



Integrating Protection Within Watershed- Based Planning

National Water
Quality Training
Workshop

June 2023

Session Outline

Introduction, Key Protection Terms

Sara Schwartz, EPA HQ

Integrating Protection in Kansas' TMDLs

Dane Boring, Kansas Department of Health & Environment

Integrating Protection in NPS Watershed-Based Planning

Steve Epting, EPA HQ

Protecting Lands to Achieve Water Quality Goals in the Delaware River Watershed

Abigail Weinberg, Open Space Institute

Discussion

2022 Clean Water Act 303(d)/319 Protection Learning Exchange

- 4-day virtual workshop to exchange approaches for advancing **protection** in 303(d) and 319 program work.
- 20 states, 4 Tribes, EPA staff
- Sessions covered:
 - Defining protection goals
 - Watershed Planning/TMDLs
 - Protection management strategies
 - Tracking protection outcomes
 - And more!



The CWA 303(d) and 319 Protection Learning Exchange

July 11 - 14, 2022

PROCEEDINGS DOCUMENT

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

<https://www.eli.org/freshwater-ocean/cwa-303d-and-319-protection-learning-exchange-presentations-and-materials>

An aerial photograph of a wooden dock extending into clear turquoise water. In the foreground, a tree with brown, autumnal leaves is visible. The water is very clear, showing some darker patches on the bottom. The dock is made of light-colored wooden planks.

Integrating Protection Within Watershed- Based Planning

Steve Epting
EPA HQ - NPS
Program

EPA Disclosure

The views expressed in this presentation are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.



Clean Water Act Section 319 Nonpoint Source (NPS) Program

- State NPS work guided by 5-year NPS management program plans.
- States must use $\geq 50\%$ of annual 319 grant for watershed projects that implement:
 - 9-element watershed-based plans (WBPs), OR
 - EPA-approved alternative watershed plans

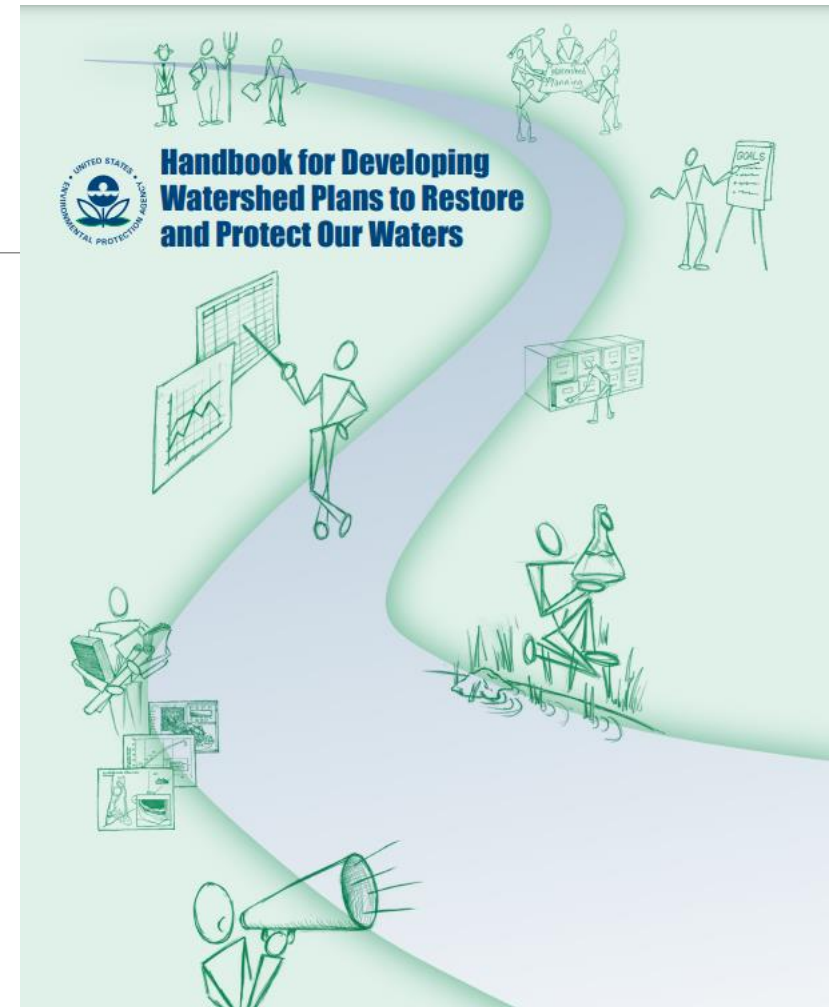


Allowed in select scenarios, including when protecting assessed unimpaired/high quality waters

