

Survey of Water Planning in Colorado



Final Report—May 2021

Prepared for the Colorado Department of Natural Resources

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Cover Image

Title: *Do You Know Your Water, Colorado?*

Source: Water for Colorado

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Note: This printed copy also includes: *A Compendium of Selected Practices across Colorado*

Preface

Survey work such as this is vitally important for the State of Colorado. It helps us better understand the nature of integrating land use and water planning implementation at the local level. The Colorado Water Conservation Board (CWCB) will use this baseline information to assess how much progress has been made toward the Colorado Water Plan's measurable objective that by 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning. Looking forward, the CWCB will use this as a source of information for initiatives and policies that may be incorporated into the next revision of the Colorado Water Plan coming in 2022.

-Kevin Reidy, State Water Conservation Specialist, Colorado Water Conservation Board

Colorado has long identified water as a pivotal issue of statewide importance. Since the creation and adoption of the Colorado Water Plan, local governments have been increasingly empowered to shape their futures by considering how growth and development decisions impact their water supplies. Statewide progress is dependent on local action. Survey results will inform the Colorado Department of Local Affairs' work of providing technical assistance to local governments on water and land use integration practices, particularly related to comprehensive planning. Our work is tailored to the needs and nuances of different jurisdictions. Data points on current conditions and practices are always welcome; these findings will help us better serve communities. Partnership is also key to meeting current and future statewide water goals. Multiple members of the Colorado Water and Land Use Planning Alliance contributed to this survey project. Since 2017, the Alliance has been a forum for state agencies, local governments, universities, advocacy organizations, research organizations, and others with a drive to advance the connections between water planning and land use planning. This project is an example of the compounding successes we can achieve through collaborative research and outreach to local governments on the front lines of sustainable water management through land use practices.

-Christy Wiseman, Land Use and Water Planner, Colorado Department of Local Affairs

Foreword

Colorado's State Water Plan envisions a sustainable future in which the State's communities have the capacity and knowledge to address their water challenges. Given that many impactful changes in planning and management practice occurs at the community level, achieving that vision depends in large part on the actions of local land and water planners and managers and the willingness of the communities they serve to revise policies, plans, and practices. Commendably, Colorado has sought to make progress towards that goal by encouraging more integrated water and land use planning at the community level.

However, measuring progress towards a more sustainable water future requires the establishment of a baseline condition against which progress can be tracked. To that end, this study implemented a survey instrument to shed light on aspects of water and sustainability planning, ranging from longstanding supply and demand issues to more emergent concerns, such as the integration of water and land use planning. As such, this research constitutes a valuable and constructive step towards a more complete understanding of the water sustainability challenges facing different communities and the actions they take to address them, especially related to the integration of land use planning and water management practices.

We wish to recognize both the diligent effort by the research team in persevering through the disruptions caused by the COVID-19 pandemic and the generosity of the respondents in sharing their valuable time, knowledge, and views. We hope that the results of this study will be a useful resource to state agency staff, water managers and land use planners, and others with an interest in decision making that advances the sustainability of the diverse Colorado communities they are concerned about and in which they live.

-Zachary Sugg, Senior Program Manager, Babbitt Center for Land and Water Policy

Summary

This survey is a product of the Colorado Center for Sustainable Urbanism (CCSU) at the University of Colorado Denver. Funding for this project was provided by the Colorado Water Conservation Board (CWCB) at the Colorado Department of Natural Resources (DNR). The CCSU project team enlisted the assistance of the Babbitt Center for Land and Water Policy, the University of Arizona, as well as members of the Colorado Water and Land Use Planning Alliance and the Cooperative Toolkit Working Group to review and comment on the initial draft of the survey and assist with the survey analysis. Additional support was provided by the Colorado Chapter of the American Planning Association and the Colorado Department of Local Affairs. The resulting final survey tool was sent in phases to cities and counties throughout Colorado.

The purpose of the survey is to gather baseline information from local and state policy makers, planners, and government officials to help them understand how land use planning and planning for water are integrated in Colorado, as well as provide information on current practices related to sustainability. The survey consisted of 56 total questions in six sections. The responses collected vary widely and offer a spectrum of local water planning practices in Colorado and how they are integrated with land use planning. A broad range of staff is represented in the responses from local governments including planners, public works staff, and town managers.

The project team has gathered data from six general topic areas (jurisdictional water planning practices; water supply, quality, and management; ecological and natural resources; applied integration of land use and water planning; opinions regarding integration of land use and water planning; and sustainability) to inform an understanding of the relationship between water and land use planning throughout the state. There were 116 responses collected, including 23 counties and 7 special districts.

This study finds that most respondents think integration between land use planning and water management is only somewhat effective at present and not to the extent that most practitioners would prefer. There are key challenges to integration, and these are related to time, funding, staffing, as well as fragmented water management and growth/political pressures. The most promising strategies to overcome these challenges are incorporating a water element in comprehensive plans, as well as a land use component in water supply plans. Sharing datasets and incorporating water directly in planning processes are also perceived as effective by respondents.

Research Design and Survey Deployment

The primary purpose of this survey is to establish a statewide baseline of water and land use planning practices in Colorado's local jurisdictions—both counties and municipalities. While there is research and information on water distribution, water providers, and water use in Colorado, the current state of information on local planning, projects, and programs is relatively piecemeal. This report contributes to offering a more complete picture of local jurisdiction practice as it relates to planning for land and water.

Survey Instrument Design

The survey consists of 56 questions divided into six sections.

- Section A asks the respondents to give an overview of how water planning is approached in their specific district and to provide relevant documents. This section also establishes a baseline to understand what department(s) is responsible for water planning and if water is in any way integrated with land use planning.
- Section B examines how water supply, quality, and management are incorporated into local plans through policies, provisions, programs, and actions.
- Section C focuses on ecological functions (pollution, watersheds, sources of drinking water, and bodies of water) in jurisdictions through policies, provisions, programs, and actions. The questions address the issues of water pollution and how those situations are addressed.
- Section D looks at integrating planning for water with local land use planning and the challenges to integration. The questions explore the types of plans and programs that address the challenges, as well as the roles played by infrastructure and cross-jurisdictional collaboration.
- Section E asks the respondents about their professional perspective on the overall effectiveness of planning for water in Colorado. The questions are directed at how jurisdictions can evolve the overall effectiveness of promoting land use and water planning integration.
- Section F focuses on sustainability, which expands on water planning, and serves as a follow-up to a 2017 sustainability survey conducted by CCSU. In the previous survey, the questions addressed various sustainability issues pertaining to climate change and the provisions, policies, and programs being used to address broader aspects of sustainability.

The CCSU survey project team used the Qualtrics information platform to create and analyze their survey instrument. (Qualtrics is a resource available at the University of Colorado Denver for survey support.) The 56 questions included a variety of question styles, such as yes/no questions, multiple choice questions, scale questions (e.g., choose on a scale of 1 to 5), and open-ended questions. In the pilot test, the team estimated it would take respondents approximately 30-40 minutes to complete. The full survey is provided in Appendix A.

Survey Deployment

The survey itself was distributed in a series of phases to ensure a manageable communication load. The same survey was used throughout the distribution process. The team used contact lists of local jurisdiction staff provided by the Colorado Department of Local Affairs (DOLA) and

the American Planning Association Colorado Chapter (APACO). These lists were then supplemented with contact information provided by the Denver Regional Council of Governments (DRCOG) and the Northwest Colorado Council of Governments (NWCCOG). In addition, the project team identified additional local jurisdiction staff through online research. The primary local staff contacted to complete the survey were local jurisdiction planning managers or water planning specialists. However, some surveys were completed by the city manager's office or public works staff.

The instructions for completing the survey suggested that a single staff member enter the responses. It was noted that some of the questions may require information from staff in other departments or offices within the jurisdiction.

The survey was first distributed in January 2020, with a second phase of distribution in February 2020. In these initial phases, approximately 125 towns, cities, and counties were contacted. A third phase was initiated in March 2020 but put on hold during the COVID-19 stay-at-home orders. This phase focused on 30 jurisdictions viewed as high priority because of their population and size. The third phase resumed in June 2020 and was supplemented with contacts to about two dozen additional jurisdictions from various subareas throughout the state. A final phase in July included phone calls and emails to 10 of the prioritized jurisdictions (from the third phase) to solicit survey responses. The project team has had a goal to receive responses back from jurisdictions representing 75 percent of the state's overall population—based on a percentage established in the Colorado Water Plan.

The respondents were given several weeks to answer these questions and were prompted with a reminder. All responses from the survey are presented anonymously.

Survey Analysis

Data was collected and cleaned and then analyzed in the software program Statistical Package for Social Sciences (SPSS). Descriptive statistics are used throughout, and average values are represented by the “ μ ” symbol when used parenthetically. To identify differences between groups, both *t-tests*¹ and *analysis of variance* (ANOVA) are used. T-statistics and “p” values² are presented for t-tests to show whether mean values differ between two groups. ANOVA measures the differences in variance between three or more groups and “f” values³ and “p” values are presented for ANOVA parenthetically when differences exist.

Survey Results

Following a description of the survey sample that was obtained, the results are organized according to the following key themes:

- How jurisdictions address planning for water
- Measuring the extent of integrating land use and water planning

¹ A *t-test* is an inferential statistical method to look for differences among groups.

² A p-value refers to probability.

