygons (for example, lake, ocean, or wetland area).
    - To determine whether it is appropriate to represent decisions for a reach of stream, gather data to understand where water quality changes occur in the reach, evaluate mixing zones, consider point source and non-point source introductions along the waterbody, elevation, land use, and physical characteristics of the waterbody.
2. The number of results the Tribe needs to make a decision.
    - The goal is to collect enough samples to characterize the true environmental condition of the waterbody for the tribal goals being evaluated. Include in the assessment methodology if and how the data will be assessed in the event a sample size is not met. Consider the sample size needed to assess thresholds or WQS as well as the magnitude, duration, and frequency of the exceedances.
3. The decision criteria for determining attainment and nonattainment of the tribal use for the waterbody.
    - Decision criteria may include a 10 percent exceedance allowance of the threshold or WQS.
4. The thresholds or WQS the Tribe uses to assess each use.
    - Thresholds can typically be represented in a table containing each parameter sampled, the WQS or threshold, the use assessed, and any rules for assessing. For example, DO for aquatic life: 3 mg/L in the spring season with a 10 percent exceedance threshold.

EPA advises Tribes to revisit their assessment methodology as they grow their programs and expand it as necessary. Tribes with TAS for Section 303(d) will also have to include additional elements in their decision-making process and assessment methodology. Additional information regarding assessment methodologies can be found in EPA's *Consolidated Assessment and Listing Methodology*.

Performing Analyses

Once the Tribe determines how to perform the assessment, data analysis will begin with:

1. Identifying all data for use in analysis.
2. Compiling, running QA measures, and standardizing data and metadata.
3. Assessing data against thresholds or WQS.

Identifying all data for use in analysis: Monitoring data are not the only data that Tribes can use to evaluate the condition of tribal waterbodies. If available, Tribes can incorporate any other data into the analysis, such as the waterbody's geological characteristics, recreational advisories, fish consumption advisories, fish kills, and data from upstream and downstream Tribes or states. EPA maintains a number of online databases containing data related to water quality that may be used to supplement or support tribally collected data. For example: the *Water Quality Portal* contains hundreds of millions of results from around the country including data from Tribes, states, academia, USGS, nongovernmental

organizations (NGOs) and more. EPA's *How's My Waterway* application provides a user-friendly way to view data from the Water Quality Portal collected on or near tribal lands as well as other information about nearby water quality. When Tribes use data from any secondary source in decision making, their QAPP needs to include a discussion of how they review the data and determine that the data are suitable for the intended purpose. In addition, Tribes can perform analyses using more than one year of data and may use external data sources to better understand trends in water quality and supplement data for low sample sizes.

Compiling, conducting QA measures, and standardizing data: The next step is compiling the data into one format for analysis. Specifically, Tribes might need to standardize parameter names, check data ranges, determine outliers, convert units, and compare methods for laboratory analysis.

Assessing data against thresholds or WQS: Once data is compiled into one format, Tribes can then compare each parameter against the corresponding WQS or threshold. Tribes with approved WQS will use them to perform assessments (see Chapter 8: Program Expansion – Regulatory Authorities for more information about WQS). Tribes without EPA-approved WQS use other thresholds, including tribally adopted WQS to determine whether tribal waters are meeting tribal water quality goals or designated uses. Tribes can adopt relevant thresholds from neighboring Tribes or states or use EPA's *National Recommended Water Quality Criteria Tables*. The thresholds chosen should align with their tribal designated uses and water quality goals.

Some thresholds or WQS have a multi-step assessment process. For example, to analyze zinc or nickel, a Tribe needs to collect and assess not only metals but water hardness. Multi-step assessments can be complex to analyze.

Compiling Water Quality Assessments

Once the Tribe compares the data against thresholds or WQS, the next step is to associate those outcomes to the tribal goals or designated uses for which they apply. As shown in Table 6, Tribes use many parameters to evaluate water quality and determine designated use support such as aquatic life use or fish consumption. In the assessment phase, Tribes will compile parameter analyses against thresholds or WQS to determine whether a designated use is being supported. For example, if *E. coli* values exceed the thresholds or WQS, the tribal goal/designated use of primary contact recreation is not supported.

Please see EPA's *Consolidated Assessment and Listing Methodology* and the *Tribal Assessment Modules* on EPA's Ambient Water Monitoring and Assessment website for more information on Water Quality Assessments including exercises to practice assessing data against thresholds and WQS.

Developing a Water Quality Assessment Report

First and foremost, Water Quality Assessments are for tribal use to communicate the status of water quality on tribal lands and secondarily for EPA.

The Water Quality Assessment Report commonly includes:

1. The Tribe's interests and goals for water quality.
2. A description of the work achieved.
3. Water quality status and trends.

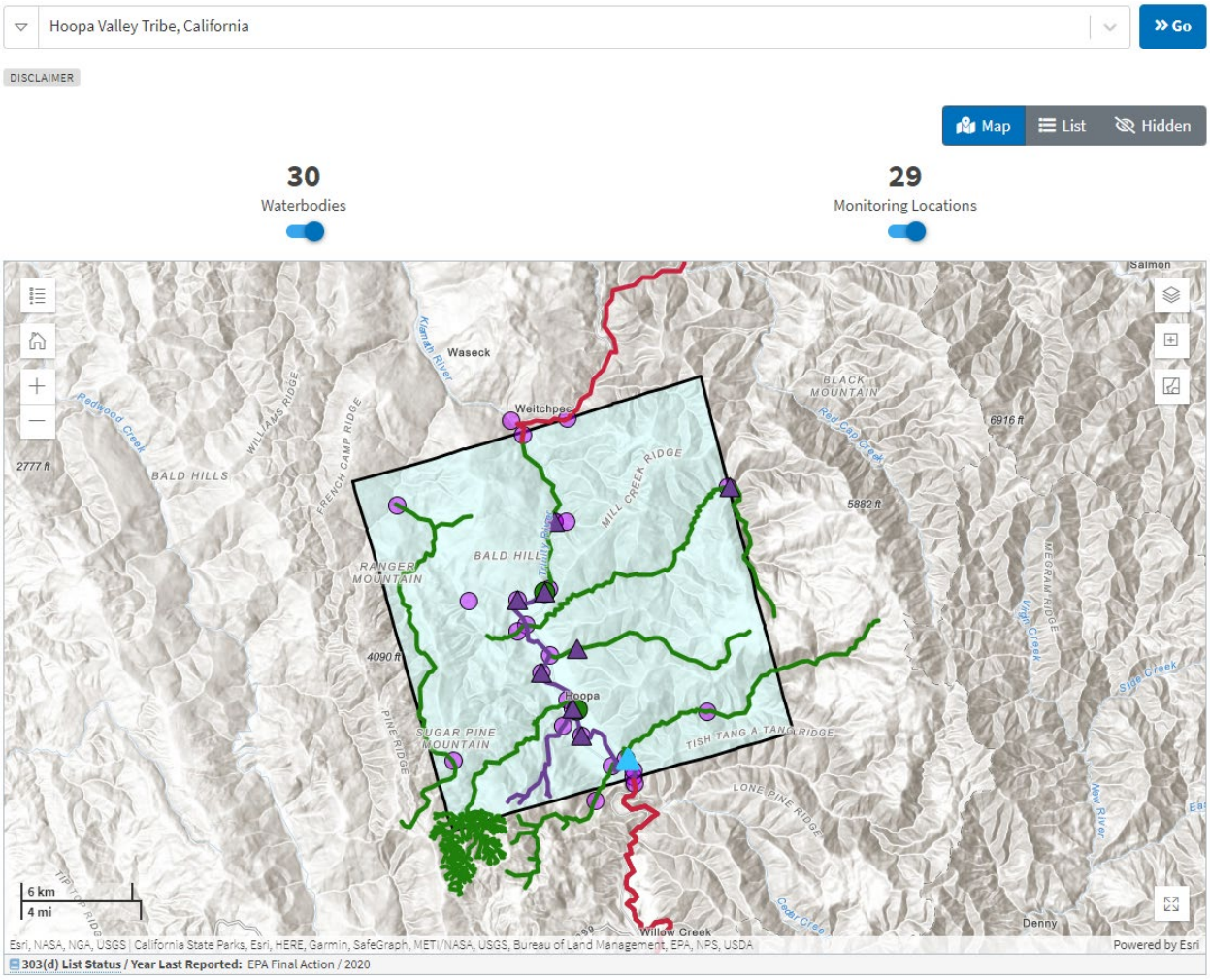
4. A discussion of how the results might inform future actions to help measure progress with meeting the tribal water quality monitoring goals and address water quality concerns.
5. Visual displays of results from analyses, such as in charts and graphs to present to the tribal community.

The Water Quality Assessment also serves as a grant deliverable and informs EPA about water quality on tribal lands. The Water Quality Assessment can include information such as evaluating program effectiveness, water quality improvements such as effectiveness monitoring, and identifying trends in water quality. Chapter 6: Programmatic Reporting Requirements has more information on Water Quality Assessment requirements.

Water Quality Assessments may lead to Tribes re-evaluating their water quality program and considering future enhancements. Tribes can review the Updating Monitoring Designs, Conducting Special Studies, and Monitoring Strategy sections of this chapter to adjust their monitoring design as the Tribe re-evaluates the water quality program to address new monitoring goals. Figure 8 shows the continuous process of learning, adjusting, and expansion of a monitoring program.

As an alternative to a written Water Quality Assessment, Tribes can choose to submit Water Quality Assessment decisions through the Assessment and TMDL Tracking and Implementation System (ATTAINS) and make these decisions available through How's My Waterway (Figure 15). ATTAINS provides a national platform for reporting tribal and state water quality decisions. This e-reporting process makes tribal decisions available, alongside decisions that states, and territories make, and shows a more complete picture of water quality across the nation. This e-reporting process not only helps inform EPA of water quality issues on tribal lands, but it also helps make tribal information more accessible in decision making by watershed partners. For more information on ATTAINS, including eligibility requirements and the new training schedule, Tribes can reach out to their EPA Project Officer, e-mail attains@epa.gov, or visit the *ATTAINS* website.

Figure 15. Snapshot of pages containing Tribal Water Quality Assessments in EPA's How's My Waterway application



Identifying Issues of Concern

Tribes may find water quality issues after performing Water Quality Assessments that need to be addressed. Several factors can contribute to water quality problems in surface water and ground water. Common pollutants and stressors that may impact a Tribe's water quality include:

- **Pesticides**: Pesticides are used in agriculture, animal feeding operations, and other activities. Many pesticides are toxic to animals and may bioaccumulate in the environment. Any pesticides used in or near surface waterbodies or aquifer recharge areas may lead to residues in water, fish, and shellfish. Sources of pesticides include crop and urban runoff. EPA's *About the Office of Chemical Safety and Pollution Prevention (OCSPP)* website and EPA's *Pesticides* website have more information about pesticides.
- **Salinity**: Salinity is a measure of the total salt content in water. Excess salinity can harm wildlife and the suitability of water for drinking. Agricultural irrigation can cause excess salinity. Urban and industrial uses can also cause salinity problems. Saltwater intrusion into fresh water sources

is a related problem that can occur where fresh and saltwater are in near proximity. Salinity measurements are often included in measurements of TDS.

- **Flow Alterations**: Activities such as dam construction and water withdrawals can alter natural water flow and threaten waterbodies. Reduced flows impair the ability of waterbodies to flush out nutrients and organic matter, thereby increasing contaminant concentrations. Additionally, lower water levels can affect aquatic species that require specific water levels and flow rates to survive. In contrast, problems such as degradation of river and stream bottoms, may also occur when water flow increases. Lack of riparian buffer and excess impervious surface without modern drainage techniques, such as bioretention ponds or green stormwater infrastructure, cause flow alterations, scouring of stream banks, and excess sedimentation. When rain falls on these surfaces and is directly routed to a river, it can cause rapid changes in flow volume and velocity. Additionally, impervious surfaces can limit ground water recharge, diminishing the quantity of ground water available for use, and increasing the cost of obtaining ground water.
- **Channelization**: Changes created by channelization and channel modification can harmfully alter waterbodies. Channel modifications alter the natural flow of water, as well as water temperature and sediment characteristics, which in turn can affect the water quality and wildlife in the waterbody.
- **Streambank Modification**: Lack of healthy vegetation buffers, channelization, and shoreline and streambank erosion can result in excessive sediment loads and increased turbidity and nutrient levels that can adversely affect aquatic vegetation, shellfish beds, and tidal flats.
- **Feedlots and Livestock Operations**: Animal waste can pose a significant threat to water quality. Oxygen-demanding substances such as aerobic bacteria, ammonia, nutrients (including nitrogen and phosphorus), solids, pathogens, and odorous compounds are common pollutants associated with animal waste. Manure is also a potential source of salts, trace metals, and, to a lesser extent, antibiotics, pesticides, and hormones. Animal waste and wastewater can enter waterbodies from spills or breaks of waste storage structures due to accidents or excessive rain.
- **Pastureland**: Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants, and reduces buildup of sediment on streambanks, wet meadows, and floodplains. This may result in nutrient runoff and sediment deposition in nearby waterways.
- **Irrigated Cropland:** Irrigation waters transported in open, unlined canals can seep into adjacent soils and carry soluble pollutants into ground or surface waters. Too much irrigation causes excess water to run off the land into surface waters or seep through the soil into the ground water. Irrigation waters can include pollutants such as sediment and organic solids, nutrients, including nitrogen and phosphorus, chemicals, metals, pesticides, salts, bacteria, viruses, and other microorganisms.
- **Land Disposal of Hazardous Waste**: While landfill units have safeguards, hazardous waste can still contaminate ground water if not properly treated before land disposal. Rain can also filter through hazardous waste and leach out hazardous chemicals into the ground water.
- **Municipal Discharges**: Wastewater is a potential source of pollution because it may contain organic and inorganic materials, especially if the wastewater is untreated or only partially treated. Discharged wastewater, particularly if untreated or partially treated, may increase excess nutrients in the receiving stream and can be a source of *E. coli*, enterococci, and other pathogens. EPA's *Office of Wastewater Management* (OWM) website has more information on wastewater management and municipal discharges.

- **Forestry**: Certain timber harvesting practices can disturb natural areas contributing to erosion, soil loss, and sedimentation. Forestry can also increase water flow through cleared sites and cause erosion along streambanks.
- **Mining**: Mining and mining waste can cause acid mine drainage, a metal-rich water formed by the chemical reaction between water and rocks containing sulfur-bearing minerals. Acid mine drainage is typical in areas where there is ore, or where coal mining activities have exposed rocks containing pyrite, which is a sulfur-bearing mineral. Even mineralized areas that have not been mined can have metal-rich drainage, which may be acidic. Mine drainage can contaminate drinking water and disrupt the growth and reproduction of aquatic plants and animals.

Monitoring Effectiveness of Protection and Restoration Activities

The goal of protection and restoration is to achieve quantifiable improvements in water quality. When designing and implementing water quality protection and restoration activities, the project plan should include measures and milestones to help determine whether the management measures are being completed and are addressing the water quality concerns. Consider short-term and long-term water quality measures as some parameters may change sooner than others. For example, riparian buffer zones and other stormwater management measures may reduce scouring and excess sedimentation before benthic macroinvertebrate community health improves. Consider that upstream stressors may limit the ability to demonstrate the effectiveness of a downstream best management practices (BMPs). It may be appropriate to update the QAPP and related documents to include the data requirements necessary to determine if the restoration activities are effective.

If the measures are not improving water quality as expected, then consider if:

- Management measures are being properly implemented by all responsible parties.
- There are other sources of the pollutant that the measures do not cover.
- There is a need to implement further special studies to evaluate effectiveness.

Program Evaluation

Program evaluations are important to ensure the program is still providing the information needed to advance and accomplish tribal goals. As Tribes accumulate monitoring data and perform assessments, it is necessary to evaluate whether the monitoring data are adequate to meet water quality goals. If the right data are not collected to meet water quality goals, Tribes may identify what additional information is needed and consider adjusting the monitoring program accordingly. If the Tribe wants to change an aspect of the water quality monitoring program, they will also need to update their QAPP and SOP documents and submit them to the EPA regional office for approval. EPA's *Developing a Tribal Water Quality Program Monitoring Strategy* supplement has more information on CWA goals.

Tribal Environmental Education and Outreach

Tribes may choose to provide information about the program to the community, including the results of the Water Quality Assessments. Water quality programs, particularly ones that involve voluntary activities, rely on active community involvement and public participation to succeed. A Tribe's community outreach and awareness program may include several topics related to the monitoring program, including information on waterbodies on the reservation, volunteer activities, human health concerns, management measures, pollution prevention, education, and general information. When conducting any public outreach activities, Tribes can reinforce the message with monitoring and

assessment data. The community may be more likely to share concerns or understand accomplishments if they see quantitative data that support the claims.

Informed and involved members of the community are more likely to support the Tribe's efforts to protect the environment. For example, if a goal is to address leaching from septic systems, the water quality program may work closely with homeowners and small businesses that use septic systems (Chapter 7: Program Expansion – Additional Activities has more information on septic systems). Taking pictures of activities and events and posting on social media may help illustrate work being completed. Depending on the activities that the Tribe chooses to implement, they may target different groups of the population. For example, if the Tribe wants to prevent pesticides from entering surface water, they may work with farmers or gardeners in the community to implement a pesticide and fertilization management program.

