

# Lessons from Drinking Water Professionals: An Assessment of Drinking Water Governance in Minnesota

A report and recommendations from the University of Minnesota and Freshwater  
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# Perspectives of Water Supply Professionals: Implications for the State Drinking Water Plan

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The Minnesota Department of Health is developing a state drinking water plan to map a ten-year strategy for ensuring a safe, equitable and reliable drinking water supply far into the future. To ensure the plan reflects a diversity of perspectives, MDH solicited support from the University of Minnesota. In turn, the U of M partners reached out to Freshwater to gather input from water supply professionals, and to Clean River Partners to gather input from water consumers. This report is a result of the feedback from professionals.

The feedback was gathered using the previously developed Governance Assessment Framework (GAF). We summarize the lessons learned about critical issues in drinking water supply management and about the usefulness of the GAF as an assessment tool. Based on the lessons, we provide recommendations for the state drinking water plan.

## **The importance of assessing drinking water governance**

Drinking water is a life-giving and irreplaceable resource that people take for granted until there are problems. It involves a complex system of delivery from source to tap that interfaces with potential contaminants from soil, water, and pipes, and from both artificial and natural origins. Because of this complexity and vulnerability, many individuals and institutions are involved in making decisions that impact the quality and availability of drinking water. “Governance” is how diverse agencies and institutions regulate and make decisions about drinking water. “Good governance” is described in many ways, but generally involves participation, accountability, transparency, responsiveness, and producing desired outcomes effectively, efficiently and equitably.

The State has a good record in terms of the lack of violations under the Safe Drinking Water Act.<sup>1</sup> It has a lower number of violations than most other states and a declining annual trend from 2012 to 2022. However, even in the short-term there are growing pressures on the system from aging infrastructure, climate change, changing populations, and increasing amounts and diversity of emerging chemicals from various sources. Drinking water failures can lead to major public health events and undermine public confidence in suppliers and agencies. For example, in April 2023, an action group filed a petition under the Safe Drinking Water Act for the EPA to use emergency powers to address the perception that

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<sup>1</sup> <https://echo.epa.gov/trends/comparative-maps-dashboards/drinking-water-dashboard>

nitrate from agricultural activities were contaminating groundwater and private wells and are causing cancer in some areas of the state. This is leading to bad press for those involved in drinking water governance.<sup>2</sup> The response letter from the USEPA<sup>3</sup> amongst other things, requires a plan to communicate among the state and local governments to ensure a coordinated response.

The drinking water system, then, is complex, interconnected, full of trade-offs and with major impacts on public health and public finance. Effective, efficient and fair delivery will be data driven and depend on a coordinated governance system that recognizes these features, backed up by a transparent assessment framework. The GAF is a tool intended to be used in collaboration with suppliers and consumers to inform the work of those in governance.

## **Background for the study**

In 2017, the MDH initiated a study with U of M partners: The Future of Drinking Water. The final report<sup>4</sup> in 2020 endorsed the development of a state drinking water plan and, among other recommendations, focused attention on the need for a more integrated governance system. It provided a framework for assessing governance (GAF, see p. 8) modified from the OECD<sup>5</sup>. It also highlighted areas of concern for those using private wells, where there is no regulatory provision for drinking water quality.

The Future of Drinking Water Report led MDH to commission the current study from the U of M to support their development of the state drinking water plan. The U of M partnered with Freshwater and the Clean River Partners to complete the project. The GAF component of the project was led by Freshwater.

## **The GAF process**

Freshwater recruited water supply professionals to participate in four focus group discussions and an online survey. Participants were drawn from technical managers of community water supplies, local government staff overseeing source water protection and water supplies (SWCDs, cities, counties); regional, state, and federal government staff; non-governmental water and environment advocates; private sector consultants and contractors; and researchers.

Participants were asked to review and rate each of the twelve criteria of the GAF (see page 8), and to suggest changes to the drinking water supply system. The twelve elements are a comprehensive list of criteria that describe an efficient, effective, and equitable system for supplying drinking water.

Participants were asked to rate each criterion on a five-point scale: Not in place, Under development; In place, not implemented; In place, partially implemented; or In place, fully implemented.

Details of the methodology and participants' responses are in the report authored by Freshwater.

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<sup>2</sup> e.g. <https://www.mprnews.org/story/2023/10/31/does-nitrate-in-southeast-minnesotas-water-present-a-public-health-crisis>

<sup>3</sup> [https://www.epa.gov/system/files/documents/2023-11/ao-rmod-reponse-letter\\_20230510-508.pdf](https://www.epa.gov/system/files/documents/2023-11/ao-rmod-reponse-letter_20230510-508.pdf)

<sup>4</sup> <https://conservancy.umn.edu/handle/11299/212014>

<sup>5</sup> OECD (2015). *OECD Principles on Water Governance*. Paris, OECD. Retrieved from [www.oecd.org/gov/regional-policy/OECD-Principles-on-Water-Governancebrochure.pdf](http://www.oecd.org/gov/regional-policy/OECD-Principles-on-Water-Governancebrochure.pdf).

OECD (2018). *Implementing the OECD Principles on Water Governance: Indicator Framework and Evolving Practices*. Paris, OECD. DOI: <https://doi.org/10.1787/9789264292659-en>

## Messages from water professionals

Most participants rated most of the criteria as “not in place or under development”. This means that the state drinking water plan should consider ways to strengthen most of the governance criteria. The exception was Criterion 7 (Sound regulatory frameworks are effectively implemented and enforced) which many participants considered to be in place and fully implemented. This reflects the existence of a well-established Federal Safe Drinking Water Act underpinned by state statutes. But there were concerns that responsibilities for regulating water at sources and tap were split between agencies – and that the current regulation of groundwater may not be appropriate for the protection of drinking water.

Here, we highlight some of the recurrent messages heard from participants.

Regarding the “Effectiveness Criteria”:

- Roles and responsibilities are well-defined but split between numerous agencies so opportunities for strategic planning are constrained (e.g. for responding to long-term needs on availability and quality of supply).
- many professionals and citizens would benefit from infographics that communicate the complexity of the governance system.
- There were requests for more coordination horizontally and vertically but no favored model for how to achieve this.
- Many saw a need to strengthen professional capacity to respond to public needs, especially in a crisis.

Regarding the “Efficiency criteria”:

- Provide greater data accessibility across agencies and public– and make sure all are relevant.
- More financial resources are needed, particularly in small communities with limited tax base.
- Strong regulatory frameworks exist for public water systems but do not extend to private well.
- Innovation is difficult given the inflexibility of the statutes and limited staffing.

Regarding the “Trust criteria”:

- More explanation of drinking water processes and management.
- More transparency on trade-offs, such as between protecting water sources at the expense of agricultural productivity versus more investment in cleanup-technology.
- Public accessibility of the evaluation of the drinking water process and management is lacking.

Regarding the GAF, itself:

- The framework was challenging to use for several reasons. Each criterion addresses multi-layered issues that require clarification. This makes them difficult to rate, but the discussion to clarify them was valuable. Make the scoring less subjective. There was a sense of ambiguity between the Effectiveness and Efficiency groupings of criteria.

## Implications for the state drinking water plan

Based on these results, we suggest the following considerations for improving water governance.

- Continue to look for ways to streamline and better coordinate drinking water governance. Drinking water is entwined with so many facets of our economy, environment, and government that there is no obvious or optimal way to organize governance. Yet, professionals throughout the system see disconnects in information sharing and coordination.
  - Look for issues at the edges of an agency’s authority, and where authority overlaps. These are the areas where governance breaks down. For example, different agencies manage aquifer withdrawal permits and well drilling rules, yet these activities need coordination.
  - Keep building communication lines across all involved in management.
  - By bringing together multiple agencies to collaborate with local suppliers, the DNR CAMP (Community-based Aquifer Management Partnership) program demonstrated success in promoting cross-agency collaboration and community empowerment and engagement.
- Drinking water management must be data driven. As part of better coordination, make data more shareable across agencies and with the public. Consider an accessible, one-stop shop for drinking water related data.
- Intentionally target community engagement and ensure all are served, including those in disadvantaged communities.
  - As part of the current project, Clean River Partners is facilitating community meetings in December 2023 to hear from consumers whose voices don’t commonly reach drinking water decision-makers. MDH can build upon the process and connections established in this project.
  - The DNR “CAMP” program (noted above) is one model for sharing information with communities in a way that empowers utility managers and leaders to make effective decisions.
  - Proactively create more public facing explanations of the drinking water supply system, how it is managed, and how to access and use the quality reports. This might be state-level communications, or resources that utilities can use for local communication.
  - Help local communities understand and assess the trade-offs that inevitably have to be made where resources are limited.
- Focus on professional development needs and building professional capacity. Ensure post-secondary training programs are available with the needed capacity and content. Identify ways to increase job satisfaction and confidence, such as by facilitating networking with professionals across a region, promoting competitive salaries and job security, and promoting the profession of utility management.
- Increase financial resources for drinking water suppliers and provide guidance to help them make decisions among trade-offs for investing limited resources.

- Build a more robust approach to source water protection. The state has made significant strides in the past two-plus decades by identifying and targeting Drinking Water Supply Management Areas. But weaknesses remain, particularly in protecting private drinking water wells. Source water management should be addressed at the aquifer scale. Because HUC8-scale<sup>6</sup> coordination is already established through the GRAPS process (Groundwater Restoration and Protection Strategies), it may be a suitable scale for organizing the conversation, even if it is not the appropriate scale for implementing aquifer management.
- In addition to source water protection, pay more attention to supporting the owners/managers of private drinking water wells. This may include promoting water testing, providing information about risks, and providing financial support for treatment.
- Carry out a regular review of the performance of Minnesota's drinking water governance system, based on the GAF criteria. The following modifications are recommended to make the GAF more useful.
  - Label the first four criteria “Administrative”, and the second four “Effectiveness and Efficiency”.
  - Consider whether the language of each criterion can be clearer.
  - Consider making the scoring less subjective by refining and elaborating the definitions. This might require adding sub-criteria to acknowledge the multiple layers within each.

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<sup>6</sup> USEPA Hydrological Unit Codes – 8, or sub-basin, which the MN DNR calls Major Watersheds. There are about 81 watersheds of this scale in Minnesota.

# The Governance Assessment Framework Criteria

## Effectiveness:

1. Jurisdictional policy **clearly defines the roles and responsibilities** of each agency with regard to drinking water management, programming, and policy making, for both private wells and public systems.
2. Drinking water is **managed at appropriate scales**, using an integrated major watershed approach and **emphasizing coordination between management at different scales**.
3. Drinking water policy is coherent and **coordinated horizontally and vertically** across administrative and economic sectors and jurisdictions, including but not limited to health, environment, energy, agriculture, and industry.
4. Drinking water management entities have **adequate professional capacity and training for the scale of their responsibilities**.

## Efficiency:

5. Processes and institutions are in place generating **scientifically robust data** about the drinking water supply **that is timely, relevant, and accessible** in a way that is suitable to guide policy development and assessment.
6. Governance mechanisms ensure **financial sources are adequate, appropriately structured, and transparently, efficiently, and equitably allocated** for drinking water management.
7. Sound **regulatory frameworks** for drinking water management are **effectively implemented and enforced**.
8. Governance processes across jurisdictions **incentivize and foster innovation and flexibility** in finance, sharing information, assessment, and engagement.

## Trust and Inclusiveness:

9. Drinking water management entities have **functional, systematic mechanisms** established to maintain integrity and transparency **for greater accountability and trust**.
10. Drinking water stakeholders, and the nature of their stake, have been clearly identified. **Stakeholders are systematically engaged** in interpreting needs and designing solutions to drinking water concerns **at a level appropriate to their jurisdictional authority**.
11. Frameworks exist and are implemented to **identify trade-offs and prioritize options** across sectors and generations of non-human and human water users.
12. Drinking water programs and institutions are **regularly and transparently monitored and evaluated** for their effectiveness and fairness in managing drinking water.



# Assessing Drinking Water Governance in Minnesota: Implementation of the Governance Assessment Framework

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## Executive Summary and Key Takeaways

Drinking water is life-giving, essential, and finite. Its management is messy, complex, and far-reaching. In 2022, the Minnesota Department of Health (MDH) announced that it would be developing a statewide drinking water plan to guide the management of drinking water over the next ten years. To inform the development of that plan, MDH also chose to conduct an assessment of the current governance of systems impacting drinking water in order to identify challenges and opportunities in the systems themselves which the statewide plan could address. This report summarizes the input received from focus group conversations and a survey with drinking water professionals based on an established set of criteria known as the Governance Assessment Framework.

Through conversations and survey responses, several themes emerged as key takeaways that indicate areas of drinking water governance that are working, and those that could use improvement. These broad themes can be summarized into engagement, coordination, and collaboration. Key to all of the above elements is issue prioritization, and funding distribution. The full report discusses each of these elements in detail. Short-form key takeaways emerging from the research are listed below.