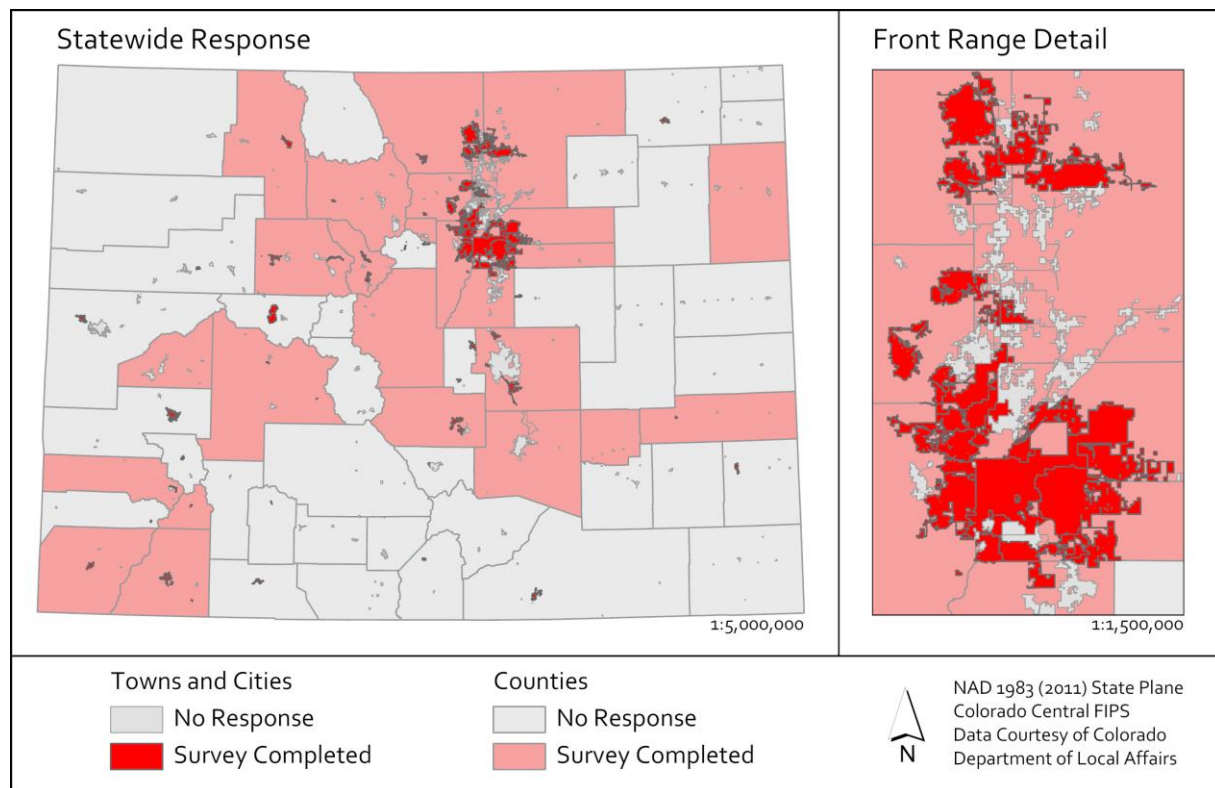
³ An f-value refers to significance.

- Water as an ecological and natural resource
- Approaches to coordinating land and water planning
- Challenges to coordinating land use and water planning
- Sustainability

Survey Sample

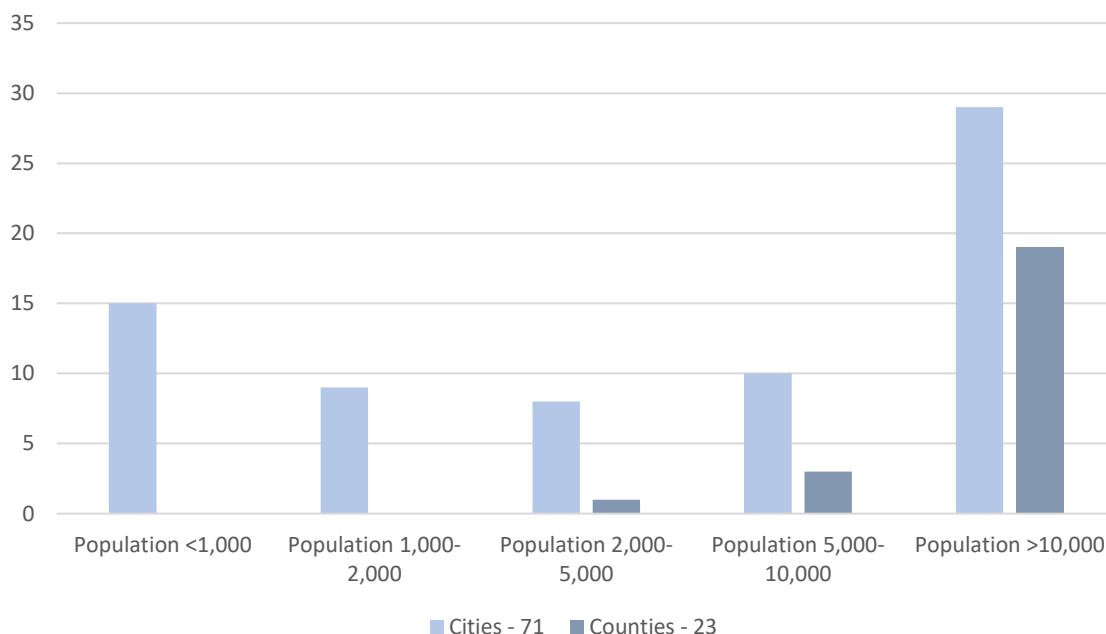
Survey responses were received from 23 counties, 71 cities, and 7 special districts on behalf of a city or county. Some respondents did not indicate their jurisdiction, but their responses are included in the analysis. A total of 116 surveys were collected and analyzed in this report. The project team met a goal to receive responses back from jurisdictions representing at least 75 percent of the state's overall population—based on a percentage established in the Colorado Water Plan. Figure 1 shows the geographic distribution of respondents.

Figure 1. Location of municipal and county respondents



The survey was most often completed by a single individual for a given jurisdiction. In most instances, the responses were completed by planners, while others were completed by public works staff, town managers, or administrators. Among the counties, 19 have countywide populations greater than 10,000; three have populations between 5,000 and 10,000; and one has a population of less than 5,000. There were 29 responding municipalities with populations greater than 10,000, 10 with populations between 5,000 and 10,000, eight with populations between 2,000 and 5,000, nine with populations between 1,000 and 2,000, and 15 with populations below 1,000 (Figure 2 and Appendix B).

Figure 2. Responding communities by type and size



A. How jurisdictions address water planning

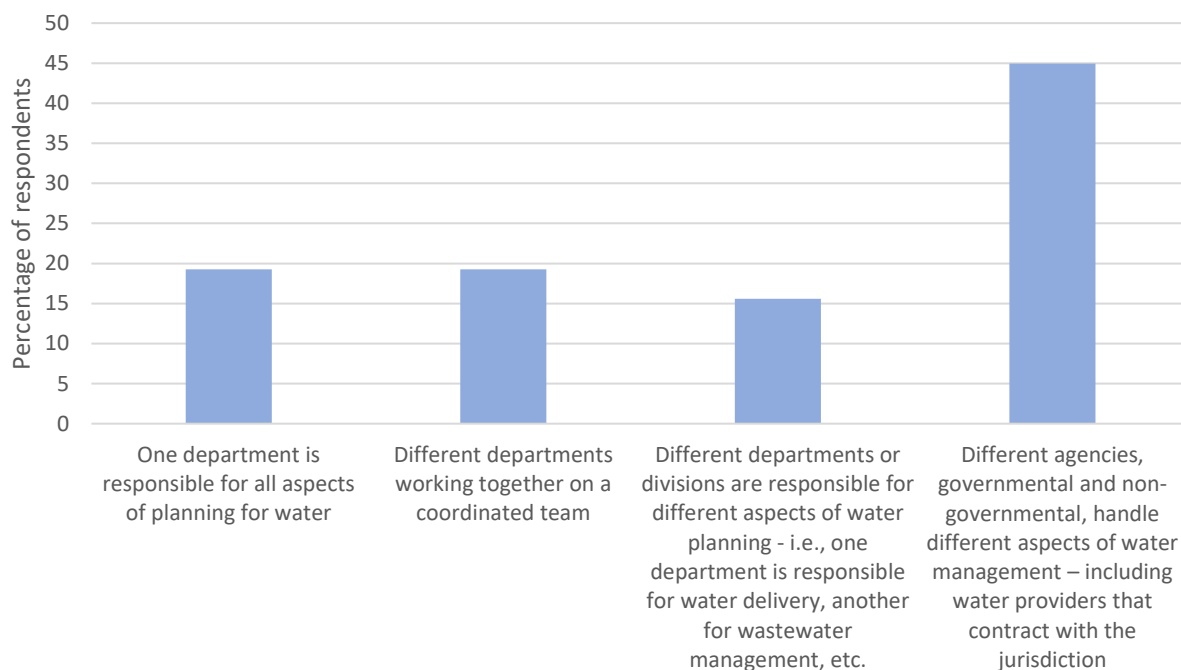
Respondents identified how water planning is managed within their jurisdictions—specifically whether one department, multiple departments, and/or other agencies are involved in the various aspects of planning for water. Among municipalities, the following results were reported:

1. One department responsible for all aspects of planning for water (25%)
2. Different departments work together on a coordinated team (22%)
3. Different departments are responsible for different aspects of planning for water (18%)
4. Various agencies (including water providers which contract with the jurisdiction) handle different aspect of water planning and management (20%)
5. Other (9%)

Responses from counties offered a different break-down:

1. One department responsible for all aspects of planning for water (3%)
2. Different departments work together on a coordinated team (10%)
3. Different departments are responsible for different aspects of planning for water (10%)
4. Various agencies (including water providers which contract with the jurisdiction) handle different aspect of water planning and management (43%)
5. Other (33%)

Figure 3. Responsibility for water planning and management—all respondents



Options 1 and 2 indicate higher levels of coordination between water agencies than 3 and 4, which are the more compartmentalized ways of managing different aspects of water. The respondents who indicated “other” wrote in descriptions which were then most closely characterized to match the first four options, i.e., a respondent wrote: “wastewater is its own special district, drinking water is provided by town utility” and we recoded this response as option 4. The following analysis compares those that indicated some level of integration or coordination between agencies (options 1 and 2, n=25), and those that operate independently or separately (options 3 and 4, n=31).