Salt River Pima-Maricopa Outreach Example

The Salt River Pima-Maricopa Indian Community (SRPMIC) considers the education of Native youth one of their most important goals. The SRPMIC Environmental Protection & Natural Resources Division's Water Quality Program (WQP) organizes community events to engage youth in learning about the natural resources and wildlife around them, and how their protection is vital. Despite the tumultuous year of 2020, the WQP made continuous efforts toward their ambitious environmental education and outreach goals.

During 2020, the WQP conducted presentations for high school students to discuss what the WQP does on tribal land to protect their water resources. Students learned about the importance of water quality, how to sample, and saw firsthand the important work the WQP staff were doing.

Activities such as these raise environmental awareness and give youth an opportunity to see some of the career opportunities that exist within tribal governments. The SRPMIC's outreach goals emphasize the impact of engaging community members in environmental issues and the importance of training future generations to be good environmental stewards.

Additional methods that communities have used to raise public awareness about water quality issues include:

- Tours of restored or impaired waterbodies.
- Educational workshops on pollution, source water protection, and septic system management.
- Events and programs such as "adopt-a-river," river cleanup days, and volunteer monitoring networks.
- Brochures, flyers, and newsletters on pollution, source water protection, and septic system management.
- No-penalty hazardous waste collection programs.
- Solicitation of public input in developing a septic system management program.

The Tribe may have public participation requirements that apply to tribal law. Tribes should consult a tribal attorney general or equivalent officer to see if any tribal public participation requirements apply. Partnering with the community (including potentially regulated entities), watershed groups, and others will help the Tribe understand the community's perspective and may give the Tribe access to data and information to make their program more effective. In addition, including those affected by the quality of the reservation waters may build support for the standards development process.

Figure 16. The SRPMIC Young River People's Council leading a student activity. Credit: Photo courtesy of the SRPMIC

Volunteer Programs

Volunteers from the community may be able to help Tribes implement their program, allowing Tribes to devote funding to other program areas. Community members may also have ideas that help Tribes define their program's needs and priorities. Tribes may also encourage volunteer groups to form and independently conduct activities that will support their water quality program goals. Tribes may consider incorporating volunteer recruitment into community outreach efforts and use available resources, such as:

- Staff from neighboring water quality programs who can provide technical assistance. Some Tribes with established water quality programs have mentored Tribes developing new programs.
- Volunteers who can help carry out some of the activities in the work plan. Several water quality programs have used volunteers from the community, local high schools, tribally sponsored internship programs, community colleges, and university programs.

EPA's *Volunteer Monitoring* website has more information about volunteer monitoring programs.

Northern California Tribal Stream Team

The Northern California Tribal Stream Team facilitates water quality monitoring knowledge and equipment sharing among tribal environmental staff primarily in Mendocino, Lake, and Sonoma counties in Northern California. Participating Tribes take turns hosting the meetings. This collaborative group has helped maintain tribal water quality programs during times of staff turnover and equipment failures. The Stream Team also works with youth through schools and other science, technology, engineering, and math (STEM) programs, demonstrating modern monitoring and restoration techniques and connecting those concepts to Indigenous values and knowledge.

Figure 17. Northern California Tribal Stream Team meeting at the Hopland Band of Pomo Indians Reservation, May 2018. Credit: Photo courtesy of the Northern California Tribal Stream Team

Working in Partnership with Other Tribes and States

Collaborating with neighboring Tribes, states, and EPA is a sound environmental planning and management practice because they often share the same environmental problems. Working together to resolve these problems benefits everyone. The Tribe may also benefit from contacting other organizations in the watershed, including local governments and watershed organizations.

Depending on the types of activities a tribal water quality program conducts in the watershed, they may be able to support regulatory programs of neighboring Tribes and states. For example, the Penobscot Indian Nation shares their water quality monitoring data with the Maine Department of Environmental Protection not only for resource management and planning purposes but also Section 305(b) reporting to Congress, which Maine is required to perform as part of their Integrated 303(d)/305(b) Report.

In some cases, Tribes may want to work even more closely with neighboring Tribes and states regarding WQS on common waterbodies or modify and adopt the WQS of an adjacent Tribe or state. These options can be quick and cost-effective ways to establish WQS that are more likely to result in consistent upstream and downstream standards.

There are many opportunities for negotiation, agreement, and cooperation between Tribes and states that can benefit both parties. Usually, these agreements have focused on information exchanges such as those in Oklahoma's *Submitting Assessments or Water Quality Data to the State of Oklahoma for Inclusion in the Integrated Report: A Guide for Tribes* and transboundary coordination, much like agreements commonly reached between states. Some agreements have also allowed Tribes to access state resources such as training, to protect water resources.

Chapter 6: Programmatic Reporting Requirements

Read this chapter…

- To understand the three programmatic reporting deliverables for the Section 106 Program.
- To identify the ten elements of a Monitoring Strategy.
- To understand flexibilities in the WQX data reporting requirement.
- To see what content to include in a Water Quality Assessment.

Chapter highlights:

- Table summarizing the three programmatic reporting deliverables for the Section 106 Program.
- Tables summarizing the frequency, due date, and relevant work plan component of each of the reporting deliverables.

Tribes are critical partners in helping demonstrate environmental results achieved using Section 106 funds. Tribal information furthers the understanding of national water quality and can be used by local, regional, and national decision makers.

Regular grant performance and programmatic reporting are typical components of EPA grants. Specifically, performance reports help EPA regional Project Officers ensure that Tribes are meeting their work plan objectives and project schedules. Programmatic reports provide specific information about a Tribe's water quality activities. This chapter focuses on:

- The three required programmatic reporting deliverables that Tribes provide to EPA:
    - A Monitoring Strategy.
    - Water quality data submitted into EPA's Water Quality Exchange (WQX)**.**
    - A Water Quality Assessment.
- Resources available to assist with their development.
- Considerations for providing additional reporting flexibilities.
- A summary of the programmatic and grant performance reporting requirements.

EPA needs to demonstrate regional and national results for the Section 106 Program and to understand conditions on Indian reservations in sufficient detail to make effective decisions at a national level. EPA is also responsible for ensuring that funding provided to grantees is used in accordance with the work plan and the grant terms and conditions.

The three required programmatic reporting deliverables contain tribal water quality information that support the program priorities of the Tribe. The Monitoring Strategy serves as the foundation and guide for tribal monitoring and assessment programs. The water quality data and Water Quality Assessments help Tribes compare water quality over time and make informed decisions about their program's future.

Table 8 is a summary of the three required programmatic reporting deliverables for the Section 106 Program.

Table 8. Summary of required programmatic reporting deliverables for the Section 106 Program

Required Programmatic Reporting Deliverable	Description
1. Monitoring Strategy	A Monitoring Strategy is a forward-thinking long-term plan for meeting water resource objectives. The document describes current and future monitoring plans and incorporates an implementation timeline and milestones, and identifies necessary enhancements.
2. Water quality data submitted through WQX	The water quality data collected by a Tribe and submitted to WQX is raw sampling information and part of many forms of information a Tribe might use to understand their water quality. Tribes should upload their data into WQX at least once a year.
3. Water Quality Assessment	The Water Quality Assessment is a backward looking or summary document that documents the data collected and how the Tribe is comparing water quality results over time. The assessment portion can help a Tribe make informed decisions about the conditions of their water and how their program will address their water quality needs in the future.

Monitoring Strategy

Comprehensive Monitoring Strategies help Tribes define water quality goals, document their existing water quality concerns, and plan, build, and expand their water quality programs. Tribes can develop new Monitoring Strategies or submit Monitoring Strategies they already developed using Section 106 funds or other funding sources such as Section 319 funds. More information is in Chapter 5: Development and Implementation of a Monitoring Program.

A 5-year Monitoring Strategy is a long-term plan for meeting each Tribe's identified water resource goals. The document describes current and future monitoring plans while incorporating a timeline and milestones for project implementation. The Monitoring Strategy should be comprehensive in scope. For instance, it should serve all water quality management needs while addressing as many tribal waters as possible, such as streams, rivers, lakes, reservoirs, estuaries, coastal areas, wetlands, and ground water. The strategy should also identify issues and needs hindering an adequate monitoring program. Where possible, a Monitoring Strategy should document the plans and resources needed to address existing gaps or weaknesses in a monitoring program.

Ten Elements of a Monitoring Strategy

1. Monitoring program strategy.
2. Monitoring goals.
3. Monitoring design.
4. Core and supplemental water quality parameters.
5. Quality assurance (QA).
6. Data management.
7. Data analysis/assessment.
8. Reporting.
9. Programmatic evaluation.
10. General support and infrastructure.

Tribes should review their Monitoring Strategy annually and revise the document to incorporate program changes. Tribes should submit their Monitoring Strategy for EPA review at least every 5 years.

Chapter 5: Development and Implementation of a Monitoring Program has more information on each element of a Monitoring Strategy.

How Monitoring Strategies Differ from QAPPs

While a Monitoring Strategy is a long-term general plan for meeting all water quality management needs, a Quality Assurance Project Plan (QAPP) is project specific. As described in Chapter 5: Development and Implementation of a Monitoring Program, the QAPP documents the type and quality of data that the program needs for specific environmental decisions and is directly connected to the activities in a Tribe's EPA-funded grant work plan. Each program's QAPP describes:

- Why, where, and how samples will be collected.
- How samples will be analyzed.
- Necessary data quality.
- How the Tribe will use and evaluate the data.
- The types of decisions that will result from data analysis.

Components of the Monitoring Strategy may be found in existing QAPPs and in some cases, the Monitoring Strategy is included as part of the Tribe's QAPP. Tribes and EPA regional staff may evaluate existing QAPPs and other programmatic documents to determine which Monitoring Strategy elements they cover. Based on these evaluations, EPA regions then determine the additional information the Tribes need to document to meet the Monitoring Strategy requirements.

How Monitoring Strategies Differ from Grant Work Plans

An annual work plan is more project-specific than a Monitoring Strategy. The work plan identifies the activities Tribes will accomplish for a set period and budget. Work plans include activities related to:

- Administering the water program.
- Managing the grant.
- Training.
- Conducting public education and outreach.
- Monitoring and assessment.
- Reporting.
- Other deliverables.

The monitoring and assessment components of a Tribe's work plan are the activities a Tribe will conduct during the grant period to support the long-term goals and objectives of the Tribe's Monitoring Strategy. However, the work plan does not necessarily include all plans and goals identified in a Monitoring Strategy. A Monitoring Strategy describes activities and enhancements the Tribe incorporates into their program over a longer time, making it more comprehensive and strategic in scope than a work plan. EPA does not require Tribes to submit monitoring strategies annually, therefore, this output may not be found in every annual work plan. However, review and revision of an existing Monitoring Strategy may be found routinely in multi-year work plans.

Water Quality Data Submitted Through WQX

At least annually, Tribes must submit water quality data to WQX for all water quality data they collect with EPA funding. Tribes should identify annual milestones for data input in their grant work plan. If Tribes cannot submit their data directly to WQX, they must submit a justification as to why they could not load data to WQX and provide the Project Officer with the data in a WQX compatible format. (The Alternate Data Submission section below has more information.)

EPA Headquarters, EPA regional offices, and Tribes have developed training materials and templates for data submission. More information is available through EPA regional offices and EPA's *Water Quality Data Upload with WQX* website and additional support is available at wqx@epa.gov.

WQX Compatible Data

To submit data into WQX, there is some required information about the data, known as metadata. Required metadata include:

- Project name.
- Project identifier.
- Monitoring location name.
- Monitoring location type, such as river, stream, or lake.
- Collection method.
- Characteristic name, for example, pH, turbidity.
- Results metadata such as date, analytical methods, unit of measure, sample fraction, and other conditional metadata depending on media type (biological, water, sediment).

Alternate Data Submission

While EPA requires Tribes to upload all tribal data to WQX, EPA may waive this requirement in some instances and allow the Tribe to submit their water quality data to their Project Officer in a WQX compatible format, along with a justification. Tribes can use the WQX Web Template for their data, even if they do not submit the data directly to WQX. Another option is to provide an Excel spreadsheet with the required metadata.

Justification examples:

- Inadequate internet access.
- Funding limitations.
- Loss of key staff.
- Training needed.

The Tribe's justification for waiving the WQX submission should include: a description of the limitation or impediment to water quality data entry directly to WQX (see the "Justification examples" text box), a proposed plan to address the issue, and a proposed time frame to meet the programmatic reporting requirement. Information provided in the justification will assist EPA in addressing barriers to data submission to WQX, where possible. Tribes should send WQX compatible data and justification details to their regional Project Officer in accordance with the annual milestone in their grant work plan. A sample justification is provided in Appendix C: Sample Justification for WQX.

Water Quality Assessment

Tribes develop a Water Quality Assessment every one to two years, with the due date found in the EPA-approved grant work plan. Tribes should discuss the frequency of submitting their Water Quality Assessment with their EPA regional Project Officer to determine if annual or two-year reporting best supports their program objectives and retains capacity. The complexity and length of the Water Quality

Assessment will vary based on the Tribe's monitoring program, staff experience, capacity, and available funding. For instance, Tribes with established programs may include more complex narrative and graphical descriptions of water quality goals and how to achieve them, while Tribes that have started their programs more recently may deliver baseline monitoring type reports. Tribes might be able to identify the causes and possible sources of water quality impairment/degradation in their Water Quality Assessments. Table 9 lists questions that the Water Quality Assessment addresses and examples of content to include.

Table 9. Questions that the Water Quality Assessment addresses along with example content

Potential Questions when Developing Assessments	**Information to Consider**
What data are available?	• Narrative text with site descriptions. • Basic data summary table(s). • QA/Quality Control (QC) review.
What do the data represent?	May include information above, plus: • Map of monitoring locations. • Data displayed graphically. • QA/QC summary. • Thresholds for results comparison. • Data observations.
What progress has the program made toward their water quality management goals?	• Assessment of condition and trends, as available. • Identify causes and possible sources of impairments. • Assessment methodology.

The Water Quality Assessment contains basic information about water quality monitoring activities, assessment decisions, and describes how the program is meeting the goals laid out in the Monitoring Strategy. As more monitoring is conducted, the Tribe's Water Quality Assessment becomes increasingly comprehensive. The major components of a Water Quality Assessment for a Tribe should include the following:

1. An atlas table of tribal water resources. An atlas should include the estimated number of stream miles, lake acres, wetland acres, or estuarine square miles on the Tribe's reservation. This information will most likely stay the same from year to year unless the land base changes.
2. A narrative description of tribal water quality monitoring programs and assessment methods. This information will most likely stay the same from year to year unless the land base changes. Refer to Chapter 5: Development and Implementation of a Monitoring Program for more information on developing a water quality monitoring program.
3. Narrative description of results of water quality monitoring on the Tribe's reservation. This should include an interpretation and summary of the findings of tribal monitoring activities, including probable causes and sources of impairment.
4. Brief narrative descriptions of issues of tribal concern and potential actions to address them.

The *Tribal Assessment Modules* on EPA's Ambient Water Monitoring and Assessment website have more information on Water Quality Assessments, including examples and technical guidance.

Programmatic Reporting Flexibilities

EPA recognizes that staffing, financial constraints, and other factors vary among Tribes. Therefore, EPA regional Project Officers may adjust individual reporting requirements on a case-by-case basis. EPA may waive a specific requirement, for instance, if a Tribe can demonstrate that the required deliverables would cause an undue hardship, or that there are circumstances beyond the Tribe's control. Some potential examples include, but are not limited to, natural disasters, such as fire or drought, and other hardships, such as a pandemic, that may limit the Tribe's ability to conduct and report monitoring activities.

Freedom of Information Act

Tribes may need to protect certain information from release. For example, confidential business information, some personal privacy information, and limited other tribal information may be exempt from disclosure under the Freedom of Information Act (FOIA) or special provisions at the EPA regional level. Tribes should discuss any data sensitivity issues with the Project Officer during work plan negotiations.

Grant Performance Reporting

All grantees are required to provide performance reports and to participate in joint evaluations. Chapter 3: Grant Requirements includes more information on financial and performance reporting requirements.

Summary of Reporting Deliverables

Table 10 provides a summary of the three required programmatic reporting deliverables and other common deliverables for the Section 106 Program. Tribes must include all the elements in Table 10 in their work plan as programmatic reporting and performance deliverables and provide the deliverables to EPA no less frequently than listed in Table 10. Tribes may be responsible for other administrative and financial reporting requirements under 2 CFR 200.328.

