

Assessing Principles of Good Governance: The Case of Lake Wausau, Wisconsin

*Kristin Floress¹, Aaron Thompson², and Cherie LeBlanc Fisher¹

¹*Northern Research Station, United States Department of Agriculture Forest Service, Evanston, IL*

²*Department of Horticulture & Landscape Architecture, Purdue University, West Lafayette, IN*

**Corresponding Author*

Abstract: This paper describes how in-depth interviews and content analysis of water-related policies and plans were used to assess good governance principles (transparency, effectiveness, equity, accountability, and appropriate scale) for Lake Wausau in central Wisconsin. The purpose of the research was to support and inform development of a lake management plan. One of the key findings was that the existing system of water governance lacked transparency. In addition, responsibility for and benefits from potential improved lake conditions were distributed unevenly and inequitably among stakeholders. Local and county plans were vague and lacked strong language (e.g., “should” vs. “must” comply) to indicate which actions were required. Both barriers to and opportunities for creating a more effective system were identified. This paper offers suggestions for improving the governance system, discusses the limits of local watershed planning for overcoming watershed management issues, and provides suggestions for anyone wishing to undertake governance analyses to support water resources management.

Keywords: *watershed management, planning, nonpoint source pollution, policy analysis*

Managing water resources at the watershed level has been promoted as one of the most promising ways of achieving water quality goals. This perspective reflects the limitations of top-down approaches to improving water conditions. At the same time, community-based watershed management has not been fully successful in changing voluntary behaviors to improve water quality, as evidenced by the fact that nearly half of United States’ surface waters are impaired (DeSimone et al. 2015). Because the impact of individual activities can be minute, motivations to change may be absent and, according to Ostrom (2011), the perceived benefits either may not outweigh the costs or may simply not be considered at all.

The United States Environmental Protection Agency (EPA) began promoting management at the watershed scale in earnest in the 1990s. The agency published several documents, including guidance for states and associated projects about the importance of watershed management and

why a more integrated and holistic approach was necessary:

The Watershed Protection Approach (WPA) is a departure from the way the EPA has traditionally operated its water quality programs and how federal, tribal, and state governments have typically approached natural resource management. Resource management programs...have tended to operate as individual entities and occasionally at cross-purposes...We also recognize that solving environmental problems depends increasingly on local governments and local citizens. Thus, the need to integrate across traditional program areas (e.g. flood control, wastewater, land use) and across levels of government (federal, state, tribal, local) is leading natural resource management toward a watershed approach. – From Watershed Protection, A Project Focus (Sosin et al. 1995, 6).

Recognizing the overlaps in relevant programs, agencies, and management scales, the EPA has since invested extensive resources in building the capacity of states and watershed projects to effectively use the WPA. From online training tools (e.g., the Watershed Academy) to the approximately 400-page watershed planning handbook (USEPA 2005), there is no shortage of guidance for developing watershed management plans. While these resources provide formulas for step-by-step approaches to watershed management, they focus heavily on watershed conditions like water quality, land use, and socio-economics. They usually do not include detailed information or analyses of the policies, programs, and organizations that may influence the management of an individual water body. These policies, programs, and organizations are each part of the system of water governance that operates to facilitate and constrain actions that impact water quality.

In this chapter, we describe an evaluation of the system of water governance of Lake Wausau, an impoundment in central Wisconsin, USA that is part of the Wisconsin River system. The central portion of the Wisconsin River Basin, shown in Figure 1, is impaired due to excess nutrient loading from landscape runoff, industrial and municipal wastewater, storm water, and naturally occurring nutrients from wetlands and forests (Turyk 2018). The authors were invited by a community-based organization, the Lake Wausau Association (LWA), to engage in research to help them understand issues, challenges, and strengths associated with managing the lake. One piece of this work is the governance assessment requested by lake planning project partners presented in this paper.

This assessment is based on several approaches used to understand institutional design: principles of good governance (Sheng 2009), relevant components of a watershed management capacity model (Davenport and Seekamp 2013), understanding perceptions related to scales at which organizations operate (Smith 2002), and our own previous work on understanding collaborative resource management (e.g., Floress et al. 2011; Floress et al. 2015). Together, these resources have demonstrated that there are numerous interactions between and among different scales even for

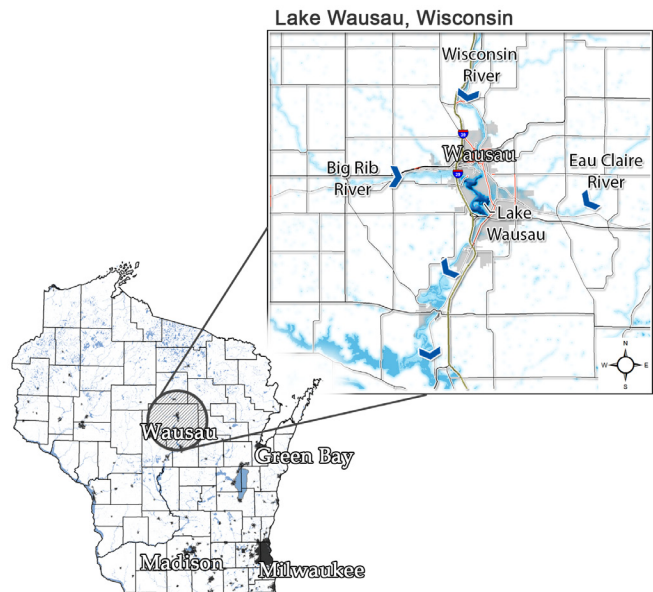


Figure 1. Map of study area.

watershed management problems that, on the surface, appear at least spatially bounded (e.g., a single lake). Thus, watershed management is a complex system comprised of “an interconnected network of components” that is not easily described (Berkes 2008, 2). Collaborative, watershed-scale approaches have been criticized for giving inadequate attention to this complexity (Akamani and Wilson 2011; Floress et al. 2015). Despite these challenges, there is overlap in factors that have been identified throughout the literature and summarized by a number of researchers about what facilitates effective watershed management (e.g., Prokopy et al. 2009; Davenport and Seekamp 2013; Floress et al. 2015), but often these highly interrelated factors are artificially separated or connections among them are not clearly defined. Thus, more attention is being paid in the watershed and landscape-scale management literature to the interrelated processes, policies, and organizations that impact and mediate how people interact with natural resources (Pahl-Wostl et al. 2009; Plummer and Fennell 2009; Floress et al. 2015); that is, the system of governance.