Special districts often play a primary role in this process, especially at the county level. They can also share the responsibility of addressing water-related planning and service provision with cities—i.e., special districts provide water delivery and wastewater management, while cities undertake stormwater and conservation efforts.

This information is significant as more jurisdictions and agencies move toward an emerging planning method called the *One Water* framework. This paradigm recognizes that all water within a watershed is interconnected—water sources, water quality, watershed health and function, water distribution, stormwater and wastewater management, and water reuse—and is most effectively managed using an integrated approach.

Nearly half of respondents stated that they are evolving toward an integrated planning framework, while a quarter of respondents said that they already have an inclusive framework for integrating water and land use planning. Some cities provide a full range of water planning and management, while others depend on outside utility services. County departments plan and manage many rural or unincorporated areas of the state where water is provided by individual wells and treated via individual septic systems.

B. Assessing the extent of integrated land and water planning

One of the central goals of this report is to provide a baseline accounting of water and land use planning practices in Colorado's local jurisdictions. This section examines the extent of current coordination between land use planning and water management and whether survey respondents thought current efforts are effective.

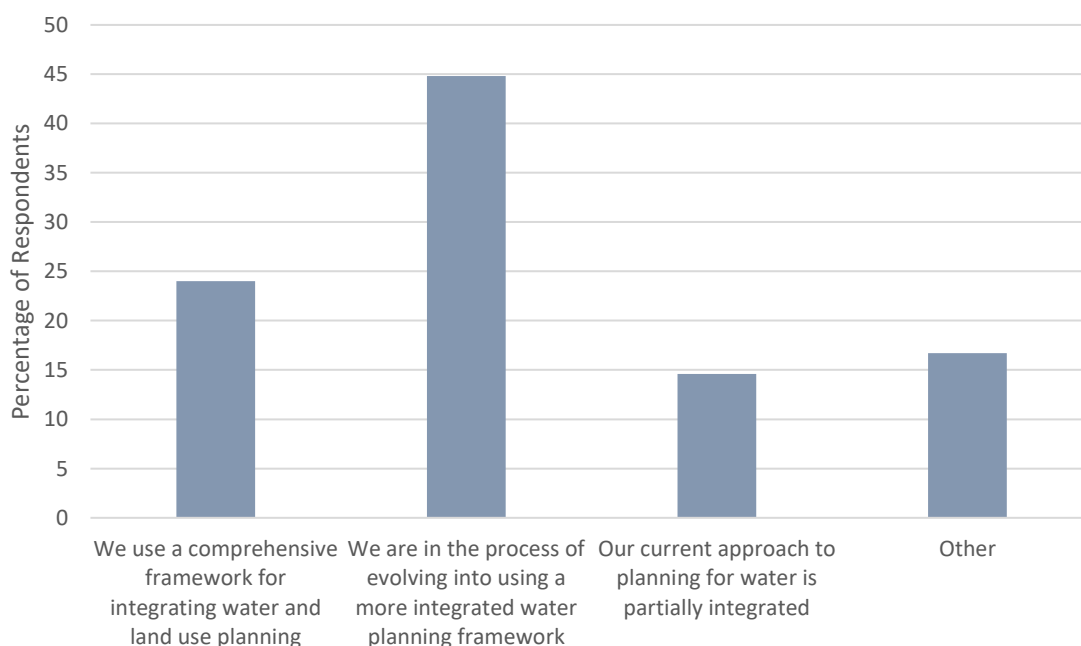
Respondents were asked to indicate how their jurisdiction plans for land use and water management (Figure 4). They were given three options and the responses are below:

1. We use a comprehensive framework for integrating water and land use planning (24%).
2. We are in the process of evolving into using a more integrated water planning framework (44.8%).
3. Our current approach to planning for water is partially integrated (14.6%)
4. Other (16.7%).

The respondents who indicated "other"—or who described their approaches—included references to assured water supply laws, comprehensive plan requirements, and water conservation through landscaping and irrigation design. One respondent indicated strong coordination between land and water resource planning, despite saying that they did not understand what the question was asking:

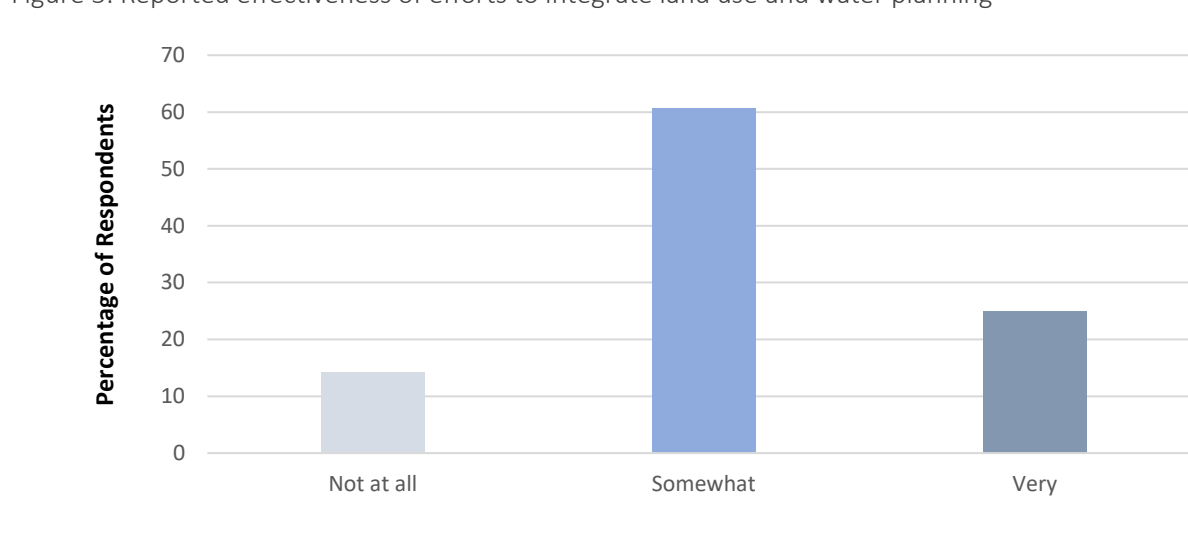
Don't understand what is meant by integrated. Department head that is responsible for water operations communicates on a regular basis with Town management and the water rights lawyer and water rights engineer to adjust operations and plans for each year to meet water rights and availability. In addition, discussion for any future supplies involves all the same parties as well as the Board of Selectmen (sic).

Figure 4. Approaches to coordinating land use planning and water management



The majority of respondents (60.7 percent) indicated that current efforts to integrate land use and water planning were only somewhat effective within their jurisdictions (Figure 5). Smaller proportions of respondents indicated that efforts were not at all effective (14.3 percent) or very effective (25 percent). It should be noted that there is a very low response rate on this question: only 56 of 120 respondents provided an answer.

Figure 5. Reported effectiveness of efforts to integrate land use and water planning



An analysis of variance reveals that there are statistically significant differences between these three groups of respondents in terms of their perceived effectiveness of strategies to promote integration:

- Water element within a comprehensive plan ($f= 14.8$, $p<0.01$)
- Land use component in a water supply plan ($f= 11.5$, $p<0.01$)
- Incorporation of water providers into planning process ($f=3.384$, $p=0.04$)
- Water and land use public awareness campaigns ($f=4.6$, $p=0.01$)

Respondents who worked in jurisdictions where efforts to integrate land use planning were very effective ranked each of these strategies as more effective than respondents in jurisdictions with somewhat or not at all effective efforts (Table 1). This finding is supported later by analysis that showed that respondents who were in jurisdictions that use a comprehensive framework for integrating water and land use planning reported that including a water element within a comprehensive plan, and a land use component in a water supply/conservation plan were the most effective (Figure 6). In other words, the respondents who worked in jurisdictions with the most integration between land use planning and water management placed high value on including a water element within a comprehensive plan, as well as including a land use component in a water supply/conservation plan.

Respondents in jurisdictions that were very effective at integrating land use and water planning thought that water and land use public campaigns were more effective than respondents in jurisdictions with less integration. While many respondents provided links and citations of their jurisdiction's comprehensive and water supply plans to demonstrate integration, there were no respondents who provided specific examples of water and land

use public campaigns. This may be an area for future investigation to assess whether and if public educational campaigns influence coordination.