Table 10. Reporting deliverables for the Section 106 Program

Monitoring Strategy	
Frequency	Submit at least every 5 years. Review annually to identify any necessary revisions.
Due Date	Due 5 years after the previous Monitoring Strategy was reviewed and submitted to EPA.
Work Plan Component	At least every 5 years a commitment and output to develop, review, or revise a Monitoring Strategy when appropriate. EPA encourages Tribes to include an annual review of their Monitoring Strategy as a work plan commitment to identify any necessary revisions.
Format	See the *Developing a Tribal Water Quality Program Monitoring Strategy* supplement.
WQX Data Submittal	
Frequency	Annually, for all water quality data they collect with EPA funding. Or, if the Tribe cannot submit data directly to WQX, then annually submit data in a WQX compatible format directly to EPA regional staff along with a justification of why they could not load their data to WQX.
Due Date	Due with the Final Performance Report (120 days after grant project period ends).
Work Plan Component	Annual submittal as a work plan commitment and an output.
Format	More information is in the *Tribal Data Management for WQX Submission* supplement. Also see the *Water Quality Data Upload with WQX* website or e-mail wqx@epa.gov.
Water Quality Assessment	
Frequency	Every one or two years. Tribes should work with their EPA regional Project Officer to determine if the tribal water quality program is best supported by an annual or two-year reporting cycle.
Due Date	Due with the Final Performance Report (120 days after grant project period ends).
Work Plan Component	Identified as a commitment and output in the grant work plan every 1 or 2 years.

Quality Assurance Project Plans	
Frequency	Submit with each new sampling project and as specified in the grant award. Complete an Annual Review each year.
Due Date	EPA must approve the QAPP before Tribes can collect or use environmental data described in the QAPP.
Work Plan Component	Required annual work plan commitment to review QAPP.
Format	*Quality Assurance Project Plan Development Tool*.
Performance Report	
Frequency	The grant agreement will specify quarterly, semi-annually, or annually.
Due Date	Select one that corresponds to the frequency (example dates for a grant awarded on October 1): *Quarterly* 1. Quarter 1 Progress Report (October to December). 2. Quarter 2 Progress Report (January to March). 3. Quarter 3 Progress Report (April to June). 4. Quarter 4 Progress Report (July to September). *Semi-annually* 1. Semi-annual Progress Report (October to March). 2. Semi-annual Progress Report (April to September). *Annually* Annual Progress Report (October to September). Reports submitted annually by the non-Federal entity and/or pass-through entity must be due no later than 90 calendar days after the reporting period. Reports submitted quarterly or semiannually must be due no later than 30 calendar days after the reporting period.
Work Plan Component	Listed as a work plan commitment and output. Submitted as a deliverable.
Format	Detailed progress reports for each grant component and describes achievement of milestones. 40 CFR 35.515 2 CFR 200.329

Final Performance Report ("close-out report")	
Frequency	Submit 120 days after grant closes.
Due Date	Due 120 days after grant project period ends.
Work Plan Component	Submitted as a deliverable at the end of the grant period.
Format	Summary of activities successfully completed to address all work plan commitments. 40 CFR 35.515 2 CFR 200.329

Chapter 7: Program Expansion – Additional Activities

Read this chapter…

- To learn about optional activities that expand water quality protection efforts.
- To understand what is meant by a watershed approach.
- To consider how a watershed approach can develop into a Tribal Nonpoint Source Program.

Chapter highlights:

- Strategies to protect source water.
- Activities to properly manage decentralized systems to protect water quality.
- Major steps of the watershed planning process.

This chapter contains information on additional, activities that tribal water quality programs can implement to expand their water quality protection efforts using Section 106 funding. The activities in this chapter are organized into three categories: source water protection, decentralized wastewater treatment systems, and watershed planning. None of the activities in this chapter are required by federal regulations or require Tribes to obtain CWA authorities. However, Tribes may find these activities especially valuable as they look for ways to work toward their water quality program goals or are interested in obtaining treatment in a similar manner as a state (TAS) for the Section 319 Program.

The activities in this chapter support addressing nonpoint source (NPS) pollution using a watershed approach. NPS pollution is from diffuse sources without a single point of origin, including pollution from agricultural lands, urban areas, and failing on-site wastewater treatment systems.

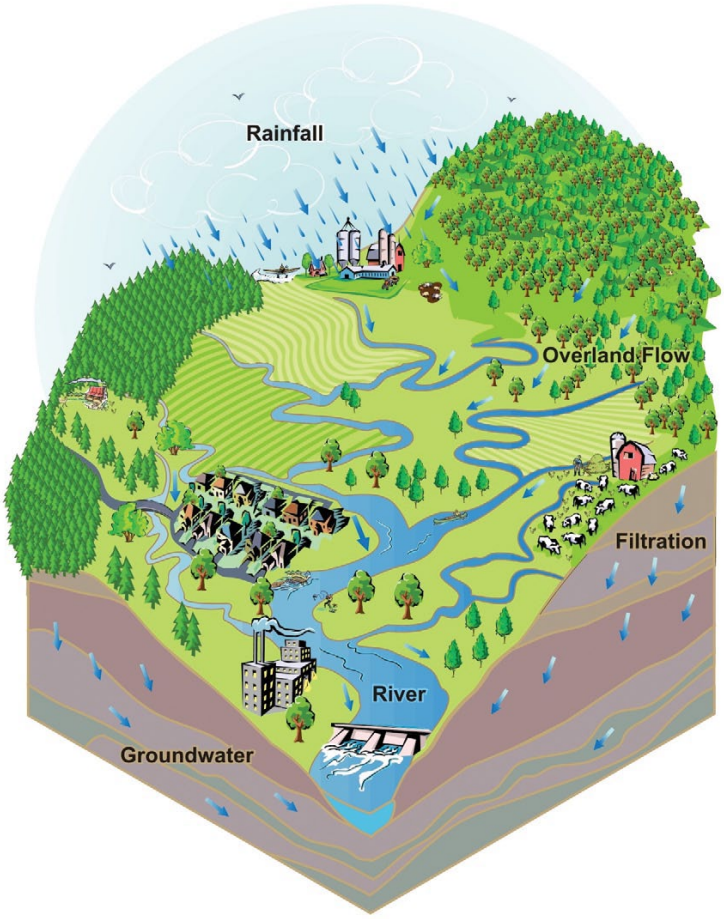
The Watershed Approach

A watershed is a geographic area in which all falling water drains to a common waterbody (Figure 18). Everyone lives in a watershed. Watersheds may be as small as a few acres or extend over thousands of square miles. Reservations often cover only part of a watershed. A watershed can cross tribal and state boundaries and fall under the jurisdiction of tribal, state, and local governments.

The watershed approach focuses efforts on a particular watershed, which is the area of land that drains to a specific point, such as the confluence of two rivers, a lake, or a coastal estuary. The watershed approach looks holistically at the interaction between activities on the land and the health of the waterways, wetlands, lakes, streams, rivers, and estuaries that the land drains into. The watershed approach is characterized by these unique features:

1. A geographic area that is hydrologically defined (a watershed or drainage area).
2. Includes a community-based coordinating framework to involve all stakeholders.
3. Uses adaptive management to strategically address priority water resource goals.

Figure 18. Illustration of a watershed



Source Water Protection

Source water includes any reservoirs, streams, rivers, and aquifers used by public water systems[10] to supply drinking water to their customers. Regardless of whether a Tribe operates their own drinking water system, a Tribe can still participate in source water and wellhead protection activities to ensure access to safe drinking water into the future.

Strategies for Source Water Protection

Source water protection involves:

- Identifying any significant potential source water contaminants.
- Maintaining source water quality.
- Preventing contamination from occurring (for example, with contingency planning).
- Determining the best available source water.

[10] A public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. A public water system may be publicly or privately owned.

As a first step in source water protection, Tribes can conduct a source water assessment. A source water assessment identifies public drinking water sources in the watershed and any current or potential sources of contamination. Tribes can connect with local watershed collaboratives, neighboring states, or others who are working on source water protection to leverage goals and potential funding for source water protection efforts.

Source water assessments provide basic information to determine the source water quality, whether the source water is safe for drinking, and how to prioritize actions to protect the source water from contamination. The final product of a source water assessment is a report that includes the following three major elements:

- A delineation or map of the land that contributes to the drinking water supply (often called the source water protection area).
- An inventory of all existing and potential sources of contamination in the delineated area.
- A determination of how susceptible the water supply is to sources of contamination.

Tribes can summarize their source water assessment results and make them available to the public for knowledge sharing and further engagement. For example, Tribes can convene public workshops; make copies available at public libraries, local government offices, or water systems; and post the assessment results online.

The results of the assessment are used to develop a Source Water Protection Plan. A Source Water Protection Plan is an action plan that identifies and prioritizes long-term management strategies for protecting sources of drinking water.

Connection to Section 106

Increasingly, EPA, Tribes, states, and interstate agencies are working together to develop basin-wide approaches to water quality management, which coincides with the watershed-based approach that source water protection also encourages. The following are eligible activities for Section 106 funding:

- Developing source water assessments and protection strategies and plans.
- Monitoring to determine source water quality.
- Outreach and communication on source water activities.

Additional Resources

- EPA's *Source Water Protection* website has more information on source water assessments.
- Tribes can use EPA's *Contact Us about Ground Water and Drinking Water* form to inquire for more information.
- EPA's *FITS: Funding Integration Tool for Source Water* is a tool that explains how users can integrate various federal funding sources to support activities that protect sources of drinking water.
- The *Drinking Water Mapping Application to Protect Source Waters (DWMAPS)* is an online mapping tool that helps tribal, state, and utility drinking water professionals in concert with other mapping tools to update their source water assessments and protection plans.
- EPA Region 10's Environmental Finance Center created the *Tribal Source Water Protection Plan Guidance Document* to assist tribal systems in protecting their drinking water sources from potential sources of contamination.

- For Tribes that use ground water for their sources of drinking water, see information and guidance on wellhead protection at *Washington State's Wellhead Protection Program Guidance Document*.

Decentralized Wastewater Treatment Systems

Decentralized systems are also called:

- Onsite wastewater treatment systems.
- Septic systems.
- Cluster systems.
- Package plants.
- On-lot systems.
- Individual sewage disposal systems.
- Private sewage systems.

Decentralized wastewater treatment systems (or "septic systems") are a significant component of the U.S. wastewater infrastructure and are used by approximately 20 percent of U.S. households. They derive their name from their location—they treat and dispose of relatively small volumes of wastewater close to the source, typically on the property of individual homes and businesses. A typical onsite (single home) decentralized system consists of a septic tank and either a drain field or soil absorption field. These systems are common in suburban and rural locations not served by a centralized public sewer system.

The performance of decentralized systems is a national issue of great concern to EPA. Decentralized systems can significantly threaten public health and water quality when they are not properly sited, designed, installed, operated, and maintained. Few decentralized systems receive proper maintenance because homeowners are either unaware of the need for maintenance or find it too costly. In addition, most regulatory programs do not hold homeowners accountable for the performance of their decentralized system after installation.

Decentralized systems can contribute to an overabundance of nutrients in ponds, lakes, and coastal estuaries, leading to an overgrowth of algae and other nuisance aquatic plants. The concentration of fecal coliform bacteria associated with human sewage and with organic wastes from livestock and wildlife have caused closures and harvest restrictions in shellfish growing areas. EPA is also concerned with the presence of nitrates in ground water, particularly in rural areas where residents rely on individual wells and decentralized systems to serve relatively small lots. Improving the performance of decentralized systems through better management and proper maintenance is essential to improve the quality of U.S. waters.

Strategies for Decentralized System Management

Proper management of decentralized systems involves:

- Public education, participation, and engagement.
- Planning, design, site evaluation, construction, and permitting.
- Oversight of system performance, including inspections and monitoring, and operation and maintenance.
- Septage disposal.
- Training and certification or licensing.
- Recordkeeping, inventorying, and reporting.
- Financial assistance and funding.

Taking decentralized systems into account is part of effective watershed-based planning. Appropriate management programs for on-site systems support the activities and approaches in other EPA programs, such as watershed management, NPDES, total maximum daily loads (TMDLs), water quality standards (WQS), source water assessment and protection, and NPS control. They also contribute to achieving WQS and public health goals. EPA's *Septic Systems* website has more information about decentralized systems.

Connection to Section 106

A Tribe may use Section 106 funds for activities related to decentralized systems, including the following:

- Participating in public outreach, education, and engagement programs.
- Participating in programs to promote stakeholder and partner agency involvement.
- Conducting watershed and ground water assessments.
- Establishing public health and water resource protection goals.
- Conducting targeted surface and ground water monitoring studies to characterize the impact of malfunctioning decentralized systems, discharging and non-discharging, on surface and ground water quality.
- Assessing the water quality impacts from decentralized systems.
- Identifying critical areas where decentralized systems pose elevated risks (for example, sites with high water tables, high densities of existing systems, near sensitive surface waters, or in floodplains).

A Tribe may not use Section 106 funds to construct, maintain, or replace decentralized systems.

Additional Resources

EPA regional and state offices have more information on eligible activities related to decentralized systems. EPA's *Contact Us About Septic Systems* website includes links to EPA regional and state contacts.

EPA Resources

- EPA's *Frequent Questions on Septic Systems* includes general information about septic systems, caring for and maintaining septic systems, signs of system failure, inspection and compliance, paying for septic systems, and the environmental and public health impacts of septic systems.
- EPA's *Septic Systems Reports, Regulations, Guidance, and Manuals* website includes the "Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems" and "Handbook for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems" which guides entities through preventing decentralized system failure, improving decentralized system management practices, and enhancing the performance and reliability of decentralized systems. The guidelines help improve system performance by encouraging the institutionalization of management concepts and raising the quality of tribal, state, and local management programs.
- EPA's *Using a Responsible Management Entity (RME) to Manage Tribal Onsite (Septic) Wastewater Treatment Systems* is a document developed by EPA in cooperation with the Indian Health Service (IHS) that describes a centralized approach for managing decentralized systems using a responsible management entity for oversight and maintenance.

- EPA's *SepticSmart Week* seeks to inform homeowners on proper septic system care and maintenance, assist local agencies in promoting homeowner education and awareness, and educate local decision makers about infrastructure options to improve and sustain their communities. EPA's *SepticSmart Education Materials* includes educational resources such as brochures, factsheets, videos, and posters.
- EPA's *Decentralized Wastewater Partnership*, created in 2005, seeks to improve the overall performance and management of decentralized systems. EPA Headquarters, EPA regions, state and local governments, and national organizations facilitate the exchange of information on decentralized system technology, collaborate to support training efforts, promote public awareness of septic system care and maintenance, and produce informational materials on decentralized systems.

Watershed-Based Approaches to NPS Management

The following subsections identify some NPS activities Tribes can conduct using Section 106 funding in advance of establishing a Section 319 funded NPS Program. The NPS Assessment Report and NPS Management Program Plan establish the basis for a Tribal NPS Program. Tribes seeking TAS for Section 319 funding are required to submit an EPA-approved NPS Assessment Report and NPS Management Program Plan with their application. Chapter 9: Other Funding Options has more information about Section 319 NPS grants.

Developing an NPS Assessment Report

The NPS Assessment Report is a comprehensive technical summary of the condition of tribal water resources. The report provides the foundation for the scope and direction of the Tribe's NPS Program. It is important to characterize all waterbodies, including those that are partially on nontribal lands, if possible. Thus, partnering with external entities can be important to the overall process. Two types of information that will determine the scope and direction are:

- NPS-related impairments for targeting restoration efforts.
- Waterbodies of high quality or cultural significance that need protection from existing or future sources of polluted runoff.

The NPS Assessment Report must include four types of information (referred to as the four legislative conditions):

1. An identification of waters that cannot be expected to attain or maintain tribal WQS or thresholds without the control of NPS pollution.
2. An identification of the categories and subcategories of NPS pollution that contribute to the water quality problems for the individual waters identified in 1 above.
3. A description of how the Tribe will identify the best management practices (BMPs) needed to control each category and subcategory of NPS pollution identified in 2 above, as well as a description of how the BMPs will be used to reduce the level of pollution resulting from these sources.
4. A description of any existing tribal, state, federal, and other programs that might be used for controlling NPS pollution.

Tribes should utilize the Section 106 Water Quality Assessment as the foundation for building an NPS Assessment Report. Additional information on developing an NPS Assessment Report is in EPA's

Handbook for Developing and Managing Tribal Nonpoint Source Pollution Programs under Section 319 of the Clean Water Act.

NPS Management Program Plan

The NPS Management Program Plan (Management Plan) describes how the Tribe will use the information in the NPS Assessment Report to address the water quality impairments and threats they identified. The Management Plan elaborates on the specific activities they will undertake to improve or maintain conditions as documented in the NPS Assessment Report. CWA Section 319(b)(2) specifically requires the following minimum components to be covered in an approvable Management Plan:

1. Identification of BMPs and other measures to reduce NPS pollutant loadings by category and subcategory.
2. Identification of programs that can help implement an NPS Management Program.
3. A schedule containing annual milestones for using the program implementation methods identified in 1 and 2 above.
4. Certification from the tribal legal counsel that the Tribe's laws provide adequate tribal authority to implement the program.
5. Identification of all potential sources of federal and other financial assistance programs and funding that might support an NPS program.
6. Identification of the federal financial assistance programs and federal development projects that affect tribal water resources.
7. Identification of local and private experts (such as range conservationists, fish and wildlife staff, hydrologists, agricultural experts) to help develop and implement an NPS Management Program.
8. Development and implementation, to the maximum extent practicable, of the program on a watershed basis.

