Toward a Regional Drinking Water Plan for the Pioneer Valley
January 2023

Acknowledgements

PVPC is grateful for funding provided by the District Local Technical Assistance (DLTA) Program that made this project possible. PVPC also greatly appreciates the small and medium size drinking water system operators who took time to help further define what elements within a regional plan might be most useful to them in their work. Small and medium size drinking water system operators who attended the two roundtables this year were:

- Amy Rusiecki, Amherst
- Bob Daley and Tommy Bean, Chester
- Greg Nuttelman and Clay Weglarz, Easthampton
- Randy Brown, Southwick
- Jeffrey Auer and Michael O'Connor, West Springfield
- Bryan Osetek, Williamsburg

Overview and objectives

In earlier work (FY21) PVPC developed a detailed table of contents for a regional drinking water plan informed by a review of local municipal plans (both Open Space and Recreation and Municipal Vulnerability Preparedness plans) for mention of drinking water issues, interviews and a survey of drinking water operators in the region, and recent state documents related to drinking water. The draft plan as conceived and described in Attachment A includes 10 chapters:

Chapter 1: Nature of drinking water supply in the Pioneer Valley region
Overview that characterizes sources of supply, as well as operation and management throughout region

Chapter 2: A pathway for drinking water supply planning
Identify future for which we are planning, including projected demographic and climate changes that can impact supply and demand

Chapter 3: Community engagement

Explore greatest needs for communication and identify best methods for engagement and potential for regional collaboration

Chapter 4: Water system infrastructure

Examine infrastructure needs and highlight those that seem most important from regional standpoint

Chapter 5: Financing and funding

Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers

Chapter 6: Water rates and affordability

Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity.

Chapter 7: Disruptions, adaptation, and resilience

Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning to help keep disruptions from becoming disasters

Chapter 8: Drinking water supply protection

Evaluate controls for protection, flag needed improvements, and highlight opportunities to advance drinking water protection

Chapter 9: A workforce for water supply

Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region

Chapter 10: Water for the future in the Pioneer Valley

Highlight greatest issues and frame discussion and strategies around addressing future water needs

Note: Chapters with content that apply only to public supply are shown in *italics*. Otherwise, chapter content applies to both public supply and private wells.

Because the draft table of contents translates to what seems an overly ambitious scope of work, PVPC sought this year (FY22) to identify what plan elements are most important and what might be missing from within or among the proposed chapter elements. PVPC also gave some thought to what might translate best to regional action, how plan elements might be phased, and who might be best suited to developing elements.

PVPC hosted two roundtable meetings with municipal drinking water operators as the main approach to identifying priorities within the draft table of contents. It is acknowledged that this approach risks placing more emphasis on the needs and concerns of municipal water suppliers rather than private well owners or even private operators. Getting at private well information is far more involved and will take more in-depth project work in the future. It is important to note that private well considerations were factored into developing the draft table of contents in FY21 and there is substantial content overlap for both public and private in at least six plan chapters.

Categorization of public drinking water operators

Drinking water is sourced and managed in a variety of ways within Hampden and Hampshire counties. In more rural locations, many residents and businesses draw water from their own private wells tapped into either sand and gravel aquifers or sources deep in bedrock. Many communities operate and manage public water supplies through municipal operations or through water districts that operate somewhat independently of municipal operations. There are important differences also in whether supply is drawn from groundwater or surface water or purchased, there are also differences in size of operation.

As a first line of approach, PVPC categorized municipal operations based on source of supply and size, and used size of operation in organizing two roundtable events, one for small and another for medium size system operators.[1] The intent of creating two different events based on size was two-fold: to explore whether there might be some variation articulated by participants due to scale of operation, and to ensure "a voice at the table" so to speak for smaller operators/the region's rural communities. Further, PVPC staff already has some familiarity with challenges facing operations based on whether supply is sourced from groundwater or surfacewater so size seemed a more important factor than source of supply.

PVPC's categorization of public drinking water operators into small, medium, and large is based on MassDEP Regulations as follows:

[1] Note that municipal sources, such as schools, town halls, and libraries, etc., that serve only day time population were not included here.

- Small Water System - serves no more than 3,300 persons
- Medium Water System - serves more than 3,300 persons but less than or equal to 50,000 persons
- Large Water System - serves more than 50,000 persons.

Within PVPC's service area of 43 cities and towns, there are 12 small, 18 medium, and 2 large municipal system operators. Springfield Water & Sewer Commission, which provides water to 5 communities on a regular basis and another 5 communities on a peak-emergency basis, serves the largest population of 228,554 people. The smallest system operators in the region are Cummington serving 379 people, and Worthington serving 565 people. A listing of municipal public water suppliers by source and size in the region is included in Appendix B.

Table 1 provides a summary of populations served by each of these size of municipal operations. These municipal operators provide drinking water to a total of 611,877 people in the region or 98% of the region's total population of 624,290.[2]

Table 1: Populations served by municipal drinking water systems

Size of public drinking water operation in the region	Total people reliant based on size of system
Large municipal systems	283,680
Medium municipal systems	308,799
Small municipal systems	19,398
Total number of people served	**611,877**

Very rough estimates on population in the region served by other sources include:

- 3,521 people served by sources qualifying as public supplies, but privately operated, such as mobile home parks and certain apartment buildings and state-run sources at certain housing facilities in the region, and the federal run source for the population at Westover ARB
- 8, 900 people reliant on individual private well sources

Meetings with drinking water operators

Approach

PVPC sent e-mail invitations with reminders to all small size drinking water operators about a meeting on November 16 and to all medium size drinking water operators about a meeting on

[2] 2021 total population for Hampshire and Hampden counties from StatsAmerica.org

November 18, 2022.[3] Response from both groups was limited with three people representing two small size drinking water operations and six people representing four medium size drinking water operations.

The meetings, held over Zoom, included a presentation, poll questions, and discussion. As noted above, these meetings were aimed at further understanding what proposed plan elements are most important to those working day-to-day on drinking water and what might be missing from within or among the proposed chapter elements.

The presentation and poll questions were the same for both groups and included four parts:

- Describing the last regional drinking water plan in 1987 called *Water 2000*;
- Sharing results and analysis from PVPC's FY21 work that pulled drinking water priorities as articulated in local Municipal Vulnerability Preparedness (MVP) Plans and Open Space and Recreation Plans (OSPRs) to then ask through the poll whether the drinking water issues flagged in the analysis jibe with their experience as a drinking water operator;
- Walking through each proposed chapter element and asking on each whether the topic makes sense to them and what else they think ought to be covered in the chapter;
- Polling on two final questions that showed all proposed chapters asked: What are your top 5 choices for topics we ought to cover in the regional drinking water plan? Do you have any additional thoughts on your choices?

Please see the full presentation for the meetings in Appendix C.

<u>Results</u>

With representatives of small size drinking water operators, the first question about whether the drinking water issues flagged in the analysis of MVP and OSRP plans jibe with their experience as a drinking water operator elicited comments about specific issues with which they are struggling.

- Representatives from Chester talked about issues with their current source of surface supply at Horn Pond, including aged infrastructure and large homes along the shores, and the effort to switch to another source at Austin Brook.
- Williamsburg's representative underscored aging infrastructure as a major issue, but also the lack of availability of funding for repairs.

Based on the conversation, it seems that while operators agreed that the issues flagged from local plans jibe with their sense of things, these small system operators place greater importance on the "Aging Infrastructure/Need for Upgrades" issue/concern than do those

[3] Because there was in-depth consultation last year with Springfield Water & Sewer Commission staff, the roundtable events this year did not include large system operators. The other large system operator in the region is the City of Chicopee, which purchases water from the MWRA operating the Quabbin Reservoir.

community members who are typically involved in development of these local plans in rural municipalities. (See Table 2 below.)

