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The CWA 303(d) and 319 Protection Learning Exchange

July 11 - 14, 2022

PROCEEDINGS DOCUMENT

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I. Overview

From July 11 through 14, 2022, the Environmental Law Institute (ELI) convened *The Clean Water Act (CWA) 303(d) and 319 Protection Learning Exchange*. This event, supported through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), virtually brought together water quality staff from various protection-relevant programs, including CWA 303(d) Listing and TMDLs, CWA 319/Nonpoint Source, and Healthy Watersheds, from 20 states, 4 tribes, most EPA regions, and EPA Headquarters.

The intention of this Exchange was to yield peer-to-peer learning through the sharing of experiences, whether successes or challenges, integrating protection into watershed plans, TMDLs and their implementation plans, and other planning documents. In addition, the Exchange was structured to allow for creative thinking and active discussion on aspects of protection for which there is less experience, such as protection-based measures of success and methods of communicating the progress and results of water quality protection efforts.

The four-day event was successful by the metrics of sharing useful information and generating new ideas. This proceedings document highlights many of the takeaway points made by participants over the course of the Exchange. This document is intended to expand the peer-to-peer communication of this event to a much wider audience of water quality professionals, spur new ideas and approaches building off those noted here, and ultimately advance water quality protection in the CWA 303(d), CWA 319, and other programs across the country, in a manner that suits the needs of the program and jurisdiction.

Some of the most salient points made during the Exchange were:

- Protecting water quality is a multidimensional effort requiring protection of complex natural systems and administration of many inter-related programs (federal, state, tribal, local, nonprofit, etc.) within watersheds. If well-integrated and managed as a whole, these efforts have the potential to protect the complex nature of our vulnerable and high-quality resources.
- Protection as a concept and program priority is not new, but CWA 303(d) and 319 program infrastructure to advance it may be.
- Protection can be advanced by:
    - Proactively investing program resources to specific waters/watersheds, e.g., prioritizing watersheds for protection through statewide/regional healthy watersheds assessments or their condition;
    - Embedding protection in meaningful ways alongside restoration, e.g., holistic TMDLs that recognize and incorporate unimpaired waterbodies; and
    - Outstanding Resource Water designations and antidegradation policy implementation.
- The pollutants and landscape/watershed alterations threatening healthy waters are frequently the same as those impairing waters. Consequently, the practices used to diminish those threats are also often the same, and it is important to view each water as existing in one point on a continuum from healthy to impaired.

- Current work being done on protection across the country, including through land conservation, waiving match requirements, and communicating with the public, is impressive and can inform future approaches.
- Still, there are ongoing challenges, and opportunities for improvement, with collaboration across CWA programs and with other programs, agencies, and entities, which could be facilitated through speaking a common language to establish aligned goals.
- Terminology and semantics matter (what are you protecting?), as they are key to establishing clear goals and communicating concrete actions to achieve them.
- Local partner buy-in is critical to the development and implementation of plans focused entirely or in part on protection.
- Protection is continuous; it never ends!

II. Takeaways

What follows are observations, lessons, and suggestions drawn from the plenary sessions and breakouts of the Protection Learning Exchange. They are organized by subtopic of discussion, including: the diverse activities and objectives considered "protection," the ways in which protection has been and could be prioritized among other water quality needs, the wide-ranging characteristics of protection plans, potential protection goals and metrics, the monitoring that is needed to evaluate the effectiveness of protection plans and their implementation, and partners for protection, as well as general challenges, lessons, and opportunities regarding protection.[1]

A. What is "protection"?

While the term "protection" is common in water quality contexts, it has been used to refer to a wide variety of activities and objectives. Understanding and appreciating those differences can be critical to successful communication and can expand perspectives as to what is possible. Protection can seek to maintain high water quality or prevent impairment, and some states also strive to protect impaired waters from worsening while seeking to restore them. Protection can focus solely on the quality of the water (a designation or assessment status) or look more broadly to the condition of the watershed. Protection can be an isolated effort or be part of a bigger endeavor, like maintaining unimpaired and unassessed waters in a watershed with impaired waters, or other pollutants that presently meet standards in a waterbody impaired for a different pollutant. It is not uncommon for protection and restoration to be viewed as interrelated or on a continuum, with similar efforts undertaken for protective and restorative purposes. Both the 319 and 303(d) programs have existing language about protection in program guidance and other materials.[2] Related comments from the Exchange include:

<u>Protection versus restoration</u>

- In some instances, there is a struggle to parse "restoration" and "protection," and uncertainty about the benefit of distinguishing them.
- At times, a bright line between restoration and protection can be valuable for communication purposes. In North Carolina, restoration involves any projects that reduce loading of pollutants or pollution (including stormwater volumes) to surface waters directly or indirectly or improve aquatic ecosystem functions (instream habitat or riparian). Protection involves projects that maintain current loading of pollutants/pollution or maintain current aquatic ecosystem functions. Protection and restoration can be done at the same time, and there is also "protection of restoration

[1] ELI staff selected these specific points from the many made over the course of the week and is responsible for how they are summarized and organized.

[2] *See, e.g.*, 2013 Nonpoint Source Program and Grants Guidelines for States and Territories (https://www.epa.gov/sites/default/files/2015-09/documents/319-guidelines-fy14.pdf); 2016 Integrated Reporting Guidance (https://www.epa.gov/sites/default/files/2015-10/documents/2016-ir-memo-and-cover-memo-8_13_2015.pdf); 2022 - 2032 Vision for the Clean Water Act Section 303(d) Program (https://www.epa.gov/tmdl/Vision).

opportunity," effectively "holding the line" in impaired watersheds while restoration is planned.
- "Protected" waters are still susceptible to natural or human-caused disturbances (e.g., wildfires, forestry activities, and climate change), so could be considered "at risk".

Actions

- Protection work can be advanced by (among other things):
  - Proactively investing state/tribal program resources to specific waters
  - Embedding protection in meaningful ways alongside restoration, such as measures that protect unimpaired tributaries of impaired waters in the course of restoration efforts.
- TMDLs using a watershed-based approach (instead of for a single waterbody) can more easily allow for protection as well as restoration.
- Until recently, TMDLs in Connecticut have applied to the actual impaired waterbody, but that is changing to include all identified waterbody segments (even if not assessed), which will provide protection in addition to restoration (a mixed plan, which may have ten segments with only two segments impaired).
- Protection work can include proactively implementing BMPs to address pollution sources prior to water quality impairment.
- Based on a 2019 EPA Headquarters analysis of the CWA 319 Grants Reporting and Tracking System (GRTS), approximately five percent of nonpoint source projects reported by states from 2014 to 2019 were primarily aimed at protecting unimpaired/high quality waters. The suite of BMPs implemented across these projects was similar to the types of BMPs implemented in the larger universe of state nonpoint source restoration projects, except that, in these projects, the state was supporting local partners to implement these practices proactively before an impairment occurs.
- Montana started a focused watershed approach, where half of CWA 319 money and staff is focused on specific HUC-8 watersheds to generate more momentum and track improvements in smaller areas. The main goal in a focus watershed is to restore water quality, but they will consider protection and have a draft protection plan out for a river in a developed area that is not currently impaired by nutrients, which is rare.
- From a water quality standards perspective, one could consider protecting a waterbody's assimilative capacity in addition to the designated use. Building into water quality standards the understanding of, and ability to measure, the capability of a system to recover from pollution and other forms of human disturbance supports the survival of resilient aquatic ecosystems.

B. Prioritizing protection

States have incorporated protection, along with restoration, into their prioritization efforts in multiple ways, although the EPA's Recovery Potential Screening (RPS) tool is a common aid. The prioritization process can favor or disfavor characteristics like vulnerability and emphasize or overlook environmental justice concerns. Other comments from the Exchange concerning prioritization include:

Generally

- Joint priority setting can bring multiple program resources to build and sustain watershed work.
- The vulnerability of waters could be prioritized or deprioritized. To prioritize vulnerable waters, the vulnerability score (e.g., in the RPS Tool) is added to the other scores (e.g., ecological and social). To deprioritize vulnerable waters, the vulnerability score is subtracted from the other scores.
- As an example of including protection within water prioritization, Wisconsin staff mentioned their 2015 Water Quality Restoration and Protection Prioritization Framework:
    - Level 1 Priority Areas – Ongoing TMDL projects
    - Level 2 Priority Areas
        - Restoration plan priority areas: the 25 percent of watersheds with the lowest Ecosystem Health scores
        - Protection plan priority areas: watersheds with both high Ecosystem Health scores and high Vulnerability scores (25 percent of watersheds with the highest Ecosystem Health Index scores and 50 percent of watersheds with the highest Vulnerability Index scores)
        - 2013 Nutrient Reduction Plan priority watersheds
- As another example, Minnesota staff referenced their lake protection prioritization process:
    - Current water quality and watershed conditions
    - Existing and potential land use changes in watersheds
    - Risk of decreasing water quality
    - Local recreational, aesthetic, and economic values

  Lakes are then prioritized based on those most at risk for future impairment (identified as a combination of disturbance, lake size, water quality, proximity to the water quality standard, and declining trend information). This step is followed by discussions with citizens to build on the priorities.