EPA's *Handbook for Developing and Managing Tribal Nonpoint Source Pollution Programs Under Section 319 of the Clean Water Act* has more information on developing an NPS Management Program Plan. Tribes can use EPA's *Handbook for Developing Watershed Plans to Restore and Protect Our Waters* framework to organize activities on the basis of watershed boundaries.

Connection to Section 106

Tribes can use Section 106 grants to establish watershed-based goals that relate to and help achieve their water quality goals. Watershed-based goals can address current and historical distribution and condition of important resources in a watershed, or the physical and ecological setting of the watershed. Common watershed-based activities that Section 106 grants can fund include:

- Characterizing water quality.
- Evaluating the impacts of forestry, agriculture, urbanization, septic systems, or construction and effects of land use on water quality.
- Identifying causes of streambank erosion.
- Investigating causes of declines in ground water quantity.
- Characterizing stormwater runoff.
- Conducting community education and outreach about the watershed.

- Developing watershed maps showing waterbody types, tribal cultural sites, species distribution, and sites of water quality impairment.
- Developing local and community watershed organizations.
- Inventorying possible restoration sites.
- Determining causes of floods.
- Collecting the information needed to develop NPS Assessment Plans and NPS Management Plans and to write the plans.

Tribes cannot use Section 106 funds to install BMPs and conduct restoration activities that **implement** watershed-based plans.

Additional Resources

The resources below can help develop an effective watershed-based plan.

- EPA maintains *How's My Waterway*, a website with information about watersheds.
- EPA's *Community-Based Watershed Management Handbook* and *Watershed Analysis and Management (WAM) Guide for Tribes* may also be helpful.
- The *Center for Watershed Protection* also provides many tools and guidance materials.

Chapter 8: Program Expansion – Regulatory Authorities

Read this chapter…

- To learn how CWA regulatory programs expand water quality protection efforts: CWA Sections 303(c), 401, 303(d), 402, and 404.
- To obtain information about TAS requirements for each CWA regulatory program.
- To identify tools and resources to develop CWA regulatory programs.

Chapter highlights:

- Developing WQS under Section 303(c).
- Conducting the certification process under Section 401.
- Listing impaired waters and developing TMDLs under Section 303(d).
- NPDES permits under Section 402.
- Permits for the discharge of dredged or fill material into "waters of the United States" under Section 404(g).

Once Tribes have established their water quality programs, they can consider options to expand their water quality programs to include additional CWA regulatory authorities using their Section 106 funding. These CWA authorities help restore and maintain the chemical, physical, and biological integrity of waters by focusing on water quality and protection of aquatic resources. Many Tribes grapple with water quality challenges ranging from climate change, drought, population growth, aging infrastructure, and other factors. EPA collaborates with Tribes and other partners, including states and municipalities, to identify how existing CWA programs can support their water quality needs.

Information collected as part of the monitoring program can help Tribes understand the status and variability of water quality on the reservation, make informed management decisions, and identify sources of impairment from point source and nonpoint source (NPS) pollution. Additionally, monitoring results provide information to identify specific parameters of concern for waterbodies (such as high levels of toxic chemicals) and support effective water quality management. This information also helps Tribes that want to develop and implement a water quality standards (WQS) program.

The sections in this chapter provide information on the following CWA regulatory programs:

- Section 303(c): the WQS program.
- Section 401: the water quality certification program.
- Section 303(d): listing of impaired waters and development of total maximum daily loads (TMDLs).
- Section 402: the National Pollutant Discharge Elimination System (NPDES) permitting program.
- Section 404: the permitting program for discharges of dredged or fill material.

This chapter provides informational resources that help Tribes determine which CWA regulatory programs to consider in order to meet their water quality goals. Tribes exploring the CWA authority approach to water quality management often consider developing and submitting WQS for EPA approval as a first step. EPA strongly recommends that Tribes also collaborate with their EPA regional office when considering which CWA approaches best address their water quality needs.

Eligibility for Treatment in a Similar Manner as a State (TAS)

Consistent with Section 518, Tribes may apply for TAS to administer specific programs in the CWA. General statutory requirements for TAS in Section 518(e):

1. The Tribe is recognized by the Secretary of the Interior.
2. The Tribe has a governing body carrying out substantial governmental duties and powers.
3. The functions to be exercised by the Tribe pertain to the management and protection of water resources that are held by an Indian Tribe, held by the United States in trust for Indians, held by a member of an Indian Tribe if such property interest is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation.
4. The Tribe is reasonably expected to be capable, in EPA's judgment, of carrying out the functions to be exercised in a manner consistent with the terms and purposes of the CWA and all applicable regulations.

Where the Tribe has previously qualified for eligibility or "TAS" under a CWA program, the Tribe need only provide the required information which has not been submitted in a previous TAS application. Each of the CWA regulatory programs may have regulations that further define the specific TAS requirements for each CWA program. The statute and regulations provide complete statements of the TAS requirements. Tribes should also work with their Project Officer to identify specific needs for their TAS application.

Section 303(c) WQS

Section 303(c) WQS are central to the CWA regulatory programs. WQS establish a foundation for measuring the success of water quality programs and serve as the regulatory basis for controlling pollutants entering the "waters of the United States." Tribes and EPA consider WQS when evaluating Section 401 certifications. Tribes and EPA also rely on WQS for listing impaired waters and developing TMDLs under Section 303(d). Permitting programs use WQS to calculate water quality-based effluent limits (WQBELs) for discharges to waters. Those effluent limits must also ensure compliance with any downstream WQS. Setting clear WQS is also important for watershed planning, protection, and restoration.

Tribes can develop WQS solely for their own use under tribal law, or they can obtain authority to adopt and administer WQS under the CWA. Both approaches are eligible uses for Section 106 grant funding.

Tribes establish WQS to meet the following objectives set forth in CWA Section 101(a):

- Restore and maintain the chemical, physical, and biological integrity of the Nation's waters.
- Wherever attainable, achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.

WQS consist of the following elements:

- Designated uses such as water recreation, aquatic life, and public water supply.
- Water quality criteria necessary to protect the designated uses, both numeric and narrative.

- Antidegradation requirements to maintain and protect existing uses, protect high-quality waters, and maintain water quality in waterbodies designated as Outstanding National Resource Waters.
- General WQS policies, such as to allow mixing zones, issue WQS variances, or issue compliance schedules.

When establishing WQS, the Tribe considers the water's use and value for public water supply, agriculture, industry, navigation, and other purposes.

Developing WQS

When developing WQS, some Tribes may decide that WQS effective under tribal law are sufficient to meet their WQS goals, while others may wish to develop WQS with the intention of submitting them to EPA for approval under the CWA. Relying on the tools and resources described in this section can help ensure a Tribe's WQS are protective of their water resources in either case.

Some Tribes have used WQS to achieve the following goals:

- Assess existing water quality.
- Protect aquatic life.
- Protect fish consumers.
- Define allowable levels and types of discharges.
- Establish priorities for the allocation of treatment resources and cleanup efforts.
- Ensure additional protection for source water.

Table 11 provides information on some of the differences between WQS under tribal law and CWA authority.

Table 11. WQS under tribal law and under CWA authority

Action	WQS under Tribal Law	WQS under CWA Authority
Designate water uses	Tribal choice of uses.	Include aquatic life, human health, and recreation uses unless justified as unattainable.
Set water quality criteria	Tribal choice of criteria.	Protect designated uses.
Protect against degradation of water quality	Tribal choice to protect.	Have an antidegradation policy and implementation methods.
Involve public	Tribal choice.	Include holding public hearings and addressing public comments.
Adopt WQS formally by tribal government	*Tribal choice.	Adopt under tribal law and submit to EPA for approval.
Regulate discharges based on complying with WQS	Under tribal law.	EPA can enforce through CWA permits (tribal and upstream waters).
Keep WQS up to date with new scientific information	Tribal choice.	Conduct public review every three years (triennial review).

**If Tribes adopt WQS formally under tribal law they may apply under certain circumstances for regulatory purposes.*

EPA has developed several tools and resources to help Tribes develop WQS. EPA's *Model WQS Template for Waters on Indian Reservations* can serve as a foundation for Tribes seeking to develop their own WQS. This template provides basic language covering the primary elements of WQS that a Tribe can adopt directly, while allowing a Tribe to add or modify language to align with their own water quality goals. Given that each Tribe's situation and local conditions are unique, coordinating with their EPA regional office is important to ensure successful use of the template.

The template draws information from various WQS resources available on EPA's website. This includes numeric water quality criteria for human health and aquatic life, which EPA periodically updates in the template to reflect its latest national recommendations. EPA's *Water Quality Criteria* website provides more information about these criteria, including information about how to adjust criteria values to best reflect local conditions and ensure protection of designated uses.

EPA's *Tribal/State Human Health Criteria Calculator* generates a customized numeric human health criteria table. The table is based on EPA's national recommended human health water quality criteria, adjusting for a selected fish consumption rate (FCR) and cancer risk level (CRL). EPA's default subsistence FCR may lead to human health criteria values that are more protective of human health. Tribes can adjust these inputs to generate criteria specific to their waters. For example, Tribes with supporting documentation, such as a FCR survey, can enter their own FCR. EPA encourages Tribes to work with their EPA regional office to determine the appropriate FCR.

EPA's *Water Quality Standards Handbook* has additional WQS-related information and is a compilation of EPA's WQS program guidance. The handbook includes recommendations for reviewing, revising, and implementing WQS.

Drafting Tribal Code Based on WQS

Once the Tribe has drafted their WQS standards, they should pursue a mechanism to incorporate them into law or regulation on their reservation (for example, by amending their tribal code). Tribes may wish to work with their legal department during this process. The department can help with the structure and language of the WQS, and with acquiring the appropriate approvals and signatures. Tribes may want to share a draft of their tribal code with others for informal review (including their tribal council, EPA, and neighboring Tribes and states) to identify any potential problems or additional topics to address, and to confirm that the WQS will help meet their program goals.

Obtaining TAS

Many Tribes consider it an expression of tribal sovereignty to have TAS to administer regulatory programs, such as WQS, over their reservations. Tribes seeking the authority to adopt and use WQS under the CWA must apply to EPA for TAS. Tribes should reference EPA's *TAS for the Water Quality Standards Program: Overview* for a general summary of the TAS process and some of its benefits. EPA's *TAS for the Water Quality Standards Program: Frequently Asked Questions* provides answers to questions regarding the TAS for WQS application process, such as why a Tribe might seek TAS for WQS, and eligibility requirements.

EPA's *TAS for the Water Quality Standards Program: Procedural Steps for Tribal TAS Applications* resource outlines the steps for tribal TAS applications. These steps include the application submission

process, comment period, EPA's review, and the final stage when EPA conveys to the Tribe its decision regarding an application.

EPA's *Water Quality Standards Tools for Tribes* website includes a TAS application template that provides an explanation and organization of the information Tribes must submit to demonstrate they meet the eligibility requirements for TAS approval for the WQS program.

EPA's *Actions on Tribal Water Quality Standards and Contacts* website has a complete list of Tribes that have been approved for TAS and the subset of Tribes that have EPA-approved WQS. This website contains links to pages associated with each Tribe. These pages each have the decision document outlining EPA's TAS for WQS decision and a copy of the Tribe's EPA-approved WQS.

Tribes should submit complete TAS applications to the appropriate EPA regional office in accordance with EPA's regulations at 40 CFR 131.8. Tribes that receive TAS for WQS are also granted TAS for Section 401 certification. See 40 CFR 131.4(c). More detail on Section 401 is below. In addition, Tribes with TAS for WQS are also "affected states" under the Section 402 NPDES program (CWA Sections 402(b)(3) and (5); 40 CFR 122.4(d)). As affected states, the Tribes receive notice and an opportunity to comment on certain permits, including upstream state permits, issued under the CWA NPDES program.

Submitting WQS for EPA Approval

EPA recommends that Tribes with TAS for the WQS program (hereafter authorized Tribes within this Section 303(c) WQS section) work closely with EPA to develop a WQS package for submission and approval. EPA reviews all new and revised WQS that authorized Tribes submit to ensure that they comply with the CWA and EPA's WQS regulation. Upon EPA approval, the tribal WQS become effective under the CWA. EPA has authority to propose and promulgate federal WQS, if necessary, to replace or augment tribal WQS. Federally promulgated WQS are also effective under the CWA.

Under the CWA, the public must have an opportunity to participate in developing and reviewing WQS. Authorized Tribes accomplish this by holding a public hearing and public comment on their proposed WQS before the WQS become effective, and on existing WQS at least once every three years thereafter (triennial review). For authorized Tribes that wish to conduct online public hearings in lieu of in-person public hearings, EPA's *Options for Modernizing Public Hearings for Water Quality Standard Decisions Consistent with 40 CFR 25.5* may be useful.

EPA can help resolve disputes concerning WQS. EPA generally recommends that authorized Tribes and states work together to ensure their WQS consider neighboring authorized Tribes' and states' WQS, and downstream WQS. EPA has a mechanism to resolve any unreasonable consequences caused by differing WQS set by authorized Tribes and states for common bodies of water. According to EPA's *Tribal-State WQS Dispute Resolution Mechanism* resource, an authorized Tribe or state may request EPA involvement in a dispute. If appropriate, the EPA Regional Administrator will work with the parties to reach an agreement.

Connection to Section 106

Tribes can use their Section 106 funds to support developing TAS packages and developing and implementing WQS for use under tribal law or use under the CWA. Chapter 9: Other Funding Options provides information on how Tribes can also use General Assistance Program (GAP) funds for capacity development activities including to develop TAS packages and developing WQS.

Participation Opportunities for Tribes without Assuming the WQS Program

There are many reasons a Tribe might not seek TAS for Section 303(c) WQS. For example, Tribes might have limited funding or staff resources, or might prioritize other environmental needs. Without TAS, Tribes can participate in other ways. For instance, when a Tribe elects to develop WQS under tribal law, the Tribe can seek informal review and suggestions from EPA staff to help the Tribe build capacity for administering CWA WQS in the future. See Developing WQS section above.

A Tribe can also participate by providing comments on the WQS of neighboring authorized Tribes or states for waterbodies that are shared with or upstream from the Tribe. For example, the CWA requires authorized Tribes and states to hold public hearings and seek public comments on all of their WQS at least once every three years and whenever they adopt new or revised WQS. A Tribe could provide comments and data in those situations to help the neighboring authorized Tribe or state provide adequate protection for the shared or upstream waters.

Finally, if EPA has promulgated federal WQS for the Tribe's waters, the Tribe can provide water quality monitoring data, data on tribal FCRs, or other information to assist EPA in adjusting or applying the federal water quality criteria to reflect local circumstances.

Additional Resources

For the regulations underlying the WQS program, visit the *Code of Federal Regulations Part 131*. EPA's *Tribes and Water Quality Standards* and *Water Quality Standards Tools for Tribes* websites contain many of the resources mentioned above, in addition to other documentation that may help Tribes navigate the TAS application and WQS development processes. EPA encourages Tribes to work with their EPA regional office when using these resources but does not require use of these resources. EPA also encourages tribal staff members responsible for WQS to participate in EPA's intensive one-week training course, the *Water Quality Standards Academy*.

Section 401 Certification

Section 401 gives authorized Tribes the authority to grant, deny, or waive certification of proposed federal licenses or permits which may result in a discharge into "waters of the United States," including the territorial seas. Water quality certification is a powerful tool to protect reservation water quality from adverse impacts from federally licensed or permitted projects. Under Section 401, a federal agency may not issue a license or permit to conduct any activity that may result in any discharge into "waters of the United States" unless the authorized Tribe, state, or interstate water pollution control agency (interstate agency) with jurisdiction over where the discharge will originate does one of the following:

- Issues Section 401 water quality certification finding ''that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307'' of the CWA.
- Waives Section 401 water quality certification (33 U.S.C. 1341(a)(1)).

An authorized Tribe, state, or interstate agency may issue a Section 401 water quality certification with conditions. Section 401(d) provides that the certification include ''any effluent limitations and other limitations, and monitoring requirements'' necessary to assure the applicant for a federal license or permit will comply with the applicable provisions of CWA Sections 301, 302, 306, and 307. Conditions also include any other appropriate requirement of tribal or state law set forth in the certification (33 U.S.C. 1341(d)).

Some of the major federal licenses and permits subject to Section 401 include:

- Section 402 and 404 permits issued by EPA or the U.S. Army Corps of Engineers (the Corps).
- Federal Energy Regulatory Commission (FERC) licenses for hydropower facilities and natural gas pipelines.
- Rivers and Harbors Act Section 9 and 10 permits.

Certification Process

Federal license or permit applicants must seek certification from a certifying authority if their activity may result in a discharge into "waters of the United States." The appropriate Section 401 certifying authority is the authorized Tribe, state, or interstate agency that has jurisdiction over where the discharge originates or will originate (33 U.S.C. 1341(a)(1)). In cases where no authorized Tribe, state, or interstate agency has authority to issue Section 401 certification, EPA is responsible for issuing certification.

A certifying authority must act on a request for certification within "a reasonable period of time (which shall not exceed one year) after receipt of such request" (33 U.S.C. 1341(a)(1)). The federal licensing or permitting agency determines the reasonable period of time. Within that period of time, the certifying authority may grant, grant with conditions, deny, or explicitly waive certification. If the certifying authority fails or refuses to act on a request for certification in that period of time, the certification requirement for the federal license or permit shall be deemed waived (33 U.S.C. 1341(a)(1)).