Medium operators also confirmed that issues flagged in local plans jibe with their experience. Two additional comments were: one operator noted that the Water Management Act and DEPs control over how much water can be used is another important issue for them while a second operator said that staffing is a major issue for them.

Table 2: Local plans and references to specific drinking water issues and concerns

	41		27		14	
Issue/Concern	**Total Municipalities Referencing**	**%**	**Number of Rural Municipalities Referencing**	**% of Rural**	**Number of Urban Municipalities Referencing**	**% of Urban**
Private Well Issues (contamination, need for testing, etc.)	24	58.54%	20	74.07%	4	28.57%
Pollution - Road salt	21	51.22%	20 out of 27	74.07%	1	7.14%
Development impacts on water supply and quality – general	21	51.22%	15 out of 27	55.56%	6	42.86%
Drought	19	46.34%	13	48.15%	6	42.86%
Aging infrastructure/ Need for upgrades	19	46.34%	8	29.63%	11	78.57%
Pollution - Coliform bacteria from failing septic, agriculture, etc.	18	43.90%	14	51.85%	4	28.57%
Pollution- Agricultural, landscaping	15	36.59%	12	44.44%	3	21.43%
Distribution/ Transmission Issues	15	36.59%	6	22.22%	9	64.29%
Public Well/ Aquifer Issues (contamination, need for testing, etc.)	13	31.71%	8	29.63%	5	35.71%
Emergency sources & protocols	11	26.83%	6	22.22%	5	35.71%
Water-sharing - Dependency on other communities	11	26.83%	4	14.81%	7	50.00%
Flooding impact on infrastructure	10	24.39%	6	22.22%	4	28.57%

Rural communities identified through: https://www.ruralcommonwealth.org/about-us/where-is-rural-massachusetts/

Polling that asked of both groups, “Do these topics make sense in this chapter?” was met with affirmative responses up and down the entire chapter elements list. Polling that asked for additional thoughts on each chapter element are shown in Table 3 below, indicating which responses came from smaller versus medium size operators.

One way to look at the recommendations for additional chapter elements in Table 3 is in terms of suggesting solutions on the one hand, and flagging larger issues on the other hand. Solutions include the following ideas for the Community engagement chapter:

- A section on rates and how they apply to our finances and operation.
- Templates developed that could be easily used by municipalities.
- Increase public access to our facilities through public education programs. It helps reduce the stigmas that often surround water departments.

Table 3: Thoughts on additional content for each chapter

What else should we cover in this chapter?		
Proposed chapter	**Small operator responses**	**Medium operator responses**
A pathway for drinking water supply planning	No responses within poll, but comments made in course of conversation were: • Warming of surface water that leads to algae formation.	• Supply chain issues since sourcing materials has become increasingly difficult. • Who makes the decisions for Water Use (Home Rule)?
Community engagement	No responses within poll, but comments made in course of conversation were: • Testing comparison of bottled water vs Town water; highlighting the need for water supply operators throughout the State • Had really good compliance with watering restrictions during the drought this past summer.	• A section on rates and how they apply to our finances and operation. • Would be good to have templates developed that could be easily used by municipalities. • Increase public access to our facilities through public education programs. It helps reduce the stigmas that often surround water departments.
Water system infrastructure	• Evaluating systems will be important to also plan on funding in future In course of conversation, following offered: • Chester is doing an Asset Management Grant with Tighe & Bond that includes GIS map of system. • In Williamsburg, Mass Rural Water Association is helping with GPS mapping of curb stops.	• Would be careful about collective needs and how they are presented - what is important to one community, if placed low on your priority list, could be detrimental to that community. • Northampton, Easthampton, Southampton & Williamsburg completed an intermunicipal emergency interconnect feasibility study about 10 years ago.
Financing and funding	No responses within poll, but comments made in course of conversation were: • Chester did joint grant application with Blandford for Efficiency in Regionalization Program with Ira Brzezinski.	• For WIFIA need $100,000 for an application, no way that is going to happen. • Just give us some money. We know what to do with it. Don't need oversight for each project. • $$$ is at the root of so many of our challenges, so this is important. However, seems like funding opportunities change rapidly, so hard to capture in a plan. • Highlight the need for routine rate study updates and asset management plans.
Water rates and affordability	No responses within poll or comments.	• I would like to see some strategies for convincing the politicians that control the rates to increase the rates at appropriate levels. • Key to pay for existing system to be upkeep with padding for rebuilding system without making it unaffordable. • Highlight need for long term capital plans and asset management plans.

Disruptions, adaptation, and resilience	No responses within poll or comments.	• Assist water system in testing of UCMR and other unfunded testing requirements for public water and for private well owners.
Proposed chapter	**Small operator responses**	**Medium operator responses**
Drinking water supply protection	No responses within poll, but comments made in course of conversation were: • Chester is concerned about Zone A of Horn Pond but do not currently have ability to enforce limitations on development and threats.	• This is an issue we have been monitoring. Our well field is at the bottom of the mountain and run off is a concern. • Clear cutting and solar installations in Zone B/Zone II areas should be included. Remember that local regulations can become political, so recommendations must come with suggested strategies. • Identify possible funding opportunities for purchasing land for water supply protection. • I would also talk about the difficulties of protecting source water against contamination from farmlands due to the legal protections that farmers have. (Another operator agreed with this feedback when PVPC staff shared comments.) • My fantasy was to change all the political line to follow watersheds areas. But that not going to happen, need help and cooperation of the Town and states to protect water supply.
A workforce for water supply	No responses within poll, but comments made in course of conversation were: • Chester is partnering with Gateway Regional School District, Blandford, Huntington, STCC, and Mass Water Works for paid internships with on-site training course and class, going to start with new semester in January.	• Raising water system operator salaries to align more closely with hourly rates for gas and electric utility workers. We lose staff to gas companies frequently. • Salary is an issue. We have many requirements for employment and municipal pay is lower than a qualified person can make in private the sector. • In-house training seems to be the key, always training people it seems to the way thing are. • One of the issues with finding qualified staff is limitations in pay rates. Our staff are part of a larger DPW union. We have limited control over the pay we can offer to attract quality talent.
Water for the future in the Pioneer Valley	No responses within poll or comments.	• State-wide drought response is problematic as each community has its own rules. Need to stop confusing the Public.

Larger issues are highlighted in yellow within Table 3 above chapter and under various chapters include:

- Supply chain issues.
- Lack of agency in the process to make decisions about local water use.
- The financial barrier to applying to EPA's Water Infrastructure Finance and Innovation Act (WIFIA) grant program
- Funding being at the root of so many challenges

There is also what seems an important cautionary note in making choices provided by one participant:

- Be careful about collective needs and how they are presented - what is important to one community, if placed low on your priority list, could be detrimental to that community.

The last part of the meeting and poll questions focused on attendees selecting 5 top priorities for chapters/topics in the regional drinking water plan. Some attendees did not select fully 5 priorities while others commented that they wish they could have selected more than just 5. The attendees from Chester, in the group representing small operators, were on one computer so their answers were likely coordinated. For Easthampton and West Springfield, there were two representatives from each community and both responded individually to the poll question. It is interesting to note differences among top 5 chapters selected by representatives from the same communities. All poll responses received are tallied in Table 4 below.

Table 4: Top 5 choices for topics in regional drinking water plan

Chapter	Small size municipal operators	Medium size municipal operators
Financing and funding	1	6
Water system infrastructure	1	5
Disruptions, adaptation, and resilience	0	4
Water rates and affordability	2	3
Drinking water supply protection	0	3
Water for the future in the Pioneer Valley	0	3
Community engagement	1	2
A workforce for water supply	2	2
A pathway for drinking water supply planning	1	1

Another point of interest is that while small municipal supply operators are prioritizing the chapter entitled, "A pathway for drinking water supply planning," this group's top choices are generally less concerned about future looking chapter content than medium municipal supply operators who had "Disruptions, adaptations, and resilience" and "Water for the future in the

Pioneer Valley" among priority chapters. It is also true that given the number of participants in the former, there were not the same number of votes to spread across chapters in defining priorities.