9-element WBPs

Must address:

- A. Causes and sources of pollution
- B. Pollutant loading and expected load reductions needed
- C. Management measures to achieve load reductions in targeted critical areas
- D. Estimated technical and financial assistance and relevant authorities needed to implement plan
- E. Information/education component
- F. Project schedule
- G. Interim, measurable milestones
- H. Indicators to measure progress
- I. Monitoring component



EPA Watershed Planning
Handbook (2008)

Alternative Watershed Plans

Must address:

- Causes/sources of NPS impairment or threat to unimpaired/high quality waters
- Watershed project goal(s) and how proposed project(s) will achieve water quality goals
- Schedule & milestones to guide project
- Management measures to address NPS problem
- Water quality results monitoring

Great East Lake Watershed-Based Protection Plan

2022-2032



Acton Wakefield Watersheds Alliance

Great East Lake Improvement Association

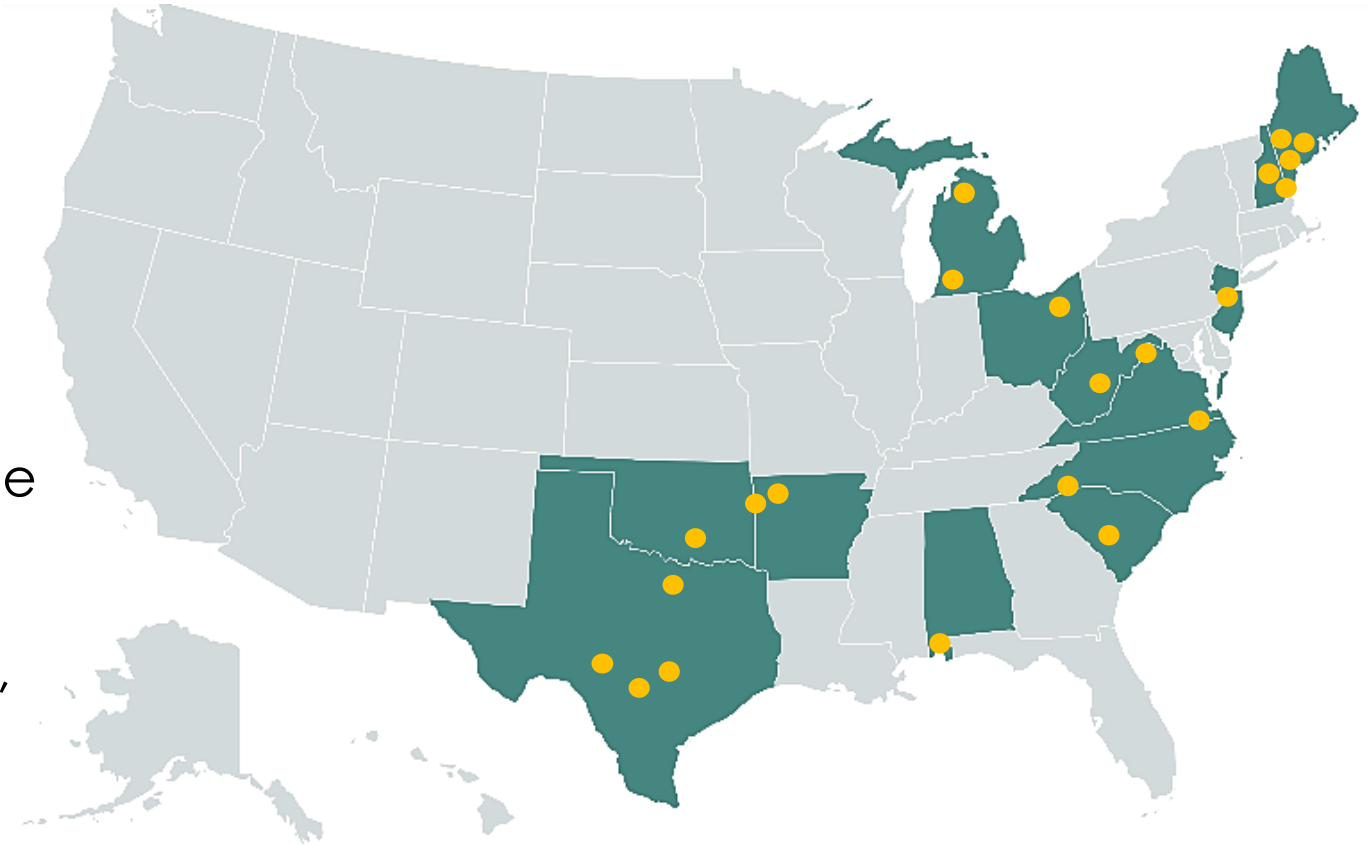
March 2022

For example, Maine has 39 active lake watershed-based protection plans

EPA review of protection-oriented watershed plans

Snapshot of Reviewed Plans:

- 22 plans, including 12 9-element WBPs
- Published 2008 - 2018
- 5 – 5,000 mi² planning areas
- 15 unimpaired watersheds, 7 with some impairments
- 9 for lakes/ponds, 12 for streams/rivers, 1 coastal area



EPA review of protection-oriented watershed plans

Common components of plans:



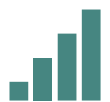
Evaluated **watershed threats**



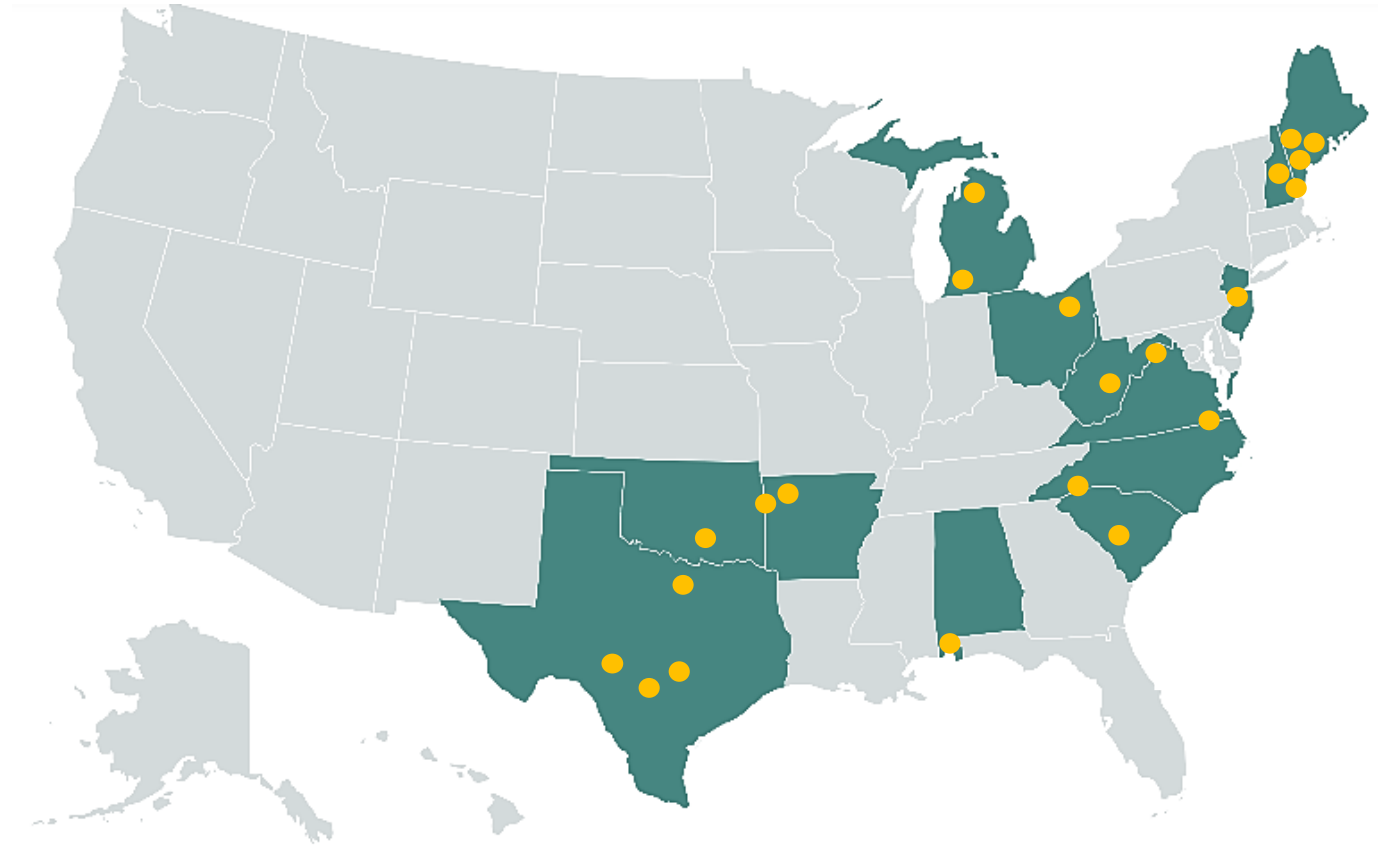
Identified **protection priority areas**