Table 1. Reported effectiveness of integrated land use and water planning compared to the average reported effectiveness of strategies to promote integration (1= not at all effective, 3= very effective)

<i>Strategies to promote integration</i>	Jurisdictions where efforts are not at all effective	Jurisdictions where efforts are somewhat effective	Jurisdictions where efforts are very effective
<i>Water element within a comprehensive plan</i>	1.25	2.06	2.69
<i>Land use component in a water supply/ conservation plan</i>	1.5	1.93	2.61
<i>Water and land use public campaigns</i>	1.67	2.18	2.67
<i>Incorporation of water providers into planning process</i>	1	2	2.33

C. Water as an ecological and natural resource

A third of the respondents have some form of policy or action that addresses the impact of water use upon natural systems beyond human consumption and use. These range from physical interventions such as the use of green infrastructure, clean stormwater or buffer setbacks along waterways, or programmatic and policy efforts like collaborating with watershed coalitions. The majority are outlined in water management plans, land use codes, or within the environmental element in comprehensive plans. For many jurisdictions, the real or potential threat to water health is determined by the location and quality of water—and what kind of policies or actions are appropriate. For cities, the majority of water pollution reported was from *E. coli* and seasonal algae blooms due to contaminated and high-nutrient stormwater runoff. In counties, mine drainage, high levels of nitrates, and forever chemicals—such as perfluoro-alkoxy plastics (PFAs)—contributed to most of the water pollution reported. Both cities and counties reported legacy mine contamination contributing to ongoing pollution issues.

Additional questions focused on climate change and how departments are implementing climate adaptation and mitigation into policies, provisions, programs, and actions. Many of the respondents saw climate change as a new issue that could affect how population growth, consumption, and other current practices will impact water usage over the long-term. Short-term policies, provisions, and actions that are implemented are normally focused on education and public outreach. Counties were less concerned with population growth and more concerned with possible risk implications associated with climate change; noted policies and programs address the potential increase in fire risk and mitigation.

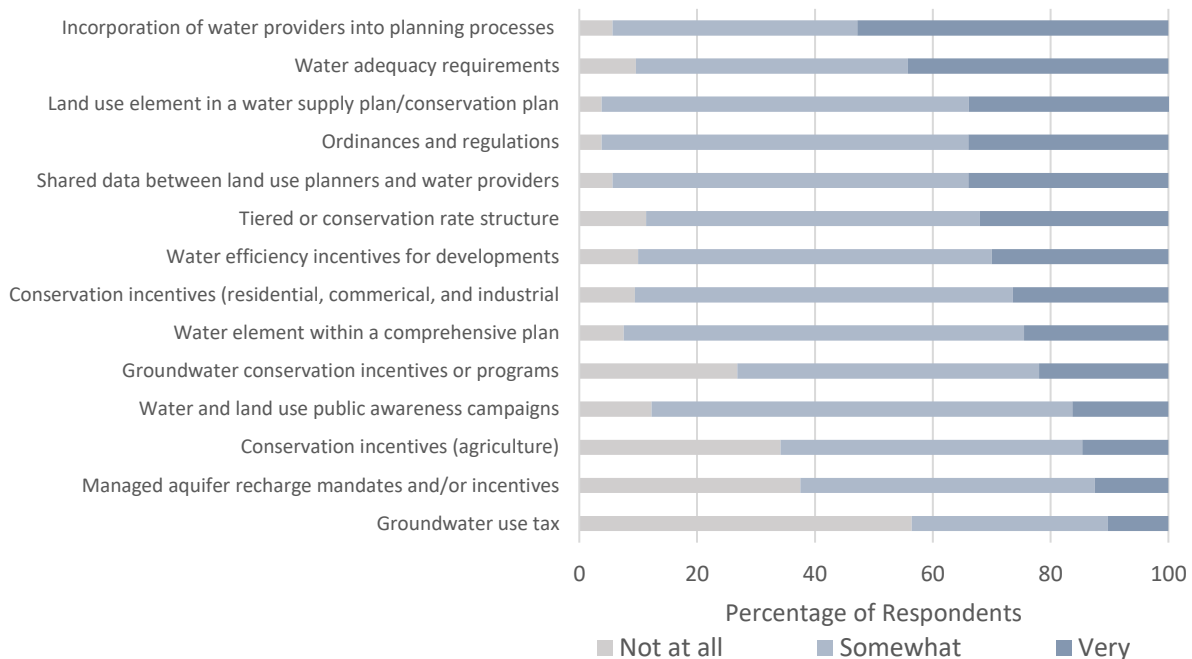
D. Approaches for coordinating land and water planning

This section examines strategies that can be used to better coordinate land use and water planning. The results show the importance of both the comprehensive plan and water supply plans to better integrate the two fields. The following analysis supports this conclusion and highlights how the respondents that worked in jurisdictions where land and water planning were

closely coordinated all strongly recommended using these planning documents to achieve better integration.

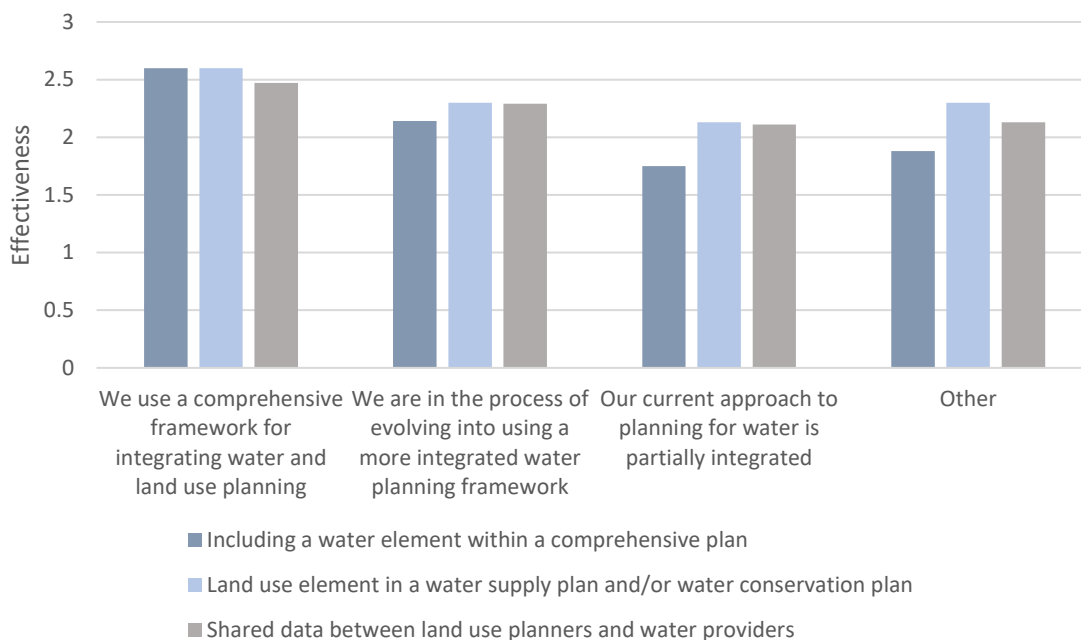
The most effective strategies for all respondents were incorporation of water providers into planning processes, water adequacy requirements, and shared data between land use planners and water providers (Figure 6). Very few respondents thought groundwater use taxes, managed aquifer recharge mandates, or conservation incentives would be effective. Support for shared data between land use planners and water providers was consistently high for all respondents.

Figure 6. Most effective strategies for promoting integrated land use and water planning



When respondents indicated that there was a comprehensive framework for integrating land use and planning within their jurisdiction, the most highly rated approaches were including a water element in a comprehensive plan ($\mu=2.6$) and including a land use component in a water supply/conservation plans ($\mu=2.6$) (1=Not at all, 3= Very effective). These average values are statistically significantly higher than for respondents who reported working in jurisdictions where less integration between land use planning and water management occurs ($f= 7.58$, $p<0.01$, $f=3.973$, $p=0.13$). Figure 7 visualizes these differences.

Figure 7. Comparative effectiveness of integration practices by local approach (1= not at all, 3= very effective)

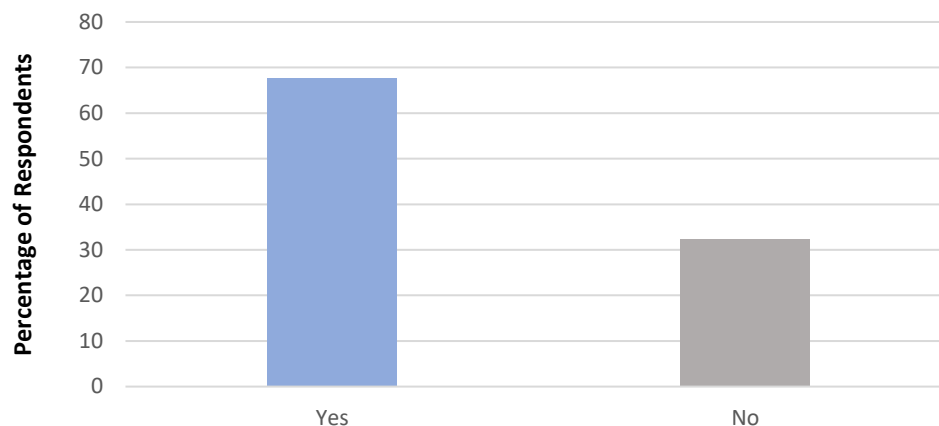


It makes sense to highlight this subset of respondents because they have achieved more effective integration. Guiding documents such as water supply plans and comprehensive plans are natural places to promote coordination of the two fields. Additionally, it is interesting to note that earlier in the survey these same respondents provided links to their jurisdictions' comprehensive plans and supply plans when asked to "please provide links to relevant plan documents or information that describe your jurisdiction's approach to water planning." This all supports that a city or county's comprehensive plan and the water agency's water supply plans are a natural point of connection between the fields. The next section explores the content of these plans in greater depth.