Incorporating climate and equity considerations into prioritizing protection

- The RPS tool and Watershed Index Online (WSIO) contain climate and environmental justice indicators that can help incorporate those factors into prioritizing protection and restoration.
- To incorporate environmental justice into water quality protection and restoration priorities, Tennessee is identifying economically distressed counties and is comparing them to EJSCREEN.
- As another example on how to incorporate environmental justice as part of a program to protect and restore aquatic ecosystems, MassBays National Estuary Program is constructing a database and framework to map ecological condition, stressor data, and ecosystem services spatially, so communities with environmental justice concerns can be identified and information and options shared with them so that they can directly influence solutions.
- Developing prioritization approaches that incorporate multiple program priorities can be challenging; for example, balancing the value of identifying areas where there is existing

local partner capacity and resources to plan and implement protection work with the goal of increasing program resources targeted to increase local capacity in underserved areas.

- Strategies for equitable prioritization and implementation include:
    - Have different districts with local staff and make funding projects roughly equitable among those districts.
    - Encourage active watershed groups to serve as mentors to a community that has environmental justice concerns but does not have an advocate. After all, the whole state needs clean water, so it can be beneficial to promote state pride!
    - Make it a point in the strategic plan that building capacity of local organizations is a critical step. This has helped Montana, for example, use programmatic funds for small grants that help communities develop plans or projects.

C. Characteristics of protection plans

The characteristics of protection plans also vary, from the type of plan used (e.g., a TMDL or watershed-based plan) to the complexity of the issues being addressed and the approaches taken in the plan. A TMDL, for example, can be protective because it solely is focused on an unimpaired waterbody (what is sometimes referred to as an "informational TMDL"), addresses unimpaired or unassessed waters as well as impaired waters within a watershed that is the focus of a restoration effort, or remains in place after water quality standards have been achieved in order to maintain those standards. Related comments from the Exchange include:

<u>Types of plans that can involve protection</u>

- Some restoration plans that can contain protection strategies:
    - CWA 303(d): TMDLs, 5alt or 5r plans, 4b plans ("other pollution controls"), 4c plans ("impaired due to non-pollutant pollution")
    - CWA 319: watershed-based plans (nine-element), EPA-approved alternative watershed plans
    - National Estuary Program Comprehensive Conservation Management Plans (CCMP), for example MassBays Biological Condition Gradient-based CCMP.
- The components for the plans differ but not always significantly. The level of detail will depend on the complexity of the watershed and its issues.
- Combination protection/restoration plans could use more stringent standards/allocations in upstream portions of the watershed to support restoration downstream.
    - In Washington, for example, the CWA 319 program tries to develop TMDL implementation plans so they have the nine CWA 319 elements to meet both needs.
    - In Connecticut, for example, the TMDL program is working with the nonpoint source program on a protection plan, separate from an implementation plan, with the TMDL program doing the watershed analysis and stressor identification, addressing many of the nine elements on a general basis (like funding source). Meanwhile, the nonpoint source program is using its funding to have local partners focus on where implementation opportunities are with more specifics on costs and schedules. This brings both programs together to work in the same watersheds, using 303(d) to do the initial work.

Common characteristics

- In general, protection-oriented plans: evaluate watershed threats; identify protection priority areas, incorporate protection-based management strategies, and include protection-based measures of success.
- Key tools for protection-oriented planning: hydrologic analysis, land use planning reviews, landscape level wetland functional analysis, conservation priority mapping, shoreline inventories, stormwater inventories, and stream-road crossing inventories. Inventories are expensive, and land use planning is costly. However, the conservation priority mapping process does not need to be extensive or costly.
- Investment of time and knowledge in working with land use planners and other local partners is critical to successful protection.
- The context of the watershed and local partners should be central to defining the scale and scope of the protection effort. Well-articulated goals responsive to community priorities, and ideally community buy-in and ownership of the plan, are more likely to result in people bringing their own resources.
    - Michigan's Alternative Inland Lake Protection Plans, as an example, provide a simplified process and template for inland lake associations to use to identify where critical best management practices are needed.
- Maine's alternative watershed-based plans (for lake protection), as another example, are kept relatively simple and cost effective to prepare. Plan developers follow a template which Maine DEP created collaboratively with the EPA, and the plans are designed to take 40 hours to complete without need of hiring a consultant. Each lake protection plan includes a volunteer-led survey of land use categories (e.g., forest, agricultural, and residential) and problems (e.g., erosion from driveways, camp roads, and lack of vegetated buffers, etc.) that are listed by location, problem descriptions, impact, recommended fixes and costs to fix the site. For the surveys, the state provides planning services, mapping, training, reporting, outreach, and technical assistance; and partners provide water quality data (Lake Stewards of Maine), local knowledge, volunteers, and capacity.

Characteristics in/of TMDLs

- Protection (informational) TMDLs are unlikely to address direct discharge or threat impacts, but rather, focus on land use changes (e.g., grassland to urban), providing analysis on the consequences of land use change, and then directing people to zoning departments to mitigate impacts on high quality waters.
- When urbanization is occurring, TMDLs can be useful as a preemptive means of securing the integrity of water quality. A TMDL can set a wasteload allocation of zero – not regulating land use but regulating the pollutants from that land use.

Lessons

- The diversity of the stakeholders writing the plan is important. Regardless, the plan needs some people interested in protection to push that agenda. Those people can encourage the person writing the plan to include the protection element and push for funding to that end.
- EPA regions also can play an important role in ensuring that protection is considered/included in watershed plans: reminding stakeholders to discuss the subject, looking at draft plans or outlines of plans, and reviewing final drafts.

- If equity and climate are to be built into protection plans, then there are some limitations and obstacles. For example, local stakeholders cannot always access and synthesize these data.
- Getting a plan in place opens the door for implementation funding.

D. Potential protection goals and metrics

Protection goals and the milestones and metrics selected to evaluate results have been everything from very specific to holistic in scope, with a variety of stressors suggested as proxies for water quality progress.

State- and region-specific protection goals

- Minnesota, for example, identified the 25th percentile value of summer mean total phosphorus concentrations in high quality lakes as a preliminary target concentration for protection (assumed to be a reasonable target for reducing phosphorus inputs to a lake).
- Conceptually comparable to Minnesota, Alabama has established designated aquatic life use thresholds for streams based on a percentage of reference and have used a Biological Condition Gradient to inform the public what exactly this means in numbers, proportion, and types of fish and benthic macroinvertebrates.
- As another example, a statewide goal for Wisconsin: 100 percent of priority healthy watersheds and high-quality waters remain so through 2030. Land cover-based metric: (1) more than 75 percent of land is permanently protected natural land cover; (2) more than 75 percent of land is in natural land cover but not under permanent protection; (3) less than 75 percent of land is in natural land cover.
- As yet another example, a goal of the Chesapeake Bay Program: 100 percent of state-identified healthy waters and watersheds (definitions vary across the states) remain healthy. Some of the metrics: rate of farmland, forest, and wetland conversion to impervious surface and improve the knowledge of land conversion and impacts throughout the watershed. Identified milestones:
    - 2013: Publish map of state-identified healthy waters and watersheds and track the healthy watersheds framework
    - 2015: Update the healthy watersheds map
    - 2016: Phase I forest retention study
    - 2017: Create the conservation land-use policy toolkit, phase II forest retention study, update the healthy watersheds map, and create the healthy watersheds co-benefit fact sheet
    - 2018 & 2019: Conduct the Chesapeake Healthy Watersheds Assessment, high resolution stream mapping, and the phase III forest retention study
    - 2020: Publish the Chesapeake Healthy Watersheds Assessment report, geodatabase, and mapping application, and develop the Maryland pilot protected lands indicator
    - 2021: Create the local government guide to preserving local character and landscapes; conduct high resolution land cover, land use change, and stream mapping; develop the Bay-wide protected lands indicator; and conduct the Maryland Healthy Watershed Assessment

    - 2022: Conduct the Chesapeake Healthy Watersheds Assessment 2.0 and the high value habitat mapping scoping project, and agree on how to assess progress (indicator development)
- Noted metrics and milestones for protection included: tracking the implementation and completion of projects/protective actions; flashiness with the Richard Baker Index; maintaining natural flow regimes; land use changes with high resolution tools; public meeting or engagement opportunities; fisheries data as a proxy metric for problems like sediment; and increasing education and outreach in a watershed, so that stakeholders contribute to protection.