- **Communication and coordination**, or lack thereof, across entities is a significant challenge. Given the complexity of drinking water, there is an impressive amount of effective communication and coordination across agencies at various levels. Still, weaknesses remain. Confusion on roles and responsibilities, who makes certain decisions about drinking water issues at various scales (especially as they relate to groundwater and private well systems), whether programs are performing as they should, and where important data are housed all stem from inadequate communication across agencies and with the public.
- Developing **tools and resources** that will help state agencies such as the Minnesota Department of Health, MN Department of Natural Resources, and Minnesota Pollution Control Agency, as well as regional and local governments more seamlessly coordinate and communicate findings with one another will be important. Recommendations from participants include creating collaborative databases and resource repositories to aid in sharing information, resources, and communications.
- Many **agencies and entities have distinct, discrete responsibilities** in drinking water management. It is important to collaborate across the implicit and explicit silos of work. Silos can

diminish knowledge sharing and coordination opportunities. Understandings across departments about these roles and intentional information sharing will be important.

- **We need more innovative and collaborative thinking.** Offering more job-sharing/shadowing opportunities so drinking water professionals can learn about what others are doing can help spur partnership opportunities and chances for more innovative thinking to occur.
  - Lots of data is being collected, but it is not always relevant, necessary, or accessible. **Making data more relevant and actionable** – which requires providing the translations of data – is important to prioritize.
  - **More intentional, targeted community engagement** – especially working to build relationships and engage with historically excluded populations – will be challenging but important.
  - **Proactive communication and planning** are essential both for communication with the public, professionals, and other agencies and for building trust.
  - When looking at gaps, **more emphasis should be made on private well drinking water management** and engaging this population of water users. There is recognition that this population of water users is vastly overlooked in the current drinking water governance paradigm.
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## Introduction

Minnesota has complex and multifaceted public drinking water systems that require nuanced management to ensure delivery of safe and sufficient water. Effective, efficient, and trustworthy management of drinking water plays a crucial role in the success of these systems to meet the demands placed upon them by ever increasing and shifting stressors. Climate change and variable precipitation and snowmelt patterns may impact the availability of supply, while old and aging infrastructure impacts the ability of the system to deliver the water. Changes in population size and concentration, particularly from water-stressed areas to areas perceived as more water-rich, places additional stress on systems built under assumptions about population and climate that are no longer accurate. As technology progresses, we are continually able to identify and track new contaminants that may pose a threat to public health in drinking water. Regulating these emerging and existing contaminants, as well as treating them to meet new and developing standards, takes time and comes at a high cost. Older infrastructure such as treatment plants may not be able to address these contaminants without costly modifications or updates.

In order to sufficiently address these ever-evolving challenges, it is crucial to identify what elements of current water governance in Minnesota are successful, and where there are areas for improvement. The Minnesota Department of Health (MDH) is in the process of developing a statewide drinking water plan to guide drinking water management for the next 10 years. To inform that process, we utilized a Governance Assessment Framework to have focus groups of water professionals and drinking water managers at different scales identify areas of success and weaknesses based on their expertise and experience, with the aim to develop recommendations for improvement and to ensure Minnesota has safe, sufficient, and sustainable drinking water for all.

The Governance Assessment Framework (GAF) consists of 12 criteria for good water governance. It was previously adapted from the Organisation for Economic Co-operation and Development (OECD) coordination principles for water governance in a 2020 report by the University of Minnesota Water Resources Center to target drinking water specifically (Calow et al., 2020; Organisation for Economic Co-operation and Development [OECD], 2015; OECD 2018). This current framework is largely derived from the drinking water-focused 2020 version, with slight language modifications for clarity and inclusion of diverse cultural perspectives of water. While drinking water is the focus of this report and analysis, it is important to note that drinking water is inextricable from the broader water system, and changes to water governance in non-drinking water specific areas will have impacts on drinking water. To that end, issues and opportunities identified in this report may extend beyond the drinking water-specific content.

The twelve criteria are loosely bucketed into three categories of four criteria each: 1) Efficiency, 2) Effectiveness, and 3) Trust and 4) Inclusiveness. While the GAF may be applied for evaluation at any level of drinking water management, the 2020 Future of Minnesota Drinking Water report directed its use primarily to a small stakeholder group and the Minnesota Department of Health, at the state agency level. This report builds upon that foundation, and broadens the scope to ask groups of water professionals to engage with the GAF on various levels, such as local government units, water advocacy groups, technical utility providers, and private water engineering firms and labs.

## **Methodology**

### Focus group meetings

In the months of April and May 2023, Freshwater worked with the University of Minnesota's (U of M) Water Resources Center, the Humphrey School of Public Affairs, and Clean River Partners to host a series of focus groups centered on drinking water management and governance in the state of Minnesota. Invitation lists were developed from previous U of M drinking water projects, with input from MDH staff, and outreach to water management professionals. The list targeted drinking water professionals from across the state, representing local, tribal, state, and federal governments, nonprofit water organizations, water advocacy groups, water utility providers, academics, and private water engineering firms and labs.

During the focus group sessions, attendees considered twelve distinct criteria (Table 1) as they relate to drinking water governance and management in Minnesota. The aim was to better understand from attendees considering the twelve criteria, based on their experience, what is working well, what is not working well, and what actions might be taken to improve effectiveness, efficiency and trustworthiness of drinking water governance in Minnesota moving forward. There were four focus groups – two in-person and two virtual – with 35 water professionals participating in total. Attendees were engaged through interactive online tools and small group discussions to work through the twelve criteria and provide their feedback.

**Table 1: Governance Assessment Framework Criteria**

**Effectiveness:**

- 1) Jurisdictional policy **clearly defines the roles and responsibilities** of each agency with regard to drinking water management, programming, and policy making, for both private wells and public systems.
- 2) Drinking water is **managed at appropriate scales**, using an integrated major watershed approach and **emphasizing coordination between management at different scales**.
- 3) Drinking water policy is coherent and **coordinated horizontally and vertically** across administrative and economic sectors and jurisdictions, including but not limited to health, environment, energy, agriculture, and industry.
- 4) Drinking water management entities have **adequate professional capacity and training for the scale of their responsibilities**.

**Efficiency:**

- 5) Processes and institutions are in place generating **scientifically robust data** about the drinking water supply **that is timely, relevant, and accessible** in a way that is suitable to guide policy development and assessment.
- 6) Governance mechanisms ensure **financial sources are adequate, appropriately structured, and transparently, efficiently, and equitably allocated** for drinking water management.
- 7) Sound **regulatory frameworks** for drinking water management are **effectively implemented and enforced**.
- 8) Governance processes across jurisdictions **incentivize and foster innovation and flexibility** in finance, sharing information, assessment, and engagement.

**Trust and Inclusiveness:**

- 9) Drinking water management entities have **functional, systematic mechanisms established** to maintain integrity and transparency **for greater accountability and trust**.
- 10) Drinking water stakeholders, and the nature of their stake, have been clearly identified. **Stakeholders are systematically engaged** in interpreting needs and designing solutions to drinking water concerns **at a level appropriate to their jurisdictional authority**.
- 11) Frameworks exist and are implemented to **identify trade-offs and prioritize options** across sectors and generations of non-human and human water users.
- 12) Drinking water programs and institutions are **regularly and transparently monitored and evaluated** for their effectiveness and fairness in managing drinking water.

## Survey

The team also developed a survey to solicit feedback on the twelve criteria from water professionals. In total, 36 people completed this survey and their feedback has been incorporated into this summary, as well. While survey respondents were asked to identify their group affiliation (e.g. local government, state agency, private firm, advocacy organizations), because of the different method of data collection compared to the in-person focus groups, we present all survey responses together rather than retroactively separating their responses into their self-selected affiliation. These responses are presented in Table 2, below, to contextualize the nature of the group.

**Table 2: Survey Respondent Self-Identified Affiliations**

<b>Self-Identified Affiliation</b>	<b># Responses</b>
Local government unit (SWCD, city staff, etc.)	10
Regional, federal, or state government	12
Private sector (private lab, engineering firm, etc.)	3
Public health	5
Community public water system	2
Non-community public water system	1
Non-profit/water advocate	2*
Other- please specify: Special district--watershed	1
Other- please specify: Academia	1
*One respondent listed two affiliations, with non-profit/water advocate as the secondary affiliation. The total number of respondents is 36, with 37 total affiliations given.	

## Data analysis

**Grounded theory methodology** was used as the primary way to analyze the data. This is a qualitative data analysis approach that is both rigorous in “developing evidence based interpretations of data by applying appropriate techniques”, and also allows for the creative elements of emergent discovery (Hennik et al., 2011 p. 205). To identify themes in the focus group and survey responses, we coded statements using both deductive (researcher originated) and inductive (codes developing directly from the data) tags. Deductive codes were generated in this case with reference to the GAF criteria, while inductive codes were developed by reading the data and noting the issues raised by participants, allowing the data to “speak for itself” (Hennik et al., 2011 p. 218). For example, the deductive code “professional capacity” emerged directly from the language of the GAF criteria, while “private well” is an example of an inductive code that emerged in participant commentary and data. Two researchers independently coded all the statements and feedback received, and then compared results to ensure consistent labeling. Once all the statements were coded, they were grouped and summarized.

Before discussing each individual criterion, the focus groups and survey respondents were asked to rank, in their perception, the extent to which the Minnesota’s drinking water governance met each criterion at the time of the study (spring and summer of 2023) on a scale of 1 (not in place) to 5 (in place, fully implemented) with an additional option for unsure/ not applicable. These responses are presented graphically and in data tables, separated by the focus group in which the respondents participated. While all graphs are presented on the same scale, the number of participant responses varies by question, as reflected in the figure captions, so it is necessary to take this into account when comparing across criteria.

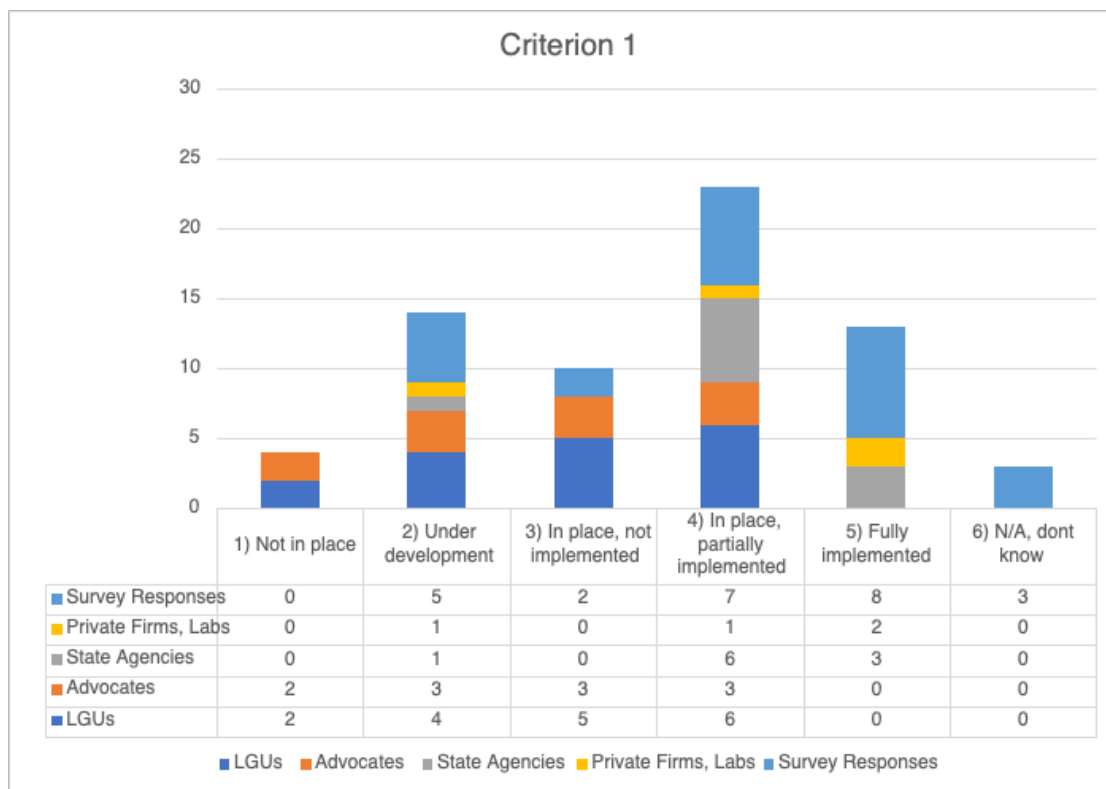
## Focus Group and Survey Responses to GAF Criterion

The following section provides summaries of comments and discussion offered by participants in response to each being presented each individual criterion. Many of the themes and implications that arise under each can span multiple criteria, and are not intended to be exclusive to the individual criterion. Key responses and suggestions from stakeholders are then aggregated by theme in the next section.

### Efficiency Criteria

**Criterion #1:** Jurisdictional policy clearly defines the roles and responsibilities of each agency with regard to drinking water management, programming, and policy making, for both private wells and public systems.

**Figure 1: Stakeholder Criterion 1 - Clear Roles and Responsibilities Responses**



This figure shows stakeholder responses to Criterion 1 - Clear Roles and Responsibilities of the GAF. There were 67 total stakeholder responses to this criterion.