Incorporating water into plans, policies, or strategies

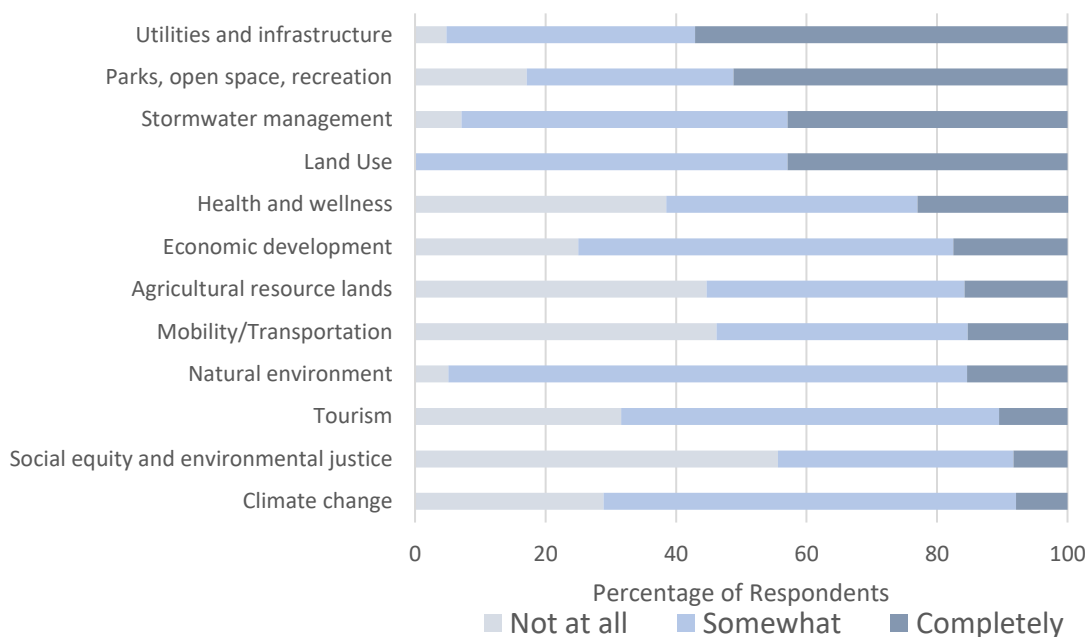
The survey provides additional details on how water resources can be incorporated into a jurisdiction's comprehensive plan, policy document, or strategy addressing water resources . While most respondents (67.6 percent) reported that their jurisdiction had a comprehensive plan, policy document, or strategy addressing water resources that addressed water resources to some degree, a sizable minority of respondents (32.4 percent) indicated that their jurisdiction did not have such a plan or document that addressed water resources (Figure 8).

Figure 8. Proportion of respondents indicating water considerations in a comprehensive plan, policy document, or strategy



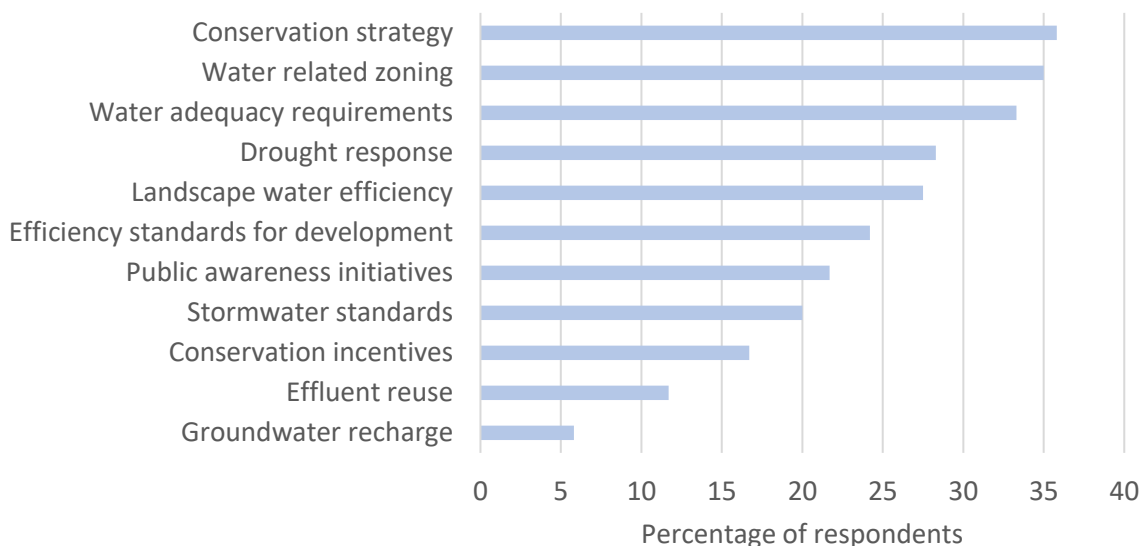
The respondents who indicated there was a comprehensive plan, policy document, or strategy addressing water resources also assessed the degree to which different sections of their plan(s) addressed water resources. The sections of the plan that most completely addressed water resources were utilities and infrastructure, parks/open space, and stormwater management (Figure 9). Interestingly, the only section of the comprehensive plan that always addressed water resources to some degree were the land use sections. However, the majority of respondents (57.1 percent) did not think that the land use section completely addressed water resources. This could indicate that additional research is needed to find out why current efforts of addressing water resources in the land use section are not widely perceived as effective.

Figure 9. The extent that sections of plans, policies, or strategies address water resources



The most commonly reported water resource considerations included in comprehensive plans are conservation strategies, water-related zoning (i.e., protecting riparian corridors), and water adequacy requirements. Groundwater recharge and effluent reuse were the least commonly reported water resource considerations included in comprehensive plans (Figure 10).

Figure 10. Water resource considerations included in a comprehensive plan, policy document, or strategy



The questionnaire also provides some insight into why the proportion of jurisdictions without a water component in their comprehensive plan (32 percent of respondents) is relatively high. Respondents were asked if there were any challenges that prevented their jurisdiction from addressing planning for water and a few themes emerged from the write-in responses:

Population Growth

Slightly over 70 percent of respondents stated that they address population growth while planning for water, while just under 30 percent stated that they do not. Of those who do address population growth, a little over half of respondents also consider the role water plays in community economic resiliency. These respondents also noted that they are integrating new practices into planning for water—such as reuse, renewable water supplies, and considerations for climate resiliency and sustainability.

Equity and Water Planning

Jurisdictions were split evenly in response to whether they addressed “social equity” in water planning or not. (Note “equity” refers to provision of services to lower-income households and communities of color in a manner that affords fair and just benefits.) Of those who said they do, a common response was that all customers receive the same level of service, with wording similar to “all residents are provided the same supply and quality of water.” However, this response speaks more to “equality” than “equity.” Equality is the concept that everyone can have access to a given service, while equity refers to the idea of ensuring that the distribution of resources is fair, especially for those in places where services or service provision may be deficient in some way. This also applies to addressing past inequities that have negatively impacted communities. For example, while water may be provided to lower income communities, the infrastructure could be leaking or contaminating the water.

More than 40 percent of the respondents who answered “yes” appear actually to be addressing equality rather than equity or fairness. Those respondents who did address equity discussed approaches for low-income households such as tiered rates and rebates. One jurisdiction mentioned that programs to replace lead pipes often occurred in communities of lesser means. Another explained that although they consider social equity, it does not always take precedence over other aspects of water service.

Aging Infrastructure

Nearly 80 percent of jurisdictions responded that they make an effort to address aging or deteriorating water infrastructure in their planning, yet responses were split evenly regarding whether these efforts were done in conjunction with other types of infrastructure such as utilities and compact land patterns. Many jurisdictions replied that they did not face barriers that prevented them from addressing aging and deteriorating water infrastructure, but for those who did, their greatest challenge was a lack of control over the water systems.

E. Challenges to coordinating land use and water planning

Half the respondents said they coordinate in some manner with neighboring jurisdictions, through informational roundtable discussions or coordination of services and planning. Most respondents said that they have no barriers to coordination, while others responded as having no barriers because coordination is not required. Three of the respondents cited relations between jurisdictions as their main challenge. Competing interests, outside control of coordination, and staffing resources were also listed as challenges.

Barriers to Interjurisdictional Coordination

In an open-ended response, respondents were asked to report on any barriers to interjurisdictional coordination. The most frequent responses were related to 1) staffing and resource constraints, 2) just starting to address water, 3) management silos, and 4) lack of information. A selection of write-in responses is included below.

1) Staffing and resource constraints

- *“small district with 1/2-time one person staff”*
- *“time, staff, money, resources”*
- *“Town’s small size, small budget; staff consists of one part-time town clerk.”*

2) Just starting to address water

- *“Our plan is very outdated; updating of plans begins in 2020 and will address planning for water.”*
- *“We are in the process of updating now.”*
- *“Just starting to take action on this issue.”*

3) Management siloes

- *“There are multiple water providers that make planning for water more difficult.”*
- *“lack of control; special districts are independent from City”*
- *“no local control over water”*

4) Lack of information

- *“Understanding the complete picture of how much water is available and where. Water rights, generally.”*

- *“Lack of understanding regarding water resource availability and previous lack of interdepartmental coordination.”*

Challenges in Integrating Land Use and Water Planning

In an open-ended response, respondents were asked to report on any challenges in integrating land use and water planning. The most frequent responses were related to 1) lack of time and resources, 2) agency siloes, and 3) growth and development pressures. A selection of write-in responses is included below.