Voting on priorities at the virtual roundtable events provides some good direction on moving forward, but limited representation in both groups (about 20% for small and 23.5% for medium municipal supply operators) must be acknowledged. Also, through voting and conversation there is a sense that all proposed chapters seem important.

For full meeting notes and polling results, see Appendix D for small and Appendix E for medium municipal supply operators.

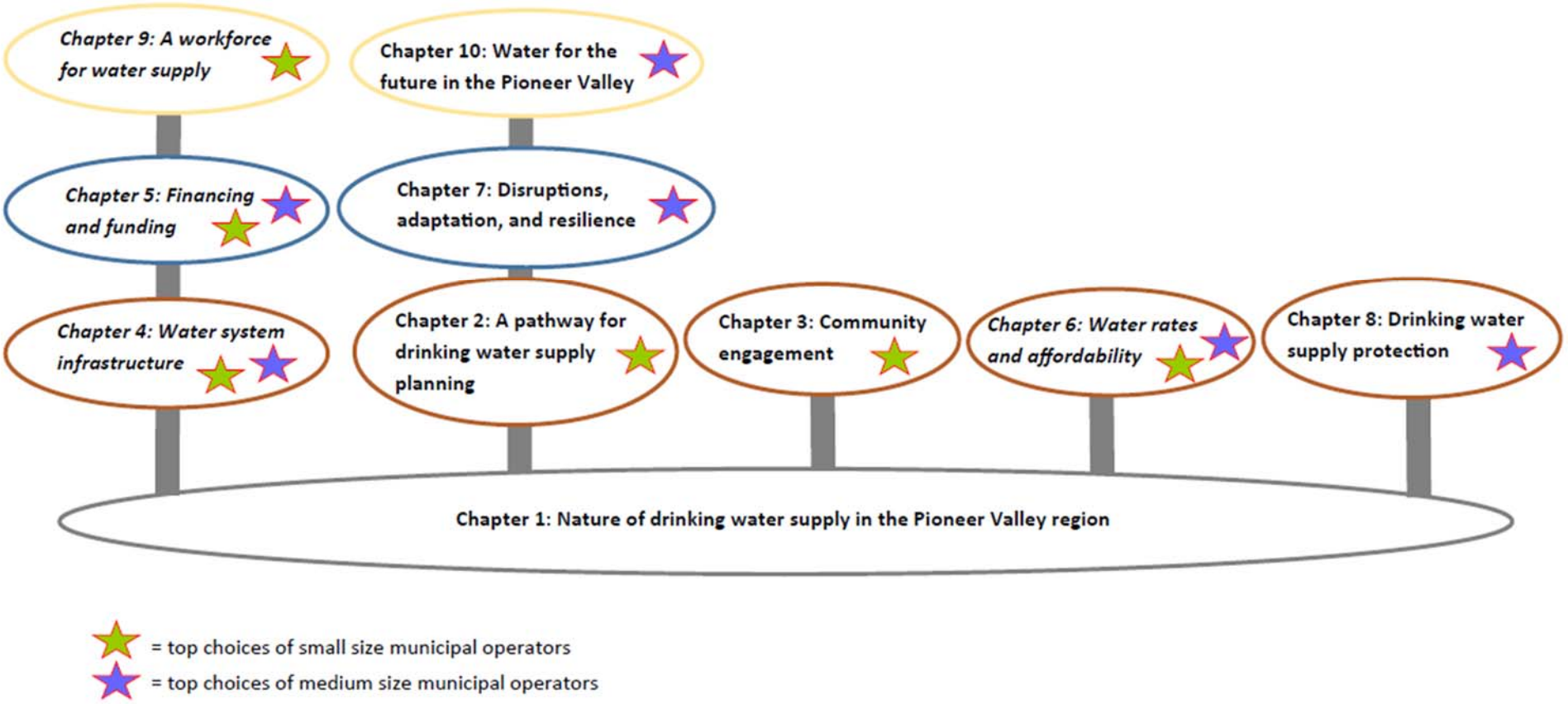
Another important consideration

Foremost among other considerations in thinking about chapter priorities and plan development is something PVPC will call "dependency" here. This has to do with how information in one chapter serves as foundation from which to build another chapter. For example, identifying the future for which we are planning (based on climate impacts, population changes, etc.) in the proposed chapter entitled, "A pathway for drinking water supply planning," serves as foundation for at least two proposed chapters, including "Disruption, adaptation, and resilience" and "Water for the future in the Pioneer Valley." Diagram 1 below is a first effort to identify some of these dependencies of one chapter on another given how content is currently defined.

Also note that the "Inventory of drinking water supply" described in last year's work, but not included as a separate chapter, has important foundational content for each chapter. Collected data, depending on topic, will thread into chapters and includes the following:

- sources of supply
- quantity and adequacy of supply, including withdrawals and supply and demand, permitted withdrawal limits and currently anticipated change in withdrawal limits if any
- future needs forecasting (if completed by DCR Office of Water Resources)
- quality of supply, contaminants, and treatment
- rate structure and approach to collecting for non-payment
- revenue, expenses, reserves, debt, and debt service
- staffing for operations and needs
- status of system mapping and understanding of system
- asset management approach
- infrastructure needs and costs (distribution pipes, treatment facilities, dams, etc.)
- drought management plans and conservation measures
- existing protective measures (regulatory, land conservation)
- inter-municipal connections (whether have agreements, connections in use or tested/not tested yet and possible needs and costs to make fully functional)

Diagram 1: Chapter dependencies and top choices by municipal operators



Next steps

Data collection that provides grounding for each chapter and provides content for fully describing the nature of supply in the Pioneer Valley seems the most important next step in moving the enterprise of a regional drinking water plan forward.

For the work to characterize drinking water supply in the region, the Annual Statistical Reports filed by public water suppliers to MassDEP provide some useful data. See Appendix F for listing of key data toward this end.

A side note

Making choices about priorities often does have unintended consequences. So in addition to thinking carefully about representing collective needs of the region at the expense of one drinking water supplier as noted by one municipal operator, it is important to acknowledge also the tension between the many served by medium and large size municipal operations and the fewer served by smaller size municipal operations in rural communities or families and businesses served through their own private wells. Often the latter here can be more vulnerable as they may be more poorly resourced.

Data on private wells will need to be acquired through local Boards of Health. There is also the Massachusetts Executive Office of Energy and Environmental Affairs data portal, where well drilling records can be accessed. This may also be of use in collecting information on private wells. PVPC staff have used this data base in understanding whether there are needs to deepen wells in certain locations during drought periods. This data base enables searches by date ranges, town, well type, and type of well work done, including decommissioning, deepening, hydrofracture, new well, repair or replacement. See: https://eeaonline.eea.state.ma.us/portal#!/search/welldrilling

Consultation with experts in drinking water is critical to identifying critical skill sets and best approaches necessary to completing the more technical chapters within the proposed plan. This could include talking with Massachusetts operators on who some of the best minds are working on drinking water issues in the state or northeast currently. Chapters that require more specialized technical skills include the following, though there may be elements in other chapters where partnerships will be important:

Chapter 4: Water system infrastructure
Chapter 5: Financing and funding
Chapter 6: Water rates and affordability
Chapter 7: Disruptions, adaptation, and resilience
Chapter 9: A workforce for water supply[4]

[4] Again as on page 2, note that chapters with content that apply only to public supply are shown in *italics*. Otherwise chapter content applies to both public supply and private wells.