When evaluating a Section 401 request, certifying authorities must determine whether the potential discharge would comply with the following:

- Effluent limitations for conventional and non-conventional pollutants.
- WQS.
- New source performance standards.
- Toxic pollutant limitations.
- Other appropriate requirements of tribal law or state law.

Once the federal licensing or permitting agency receives both the application for the license or permit and a certification, they must immediately notify EPA under the neighboring jurisdiction process set forth in CWA Section 401(a)(2) (33 U.S.C. 1341(a)(2)).

Whenever EPA determines, upon receiving such notification, that the discharge from the certified activity may affect the water quality of a neighboring jurisdiction (authorized Tribe or state), the CWA Section 401(a)(2) process is as follows (33 U.S.C. 1341(a)(2)).

- EPA must provide notice to the neighboring jurisdiction, the licensing or permitting agency, and the license or permit applicant within 30 days of the notification from the federal agency.
- The neighboring jurisdiction has 60 days to determine if the discharge will violate their water quality requirements.
    - The neighboring jurisdiction must notify EPA and the federal licensing or permitting agency, in writing, of the objection within the 60-day period.
    - The neighboring jurisdiction can request a public hearing within the 60-day period.

- The federal licensing or permitting agency must hold a public hearing. At the public hearing, EPA will provide its evaluation and recommendations on the objection to the federal licensing or permitting agency.

The federal licensing or permitting agency, based on the recommendations of the neighboring jurisdiction and EPA, and any additional evidence presented at the hearing, must condition the license or permit to ensure compliance with the neighboring jurisdiction's water quality requirements. However, if the federal licensing or permitting agency cannot condition the license or permit to ensure compliance with the neighboring jurisdiction's water quality requirements, then they shall not issue the license or permit. Ultimately, the federal licensing or permitting agency cannot issue a federal license or permit until the CWA Section 401(a)(2) process is complete (33 U.S.C. 1341(a)(2)).

Obtaining TAS

Tribes have the opportunity to participate directly in the certification process by obtaining TAS for Section 401. Tribes that receive TAS for WQS are also granted TAS for purposes of Section 401 (40 CFR 131.4(c)). Tribes should consider TAS if they are interested in issuing certification decisions for their reservation (CWA Section 401(a)(1)) or participating in the neighboring jurisdiction process (CWA Section 401(a)(2)).

Once a Tribe receives TAS for Section 401 certification, the Tribe becomes the certifying authority. That Tribe has the authority to issue water quality certifications for federal licenses or permits that may result in any discharge to "waters of the United States" on their reservation.

Connection to Section 106

Tribes may use Section 106 funding to develop and implement water quality ordinances and tribal WQS. Additionally, Tribes may use Section 106 funds to support capacity building for a Section 401 certification program and apply for TAS for WQS and for Section 401 in a single application. Tribes can also use Section 106 funds to review permits and conduct the certification process.

Participation Opportunities for Tribes without the Section 401 Program

There are many reasons a Tribe might not seek TAS for Section 401 certification. For example, the Tribe might have limited funding or staff resources, or might prioritize other environmental needs. Without TAS, Tribes can still participate in Section 401 certification in other ways. For instance, EPA as the certifying authority on behalf of non-TAS Tribes can consider the Tribe's water quality requirements, even if the Tribe does not have EPA-approved WQS, when reviewing requests for certification.

When EPA acts as a certifying authority on behalf of a Tribe without TAS, EPA will provide public notice on the certification request, and will conduct a public hearing if necessary or appropriate (33 U.S.C. 1341(a)(1)). During the public notice process, a Tribe may submit public comment regarding the request for certification.

Additional Resources

EPA's *Section 401 of the Clean Water Act* website.

EPA recently announced that it intends to revise the 2020 CWA Section 401 Certification Rule at 40 CFR part 121 (Notice of Intention to Reconsider and Revise the CWA Section 401 Certification Rule, 86 FR 29541, June 2, 2021).

Section 303(d) Impaired Waters and TMDLs

Tribes with TAS for Section 303(d) develop lists of impaired waters, establish priority rankings for those waters, and develop TMDLs for those waters. A TMDL includes a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet applicable WQS, and an allocation of that amount to the pollutant's sources.

Requirements under Section 303(d) do not apply to Tribes until the Tribe has chosen to apply for, and has received, TAS to administer the program (authorized Tribes). Tribes can begin developing capacity to receive TAS for Section 303(d) by creating assessment methodologies and voluntarily publishing their water quality reports to the Assessment and TMDL Tracking and Implementation System (ATTAINS). Once Tribes have TAS for Section 303(d) and EPA-approved WQS in place, impaired waters lists will be required. For more information on assessment methodologies and ATTAINS, see Chapter 5: Development and Implementation of a Monitoring Program.

Listing Impaired Waters

Every two years, Tribes with Section 303(d) TAS must develop lists of waters not meeting, or expected not to meet, applicable WQS. These lists are commonly called ''impaired waters lists'' or ''303(d) lists.'' Impaired waters are waters for which technology-based limitations and other required controls are not stringent enough to meet applicable WQS. In developing their Section 303(d) list, authorized Tribes must assemble and evaluate all existing and readily available information (40 CFR 130.7(b)(5)). EPA's regulations include a non-exhaustive list of water quality-related data and information to consider. Tribes establish priorities for developing TMDLs for waters on the Section 303(d) list based on the severity of the pollution and the target uses for the waters.

EPA's *Overview of Listing Impaired Waters under CWA Section 303(d)* website includes additional information about listing impaired waters.

Developing TMDLs

Each authorized Tribe must, from time to time, establish and submit TMDLs for pollutants causing impairments in all waters on their 303(d) list (CWA Section 303(d)(2)). A TMDL is the calculation of the maximum amount of a pollutant that can enter a waterbody so that the waterbody will meet and continue to meet WQS for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant. Expressed mathematically, the TMDL equation is:

$$TMDL = \Sigma WLA + \Sigma LA + MOS$$

WLA is the sum of wasteload allocations (point sources), LA is the sum of load allocations (NPS and background), and MOS is the margin of safety.

Authorized Tribes and states generally implement TMDL wasteload allocations through Section 402 NPDES permits. WQBELs in NPDES permits must be "consistent with the assumptions and requirements" of wasteload allocations in EPA-approved or established TMDLs.

A wide variety of state-, local-, and federal-level programs implement NPS load allocations. These programs may be regulatory, nonregulatory, or incentive based. Additionally, voluntary actions on the part of citizen and environmental groups can assist with waterbody restoration. Section 319 provides

grant money for specific projects that reduce NPS pollution. Section 303(d) does not establish any new or additional implementation authorities for controlling NPS pollutants.

EPA's *Overview of Total Maximum Daily Loads (TMDLs)* website includes additional general information about TMDLs.

Obtaining TAS

EPA regulations (40 CFR 130.16) establish a process for Tribes to obtain TAS authority to administer the water quality restoration provisions of Section 303(d), including the issuing of lists of impaired waters and developing TMDLs. Key information on EPA's *Final Rule - Treatment of Indian Tribes in a Similar Manner as States for Purposes of Section 303(d) of the Clean Water Act* website includes:

- Responsibilities Tribes would have under Section 303(d).
- Regulatory procedures for a Tribe to apply for Section 303(d) TAS.
- Regulatory procedures for EPA to review a TAS application.
- Expectations regarding WQS and WQS TAS for Tribes seeking Section 303(d) TAS.
- Availability of EPA support for Tribes seeking Section 303(d) TAS.
- Special circumstances regarding qualification for Section 303(d) TAS.

Authorized Tribes must submit their 303(d) lists to EPA for approval every two years on April 1 of even-numbered years. A Tribe gaining TAS status would have at least 24 months to submit their first impaired waters list to EPA (40 CFR 130.16(c)(5)). The list is due to EPA in the next listing cycle that is at least 24 months from the date the Tribe's TAS application is approved or the date that EPA approved or promulgated WQS for the Tribe's waters become effective, whichever is later (40 CFR 130.16(c)(5)).

By obtaining TAS authorization for the Section 303(d) program, Tribes would have the opportunity to take the lead role under the CWA in restoring and protecting their reservation waters. Tribes would assume the primary responsibility in deciding what waters on their reservations are impaired and in need of TMDLs, the priority ranking for TMDL development, and the nature of TMDLs and pollutant source allocations for those waters.

EPA's *Treatment of Indian Tribes in a Similar Manner as States for Purposes of Section 303(d) of the Clean Water Act* "frequently asked questions" document provides additional information about tribal responsibilities under Section 303(d), benefits of assuming the program, and other questions related to Section 303(d) TAS. EPA developed a working-draft *TAS Application Template for the CWA Section 303(d) Impaired Water Listing and TMDL Program* to help streamline the TAS application process.

Connection to Section 106

Tribes can use their Section 106 funds to create assessment methodologies, voluntarily publish their water quality reports to ATTAINS, support the development of Section 303(d) TAS applications, develop 303(d) lists, and develop TMDLs. Chapter 9: Other Funding Options provides information on how Tribes can use GAP funds for capacity development activities (including to develop TAS packages) and can use Section 319 funds to support TMDL development and developing WQS.

Most Tribes with Section 303(d) TAS are likely to be recipients of Section 106 grants. EPA encourages Tribes with TAS for Section 303(d) to combine their Section 303(d) impaired waters list with their Section 106 assessment report. Tribes should submit the combined report electronically through

ATTAINS. EPA's *Get Data: Access Public ATTAINS Data* website includes data that entities report to EPA and links to the ATTAINS website.

A combined Section 303(d)/Section 106 report is similar to a state's Section 303(d)/Section 305(b) ''Integrated Report.'' The Guidance for the 2006 Assessment, Listing, and Reporting Requirements Pursuant to CWA Sections 303(d), 305(b), and 314 on EPA's *Water Topics* website has more information on the Integrated Report.

Participation Opportunities for Tribes without Assuming the Section 303(d) Program

Tribes do not need Section 303(d) TAS to engage with EPA on state and federal Section 303(d) actions that are relevant to protecting and restoring waters of interest to them.

The Code of Federal Regulations requires states to evaluate all readily available water quality-related data and information in developing their Section 303(d) lists (40 CFR 130.7(b)(5)). Therefore, when Tribes provide their data to the Water Quality Exchange (WQX) the data are readily available for consideration in the Integrated Reports for their respective states and all other data reuse purposes.

The *EPA Policy on Consultation and Coordination with Indian Tribes* website states EPA's commitment to consult on a government-to-government basis with federally recognized governments when EPA actions and decisions may affect tribal interests. This applies to EPA actions regarding impaired waters lists and TMDLs when such action may impact a Tribe's interest.

In addition to government-to-government consultation between EPA and Tribes, Tribes may provide comment during states' public notice periods. States describe in their Continuing Planning Processes (CPP) the process for involving the public and other stakeholders in the development of the Section 303(d) list and TMDL calculations (40 CFR 130.7(a) and 130.7(c)(ii)). EPA encourages the state to provide opportunities for public participation in the development of the Integrated Report and demonstrate how they considered public comments in their final decisions. EPA has 30 days to approve or disapprove a TMDL or impaired waters list that a state submits. Where EPA disapproves a submittal, EPA must identify waters and loadings necessary to implement the applicable WQS within 30 days and then issue public notice seeking comment.

Additional Resources

- EPA's *Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads* website has general information about Section 303(d).
- EPA's *Contact Us About Impaired Waters and TMDLs* website lists the EPA regional 303(d) program offices for Tribes to contact for additional information or questions related to Section 303(d) activities.
- EPA's *Final Rule - Treatment of Indian Tribes in a Similar Manner as States for Purposes of Section 303(d) of the Clean Water Act* website has more information about the final TAS rule for Section 303(d).
- EPA's *TAS Application Template for the CWA Section 303(d) Impaired Water Listing and TMDL Program - Working Draft* website has a TAS application template.

Section 402 NPDES Permitting Program

The NPDES permitting program is a cornerstone of the CWA. The program regulates the point source discharge of pollutants into "waters of the United States." Point source discharges include discharges

from publicly owned treatment works (POTWs), industrial process wastewater discharges, runoff conveyed through a storm sewer system, and discharges from concentrated animal feeding operations (CAFOs), among others. Until a Tribe, state, or territory has authority to administer their own NPDES permitting program, EPA issues all permits, conducts all compliance and monitoring activities, and enforces all program requirements. Currently, EPA issues and enforces NPDES permits in all of Indian Country.

EPA's *NPDES and Sewage Sludge Program Authority Handbook for Federally Recognized Indian Tribes* contains more information on the NPDES program for Tribes. EPA's *National Pollutant Discharge Elimination System* website has general information and links to guidance, regulations, and training information.

Issuing NPDES Permits

Pollutant discharges may come from direct and indirect sources. Direct sources discharge wastewater directly to a receiving waterbody; indirect sources discharge wastewater to a POTW that discharges to the receiving waterbody. The primary focus of the NPDES permitting program is permit issuance for municipal and industrial direct discharges. The NPDES program has other components, such as pretreatment programs, the industrial stormwater program, the construction stormwater program, CAFOs, and biosolids. EPA's *National Pollutant Discharge Elimination System* website has more information on these components.

The NPDES program regulates different types of sources. Municipal sources are POTWs that receive primarily domestic sewage from residential and commercial customers. Larger POTWs also typically receive and treat wastewater from industrial facilities (indirect dischargers) connected to the POTW sewage system. The types of pollutants treated by a POTW always include conventional pollutants (for example, human wastes, ground-up food from sink disposals, laundry and bath waters) and may also include toxic pollutants (such as pesticides, solvents, dioxin, lead, silver, mercury, copper) or nonconventional pollutants (all other pollutants, including nutrients such as nitrogen and phosphorus) depending on the characteristics of the commercial and industrial sources discharging to the POTW. Some older POTWs have the additional concern of combined sewer overflow (CSO) systems that can release untreated effluent during storms that can reach "waters of the United States." CSOs were an economical way for municipalities to collect both sanitary sewage and stormwater and are controlled under the NPDES program. A number of municipalities have municipal separate storm sewer systems (MS4s) that are also subject to NPDES requirements.

Nonmunicipal sources, which include industrial and commercial facilities, have unique products and processes. At industrial facilities, the types of raw materials, production processes, treatment technologies, and pollutants discharged vary widely and depend on industry and facility characteristics. Industrial facilities generally operate within a clearly defined plant area; thus, the collection systems are typically less complex than those for POTWs. Examples of nonmunicipal commercial sources include CAFOs, which must obtain NPDES permits to control runoff of nutrients and manure, and the construction stormwater program.

Permit Overview

An NPDES permit authorizes a facility to discharge a specific amount of a pollutant to a receiving waterbody, subject to certain conditions. Permits may also authorize facilities to process, incinerate, send to a landfill, or beneficially use sewage sludge.

The two basic types of permits that the NPDES program can issue are individual permits and general permits.

- An individual permit is tailored to an individual facility based on information from the permit application and other sources (such as from previous permit requirements, discharge monitoring reports, technology and WQS, TMDLs, ambient water quality data (from WQX), special studies). The permitting authority then issues the permit to the facility for a specific period, not to exceed five years, with a requirement to reapply before the expiration date. The largest category of dischargers requiring individual NPDES permits are POTWs owned by a state or municipality.
- A general permit is a permit for multiple facilities in a single category of discharges, sludge use, or disposal practices. General permits can be a cost-effective option for agencies because of the large number of facilities that they can cover. The permitting authority can write general permits to cover stormwater point sources or other categories of point sources that (40 CFR 122.28(a)(2)):
    - Involve the same or substantially similar types of operations.
    - Discharge the same types of wastes or engage in the same types of sludge use or disposal.
    - Require the same effluent limitations or operating conditions, or standards for sewage sludge use or disposal.
    - Require the same monitoring where tiered conditions may be used for minor differences within a class (such as size or seasonal activity).
    - Are more appropriately regulated by a general permit.

While these permit types share the same components, the permitting authority uses them under different circumstances, and they involve different permit issuance processes.

Permit Sections

At a minimum, all NPDES permits consist of the following five sections:

1. Cover Page: Contains the name and location of the permittee, a statement authorizing the discharge, and a listing of the specific locations for which a discharge is authorized.
2. Effluent Limitations: The primary mechanism for controlling discharges of pollutants to receiving waters. When drafting a permit, permit writers spend most of their time deriving appropriate effluent limitations based on applicable technology and WQS.
3. Monitoring and Reporting Requirements: Used to characterize waste streams and receiving waters, evaluate wastewater treatment efficiency, and determine compliance with permit conditions.
4. Special Conditions: Conditions developed to supplement numeric effluent limitations. Examples include additional monitoring activities, special studies, best management practices (BMPs), and compliance schedules.
5. Standard Conditions: Pre-established conditions that apply to all NPDES permits and delineate the legal, administrative, and procedural requirements of the NPDES permit.

In addition to the five sections, the supporting documentation for the draft permit also includes a factsheet or statement of basis explaining the rationale for permit conditions.

Although these five sections are part of all permits, the contents of some sections vary depending on the nature of the discharge.