Table 1 presents five principles of good governance expanded from Sheng (2009) and Citizens’ League (2009), each principle’s description and indicators from the literature, and interview and web survey questions used to

assess each in the current study (methods for each are described below). The principles are interdependent and require a system of governance to be: 1) transparent – the system, its policies, and relevant information can be understood by stakeholders; 2) effective – the system “meet(s) the needs of society while making the best use of resources” (Sheng 2009, 3); 3) equitable – all stakeholders are included and share responsibility for and benefits of the managed resources; 4) accountable – relevant governmental institutions and private industry are accountable for decisions/actions; and 5) appropriately scalable – policies and authority, from the federal to local level, are clear and flexible enough to be implemented at the watershed scale.

Methods

Content Analysis

To understand the plans and policies potentially impacting management of Lake Wausau, we conducted a content analysis of relevant documents from local, county, and state agencies. Federal policies were omitted since state statutes are intended to ensure compliance with federal code. The initial intent was to utilize the Institutional Grammar Tool (Crawford and Ostrom 1995; Siddiki et al. 2012) as a method for understanding transparency, equity, and accountability. The Institutional Grammar Tool was designed to understand the structure of written policies, laws, and other documents. The components and definitions of this structure can be found in Table 2.

However, early feedback from the LWA and resource management staff led us to simplify our analysis by using plain, understandable language and refine what was included to address their needs. Because sanctions (“or else” component) were not included in the majority of documents, this information was not collected. Thus, for each policy we identified the target resources (e.g., soil, water quality, property), impacted stakeholders (e.g., lakeshore owners, agricultural producers, municipalities), actions suggested, required, or forbidden (e.g., activities that can potentially harm the lake’s resources, requirements for cost-sharing), the entity/entities accountable for meeting the policy’s goals (e.g., Wisconsin

Department of Natural Resources (WDNR), county conservation, planning, and zoning office, etc.), and the administrative scale (state, county, or city/village/town) at which the policy applies. Plans and policies were identified through interviews with land and water resource managers in Marathon County and through web searches for ordinances, plans, and policies related to nonpoint source pollution in the state of Wisconsin and each of the cities, towns, and villages in the watershed.

Interviews and Follow-up Web Survey

We conducted a series of 12 interviews with individuals involved in water/watershed management, local government agencies and non-governmental organizations, lake association members, and others who were identified as potentially having knowledge that would be useful for understanding the management of Lake Wausau. The interviews were designed to elicit feedback about specific components of good governance (see Table 1).

After analyzing the interview transcripts, the researchers developed a series of questions based on Smith (2002, see Table 1) about 11 specific agencies and organizations that had been mentioned by one or more interviewees, in order to garner additional information about governance principles. A web survey was used to gather input from the 12 interview participants themselves and several others that interview participants forwarded the survey to because they were knowledgeable about watershed management. The number of people who were forwarded the survey link is not known.

The 11 agencies/organizations that were identified during interviews or during the policy analysis as influencing the management of Lake Wausau and included in the web survey questions were: EPA; WDNR; Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP); local cities/towns/villages; Marathon County Department of Conservation, Planning, and Zoning (CPZ); Natural Resources Conservation Service (NRCS); River Alliance of Wisconsin; LWA; North Central Stormwater Coalition (NCWSC); Wisconsin Association of Lakes (WAL); and University of Wisconsin-Extension (UWEX).

Table 1. Descriptions and data sources for principles of good governance.

Principle	Description/ Indicators*	Key Interview Questions	Web Survey Questions**
Transparency	Coordination across spatial and issue boundaries, knowledge of programs	<ul style="list-style-type: none"> • Are you involved in any other organization that might also impact or be impacted by (water policies in Wisconsin/the Lake Wausau management plan?) • What is the primary role your organization plays, and how is that related to (water policies in Wisconsin/the Lake Wausau management plan?) • How frequently do you work directly with other organizations on water management issues? How would you characterize that work? • Integration of all findings from other principles 	<ul style="list-style-type: none"> • How would you characterize [organization] in terms of its functional scale? Functional scale means the variety of issues the organization addresses. (<i>narrow, medium, broad</i>)
Effectiveness	Presence of adequate resources, effectiveness of programs, engagement in adaptive management	<ul style="list-style-type: none"> • What policies or plans shape the role you and your organization play? • What policies help or hinder successful watershed management? • What resources do you know of that are available to you to work on Lake Wausau issues? • What types of resources do you and your organization use to help achieve your goals? Which do you rely upon most often? • Please describe how well you think our agencies, policies, and programs are working to protect water quality? Which do you think are the most effective? The least? 	<ul style="list-style-type: none"> • How would you characterize the financial support, or willingness for the public to invest in actions to improve water quality, for the organization? (<i>minimal, fair, optimal</i>) • In general, how effective do you think the organization's programs and policies are for improving water quality? (<i>very effective, somewhat effective, neither, somewhat ineffective, very ineffective</i>)
Equity	Benefits from and responsibility for safe water shared among and supported by stakeholders	<ul style="list-style-type: none"> • Are there people, agencies, or groups who you see as having too much influence on attempts to protect water quality? Too little? 	<ul style="list-style-type: none"> • How would you characterize the ideological support, or public and political support for actions, the organization has to achieve water quality goals? (<i>minimal, fair, optimal</i>)
Accountability	For problems and solutions	<ul style="list-style-type: none"> • To whom or what do you see your organization as most accountable? 	<ul style="list-style-type: none"> • How would you characterize the authority the organization has over decisions impacting water quality? (<i>weak, moderate, strong</i>) • How would you characterize the power the organization has to change people's behavior to improve water quality? (<i>weak, moderate, strong</i>)
Appropriate Scale	Presence of flexible policy options for implementation at watershed scale	<ul style="list-style-type: none"> • What is unique to the local population in the Lake Wausau watershed that affects your ability to achieve your goals? • What unique natural resource features in the area simplify or complicate your ability to achieve your goals? 	<ul style="list-style-type: none"> • How would you characterize [the organization] in terms of its spatial scale? Spatial scale means the geographic area to which the organization's policies apply. (<i>narrow, medium, broad</i>)