<u>Other noted protection goals</u>

- Water quality- and ecology-based goals:
    - Protect water quality in unassessed areas
    - Protect high quality waters (State/National) and Category 1 waters
    - Protect or maintain water quality to meet state water quality criteria
    - Develop plans that identify watershed-specific stressors and offer suggestions on how to prevent future impacts in areas of good water quality
    - The water quality trend is stable or improving (and proof that actions have contributed to that)
    - Increase riparian health
    - Streams support ecologically balanced and sustainable communities of native organisms (sensitive species)
    - Lakes do not lose their existing trophic classification
    - Protect and maintain Cisco populations (and resulting game fish fishery) in coldwater lakes
    - The number of protection plans developed per year (not necessarily in new watersheds)
    - The sustained minimization or avoidance of water quality degradation due to stressors and/or watershed alterations that would present threats to its current condition
    - Examples of land use-based indicators that could be helpful in characterizing watershed health:
        - Percent of natural land cover in the watershed
        - Percent of tree canopy in the riparian zone in the watershed
        - Percent of natural land in the riparian zone in the watershed
        - Percent of impervious cover in the watershed
        - Percent of effective impervious cover in the watershed
        - Percent of managed turf grass
        - Percent of forest in the watershed
        - Percent of wetlands in the watershed
        - Percent of impervious cover in the riparian zone in the watershed
        - Percent of forest habitat in the watershed
- Programmatic goals:
    - Aiming for staff and project funding to be balanced equally between restoration and protection

    - Using a holistic approach in TMDLs to protect waters near an impaired waterbody
    - Engaging and leveraging other programs and partners who have huge roles to play in protection (e.g., forestry, fishery, wildlife, land trust, other conservation organizations, and local municipalities)
    - Better aligning with the nonpoint source, drinking water, and groundwater programs within the agency and NRCS to achieve statewide protection strategies and program requirements
- The Chesapeake Healthy Watersheds Assessment is an example of a multi-metric index measure, based on: landscape condition, hydrology, habitat, geomorphology, water quality, and biological condition, with vulnerability metrics of land use change, wildfire, water use, and climate change. The Chesapeake Bay Program and state partners are working to identify opportunities to use the assessment to help track progress in maintaining healthy waters and watersheds.
- Multiple states have developed and are applying a Biological Condition Gradient model that enables goal setting, and they are measuring progress in incremental steps along a gradient of human disturbance – all levels assessed against the CWA integrity objective.

<u>Lessons learned from protection plans and metrics</u>

- Including social survey projects as part of the impact analysis is informative, to know how much people's perspectives and understandings have changed. A set of interview questions to determine where on the readiness spectrum people in the community are immediately helps the state and organizations to tier their outreach. Repeating the assessment in five years should reveal improvement.
- Tracking riparian vegetation over time can be very effective, as healthy vegetation can address several pollutants and can be a good indicator of overall stream health (e.g., a proxy for temperature and sediment load reductions).
- Land metrics: state-owned land provides the highest assurance of meeting established goals/metrics, then riparian protection rules and limited impervious cover rules, followed by easements; land use plans also could get credit.
- Be specific at the outset about the designated uses being protected, as this will help in conveying the story of protection outcomes.

E. Monitoring

The monitoring that is needed to evaluate the effectiveness of protection plans and their implementation will depend on the goals, milestones, and metrics set. Related comments from the Exchange include:

- Monitoring for evaluating the effectiveness of protection efforts can use the same approach and techniques that were used to produce the data that originally prompted the protection effort.
- Water quality data (and trends in water quality), ideally with a mix of water quality indicators, potentially including bio/ecological indicators and hypolimnion and profile data for shifts in lake processes, over the short and long term would help with certain

protection efforts. Such data could come from standard water quality monitoring activities, regional surveys, and citizen/volunteer monitoring programs.

- Knowing flashiness changes over time can help with runoff-focused efforts.
- Knowing land conservation (fee simple and easements) statistics, such as acreage and the cumulative percentage of land conserved in the watershed, as well as remote imagery that reveals clearing and other disturbance in protected areas, would help in monitoring conservation-focused protection efforts.
- Similarly, the percent of natural land cover or percent of forested land cover (and the change) would help in monitoring cover-focused protection efforts.
- BMP implementation data, including the number of activities and whether they remain in place and are maintained, would help in evaluating the effectiveness of BMP-focused efforts over time. Potential sources of these data include pollutant-controlled reports and stormwater BMP inspections conducted by agency nonpoint source staff and project partners.
- Forestry management plans, including for private lands and NRCS Conservation Activity Plans, and especially plans that go beyond standards, could help in monitoring implementation and its effectiveness.
- Alabama, for example, is implementing a monitoring plan that measures the stream condition relative to the Biological Condition Gradient and criteria threshold. This framework enables reporting incremental progress and milestones when implementing a complex, multi-stage restoration or protection plan.
- Data on the adoption of municipal regulations, especially those that are more aggressive than at the state level, would help in evaluating rules-based efforts.
- The change in landowner/water user perspectives and attitudes, through social surveys, would help in evaluating education- and engagement-focused efforts.
- Other potentially valuable monitoring efforts include the number of groups formed and number of meetings held.

F. Partnerships

There are many opportunities for partners in protection, from fiscal support to collaboration in planning and implementation. Below are comments and suggestions from the Exchange concerning such partnerships:

<u>Approaches</u>

- Find common ground and co-benefits (e.g., restoring floodplains and increasing first foods for tribal use). Water quality is one of many co-benefits of protection work, and while it may be the first one considered by water quality programs, there may be other benefits that are more important to local stakeholders.
- Find a person or an organization to be your local champion.
- In general, private individuals and groups are hard to get a hold of, so it is helpful for nonprofit partners to facilitate the communication while the state provides the templates.

- Some states, including Alaska, Maryland, and Washington, have been reducing or completely offsetting the federal match requirement with state funds, focusing on tribes and communities with environmental justice concerns.
- It also can be important to provide communities with limited resources guidance and training on proposal development (e.g., technical assistance, templates, and examples of successful methods), so they can be more competitive with those communities who can afford contractor assistance.
- The Healthy Watersheds Grant program has been a "game changer" in EPA Region 1, a catalyst for coordinating on source water protection.

Who

- Partners for protection may not always be the same 501(c)(3) partners as for restoration efforts. There may be different local partners in healthier areas. Local governments are common in protection plans, and land conservation is a ripe partner group nationally.
- The U.S. Forest Service can be a great protection partner and has been working in the priority healthy watersheds of some states (e.g., developing Watershed Restoration Action Plans). The agency brings special resources and technical assistance to the collaboration. Some states have MOUs/MOAs with the U.S. Forest Service, which outline the roles and responsibilities in implementing the nonpoint source water quality provisions and for managing and controlling point and nonpoint source water pollution.
- The U.S. Forest Service's Joint Chief's Landscape Restoration Partnership is a notable collaborative opportunity.
- For FEMA collaboration opportunities, a good starting point is the state hazard mitigation officer (SHMO).

Examples

- The Louisiana Watershed Initiative coordinates funding, data, and resources among five state agencies to reduce flood risk through a watershed-based approach. They are speaking the same language and heading in the same direction. Flood mitigation comes first, then water quality/habitat goals, and natural channel design as a form of TMDL alternative.
- Alaska has been rather urban-centric, so each region of the state was required to identify at least two remote watersheds in which the agency does not usually work. The focus now is to develop those partnerships for all CWA 319 proposals.
- After working with the same partners for years, Maryland DNR has created capacity building grants, focusing on more rural areas and investing in circuit riders to help communities with limited resources. They are looking for opportunities to make sure counties know that they are interested in helping. Sea Grant and other partners can help as a trusted resource with new communities.
- Also, Maryland's chlorides (road salt) effort involves the State Highway Administration, MS4 jurisdictions, an interstate commission, and other states.
- Maine's alternative watershed protection plans (for lakes), as another example, are implemented by lake associations, road associations, soil and water conservation districts, towns, nonprofit groups, and the Youth Conservation Corps.