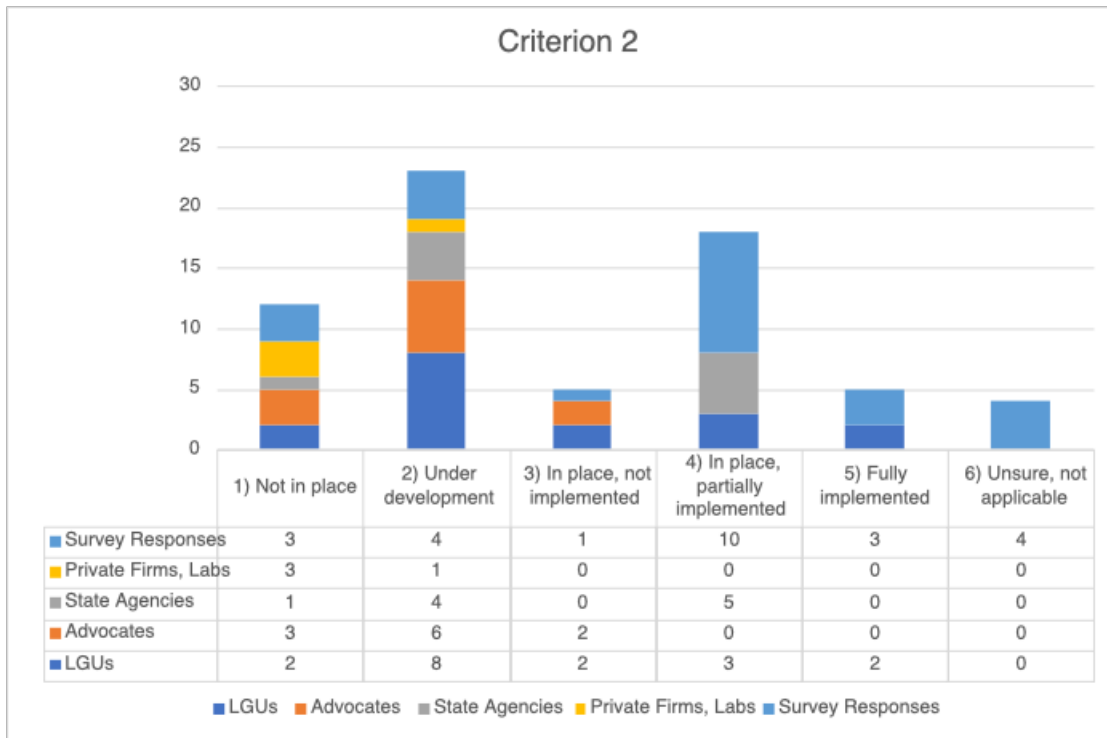
Across the groups surveyed, the most common response was that in Minnesota, this criterion is in place, and partially implemented. Local government units (LGUs) and advocacy groups did not have any respondents stating that they believed criterion one is fully implemented, while survey respondents generally answered that this criterion is more fully implemented.

**Working well:** In statute, the roles and responsibilities of each state agency are clearly defined to not interfere or overlap with each other when managing drinking water. When it comes to public drinking water supplies in particular, each agency seems to fully understand the role they play in its management. The fact that each agency has a distinct role helps with efficiency and knowledge generation, since having multiple agencies with different responsibilities means having multiple pots of unique knowledge and viewpoints rather than if all the agencies dealing with water came together under one water organization. The Clean Water Fund Interagency Coordination Team may be facilitating more coordination.

**Issues:** While state agency roles and responsibilities are distinguished in rule, it is less clear that they are practiced in reality as defined. Focus group participants who did not represent a state agency expressed confusion about the roles state agencies play in drinking water management, and cite that this may be due to an absence of a consistent narrative and messaging across agencies about what their roles are as they relate to drinking water issues. Additionally, although state agencies may fully understand the role they play in public water supply management, there is a lack of clear policy regarding their roles and responsibilities when it comes to groundwater management, and private well supply management in particular. Some argue that the compartmentalization of drinking water management across many state agencies is inefficient due to lack or lag of communication between departments, or because each agency has different, sometimes conflicting, goals. This makes people wonder how these agencies are integrated together across drinking water management, and who has the authority to make decisions. The question arose regarding rigidity in the defined roles and responsibilities of each agency, and whether there is any flexibility for agency staff to address issues not “within their wheelhouse.”

**Criterion #2:** Drinking water is managed at appropriate scales, using an integrated major watershed approach and emphasizing coordination between management at different scales.

**Figure 2: Stakeholder Criterion 2 - Management Scale and Coordination Responses**



This figure shows stakeholder responses to Criterion 2 - Management Scale and Coordination of the GAF. There were 67 total stakeholder responses to this criterion.

Responses from in person groups (all listed above except for the survey responses) indicate that in Minnesota, this criterion is primarily not in place, or it is under development. The most common response for survey respondents was that this criterion is fully implemented.

**Working well:** Cities and local government units generally understand their drinking water management systems, and drinking water protection may be managed better at this scale than at the state level for the time being. There was some discussion around how monitoring and planning at watershed scales, culminating in comprehensive watershed plans through One Watershed, One Plan (1W1P), has been a good starting point for organizing aquifer-related information through GRAPS, where they are complete. At the private water supply scale, there is progress being made to help better protect private wells and empower their owners. MDH in particular is doing good work communicating private well protection information to counties and keeping them in the loop.

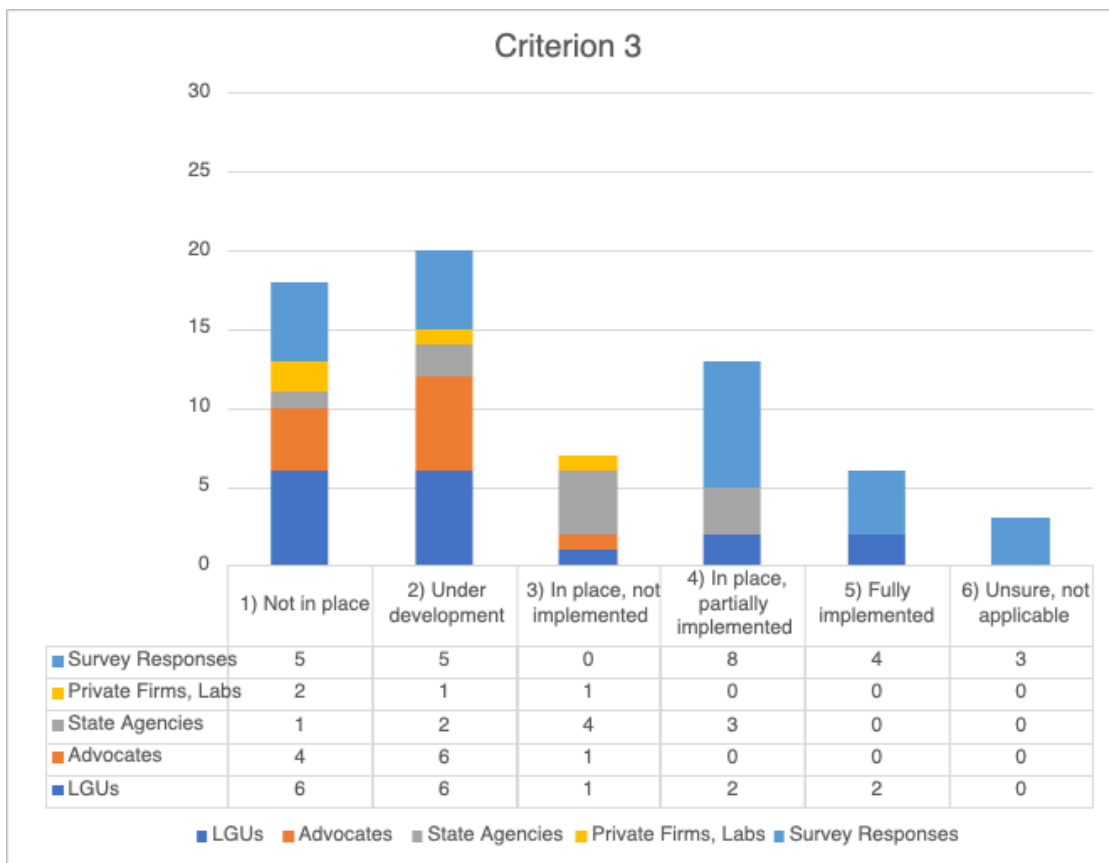
**Issues:** At a high level, participants spoke about how the long term supply of drinking water does not seem to be managed effectively, and that it has not been determined what it will realistically take to do so. There exists some confusion around who has authority to make certain decisions at different scales, and whether the entities responsible have the resources they need to be most successful. Others question if management at the larger watershed scale is appropriate, since drinking water management and conveyance is primarily a local challenge. However, there remain some challenges with a local approach. From an urban perspective, each municipality is managing their drinking water differently, which leads to



inconsistencies in management across the larger supply of drinking water. Additionally, since LGUs often lack capacity to carry out non-structural land management practices, like technical and outreach activities, they may need more support in these areas to be the most impactful. On the other hand, some argue that since drinking water resources are not aligned with arbitrary jurisdictional boundaries it is a disservice to its sustainable use if it is thought of and managed this way. Finally, the question around how private wells fit into the scaled management of drinking water is still unresolved. Participants recognized that private wells do not fit neatly into the conservation delivery model which leads to them being left out of important conservation and management conversations. They are not regulated to the same extent as public water supplies. Governance, enforcement, outreach, coordination and data acquisition are all inadequate at the moment for private well supply management.

**Criterion #3:** Drinking water policy is coherent and coordinated horizontally and vertically across administrative and economic sectors and jurisdictions, including but not limited to health, environment, energy, agriculture, and industry.

**Figure 3: Stakeholder Criterion 3 - Coordinated Policy Responses**



This figure shows stakeholder responses to Criterion 3 - Coordinated Policy of the GAF. There were 67 total stakeholder responses to this criterion.

The majority of respondents from advocacy groups, LGUs, and private firms and labs indicated that this criterion is not in place, or is under development. State agency and survey responses were split, but generally ranked this criterion higher than the other groups.

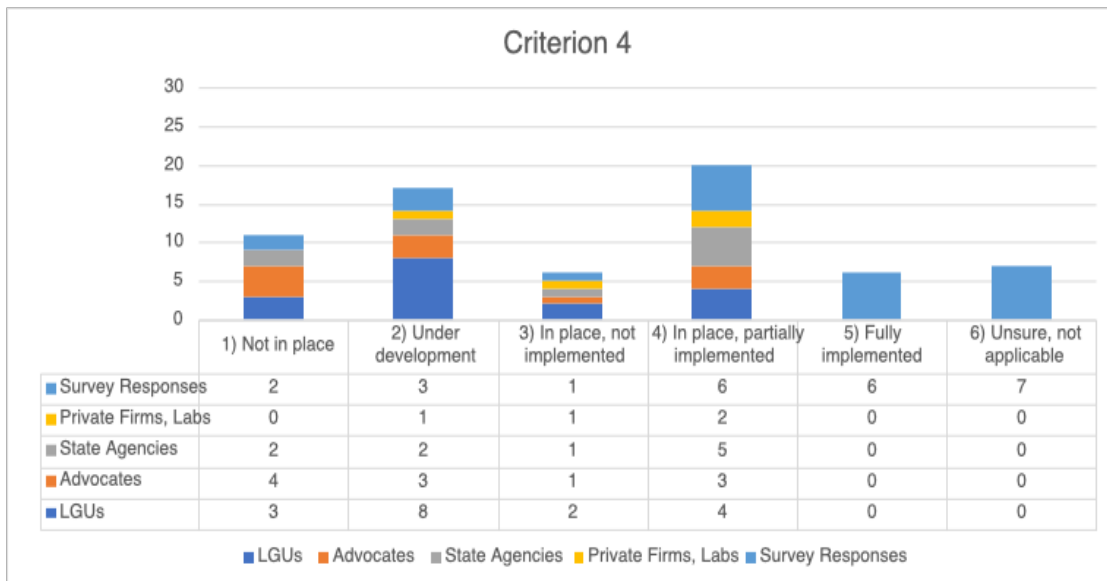
**Working well:** When considering the totality of drinking water governance and management in the state, coordinating the resource can be extremely complex and time intensive. Despite this, there are countless entities including but not limited to the state and local health departments, municipalities, and utilities working hard every day to ensure coordination of the resource. One way this is happening is through the Clean Water Legacy Act, which has helped drive collaboration across sectors since the establishment of the Clean Water Fund Interagency Coordination team's establishment in 2008. Advocacy groups, like conservation groups and nonprofits, are building relationships at the local level to assist with water management projects. Examples were provided of cities collaborating to form joint commissions in order to purchase water and better coordinate drinking water resources – one example of this being the City of Golden Valley creating a successful partnership with the cities of Crystal and New Hope to collectively purchase water from the City of Minneapolis. There are also some impactful consortia/collaborative groups across sectors of water, agriculture, and government which meet fairly regularly to discuss paths forward for equitable and sustainable drinking water management. One example of this is the Clean Water Council, although it is not exclusive to drinking water conversations. There are many active associations, such as Minnesota Rural Water, American Water Works Association (AWWA), Suburban Utility Superintendents Association (SUSA), Minnesota Groundwater Association (MGWA), Minnesota Well Owners Organization (MNWOO), and the Well Drillers Association, doing important work partnering with cities, townships, and agencies to drive forward collaboration across sectors. These groups are not regulatory and have a primary interest in serving their communities, so may be more trusted than some of the other regulatory and enforcing bodies in the state. Certain conferences, like the Water Resources Conference, bring folks from different sectors together to share their programs and ideas with one another. From an interagency standpoint, participants who represented a state agency remarked that they coordinate well across agencies and maintain sufficient checks and balances between regulatory and advisory responsibilities. Public water systems may tend to have more robust coordination mechanisms in place than private water systems.