Incorporated **protection-based management strategies**



Included **protection-based measures of success**

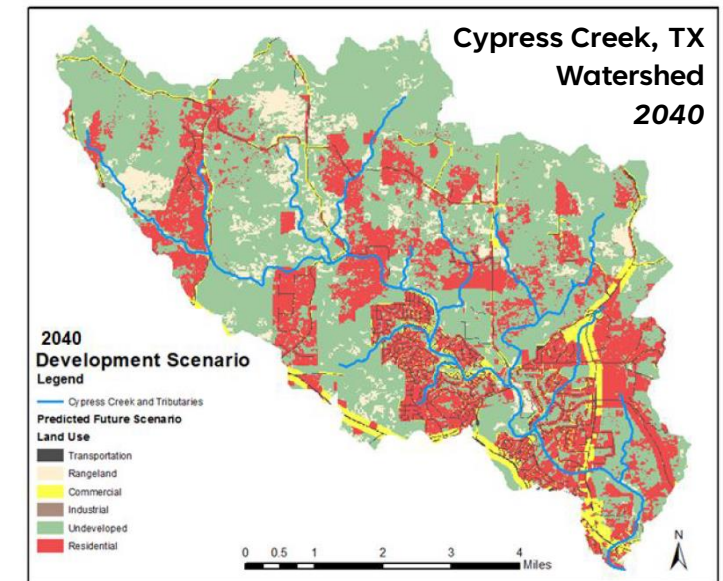
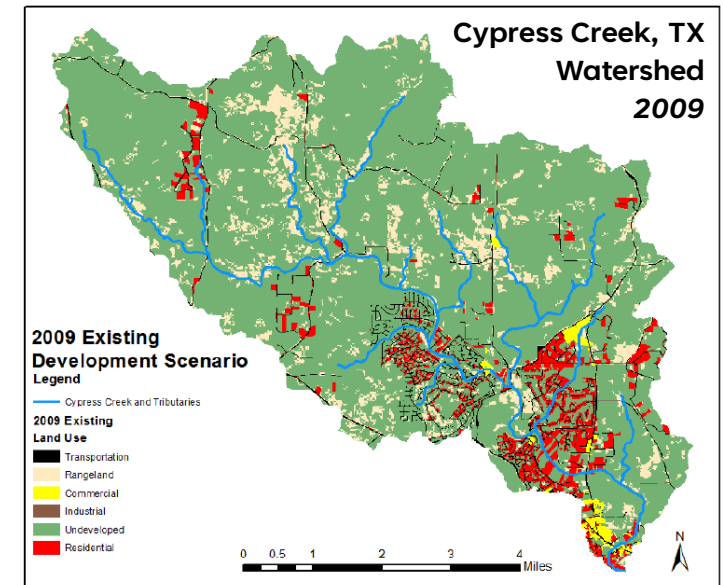


Evaluating Watershed Threats

- Evaluating watershed condition (e.g., **existing WQ problems & future threats**) is important when planning.
- Helps inform watershed goals & target management strategies
- Future conditions are relevant as plans typically cover a **10–15-year** implementation period.