Get the ball rolling with development of certain chapters that can begin now. Chapters include the following:

Chapter 3: Community engagement – begin with a basic needs assessment on community engagement topics, defining effective strategies, and development of specific tools to message on key topics. Considerations associated with effectively engaging with the regions very diverse populations and working with the state to refine drought messaging are essential elements. Also explore whether regional outreach and education functions (like with the Connecticut River Stormwater Committee) might be a worthwhile objective. See Appendix A for additional information on this chapter.

Chapter 8: Drinking water supply protection – begin with a mapping analysis of surface water Zone A and Bs and groundwater Zone I and IIs to ascertain how well these areas are protected. Some attention to communities with predominantly private well sources is also warranted in this mapping analysis. Conversations with local suppliers, boards, of health and local land trusts about their priorities will be important to further informing this work. See Appendix A for additional information on this chapter.

Identify and develop key resources that could serve the region. One idea that emerged in the conversation with operators is a regularly updated summary sheet of funding and financing available for drinking water operations.

Appendixes

A. Table of Contents for a Pioneer Valley Drinking Water Plan, January 2022

B. Size and Sources of Public Water Suppliers in Hampden and Hampshire Counties, Massachusetts, October 2022

C. Virtual roundtables presentation, November 2022

D. Meeting Notes and Poll Results, Virtual Roundtable - Small System Water Operators November 16, 2022, 10:00 AM

E. Meeting Notes and Poll Results, Virtual Roundtable - Medium System Water Operators November 18, 2022, 10:00 AM

F. Annual Statistical Reports - Information useful for characterizing nature of supply in the Pioneer Valley, October 2022

Draft Table of Contents for a

Pioneer Valley Regional Drinking Water Plan

January 2022

The people shall have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment; and the protection of the people in their right to the conservation, development and utilization of the agricultural, mineral, forest, water, air and other natural resources is hereby declared to be a public purpose.

--Article XCVII from the Massachusetts Constitution

This project was made possible through funding provided by the District Local Technical Assistance Program. PVPC thanks Easthampton Mayor Nicole LaChapelle, Southampton Town Administrator Edward Gibson, and former Blandford Town Administrator (now Holyoke Mayor) Joshua Garcia who all saw the importance of taking this first step toward a regional drinking water plan by submitting District Local Technical Assistance requests for this work.

Cover image: Conceived of by Patty Gambarini and developed by Jillian DeCoursey.

Introduction

Context

Western Massachusetts has an incredible natural endowment with its abundance of fresh water. Waters flow in nearby rivers and streams or lie still in surface reservoirs or underground in glacially formed sand and gravel aquifers or bedrock aquifers. Our region's ability to thrive physically, socially, and economically is intimately tied to water and continued access to clean drinking water is essential.

Our capacity to protect drinking water over the long term, however, can seem uncertain. Infrastructure in many places is undersized or aged with investments lacking, stories of contamination are often in the news, and greater extremes in the frequency of downpours as well as droughts and hotter temperatures are trending upward and creating problems. In addition, there is an increasing sense that regions such as Western Massachusetts could see an influx of population as people move to "higher ground" from climate change impacts in other locations.[1]

Why a regional plan?

While local planning and investments for drinking water systems are of paramount importance, a regional drinking water plan can help enable this work by creating a space for sharing information, setting priorities, informing policy, showcasing innovations, and advancing coordination that can produce greater efficiencies. Perhaps most importantly, collaboration can help establish a reasonable planning pathway for drinking water both locally and regionally, despite the great uncertainties of the future.

Concurrent with developing a regional plan, PVPC envisions establishing and facilitating an advisory group that will serve as a community of practice around drinking water, where the learning, dialogue, collaboration, and change needed to advance practice is collectively supported. Leading utility operators will be invited to come speak to the group to help inform planning and operation strategies and provide insights on overcoming barriers. At the same time, thought leaders within this group can offer insights on problem solving among operators. For example, confronting the lack of licensed professionals coming to the industry at a time when succession is critical, Springfield Water & Sewer Commission (SWSC) has started a scholarship program in association with Mass Water Works Association and Springfield Technical Community College (STCC). The program provides a scholarship to students to study and take the exam for an operator's license without obligation. SWSC has also been working with STCC to institute a learn at your own pace course, which enables people who are already

[1] See interactive climate migration resource based on a paper published in the Proceedings of the National Academy of Sciences at: https://projects.propublica.org/climate-migration/
National Academy of Sciences paper is at: https://www.pnas.org/content/117/21/11350

in the workforce to retrain off-hours when they are at home. This is problem solving that benefits the entire industry yet few other operators in the region know of this important work.

Developing a draft table of contents for a regional drinking water plan

In this first step, PVPC developed a draft table of contents informed by a review of local municipal plans (both Open Space and Recreation and Municipal Vulnerability Preparedness plans) for mention of drinking water issues, review of the last regional plan, interviews and a survey of drinking water operators in the region, and recent state documents related to drinking water. All of this information is included in the appendixes, which are as follows:

A. Summary of Information from Earlier Regional Event and Plans Addressing Drinking Water
B. Top Drinking Water Topics in Local Planning Documents
C. Interviews
D. Survey Responses
E. Summary of State Related Plans

Next steps

With development of this draft table of contents, PVPC seeks to take the following next steps:

- Host a roundtable of drinking water operators to narrow down and finalize the table of contents noted below.[2] The major question is: Which chapters would translate best into providing strategic regional assistance? And how might the answer to this question differ between larger and smaller operations?
- Develop a strategy and estimated budget for plan development
- Inform chief elected officials about table of contents and budget and make any needed refinements based on feedback
- Meet with state officials about potential sources for funding plan development

[2] Because of urgency or even just the nature in attending to certain chapter topics, it may be that a chapter becomes its own discrete project so that it can move forward immediately.

Draft Table of Contents

The plan as currently conceived will include 10 chapters:

Chapter 1: Nature of drinking water supply in the Pioneer Valley region
Chapter 2: A pathway for drinking water supply planning
Chapter 3: Community engagement
Chapter 4: Water system infrastructure
Chapter 5: Financing and funding
Chapter 6: Water rates and affordability
Chapter 7: Disruptions, adaptation, and resilience
Chapter 8: Drinking water supply protection
Chapter 9: A workforce for water supply
Chapter 10: Water for the future in the Pioneer Valley

Chapters with content that apply only to public supply are shown in italics. Otherwise chapter content applies to both public supply and private wells.

In addition to the discussions within each chapter, PVPC plans to highlight innovations in practice, such as integrated approaches to solutions that bring together drinking water with stormwater and wastewater, often resulting in important benefits, including energy or costs savings.

An inventory of drinking water supply

Foundational to the plan and its chapters will be an inventory of drinking water supply. The inventory will inform discussion and analysis in each chapter with detailed information on drinking water supply for each municipality. It will enable understanding of common issues, long-term capacity to support growth, and opportunities for collaboration to address drinking water needs across the region. Sources of information will include: Annual Statistical Reports made to MassDEP and interviews with operators for public sources and MassDEP driller logs and interviews with local boards of health for private wells. The inventory will summarize the following for each municipality with related data in graph form:

A. sources of supply
B. quantity and adequacy of supply, including withdrawals and supply and demand, permitted withdrawal limits and currently anticipated change in withdrawal limits if any
C. future needs forecasting (if completed by DCR Office of Water Resources)
D. quality of supply, contaminants, and treatment
E. rate structure and approach to collecting for non-payment
F. revenue, expenses, reserves, debt, and debt service
G. staffing for operations and needs
H. status of system mapping and understanding of system
I. asset management approach

J. infrastructure needs and costs (distribution pipes, treatment facilities, dams, etc.)
K. drought management plans and conservation measures
L. existing protective measures (regulatory, land conservation)
M. inter-municipal connections (whether have agreements, connections in use or tested/not tested yet and possible needs and costs to make fully functional)

Chapter 1: Nature of drinking water supply in the Pioneer Valley region

Purpose of chapter: Drinking water is sourced and managed in a variety of ways within Hampden and Hampshire counties. In more rural locations, many residents and businesses draw water from their own private wells, often times from sources deep in bedrock. Some communities operate and manage public water supplies through municipal operations. Easthampton's water department, for example, operates under the Department of Public Works, and sources from groundwater sources in the Barnes Aquifer. In other communities, drinking water is provided by fire and water districts that operate somewhat independently of a municipality. Most drinking water in South Hadley, for example, is distributed through two fire and water districts, and in Palmer there are four water districts. Springfield Water & Sewer Commission, governed by a board of three mayoral appointees, provides drinking water from reservoirs high in the Hilltowns to Agawam, East Longmeadow, Longmeadow, Ludlow, Springfield, and peak or emergency supply to Chicopee, Southwick, West Springfield, Westfield, and Wilbraham. Several communities---Chicopee and Wilbraham, as well as South Hadley Fire District #2--receive supply from the Massachusetts Water Resources Authority, which draws from the Quabbin Reservoir.