Effluent Limitations

The first major step in the permit development process is deriving technology-based effluent limitations (TBELs). Following that step, the permit writer derives WQBELs as needed, which are effluent limitations that are protective of state WQS.

Technology-Based Limitations

TBELs aim to prevent pollution by requiring a minimum level of effluent quality that is attainable using demonstrated technologies for reducing discharges of pollutants or pollution into "waters of the United States." NPDES permit writers develop TBELs independently of the potential impact of a discharge on the receiving water, which WQS and WQBELs address. NPDES permit writers must develop technology-based treatment requirements that represent the minimum level of control that a permit must impose (40 CFR 125.3(a)). Permit writers must also include in permits additional or more stringent effluent limitations and conditions, including those necessary to protect water quality.

When developing TBELs for industrial (non-POTW) facilities, the permit writer must consider all applicable technology standards and requirements for all pollutants discharged. If there are no applicable effluent guidelines for the discharge or pollutant, permit writers must identify any needed TBELs on a case-by-case basis, in accordance with the factors detailed in CWA Sections 301(b)(2) and 304(b). The permit writer also should consider whether state laws or regulations govern TBELs and might require more stringent performance standards than those required by federal regulations. In some cases, a single permit could have TBELs based on effluent guidelines, best professional judgement, and state law, as well as WQBELs based on WQS.

Water Quality Based Limitations

By analyzing the effect of a discharge on the receiving water, a permit writer could find that TBELs alone will not achieve the applicable WQS. In such cases, the CWA and its implementing regulations require permit writers to develop WQBELs. WQBELs protect water quality by ensuring that receiving waters meet WQS. WQBELs help meet the CWA objective of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters and the goal of protecting water quality for the propagation of fish, shellfish, and wildlife and for recreation in and on the water (fishable and swimmable). A Tribe's WQS serve as a basis for establishing WQBELs for facilities with NPDES permits that discharge to waters on their reservation. EPA's *NPDES Permit Writers' Manual* has more information about NPDES permits.

NPDES Program Authorization

EPA may authorize a tribal government, state, or territorial agency to implement all or parts of the NPDES program. EPA approves Tribes, states, or territories through a process detailed in CWA Section 402(b) and in 40 CFR Part 123 of the NPDES regulations.

Obtaining TAS

As with obtaining TAS for other CWA authorities, Tribes must meet basic requirements found at Section 518 of the CWA and in the regulations at 40 CFR 123.32. Tribes do not need TAS for any other CWA regulatory program to demonstrate that they meet the TAS requirements for Section 402.

If the Administrator or their delegate has previously determined that a Tribe has met the TAS prerequisites under the Safe Drinking Water Act, the CWA, or the Clean Air Act, then that Tribe only needs to provide the information that is unique to the NPDES program which is requested by the Regional Administrator.

In evaluating whether a Tribe is capable of implementing an NPDES program in a way that is consistent with the CWA and applicable regulations, EPA will consider:

- The Tribe's previous management experience.
- Environmental or public health programs that the Tribe currently administers.
- Existing mechanisms to carry out the executive, legislative, and judicial functions of tribal government.
- The relationship between the entities they will regulate and the agency of the tribal government that is designated as the primacy agency.
- The technical and administrative capabilities of the staff responsible for administering and managing the program.

Considering NPDES Program Authorization

Before deciding to pursue NPDES program authorization, Tribes should consider all the benefits and costs associated with it, such as:

- Tribal interest in furthering autonomy and self-determination.
- Whether the program has the organizational ability to develop and maintain a permitting authority.
- New tribal statutes or regulations that a Tribe needs to manage an NPDES program.
- Costs associated with expanding the Tribe's regulatory role and ability to protect public health and the environment.
- The infrastructure necessary to implement the program.
- The ability to support this type of program for many years.

Tribes planning to seek NPDES program authorization should contact their EPA regional office to discuss the process. EPA regional offices can help guide Tribes through the process and can provide technical assistance as Tribes develop their application materials.

Preparing for NPDES Program Authorization

Tribes must have the ability to implement all portions of an NPDES program, including the ability to write permits, track compliance, and enforce permit conditions at the time of program authorization (40 CFR 123.23(a)). To help meet this requirement, Tribes should consider training engineers and permit writers. The extent to which permit writers participate in monitoring, compliance, and enforcement activities will depend on the size of the Tribe's water quality program. In smaller programs, an individual or a small group of individuals may be responsible for all activities. In larger programs, individuals may specialize in different functions. For example, in a large program, the permit writer may be aware of the general activities of the permittee but not as involved with monitoring, compliance, and enforcement.

Developing Tribal Code and Obtaining Approval from the Tribal Government

Tribes will need to follow their tribal mechanisms to develop any necessary legal authorities to administer the NPDES program. Tribes should work with their tribal attorney general or equivalent office during this process to produce a tribal code that meets tribal and NPDES program requirements. Tribes should also work with their tribal council to make sure they cover all applicable tribal requirements when adopting the NPDES program.

Inventorying Existing Point Sources

Point sources are defined in the CWA and in the NPDES regulations. Point sources include POTWs and industrial facilities. Tribes should coordinate with the existing (state or federal) permitting authority on or near their reservation to make sure they have a complete list of all point source dischargers currently regulated by NPDES permits.

Establishing Sources of Funding to Run the NPDES Program

Prior to seeking authorization for an NPDES program, each Tribe should consider if they can commit to the long-term financial support of the program. The Tribe must determine whether they have, or can obtain, the revenue to hire and train staff to run the NPDES program. The Tribe might be able to collect some funding through program and permit fees but might also need additional dedicated tribal

appropriations or other sources of EPA funding to fully fund the program. EPA regional offices may be able to help locate additional sources of funding.

Connection to Section 106

Tribes can use Section 106 funds to develop their TAS application, develop training and capacity for permit writers, establish the necessary tribal code, inventory existing point sources, and implement a NPDES program. Chapter 9: Other Funding Options provides information on how Tribes can use GAP funds for capacity development activities including to develop TAS packages.

Participation Opportunities for Tribes without Assuming the Section 402 Program

In accordance with EPA's Consultation and Coordination Policy, EPA regions coordinate with Tribes and provide for consultation opportunities when issuing or reissuing permits that may affect Tribes.

Tribes can also participate in the public comment processes required by the NPDES regulations. When states and EPA are considering whether to issue or reissue an NPDES permit, they must provide notice to the public and an opportunity to provide comments. The regulations also require permitting authorities to hold public hearings if they determine that there is "significant public interest." Hearings can also be held at the permitting authority's discretion.

States and EPA must develop and maintain a mailing list of the members of the public who are interested in permit actions. They must provide notice to those on their mailing list when a permitting authority takes an action requiring public notice. Tribes can join those mailing lists (by submitting a request in writing or by responding to a notification from the permitting authority) to learn about permitting actions under consideration in their geographic area.

The NPDES regulations require that permitting authorities provide notice to "affected states," which includes Tribes with TAS. Tribes with TAS thus would receive notice when the NPDES permitting authority is taking a permitting action that requires public notice.

Additional Resources

EPA provides a range of training opportunities focused on various aspects of the NPDES program. EPA has also issued a number of guidance documents and technical resources, for permit writers that contain information on developing, issuing, ensuring compliance with, and enforcing NPDES permits. The links to the following websites have more information about these opportunities, documents, and resources.

- EPA's *All NPDES Program Areas* website.
- EPA's *NPDES Recorded Training and Webinars* website.
- EPA's *NPDES Training* website.
- EPA's *NPDES Technical Resources* website.
- EPA's *Small and Rural Wastewater Systems* website.
- EPA's *Water Enforcement Policy, Guidance, and Publications* website.

Section 404(g) Permitting Program for Dredged or Fill Material

Section 404 establishes a program to regulate discharges of dredged or fill material into "waters of the United States," as described on EPA's *Statutory and Regulatory Requirements for Assumption under CWA Section 404* website. Activities that Section 404 regulates include dredged or fill material for

development purposes, water resource projects (such as docks, dams, and levees), infrastructure development (such as highways, bridges, and airports), and dredging and mining projects. Section 404 requires a permit to discharge dredged or fill material from these activities to "waters of the United States," unless Section 404 exempts the activity (for example, certain farming and forestry activities).

Administering the 404 Permitting Program

The Corps is the permitting authority for Section 404 discharges of dredged or fill material into "waters of the United States" where no Tribe or state has assumed responsibility for administering the program. (Tribes and states may place conditions on or deny certification on Corps permits, see discussion on Section 401 Certification). EPA jointly administers the federal permitting program with the Corps and EPA is responsible for approval and oversight of tribal and state Section 404 programs.

Section 404(g) provides Tribes and states the option to assume administration of the Section 404 permit and enforcement program for certain waters within their jurisdiction (CWA Section 404(a), (g)-(i)).

Prior to issuing a Section 404 permit, the permitting authority (Tribe, Corps, or state) reviews the application to ensure the permit complies with the requirements at 40 CFR 230, commonly called the "Section 404(b)(1) Guidelines." The Section 404(b)(1) Guidelines are the environmental review criteria for permits allowing for the discharge of dredged or fill material into "waters of the United States."

An applicant must show that they have taken steps to avoid impacts to wetlands, streams, and other aquatic resources; that they have minimized potential impacts; and that they will provide compensation for all remaining unavoidable impacts (40 CFR 230.10(a)-(d)).

A particular discharge of dredged or fill material may be subject to other laws such as the Endangered Species Act as well as other procedural or substantive requirements established by the permitting authority. As such, a discharge request complying with the Section 404(b)(1) Guidelines will not automatically receive a permit.

Assumption allows a Tribe to operate a program that is consistent with national environmental standards, while adapting the program to best address the Tribe's resources, issues, and needs. A Tribe may choose to assume the Section 404 permitting program to increase their role in management of tribal resources, reduce duplication between tribal and federal programs, or streamline the regulatory program. Tribes can use assumption as a way to carry out a fully integrated and comprehensive program addressing the full range of tribal and Section 404 authorities.

EPA's *State or Tribal Assumption of the CWA Section 404 Permit Program* website has more information.

Obtaining TAS

A Tribe must demonstrate that it meets the TAS requirements for Section 404 to assume and administer a Section 404(g) program. A Tribe would generally make that demonstration as part of their request to assume the Section 404 program. Tribes do not need TAS for any other CWA regulatory programs to demonstrate that they meet the TAS requirements for Section 404 or to assume the Section 404 program. The criteria for TAS for Section 404 can be found at 40 CFR 233.60-61.

The regulations are available on EPA's website, *40 CFR Part 233: CWA Section 404 State Program Regulations*.

Program Approval

Tribal programs must be consistent with and no less stringent than the CWA and EPA's regulations at 40 CFR Part 233. In general, a tribal program must:

- Have an equivalent scope of jurisdiction.
- Regulate at least the same activities as the federal program.
- Provide for sufficient public participation.
- Ensure compliance with the Section 404(b)(1) Guidelines.
- Have an enforcement program that abates violations and ensures compliance. Enforcement responsibilities are to be laid out in the Tribal-EPA Memorandum of Understanding, to ensure consistency with the Tribe's authorities.

Program Scope

- Geographic Scope.
    - A tribal Section 404 program must cover all "waters of the United States" within its jurisdiction not retained by the Corps.
    - A Tribe's program can cover additional waters; however, the scope of the approved program and EPA oversight is limited to "assumed" waters which are "waters of the United States" within their jurisdiction and not retained by the Corps.
    - Tribal waters are generally not assumable under a state Section 404 program.
- Programmatic Scope.
    - A Tribe's Section 404 program must regulate all discharges of dredged and fill material into "waters of the United States" as the federal program.
    - A Tribe may regulate additional activities than those covered by the federal program.
    - A Tribe may choose to regulate, and not exempt, activities listed in Section 404(f).
    - EPA oversight of the tribal program is limited to activities within the scope of Section 404.

Assumption does not affect the scope of CWA jurisdiction, rather it shifts responsibility for administering the Section 404 program for certain waters from the Corps to the authorized Tribe. Tribes should reference the U.S. Army's *Army Issues Memorandum to Empower States & Tribes in their Permitting Authority* to learn how the Corps will identify "waters of the United States" for which they will retain Section 404 permitting authority. The memo directs the Corps to work with the Tribe to identify an administrative line to determine the extent of adjacent wetlands that the Corps will retain.

Preparing for Program Assumption

EPA encourages Tribes that are seeking to assume Section 404 permitting authority to contact the applicable EPA Regional Administrator and Corps District. EPA also encourages Tribes to:

- Confer with EPA regional and Headquarters staff on the assumption process substantive requirements.
- Identify program modifications and legislative needs by reviewing existing tribal programs, laws, and resources.
- Conduct outreach with the public and regulated community.
- Obtain from the Corps the list of waters that they will retain and work to identify an administrative line associated with adjacent wetlands.

Once the Tribe has established statutory authorities, developed the program, and secured funding, staffing, and resources, the tribal leader will submit the program request package to the appropriate EPA Regional Administrator for review.

The CWA and implementing regulations provide EPA 120 days to review and either approve or deny a tribal program request unless the Tribe and EPA agree to an extension. If EPA fails to make a decision on the program request within this timeframe, the program request is statutorily approved. During the 120-day review, EPA must determine if the proposed program meets the requirements of the Act and regulations. EPA accomplishes this by performing its own review, seeking comment from other federal agencies (such as the Corps and the U.S. Fish and Wildlife Service), holding public hearings, soliciting public comment, consulting with tribal governments as appropriate, documenting its review and decision, and undertaking consultations on the program approval if applicable to the program request. The procedures EPA will follow, and the criteria EPA will apply in approving, reviewing, and withdrawing approval of a tribal program under Section 404, are specified in 40 CFR 233.1.

Connection to Section 106

Tribes can use Section 106 grants to assume and administer an approved Section 404 program. Funding can be used to receive TAS for Section 404, develop a Section 404 assumption package, and implement the program upon EPA approval. Additionally, Tribes can use Section 106 funds to review and staff mapping programs, identify impaired waters, clarify what waters they have assumed, and identify the pollution abatement requirements for those waters. Tribes may also use the funds to help staff in permitting and enforcement positions ensure compliance with the assumed programs.

Chapter 9: Other Funding Options provides information on how Tribes can use GAP funds for capacity development activities including to develop TAS packages and apply for funding through EPA's *Wetland Program Development Grants* (WPDGs) to develop a dredged or fill permitting program. However, WPDGs are competitively awarded and may only be used for program development including to seek TAS authority.

Participation Opportunities for Tribes without Assuming the Section 404 Program

If a Tribe does not have TAS for Section 404, the Tribe can still participate in the following ways:

- **Consultation on program assumption request:** EPA will reach out to Tribes and offer government-to-government consultation on Section 404 program requests.
- **Comment on permits:** Section 404 programs must provide the opportunity for states and eligible Tribes to comment on permits if the permit may adversely affect their waters. When the permitting state or Tribe does not address these comments, the permit is sent to EPA for review.
- **Public comment on permits:** Tribes and individual tribal members may provide comments during the public comment period on tribal or state Section 404 permits.

Additional Resources

- EPA's *State and Tribal Assumption of Section 404 of the Clean Water Act* website.
- EPA's *Statutory and Regulatory Requirements for Assumption under CWA Section 404* website.
- EPA's *Assumption Request Package under CWA Section 404* website.
- *40 CFR Part 233: 404 State Program Regulations*.

EPA conducts consultations on program requests as appropriate. Policies on consultations include:

- EPA's *Consultation and Coordination with Tribes* website.
- EPA's *Consultation on CWA Section 404 Program Requests: Endangered Species Act and National Historic Preservation Act* website, which includes Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act.

For an overview of the Section 404(g) permitting process, see slide 9 in EPA's presentation on *CWA Section 404 Assumption: Background and EPA's Efforts*.

Chapter 9: Other Funding Options

Read this chapter…

- To identify EPA and other government programs that provide funds to support tribal water quality programs.
- For examples of how Tribes have used government program funds.
- For links to find more information about government programs.

Chapter highlights:

- At-a-glance table of EPA tribal grant programs, how to qualify for each, and their connection to the Section 106 Program.
- List of other EPA grant programs and tribal project examples.
- Links to other non-EPA federal grant programs that may be relevant to tribal water quality programs.

Section 106 funding supports each Tribe's ability to manage and improve water quality. As water quality programs identify other needs, such as implementing best management practices (BMPs), Tribes will need to identify additional funding and resources. This chapter gives examples of government programs that provide technical and financial assistance to support tribal water quality programs.

It is important for water quality programs to define their program goals before seeking funding, technical assistance, and partnerships. Clearly established goals allow Tribes to pursue the opportunities that are best suited to meet their needs.

Tribes should consider applying for additional funding programs in coordination with other tribal departments and external partners that share priorities. For example, Tribes may coordinate with public works and transportation departments for trash reduction in waters or with tribal air quality programs for climate change planning efforts. Tribes can learn more about these programs and determine the best way to leverage funding options by contacting their EPA regional office.

Explore and Apply for Federal Funding at Grants.gov

Grant opportunities available across the federal government are posted on *Grants.gov*. This website allows users to sign up to receive e-mail alerts about new grant opportunities in relevant areas.