Lessons

- It is very helpful to engage partners who are good at building community and agency interest and participation.
- Think creatively, including building off other work (like restoring fish habitat) and tying water quality protection into other planning efforts and implementation activities.
- Communicate early and often with potential partners.
- Prepare for things to take longer than expected.
- Be prepared for staff changes with project partners.

G. Challenges

Like so many other aspects of protection, the challenges are wide-ranging, from more universally perceived obstacles to rather context-specific ones. Challenges to protection planning, implementation, and assessment identified during the Exchange include:

Protection versus restoration

- It is difficult to shift to protection projects with so much emphasis on restoration for so long, and with resources (funding and staffing) being so limited.
- Restoration can be easier to document (water quality improvements) than protection work.
- There is a paradigm shift to communicating to partners about protection, as compared to restoration, since there is no crisis to respond to in healthy watersheds. Potential solution: try and educate the local stakeholders about the benefits for them (e.g., continued great fishing or high property values) regarding protection efforts, and the potential threats to those waters.

Collaboration

- Many tribal lands commonly get left out of larger planning efforts in surrounding lands.
- It is difficult to find capacity to work with new people/groups, rather than the more usual partners, or to include communities with environmental justice concerns that do not have the financial or technical staff resources but are interested in collaborating.
- Lake protection, especially if analyzed and managed as a single waterbody, can be tough to implement because of disjointed municipal approaches, capabilities, concerns, and levels of willing engagement.
- Any elected position can and will change at some point, which makes consistency of support and collaboration from elected officials difficult, especially over long periods.
- Many communities do not have a local organization to work with or know where to start, but they do not trust state government.

Data and indicators

- Data sharing is a big challenge in some places and with some entities, with significant distrust in how the agency will use the data.
- For incorporating climate change considerations, the limited scalability/customization of climate data and climate indicators is a challenge.

Funding

- The CWA 319 guidance allows only a limited amount of funds to be used for protection.
- In Michigan, for example, communities with environmental justice concerns tend to be in areas where it is difficult to use CWA 319 money for implementation because they are in either Phase 1 or 2 permitted stormwater areas.
- Often, tribes cannot access state CWA 319 funds (or are unwilling to give up sovereignty to get them), and there frequently is a capacity issue when seeking those funds just by the tribe, as it is a large undertaking.
- Limitations and prohibitions on using CWA 319 money to develop plans can be a significant hurdle, as it is difficult to effectively act without a good plan.
- Similarly, it is difficult to pay for planning when half of the CWA 319 money must be used for implementation.
- The non-federal 40 percent match requirement for CWA 319 funding is difficult for smaller local organizations to meet, especially with the cost of materials having increased while the match requirement remains the same. Even at 25 percent for implementation projects, the match can be a challenge, especially for large/expensive restoration or green infrastructure projects.
- There is a dearth of continued funding for local groups.
- It is important to consider protection for the long-term, but it can be hard to keep momentum and messaging going after a grant has ended.

Other

- The timing of the CWA 319 request-for-proposal cycle and fiscal year can be tough, as it falls right in the middle of summer monitoring and assessment work.
- It has not been clear what is needed for protection plans and/or how to specifically address protection in a mixed (restoration/protection) nine-element watershed-based plan.
- A key challenge for many watersheds is to realistically and adequately prioritize the number of lakes and strategies in a watershed to be able to actively manage them during local water planning activities and the implementation phase.
- Some people see the Source Water Protection program as "competing" with CWA 319, but it can be said that there is more appetite to fund and support protection if it involves protecting a public drinking water supply.

H. Lessons

Numerous lessons from experience in planning and implementing protection efforts, and how other water quality work may inform protection, arose over the course of the Exchange. Some of those lessons are:

Partnerships

- Identify key partners, including tribes, and engage them early, so as to jointly plan, defining project objectives and deliverables in a manner that is readily implementable by the primary users.

- Developing and then maintaining, if not growing, a suite of partnerships is time-consuming. For partnerships to be successful, there has to be a coordinator. When a chair rotates, a lot of information and forward movement tends to get lost. The little things (gathering notes, following agendas, keeping track of who is or is not on the list, and keeping projects straight so partners know where things stand) matter.
- Look for multiple benefits. The primary objectives may not be the same for everyone involved, but the actions can benefit all of those objectives. For example, reducing the feeding of birds at a local pond can make walkways cleaner (and the experience generally better) while improving water quality.
- Coordinating sample collection, planning, and implementation with tribal technical staff is important.

Communication

- Tribal liaisons can be key for coordinating communication with tribes, nations, and pueblos. For example, in New Mexico, on-the-ground activities (monitoring, TAS, standards, CWA 319, etc.) are allowed to be coordinated by the technical staff at the tribe and state; this is in addition to the formal communication from the office of the secretary with the governors of the pueblos.
- Providing translation and interpretation at public meetings is key to diverse participation.
- When scheduling meetings, account for all local customs/holidays.
- A tool or template to numerically relate changes in ecological condition to ecosystem services will engage stakeholders who have multiple and sometimes conflicting objectives and priorities. Such a tool will facilitate identification of shared protection or restoration goals that may lead to collaborative problem solving to achieve these shared goals. For example, the MassBays NEP is linking changes in its Biological Condition Gradient-based habitat goals to ecosystem services that span a range of interests among stakeholders, such as birdwatching, fishing, shoreline protection, and property taxes.
- Messaging can help protect resources. In Tennessee, for example, an area near a national park is economically distressed because there are no jobs, but proving that the water quality is good can emphasize its value for tourism (and push back on alternative approaches to economic stimulation that might adversely affect the water quality).
- Maine, as another example, drafted a preliminary protection metric based on estimating phosphorus load reductions in terms of both lake carrying capacity and watershed carrying capacity; this work was stalled (not finalized or released to the public), in part, due to concerns about how to communicate the phosphorus reduction goals needed in watersheds.
- Water quality report cards are a very powerful and successful means of communication.
- Tailor messages to the audience. Try to relate the message to something that is known to be important to that audience.

Land use and planning

- Locals often approve of land purchases for conservation if the land is undeveloped and will be for public use, but there tends to be pushback if land is being taken out of agricultural use or will be privately held.

- The exercise of state and local authorities in creating land use planning requirements and other rules that aid water quality protection and restoration (e.g., buffer requirements) often are more effective than one-off plans.

Data

- Important data for maintaining the health of watersheds:
    - Assess current watershed condition
    - Track condition over time
    - Provide early warning signs – vulnerability to degradation
    - Identify resiliency – ability to sustain good watershed health in spite of stressors
- Reference sites are critical for follow-up on inter- and intra-variability. Also, it is critical to define the condition these reference sites represent relative to the CWA integrity objective. Least disturbed or best existing sites can span a range of conditions from minimally disturbed to highly altered. For example, in some states that have developed tools or frameworks such as the Biological Condition Gradient, reference sites correspond to Biological Condition Gradient levels 2 and 3 (minimal changes to natural condition), while in other regions, the reference sites correspond with level 4 (reflecting greater departure from natural conditions and more widespread impacts from human disturbance).
- Model results do not necessarily indicate "good/bad" quality. The model is a screening tool. Local knowledge and field verification can improve it.

Other

- For protection efforts, it is important to maintain the built capacity, generate local buy-in through word-of-mouth, follow through with long-term watershed goals to identify successes, and provide lead-time.
- An ideal scenario for protection:
    - A municipality with need for investing in the watershed
    - A watershed district that overlies the municipality's watershed of interest, and its general plan includes projects for water quality protection
    - A CWA 319 group exists or emerges with a nine-element watershed plan
    - The municipality and watershed district cooperate and contract to obtain a Clean Water State Revolving Fund (CWSRF) loan
    - The municipality puts the project on the state CWSRF Intended Use Plan and signs the loan agreement
    - The loan funds implement protection practices by individual agricultural producers
    - The loan is repaid through municipal tax levies and utility rates and fees and watershed district tax levies
- Avoid using too many metrics and be sure to consider what the community wants early in defining what is to be done, and then continuously engage the community throughout the life of a project so that the final product is delivered in a form and manner that can be readily implemented.
- When starting something new, consider benefitting from the knowledge and experience of other programs that might have done something similar, even if in a different context (e.g., managing conservation easements in a grant program).