*Informed by Prokopy et al. 2009; Floress et al. 2011; Davenport and Seekamp 2013; and Floress et al. 2015. **Revised from Smith 2002.

Table 2. Institutional grammar components, definitions, and simplified analysis.

Institutional Grammar Component	Definition	Simplified Analysis (Institutional Grammar Tool Component in parentheses)
Attribute	Who the policy refers to (e.g., municipality, farmer, resident)	<ol style="list-style-type: none"> 1. Resources protected (e.g., soil, water quality, human health) (Aim) 2. Stakeholders impacted: Those identified in the policy as carrying out actions (Attribute) 3. Actions and whether they were suggested, required, or forbidden (Deontic, Conditions) 4. Accountability: Entity accountable for meeting policy's goals (Attribute) 5. Administrative scale at which policy applied (city/village/town, county, or state) (Conditions)
Deontic	Conditional or imperative statement (e.g., must, should not, etc.)	
Aim	What the policy is about (e.g., livestock fencing)	
Conditions	The specifics regarding when the aim occurs	
Or else	A sanction if the policy is not followed	

Mail Survey

A mail survey questionnaire was designed to measure residents' attitudes toward Lake Wausau, their economic priorities, and demographic information. The recruitment letter specified that the survey results would be treated as anonymous and that participation was completely voluntary. Participants were selected using a random sample of 850 mailing addresses in the Lake Wausau area. The sample was developed from tax parcel records to identify and randomly select residential homeowners within each of the communities. Using Dillman's (2000) tailored design method a five wave survey was conducted that resulted in a 44.3% (n=376) response rate. In this paper, results of only two questions are reported that were included on the survey to support the governance analysis: respondents' familiarity with and importance of five specific policies: the Clean Water Act, three state administrative rules (Natural Resources 115, Shoreland Zoning; Natural Resources 151, Phosphorus Rule; and Natural Resources 40, Invasive Species Rule), and a general category for "local planning & zoning regulations". See Thompson et al. (2014) for a full report of this survey.

Results

The sections below first provide overviews of the content analysis and web survey results,

followed by an assessment of each principle of good governance. These assessments are supported by interview, content analysis, and survey results.

Overview of Policies and Plans Impacting Lake Wausau

Thirty-two policy and plan documents were identified and analyzed. Half (n=16) were at the state administrative scale, followed by city/village/town (n=10), and county (n=6). All state-level policies were administrative rules (i.e., official agency regulations that describe how a law will be implemented). At the county level, two documents were general plans (land and water plan, comprehensive plan) and four were county ordinances. At the city/village/town level, four were comprehensive plans and six were ordinances. In general, plans and policies in the watershed are implemented to reduce soil loss and protect surface, ground, and drinking water quality, wetlands and shorelands, floodplains, and aquatic life and habitat. In addition, many of the plans and policies mentioned enhancing natural beauty and aesthetics as benefits of protecting other resources. Tables 3-6 provide an overview of the policies and resources addressed, stakeholders, and responsible entities. The appendix includes more detailed information about each policy.

The plans and policies differed greatly in the degree to which certain actions were required, encouraged, or forbidden. Local and county

comprehensive plans that were largely voluntary in nature used language such as “strive for”, “attempt”, and “encourage.” State administrative rules and local/county ordinances were regulatory in nature and used much stronger language such as “must”, “must not”, “is/are required”, and “will.”

The majority of policies and plans analyzed were identified by the research team and not mentioned by interviewees. However, several were mentioned by at least one interviewee, including state administrative rules that established performance standards for nonpoint source pollution, regulated

Table 3. Number of policies analyzed at each administrative scale.

Administrative Scale	Frequency (number)
City/Town/Village	10
County	6
State	16

Table 4. Stakeholders groups and the number of policies/plans that target them.

Stakeholder Group	Frequency (number)
City/Town/Village	10
All residents	9
All agricultural producers	7
County	7
All property owners	6
Developers/Builders	6
Livestock producers	5
University/School	4
Lake organizations	3
Community, general	3
Crop producers	2
Dairy producers	2
Construction/Developers	1
Mine operators	1
Industry, general	1
Woodland owner	1
All riparian owners	1
Waste storage operators	1

stormwater discharge permitting, and regulated animal feeding operations, along with two county ordinances that regulated livestock facilities and waste.

Table 5. Number of policies that aim to protect each resource.