**Issues:** There exist a plethora of entities involved in managing drinking water in Minnesota – from state agencies, to local government, to advocacy groups. While it is encouraging to have so many people working for the protection of the resource, very often coordination and collaboration across these entities is severely lacking, which leads to groups recreating the wheel or work not well coordinated. Collaboration across state agencies and advocacy groups can be difficult for a number of reasons. Since many advocacy groups are not housed within agencies and are volunteer based, there is no formal way to incentivize their work with state agencies or municipalities. In terms of coordination between local jurisdictions, there remain some problems with drinking water management processes because of individual ownerships and rigid jurisdictional boundaries. While there is a lot of great coordination going on, the public is not always aware of this due to poor or a lack of communication about these collaborative projects and conversations. In terms of state agency and local government coordination, some see the compartmentalization of issues as a concern. Source water supply, protection, and contamination are each addressed within separate agencies, the Minnesota Department of Natural Resources (DNR), MDH, and the Minnesota Pollution Control Agency (MPCA) respectively, making it difficult to refer issues that arise to regulatory bodies due to lack of communication. State agencies are

perceived as not engaging in a unified effort around drinking water management issues, and this leads to slower coordination and communications with local entities when issues such as contamination trends or rezoning of surface water protections arise. There is also a sense that water governance, including drinking water, is highly fragmented between state and local governments, exacerbated by the fact that political boundaries create inconsistencies in collaboration. Across state agencies and local entities throughout Minnesota, a primary concern is that they are all too siloed, stifling coordination and collaboration. There is a perception from some participants representing a local government that each state agency has its own agenda and that they only talk to each other when a complaint or a problem requires it. Additionally, while bodies like the Clean Water Council are intended to bring everyone to the same table, it seems that around that table members continue to operate within their own silos, protecting their organizational interests. Local public health entities have largely been left out of the discussion regarding both private wells and public supply. In terms of interagency coordination at the state level, the apparent disconnect between agencies and departments across drinking water issues is a main concern for participants, and many regard these silos as the breakdown point for momentum and coordinated action for the resource. Agency responsiveness to local needs is sometimes not carried out in a timely way, which can exacerbate issues experienced. Finally, it is noted that the sheer complexity of drinking water management makes it extremely difficult to coordinate groups working on it in an integrated way, with one participant noting that “drinking water is such a massive topic. It will never be clear enough, scaled enough, coordinated enough or enough people trained to adequately cover the topic.”

**Criterion #4:** Drinking water management entities have adequate professional capacity and training for the scale of their responsibilities.

**Figure 4: Stakeholder Criterion 4 - Workforce Capacity and Training Responses**



This figure shows stakeholder responses to Criterion 4 - Workforce Capacity and Training of the GAF. There were 67 total stakeholder responses to this criterion.

Responses to this criterion were primarily split between being under development and in place, partially implemented. The survey group was the only one that had responses indicating this criterion was fully implemented.

**Working well:** When discussing professional capacity about drinking water management, many of the focus group participants agreed that Minnesota is way ahead of other states when it comes to the level of technical knowledge and expertise present in the drinking water sector. Public works and water utility staff were specifically called out as highly trained and knowledgeable in their respective fields. Information from Groundwater Restoration and Protection Strategies (GRAPS) has been specifically acknowledged as helping to increase understanding. Training opportunities exist across the state enabling staff to maintain and improve their skills to manage drinking water. Training mentioned include those offered through Board of Water and Soil Resources (BWSR) Academy, UMN Extension, and MN Rural Water.

**Issues:** Two of the most pressing professional capacity issues include training and staffing for drinking water management positions.

Although training opportunities are available, as discussed above, it is not clear that they are appropriately taken advantage of or if they are effectively improving staff preparedness to do the work. The trainings which are offered are generally geared toward a narrow skillset, and while this is important, there is a blatant gap in any trainings that teach about the drinking water system holistically or across sectors. It is also not clear that those who might find value in training are being offered the option. There may be some, such as rural public health staff, who would benefit from a drinking water training session, but are often overlooked for this opportunity. At the local level, there may not be capacity to provide training as those who would administer it are occupied with other work.

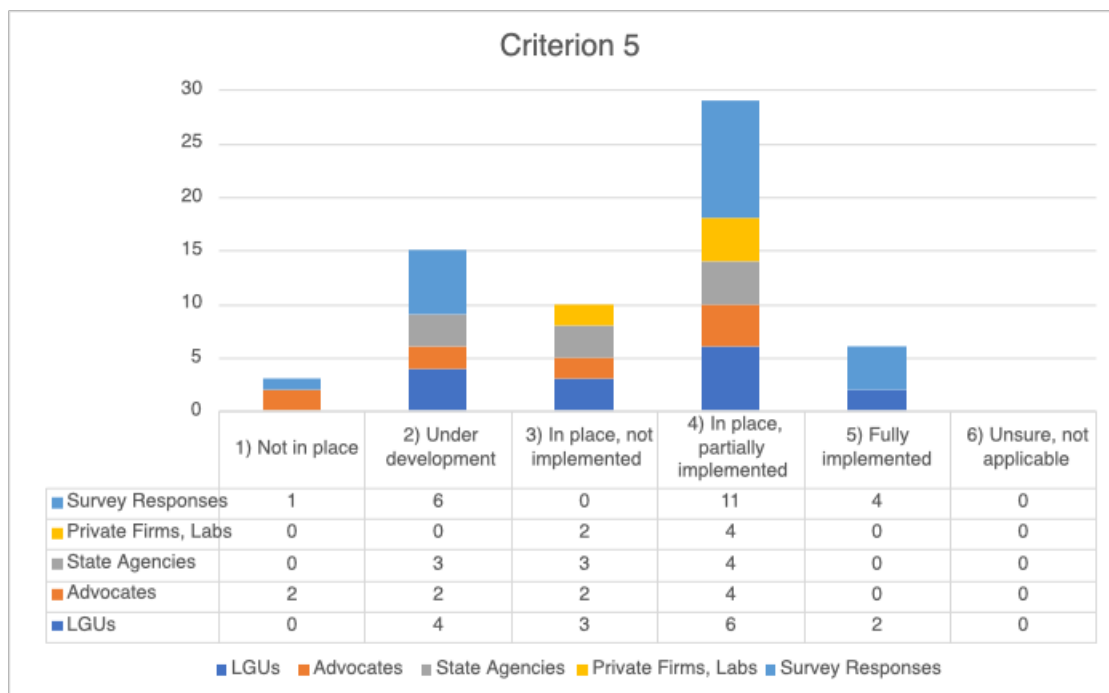
The other glaring issue is staffing - the capacity to carry out necessary work is undermined because of too few staff trying to cover a lot of ground. As an example, there are only 2-3 employees from MDH responsible for managing every well in the state of Minnesota – not nearly enough to cover this area thoroughly. Local entities, such as Soil and Water Conservation Districts (SWCDs) and municipalities, also feel they do not have enough people to accomplish all the work they need to do to protect and manage drinking water effectively. When areas are understaffed and under-resourced, it can be difficult for partners to come in and work with them. This situation may be a limiting factor when applying for or accepting projects and funding. If there is not sufficient staff capacity, funds will flow where there is staff ready to implement a project rather than where the biggest problems exist. Additionally, staff turnover and changes in the talent pool challenge entities across the state. Many water professionals are retiring, and there is concern that there are not enough technically competent people to replace them. Recruiting and retaining employees, especially in greater Minnesota, is a hardship many offices face consistently, leading to more time and energy pulled away from the work at hand and into finding new people to do the work. Frequent staff turnover is a problem not only because it takes focus away from the work, but also because it hurts the knowledge base, contributes to a lack of consistency and momentum in projects, and makes it difficult to build trust and relationships with stakeholders. Lastly, offices with limited capacity have to pick and choose where their energy and time flows, which often means drinking water work is relegated to a lower rung of importance. For example, local public health staff are often overwhelmed with other health issues in their area, so drinking water falls low on their list of priorities. Community outreach and engagement, a crucial aspect of effective drinking water management, is often pushed lower on the priority list as well due to the limited capacity for many offices to carry this out.

## Effectiveness Criteria

**Criterion #5:** Processes and institutions are in place generating scientifically robust data about the drinking water supply that is timely, relevant, and accessible in a way that is suitable to guide policy development and assessment.

**Figure 5: Stakeholder Criterion 5 - Data Collection and Accessibility Responses**

Accessible, timely and relevant data are all necessary in order to manage drinking water effectively with accurate information, and act based on current trends. This section explores how professionals who deal with drinking water are thinking about data gathering and sharing, including what is working well and what issues exist. Responses to this criterion tended to fall into three categories: Accessible data, timely data, and relevant and actionable data. This is reflected in the discussion below.



This figure shows stakeholder responses to Criterion 5 - Data Collection and Accessibility of the GAF. There were 63 total stakeholder responses to this criterion.

While responses were split across different groups, this criterion was primarily ranked as in place, partially implemented by the majority of respondents. Few respondents believed that this criterion was not in place in Minnesota.

*Accessible Data* - defined by an ability to effectively and efficiently access and comprehend data related to drinking water, which includes data sharing across groups.

**Working well:** The shift from planning water resources at the county level to the watershed scale has allowed data from state agencies to be delivered to local decision-makers in a more accessible and useful format than before. There is a breadth of great research and data available from many sources, and it is

becoming more publicly accessible through helpful online resources and interactive data tools, such as the per- and polyfluoroalkyl substances (PFAS) dashboard and the County Geologic Atlases. It was noted that some groups are great resources to go to for data, and are willing to share information they have gathered. Some examples are the University of Minnesota, including the Center for Changing Landscapes, the MN Geological Survey, and the United States Geological Survey which plays a crucial role in providing state agencies with scientific information and prioritization suggestions “without poking holes in agencies.”

**Issues:** It was noted by participants that the data that is available can be difficult to find. Drinking water data “feels spread out”, “dispersed” and “siloes”, “all over the place”, and “obscure.” There does not seem to be one logical spot for the average person to look for data, and if they do find it there is rarely an intuitive or efficient way to sort through it. These factors make accessing data a chore and a hassle. Additionally, even though a lot of data is accessible, a lot of it still remains private. There are a number of protections around drinking water quality and regulation data due to privacy laws around data sharing. For this reason, data sharing is not always easy and some agencies are not forthcoming in making it available, making legal action necessary in order to obtain information. For example, public water supply well locations cannot be shared, so it is difficult to get this information to other professionals who might need to know the information. Some data is only available when one files a data information request, and this requires knowledge of how and where to do so. Apart from privacy, some may want to share data but do not know where or how to report their findings. For example, citizen science exists, but there is confusion around how citizens report the data they gather. Lastly, some data is difficult to comprehend, especially for non-technical people. For example, Watershed Restoration and Protection Strategies (WRAPS) and GRAPS reports may be difficult to understand and interpret by an average person or staff member for whom drinking water is not a primary focus. Similarly, drinking water supply management area (DWSMA) data can be hard to understand by SWCDs, let alone the public. Wellhead protection plans are too technical and may not be available because of privacy. Groundwater atlases are also noted as being difficult to understand and use.

*Timely Data* - defined by the extent to which professionals are receiving and sharing data that is up-to-date or appropriate for the current context or situation

**Working well:** Some state agencies do deliver data to other entities in a timely fashion. For example, one participant recognized that the Department of Health was proactive and responsive in getting nitrate contamination results to other entities when requested.

**Issues:** There are a number of causes that may hinder timely data collection and sharing. At times there may be a shortage of staff time and dollars to process data, or delays in getting data results verified through a lab. Having to wait for other entities to provide information may also make it difficult for some to take action in a timely way. Additionally, there are questions about whether entities are obtaining the latest data at the right time to effectively inform local government planning work, like information from the WRAPS and GRAPS. There is concern that by the time any annual report is published, the situation may already be different and the data already out of date, not accurately reflecting the current landscape. While some participants praised Minnesota’s County Geologic Atlases especially compared to other states, others noted that completing this work has also been challenging and time intensive.