- It is important to account for increases in pollutants due to development and climate change, as they will make it more difficult for waters to meet standards.
- Look beyond traditional funding sources.

I. Opportunities to advance protection

From the many challenges and lessons identified during the Exchange, there emerged numerous suggestions as to how the CWA 303(d) and 319 programs can advance protection. Many of the more concrete ideas and requests are listed below. Some of them are directed at the EPA and others would be accomplished at the state/tribal level, while a few are more general in application. One of those general suggestions was for more and better conversations about protection planning, including expectations and resources available. To that end, many of the Exchange participants encouraged the development of a water resource protection work/planning/support group, with quarterly discussion-focused calls. Protection remains an under-examined area within these programs, leaving significant opportunities to do more, from untapped potential in funding, to improved coordination, to more comprehensive and influential implementation.

Pathways for protection funding

- Since funding tends to be more prevalent for restoration plans/efforts, it can make sense to combine protection into restoration.
- For protection to be fundable with CWA 319 money, it must be in the five-year nonpoint source management plan (the same is true for wildfire recovery and mitigation). So, when updating its plan, a state or tribe should include the role of protection in the next five years.

Prioritization

- "Source Water Protection Areas" could be used to prioritize for protection. The EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS) is a good resource.
- Watershed assessment also is a way to prioritize areas for protection.

Communication by states and tribes

- Improved/effective outreach and education is needed, especially to underserved communities and watersheds not already working with the state, to influence positive changes that protect and restore surface waters.
- Proposal templates, webinars at the time of the request for proposal release, and required communication with CWA 319 staff by all applicants can aid the application process and create a more equitable application process (not just those who can hire a contractor will have competitive applications).

EPA leadership in collaboration

- It would be beneficial if the EPA encouraged (or even provided guidance) about how CWA 303(d), CWA 319, antidegradation, and CWSRF programs can work together better and see protection as a priority.
- It also would be helpful for the EPA to assist states and tribes in bridging gaps with other agencies.
- It would be helpful to have EPA leadership in addressing cross-cutting issues (e.g., protection, hazard mitigation, and equity) as part of program and agency connections.
- It might be useful for the EPA to develop a guide to "speaking the same language" or the likely overlaps between hazard mitigation activities and water quality.
- Within the federal government, there are several different types of watershed/planning documents (FEMA, NRCS, nonpoint source, source water protection, etc.), but it would help to have a one-size-fits-all document that can be used to support the various federal funding opportunities.

Further program clarity from the EPA

- It would help to have additional clarity from the EPA that there is the opportunity to focus on protection as well as restoration, and even to incentivize protection work (e.g., a protection measure like success stories).
- EPA guidance on how to integrate protection into assessment, TMDL, and nonpoint source programs would help, especially with simple acts and examples.
- Encouragement from the EPA to think and work across protection and restoration more holistically, including coordinating the development of TMDLs and other plans in a watershed/integrated (restoration and protection) manner, would be useful.
- CWA 319 guidance notes that watershed project funds may not be used for planning activities, such as watershed-based plan and TMDL development, but the technical analysis of an existing watershed-based plan may need minor updates. It should be made clear that EPA regions may allow states and tribes to use a limited amount of project funds for necessary technical revisions (e.g., updates to watershed modeling to account for changes in land use).
- Under the Chesapeake Bay TMDL, local jurisdictions can get credit for water quality load prevention when lands that were expected to be converted are protected. It could be helpful to have EPA/national guidance on how to do that.
- For purposes of meeting environmental justice targets, it would be helpful to know whether statewide organizations could serve as surrogates in an area that does not have groups with the capacity to undertake the actions. If that is allowed, a portion of those funds should be required to be used to support building capacity in the community with environmental justice concerns. Also, it is important for the statewide group to be trusted by the local group/community.

Resources and technical support from the EPA

- It would be helpful if EPA Headquarters could gather and share some examples of protection plans.
- There should be templates for effective data mapping and visualization and exploration tools that programs with no or minimal resources can easily adapt for their data use and communication needs.

- It would help if prioritization tools were easier to use and more widely accessible, so everyone could use them.
- Information about the role that state and tribal programs can play in local regulations and planning would be helpful.
- General resource needs:
    - Geographic/water data sources
    - Suggestions of how to inspire behavioral change that impact water quality (non-structural BMPs like flyers and door hangers), how to quantify efforts and results, and how to improve the return on investment
    - Economic benefits studies, specifically the value of protecting water resources relative to the costs of restoring impaired waters
    - Guidance on what types of state/tribal regulations, ordinances, etc. are beneficial for protection and how to support their development and promulgation
    - A protection-oriented performance measure from the CWA 319 program (incentivizing the programs and giving them credit for protection work)

Appendix 1: Protection Learning Exchange Agenda

ENVIRONMENTAL LAW INSTITUTE®

AN INDEPENDENT, NON-PARTISAN ENVIRONMENTAL EDUCATION AND POLICY RESEARCH CENTER.

THE CWA 303(d) AND 319 PROTECTION LEARNING EXCHANGE

July 11 – 14, 2022

VIRTUAL LEARNING EXCHANGE AGENDA

This project made possible through a cooperative agreement with the United States Environmental Protection Agency

OBJECTIVES

- Bring together CWA 303(d) and 319 program staff to discuss approaches to protecting healthy waters.

- Facilitate peer-to-peer learning through the sharing of experiences, including successes and challenges, integrating protection into watershed plans, TMDLs and their implementation plans, and other planning documents.

- Identify protection-based measures of success that could be used to track water quality protection efforts in CWA 303(d) and 319 programs.

- Identify methods of communicating the progress and results (successful and unsuccessful) of water quality protection efforts.

OUTPUT

A proceedings document that identifies themes and key takeaways from learning exchange sessions, identifies existing resources that can help guide state and tribal protection work, and identifies opportunities to better integrate protection in CWA 303(d) and 319 programs. This document will serve as a resource for participants and the broader CWA 303(d) and 319 communities.

AGENDA

(All Times Eastern Daylight)

Monday, July 11

12:00 pm – 1:00 pm

Session 1: Welcome

An overview of the Learning Exchange will be followed by a keynote speech by Steve Landry of New Hampshire and a round of self-introductions by all participants.

1:00 pm – 2:00 pm

Session 2: The Many Meanings of "Protection"

Brief presentations of two relevant reports will lead into a facilitated discussion of the many ways that the term "protection" is used and how to be thinking about the term throughout the week.

Presenters:

1. Steve Epting (EPA HQ)
2. Adam Schempp (ELI)

Discussion Questions:

1. In your professional experience relative to water quality and the CWA 319 and 303(d) programs, how has 'protection' been defined or used?
2. What protection work do you have underway?
3. How do you and your colleagues target/prioritize protection work?

2:00 pm – 2:30 pm

Break

2:30 pm – 4:30 pm

Session 3: Watershed Planning with Protection in Mind, *Part 1*

Examples of watershed-based plans (9-element, etc.), TMDLs and their implementation plans, and other plans with a protection focus or protective elements will lead into breakout group discussions about how different types of plans can support and even prompt protection.

Presenters:

1. Jayne Carlin (EPA R10)
2. Tom Stiles (KS)
3. Julia Kirkwood (MI)

Discussion Questions:

1. In what ways have watershed-based plans and TMDLs (and their implementation plans) protected waters, or how could they?
2. What challenges exist to these approaches?
3. What would help reduce the challenges (including actions by EPA)?

Tuesday, July 12

12:00 pm – 2:00 pm **Session 4: Watershed Planning with Protection in Mind, *Part 2***

Examples of plans incorporating into protection evolving areas of consideration, including climate change/resiliency, environmental justice, and hazard mitigation (minimizing the impact of disasters like flooding), will be followed by breakout group discussions about how those different issues can best be considered in protection planning.

Presenters:

1. Ashley Beranek and Pamela Toshner (WI)
2. Heidi Henderson (NM)
3. Ellie Flaherty (EPA HQ)

Discussion Questions:

1. In what ways has environmental justice been incorporated into watershed-based plans and TMDLs (and their implementation plans) to support protection, or how could it be incorporated?
2. In what ways has climate change and resiliency been incorporated into watershed-based plans and TMDLs (and their implementation plans) to support protection, or how could they be incorporated?
3. In what ways has hazard mitigation been incorporated into watershed-based plans and TMDLs (and their implementation plans) to support protection, or how could it be incorporated?
4. What challenges exist to these approaches?
5. What would help reduce the challenges (including actions by EPA)?