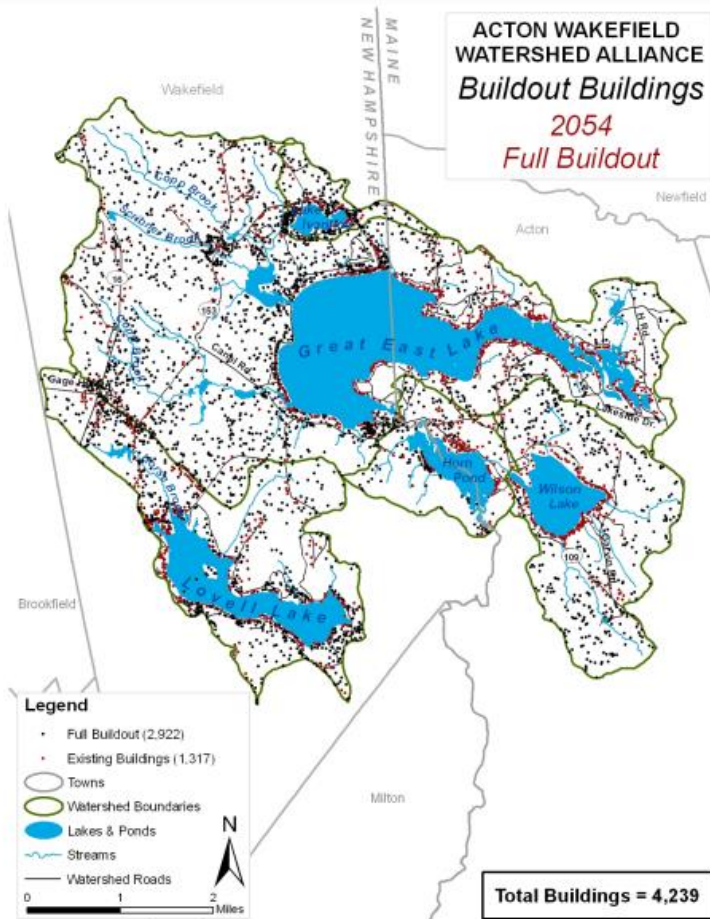
In our review:

- **13** plans included a goal to **prevent future increases** in NPS loading.
- **6** plans applied a build-out analysis to **project future WQ conditions**.



Evaluating Watershed Threats: Salmon Falls Headwater Lakes (ME/NH, 2010) 26mi²

Land use analysis + Buildout analysis + Potential P load estimations



Watershed	Watershed Area (acres)	Percent Developed Area	Percent Buildable Area
Great East Lake	9,620	9%	52%
Horn Pond	1,139	6%	34%
Lake Ivanhoe	455	17%	59%
Lovell Lake	3,075	14%	37%
Wilson Lake	2,480	8%	49%