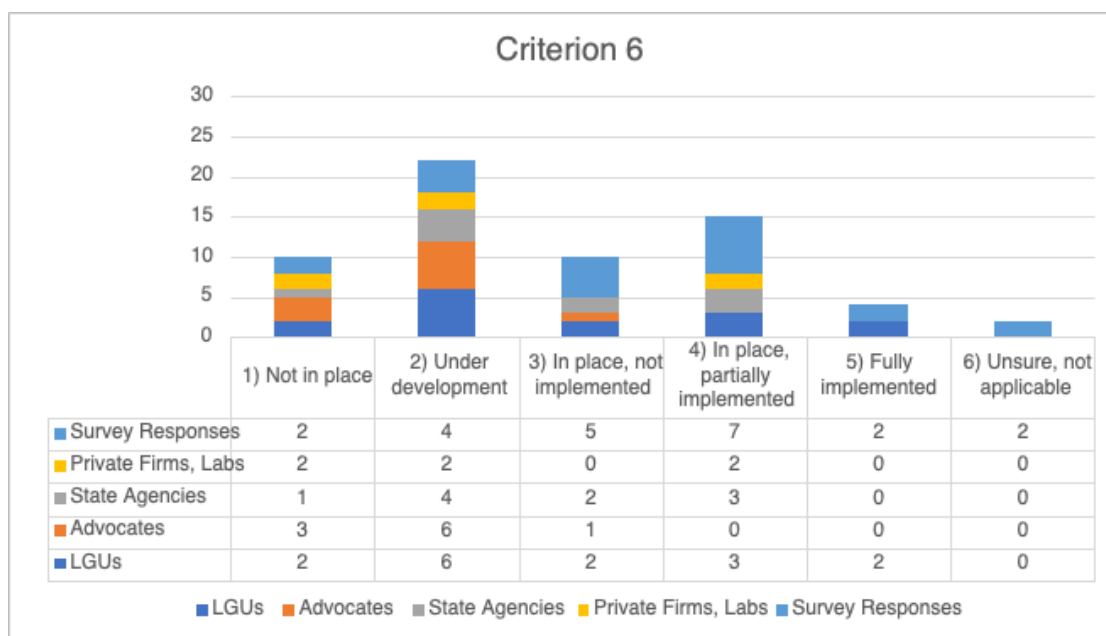
### *Relevant & Actionable Data -*

**Working well:** The WRAPS and GRAPS are called out as being useful compilations of data, though there is room for improvement, especially with GRAPS. The data collected from ambient monitoring of contaminants of emerging concern has also been relevant and helpful for water managers as they work to understand and mitigate new contaminants.

**Issues:** While there is an abundance of data available, the question was raised regarding whether or not the right data is being focused on to help inform drinking water management. For example, a participant notes that while data acquisition is significant, particularly in terms of wildlife habitats and recreation, there is an apparent gap when it comes to essential chemistry parameters affecting water treatment costs. Measurements of hardness, total dissolved solids, turbidity, and point source contamination that directly affect costs of treatment may not be receiving the attention they deserve. Other data factors that may be passed over are health based values and health risk limits associated with drinking water. Since these measures are not regulatory, they may not be considered appropriately in data collection. There is also a recognition that the technology necessary to collect some useful data may simply not exist, or be too costly or time intensive to use. Examples include the ability to track true and real-time changes in groundwater flow, recharge rates, and volume of aquifers. Part of what makes data relevant is that it can be acted on, and this is not always realized. For instance, counties may collect private well data, but there is no mechanism to utilize or share this data, even though it would be helpful for private and public well users to have this information to take effective action and understand the quality and quantity of their supply. In fact, private well data is inadequate across the board which creates a real barrier when trying to understand the drinking water supply at this scale, while at the same time finer point data may lead to privacy concerns for well owners. Lastly, while there is a lot of data available, agencies are not talking to each other to identify what they want to learn from the data and how they want to use it to pursue coordinated action. Translating data to policy may be an example of what coordinated action could look like, but this is not currently being done on a well-timed basis.

**Criterion #6:** Governance mechanisms ensure financial sources are adequate, appropriately structured, and transparently, efficiently, and equitably allocated for drinking water management.

**Figure 6: Stakeholder Criterion 6 - Funding Procedures Responses**



This figure shows stakeholder responses to Criterion 6 - Funding Procedures of the GAF. There were 63 total stakeholder responses to this criterion.

Respondents across all groups with the exception of the survey group most commonly ranked criterion six as being under development. Only four total respondents indicated that this criterion was fully implemented in Minnesota, with 10 indicating that it is not in place.

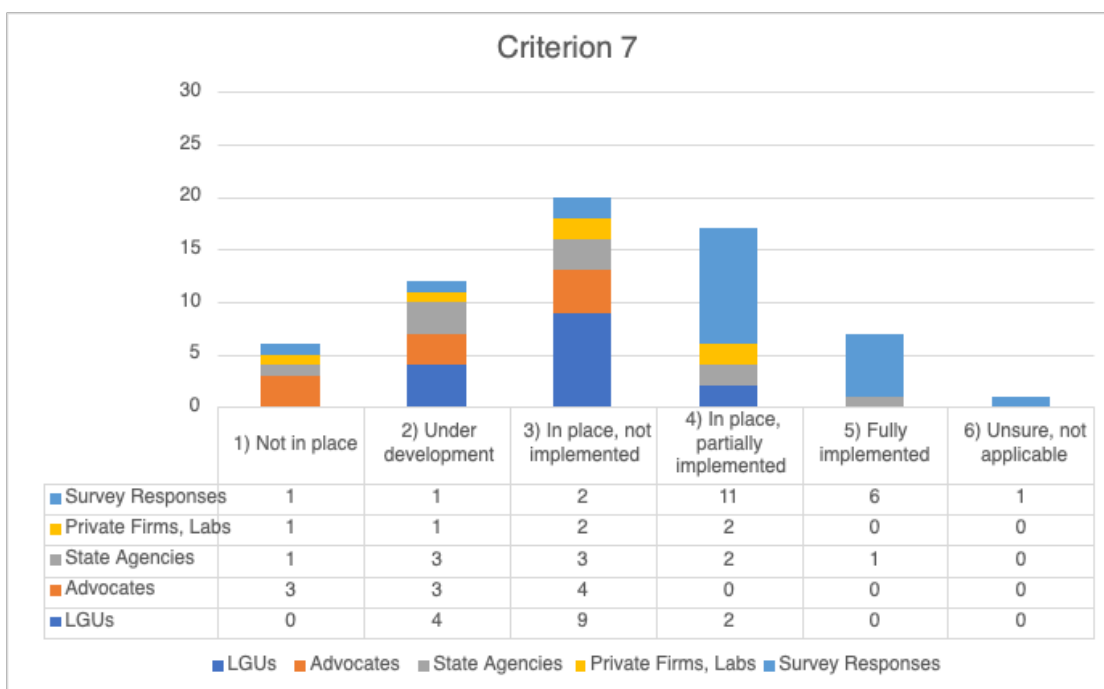
**Working well:** While financial sources have been fairly minimal for drinking water management historically, Minnesota has seen an increase in funding opportunities over the last 10 years that is continuing to grow. There exist many different pots of funding for drinking water projects, and people are starting to understand where to look for this money. The Clean Water Fund and BWSR implementation funds have been invaluable for funding projects throughout the state since their establishment, and may place Minnesota ahead of other states in the country in terms of funding for drinking water protection. There are some funding programs offered by agencies that were noted as being particularly helpful and effective. Source water protection grants, funded by the Clean Water Fund and administered by MDH, are heavily utilized, so much so that demand is beginning to outpace supply. MDH’s accelerated implementation grant program is also a great initiative, but may be underutilized at the moment. The arsenic grants awarded to local public health offices by MDH were flexible and could have a big impact on private well supplies, along with the well sealing grants available through this same agency. BWSR was recognized by some participants as the agency with the most funding opportunities available for watershed approaches to source water protection work. Their wellhead protection partnership grant pilot program has been lauded for its flexibility, as has the drinking water subgrant they offer. The fact that their grants are focused on equity based programming and partnerships is also seen as a progressive move in the right direction for clean water projects. The One Watershed, One Plan initiative has further helped distribute funding across the state more equitably than before. Lastly, the drinking water revolving fund and funding from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) are great ways to tap into funding for drinking water management projects and programs.



**Issues:** Although there have been great improvements in the availability of financial resources for drinking water issues, challenges still remain in accessing funding. Local governments, and particularly smaller communities, are disadvantaged when it comes to funding their drinking water systems by their utility funds. Since small communities generally do not have a large tax base, they are often unable to adequately fund their own systems and so must spend extra time looking for outside help through state sponsored grants. Additionally, some community water supplies are so small that they do not meet the minimum threshold for grants. It is difficult for small communities to find low income state-testing water well loans or grants, let alone find help for water remediation, if needed. The occasional lag time between applying for funding and actually receiving the funds can be a frustrating and challenging experience for small communities not able to cover some expenses and obligations from the baseline revenue they generate. Funding priorities also raise some questions, as participants voiced that, in their experience, most funding available is for treatment and source water quality, with very few available for community engagement activities, private well supplies, and water quantity. The funding availability also is perceived by some participants to be highly dependent on lobbying and political sway, and it is not terribly transparent if and how money is equitably split. The administrative demands of applying for grants is also a detrimental hurdle that may deter qualified candidates from applying. There are countless hoops to jump through, including understanding which grant is the best fit for an entity to apply for. There may be strings attached with certain funding programs. Lastly, many entities require sustained funding to continue their programs (especially in the case of pilot programs), maintain their systems, and retain staff. Oftentimes grants do not accommodate hiring staff, even though this is an area where funding may be most needed to have capacity to carry out the work.

**Criteria #7:** Sound regulatory frameworks for drinking water management are effectively implemented and enforced.

**Figure 7: Stakeholder Criterion 7 - Regulatory Frameworks Responses**



This figure shows stakeholder responses to Criterion 7 - Regulatory Frameworks of the GAF. There were 63 total stakeholder responses to this criterion.

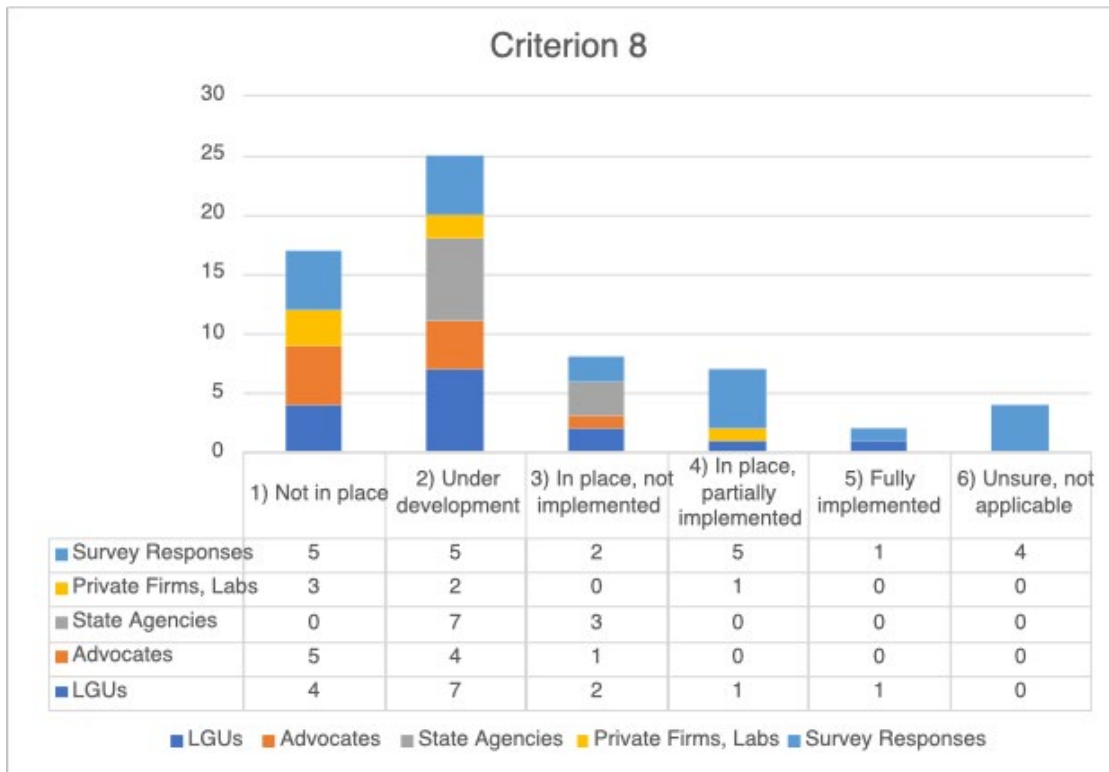
Most respondents indicated that Criterion 7 is in place but not implemented, or in place but only partially implemented. The advocacy group, state agency group, and LGUs tended to rank this criterion lower than survey group respondents.

**Working well:** Generally, there is a sense that a strong regulatory framework for the quality of public water supplies exists in Minnesota, including non community drinking water supplies for places like schools and restaurants. These systems are consistently monitored and have a 98% compliance rate for existing standards. Source water protection rules as regulated by MDH, including the wellhead protection program and well code, also seem to be working well and funding for their compliance remains stable. A recent rulemaking effort that received praise from participants is the Minnesota Department of Agriculture’s Groundwater Protection Rules process. During the rules development, there was great collaboration and synergy between those responsible for writing the rules and landowners who would be implementing them. While it is noted that these rules are just a start and there is still a lot of work to be done regarding nitrate pollution, they lay out an approachable framework for addressing the problems that exist. At the federal level, the Safe Drinking Water Act (SDWA) is also well structured and effective, and SDWA regulated facilities in Minnesota are efficient. The Environmental Protection Agency is also actively clarifying procedures and processes laid out in the SDWA, which may make it easier for state and local water providers to abide by the requirements of this act moving forward. On the water quantity side, water use allocation criteria and sustainable use standards are documented in statute, along with who can use groundwater supplies for which purposes. The DNR has measures and precautions in place to protect groundwater quantity, including the Groundwater Strategic Plan and water use permits for large water users. The licensing process for well drillers and water labs also works well in the eyes of participants.