2:00 pm – 2:30 pm Break

2:30 pm – 4:30 pm **Session 5: Protection Management Strategies**

Examples of protection implementation, successes and challenges, from actions on the ground to water quality results, will provide the foundation for a facilitated discussion on plan characteristics and approaches to implementation that improve the chance for successful results.

Presenters:

1. Cam McNutt (NC)
2. Hannah Riedl (MT)
3. Laura Eldred (AK)
4. Karen Kesler (EPA HQ)

Discussion Questions:

1. What types of management strategies have you seen be effective in achieving water quality protection goals?
2. What are/have been challenges to implementing protective elements of plans?
3. What would help reduce the challenges (including actions by EPA)?
4. Does your CWA 319 program solicit protection-specific watershed project proposals?

a. If yes, how do you define "protection projects"? What criteria do you use to evaluate protection-specific proposals? Are they different from criteria used to evaluate restoration project proposals?
b. If no, are there other means of implementing watershed protection outside the CWA 319 program?

Wednesday, July 13

12:00 pm – 2:00 pm **Session 6: Protection Goals, Milestones, and Metrics**

Examples of setting protection goals at the program and project/waterbody level will be followed by facilitated discussion about reasonable protection goals as well as milestones and metrics to help identify whether a plan is being implemented and having the impact desired.

Presenters:

1. Steve Epting (EPA HQ)
2. Ali Dunn (CA)
3. Ashley Beranek and Pamela Toshner (WI)
4. Greg Johnson (MN)
5. Renee Thompson (Chesapeake Bay Program)

Discussion Questions:

1. From a programmatic perspective, what are other examples of protection goals?
2. For waterbodies/watersheds, how would you define the protection endpoint? How do you know when they are being sufficiently protected? What are appropriate timeframes for "success" in different situations?
3. Have you used or heard of metrics or milestones for evaluating protection (for implementation, outcomes, etc.)? If yes, what were they and how effective/accurate do you think they have been?
4. Beyond these examples, what do you think could serve as useful metrics or milestones for protection, and in what situations?

2:00 pm – 2:30 pm Break

2:30 pm – 4:30 pm **Session 7: Tracking, Evaluating, Reporting, and Communicating Protection**

Examples of approaches to tracking and evaluating protection progress will lead into facilitated discussion about existing and potential strategies for monitoring for protective purposes, evaluating the results of plan implementation, reporting on progress, and communicating protection efforts and their results.

Presenters:

1. Cam McNutt (NC)
2. Renee Thompson (Chesapeake Bay Program)

Discussion Questions:

1. What aspects of protection implementation can/should be monitored? (e.g., BMP implementation, easement development and enforcement, water quality)
2. What approaches to protection monitoring have been or could be used? Where does and could the data originate?
3. What methods have been used and could be used to evaluate the results of protection plans, on an interim basis and ultimately?
4. How has adaptive management been used in the protection context, or how could it be?
5. How can the results of protection plans be reported?
6. What lessons have you learned about communication regarding protection (with whom and concerning what types of threats)?

Thursday, July 14

12:00 pm – 12:30 pm **Session 8: <u>Connecting Conservation Efforts with Outside Partners</u>**

Michael Eberle of the U.S. Forest Service will speak about linking forests and waters, specifically the coordination opportunities with the U.S. Forest Service and other federal partners.

12:30 pm – 2:00 pm **Session 9: <u>Protection Partnerships</u>**

Examples of communicating and partnering with other programs, agencies, jurisdictions, and organizations on protection planning and implementation will provide the foundation for a facilitated discussion on partners to consider and characteristics of successful partnerships in the protection context.

Presenters:

1. Laura Eldred (AK)
2. Rebecca Schwartz (CTUIR)
3. Kathy Stecker (MD)
4. Amanda Pratt (ME)

Discussion Questions:

1. What can you not do in-house or what benefits notably from partners with regard to protection planning and implementation (generally speaking or in specific examples)?
2. What are you doing in-house that can be sold to partners (what do and can you offer)?
3. What entities have you found (or do you foresee) to be valuable partners for protection (concerning what types of threats)?

2:00 pm – 2:30 pm Break

2:30 pm – 4:30 pm **Session 10: Resource Showcase**

Brief presentations on tools, datasets, literature, and approaches that have aided protection planning and implementation will precede facilitated discussion of information and resource gaps and potential ways to fill those gaps.

Presenters:

1. Recovery Potential Screening Tool – Emily Cira (EPA HQ)
2. How's My Waterway – Steve Epting (EPA HQ)
3. Source Water Protection Tools – Kara Goodwin and April Byrne (EPA HQ)
4. Biological Condition Gradient – Susan Jackson (EPA HQ)
5. Clean Water State Revolving Fund – Alison Souders (EPA HQ)
6. Healthy Watersheds Consortium Grants and *Advancing Watershed Protection through Land Conservation: A Guide for Land Trusts* – Sequoya Bua-Iam (EPA HQ - ORISE Fellow)

Discussion Questions:

1. What other resources (tools, datasets, literature, etc.) have you found useful for protection planning and implementation?
2. What additional EPA resources would help to better guide protection in CWA 303(d) and 319 programs nationally?

4:30 pm – 5:00 pm **Wrap-Up**

Appendix 2: Participant List

The CWA 303(d) and 319 Protection Learning Exchange

Name	Affiliation	Name	Affiliation
Crisalda Adams	Louisiana	Steve Hohman	EPA Region 3
Erik Bedan	Connecticut	Chris Hunter	EPA Headquarters
Micah Bennett	Michigan	Traci Iott	Connecticut
Chuck Berger	Louisiana	Peter Ismert	EPA Region 8
Ashley Beranek	Wisconsin	Susan Jackson	EPA Headquarters
Catherine Brady	EPA Headquarters	Kira Jacobs	EPA Region 1
Heidi Brow	Pala Band of Mission Indians	Greg Johnson	Minnesota
Sequoya Bua-Iam	EPA Headquarters - ORISE Fellow	Karen Kesler	EPA Headquarters
April Byrne	EPA Headquarters	Sue Keydel	EPA Region 9
Jayne Carlin	EPA Region 10	Julia Kirkwood	Michigan
Kim Cenno	New Jersey	Steve Landry	New Hampshire
Emily Cira	EPA Headquarters	Chauncey Means	Confederated Salish and Kootenai Tribes
Corey Clatterbuck	California	Krista Mendelman	EPA Region 10
Rich Cochran	Tennessee	Cam McNutt	North Carolina
Rosaura Conde	EPA Headquarters	Emily Nusz	EPA Region 7
Tim Craddock	West Virginia	Amanda Pratt	Maine
Ali Dunn	California	Ben Rau	Washington
Michael Eberle	U.S. Forest Service	Trish Reilly	Missouri
Laura Eldred	Alaska	Hannah Riedl	Montana
Steve Epting	EPA Headquarters	Crystal Robinson	Quartz Valley Indian Reservation
Sandra Fancieullo	EPA Region 1	Rebecca Schwartz	Confederated Tribes of the Umatilla Indian Reservation
Brian Fontenot	EPA Region 6	Elizabeth Smith	EPA Region 4
Kristy Fortman	EPA Region 8	Kathy Stecker	Maryland
Abe Franklin	New Mexico	Tom Stiles	Kansas
Kara Goodwin	EPA Headquarters	Paul Thomas	EPA Region 5
Dave Guiliano	EPA Region 9	Pamela Toshner	Wisconsin
Heidi Henderson	New Mexico		

Appendix 3: Referenced Hyperlinks

Generally Useful Resources:

The webpage for the Exchange: https://www.eli.org/freshwater-ocean/cwa-303d-and-319-protection-learning-exchange-presentations-and-materials

The *Draft Nonpoint Source Protection Report: Approaches for integrating the protection of healthy waters in nonpoint source management programs*: https://www.eli.org/sites/default/files/files-pdf/S21%20-%20Draft%20NPS%20Protection%20Report.pdf (see page 69 for a working definition of "protection priority area")

CWA 303(d) Vision and 319/NPS Restoration and Protection Plans Table: https://www.eli.org/sites/default/files/files-general/S30%20-%20303d%20Vision%20and%20319%20Plans%204-7-22%20Copy.xlsx

The draft CWA 303(d) Program Protection FAQs: https://www.eli.org/sites/default/files/docs/draft_protection_faqs_-_november_2018.pdf

ELI's Compendium of State Approaches to Protection: https://www.eli.org/water-quality/compendium-state-approaches-protection