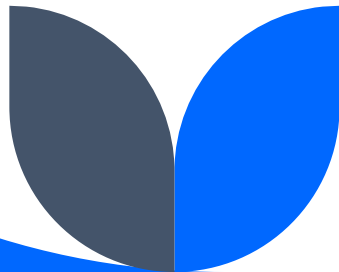
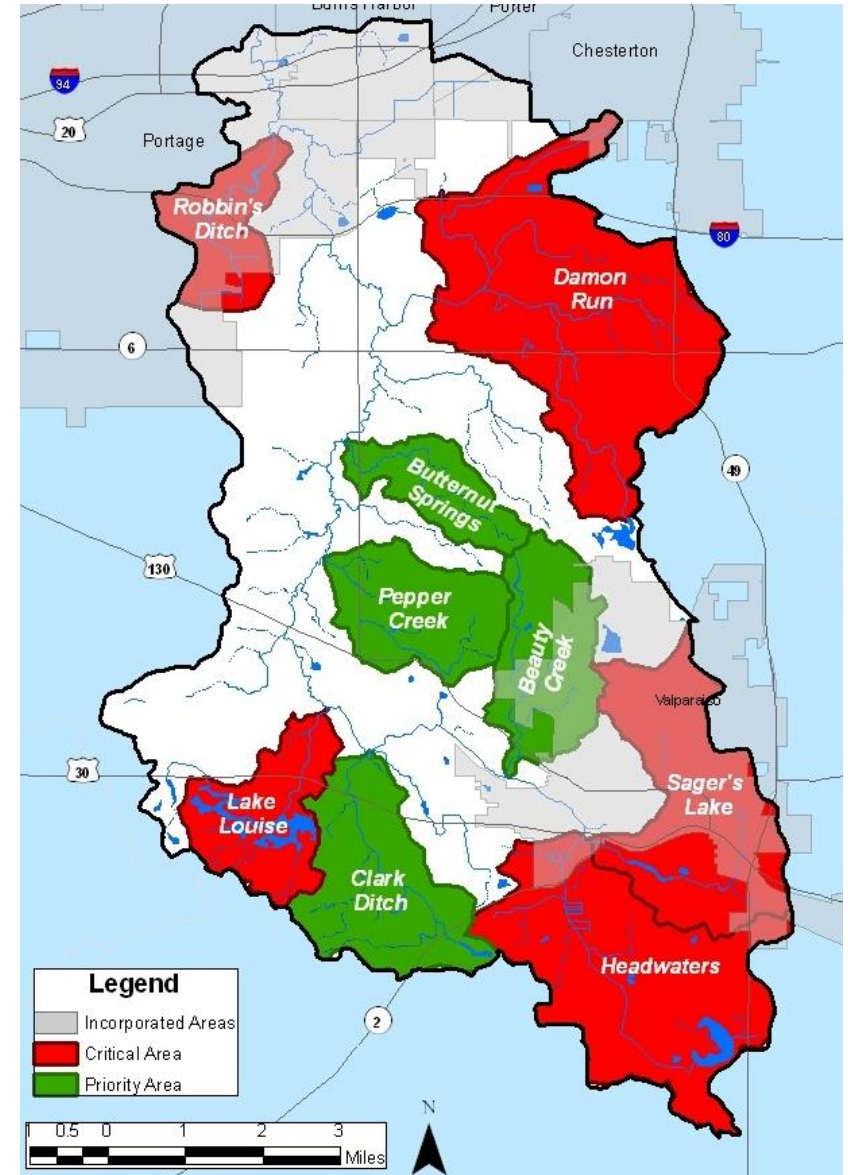
Lake	Current: KG P per year Exported (WS survey)	Future: Loading Est. per year (30% buildout)	Total KG per year of P
Great East	40	47	87
Horn	4	3	7
Ivanhoe	16	6	22
Lovell	22	23	45
Wilson	10	7	17
TOTALS	92	86	178

Identifying Protection Priority Areas

- **Critical Source Areas (CSAs)** contribute disproportionately to NPS pollution often because of high source magnitude + high transport potential.
- **Protection Priority Areas (PPAs)** are high quality and targeted for protection because they provide key functions necessary to achieve watershed goals and/or are vulnerable to degradation.

In our review:

- Most plans **described PPAs to guide management strategies** (e.g., target land conservation in headwaters & riparian-adjacent parcels).
- **5 plans** included detailed spatial analyses and prioritization of PPAs.



Identifying PPAs: Upper Frog Bayou (AR, 2015) 84mi²

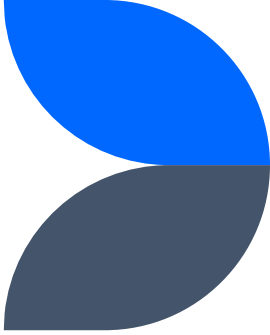


Table 24. Ranking of impact categories in each of the key Upper Frog Bayou sub-watersheds.