This chapter will broadly characterize both sources of supply as well as operation and management, exploring questions that include:

Where does water supply come from (e.g., surface reservoirs, surficial aquifers, bedrock aquifers)?
How much of the region is served by public supply versus private wells?
How are municipalities and the state involved in safeguarding private wells?
What are the key current challenges for private well supply?
Who are the public drinking water operators in our region (municipalities, districts, etc.) and how are they characterized by size of system/numbers served?
What are the key current challenges for public supply?

Chapter 2: A pathway for drinking water supply planning

Purpose of chapter: In a time of such great uncertainty, it is important to explore and identify (to the extent possible) the future for which we are planning. This chapter will highlight the major considerations for drinking water supply planning, including demographic and climate change impacts, using the most recent climate change data and climate science projections, and seeking development of new information from demographic forecasters who can make reason-based predictions on climate migration to the Northeastern U.S., and Western Massachusetts in particular. The objective will be to understand greatest climate change risks to supply, expectations for demand, and possible land use changes impacting supply.[3],[4]

Chapter 3: Community engagement

Purpose of chapter: Public engagement around water supply is essential to local compliance with conservation requirements and, moreover, in building trust in water quality and full appreciation for what it takes to bring water to the tap. While some of the major scary stories about drinking water, such as systemic failures to protect supply in Flint, Michigan, are far flung from the Pioneer Valley region, perception — as noted in a nation-wide 2017 study — is not typically tied to known built environment or neighborhood risk factors affecting water safety and quality.[5,6]

For this region, there is an important story to be told about the water that flows to our taps. Robust public engagement around drinking water is important in creating a constituency that cares and supports local efforts to ensure integrity of both supply, and treatment and delivery systems.

This chapter will focus on the greatest needs for communication and explore best methods for public engagement across the diversity of populations in the region. Conducting meetings within neighborhood groups to gain insights will be part of this work. Philadelphia Water has

[3] Note that the state has an approved water needs forecasting methodology and will undertake forecasting at the request of a water supplier provided sufficient information to do so (see: https://www.mass.gov/doc/water-needs-forecast-policy-and-methodology/download) Advancing forecasting that accounts for potential population growth with climate migration seems important.

[4] Some of the climate change considerations will include increases in sedimentation rates in reservoirs (Tropical Storm Irene) which would decrease the volume for storage. Also, high sediment in the water column affects water quality during the events and may force closure of the intakes (Northampton during Irene). Higher Dissolved Organic Carbon (DOC) due to forest floor runoff from more frequent extreme events may degrade water quality by increasing disinfection byproducts such as haloacetic acids.

[5] "Mistrust at the tap? Factors contributing to public drinking water (mis)perception across U.S. Households," Gregory Pierce and Silvia Gonzalez, published in *Water Policy*, 2017.

[6] In their study, Piece and Gonzalez also note that the mistrust in tap water, in turn, leads to increased consumption of bottled water and even sugary drinks, contributing to obesity and decreased oral health. Another consequence, particular to lower income folks, is that these additional purchases add stress to already strained household budgets. PVPC notes that there is a possible tie here to affording water rates as well.

innovated some important approaches to developing external communications with the public that could be helpful in this regard. This chapter will also identify common communications needs that might be developed in collaboration through regional effort, therefore reducing burden on especially smaller drinking water operations.

Chapter 4: Water system infrastructure

Purpose of chapter: This chapter will build on the infrastructure issues highlighted already in the Massachusetts State Auditor's 2017 report entitled, *Costs, Regulation, and Financing of Massachusetts Water Infrastructure: Implications for Municipal Budgets*, as well as EPA's *Drinking Water Infrastructure Needs Survey and Assessment* report to Congress, and the American Society of Civil Engineers *Infrastructure Report Card on Drinking Water* (a C- in the 2021 report).

Drawing from the plan's inventory element described above, discussion within this chapter will focus on local infrastructure needs, highlighting collective needs and those that seem most important from a regional standpoint. While intake pipes, treatment works, pumps, and distribution pipes are certainly key parts of infrastructure in need of attention so too are dams at drinking water reservoirs (as demonstrated by partial failures at Westfield's Granville Dam during Tropical Storm Irene and more recently at SWSC's Dam #2 at the West Parish filters during Hurricane Henri). The chapter will also discuss the extent to which system operators have mapped and evaluated the condition of their systems, which could tie to informing the discussion about disruption, adaptation, and resilience in Chapter 6.[7]

Chapter 5: Financing and funding

Purpose of chapter: Without exception, drinking water system operators point to financing and funding as the top issues. Even when identifying aging infrastructure as a top issue, the conversation quickly turns to lay blame with the lack of adequate funds. Lack of ability to invest is a chronic stress and seems to hit smaller drinking water systems the hardest as they are far more limited in their capacity to borrow.

The ability to use American Rescue Plan Coronavirus State and Local Fiscal Recovery Funds (SLFRF) for water and sewer infrastructure investments could provide an important boost and even turning point in the story or water infrastructure. Furthermore, SWSC's success in securing a $250 million low-interest loan for critical infrastructure projects from the EPA's

[7] PVPC notes that MassDEP has a Water Utility Resilience Program - Enhancing Resilience and Emergency Preparedness of Water Utilities through Improved Mapping. Only 3 communities in the Pioneer Valley region seem to have participated--Cummington, Palmer, and Ware—and the program does not seem to have been active since 2019.

Water Infrastructure Finance and Innovation Act (WIFIA) program could provide insights for other successful applications from the region.

This chapter will work with data collected in the inventory described above to characterize key financing and funding issues for drinking water operators in the region and the degree to which SLFRF and other funds were and could be invested. From this analysis, the chapter will take a deep dive into major barriers for financing and funding and recommended strategies.

Chapter 6: Rates

Purpose of chapter: This chapter will explore a series of questions about water rates that tie to covering utility costs, but also to drinking water affordability and equity. Questions will include:

- What are ratepayer costs in the region, how much has this increased in 10 years?
- How much of overall revenue comes from ratepayers?
- What are the pricing/rate structures used by water suppliers in the region?
- What are shut off policies and practices and to what extent are these used in the region?
- What are best practices in structuring rates and payments to help limit the number of shutoffs or liens on property in the region yet enable water suppliers the income they need to maintain good operations and service? [8] [9]

This chapter will also explore best rate structures to promote conservation, the degree to which water operators have been able to adopt such structures, barriers to adoption of such rate structures, and recommended strategies.

Chapter 7: Disruption, adaptation, and resilience

Purpose of chapter: This chapter will revisit the chief vulnerabilities and risks identified in Chapter 2 (A pathway for drinking water supply planning) and explore ways in which adaptation might be integrated within local and regional planning and operations around drinking water.