**Issues:** A handful of issues were identified when it comes to effectively implementing and enforcing drinking water regulations. One concern is regulations that exist and are enforced are not going far enough to meet desired goals. Authorities responsible may say they are implementing regulations, but they are not meeting their defined goals and therefore are not proving to be as effective as they could be. This is primarily revealed by surveys of groundwater quality done at the county level, where it is known that private wells may be contaminated and are having adverse health impacts. Another issue is a lack of consistency and collaboration across sectors in applying regulations. It would seem that some sectors and jurisdictions have different standards or may be carrying them out differently, which can be confusing when trying to communicate these rules to the public. This may be exacerbated by a disconnect between agencies that enforce regulations and those that carry out regulations, further diminishing the likelihood that the standards of a regulation will be met. This especially appears between state agencies and local government entities, since local entities need permits with every state agency for various aspects of drinking water management and there are many nuances to observe. Permitting is a complex and time intensive process for local governments, especially for appropriations. There is also a long backlog of old permits that have never been amended or are being changed slowly. However, a shortage of staff and dollars has made it difficult to keep the update process moving in a timely fashion. While the development of the Groundwater Protection Rule has been positive in many ways, there remains a lack of clarity around how it will be enforced and by whom. The framework exists, but so does confusion around how discipline or enforcement will happen moving forward. Some have felt that the rollout of this rule has been too slow, and due to this, people may be losing momentum and buy-in for its implementation.

**Criteria #8:** Governance processes across jurisdictions incentivize and foster innovation and flexibility in finance, sharing information, assessment, and engagement.

**Figure 8: Stakeholder Criterion 8 - Innovative and Flexible Governance Processes**



This figure shows stakeholder responses to Criterion 8 - Innovative and Flexible Governance Processes of the GAF. There were 63 total stakeholder responses to this criterion.

This criterion was one of the lower ranked criteria across all respondents. The majority of respondents indicated that Criterion 8 was either not in place, or under development.

**Working well:** Participants who represented a local government entity shared that local level offices do allow for some innovative and creative thinking in work. The increased level of data sharing that is occurring is also helping people think more creatively across issues. There are a handful of innovative solutions being put into practice across Minnesota, including the ability for some places to reuse water in specific cases until another source can be found, and St. Paul’s interest in adding ozone treatment to improve their water treatment process. Another area of innovation is increased recognition that climate change and safe drinking water issues are deeply intertwined. Conversations and work around incorporating climate change solutions for safe drinking water are increasing, including conversations about siting solar farms in DWSMAs. The Met Council’s strategic priority of driving climate change solutions forward will hopefully shift the culture even more towards recognizing our need for sustainable water resource solutions in the Twin Cities metro area.

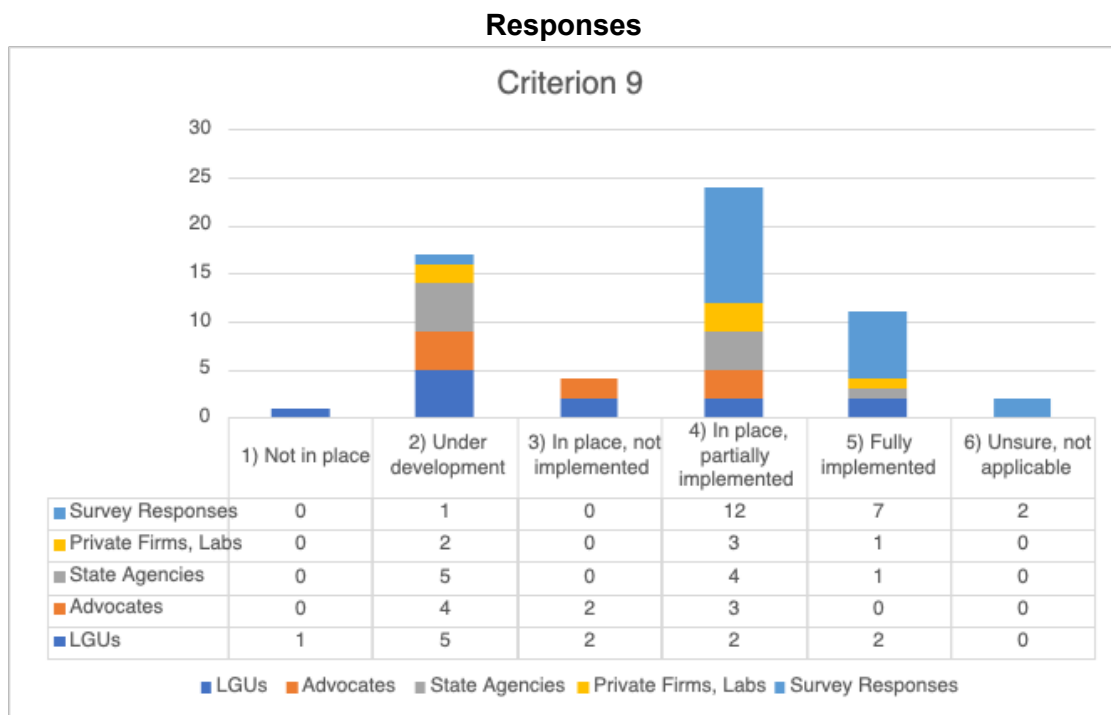
**Issues:** Generally, there is a perception that there is little room for innovation and flexibility in the field of drinking water management, and that it is rarely fostered as a part of the culture, especially for state agencies. Regulations seem to discourage innovation, and there is little support for staff to think about creative solutions and then apply them in a timely way. Others say that while they do enjoy periods of

brainstorming and idea generation with colleagues, the ideas are very rarely taken through to the implementation stage. Innovations in application of water reuse for graywater and wastewater continues to be desired, but the ability to engage in reuse efforts continues to be hampered by regulatory ambiguity and what feels to some participants as an unwillingness to engage in innovation at the state level. Overall, there is a sense that many of the entities involved in drinking water management are far more reactive to situations that arise rather than proactive and forward thinking in their approach.

### Trust and Inclusiveness Criteria

**Criteria #9:** Drinking water management entities have functional, systematic mechanisms established to maintain integrity and transparency for greater accountability and trust.

**Figure 9: Stakeholder Criterion 9 - Mechanisms for Accountability and Trust**



This figure shows stakeholder responses to Criterion 9 - Mechanisms for Accountability and Trust of the GAF. There were 59 total stakeholder responses to this criterion.

Criterion 9 split the majority of responses between being under development and in place, partially implemented. Only one member of the LGU group responded that this criterion was not in place, which is the lowest response across all criteria.

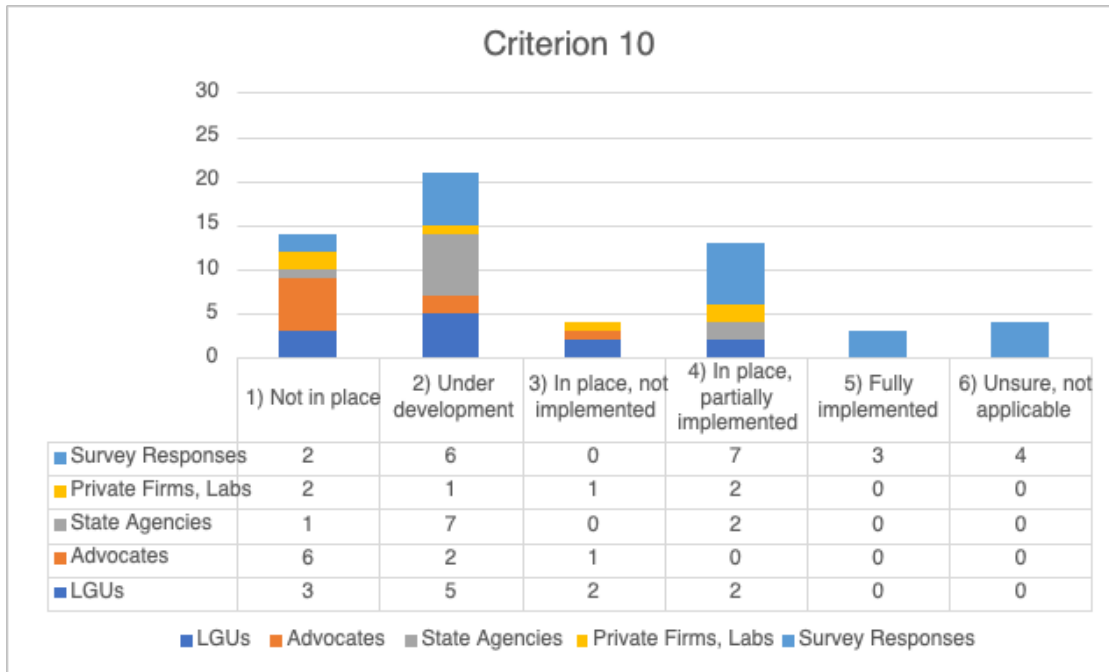
**Working well:** Certain drinking water entities have garnered trust from the public over the years. Some that are doing this well include community water suppliers, who are generally transparent with their water pricing and are responsive in the event of an emergency. Local public health offices also feel that the public trusts them to test and report on water issues in communities. It is hoped that the initiative to replace lead service lines will also help build trust with the public and those working to ensure everyone

has safe drinking water. There are some communities excelling in leadership for safe drinking water. For example, the Shakopee-Mdewakanton Sioux Community is doing amazing work considering the science of safe drinking water and creating a plan for protecting it for many generations. State agencies and local entities do a fair job of releasing comprehensive annual reports to hold themselves accountable for the work they said they would accomplish throughout the year, and documenting what was actually accomplished. One example is the annual Clean Water Fund Performance Report.

**Issues:** In regard to accountability across entities, there is a lack of clarity around how state agencies are accountable to local government entities, and vice versa. When issues arise, there may exist an urge to “pass the buck” – that is, transfer accountability to someone else in order to avoid it yourself. It was also remarked that though the legislature handles funding for state agencies, they do not seem to “hold [agency] feet to the fire” to get the necessary work achieved, or provide sufficient oversight. There is recognition that building trust in institutions and drinking water management remains an issue for a number of reasons. There are some issues that are difficult to avoid. For instance, because of the scale and complexity of drinking water management, predicting the next challenge can be difficult and, in resolving a problem, other problems may be created. Trust is generally built when there are positive trends in situations, like when nitrate pollution is declining, for example, but that trust is lost when trends turn for the worse. Respondents suggested agencies’ general lack of a sense of urgency for drinking water evaluation or action may be giving the public the idea that regulators are not as serious about protection as they could be. If there persists a lack of trust in agencies, this may lead the general public to withhold samples from or not participate in citizen science. Lastly, there is a sense that entities often lack all the necessary information in order to inform sound decision making.

**Criteria #10:** Drinking water stakeholders, and the nature of their stake, have been clearly identified. Stakeholders are systematically engaged in interpreting needs and designing solutions to drinking water concerns at a level appropriate to their jurisdictional authority.

**Figure 10: Stakeholder Criterion 10 - Stakeholder Engagement Responses**



This figure shows stakeholder responses to Criterion 10 - Stakeholder Engagement of the GAF. There were 59 total stakeholder responses to this criterion.

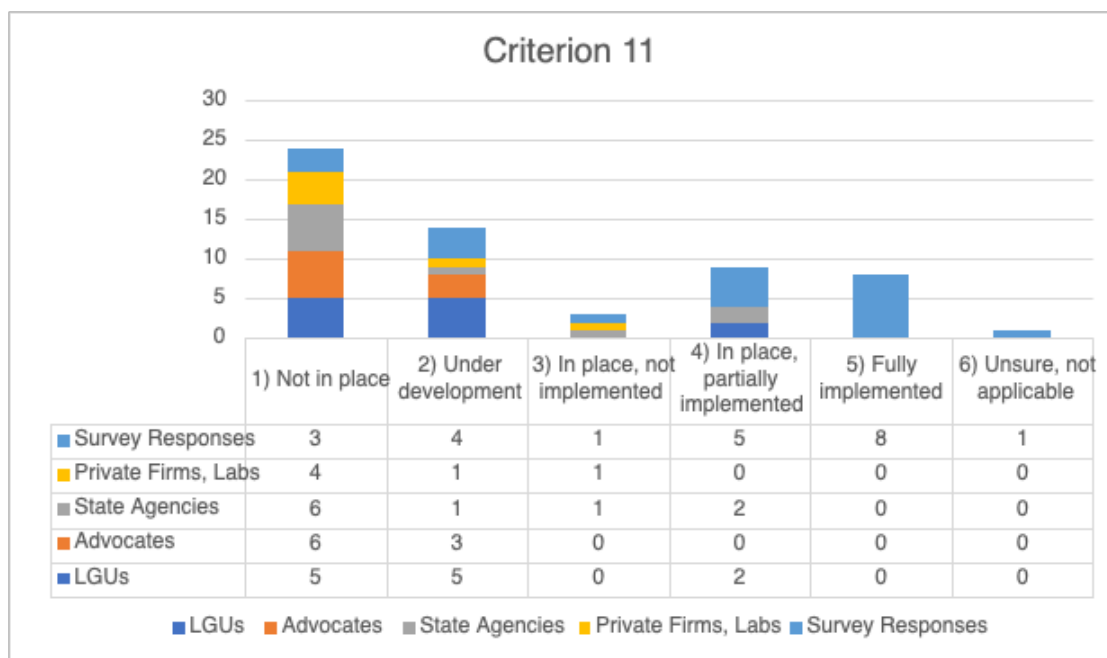
Responses for Criterion 10 were split between under development (the most common response), not in place, or in place, partially implemented (second and third most common respectively). Members of the advocacy group tended to rank this criterion the lowest with respect to the other groups, and the state agency group landed mostly on under development.