Tools:

The Recovery Potential Screening Tool: https://www.epa.gov/rps

Direct links to select indicator reference sheets:

- Population Demographics (https://www.epa.gov/system/files/documents/2022-03/demographics-indicator-reference-sheet-20220306.pdf)
- Projection Hydrologic Change (https://www.epa.gov/system/files/documents/2022-03/projected-hydrology-indicator-reference-sheet-20220306_508.pdf)
- Projected Air Temperature Change (https://www.epa.gov/system/files/documents/2022-03/projected-temperature-indicator-reference-sheet-20220306_508_0.pdf)
- Projected Precipitation Change (https://www.epa.gov/system/files/documents/2022-03/projected-precipitation-indicator-reference-sheet-20220306_508.pdf)

Watershed Index Online: https://www.epa.gov/wsio/watershed-index-online-wsio-national-watershed-data-library-and-tool

Reference sheets addressing some of the new Watershed Index Online indicators (e.g., climate, environmental justice): https://www.epa.gov/wsio/indicator-reference-sheets

The New Hampshire NPS Management Program Plan: https://www4.des.state.nh.us/blogs/watershed/wp-content/uploads/2019/09/2020-2024-New-Hampshire-Nonpoint-Source-Management-Program-Plan-DRAFT.pdf (The PPST and RPST discussion, tool elements, and tables/maps start on Page 104)

Wisconsin DNR's Healthy Watersheds Initiative's adapted RPS Tool (focusing on protecting wetlands): https://dnr.wisconsin.gov/topic/SurfaceWater/HQW.html

Minnesota DNR's Watershed Health Assessment Framework (has parallels to the EPA RPS and various states' tools): https://www.dnr.state.mn.us/whaf/index.html

The North Carolina Conservation Planning Tool: https://www.ncnhp.org/conservation/north-carolina-conservation-planning-tool

The Code and Ordinance Worksheet for Improving Local Development Regulations: https://www.cwp.org/updated-code-ordinance-worksheet-improving-local-development-regulations/

EPA's Creating Resilient Water Utilities initiative: https://www.epa.gov/crwu
Climate Resilience Evaluation and Awareness Tool (CREAT) Climate Scenarios Projection Map: https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=3805293158d54846a29f750d63c6890e

EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS): https://www.epa.gov/sourcewaterprotection/drinking-water-mapping-application-protect-source-waters-dwmaps

EPA's Funding Integration Tool for Source Water: https://www.epa.gov/sourcewaterprotection/fits

Wichita State University Environmental Finance Center's Missouri Healthy Watershed Funding Search Tool: https://www.wichita.edu/academics/fairmount_college_of_liberal_arts_and_sciences/hugowall/efc/news/meramec-funding-sources-landing-page.php

Targeting Chesapeake Bay Program Resources to Achieve Multiple Outcomes - Approach and Tools: https://gis.chesapeakebay.net/targeting/

Documents:

Grouse Creek Watershed Protection TMDL (Kansas): https://www.eli.org/sites/default/files/files-pdf/S30%20-%20Grouse%20Creek%20Watershed%20%28PDF%29.pdf

Charlevoix County Local Ordinance Gaps Analysis: An Essential Guide for Water Protection (Michigan):
https://www.watershedcouncil.org/uploads/7/2/5/1/7251350/charlevoix_gaps_analysis-web.pdf

Healthy Watershed Options for Floodplain Management, Lower Meramec Watershed:
https://www.mvs.usace.army.mil/Portals/54/docs/pm/Lower%20Meramec%20Basin/Lower%20Meramec%20Watershed-Healthy%20Watershed%20Options%20Report%20-%20Final.pdf

The Wonderful Waters of Wisconsin: An Action Plan to Protect Wisconsin's Healthy Watersheds & High-Quality Waters: https://dnr.wisconsin.gov/topic/SurfaceWater/HQW.html

Guidance for Maine Lake Watershed-based Protection Plans:
https://www.maine.gov/dep/water/grants/319-documents/guidance_lake_watershed-based_protection%20_plans.pdf

Protection and Prioritization: Tools Available to Help Prioritize Waters for Protection Efforts (Minnesota):
https://www.pca.state.mn.us/sites/default/files/wq-ws1-29.pdf

Incorporating Lake Protection Strategies into WRAPS Reports (Minnesota):
https://www.pca.state.mn.us/sites/default/files/wq-ws4-03c.pdf

Lakes of Phosphorus Sensitivity Significance (May 10, 2022), a ranked priority lake list based on sensitivity to additional phosphorus loading and the significance of that sensitivity (Minnesota):
https://resources.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/env_lakes_phosphorus_sensitivity/metadata/Lakes%20of%20Phosphorus%20Sensitivity%20Significance%202022.pdf

A Fish Habitat Conservation Framework for Minnesota Lakes (reference for the 75% forested land threshold):
https://www.researchgate.net/publication/303745823_A_Fish_Habitat_Conservation_Framework_for_Minnesota_Lakes

Advancing Watershed Protection through Land Conservation: A Guide for Land Trusts:
https://www.epa.gov/system/files/documents/2022-07/Advancing_Watershed_Protection_Through_Land_Conservation_EPA_July_2022.pdf

Open Space Institute's *Literature Review: Forest Cover & Water Quality – Implications for Land Conservation*: https://s3.us-east-1.amazonaws.com/osi-craft/Forest-Cover-Water-Quality-Report-2018-6-30-Final.pdf

Land Policy BMPs and Crediting Conservation towards the Bay TMDL, Frequently Asked Questions: http://www.chesapeakeconservation.org/wp-content/uploads/2018/11/Crediting-Conservation_FAQs_Final_v5.pdf

Funding Land Conservation Projects with the Clean Water State Revolving Fund:
https://www.epa.gov/sites/default/files/2018-10/documents/cwsrf_land_conservation.pdf

ELI's *Opportunities for Funding Water Quality Protection Projects through the Clean Water State Revolving Fund*: https://www.eli.org/sites/default/files/docs/cwsrf_and_protection_projects.pdf

ELI's *Opportunities for Funding Protection Projects through the Drinking Water State Revolving Fund*: https://www.eli.org/sites/default/files/docs/dwsrf_and_protection_projects.pdf

Protecting Source Water with the Drinking Water State Revolving Fund Set-Asides: https://www.epa.gov/sites/default/files/2019-10/documents/protecting_source_water_with_the_dwsrf_-_final.pdf

Overview of Clean Water State Revolving Fund Eligibilities: https://www.epa.gov/cwsrf/overview-clean-water-state-revolving-fund-eligibilities

CWSRF Best Practices Guide for Financing Nonpoint Source Solutions: https://www.epa.gov/system/files/documents/2021-12/cwsrf-nps-best-practices-guide.pdf

Financing Options for Nontraditional Eligibilities in the Clean Water State Revolving Fund Programs: https://www.epa.gov/cwsrf/financing-options-nontraditional-eligibilities-cwsrf

EPA's Bipartisan Infrastructure Law Water Infrastructure Investments Information and Factsheet: https://www.epa.gov/infrastructure/water-infrastructure-investments

The Economic Benefits of Protecting Healthy Watersheds: https://www.epa.gov/sites/default/files/2015-10/documents/economic_benefits_factsheet3.pdf

FY2014 Nonpoint Source Program and Grants Guidelines for States and Territories (includes example protection-based "measures and indicators of progress and success"): https://www.epa.gov/sites/default/files/2015-09/documents/319-guidelines-fy14.pdf

Interim Implementation Guidelines for Clean Water Act Section 604(b) Water Quality Management Planning Grants for Fiscal Years 2022 through 2026 (includes discussion of environmental justice and climate): https://www.epa.gov/system/files/documents/2022-06/Final_604%28b%29%20Water%20Quality%20Managment%20Planning%20Grants%20Interim%20Implementation%20Guidelines%20signed%206.29.2022.pdf

A Review of Climate Change Effects on Practices for Mitigating Water Quality Impacts: https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=354613&Lab=CPHEA

Handbook: *Community Readiness for Community Change*: https://tec.colostate.edu/wp-content/uploads/2018/04/CR_Handbook_8-3-15.pdf

A Practitioner's Guide to the Biological Condition Gradient: https://www.epa.gov/sites/default/files/2016-02/documents/bcg-practioners-guide-report.pdf

2021 Flyer: *The Biological Condition Gradient*: https://www.eli.org/sites/default/files/files-pdf/S100%20-%20BCG%20Flyer%202021.pdf