Resources Protected	Frequency (number)
Surface water quality	11
Ground/Surface water, general*	10
Wetlands	10
Shorelands	7
Aquatic life	6
Natural beauty	6
Floodplains	4
Native species	4
Public health, people	4
Groundwater quality	3
Groundwater quantity	3
Woodlands	3
Habitat	2
Lake resources, general	2
Wildlife	2
Economic/Property values	1
Recreation	1
Soil	1
Surface water quantity	1
Threatened/Endangered species	1
Water supply	1
Wellheads	1

*Not specific to quality or quantity, includes surface and ground.

Table 6. Agencies responsible for enforcing policies and plans.

Responsible for Enforcing	Frequency
WDNR	17
CPZ	13
City/Town/Village	11
DATCP	5

Overview of Web Survey Results

Nineteen individuals responded to the web survey. As explained above, there were 12 interview participants who were sent the survey, and several of those individuals asked if they could forward it to others. We do not know how many people were forwarded the link, thus we are unable to calculate a response rate. Regardless, this was not intended to be a representative survey but, instead, gather additional information from interview respondents about organizations mentioned during interviews. Respondents were initially asked if they were familiar with 11 organizations listed on the survey. If they answered no about any organization, skip logic “piped” them to the next organization. If they answered yes about any organization, they were asked follow-up questions about that organization. Thus, the total number of individuals answering any given question may not always add up to 19.

Respondents were asked which agency/organization types they were affiliated with, and were allowed to check multiple responses (some elected officials, part time staff or volunteers, for example, might have other jobs). Respondents represented city/town/village governments (n=6), state agencies (n=9), non-governmental organizations (n=4), college/university/extension programs (n=8), and a federal agency (n=1). These results are used below to highlight findings organized by good governance principles.

Good Governance Principle 1: Transparency

The system of water governance for Lake Wausau (and in general) was not very transparent. There were a variety of administrative rules, local and county ordinances, and plans that could impact the lake, very few of which were mentioned by interviewees as being important to their work. While those who were responsible for the implementation of specific programs and policies might know the goals of a policy and to whom it applied, most respondents to the mail survey found it difficult to understand who was ultimately responsible for achieving outcomes and how policies were inter-related (Figure 2). In terms of the level of agreement in web survey responses about the functional scale – or variety of issues addressed by each agency/organization – the organization most people agreed had the most

narrow functional scale was the LWA, with EPA and WDNR having the most broad (Figure 3).

Good Governance Principle 2: Effectiveness

Adequate Resources. Having the resources necessary to develop, implement, and enforce policies and plans was described as important by all participants, and not having (enough) appropriate staff and funding for implementation and monitoring were noted as barriers to protecting water quality. The technical skills of those working in the area long-term were seen as a having the potential to help improve water quality, as was increased monitoring that resulted from the Wisconsin River total maximum daily load process.

The comment below illustrates the connection between effectiveness and having adequate resources, and the need for additional cooperation among the various Lake Wausau stakeholders, to improve the lake as a community resource. Further, the participant discusses how disconnection among stakeholders and the system of governance was hindering that process at the time of the interview.

Well you've got a fragmented approach. You've got different regulations in different municipalities and you've got different thought processes relative to the value and the role of that governmental unit in protecting quality and I think that the hope of the lake association was there would be some opportunities to approach it holistically with all the governmental units.

Funding for municipal and agricultural practices – in addition to activities such as weed removal – was repeatedly mentioned as being vital and currently insufficient to improve water quality. One person noted, “The DNR, they set the standards that we have to follow and other than quantity, we are typically not more restrictive. We are not because it boils down to money. It costs a lot of money to be in compliance with DNR rules and regulations, so we do our best to be in compliance.”

Web survey respondents reported that no organization had optimal financial support (Figure 4). The Wisconsin DATCP was ranked as having minimal support most often (n=10), while funding

for the County Department of Conservation, Planning, and Zoning was ranked as both minimal (n=8) and fair (n=7). All other organizations were rated as having fair financial support. Most people responding to the question did not know the financial support associated with River Alliance and the Wisconsin Association of Lakes.

Specific Policies and Programs. Agricultural performance standards (Wisconsin Administrative Rule Natural Resources 151 – Runoff Management, hereafter NR 151) were noted as having the potential to positively impact Lake Wausau water quality, but, as one individual stated, they don't "go far enough to protect water quality" since producers did not need to change potentially harmful practices unless cost-share funding was available. Another participant stated that current regulations in general were not effective for protecting water quality: "They take steps in the right direction, but they certainly aren't strong enough because they're a political compromise. So

they're not strong enough to protect water quality."

However, the municipal separate storm sewer system (MS4) program was seen as having positive impacts on water quality. Further, several participants believed that the NCWSC was a positive asset to and driver of change in the Lake Wausau watershed.

When asked how effective each organization was with regard to improving water quality, respondents most often ranked each organization as somewhat effective, though UWEX was considered neither effective nor ineffective, and DATCP was most often considered somewhat ineffective followed closely by very ineffective (Figure 5). Overall, there was disagreement about whether policies and programs created by various agencies were positively impacting water quality. This finding, taken together with perceptions about the agencies' inability to impact behaviors that affected water quality, indicates that the institutional structure for water governance was seen, at best, as only mildly effective.