**Working well:** Every year, opportunities for stakeholder engagement around water issues seem to be getting more frequent and more intentional. There is increasing engagement from municipalities in drinking water issues, with SWCDs and city departments improving interaction with one another. Some local case examples of effective engagement include city-specific initiatives to conserve water in the summer, Coon Rapids bringing their drinking water staff to county fairs to discuss drinking water with attendees, and in the Twin Cities increasing signage in parks and other public places that remind people that tap water is safe to drink. Urban planners are becoming more deliberate in engaging a variety of people and perspectives during plan development processes. Bringing farmers into the conversation around the protection of drinking water is helping to create new connections and partnerships. An example of this is Dakota county’s agricultural chemical reduction efforts. The creation of more citizen groups, such as the 3M citizen group and various community advisory committees, provides more leadership and engagement opportunities for the general public who want to be more engaged in these issues. Lastly, the source water protection grants and wellhead protection programs through MDH now require community engagement and education to be a component of the proposal or program in order to qualify.

**Issues:** It is noted that one of the most difficult things about community engagement is that it is a voluntary exercise. People have to be willing to give their time, energy and attention to these issues, which is not easy in a world where many different issues are vying for public attention. Due to this, it takes more effort than many entities are willing or able to give in order to conduct community outreach and engagement effectively and keep people’s attention on drinking water conversations. SWCDs and small district office staff often do not have the capacity or resources to devote to these time-consuming activities to produce public facing materials that may be distributed consistently and effectively, or to facilitate regular engagement opportunities.

**Criteria #11:** Frameworks exist and are implemented to identify trade-offs and prioritize options across sectors and generations of non-human and human water users.

**Figure 11: Stakeholder Criterion 11 - Identify Trade Offs and Options Responses**



This figure shows stakeholder responses to Criterion 11 - Identify Trade Offs and Options of the GAF. There were 59 total stakeholder responses to this criterion.

The majority of respondents ranked Criterion 11 as not in place, with the second most popular answer being under development. Only survey respondents indicated that they perceived this criterion to be fully implemented. All advocacy group members and most private firm and lab representatives gave this criterion the two lowest rankings.

**Working well:** More decision-makers are beginning to prioritize strategies that achieve multiple benefits across issues. For example, siting solar farms in DWSMAs and Wellhead Protection Areas benefits the move toward renewable energy and also better protects these sites from pollution. In terms of identifying trade-offs, the Department of Natural Resources’ (inactive at the time of this report) Community-based Aquifer Management Partnership (CAMP) program was helping to facilitate these conversations, and is turning out to be a successful model that could be expanded on. CAMP facilitated multi-agency conversations with community decision-makers, so they could simultaneously address locally specific

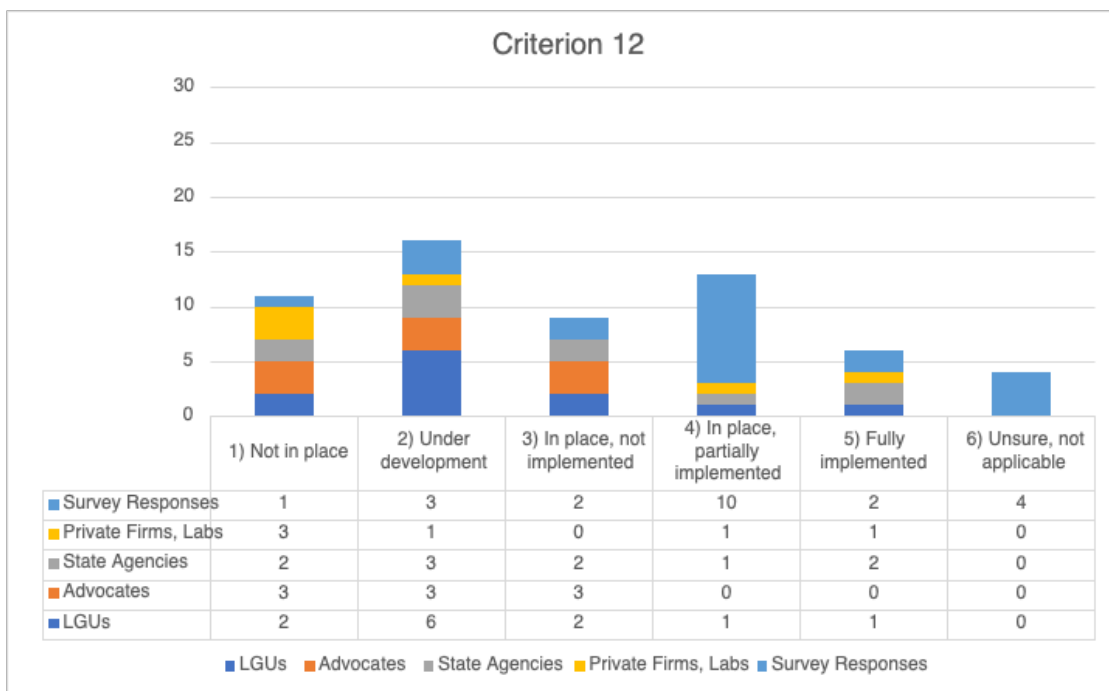


concerns about withdrawals, source water protection and more. There is a general understanding of the importance of talking about trade-offs and making decisions. The DNR also has a ranking system that prioritizes water uses for the state, with drinking water being a more important use for freshwater than water use for mining, for example.

**Issues:** In general, identifying trade-offs and prioritizing issues is a daunting and contentious exercise across state and jurisdictional authorities. One reason it is so difficult is due to bias and siloing across decision-making bodies. Agencies may have competing interests or not have the same priorities, and so identifying appropriate trade-offs that everyone can agree on is especially complex. Because it is difficult to deal with this complexity, agencies may end up creating policies in their own silos without appropriately weighing options with other collaborators. There is also a lot of influence from varying industries that can further complicate conversations around trade-offs and priorities for drinking water resources. Urban development, agriculture, public health, and local economic growth are some of the other considerations and perspectives needing to be balanced with drinking water resources, however where there are opportunities for growth, these solutions seem to win out. The more immediate needs or wants of an industry seem to be prioritized above long term sustainability strategies for water resources. Additionally, it is remarked that where frameworks for prioritization of water use do exist, they tend to be utilized primarily in crisis situations, with authorities again being more reactive than proactive.

**Criteria #12:** Drinking water programs and institutions are regularly and transparently monitored and evaluated for their effectiveness and fairness in managing drinking water.

**Figure 12: Stakeholder Criterion 12 - Program Transparency and Evaluation Responses**



This figure shows stakeholder responses to Criterion 12 - Program Transparency and Evaluation of the GAF. There were 59 total stakeholder responses to this criterion.

There was no broad agreement about the status of this criterion, except for it not being fully implemented. The most common response was under development, followed closely by in place partially implemented and not in place. There was not a high level of agreement in groups across these rankings with the exception of the survey group, who primarily responded that this criterion was in place, partially implemented.

**Working well:** Written reports documenting effectiveness of programs and initiatives can be fairly regular and are generally posted on websites for public accessibility.

**Issues:** Participants could not name many specific drinking water programs that exist at this time, and if there are programs that exist it does not seem that they are especially effective due to understaffing or lack of funding. Additionally, where programs exist, they do not seem to be transparently monitored. For example, the MN Agriculture Water Quality Certification Program was perceived by some participants to have insufficient meaningful, publically accessible information about the impacts of the program. When a review of a program is performed, it may be unclear to readers how the review was conducted, and, if it was done by the agency running the program, there may be inherent bias in the evaluation. There does not seem to be an unbiased entity that conducts a sweeping evaluation across agency programs to determine their effectiveness at a big picture level. In terms of fairness of programs managing water, it was discussed that fairness will look different to many different people, so it is very difficult to evaluate whether fairness is being considered in the programs which aim to better manage drinking water.

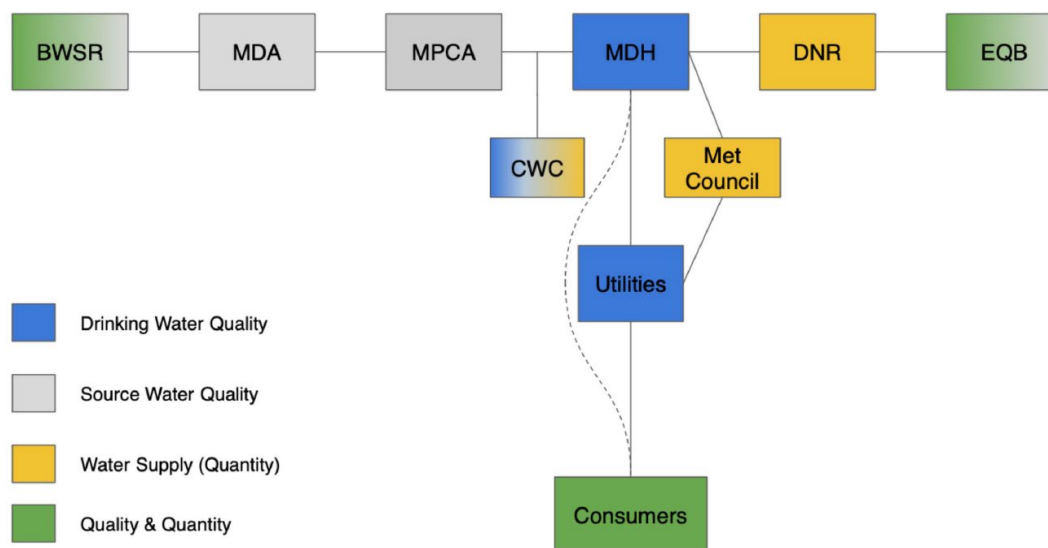
## **Recommended Next Steps from Focus Group Participants**

As with the content on preceding pages, the following recommendations also stem directly from the comments offered by participants and reflect the sentiments and ideas shared during the engagement process. They are organized by the twelve criteria though, as with what is working well and could use improvement, the criteria are not mutually exclusive.

Roles and Responsibilities:

- Consider creating a guiding document or online infographic that clearly examines and explains which entities are responsible for which aspects of drinking water management, and how and where they may or may not overlap. While some graphics currently exist, participants indicate they may be insufficient for this level of clarification, and seem to vary by the authoring agency. Updating or developing a more detailed document or infographic would clarify how agencies are integrated to cover all of the issues, could uncover gaps in issue coverage, and insight on which areas entities could most easily work together on and get clear about who has the authority and responsibility to manage private well and groundwater supplies. This could be included as a part of the infographic or informational website that lays out these roles and responsibilities. A preliminary graphic [Figure 13] was developed in the WRC Future of Minnesota Drinking Water report that could be expanded upon to include municipalities, and further refined for ease of use.

**Figure 13: Horizontal and Vertical Relationships of Water Governance in Minnesota**



This figure, developed originally for the Water Resources Center Future of Minnesota Drinking Water report, shows relationships between the main actors in water governance, indicating primary responsibilities of each actor. It is not intended to comprehensively describe every responsibility of each actor. From left to right: Board of Water and Soil Resources (BWSR), Minnesota Department of Agriculture (MDA), Minnesota Pollution Control Agency (MPCA), Minnesota Department of Health (MDH), Minnesota Department of Natural Resources (DNR), Environmental Quality Board (EQB), Clean Water Council (CWC), and Metropolitan Council (Met Council).

#### Scaled management:

- 75% of the state gets their drinking water from groundwater sources. While drinking water and groundwater have been incorporated to some degree in the Comprehensive Watershed Management Plans developed through the One Watershed, One Plan program, participants noted that the watershed scale is too broad and at times misaligned for management of groundwater for drinking water. These boundaries can be significantly different from major watershed boundaries, and some attending perceived planning at the aquifer or multi-community scale to be the most sustainable option for the resource. While overlapping aquifers may add difficulty, collaboration among entities tapping into the same area of an aquifer is needed for sustainability of the resource. Additionally, the watershed-based management approach can more appropriately include a focus on land management impacts to source water. There is a call for a unified vision in managing drinking water and potentially transitioning the state's Ground Water Protection Rules to be applied at a township scale rather than the DWSMA scale as they are currently. Groundwater's local impact underscores the importance of communication with cities and towns in addition to a high-level approach. There is a recognition that governance at the county level can play a key role, especially for policies such as point-of-sale well testing, which could follow a model similar to septic systems. It is acknowledged that since groundwater is in many ways a

local concern, state agencies should work with or better align with local policies to achieve effective water management decisions.

#### Private well focus:

- At the private well scale, consider more engagement with private well owners on their supplies and what they can do if those supplies are contaminated. It could be helpful to shift from seeing private well owners as merely water consumers, to also recognizing them as water managers. Even though MDH has the Private Well Management program which helps get materials out to well owners, there is some concern about trust since it is a government run program. Some might feel intimidated with the government presence at well testing events. Due to this, there may be an opportunity for advocacy groups to get more involved in private well engagement with owners through well testing or educational events. Equity between private and public water use and users also needs to be considered, especially in terms of funding and response time for solving issues. Currently, participants feel that public water use issues are more heavily funded and are addressed in a more timely way than private supply issues.