[8] Two resources could be useful to the inventory material for this chapter and the discussion within the chapter itself: Massachusetts water rates dashboard: https://dashboards.efc.sog.unc.edu/ma; and Massachusetts DER and DCR project to support PWS and Water Districts in restructuring rates: https://www.mass.gov/service-details/water-rates

[9] A 2019 report by the Northeastern Law Program on Human Rights and the Global Economy called, *A Drop in the Bucket: Water Affordability in Twelve Massachusetts Communities*, discusses such tools as property liens and water supply shut offs used by MA public water suppliers for non-payment of bills. While water suppliers may also have certain discount policies for property owners based on income and age or disability, the report notes that rising water prices in Massachusetts (which increased 50 percent between 2010 and 2019) "are exacerbating the impacts of economic and racial inequalities." The report also highlights some best practices in rates that may be worth considering or that offer leads for further exploration.

The Massachusetts State Auditor's 2017 report found that in its survey of 146 cities and towns, "only 6% of survey respondents indicated that they developed any formal climate change plans or policies that affect water infrastructure systems." At the same time, leading national practitioners within the Water Utility Climate Alliance insist that the only way to avoid future cost and liability is to "mainstream," proactively embedding and streamlining climate change information into practice, planning, and decisions.

The Massachusetts Water Works Association has been indicating that there are barriers in state law that impede resiliency. Most recently the comments they issued on the state's *Drought Management Plan* (when it was in draft form) state in part, "Our water systems need the flexibility to operate their systems optimally; new sources would give water systems more options and may actually be more beneficial to the environment."

Exploring these issues and tensions and how to build resilience (toward keeping disruptions from becoming disasters) in key areas will be an important element of this chapter. Likely topics will include:

A. Contaminants[10]
B. Flood
C. Drought
D. Extreme heat
E. Invasive species[11]

Chapter 8: Drinking water supply protection

Purpose of chapter: Protection of drinking water quality in Massachusetts currently occurs in a number of ways, including land conservation (Zone As, and Zone Is and IIs), local land use controls on development (zoning and board of health), and state regulations. This chapter will evaluate local controls, flag needed improvements, and highlight important opportunities to advance protection.[12] In terms of land protection, the chapter will also explore the potential for contiguous land protection in southwest Hampden County, MA to Hartford, CT through Forest Legacy Designation for area, and water supply protection overlay zoning.[13]

[10] Contaminants currently impacting supplies in the region, include PFAS, Haloacetic acids (HAA), and lead and copper. Lead, in particular, has been regarded as a social justice issue.
[11] While invasives may seem an odd topic here, it is important to note the impact that "Gypsy" moth infestations had on large populations of oak trees across the region and particularly on such forests as those surrounding places that include the Ludlow Reservoir.
[12] Survey responses indicate that there are some Zone A and Zone I areas (closest to water sources) that are not protected, and communities do not typically have a process in place for prioritizing land for conservation to protect drinking water supply. Respondents also indicated that updating local regulations for drinking water supply are among the greatest needs.
[13] Land protection in this area is a recommendation within the 2014 Environmental Plan for the region.

It will also explore state level issues, such as whether distance requirements between private wells and septic systems are adequate and whether there ought to be a refinement based on given soil types in a location. Locally, the chapter will also seek pathways to resolving road salting practices and impacts to supply as well as identify strategies to averting future contamination as winter icing occurs more frequently.[14] Additional newer measures for protection, such as advancing reuse will also be explored.

Another important topic for exploration in this chapter involves the increasing use of some back up sources in the region for recreational activity. Could this recreational access to back-up supply areas translate to a sort of new "rail trail" effect, where takeover for other uses precludes return to former use? Fresh Pond Reservation in Cambridge, as well as the reservoirs system in West Hartford and Farmington, Connecticut, could include some important insights into how to reasonably combine these uses (drinking water supply and recreation) in a single location.

Chapter 9: Workforce for water supply

Purpose of chapter: As noted within the introduction to this document, licensed drinking water operators are scarce. Current operators are retiring, and few young people are coming into the profession. While Springfield Water & Sewer Commission is collaborating with Mass Water Works Association and Springfield Technical Community College toward solving this problem, there are additional questions that this chapter can help address.

How might this current effort be further supported?

What other opportunities are there to promote entry into the profession?

How might professionals be further shared among smaller drinking water operators and what are successful existing models?

What are the requirements for knowing how to operate a system and how do these requirements relate to the different types of systems in the region?[15]

What are important measures to take now to ensure long-term succession planning for drinking water supply?

[14] Goshen, Granby, and Southampton have all had private well impacts or public well closures due to salt along state numbered highways. Goshen's issues date back to the 1980s and water in such places as Town Hall is still not potable due to road salt contamination. As more precipitation in winter falls as rain, icing will likely become an even greater problem so finding some resolution before the problems become even more widespread seems critical.

[15] In a conversation before this project started, one municipal official talked with PVPC staff about having to recruit from licensed operators among the pool of retirees to operate their system. They questioned whether requirements were too rigid given the needs for operating their particular system and that perhaps a licensed operator could instead just provide training and oversight rather than having to operate the system themselves. Exploring the possibility of flexibility seems worthy of some consideration in conversation with MassDEP.

Chapter 10: Water for the future in the Pioneer Valley

Purpose of chapter: Drawing from chapter 2 (A pathway for drinking water supply planning) and chapter 6 (Disruption, adaptation, and resilience), this chapter will help frame discussion and strategies around addressing future water needs. Considerations here will include: MassDCR's water forecasting for drinking water suppliers; MassDEP's Sustainable Water Management Initiative elements within the Water Management Act, capability for drinking water conservation within the region; population increases that could be supported with current sources; and priority emergency interconnections.

If an exploration of potential new sources of supply is warranted in this chapter, there could be additional needs for information, particularly:

Sources in the region indicated as back-up supply or not used actively

Issues with those back-up sources and last estimated costs to bring those sources back on-line

Criteria for identifying back-up sources most important to protect over the long term

Potential to connect to larger systems (Springfield Water & Sewer or MWRA systems)

New potential sources of supply in the region

Appendixes

A. Summary of Information from Earlier Regional Event and Plans Addressing Drinking Water

B. Top Drinking Water Topics in Local Planning Documents

C. Interview Notes

D. Summary of Drinking Water Survey Responses

E. Summary of Important State Related Plans

Appendix A

Summary of Information from Earlier Regional Event and Plans Addressing Drinking Water

2017 - Drinking Water Roundtable Highlights

Greatest needs

- Talent
- Infrastructure funding
- Source protection funding
- Stakeholder/customer outreach engagement/education
- MassDOT salt practices in drinking water areas
- Cross municipal conversations

Community Compact includes drinking water as best practice - possible source of funding.

SWMI – Registrations will be extended for another 4 years (otherwise would end 2017)

Some communities may still not have meters – which? And do they need help?

EPA Drinking Water Needs Survey in process of updating 2011 report

SW&SC

- 31,000 acre watershed area and over 14,000 acres protected
- 80% in Zone A protected
- Forest stewardship – some investment

Granby

- 90% on wells
- Put a lot into snow and ice management as a result. Use undercarriage plow. Salt and sand mix 1:5.

Southampton

- $700k budgeted for water master plan
- Emergency interconnection – have MOU with Easthampton. Need MassDEP permission.