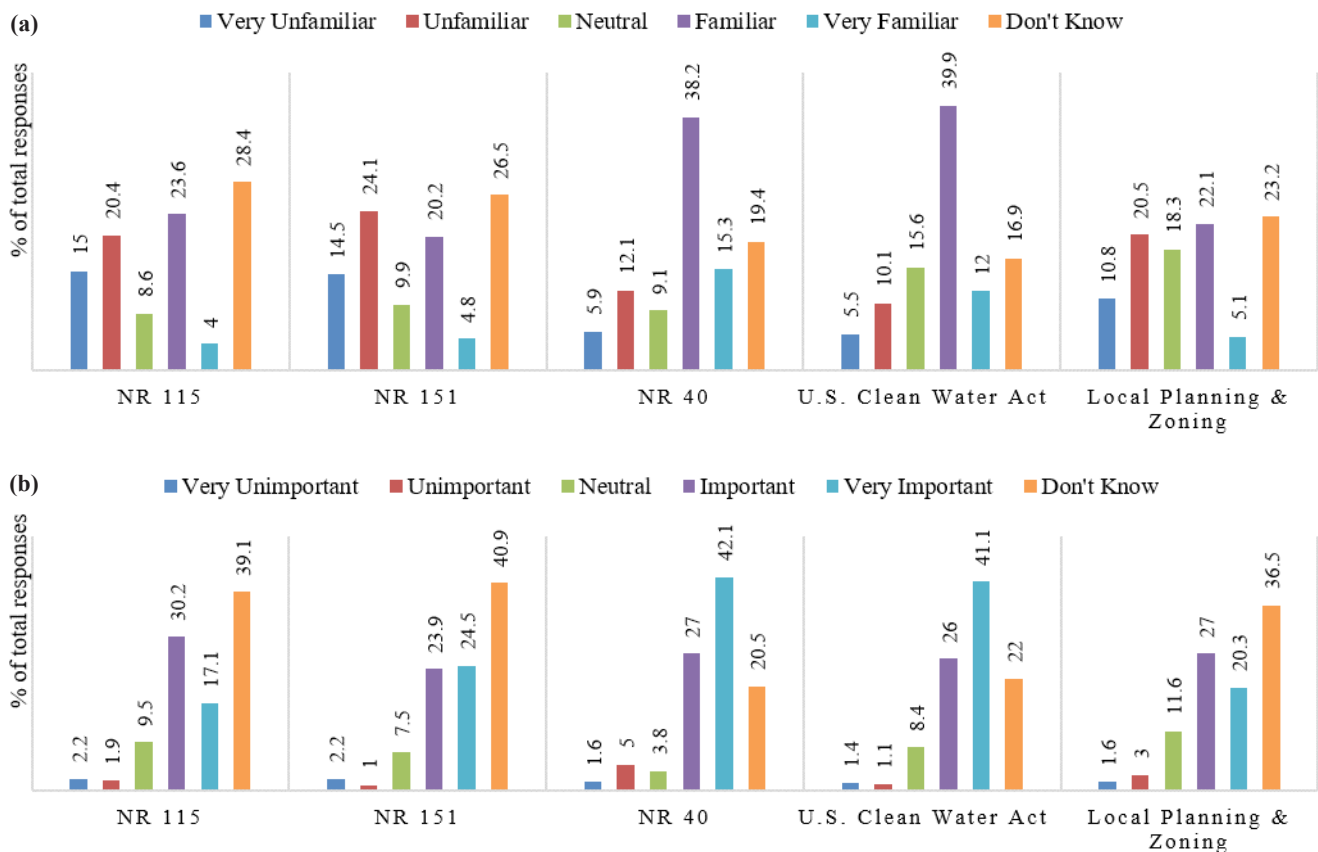


Figure 2. Mail survey respondents' rating of their (a) familiarity with and (b) importance of policies.

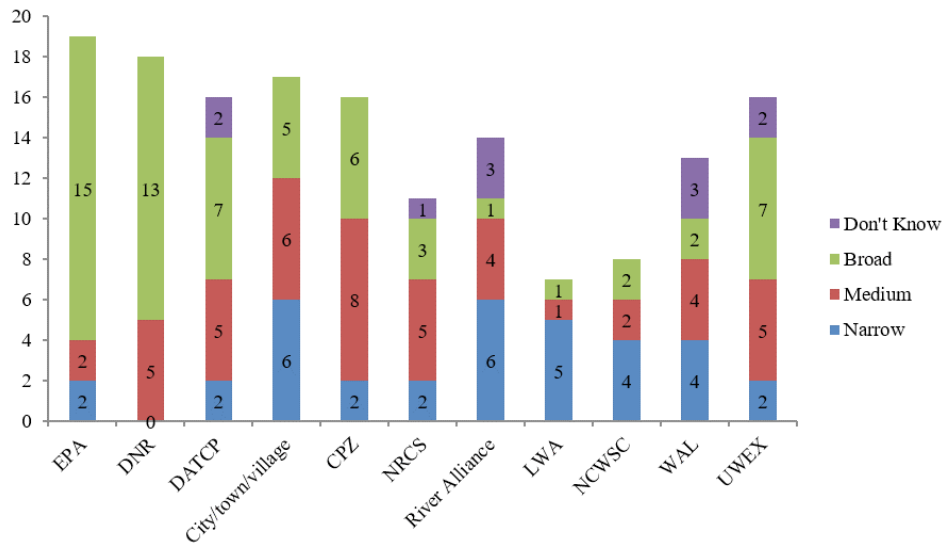


Figure 3. Web survey respondents' rating of each organization's functional scale.