Table 12. EPA funding programs at-a-glance

General Assistance Program Grants (Assistance Listing #: 66.926)	
Program Description	Assistance to Tribes and intertribal consortia to build tribal capacity to administer environmental regulatory programs and provide technical assistance in the development of multimedia programs. Supports activities such as planning, developing, and establishing the capability to implement programs that EPA administers, including to develop and implement solid and hazardous waste programs. For more information, visit: *Indian Environmental General Assistance Program*
How it Works with Section 106	Tribes can use General Assistance Program (GAP) funding to: • Develop an initial Section 106 grant application or a treatment in a similar manner as a state (TAS) application. • Establish a Section 106 grant management program. • Conduct capacity building activities (for example, participate in training opportunities, develop Quality Assurance Project Plans (QAPPs), develop a Monitoring Strategy). • Expand water quality program activities (for example, TAS packages for water quality standards (WQS), listing and total maximum daily loads (TMDLs), Section 319).
Tribal Eligibility	Federally recognized Tribes and intertribal consortia.
Grant Funding and Match Requirement	• $75,000/year or more, depending on allocation formula. • No match required.
Section 319 Nonpoint Source Grants (Assistance Listing #: 66.460)	
Program Description	Assistance to states, Tribes, and intertribal consortia for implementing Nonpoint Source (NPS) Programs. For more information, visit: *Tribal Nonpoint Source Program*
How it Works with Section 106	Tribes can use Section 106 funds to: • Develop the NPS Assessment Report and NPS Management Program. • Conduct monitoring and assessment work to identify NPS pollution problems and threats. • Develop non-structural controls to reduce NPS pollution. • Form partnerships to address NPS issues. • Conduct watershed-based planning. • Conduct water quality monitoring to determine effectiveness of NPS BMPs.
Tribal Eligibility	• Federally recognized Tribes that meet the criteria in CWA Section 518(e) and intertribal consortia. • TAS for Section 319 is required, including an EPA-approved NPS Assessment Report and NPS Management Plan.
Grant Funding and Match Requirement	• Base Grants: $36,000 or $60,000/year, depending on tribal land area. • Competitive Grants: Up to $125,000/project for water quality protection or restoration projects.

	• 40 percent match; can be reduced to 10 percent match with demonstration of hardship. • No match required if funds are included in a Performance Partnership Grant (PPG).
Section 104(b)(3) Wetlands Program Development Grants (Assistance Listing #: 66.461)	
Program Description	• Assistance to states, Tribes, intertribal consortia, and other groups to build wetland programs. A secondary focus is to build local (county or municipal) programs. • Regions issue a Request for Applications (RFAs) for Tribes, states, territories, intertribal consortia, interstate agencies, and local governments every two years. • EPA Headquarters (HQ) and regions issue tribal-only RFAs every two years. For more information, visit: *Wetland Program Development Grant*
How it Works with Section 106	Tribes can use Section 106 funds to support and implement wetland program activities, including to: • Identify wetlands. • Monitor wetlands. • Implement a Wetlands Program. • Develop a Section 404 dredge and fill permit program. • Implement a dredge and fill permit program.
Tribal Eligibility	Federally recognized Tribes and intertribal consortia.
Grant Funding and Match Requirement	• Competitive grants: Funding at the regional level ranges from $50,000 to $550,000 per award. • 25 percent match. • No match required if funds are included in a PPG.
Exchange Network Grants (Assistance Listing #: 66.608)	
Program Description	The Exchange Network (EN) Grant Program provides funding to help Tribes develop the information management and technology capabilities they need to participate in the EN. For more information, visit: *Exchange Network Grant Program*
How it Works with Section 106	Tribes can use EN funds to: • Establish data storage and retrieval systems for water quality data. • Establish data flow to Water Quality Exchange (WQX).
Tribal Eligibility	Federally recognized Tribes and intertribal consortia.
Grant Funding and Match Requirement	• Competitive Grants: Eligible Tribes received from $130,000 to $400,000 per award in 2020. • No match required.
Clean Water State Revolving Funds (Assistance Listing #: 66.458)	
Program Description	• The Clean Water State Revolving Fund (CWSRF) program is a federal-state partnership that provides communities low-cost financing for a wide range of wastewater infrastructure projects.

	• Tribes are eligible to apply for state funds and should contact the appropriate state agency for information on the program. For more information, visit: *Clean Water State Revolving Fund*
How it Works with Section 106	Tribes may be eligible to use CWSRF to: • Construct, upgrade, repair, or replace community decentralized wastewater systems. • Set up a special district or Responsible Management Entity for management of decentralized systems. • Implement a watershed-based plan and watershed pilot projects. • Implement an NPS management plan. • Implement riparian buffers. • Restore habitat. • Develop public outreach materials.
Tribal Eligibility	Tribes may be eligible for CWSRF loans. Specific eligibilities vary by state.
Grant Funding and Match Requirement	Funding ranges and match requirements vary by state.
Drinking Water State Revolving Funds (Assistance Listing #: 66.468)	
Program Description	The Drinking Water State Revolving Loan Fund (DWSRF) is a federal-state partnership that distributes funds to states to provide low-interest loans to eligible recipients for drinking water infrastructure projects. DWSRF also allows states to set-aside a portion of their funds to finance source water protection activities. For more information, visit: *Drinking Water State Revolving Fund*
How it Works with Section 106	Tribes may be eligible to use DWSRF to: • Implement source water protection activities. • Acquire land or conservation easements to protect source water.
Tribal Eligibility	Tribes may be eligible for DWSRF loans. Specific eligibilities vary by state.
Grant Funding and Match Requirement	Funding ranges and match requirements vary by state.
EPA Geographic Programs	
Program Description	• EPA Geographic Programs include Puget Sound, Columbia River, Great Lakes, Chesapeake Bay, Gulf of Mexico, Lake Champlain, Long Island Sound, Lake Pontchartrain, S. New England Estuary, South Florida, and San Francisco Bay. • Tribes can monitor *Grants.gov* for requests for proposals from these programs.
How it Works with Section 106	Tribes can use EPA Geographic Program funds to support and expand Section 106-funded activities, such as those that improve knowledge and protect and restore critical aquatic ecosystems.
Tribal Eligibility	Tribal eligibility may vary by Geographic Program.
Grant Funding and Match Requirement	Funding amount and match requirements may vary by Geographic Program.

EPA Tribal Grant Programs

This section provides more detail on EPA funding sources that tribal programs commonly pursue.

General Assistance Program Grants

- Assistance Listing #: 66.460.
- Statutory Authority: Indian Environmental General Assistance Program Act.

Program Description

The Indian Environmental GAP provides grants to Indian tribal governments or intertribal consortia to support activities such as planning, developing, and establishing environmental protection programs consistent with other applicable provisions of law providing for enforcement of such laws by Indian Tribes on Indian lands. The purposes of GAP funding are to:

1. Provide general assistance grants to Indian tribal governments and intertribal consortia to build capacity to administer environmental regulatory programs that EPA may delegate on Indian lands.
2. Provide technical assistance from EPA to Indian tribal governments and intertribal consortia in the development of multimedia programs to address environmental issues on Indian lands.
3. Develop and implement solid and hazardous waste programs.

EPA's *GAP Guidance on Financial Assistance Agreements* has more information.

How to Qualify

Federally recognized Tribes and tribal consortia interested in planning, developing, and establishing environmental protection programs in Indian Country, and developing and implementing solid and hazardous waste programs on tribal lands, can submit applications for funding to their EPA region. Tribes and consortia are required to have an EPA-Tribal Environmental Plan (ETEP) in place. If they do not have an ETEP, their GAP work plan should include a commitment to develop one.

Funding Amount

The Indian Environmental General Assistance Program Act states that each grant that EPA awards for general assistance for a fiscal year shall be no less than $75,000, and EPA may not award a single grant to an Indian tribal government or intertribal consortium for more than 10 percent of the funds appropriated.

Match Requirements

None.

Connections with the Section 106 Program

GAP funding can help Tribes build capacity for water related environmental programs and develop TAS applications. Capacity development activities include participating in water quality training; developing a QAPP, initial Monitoring Strategy, and water quality database; and building capacity for CWA authorities including to develop TAS packages, WQS, and assessment methodologies.

Examples of GAP-Funded Activities

The GAP program can support tribal environmental program work in the following areas: water, air, solid waste, pesticides, emergency response, border issues, land use, and regulatory actions.

Hoh Indian Tribe

The Hoh Indian Tribe of western Washington has called the Hoh River watershed home since time immemorial. The 1.5-square mile Hoh Indian Reservation sits adjacent to the mouth of the Hoh River on the Olympic Peninsula. The river originates from glacial terminuses on Mount Olympus in the Olympic National Park, flowing 56 miles from its headwaters to the Pacific Ocean. As it travels westward, the river flows through one of the largest temperate rainforests in the United States. Due to the prolific nature of the forest, logging is pervasive in the watershed outside of the Olympic National Park. Many native fish species reside in the Hoh River and its tributaries, including runs of steelhead, chinook, coho, pink, and chum salmon. The Hoh Indian Tribe depends on healthy populations of these fish for their cultural, ecological, and economic values.

In 2005, the Tribe established the Hoh River Watershed Monitoring Program to monitor water quality in the Hoh River and its tributaries with support from GAP. At the time of the monitoring program's inception, water quality data were largely lacking for the Hoh River watershed. There were no long-term monitoring programs for the area outside of the Olympic National Park and little was known about the effects of timber harvest on water quality and salmon habitat in the Hoh River and its tributaries. The Hoh River Watershed Monitoring Program was created to: 1) establish baseline conditions of water quality, 2) document changes from baseline conditions, and 3) monitor for compliance with relevant regulatory standards. The program monitors the following water quality parameters: instantaneous temperature, dissolved oxygen (DO), turbidity, conductivity, and pH; continuous temperature and DO; and summer low flow in tributaries.

Over the years, the Tribe expanded their water quality program with GAP by incorporating new core capacities, such as developing a water quality Monitoring Strategy, submitting and routinely updating a Quality Assurance Project Plan, developing an EPA-TEP, enhancing staff expertise through training opportunities, and adding baseline environmental data by incorporating new tributaries into the monitoring network. After building the capacity of the monitoring program through GAP, the Tribe received TAS for the Section 106 Program in 2021. With support from GAP and Section 106 grants, the Hoh River Watershed Monitoring Program will continue to enhance water quality monitoring efforts, thereby striving for protection of the waters that are integral to the longevity of salmon and the Hoh Indian Tribe's way of life.

Figure 19. South Fork of the Hoh River during autumn. Credit: Photo courtesy of the Hoh Indian Tribe

Section 319 Nonpoint Source Grants

- Assistance Listing #: 66.460.
- Statutory Authority: CWA Section 319.

Program Description

The Section 319 NPS Program provides grants and technical assistance to Tribes, states, and territories to support the control of NPS pollution. NPS water pollution comes from diffuse sources, including agricultural lands, failing septic systems, developed lands, and other runoff that does not come from a discrete source, such as a pipe. The NPS Program also supports restoration actions to reverse hydromodification and habitat loss. Across the United States, NPS pollution is a major contributor to water quality problems. EPA's *Polluted Runoff: Nonpoint Source (NPS) Pollution* website has more information.

How to Qualify

Tribes must apply for TAS for the NPS Program. Tribes interested in TAS for NPS are encouraged to work with their EPA regions and submit a draft NPS Assessment Report and NPS Management Program Plan for review and approval before submitting a TAS application. Developing the NPS Assessment Report and NPS Management Program Plan can be a lengthy process and Tribes might need to submit multiple drafts before the EPA region can approve the documents. These documents serve as the foundation for how Tribes implement their NPS Program. To qualify for Section 319 grants TAS, Tribes must demonstrate that they meet the CWA Section 518(e) TAS criteria and have an approved NPS Assessment Report and NPS Management Program Plan. For details on 319 TAS process, Tribes should consult EPA's *Handbook for Developing and Managing Tribal Nonpoint Source Pollution Programs Under Section 319 of the Clean Water Act*. Tribes should also contact their EPA regional Tribal NPS Coordinator for region-specific information.

Funding Amount

Tribal NPS grants are for $36,000 or $60,000 per year, depending on a Tribe's land area. Tribes with TAS for NPS can apply for these base program amounts annually. EPA also conducts a national tribal Section 319 grant competition each year, where Tribes can apply for funds for on-the-ground, "implementation" projects. Tribes can apply for up to $125,000 in competitive tribal Section 319 funding.

Match Requirements

Section 319 has a 40 percent tribal match requirement based on the total amount of the approved work plan. For example, a Tribe submitting a $50,000 work plan will receive a $30,000 NPS grant and will match that grant at $20,000. Tribes can request a financial hardship regulatory exception to reduce the 40 percent match to 10 percent. Tribes should consult with their EPA regional office for specifics on requesting match regulatory exceptions. To receive a regulatory exception, Tribes typically provide documentation of a hardship, such as the Tribe's per capita income or unemployment rate in comparison to the state or local area.

EPA waived the required cost share when Section 319 funds are included in PPGs for new funding awarded or supplemental amendments to tribal or intertribal PPGs awarded on or after October 1, 2021. More information is in Chapter 3: Grant Requirements.

Connections with the Section 106 Program

Tribes can use Section 106 funds to support a range of NPS activities, such as developing the NPS Assessment Report and NPS Management Program Plan and conducting NPS effectiveness monitoring.

Examples of Section 319-Funded Activities

Depending on the Tribe's NPS management program, grants may be available to fund activities such as:

- Replacing, constructing, upgrading, or repairing failing septic systems to protect source water.
- Installing BMPs to reduce soil erosion near roads.
- Developing a watershed-based plan to guide NPS management work.
- Protecting or restoring wetlands to manage NPS pollution.

Section 104(b)(3) Wetlands Program Development Grants

- Assistance Listing #: 66.461.
- Statutory Authority: CWA Section 104(b)(3).

Program Description

Wetland Program Development Grants (WPDGs) assist tribal, state, territorial, and local government agencies, as well as intertribal and interstate entities, in developing or refining programs which protect, manage, and restore wetlands. The secondary focus is to develop or refine programs for local entities, such as counties or municipalities.

Wetland programs help conserve and restore wetland acreage and improve wetland condition. The grant recipients use one or more of the primary activities, known as Core Elements, to achieve this goal. Core Elements include the following:

- Monitoring and assessment.
- Voluntary restoration and protection.
- Regulatory approaches (including Section 401 certification).
- Wetland-specific WQS.

How to Qualify

Tribes do not need TAS to apply for WPDGs. WPDGs are competitive grants and EPA regions issue regional RFAs every two years for projects that can last for four years from time of award. EPA regions usually issue the announcement in the spring of odd numbered years. Tribes should follow the application requirements listed in the RFA. The RFA includes two tracks:

- Track One or the Wetland Program Plan Track is for Tribes, states, and local governments that have or are developing/refining a Wetlands Program Plan.
- Track Two or the Non-Wetland Program Plan Track is open to intertribal consortia and states, as well as local governments, interstate agencies, and eligible colleges and universities that are agencies of a state government.

Funding Amount

- Approximately $25,000 to $550,000 for the regional RFAs.
- From $25,000 to $250,000 in the tribal-only RFA.

Match Requirements

Individual WPDGs have a 25 percent match requirement.

EPA waived the required cost share when WPDGs are included in PPGs for new funding awarded or supplemental amendments to tribal or intertribal PPGs awarded on or after October 1, 2021. More information is in Chapter 3: Grant Requirements.

Connections with the Section 106 Program

Tribes can use Section 106 grant funds for the following wetlands-related activities:

- Identify wetlands.
- Monitor wetlands.
- Develop and implement wetland programs.
- Develop Section 404 dredge and fill permit programs.
- Implement dredge and fill permit programs.

Examples of WPDG-Funded Activities

- Develop an inventory of wetlands on tribal lands.
- Develop a Wetland Protection Program.

Other Considerations

Tribes cannot use WPDGs for implementation. EPA intends for Tribes to use WPDGs to develop or refine wetland programs. Therefore, ongoing, routine activities, such as managing a Section 401 program would not qualify for funding. Additionally, these funds cannot be used to purchase land or easements.

In addition to the EPA regional RFA, EPA HQ also issues a tribal-only RFA every other year. Tribes interested in applying should follow the directions in the tribal-only RFA. Tribes can apply for both the HQ RFA as well as the regional RFA, using the same proposal.

Exchange Network Grants

- Assistance Listing #: 66.608.
- Statutory Authority: Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by PL 98–80, 97 Stat. 485 (codified at Title 5, App.) (EPA's organic statute).

Program Description

The EN is an information network that facilitates environmental data sharing among EPA, Tribes, states, and territories. The EN streamlines data collection and exchange and increases data quality and access. Ultimately, this supports decision making on environmental and health issues. The EN grant program provides funds for Tribes and intertribal consortia to develop the information management and technology capabilities they need to participate in the EN. This includes funding for specific program data enhancements such as WQX and ATTAINS.

How to Qualify

Tribes must be federally recognized to qualify for EN grants. Tribal consortia, tribal councils (on behalf of two or more tribal environmental or health agencies), and tribal water quality administrations that consist of federally recognized Tribes can also apply for EN grants.