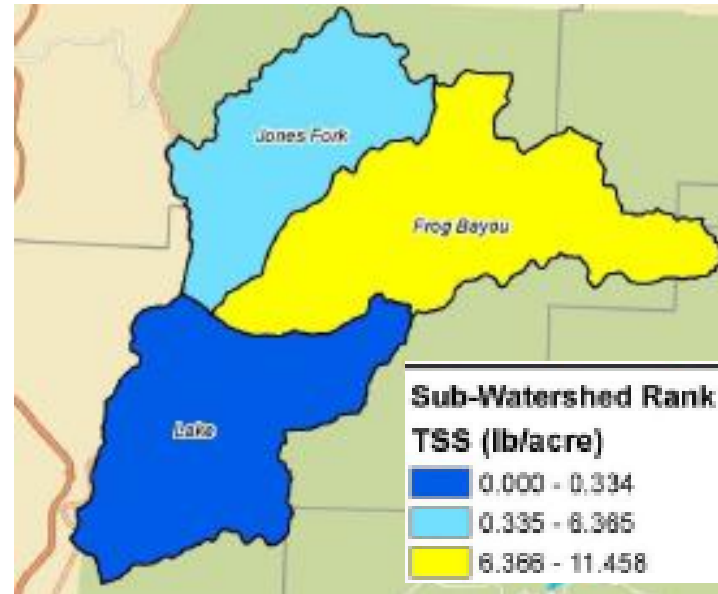
Rank #	TSS Loading	Phosphorus Loading	% Pasture	Impacted Riparian	Bank Erosion	Cattle	Unpaved Roads
1	FB-1	FB-1	Jones-1	Lake	FB-1	FB-1	Lake
2	Jones-1	Jones-1	FB-1	Jones-1	Jones-1	Jones-1	Jones-1
3	Lake	Lake	Lake	FB-1	Lake	Lake	FB-1

Concern: Sediment & nutrient loading during storms, along unpaved roads, and in a steep watershed = Threat to DWQ

→ Impact ranking + land slope + soil analyses to ID most vulnerable areas & target management

Table 28. Priority ranking of Upper Frog Bayou watershed impacts/disturbances from worst to least.

Rank	Location	Impact/Disturbance
1	FB-1	Stream bank erosion
2	Jones-1	Stream bank erosion
3	Lake (FB-2)	Stream bank erosion
4	FB-1	Pasture runoff
5	Jones-1	Pasture runoff
6	Jones-1	Unpaved roads
7	FB-1	Unpaved roads
8	Lake (FB-2)	Unpaved roads
9	Lake (FB-2)	Urban (developed areas) runoff



Other PPAs:



≥ 100ft of riparian buffer



Wetland areas



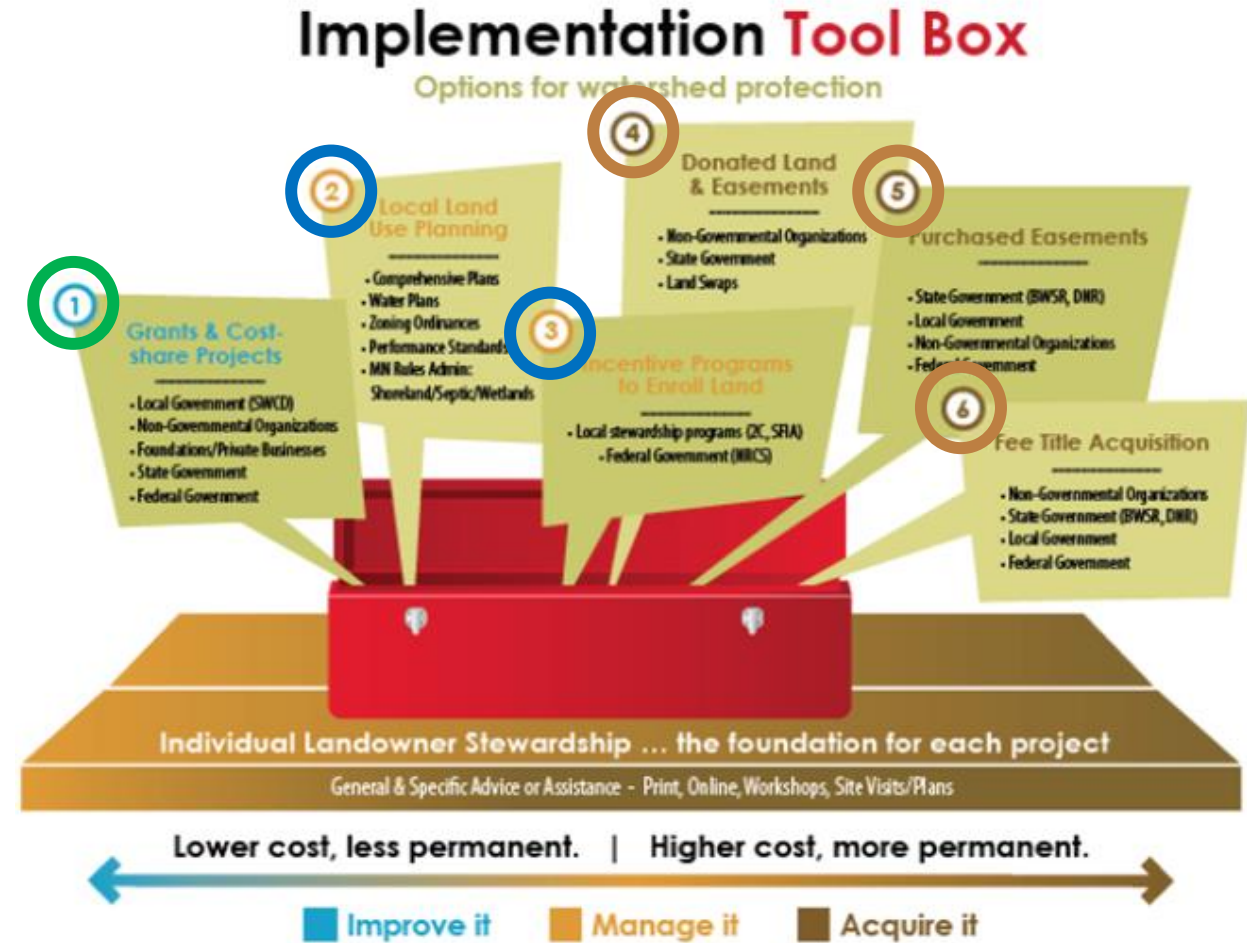
Upper littoral region

Protection-Based Management Strategies

- Watershed plans frequently guide ‘multiple-barrier approaches’ to protect and restore water quality.

In our review:

- Nearly all plans **proposed BMPs** to reduce existing NPS pollution loads.
- 18** plans proposed actions related to **local ordinances/regulations**.
- 15** plans proposed **land conservation strategies** (e.g., easements, purchases)



MN Pollution Control Agency (2017).
Incorporating Lake Protection Strategies
into WRAPS Reports

Protection-Based Management Strategies: Lake Charlevoix (MI, 2012)

330mi²

Local ordinance gaps analysis:

Table 6: Gaps Analysis Ranking Results for Lake Charlevoix Watershed Jurisdictions

Elements	Master Plan Components	Basic Zoning Components	Shorelines	Impervious Surfaces	Stormwater Management	Soil Erosion and Sediment Control	Sewer/Septic	Wetlands	Groundwater and Wellhead Protection	Other: Floodplains, Steep Slopes, and Critical Dunes
Strong	5	10	2	1	2	2	0	0	3	0
Adequate	10	4	6	2	6	3	13	0	8	15
Weak	0	1	6	9	8	10	3	12	3	0
Missing	1	1	2	4	0	1	0	4	2	1
TOTAL	16	16	16	16	16	16	16	16	16	16



- Master plan
- Floodplains, steep slopes, and critical dunes
- Basic zoning
- Sewer/Septic



- Wetlands
- Impervious surfaces
- Soil erosion and sediment control
- Shorelines

Protection-Based Measures of Success

- ‘Measures of success’ refer to **WQ & other implementation-based metrics used to track progress towards protection goals.**

In our review:

- WQ goals were to **maintain and/or improve existing good WQ.**
 - WQ targets were typically set to WQS.
 - In some cases, more stringent
- Plan implementation (e.g., BMPs & land protection) **milestones were strongest when targeted, measurable, and linked to WQ goals.**



Protection-Based Measures of Success: Lake Winnepesaukee (NH, 2010)

53mi²

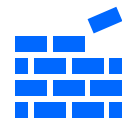
In-lake phosphorous goal

(state numeric nutrient criteria) = 8 µg/L

+ Milestones related to:



Community (implement a town septic system inspection/maintenance program)



Structural BMPs and Restoration Sites
(increase # of culverts retrofitted)



Environment (increase in loon, smelt, and trout populations)



Closing Thoughts:

How can state 303(d) programs use this information?

- If protection is on your radar, have a conversation with your state 319 counterparts. Is there an opportunity to coordinate planning?
- When planning in watersheds where protection may be a relevant goal, highlight management strategies particularly effective in addressing future threats.
 - E.g., land conservation, land use planning