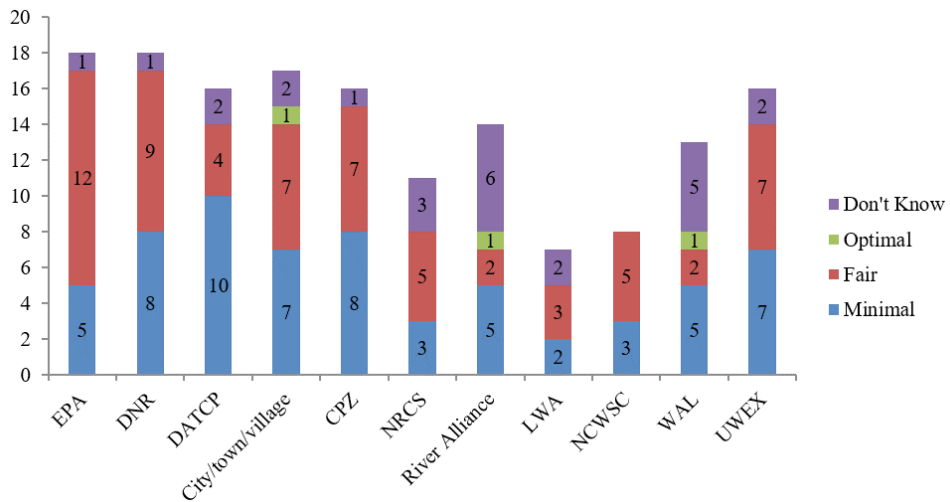


Figure 4. Web survey respondents' rating of each organization's financial support.

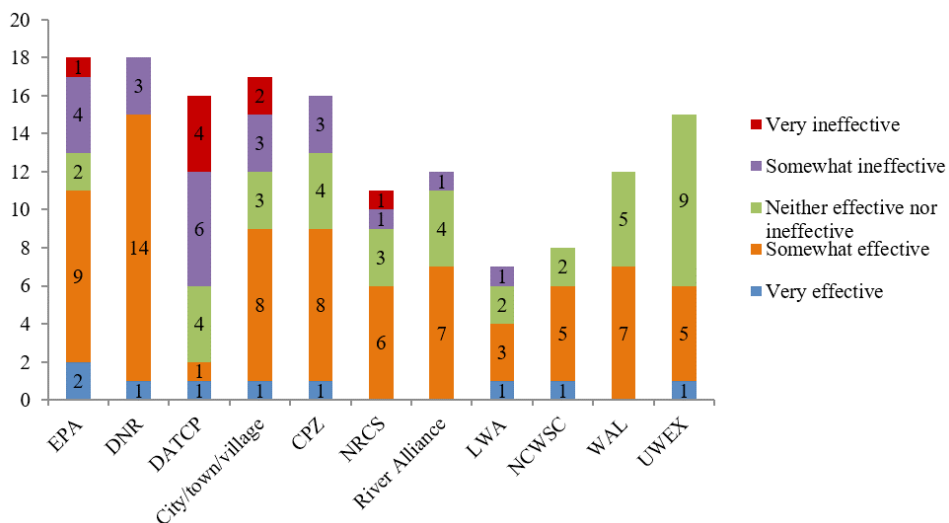


Figure 5. Web survey respondents' rating of each organization's effectiveness.

The MS4 permitting program (Wisconsin Administrative Rule Natural Resources 216) and agricultural performance standards (NR 151, Wisconsin Administrative Code ATCP 50 – Soil and Water Resource Management Program) were the two policies/programs that interviewees perceived as effective. One participant noted that the performance standard “doesn’t go far enough to protect water quality... it gets us a little bit closer, but not quite where we need to be.” With regard to MS4 permits, an interviewee stated that a goal was to educate people about stormwater discharging directly to the river and that “a lot of people for some reason don’t think that happened.” Both statements indicate that even policies viewed as effective have issues with implementation and achieving target outcomes.

Good Governance Principle 3: Accountability

Individuals involved in implementing state and local policies considered themselves accountable to agencies hierarchically above them (like WIDNR) and to local citizens. One person said, “I am most accountable to the residents of the county. They tell their representatives what they would like to see, issues they have, and that’s passed down to me. If I’m not doing my job, they go to their representatives and I find out about it.”

The policies and plans accountable for addressing nonpoint source pollution that could impact Lake Wausau were mostly aimed at agriculture and development. Residents who were not agricultural producers were largely ignored in regulatory policy. Even the MS4 permits that regulated municipal stormwater runoff were issued to the local government, which was then responsible for ensuring that individuals were not contributing too much of a given pollutant to the system. In spite of this, agri-business and those who represented agri-businesses (“big ag,” lobbyists, or the Dairy Business Association) were viewed as having too much influence and power with regard to water policy. One interviewee stated that the WIDNR needs to be “back in charge of regulating or protecting water quality” instead of DATCP.

Another component of accountability is that those who are responsible for meeting goals have the resources necessary to do so. Several

interviewees noted that this was not the case. For example, respondents mentioned staff shortages, lack of financial and staff commitment for implementation and monitoring, and funding being removed from some programs (specifically WIDNR programs) to be funneled toward others that were not natural resources-related. Web survey respondents indicated most organizations had fair or minimal financial support (Figure 4).

Good Governance Principle 4: Equitable Distribution of Power, Responsibility, and Benefits

Interviewees were asked to assess the level of power stakeholders had with regard to water quality in Lake Wausau. “The people who enjoy the lake” were noted as not being involved in decision-making. Wastewater dischargers were seen as having some degree of power to make policy changes that could impact Lake Wausau water quality. One person said that “tree huggers” have unfairly influenced policy by attending meetings and being a vocal minority with regard to stormwater and runoff. Agri-business, concentrated animal feeding operations, and farmers were repeatedly mentioned as having too much power and influence over actions that impact water quality. One respondent noted, “The involvement of big ag in this area, they are structured in a way that can prevent a lot of water quality improvement.” Several participants noted it was not individual farmers but the agricultural lobby “down in Madison” and “whoever is representing the farmer at the state level” that had the power and influence. Another said, “I think the farming organizations have too much lobbying power down in Madison and at the national level...Dairy Business Association, Wisconsin Corn Growers, and all those different organizations, I think they have too much power.”