Funding Amount

Typically, EPA expects that most awards will range from $50,000 to $200,000. Individual opportunity applicants may request up to $200,000, while partnership opportunity applicants may request up to $400,000.

Match Requirements
The EN grant program does not have a match requirement.

Connections with the Section 106 Program
Tribes can use EN grants to establish data storage and retrieval systems for the water quality data they gather using Section 106 funds. Tribes can also use EN grants to establish data flow to WQX to load the water quality data they gather using Section 106 funds.

Examples of Activities
Example activities that Tribes can fund with EN grants include:

- Mapping data systems to WQX schema and collaborating with eligible entities collecting monitoring data.
- Developing Quality Assurance (QA)/Quality Control (QC) checks and reports to improve data consistency.
- Developing capability for integrating WQX and Assessment and TMDL Tracking and Implementation System (ATTAINS) workflows and making use of monitoring data for automated water quality analyses.

EPA's *Previous Exchange Network Grant Projects* website has a list of projects, including many tribal projects, that EPA has awarded.

Other Considerations
Tribes may consider joining the Tribal Exchange Group to address issues involving data management, technology access, and information exchange. The *Tribes and the Exchange Network* website has more information and updated resources on open grant solicitation.

Dry Creek Band of Pomo Indians

The Dry Creek Band of Pomo Indians in Region 9 received $200,000 from the EN in 2021 to do the following:

- Develop a strategic plan for collecting, managing, and assessing data and making the best use of available technology to support water quality monitoring of the Tribe's resources.
- Develop, test, and implement the electronic discharge monitoring report (eDMR) system within a tribal environment.
- Develop websites, including website content and user tools, to inform the public of critical environmental projects undertaken or issues monitored.
- Develop and implement innovative geospatial tools and technologies to improve monitoring, reporting, data visualization, and analysis of environmental and public health.

Clean Water State Revolving Funds

EPA's *Clean Water State Revolving Fund* program is a federal-state partnership that provides communities with low-cost financing for water quality infrastructure projects. State CWSRF programs provide eligible recipients loans to construct municipal wastewater facilities, control NPS pollution, build decentralized wastewater treatment systems, repair or replace failing decentralized systems, create green infrastructure projects, protect estuaries, and fund other water quality projects. Each state's

CWSRF program is responsible for selecting the projects that receive assistance. Tribes are eligible to apply for state funds and should contact the appropriate state agency for information on this program. EPA's *State CWSRF Program Contacts* website has contact information for states' CWSRF representatives along with links to states' CWSRF websites. The CWSRF program offers a variety of types of financial assistance that can fund projects that do not fall within the mainstream of traditional wastewater infrastructure. EPA's *Financing Options for Nontraditional Eligibilities in the Clean Water State Revolving Fund Programs*, *Financing Decentralized Wastewater Treatment Systems*, and *CWSRF Best Practices Guide for Financing Nonpoint Source Solutions* documents have more information.

The Yurok Tribe

The Yurok Tribe received an $18.7 million loan at zero percent interest. This loan, provided by California CWSRF, allowed the Tribe to acquire 22,237 acres of forestland to protect water quality and beneficial uses. Sustainable harvesting practices generated carbon credits, a partial repayment source. The California CWSRF required the Tribe to provide a contract for the sale of carbon reserves as a condition to receive funding. EPA's *Funding Land Conservation Projects with the Clean Water State Revolving Fund* factsheet has more information.

Drinking Water State Revolving Funds

EPA's *Drinking Water State Revolving Fund* program is a financial assistance program that provides loans for infrastructure projects that protect public health. Projects may include those to improve drinking water treatment, fix leaky or old pipes for water distribution, improve sources of water supply, and replace or construct finished water storage tanks. Tribes can apply to states for funds to implement source water protection activities and acquire land or conservation easements to protect source water.

Other EPA Programs

In addition to the EPA grant programs above that are specifically for Tribes or have established tribal set-asides, there are several other EPA programs that provide financial and technical assistance that may be relevant to tribal water programs.

BEACH Act Grants

EPA awards grants under authority of the Beaches Environmental Assessment and Coastal Health (BEACH) Act to eligible Tribes, states, and territories that have oceans, or Great Lakes recreation waters, that are designated for primary contact use with EPA-approved WQS. BEACH Act funds can help establish or supplement water quality monitoring and public notification activities. Specifically, tribal, state, local health and environmental protection agencies, and other local authorities use BEACH Act funds to monitor beach water quality during each swimming season. When bacteria levels in the water are too high, these entities notify the public of unsafe swimming conditions by either posting beach warnings or closing the beach.

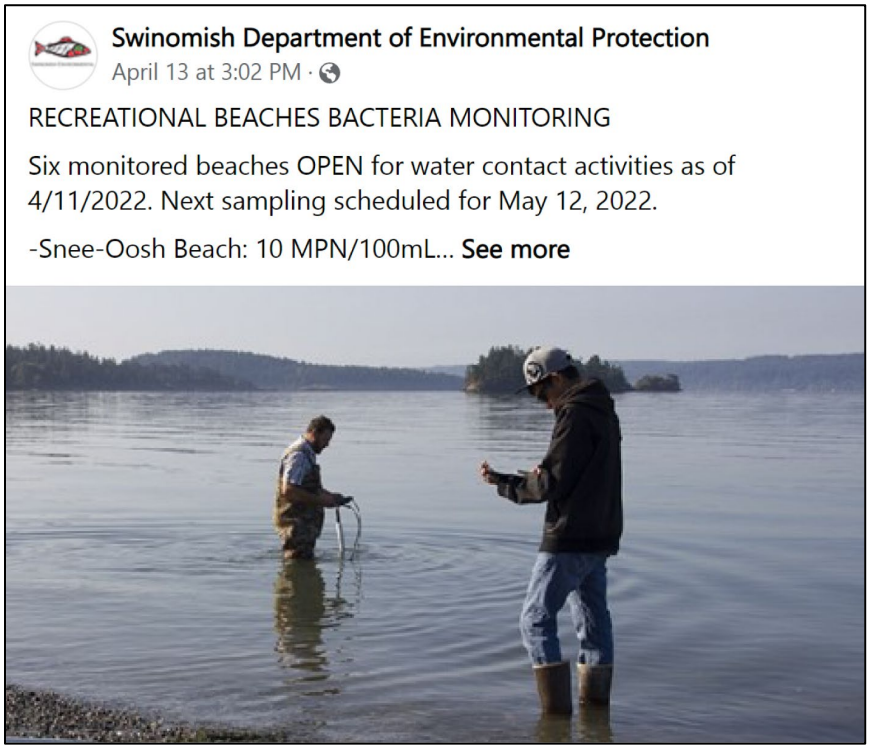
EPA allocates the BEACH Act grants using a formula based on the length of the beach season, number of miles of shoreline, and population of coastal counties. There are currently four eligible Tribes, each receiving approximately $50,000 per year.

EPA's *Beach Grants* website has more information.

Swinomish Department of Environmental Protection

The Swinomish Department of Environmental Protection conducts bacteria monitoring along their recreational beaches using BEACH Act funds. They update their community on their monitoring activities, as shown in a post to their Twitter account (Figure 20).

Figure 20. A post to Twitter by the Swinomish Department of Environmental Protection



National Estuary Program

EPA's *National Estuary Program* (NEP) is a non-regulatory, place-based program designed to protect and restore water quality and ecological integrity in estuaries that EPA designates as having national significance. There are currently 28 NEPs across the United States, located along the Atlantic, Gulf, and Pacific coasts, and Puerto Rico. Each of the 28 NEPs focuses within a study area that includes the estuary and surrounding watershed. A Comprehensive Conservation and Management Plan (CCMP) guides NEP priorities and actions to address challenges to water quality, living resources that are found in or use estuaries, and local priorities. EPA provides annual funding, national guidance, and technical assistance to local NEPs.

The *NEP Coastal Watersheds Grant (CWG) Program* is a competitive grant program that supports projects addressing urgent and challenging issues that threaten estuaries of national significance. Restore America's Estuaries (RAE) administers the NEP CWG Program under a cooperative agreement with EPA. RAE conducts an annual solicitation with approximately $1 million awarded each year. Subawards range between $75,000 and $250,000, resulting in approximately three to ten total subawards per funding year, depending on Congressional appropriations. Tribes and intertribal

consortia are eligible applicants. Project proposals must occur in their entirety within NEP geographic areas.

The Lowlander Center
The Lowlander Center supports coastal and bayou lowlands (both human and natural) by honoring residents. It also supports Indigenous and diverse historied groups by helping them achieve full engagement for a resilient future. The Lowlander Center received a $250,000 Coastal Watersheds Grant in 2020 to strengthen Louisiana's marshes by backfilling canals to reduce flood risk, protect sacred sites, and enhance tribal communities' resilience.

Urban Waters Program

The *Urban Waters Federal Partnership* seeks to connect overburdened or economically distressed urban communities with their waterways so that they become stewards for clean urban waters. Through the Partnership, communities gain economic, environmental, and social benefits. Communities also collaborate with federal agencies, state and local agencies, and community-led efforts to achieve common goals. The Partnership currently supports efforts in 20 designated Urban Waters locations in the United States.

The *Urban Waters Learning Network*, led by a partnership between River Network and Groundwork USA, is a peer-to-peer network of people and organizations working to restore and revitalize local waterways. Pollution, economic distress, and related challenges disproportionately impact many of these waterways. Its purpose is to strengthen the effectiveness of urban waters practitioners across the country by providing them with opportunities to share experiences, exchange technical expertise, and learn about funding and technical resources available to support their work.

The *Five Star and Urban Waters Restoration Grant Program*, managed by the National Fish and Wildlife Foundation and Wildlife Habitat Council, in cooperation with EPA and other partners, seeks to develop community capacity to sustain local natural resources for future generations by providing financial assistance to diverse local partnerships focused on improving water quality, watersheds, and the species and habitats they support. Awards range from $20,000 to $50,000 with an average size of $35,000 and 40 to 50 grants awarded per year. Grants span from 12 to 18 months. Program grants support projects for ecological improvements along with targeted community outreach, education, and stewardship. Tribes are eligible applicants.

For a tribal project example, see the *Urban Waters and the Green-Duwamish Watershed (Washington)* website.

Office of Environmental Justice Grants

EPA's *Environmental Justice Small Grants (EJSG) program* supports and empowers communities working on solutions to local environmental and public health issues. EPA designed the program to help communities understand and address exposure to multiple environmental harms and risks. EJSG fund one-year projects up to $75,000, depending on the availability of funds. All projects must include activities that relate to at least one of the following qualified environmental statutes: Clean Air Act Section 103(b)(3); CWA Section 104(b)(3); Federal Insecticide, Fungicide, and Rodenticide Act Section 20(a); Marine Protection, Research, and Sanctuaries Act Section 203; Safe Drinking Water Act Section

1442(c)(3); Solid Waste Disposal Act Section 8001(a); or Toxic Substances Control Act Section 10(a). Federally recognized and state-recognized tribal governments, Alaska Native Villages, and tribal organizations are eligible applicants.

Penobscot Indian Nation

The Penobscot Indian Nation received an EJSG in 2019 to study mercury contamination of fish and crayfish, key components of the traditional sustenance diet of the Penobscot Indian Nation, Maine. This project provided species- and site-specific information on mercury concentrations of fish and crayfish in lakes subject to tribal sustenance fishing rights. Findings from this project are being used to inform the tribal community and to influence behavior to minimize mercury exposure during sustenance fishing. Finally, data on mercury in fish and crayfish will provide the baseline data needed to design a long-term mercury monitoring program that informs policymakers on the effectiveness of current mercury water quality regulations. Activities include sampling (approximately 500 samples of 2 to 8 species of fish and crayfish in 8 to 10 lakes), forming community forums on the project, conducting several school presentations, and developing a summary brochure and a technical report on the sampling results. For more information about past EJSG grantees, visit EPA's *Environmental Justice Small Grants Program – Grant Recipients* website.

EPA Geographic Programs

Gulf of Mexico Division: The Gulf of Mexico Division (GMD) is a non-regulatory program focused on 1) assisting Tribes, states, interstate agencies, and other public or nonprofit organizations in developing, implementing, and demonstrating innovative approaches relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution; and 2) expanding and strengthening cooperative efforts to restore and protect the health and productivity of the Gulf of Mexico in ways consistent with the economic well-being of the region. The GMD utilizes competitive funding opportunities to fund projects that will deliver significant results to achieve the environmental outcomes of improved health of the Gulf of Mexico by restoring, protecting and enhancing habitat, improving water quality, enhancing community resilience, and furthering environmental education. Tribes and intertribal consortia are eligible applicants.

Great Lakes Restoration: The Great Lakes Restoration Initiative (GLRI) accelerates efforts to protect and restore the Great Lakes which is the largest system of fresh surface water in the world. Built upon the foundation of the Great Lakes Regional Collaboration Strategy, the multi-agency GLRI has provided funding to 16 federal organizations to address threats to the Great Lakes ecosystem and to accelerate progress toward achieving long-term goals since 2010. The *GLRI Action Plan III* outlines the priorities and goals of the GLRI for fiscal years 2020 to 2024, which work to accelerate environmental progress in five focus areas: toxic substances and areas of concern, invasive species, NPS pollution impacts on nearshore health, habitats and species, and foundations for future restoration actions. Tribes and intertribal consortia are eligible for GLRI funding. GLRI includes the Distinct Tribal Program administered by the U.S. Department of the Interior (DOI) Bureau of Indian Affairs under which tribal projects are supported that are consistent with GLRI goals and objectives in the spirit of self-determination, maximum flexibility, and consistent with federal Indian trust responsibilities.

Puget Sound: Since 2010, Congress has appropriated over $350 million in CWA Section 320 funds for Puget Sound. Under Section 320, EPA has provided NEP and Geographic Program funding and support to help communities make on-the-ground improvements for clean and safe water, protected and restored habitat, thriving species, and a vibrant quality of life for all, while supporting local jobs. Currently, EPA helps fund the Puget Sound Partnership's Action Agenda for protecting and restoring Puget Sound, but federal support of Puget Sound recovery also comes from many programs. Administrators of most of these programs include the National Oceanic and Atmospheric Administration, U.S. Department of Agriculture (USDA), DOI, and the U.S. Army Corps of Engineers. Funding is made available directly to Tribes from EPA Region 10 and through the Northwest Indian Fish Commission subawards.

Other Non-EPA Federal Programs

U.S. Department of Agriculture

The USDA provides services related to food, agriculture, natural resources, rural development, nutrition, and related issues. The *U.S. Department of Agriculture* website and *2016 USDA Resource Guide for American Indians and Alaska Natives* have more information. USDA's *Grants and Loans* website has information on their financial assistance programs.

- **Natural Resource Conservation Service (NRCS)** offers grants to Tribes through its Conservation Partnership Initiative. NRCS staff have worked closely with many Tribes to help them identify additional funding opportunities. USDA's *Regional Conservation Partnership Program* website has more information.
- **Farm Services Agency** provides farm commodity and disaster assistance programs, as well as other forms of financial assistance. USDA's *Farm Service Agency* website has more information.
- **U.S. Forest Service** works to maintain and improve the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of current and future generations. The Forest Service performs functions such as natural resource stewardship, management of lands and realty, and minerals and geology management. USDA's *Forest Service* website and *Grants & Agreements* website have more information.

U.S. Department of the Interior

DOI manages and protects America's federal lands, national parks, and other resources. The *U.S. Department of the Interior* website has more information.

- **Bureau of Indian Affairs** within the DOI provides Water Resources on Indian Lands Grants to Tribes to assist in the management, planning, and development of their water and related land resources.
- **U.S. Fish and Wildlife Service** works to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The *U.S. Fish and Wildlife Service* website and *Financial Assistance* website have more information.
- **U.S. Geological Survey (USGS)** monitors, assesses, and conducts targeted science research. USGS works in the fields of water, earth, and biological science as well as serving as a civilian mapping agency. The *USGS* website and *Financial Assistance* website have more information.

Federal Emergency Management Agency

Nature-based solutions are increasingly recognized as important tools to mitigate disasters. EPA and the Federal Emergency Management Agency (FEMA) are working together to align EPA water quality actions

with nature-based solutions that improve water quality and mitigate disasters. FEMA has a variety of funding programs that support the implementation of nature-based solutions. FEMA's *Mitigation Assistance Resource Guide* for Tribal Nations has more information.

Department of Health and Human Services

The Administration for Native Americans, within the Administration for Children and Families in the Department of Health and Human Services, provides Environmental Regulatory Enhancement grants to Tribes to develop tribal environmental projects that are responsive to tribal needs. The *About Environmental Regulatory Enhancement* website has more information.

State Programs

State agencies manage many EPA grant programs, such as the NPS Program and the State Revolving Funds program. These agencies set their own priorities and have their own procedures for providing funding. Tribes should contact the relevant state agency for specific information on whether Tribes are eligible to receive funding and what projects are eligible for funding. In addition, other state natural resources agencies, such as those related to fish and wildlife or forestry, might also provide sources of funding or opportunities to collaborate.

United States Environmental Protection Agency
Office of Water
Office of Wastewater Management
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