1) Lack of Time and Resources

- *“Staffing resources to implement water efficiency during construction of residential and/or commercial projects.”*
- *“Ability to coordinate between the different jurisdictions because of quantity of special districts and staff time.”*
- *“It is not of central importance for any one person or department position. It would take a coordinated effort by multiple people, whose time is already spread thin.”*
- *“Lack of communication and Colorado water rights laws.”*
- *“No barriers other than change of habit to coordinate and communicate better between departments.”*
- *“Lack of capacity—we're really small.”*
- *“Personnel that are willing to include the other departments.”*

2) Management Siloes

- *“Typical government department operations (silos).”*
- *“Water providers are generally special districts which have no land use authority. While we coordinate extensively, the objectives can be at odds.”*
- *“They are entirely independent agencies.”*
- *“Processes are very different and there is not a strong understanding of the other side.”*
- *“The number of water providers in the County. There are 49 Water and Sanitation Districts in the County and this does not include all private water providers. It is a challenge to coordinate with all of them.”*

3) Growth and Development Pressures

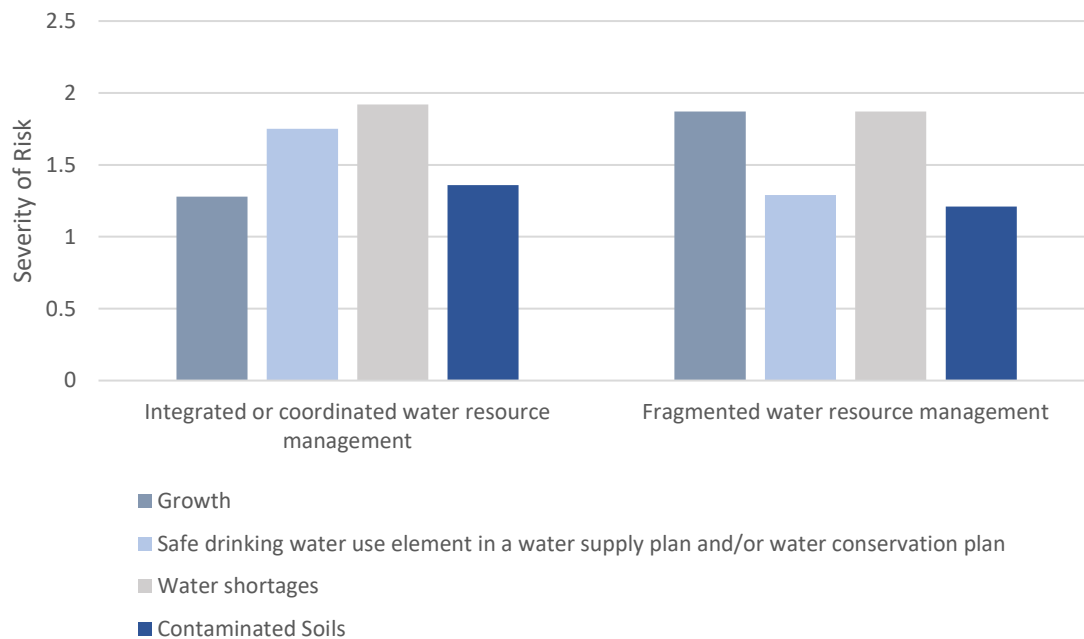
- *“Politics and the water districts [sic] unwillingness to realize that the climate is changing, regardless of the cause.”*
- *“Obtaining and developing water rights to serve new development; limited availability of developable land to accommodate growth within existing water service areas.”*
- *“Seems as though the revenue for land development can often overshadow patient planning.”*

The first challenge related to limitations on time and staffing is indicative of the need to dedicate resources to coordination. If jurisdictions want to improve coordination, these resources will need to be prioritized. The second common challenge is related to the fragmentation of water management across many agencies and jurisdictions.

The degree of coordination and integration across departments or among agencies explains some differences in the respondents' perceptions of future risks related to water and the environment. Interestingly, those respondents that indicated less integration between land and water planning reported statistically significantly higher concerns for the impacts of future growth than respondents who worked in jurisdictions with greater integration in planning processes ($t = -$

3.13, $p < 0.05$) (Figure 11). This indicates that improved integration is associated with higher confidence in a jurisdiction's ability to meet the future demands of urban growth. However, in jurisdictions that are more closely integrated, respondents indicated more severe risks related to safe drinking water ($t = 2.29$, $p < 0.01$), water shortages ($t = 0.23$, $p = 0.05$), and contaminated soils ($t = 0.932$, $p = 0.028$). This could be due to an increased awareness of these interrelated challenges that results from a broader management perspective.

Figure 11. Fragmentation in water agencies and concerns for future risks (1= not too serious, 3= extremely serious)



F. Sustainability

When asked if jurisdictions had climate action plans, 85 percent of respondents stated that they did not. Moreover, they had no plans to create one in the next five years, or to initiate other programs or actions to reduce greenhouse gas emissions. Financial resources for implementation, community outreach, and training for staff and decision-makers were rated as very important to aiding in the development or implementation of sustainability projects and programs. Resources pertaining to the completion of greenhouse gas inventories and improvement of energy efficiency were rated as somewhat important.

When asked about current environmental risks, most respondents stated that the listed issues were not serious. Long-term drought was viewed as a serious issue, but overall, most jurisdictions did not view the risks being extremely serious. However, these risks were viewed as being somewhat or very influential on future sustainability. This indicates that while issues may not be viewed as immediate threats, jurisdictions predict they will become more pressing in the future and should be incorporated into their planning efforts.

The main challenges identified to addressing sustainability and implementing actions were lack of staff and limited financial resources; others include lack of political interest, lack of knowledge, and limited opportunities for collaboration on these issues.

When asked about tools that jurisdictions employ to improve sustainability, almost half of the respondents stated that they sometimes use a website that offers tools and resources for sustainability and climate change, while a quarter of respondents answered that they frequently use such a site.

Limitations

The conclusions derived from this analysis must be balanced with a few limitations of this study. All survey research has several potential sources of error and bias. The first is sample bias, which is avoided by achieving a high response rate so that all members of the target population have an equal probability of being sampled. This research obtained a response rate from jurisdictions representing more than 75 percent of the state's population, which minimizes this bias. The second common bias is non-response bias, where respondents who choose not to take the survey are fundamentally different than those who take the survey. This bias is minimized again by a high response rate, but it should be noted that many smaller and rural communities did not respond to the questionnaire (Figure 1). Therefore, the insights and perceptions of these jurisdictions are not included in this report. Third, there is response bias, where respondents provide answers that they think a researcher wants to hear or answers that may not be objectively true. For example, there are many reasons why a manager of a utility or agency is unlikely to report negative findings about their agency. This third bias may be present in the results. Finally, the survey had multiple sections and often response rates to questions later in the survey were much lower than questions earlier in the survey.

Conclusions and Recommendations

This study can be used as an assessment of whether current efforts to integrate land use and water planning in Colorado have been effective. Based on the questionnaire findings presented in Figure 4, most jurisdictions are either using an inclusive framework for integrating water and land use planning or evolving into using a more integrated water planning framework. This seems to be an early indicator that integration is improving, but not equally across the state nor to the extent that respondents think is needed. For example, only 25 percent of respondents think that current efforts to integrate land use planning are very effective (Figure 5). The majority of respondents were somewhere in between, reporting that efforts are somewhat effective.

There are specific challenges to better integration that should be targeted in order improve coordination efforts across the state. The first challenge is related to staffing, funding, and time. These are always challenging in agencies, as competition for scarce financial and human resources requires compromise and can result in certain initiatives or efforts never coming to fruition. As one respondent indicated, the "staff consists of one part-time town clerk." It is not possible for this jurisdiction to conduct integrated land and water planning due to this limitation. The good news is this challenge could quickly be resolved if funds and staffing are available. When they are not, this will continue to be a persistent challenge for practitioners.

The second challenge to better integration is the fragmentation of responsibilities for planning and managing water. The fragmentation within jurisdictions and water agencies is a widely recognized challenge across the U.S. for both more efficient water management and for better

integration of land use and water planning. This survey reflects this challenge to an extent, as respondents in fragmented jurisdictions were more concerned about future water supplies and urban growth than respondents in less fragmented jurisdictions (Figure 11). Not only does this fragmentation challenge water management, it also contributes to the separation of land and water planning. As one respondent noted, “There are 49 Water and Sanitation Districts in the County and this does not include all private water providers; it is a challenge to coordinate with all of them.” Resolving this challenge is beyond the scope of this study, but there are several well-known strategies and approaches to achieve integrated land use and water management.

Finally, there are challenges related to education, awareness, development pressures, political will, and agency goals that are in opposition to each other. There are many intrinsic barriers to managing land and water that must be overcome. Many challenges are unlikely to be resolved in the near term, i.e., development and growth pressures, so it is practical to focus on the most effective strategies to overcome at least some of the challenges.

The strategies that appear to be most effective at overcoming these challenges appear to be incorporating a water element in comprehensive plans and a land use component in water supply plans. While these strategies were not necessarily perceived as the most effective by all respondents (Figure 6), they were the most favored by respondents in jurisdictions that have already achieved effective levels of integration (Figure 7 and Table 1). These plans are updated on regular intervals and updates are perfect opportunities to address the land and water connections if they are not currently integrated in the plans. Current plans can also be improved and there is a need to better understand what makes an effective plan component, as very few respondents indicated that incorporating a land or water element fully addressed the issue (Figure 9). As with all plans and policies, wording, incentives, and implementation all influence effectiveness. This suggests the benefit of additional case studies and best practices to guide implementation and refinement of including a water resource component in comprehensive plans and a land use component in water supply plans.

Additionally, there are a few strategies that are favored by all respondents that could be implemented right away. The first are shared data sets, which could include future projections of water supplies, population growth estimates, and demand estimates. Shared datasets may also help improve awareness and education about the respective agencies and fields. This strategy was widely perceived to be effective for improving coordination. The strategy that was perceived to be most effective, incorporating water providers into planning processes, is a little vague, but could be interpreted as any amount of involvement during long-term planning, design and development reviews, zoning and ordinance drafting, or simply networking and shared trainings. Each of these strategies can be implemented quickly if staff and resources are available.