Several interviewees believed that there were unreasonable burdens placed on municipalities to reduce phosphorus contributions rather than other land uses that were negatively impacting water quality, most notably agriculture. One individual noted that the MS4 permits were “... a great idea. But to turn around and put the burden on the incorporated entities and not everyone that may have an impact on the river, I don’t think it’s fair.”

In addition, some stakeholders are not being engaged in the decision-making processes around water quality. Most of the targeted populations identified in plans and policies had not been involved in the planning efforts and were not reaping the same benefits from the lake as lakeshore residents. In fact, “people who enjoy the lake” and individual farmers (as opposed to the agriculture lobby or “big ag”) were seen as having little power with regard to Lake Wausau decision-making.

Touching upon the intersection of resources and equity, one person said about monitoring that, “They’re talking about making the treatment plants reduce their phosphorus...and it’s supposed to cost millions of dollars. And we haven’t even hardly touched on some of the agricultural runoff things so I think the monitoring is important.”

Perceptions of Authority and Power to Change Behavior. Web survey respondents had differing views on the authority and power each organization had to impact water quality and the power of each organization to actually change behavior. Organizations with formal authority (WIDNR, USEPA) were perceived as seeing strong authority but weak power to actually change behavior. Conversely, those organizations with less formal authority (UWEX, River Alliance, LWA) were perceived as having less authority but moderate to strong power to change behavior (Table 6).

Good Governance Principle 5: Appropriate Scale and Flexibility of Policies

Of the five good governance principles, spatial scale is often the most difficult to assess since it fluctuates depending on the resource in question. As one interviewee said, “the biggest problem is that we people in Lake Wausau tend to look at the weeds and the algae growth in terms of, ‘here’s our local problem,’” instead of seeing the various land uses in the Wisconsin River watershed as impacting the Lake, illustrating that the scale at which people view lake issues may not be appropriate for solving them. In addition, the greatest number of regulations that required action and enforcement were at the state, rather than local, level. While numerous policies and plans existed at the local level, they were mainly voluntary in nature. Ideally, the state policies would be both specific and broad enough to protect water quality and be

applied locally, respectively. However, interview participants did not perceive most of the policies as effective. Further, the perceptions of authority and power to change behavior differ by administrative scale of each organization (see Table 6).

Discussion

Good governance of water resources requires systems to be transparent, effective, equitable, and operating at the appropriate scale with adequate resources. Currently, multiple, separate systems of administrative rules, ordinances, and plans regulate and address polluted runoff that affects Lake Wausau, and multiple entities that do not work closely together are responsible for attaining water quality goals. Results of this research that were presented to the LWA suggested that transparency in the governance of Lake Wausau could be improved by developing the lake management plan in a way that all stakeholders could contribute, and with the ultimate goal of engaging all stakeholders in the effort to achieve agreed-on resource management goals.

However, lake and watershed management plans often do not have regulatory power on their own, and caution is needed in interpreting how effective they can be for overcoming shortfalls in existing laws, policies, and programs. It may not be reasonable to expect local water planning efforts to achieve what state and federal laws have not been able to accomplish. Further, the strength of language in policies varies: state level administrative rules have much more powerful language than local policies with regard to whether an action should/should not occur vs. must/must not. Even so, local staff responsible for administering state rules often lack resources for monitoring and enforcement, so lack of resources becomes a barrier to effective policy implementation.

Approaches to managing stormwater near the Lake Wausau study site have included creating a stormwater utility fee that can be pooled and used to address nutrient and other pollutant loading from stormwater. Lake Wausau project partners may want to consider implementing a watershed utility fee program that would support changes in land management practices. Since funding was seen as one of the barriers to successfully improving

water quality in Lake Wausau, a steady source of funding could be significant. A watershed utility fee that uses parcel size and land use as metrics for determining each property owner's fee could be an equitable means of funding water quality protection.

The strategies included in the lake management plan are more likely to be successful if ties are formed with all stakeholder groups impacting the lake, including farmers who may not be able to enjoy the resource at all or to the extent other residents in the watershed can, as they are closely tied to their own land from spring through fall. Inviting farmers to have a role in managing the lake and enjoying its benefits could provide opportunities for all Lake Wausau stakeholders to meet and interact with each other, thereby increasing the probability of cooperation. Additionally, including representatives from all state, county, and local administrative agencies in planning meetings could be a beneficial way to incorporate multiple sources of knowledge and more resources into the processes.

Conclusion

Those wishing to assess governance principles at the level of a lake, watershed – or for conservation projects of any type that cross administrative, political, and geographic scales – should consider the intensive nature of this process and consult with professionals with appropriate skills. However, examining a limited number of policies using the simplified approach developed to understand what resources are protected, who is supposed to protect them, and who is accountable for enforcing policies, may be within the time and skill constraints of some water management staff. The need to simplify this process illustrates how researchers engaged in this type of participatory process should be able to adapt to the needs of stakeholders. Because the Institutional Grammar Tool was not easily understood by stakeholders, including local program staff or research assistants, it may have limited utility beyond a scholarly audience.

Finally, the Lake Wausau Management Plan was officially adopted in September, 2018. The Plan included multiple goals that relate directly to this research, including developing a more inclusive Advisory Team that linked stakeholders

previously not engaged in planning efforts for the lake, including representatives from local and state governments affecting Lake Wausau's management, and farmers and farmer groups as recommended in this analysis. As stated in the final plan in direct relation to the findings of this report, "...additional cooperation among the various stakeholders of Lake Wausau could provide for improving it as a community resource, but disconnection among stakeholders and governance hinders this opportunity. This plan and the process to develop it were designed to break through some of the barriers that created fragmented management."