2014 *Our Next Future - Pioneer Valley Sustainability Plan - Environment Plan Element*

Given the expanse of ground to cover under the topic of environment, drinking water information in this plan is limited. The narrative explains that there was an effort to develop a water needs forecast based on the methodology provided by the Massachusetts Water Resources Commission. Obtaining several years of information from the annual statistical reports (ASR) that water suppliers annually file with

MassDEP, however, was not possible. PVPC was only able to obtain ASR information for 2009 and 2010, and not previous years which were key to properly following the forecasting methodology. Drinking water information in the plan is thus limited to a summary of water supply sources for each municipality in Hampden and Hampshire counties and a set of five recommended strategies:

STRATEGY	DESCRIPTION	LEAD ROLE
Complete Supply and Demand Forecasts for Public Water Supplies	In conjunction with Hazard Mitigation Plans development and updates, complete 5-year supply and demand projections for public water supplies	PVPC
Implement Bi-State approach to Water Supply Protection in Westfield and Farmington River Watersheds	Promote contiguous land protection in southwest Hampden County, MA to Hartford, CT through Forest Legacy Designation for area, and water supply protection overlay zoning.	PVPC; CRCOG
Inventory, Update, Assess Vulnerability and Protect Critical Infrastructure	Inventory, update and conduct vulnerability assessments of critical infrastructure to flooding and other weather impacts, including energy generation, electrical transmission and distribution, communication networks, drinking and wastewater facilities, roads and highways, railways, dams and flood dikes and healthcare facilities. Take needed steps to improve resilience.	Municipalities
Storm-proof infrastructure	Increase resilience of water/ wastewater infrastructure, streets and roads, flood dikes, sewer and water lines, to severe storm events and flooding. Take action to harden and raise the level of infrastructure, as funds become available.	Municipalities
Create Emergency Inter-municipal Water Connections	Identify options for creating emergency water supply inter-connections with neighboring communities, and seek formal agreements to purchase water in emergencies. Physical, piped emergency connections, and agreements to purchase water, should be put into place in advance of emergencies.	Municipalities

1987 *Water 2000: An Inventory and Assessment of Water Needs through the Year 2000*

Though now more than 30 years old, this analysis presents a comprehensive review of drinking water supply in the Pioneer Valley. The purpose of the study is articulated as follows in the introduction:

1. Inventory the quality and adequacy of drinking water supply in the 43 Lower Pioneer Valley communities;
2. Assess the areas where water supply quality or quantity problems exist in the region;
3. Provide a series of recommended actions for community water supply management.

Principal findings from plan development include the following:

- Water supply deficits projected for nine communities by the year 2020
- Water supply contamination problems have adversely affected 13 communities

- Drought restrictions cause major impacts on Pioneer Valley communities
- Potential emergency intermunicipal water supply connections exist in many communities
- Existing water pricing policies do not encourage water conservation

Plan elements include the following:

A regional overview that describes the range of systems (exclusively individual private on-site wells, exclusively a central supply systems, or a mix of each) and sources (groundwater and surface water) throughout the Pioneer Valley. It also covers regional supply and demand projections, adequacy of supply, water quality problems due to chemical contamination, drought declarations and conservation measures, inter-municipal water connections, and water pricing policies, providing illustrative maps on each topic.

A community by community inventory that describes sources of supply and demand, supply and demand projections, adequacy of supply, drought management plans, quality of supply and treatment, protective measures, inter-municipal connections, future needs, providing all related statistics in graph form.

Water supply protection strategies that explains the need for protection, using examples from the region, and providing specific tools to undertake recommended strategies. Tools include:

1. Zoning overlay districts for water supply protection
2. Hazardous material and underground storage tank controls
3. A municipal road salt policy
4. Land acquisition strategy
5. Drought management plan

Appendix B

Top Drinking Water Topics in Local Planning Documents

Overview

Drinking water often emerges as an important topic in Open Space & Recreation planning and Municipal Vulnerability Preparedness planning.[1] To get a sense of those drinking water issues and concerns common to the most communities in the region, PVPC hired Dodson & Flinker Associates to conduct a review of planning documents in all 43 cities and towns in Hampden and Hampshire counties. A search in these plans identified multiple common issues.

This summary document focuses on the 12 topics mentioned by at least 10 or more communities. These topics are the following in order of those mentioned most frequently:

- *Private Well Issues (contamination, need for testing, etc.)*
- *Pollution - Road salt*
- Development impacts on water supply and quality – general
- Drought
- Aging infrastructure/ Need for upgrades
- *Pollution - Coliform bacteria from failing septic, agriculture, etc.*
- *Pollution- Agricultural, landscaping*
- Distribution/ Transmission Issues
- Public Well/ Aquifer Issues (contamination, need for testing, etc.)
- Emergency sources & protocols
- Water-sharing - Dependency on other communities
- Flooding impact on infrastructure

PVPC noted that there are some topics that seem to stand out as of greater concern to rural communities versus more urbanized communities. Those topics are identified in italics above. At the same time, there are such issues as aging infrastructure or distribution/transmission that appear to be of greater concern to urban communities. Table 1 below provides a summary of the topics and shows the number of rural and more urban communities making mention in their plans of these issues and concerns.

[1] While these topics also emerge in hazard mitigation planning conversations, PVPC noted that most MVP planning work already integrates issues and concerns identified in hazard mitigation planning. As such, the review of local plans was limited to Open Space and Recreation Plans and MVP Scope of Findings documents.

Table 1: Local plans and references to specific drinking water issues and concerns

	41		27		14	
Issue/Concern	**Total Municipalities Referencing**	**%**	**Number of Rural Municipalities Referencing**	**% of Rural**	**Number of Urban Municipalities Referencing**	**% of Urban**
Private Well Issues (contamination, need for testing, etc.)	24	58.54%	20	74.07%	4	28.57%
Pollution - Road salt	21	51.22%	20 out of 27	74.07%	1	7.14%
Development impacts on water supply and quality – general	21	51.22%	15 out of 27	55.56%	6	42.86%
Drought	19	46.34%	13	48.15%	6	42.86%
Aging infrastructure/ Need for upgrades	19	46.34%	8	29.63%	11	78.57%
Pollution - Coliform bacteria from failing septic, agriculture, etc.	18	43.90%	14	51.85%	4	28.57%
Pollution- Agricultural, landscaping	15	36.59%	12	44.44%	3	21.43%
Distribution/ Transmission Issues	15	36.59%	6	22.22%	9	64.29%
Public Well/ Aquifer Issues (contamination, need for testing, etc.)	13	31.71%	8	29.63%	5	35.71%
Emergency sources & protocols	11	26.83%	6	22.22%	5	35.71%
Water-sharing - Dependency on other communities	11	26.83%	4	14.81%	7	50.00%
Flooding impact on infrastructure	10	24.39%	6	22.22%	4	28.57%

Rural communities identified through: https://www.ruralcommonwealth.org/about-us/where-is-rural-massachusetts/

Following are the 12 major topics and those municipalities indicating a given topic as an issue or concern. Urban communities appear first in the list with a line demarcating where the list of rural communities then follows.

Private well Issues (contamination, need for testing, etc.)

Holyoke
Ludlow
Westfield
Wilbraham

Williamsburg
Chesterfield
Cummington
Goshen
Worthington
Belchertown
Chester
Granby
Granville
Hampden
Middlefield
Monson
Palmer
Pelham
Plainfield
Russell
Southampton
Southwick
Tolland
Westhampton

Pollution - road salt

Westfield

Belchertown
Blandford
Chester
Granby
Granville
Hampden
Hatfield
Middlefield
Monson
Pelham
Plainfield
Russell
Southampton
Tolland
Westhampton
Williamsburg
Chesterfield
Cummington
Goshen
Worthington

Development impacts on water supply and quality – general

Amherst
Easthampton
Ludlow
South Hadley
Westfield
West Springfield

Belchertown
Brimfield
Chester
Granville
Hampden
Hatfield
Holland
Middlefield
Monson
Southampton
Southwick
Tolland
Chesterfield
Cummington
Worthington

Drought

Amherst
Longmeadow
Northampton
Springfield
Westfield
Wilbraham

Belchertown
Blandford
Chester
Granville
Hadley
Hampden
Hatfield
Plainfield
Russell
Southampton
Southwick
Westhampton
Williamsburg

Aging infrastructure/ need for upgrades

Agawam
Amherst
Easthampton
East Longmeadow
Longmeadow
Northampton
South Hadley
Springfield
Westfield
West Springfield
Wilbraham

Belchertown
Blandford
Chester
Hatfield
Monson
Palmer
Russell
Williamsburg

Pollution - coliform bacteria from failing septic, agriculture, etc.