Finally, this study can be used as a baseline assessment to evaluate whether future efforts to promote integration between land and water planning are effective. This questionnaire could be revised and re-sent to jurisdictions at regular intervals to track Colorado’s efforts to better integrate these fields. Ideally these efforts will result in more resilient communities that can balance growth and natural resource constraints, while maintaining safe and reliable water resources.

Appendix A—Survey Questions

A. HOW IS WATER PLANNING APPROACHED IN YOUR JURISDICTION?

Note: This survey addresses planning for both water and wastewater. Wastewater is defined as water that has been affected by human use (i.e., domestic uses such as showers or toilets, industrial or commercial uses, or storm runoff) and requires treatment before being returned to natural environments. When planning for water, it is important to address water sources, water quality, water quantity, water treatment, and water conservation.

A.1 Which of the following best describes how water planning occurs in your jurisdiction?

- One department is responsible for all aspects of planning for water
- Different departments working together on a coordinated team
- Different departments or divisions are responsible for different aspects of water planning, i.e., one department is responsible for water delivery, another for wastewater management, etc.
- Different agencies, governmental and non-governmental, handle different aspects of water management—including water providers that contract with jurisdictions
- Other

A.1.a If your answer to the previous questions was "Different agencies, governmental and non-governmental, handle different aspects of water management—including water providers that contract with the jurisdiction," please select all that may apply:

- Formal agency/departmental memorandum of agreement (MOU)
- Information agency/departmental collaboration
- Staff and/or financial resources allocated to water and land use integration
- No staff or financial resources allocation to water and land use integration
- Specific programs necessitate consideration nor approvals from other water and planning agencies and departments
- No specific collaborative efforts, but staff maintain familiarity with overlapping issues

A.2 Which of the following best describes your jurisdiction's approach to planning for water?

- We use a comprehensive framework for integrating water and land use planning
- We are in the process of evolving into using a more integrated water planning framework
- Our current approach to planning for water is partially integrated (if so, please explain in the text box below)
- Other

A.2.a Please provide links to relevant plan documents or information that describe your jurisdiction's approach to water planning. (*open response*)

B. WATER SUPPLY, WATER QUALITY, AND MANAGEMENT

Note: A number of survey questions refer to "policies," "provisions," "programs," and "actions."

"Policy" refers to a formal statement adopted by a community's officials to direct decisions, actions, and approval processes. Policies are typically included in planning documents, including comprehensive plans.

“*Provisions*” refers to guidance or recommendations, such as zoning, established by a community to achieve certain goals and objectives. Provisions can include guidelines and/or recommendations that are more flexibly applied than policies.

“*Programs*” are more detailed efforts for addressing water planning. They may be developed and enacted separately from a comprehensive plan, or they may be a tool to implement policies or provisions in a plan.

“*Actions*” include steps and projects for implementing policies and/or recommendations. Actions may or may not be included in a comprehensive plan, however, they play an important role in achieving goals and objectives for water planning.

B.1 How does your jurisdiction address water supply, quality, and management? (*Yes/No, Cite or describe, department or office with primary responsibility*)

- Policies
- Provisions
- Programs
- Actions

B.2 How is wastewater management addressed in your jurisdiction—including managing effluent reuse? (*Yes/No, Cite or describe, department or office with primary responsibility*)

- Policies
- Provisions
- Programs
- Actions

B.3 How does your jurisdiction address stormwater management? (*Yes/No, Cite or describe, department or office with primary responsibility*)

- Policies
- Provisions
- Programs
- Actions

B.4 How does your jurisdiction address flood prevention and management? (*Yes/No, Cite or describe, department or office with primary responsibility*)

- Policies
- Provisions
- Programs
- Actions

B.5 Does your jurisdiction have provisions or programs to address *low impact development* techniques?

Note: *Low impact development* techniques are practices that mimic more natural processes or systems for stormwater management, including infiltration and evapotranspiration, to protect water quality (e.g., rain gardens, bioswales, or other Best Management Practices).

- Yes
- No

B.5.a If no, are there any barriers preventing your jurisdiction from addressing low impact development through provisions or programs? (*open response*)

B.6 What entity provides water for your jurisdiction?

- One water provider in one municipal jurisdiction
- One water provider that serves neighboring jurisdictions
- Multiple water providers in one municipal jurisdiction
- Entities like Northern Water and Denver Water, who provide water wholesale to multiple retailers

C. WATER: ECOLOGICAL AND NATURAL RESOURCE

C.1 Are there areas within your jurisdiction where water is polluted or contaminated and is a danger—or potential danger—to humans and/or wildlife?

- Yes
- No

C.2 How does your jurisdiction address maintenance and restoration of the ecological function of watersheds and bodies of water? (Including, but not limited to, water sources, rivers, creeks, streams, lakes, ponds, wetlands, flood plains, and deltas.) *(Yes/No, Cite or describe, department or office with primary responsibility)*

- Policies
- Provisions
- Programs
- Actions

C.3 Groundwater and Aquifers

- Does your jurisdiction—or water provider—have standards for monitoring groundwater withdrawals? *Yes/No*
- Does your jurisdiction—or water provider—employ any form for managing aquifer recharge? *Yes/No*
- If yes, is groundwater also managed in order to maintain minimum base flows for surface water? *Yes/No*

C.4 Given that changes in climate have the potential to impact both water quality and water quantity, does your jurisdiction address climate impacts on water availability and quality—for example, climate mitigation and adaptation? *(Yes/No, Cite or describe, department or office with primary responsibility)*

- Policies
- Provisions
- Programs
- Actions

D. INTEGRATING PLANNING FOR WATER WITH LOCAL PLANNING AND LAND USE

Integrating land use planning with water planning can impact the ability of water users and water suppliers to protect and sustainably manage water quality and quantity. This can be relevant in locations where access to water is more limited and where there are competing demands for agricultural, commercial, and domestic uses of water. Moreover, integrated land use and water planning can help to ensure the health of watersheds, habitats, and human consumption.

D.1 Does your jurisdiction's comprehensive plan, and/or other policy and planning documents, and/or other adopted programs or action strategies address planning for water?

- Yes
- No

D.1.a If your jurisdiction addresses water, please indicate to what extent sections of your plan(s) address water. (*Not at all/Somewhat/Completely*)

- Natural environment
- Land use and/or development pattern
- Utilities and infrastructure
- Mobility and/or transportation
- Stormwater management
- Health and wellness
- Parks, open space, recreation
- Economic development
- Social equity and environmental justice
- Tourism
- Climate change and/or hazards
- Agricultural and resource lands
- Other—please explain

D.1.b Are there barriers that prevent your jurisdiction from addressing planning for water?

- Yes
- No

D.2 Please indicate which of the following are addressed in your jurisdiction's plan(s)—either in your comprehensive plan or more broadly in other related strategies. (*Check all that are relevant*)

- Water adequacy requirements
- Water conservation strategy
- Drought response and/or contingency strategy
- Water efficiency standards for landscape
- Water efficiency standards for stormwater management
- Water efficiency standards for buildings and development
- Water related directives for zoning (including, for example, any requirements for limiting development in a designated floodplain)
- Groundwater recharge or conservation (including, where appropriate, aquifer recharge)
- Conservation incentives (for residential and/or commercial use; for resource uses, such as agriculture)
- Effluent reuse
- Public awareness initiatives
- Other

D.3 Do your jurisdiction's efforts for planning for water address population growth and future demands?

- Yes
- No

D.3.a If "yes" to the previous question, is the role water plays in the jurisdiction's economy also factored?

- Yes

- No

D.3.b If "yes" to the previous question, is it built upon today's paradigm standards or are you looking at water differently than you have historically?

- Yes
- No

D.3.c If "yes" to the previous question, what department or office in your jurisdiction (or other agency) has primary responsibility? (*open response*)

D.3.d Are there barriers that prevent your jurisdiction from addressing population growth and future demand?

- Yes
- No

D.4 Do your jurisdiction's efforts address social equity in water service—that is, ensuring fair distribution of clean and adequate water?

- Yes
- No

D.4.a Are there barriers that prevent your jurisdiction from addressing social equity in water service?

- Yes
- No

D.5 Do your jurisdiction's efforts address deteriorated or aging infrastructure (i.e., pipes, wells, treatment plans for water and wastewater, roads) for water?

- Yes
- No

D.5.a If "yes" to the previous question, are there also efforts to integrate planning for water infrastructure with other types of infrastructure (such as energy utilities and compact land use patterns)?

- Yes
- No

D.5.b If "yes" to the previous question, what department or office in your jurisdiction (or other agency) has primary responsibility? (*open response*)

D.6 Are there barriers that prevent your jurisdiction from addressing deteriorated or aging infrastructure?

- Yes
- No

D.7 Is planning for the use of water serving the residents of your jurisdiction coordinated with those of adjacent or nearby jurisdictions?

- Yes
- No

D.7.a Are there barriers that prevent your jurisdiction from coordinating with adjacent or nearby jurisdictions?

- Yes
- No

E. INTEGRATING LAND USE AND WATER PLANNING | YOUR THOUGHTS

Note: The previous section focused primarily on planning for water in local jurisdictions. The questions in this section now ask for your perspective on the overall effectiveness of planning for water within Colorado (the previous sections were focused primarily on information). All answers provided in this section will be kept confidential; respondents will not be identified in the project report.