Acknowledgements

We would like to thank Shantanu Pai, Michelle Scarpace, Daniel Hoff, and Matthew Havlik for their assistance in identifying plans and conducting interviews. We also extend our gratitude to those who participated in interviews and engaged in project planning activities. The Wisconsin Department of Natural Resources funded the research that took place while the first and second authors were affiliated with the University of Wisconsin – Stevens Point.

Author Bio and Contact Information

DR. KRISTIN FLORESS (corresponding author) is a Research Social Scientist with the United States Department of Agriculture Forest Service Northern Research Station. She studies and models the relationships among social factors on natural resources planning, management, conservation, and restoration. Her work ranges from understanding conservation decisions on private lands to cross-boundary landscape scale conservation. In collaboration with land managers, scientists across disciplines, and non-governmental organizations, her work contributes to sustainable management of natural resources. She may be contacted at kristin.m.floress@usda.gov.

DR. AARON THOMPSON is an Assistant Professor of Landscape Architecture at Purdue University whose work emphasizes the power of place-based planning to support community land use, recreation, and conservation decision-making. Integral to his teaching and research is an applied landscape planning approach that incorporates social-ecological science into the design process to create landscape transformations capable of balancing the needs of human and natural systems. He is currently working on developing innovative community capacity approaches that respond to the challenge

of water quality management, and providing design support to sustainable development projects enhancing the future of the Midwestern landscape.

CHERIE LEBLANC FISHER is a Social Scientist with the U.S. Forest Service where her work focuses on collaborative strategies to manage urban natural resources. As co-Chair of the Chicago Region Trees Initiative's Tree Stewardship and Planting Work Group, she helps promote better tree care practices. As Chair of the Chicago Wilderness Force of Nature Awards committee, she works to bring attention to projects, programs, and people that are inspirational examples for others. She is actively involved in the northwest Indiana Urban Waters partnership, an alliance of government agencies, nonprofits, and others that seeks to connect people to local waterways.

References

- Akamani, K. and P.I. Wilson. 2011. Toward the adaptive governance of transboundary water resources. *Conservation Letters* 4: 409-416.
- Berkes, F. 2008. Commons in a multi-level world. *International Journal of the Commons* 2: 1-6.
- Citizens League. 2009. *Moving Minnesota's Water Governance Upstream*. Report of the Citizens League Water Policy Study Committee, St. Paul, MN. Available at: <https://citizensleague.org/wp-content/uploads/2017/08/PolicyReportLandNov-2009.pdf>. Accessed July 19, 2019.
- Crawford, S.E.S. and E. Ostrom. 1995. A grammar of institutions. *American Political Science Review* 89: 582-600.
- Davenport, M.A. and E. Seekamp. 2013. A multi-level community capacity model for sustainable watershed management. *Society and Natural Resources* 26: 1101-1111.
- DeSimone, L.A., P.B. McMahon, and M.R. Rosen. 2015. *The Quality of Our Nation's Waters – Water Quality in Principal Aquifers of the United States, 1991-2010*. U.S. Geological Survey Circular 1360. Available at: <https://dx.doi.org/10.3133/cir1360>. Accessed July 19, 2019.
- Dillman, D.A. 2000. *Mail and Internet Surveys: The Tailored Design Method*. John Wiley & Sons, New York, NY.
- Floress, K., K. Akamani, K.E. Halvorsen, A.T. Kozich, and M. Davenport. 2015. The role of social science in successfully implementing watershed management strategies. *Journal of Contemporary Water Research and Education* 154: 85-105.
- Floress, K., L.S. Prokopy, and S.R.B. Allred. 2011. It's who you know: Social capital, social networks, and watershed groups. *Society and Natural Resources* 24: 871-886.
- Ostrom, E. 2011. Background on the Institutional Analysis and Development Framework. *Policy Studies Journal* 39: 7-27.
- Pahl-Wostl, C., J. Sendzimir, P. Jeffrey, J. Aerts, G. Berkamp, and K. Cross. 2009. Managing change toward adaptive water management through social learning. *Ecology and Society* 12: 30.
- Plummer, R. and D.A. Fennell. 2009. Managing protected areas for sustainable tourism: Prospects for adaptive co-management. *Journal of Sustainable Tourism* 17: 149-168.
- Prokopy, L.S., K. Genskow, J. Asher, A. Baumgart-Getz, J.E. Bonnell, S. Broussard, C. Curtis, K. Floress, K. McDermaid, R. Power, and D. Wood. 2009. Designing a regional system of social indicators to evaluate nonpoint source water projects. *Journal of Extension* 47: 2FEA1.
- Sheng, Y.K. 2009. What is good governance? United Nations Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand.
- Siddiki, S.; X. Basurto, and C.M. Weible. 2012. Using the institutional grammar tool to understand regulatory compliance: The case of Colorado aquaculture. *Regulation and Governance* 6: 167-188.
- Smith, C.L. 2002. Institutional mapping of Oregon coastal watershed management options. *Ocean & Coastal Management* 45: 357-375.
- Sosin, A., D. Brady, M. McCarthy, W. Cooter, and S. Alexander. 1995. *Watershed Protection: A Project Focus*. EPA 4503F. United States Environmental Protection Agency, Office of Water, Washington, D.C.
- Thompson, A., M. Vokoun, and K. Floress. 2014. *Lake Wausau Community Survey: Understanding the Socioeconomic Conditions Surrounding Management of Lake Wausau*. UWEX Center for Land Use Education, University of Wisconsin – Stevens Point.
- Turyk, N. 2018. *Lake Wausau Protection and Improvement Plan*. Center for Watershed Science and Education, University of Wisconsin – Stevens Point.
- USEPA. 2005. *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*. EPA 841-B-08-002. United States Environmental Protection Agency Office of Water, Nonpoint Source Control Branch, Washington, D.C.