Overview of the Preliminary Healthy Watersheds Assessments Project: Evaluating Relative Health and Vulnerability of Conterminous US Watersheds: https://www.epa.gov/sites/default/files/2017-02/documents/170215phwa_overview_report_final_508v2.pdf

A Manual for Water Resource Protection: Inspiring Action for Nonpoint Source Pollution Control: https://freshwater.org/wp-content/uploads/2017/03/InspiringAction.pdf

TELE's *Engaging Landowners in Conservation: A Complete Guide to Designing Programs and Communications*: https://www.engaginglandowners.org/guide

Getting In Step: A Guide for Conducting Watershed Outreach Campaigns: https://cfpub.epa.gov/npstbx/files/getnstepguide.pdf

A Citizen's Guide to Volunteer Lake Watershed Surveys: How to Conduct a Nonpoint Source Phosphorus Survey (Maine): https://www.maine.gov/dep/land/watershed/materials/lakewsurveyguide.pdf

Outreach/Communication Resources:

How's My Waterway?: https://mywaterway.epa.gov/

Montana's "stream summaries" for the Madison Watershed, impaired and unimpaired streams (including water quality and BMP information with some geographical context): https://deq.mt.gov/files/Water/WQPB/TMDL/PDF/Madison/MadisonStreamSummaries2020.pdf

From Source to Tap: How to Use the Clean Water Act to Protect Drinking Water (an interactive infographic by The Source Water Collaborative): https://www.sourcewatercollaborative.org/infographic/

Heal the Bay beach report card: https://beachreportcard.org/33.91029999999999/-118.51929100000001/11

Chesapeake Bay Report Cards: https://ecoreportcard.org/report-cards/chesapeake-bay/

Chesapeake Healthy Watersheds Assessment: https://gis.chesapeakebay.net/healthywatersheds/assessment/

New Hampshire's 2020/2022 Surface Water Quality Assessment Viewer and the Watershed Report Cards: https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/apps/nhdes-2020-2022-surface-water-quality-assessment-viewer/explore

Maryland's Stronghold Watersheds:
https://dnr.maryland.gov/streams/Pages/streamhealth/Maryland-Stronghold-Watersheds.aspx

Consumer Confidence Reports (the Safe Drinking Water Act requires that every American who is served by a public water supply receive one in the mail every June):
https://www.epa.gov/ccr/ccr-information-consumers

Charles River Watershed Association's Flagging Program (live water quality alerts):
https://www.crwa.org/flagging-program.html

U.S. Forest Service Watershed Condition Framework:
https://www.fs.fed.us/naturalresources/watershed/condition_framework.shtml

Interactive Map:
https://usfs.maps.arcgis.com/apps/MapSeries/index.html?appid=f4332e5b80c44874952b57e1db0b4407

U.S. Forest Service National Forests to Faucets 2.0 Assessment:
https://www.fs.fed.us/ecosystemservices/FS_Efforts/forests2faucets.shtml

NH Lakes (New Hampshire): https://nhlakes.org/

Lakes Environmental Association (Maine): https://mainelakes.org/

"Hey You!" campaign (Maine lakes): https://blog.mrlakefront.net/2015/06/12/lakes-environmental-association-educates-students-through-hey-you-cruise-on-long-lake-in-naples/

Breweries funding watershed protection in Maine: https://www.sebagocleanwaters.org/

Brewery-funded water quality initiative in North Carolina:
https://frenchbroadriver.org/partnership-organization/

Missouri Conservation Heritage Foundation - Save Water. Drink Beer:
https://www.youtube.com/watch?v=rHMndXlf03Q

TNC's Youth Education Resources for Ages 14-18: https://www.nature.org/en-us/about-us/who-we-are/how-we-work/youth-engagement/nature-lab/high-school-lesson-plans/?s_src=NewSch.WJEMSA2101NPNZNZZE01Z00-ZZZZZ-ST00&lu=8666805&src=e.ch_nc.eg.x.gpn.0121.n.sas.unv

North Carolina's water education videos: https://deq.nc.gov/about/divisions/water-resources/water-resources-public-information/water-education-programs/nc-dwr-water-education-programs#its-our-water-online-modules

Water Words That Work: https://www.waterwordsthatwork.com/

ELI's Compendium of Approaches to Clean Water Communication: https://www.eli.org/water-quality/approaches-clean-water-communication

Iowa's Water Rocks!: https://www.waterrocks.org/

Video ideas from the Minnesota Department of Agriculture: https://www.mda.state.mn.us/segwresources and https://www.mda.state.mn.us/root-river-field-stream-partnership

Other Resources:

Clean Water State Revolving Fund Webinars: https://www.epa.gov/cwsrf/cwsrf-webinars

State Clean Water State Revolving Fund websites and contacts: https://www.epa.gov/cwsrf/forms/contact-us-about-clean-water-state-revolving-fund-cwsrf#state

The Clean Watersheds Needs Survey (an assessment of capital investment needed nationwide for publicly-owned wastewater collection and treatment facilities to meet the water quality goals of the Clean Water Act): https://www.epa.gov/cwns

EPA's Source Water Protection webpage: https://www.epa.gov/sourcewaterprotection

EPA's Build Wildfire Resilience website (another great resource for wildfire risks and drinking water): https://www.epa.gov/waterutilityresponse/build-wildfire-resilience

How to Locate National Forests and Grasslands: http://www.fs.fed.us/locatormap/

A land conservation campaign as part of the Northeast Forest Network (with resources available to everyone): https://standupforforests.org/

Forest Action Plans (searchable database): https://www.stateforesters.org/forest-action-plans/

The Southeastern Partnership for Forests and Water: https://southeasternpartnership.org/

Forestry Learning Exchange and a Healthy Watershed Consortium webinar series from 2021 (a link to the recordings of the webinars and additional resources, including a webinar on Watershed Protection Prioritization and two focused on wildfire): https://www.sourcewatercollaborative.org/learning-exchange/source-water-protection-through-forestry-partnerships/

The Source Water Collaborative: https://www.sourcewatercollaborative.org/

Healthy Watersheds Consortium Grants (HWCG): https://www.epa.gov/hwp/healthy-watersheds-consortium-grants-hwcg

An example of protecting a priority drinking water supply watershed as part of a National Water Quality Initiative project: https://conservect.org/southwest/watersheds/ (the Farm River watershed project)

Maintain Healthy Watersheds Goal Implementation Team (GIT 4) of the Chesapeake Bay Program: https://www.chesapeakebay.net/who/group/maintaining_healthy_watersheds_goal_implementation_team

Chesapeake Bay Stewardship: https://www.chesapeakebay.net/what/goals/stewardship

Wisconsin's shoreland stewardship program (5 "simple" best practices with state grant funding available): https://healthylakeswi.com/

Lake Stewards of Maine, Watershed Surveys: https://www.lakestewardsofmaine.org/programs/other-programs/watershed-survey/

North Carolina's Watershed Action Plans (with links to all of the state's apps and plans that have been "accepted" or "approved" by the EPA): https://deq.nc.gov/about/divisions/water-resources/water-resources-public-information/water-education-programs/watershed-action-plans

Confederated Tribes of the Umatilla Indian Reservation Fisheries Habitat Program: https://fisherieshabitat.ctuir.org/

New Hampshire's Green SnowPro voluntary commercial salt applicator certification program: https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification

Maryland's Winter Salts Program: https://mde.maryland.gov/programs/Water/319NonPointSource/Pages/411-on-Salt.aspx

Maryland's High Quality Waters (Tier II): https://mde.maryland.gov/programs/water/tmdl/waterqualitystandards/pages/antidegradation_policy.aspx

New Mexico Environment Department's Tribal Liaison and related information: https://www.env.nm.gov/general/tribal-liaison/

The New Mexico Environment Department's General Counsel's environmental justice presentation to ACWA: https://www.acwa-us.org/wp-content/uploads/2020/08/EJ-NMED.pdf

Mae Davenport, a University of Minnesota professor who focuses her research on social dynamics and has done watershed evaluations: https://forestry.umn.edu/people/mae-davenport

Re: Tim Sweeney and land conservation in the NC Triangle Area: https://www.bizjournals.com/triangle/news/2021/12/17/tim-sweeney-chatham-county-cary-headquarters-epic.html

The National State Revolving Fund Workshop in New Hampshire later this month:
https://neiwpcc.org/our-programs/srf_workshop/

The 2022 One Water Summit in Milwaukee in September:
http://uswateralliance.org/events/summit2022