E.1 Relating to planning for water in your jurisdiction, how effective are efforts at various levels of government to integrate land-use and water planning? Are you aware of any efforts that exist? If yes, how effective overall (1-5; 1 being the least effective)

- State
- Regional
- Local
- Special Service Districts, including Water Districts

E.2 From your perspective, how effective are each of the following means of promoting integrated land use and water planning? (*Not at all/Somewhat/Very*)

- Water element within a comprehensive plan
- Land use element in a water supply plan and/or water conservation plan (including a drought response strategy)
- Ordinances and regulations—buildings, landscape, stormwater
- Groundwater use tax
- Groundwater conservation incentives or programs
- Managed aquifer recharge mandates and/or incentives
- Tiered or conservation rate structure
- Conservation incentives—for residential, commercial and industrial customers
- Conservation incentives for agriculture
- Water efficiency incentives or developments
- Water and land use public awareness campaigns
- Incorporation of water providers into planning process
- Other

E.3.a How effective overall are the jurisdictions and services districts in your region of Colorado in promoting integrating land-use planning with water planning?

- Not at all
- Somewhat
- Very
- I don't know

E.3.b How effective overall are the jurisdictions and services districts in your region of Colorado in addressing planning for drought and its impact on water planning?

- Not at all
- Somewhat
- Very

- I don't know

E.4 Overall, how effective is your jurisdiction currently in promoting integrating land-use planning with water planning?

- Not at all
- Somewhat
- Very
- I don't know

E.5 Thinking about planning for water and water management for your jurisdiction, to what extent would you support or oppose... (*strongly support/somewhat support/neither support nor oppose/somewhat oppose/strongly oppose*)

- Local jurisdiction staff, such as yourself, working with the public to make decisions?
- Investing in new technology to deliver water using 100% renewable energy?
- Collecting and storing rainwater to irrigate landscaping?
- Treating wastewater to meet water quality standards for reuse?
- Using only current water sources in your area—without importing or getting new supplies?
- Establishing a target for everyone in your jurisdiction to reduce overall water usage by a certain percentage within a given time frame?

E.6 In your jurisdiction, how much does planning for water (water resource management) need to adapt to ensure...

- All residents have safe and adequate water for living purposes?
 - Not at all
 - Somewhat
 - Quite a bit
- There is sufficient water for a resilient economy?
 - Not at all
 - Somewhat
 - Quite a bit
- There is adequate water for environmental systems?
 - Not at all
 - Somewhat
 - Quite a bit

E.7 What barriers, if any, challenge coordination between water and land use departments in your jurisdiction? (*open response*)

F. SUSTAINABILITY

F.I.a In addition to planning for water, what other areas of sustainability does your community currently address? (This can include plans, policies, programs, projects, or other actions.)

- Environmental restoration or repair
- Hazard mitigation
- Energy efficiency
- Renewable energy and alternative energy
- Air quality
- Greenhouse gas emissions
- Health and the built environment
- Access to healthy food

- Waste/recycling/composting
- Mobility and accessibility I: complete streets, green streets, living streets, context sensitive design
- Mobility and accessibility II: pedestrian, bicycle, transit
- Housing affordability
- Green building standards
- Economic resiliency
- Environmental justice and social equity

F.I.b In the coming five years, please tell us which sustainability issues, in addition to water, your community intends to address through projects and/or programs?

- Environmental restoration or repair
- Hazard mitigation
- Energy efficiency
- Renewable energy and alternative energy
- Air quality
- Greenhouse gas emissions
- Health and the built environment
- Access to healthy food
- Waste/recycling/composting
- Mobility and accessibility I: complete streets, green streets, living streets, context sensitive design
- Mobility and accessibility II: pedestrian, bicycle, transit
- Housing affordability
- Green building standards
- Economic resiliency
- Environmental justice and social equity

F.II Which of the following describe how your jurisdiction addresses sustainability?

- Sustainability element in the comprehensive plan
- Sustainability provisions incorporated within the comprehensive plan
- Separate stand-alone sustainability plan or strategy independent of the comprehensive plan
- Sustainability program(s) independent of the plan documents
- Individual sustainability project(s)

F.III Does your community have a climate action plan?

- Yes
- No

F.III.a.1 Does it address mitigation (that is, taking action to reduce greenhouse gas emissions)?

- Yes
- No

F.III.a.2 Does it address adaptation (to localized changes in climate)?

- Yes
- No

F.III.b.1 If your community does not have a climate action plan, are there other programs or actions being taken to reduce greenhouse gas emissions?

- Yes

- No

F.III.b.2 Is your community planning on developing a climate action plan in the next five years?

- Yes
- No

F.IV Does your jurisdiction have dedicated staff devoted to sustainability projects, programs, and initiatives?

Note: Dedicated staff is defined as spending 50 percent or more of their time on sustainability work. Examples could include a Sustainability Coordinator, Sustainability Manager, or Sustainability Officer.

- Yes
- No

F.IV.a If your jurisdiction has dedicated staff working on sustainability, are the position(s) funded through any of the following mechanisms: (Click on all that apply)

- General fund budget cycle
- State, national, or foundational grants
- Sustainability tax or assessment
- Other (please explain)

F.IV.b If your jurisdiction does not have dedicated staffing, does it do any of the following to address sustainability practices?

- Contract with consulting firms
- Staff sharing (with other jurisdictions or the state)

F.V What are the biggest challenges for your community in terms of implementing projects and programs related to sustainability? Please select all that apply.

- Lack of staff capacity
- Lack of staff knowledge/training on the subject matter
- Limited financial resources to devote to the issue
- Limited community interest in the issue
- Limited partners in the community with whom we can collaborate
- Limited political interest in the subject
- Open ended optional responses

F.VI Indicate what resources would be most helpful for your jurisdiction for developing or implementing your sustainability projects and programs. (*Not important/Somewhat important/Very important*)

- Financial resources to support program implementation
- Financial resources to support outreach/education to the community
- Training for municipal staff on sustainability implementation
- Training for decision-makers (i.e., elected officials, department heads) on sustainability
- Support completing greenhouse gas inventories
- Toolkits on implementing energy efficiency programs
- Toolkits on writing grants for sustainability
- Toolkits on pursuing renewable energy projects
- Resources on building public-private-partnerships

F.VII Would you regularly use a website that provided access to various toolkits, resources, and examples of sustainability and climate action projects happening in other Colorado communities and across the country?

- Frequently (once a week or more)
- Somewhat frequency (once a month)
- Sometimes
- Not at all
- Open ended optional response

F.VIII How serious are the risks posed by each of the following items to your municipality and/or county? (*Not too serious/Somewhat serious/Extremely serious*)

- Long-term drought
- Climate change (including climate variability)
- Growth
- Contaminated soils
- Air pollution
- Safe drinking water
- Water pollution
- Water shortages
- Floods
- Extreme heat
- Severe storms

F.IX How will each of the following items influence future water sustainability in your municipality? (*Not at all/Somewhat/Very*)

- Long-term drought
- Climate variability
- Population growth
- Infrastructure to store, treat, and deliver water
- Municipal land-use planning, zoning
- Municipal water-resource planning or management
- Inadequate access to water sources
- Indoor water use (to flush toilets, wash dishes, etc.)
- Outdoor water use (to maintain landscaping)
- Water used for household or residential purposes
- Water used for agriculture purposes
- Water used for industrial or other business-related purposes

Appendix B—List of Respondents

COUNTIES BY POPULATION

10,000+

Adams	Eagle	Park— <i>response by County Planning Department; Indian Mountain Metro District</i>
Arapahoe	El Paso	Pueblo
Boulder	Fremont	Routt
Broomfield— <i>see listing under CITIES</i>	Grand	Summit— <i>response by Summit County Planning Department; response by Dillon Valley District</i>
Denver— <i>see listing under CITIES</i>	Gunnison	Weld
Delta	Jefferson	Yuma
Douglas— <i>response by Rural Authority of Douglas County; response by Roxborough Water & Sanitation District</i>	La Plata— <i>response by County Planning Department; response by Durango West Metro District 2</i>	
	Larimer	
	Montezuma	

Note: The City and County of Broomfield and the City and County of Denver are listed in both categories, i.e., as counties and as cities, but are only counted once among the responses.

5,000+

Crowley	Gilpin	San Miguel
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>5,000

Kiowa
San Juan— <i>response provided by Town of Silverton</i>

CITIES BY POPULATION

10,000+

Arvada	Durango	Louisville
Aurora	Englewood	Loveland
Boulder	Federal Heights	Montrose
Broomfield	Fort Collins	Northglenn
Canon City	Fountain	Steamboat Springs
Centennial	Fruita	Sterling
Commerce City	Greeley	Superior
Denver— <i>response by Department of Public Health and Environment; response by Denver Water</i>	Lakewood	Westminster
	Littleton	Wheat Ridge
	Lone Tree	Windsor
	Longmont	

5,000+

Cortez	Gypsum	Vail
Edgewater	Lamar	Woodland Park
Estes Park	Monument	
Frederick	Trinidad	

2,000+

Breckenridge
Glendale
Manitou Springs

Severance
Silt
Silverthorne

Snowmass Village
Telluride

1,000+

Crested Butte—*response
from city; response by
Skyland Metro District*
Cripple Creek

Elizabeth
Georgetown
Idaho Springs
Kersey

Kremmling
Nederland
Pagosa Springs

Under 1,000

Blanca
Brookside
Creede
Dillon
Foxfield

Haswell
Ignacio
Morrison
Pitkin
Rico

Ridgway
Rockvale
Silverton
Westcliffe
Williamsburg

Special Districts

(are not addressed in a separate category, but under the county or city they serve)

Denver Water
Dillon Valley District
Durango West Metro
District 2

Indian Mountain Metro
District
Roxborough Water &
Sanitation District

Rural Authority of Douglas
County
Skyland Metro District