#### Coordination:

- State agencies should consider collaborating more with diverse partners to stimulate innovative and intersectional drinking water management solutions. This may include collaborations with industries involved in the production of goods or services, and especially ones that may be polluting water resources or using water intensively. Other possibilities may include SWCD and County partnerships, and more state agency relationships with city governments. There have been some shifts in state agencies collaborating with actors in agriculture. More should be considered with other sectors. One suggestion would be to hire someone for a position at the state level responsible for this type of relationship building and connecting the right departments and people. It also could be helpful to set up a program that promotes mentorship or job shadowing experiences across jurisdictional boundaries to build networks and to understand how different entities manage their water resources. Better communication and information sharing across jurisdictions should also be considered so that people can more easily consider new information and let it inform their work. For interdepartmental coordination at the state agency level, it should be a priority for state agency departments to coordinate better on the areas of drinking water governance that are on the edges of state agency authority, and to work on breaking down the silos that many perceive currently exist. Communicating the bigger picture of drinking water management and coordinating on an integrated and unified message could be a valuable next step. This could come about through the expansion of cross-agency collaborative working groups, such as the Groundwater-Drinking Water Interagency Coordination Team, that regularly meet to coordinate efforts for drinking water management across the state. Local government and advocacy group representatives could attend as appropriate to increase public-private engagement in drinking water management.

#### Professional capacity:

- Efforts to increase staff capacity may be important to focus on, specifically in the areas of communication and community engagement. Building up these skills, especially for technical

employees, are needed for staff to be most effective and more trusted by the communities they serve. There could also be more outreach happening from those who administer training opportunities to let organizations know that they exist and are offered, and there also needs to be clear definitions about which types of certifications are required for different activities in the drinking water industry. Lastly, there is a sense that professional capacity and skill set should move more toward a “one-water” mindset, that is, staff operating with the perspective that all water is interconnected and understanding how this works. Offering more holistic training that teaches about the many facets of water, including its quantity, quality, uses, movements, locations, etc. could help foster this mindset shift and allow many different professionals who work on different facets of water understand each other better. Developing mentorship programs across expertises can also help water professionals better understand what others do, and how they can partner together to create new solutions for improved water health. This sort of program may also help in developing a sense of shared responsibility.

#### Drinking water data:

- Accessible data: Dispersed, siloed, and difficult-to-find data hampers the ability to make informed decisions for drinking water. A central repository of drinking water data that is both easy to navigate and understand is needed to increase data accessibility and use. Such a database would bring together all available data related to drinking water issues in one location, and would not only include the data itself but also why the data was collected, the data’s implications, and how to understand and use the data in order to take action. This would be a great resource to house groundwater and private well data as well, since it has been recognized that publicly accessible data in these areas are lacking. This hub could also help consolidate undocumented data floating around, and creating it could be a collaborative exercise across drinking water entities. Another related suggestion is to make data gathering and sharing easier and more consistent. This could mean increasing the amount of peer-reviewed data shared through the MN Geospatial Commons or increasing data transparency for drainage systems, like creating a drainage registry database.
- Relevant and actionable data: Asking the right questions is a necessary precursor to collecting the most relevant data. It is important to ask what the knowledge gaps are and whether the data being collected are the most useful information to help people and partners answer the questions they have. Some questions that may be considered for future data collection include how land cover change is affecting groundwater quality and availability, and how various entities are identifying data gaps vs. data needs. Entities should prioritize figuring out how they are using trends in water quantity data to determine their next steps, and also spend some time identifying the most effective technologies and practices, as supported by data, and focus attention and funding in those areas. While the WRAPS and GRAPS data compilations are seen as useful in many ways, there is a desire for more guidance and support for those using these documents. It is not always clear what the information means, what its implications are, or what action should be taken based on them. Hiring local facilitators to help guide groups through these documents may help people better understand them and feel more confident in making decisions based on their contents. Lastly, there is a recognition that private well data is extremely relevant, but there is a perception that there is not a sufficient amount of it available. Improving knowledge and record-keeping through more available well data might help private well owners make more informed choices

about their water supplies. However, this effort needs to be cognizant of data privacy concerns that emerge with greater data availability, particularly for private wells.

#### Financial sources:

- Although there has been an influx of funding for water quality and quantity improvements in large part thanks to the Clean Water Fund, participants shared that they would like to see still more funding made available, particularly for the treatment of public water supplies and water affected by contaminants of emerging concern, as well as investments in water infrastructure improvements like lead pipe replacements. Other areas that could benefit from increased funding opportunities include community engagement projects led by nonprofits to provide engagement opportunities and information to people as a non-governmental entity. Pilot programs, like the CAMP program, demand a lot of energy and resources to get off the ground, so increasing funding for these would also be helpful to keep their momentum going. An additional source of funding could potentially stem from the creation and implementation of a statewide tax structure. How to prioritize who and what issues receive funding was also broached during focus group conversations, with some suggesting that equity should be prioritized when doling out funding for projects and programs. An example of this may be that since 25% of Minnesotans have private wells, maybe 25% of funding should go to private well improvements or programs. Funding should also spread more to communities which have been historically marginalized and excluded from environmental improvements in the past, such as low income neighborhoods, rural Minnesotans, and black, Indigenous, and other people of color (BIPOC) communities. Improving communication about grant opportunities could also be a great way for people to know what options are out there for them to try to take advantage of. Holding more local forums where people can openly discuss their grant experiences, including their wins or failures, could help people prepare to apply. Additionally, it could be helpful to create a comprehensive list of grants and programs that specifically address drinking water issues that local governments could apply for. In terms of specific grant programs and opportunities, there is a suggestion to use BWSR's Source Water Protection funding model for the creation of future grant programs, and have more flexible grants with rolling deadlines.

#### Regulatory Framework:

- There may be opportunities for the existing regulatory landscape to be strengthened through updates and improvements. Some suggestions include updating the data practices law, including a surcharge on agricultural fertilizer or any product that contributes to water pollution, and not reducing water fees for large commercial water users. Additionally, it could be helpful for entities to assign specifically-trained regulators to targeted regions who are focused on enforcing a specific subset of water regulations, like surface water system regulations or groundwater system regulations. Some participants noted that in their experience, regulators with extensive training in one of those aspects were sometimes reassigned to drinking water systems that did not align with their expertise (surface versus groundwater). Standardizing this would help people understand who the regulators in their area are, and could help with streamlining communication and diminish confusion around who is responsible for ensuring systems are in compliance. Enhancing private well protections is another suggested action, such as requiring well testing at a property transfer. Permitting processes could also benefit from being more streamlined and regimented. For example, it could be useful to link the well drilling and water appropriations processes as a

way to more clearly grasp the full effect of these two practices on the resource as opposed to addressing the two separately. Permits should be adjusted to have a long-term horizon for what sustainability looks like way down the line, rather than just considering shorter term impacts. In regard to drainage practices, some think that drainage should be regulated as point source pollution. Some participants perceive that the current drainage code does not have teeth, and there should be a section added that considers the environmental impact from drainage. Finally, there should be a comprehensive study done on other regulations in order to leverage the information there to help regulate locally. For instance, it could be beneficial to find intersections between the Clean Water Act and Safe Drinking Water Act so that localities can use these to influence local policies and regulations. It also may be beneficial to revisit and revamp the 1989 Groundwater Protection Act. In terms of enforcement of regulations, the implementation of the Groundwater Protection Rule is a move in the right direction, but it is too soon to tell if it is working as intended, so it will be important to continue monitoring its impact.

#### Innovation:

- Generally, there could be more room made for innovative thinking and project implementation. There should be a healthy balance struck between abiding by rules and trying new things within every agency. Some examples offered by participants include implementing more unique pilot projects and looking more intentionally at water reuse possibilities. Innovative partnerships could also expand opportunities for creative solutions and relationships. For example, big city water plants could partner with small towns and cities to introduce and guide them through implementation of forward-thinking practices. With the increasing attention being paid to climate change, there is also a suggestion to bring climate and water together in the kind of work that gets funded. Since water quality and quantity are so deeply intertwined with the ongoing climate crisis, these two issues should not be considered or funded separately.

#### Transparent Entities:

- Three important characteristics that instill trust in entities include accountability, effective leadership, and consistent, transparent communication. These could all be further improved across drinking water management institutions. In terms of building transparency through accountability, it could be helpful to start or continue convening community advisory committees, made up of stakeholders in the community who are directly impacted by drinking water management choices, providing oversight to ensure professionals are staying accountable to their work and promises. There is some confusion around what accountability state agencies have to local government units and vice versa around drinking water management, so getting clear on this would help with coordination and understanding of roles and responsibilities across the board. There is also a suggestion to conduct a comprehensive assessment of agencies and how they are each involved in drinking water management, including what specific issues the different agencies are supposed to be tackling, and publishing these findings. Participants believe those in leadership positions should be more assertive and prioritize drinking water source protection in decision-making, with less emphasis on total consensus among stakeholders or among agencies. There is a desire for leaders to be bold and take action on a more consistent basis, and work on being more proactive rather than reactive when making decisions. Identifying and building relationships with local champions in different communities who are clear connectors and trusted individuals could also be a way to stimulate effective grassroots leadership for protecting

drinking water sources. In terms of communicating with the public to build transparency and trust, it may benefit managers to think about a novel messaging approach to get through to people, and maybe soliciting other entities to spread the message for them. For example, managers might recruit public health offices to discuss the health impacts of drinking water quality and quantity as opposed to the environmental impacts. Physicians could be recruited as trusted messengers to communicate important information about drinking water to their patients. There needs to be more investment made in communication tools, even just state to local government communications. One idea is to create an online communication hub for state agencies to communicate with LGUs, and that could also act as a repository for outreach language and flier templates that districts might pull and distribute materials from.

#### Stakeholder engagement:

- Participants recognized the immense value of stakeholder engagement in the drinking water management process, and offered countless suggestions for ways to broaden and increase stakeholder engagement efforts across Minnesota. Offering more adult education opportunities on a wide range of drinking water topics is one suggested approach, including teaching fundamental principles of what aquifers are and how they work and flow, and the age of drinking water and possible contaminants like arsenic. Educational opportunities could be offered in a variety of mediums, including monthly webinars, forums, and town halls. Getting outreach messaging right is also an important piece of conducting effective engagement. Meeting people where they are and relating drinking water issues to their daily lives could be effective. Outreach staff should keep language regionally appropriate, and consider a novel entry point for starting the conversation, for instance focusing on the health narrative of drinking water quality or applying an economic analysis framework to show that it is more cost effective to install a reverse osmosis system than continuing to buy bottled water over the long term. The “one water” messaging could also be a possible strategy, explaining how groundwater and surface water improvements are inextricably linked. Because community engagement can be such an overwhelming task, it could also be beneficial to target the most vulnerable or most impacted communities, or solicit others to help conduct outreach. This could mean identifying areas of social vulnerability and engaging communities that have concerns about their drinking water quality and quantity, and making sure engagement is inclusive of diverse cultures and languages. Establishing community appointed messengers who are known and trusted within their communities could also be a way to reach more people. Offering more collaborative planning exercises could get people civically engaged in influencing priorities in their communities. Just as engagement should be made as easy and accessible as possible for stakeholders, it should also be made as easy as possible for local governments to employ community engagement efforts and outreach. To that end, having a repository for drinking water outreach ideas and templates that various entities could pull from could be important. A final reminder is to avoid the pitfalls of turning people into data, and remembering that cultivating lasting relationships and trust is the best way to activate sustained change.

#### Trade-offs:

- Weighing priorities and trade-offs when considering drinking water management decisions is a difficult task, but some actions may help make it a bit easier. Participants agreed that the establishment of a statewide drinking water plan will be a much needed directive for drinking



water management in the state, so long as it is explicit in laying out priorities for the resource, using crowd sourced information from focus groups like those involved in this study, and is able to back up identified priorities with sound reasoning and actionable, measurable ways to execute each strategy in the plan. It also could be important to determine which existing water plans should receive priority implementation, because there are so many and some are duplicative. An example to consider are state strategies, such as statewide funding plans and Clean Water Council strategic plans. There does not currently seem to be an agency involved in facilitating conversations that consider non-human users of drinking water when weighing priorities and trade-offs. State agencies might consider providing a community toolkit to guide these discussions.

#### Program Monitoring and Evaluation:

- As noted in a previous section, participants acknowledged that it is not clear that drinking water programs are evaluated in an unbiased fashion based on a standardized set of criteria. To address this, there was a suggestion to use a system of criteria similar to the Governance Assessment Framework to assess effectiveness, efficiency and integrity of existing drinking water programs. A version with language that is clarified for subjectivity and is more directly targeted to specific elements of the drinking water system may be easier for participants to comprehend and use.
- Repeated evaluations using the same framework on a longer time scale could potentially be used to evaluate progress and changes in the drinking water governance system. Additionally, a collaborative body such as the interagency coordination team could engage in an exercise identifying the top 10 drinking water programs and institutions and then spend time clarifying a threshold for reasonable evaluation of them. Another option could be to create a Groundwater Protection Board that could review results from all the existing source water programs and provide comments and direction for their continued success.

## Conclusion

Through the process of this research, professionals working in drinking water management and governance dedicated their time and expertise, allowing the collection of large amounts of valuable comments and information. The researchers on this report are grateful for participants' thoughtful contributions. The professionals working in this field have many valuable observations and insights into drinking water governance from a variety of perspectives that MDH should continue to collect and respond to in a systematic way.

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