Amherst
Longmeadow
Ludlow
South Hadley

Belchertown
Brimfield
Chester
Granby
Granville
Hampden
Hatfield
Holland
Plainfield
Southampton
Chesterfield
Cummington
Goshen
Worthington

Pollution- agricultural, landscaping

Amherst
Northampton
Wilbraham

Belchertown
Granville
Hadley
Hampden
Hatfield
Holland
Monson
Plainfield
Southampton
Chesterfield
Cummington
Worthington

Distribution / transmission Issues

Agawam
Amherst
Chicopee
Easthampton
Northampton
South Hadley
Springfield
West Springfield
Wilbraham

Blandford
Hatfield
Palmer
Russell
Southwick
Williamsburg

Public well/ aquifer Issues (contamination, need for testing, etc.)

Amherst
Easthampton
Holyoke
South Hadley
Westfield

Belchertown
Brimfield
Hadley
Hatfield
Southampton
Williamsburg
Cummington
Goshen

Emergency sources & protocols

Amherst
Holyoke
Northampton
South Hadley
Springfield

Belchertown
Hatfield
Palmer
Pelham
Plainfield
Ware

Water-sharing - dependency on other communities

Agawam
Amherst
East Longmeadow
Longmeadow
Northampton
Springfield
Wilbraham

Chester
Pelham
Southampton
Southwick

Flooding impact on infrastructure

Northampton
South Hadley
Springfield
Wilbraham

Chester
Hadley
Hampden
Hatfield
Ware
Williamsburg

Appendix C

Interview Notes

Jim Laurila, Director of Water Operations, Springfield Water & Sewer Commission

Greg Nuttelman, Easthampton Public Works Director, and Mike Czerwiec, Easthampton Water Department

Jeff Auer, Deputy Director of Water, West Springfield

Mark Bushee, Goshen and Westhampton Health Agent

Jen Pederson, Director, Massachusetts Water Works Association

Catherine Sarafinas, MassDEP Regional Planner and Wellhead Protection Coordinator

Notes

Phone conversation with Jim Laurila, Director of Water Operations, Springfield Water & Sewer Commission – November 19, 2021

1. SW&SC drinking water serves: Springfield, Ludlow, Agawam, Longmeadow, E. Longmeadow Peak emergency water to Southwick, Westfield, Wilbraham, and Chicopee. Is that correct?
Yes, all correct.

2. What happened in taking survey, lost all but 5 survey takers one third of the way through? Was it clear that we are just in information collecting phase?
A lot of answers not at fingertips and had to close out. For example: ranking of funding sources - needed to talk with financial people and on land protection priorities - needed to talk with natural resources manager. Got on and off three times. On last try, responded to every question, but did not enter in sequence and information disappeared.

3. What do you see as your top drinking water challenges?
<u>Aging infrastructure:</u> • Have pushed old treatment plant and system as far as can and revised decision making around chlorine, but not able to treat to degree that need to address haloacetic acids (HAAs), a disinfection by-product. • On path to developing completely new treatment plant at West Parish Filters. • Water delivery system is also aged with leaks in many places, including filtered water clearwell at WPF and in finished water storage tanks at Provin Mountain. We have installed a temporary membrane cover in the filtered water clearwell at WPF and a permanent membrane cover or Tank 2 at Provin. • Always working to deliver water without breakdowns, but it happens. • One of the oldest systems around so not surprising that there are issues with age. <u>Labor and staffing</u>: • There is an operator shortage and the work force is aging and there are few new licensed operators. • Has been the case since I started at Springfield Water & Sewer Commission, about 6 years ago. • Have now started to turn the corner on this issue based on several initiatives. • SW&SC started a scholarship program in association with Mass Water Works Association and Springfield Technical Community College. The program started about one year ago where anyone can apply for a scholarship paid by the Commission, that allows a student to study and take exam for operator's license without obligation.

- Josh also instrumental in working with STCC to institute learn at your own pace course, which enables people who are already in the workforce to retrain off-hours when they are at home.
- Working to identify people entering the workforce as well and getting them excited about the profession.
- Have a couple of people with us now who came from Westfield State Univ. with Environmental Science degrees and two now headed into operations careers.
- At same time, have raised the bar on salaries and made the promotional ladder far more apparent. So now the positions are enough to get people's attention.

<u>Financing and funding</u>:

- Work that needs to get done has long been more than can afford.
- $250 million WIFFIA loan that Josh got now though is enabling to fast forward on many projects that could not do previously.
- There is a 50% match on loan, but can use SRF $s on the wastewater side, which makes this all more do-able.

Fortunately, we are good on PFAS and lead and copper, which presents a struggle for many systems.

4. Any additional challenges when you think about increase in extremes, including frequency of larger storms, drought, and 90-degree days?

Yes.

- Larger storms with a higher intensity of rainfall can create problems.
- Rainfall from Hurricane Henri caused downslope failure at Dam #2 at West Parish filters this summer. Earthern dams may be more susceptible to damage from increases in rainfall and intensity.
- Spillways may not have adequate capacity to safely pass increased rainfall amounts from more extreme storms.
- We have done spillway capacity modelling of dams and found that the Borden Brook dam spillway cannot pass the spillway design flood, which means there is increasing risk of damage to the dam due to climate change and changing rainfall intensity and amounts.

- Increased frequency of drought means inadequate supply.
- SW&SC updated drought management plan.
- Right now at 99% full, which is very high given that we are headed into winter.
- Variability is concerning.
- Need to better understand "soft spots."

- Have emergency connection with MWRA through the Chicopee Valley Aqueduct (CVA), but understanding details of that connection are critically important. Is it downgradient? Are there potential water chemistry issues associated with lead and copper and with adequate disinfection.
- As it turns out, current connection to CVA is downgradient of a pressure reduction valve so that the Commission cannot get even 2 MGD from the CVA. (Currently, SW&SC providing about 34 to 35 MGD out of its system.) If change location of connection to CVA, could get around 15 to 16 MGD, which would be of greater help.

- CDM did study showing that Quabbin/CVA water chemistry different from what providing in SW&SC system. A connection would increase pH and phosphate. Could increase lead and copper release. So would need to build small treatment plant to address.
- We are looking at hydropower projects as well.
- This is all tied to greater resiliency in our system, but not at top of our list given all else we need to address at this point.

- When Jim working for Northampton, entered into intermunicipal agreements. Then Tate & Howard did hydraulic modeling to figure out what it all meant and what the needs are to actually get emergency water delivery from one place to another.

- We have a peak water agreement with Southwick, where their sources cannot meet demand. But we also know if there was a change to their system, we could provide all the water they might need.
- Have had on and off conversation with Westfield, which has connection to us, but not in active use.

5. Are there some of these issues and challenges that you think best to be addressed at regional scale?

- Would be good to review what each community can provide and what extra capacity may have/not have.
- Really understand source and supply issues.

6. Does SW&SC have an integrated water management plan? Or do you have another tool that helps guide you in investments?

- We are wrapping up a facilities plan on the water side.
- Bill already has a plan on the wastewater side.

7. Have you a sense of the capacity Springfield Water & Sewer may have to take on additional communities or people if there is climate migration to our region?

- Registration authorizes to withdrawal of 39 MGD so have a margin of about 4 MGD available currently based on current withdrawal amounts. Safe yield at Cobble, however, is higher than that so could go to a permit if needed.

8. Do you have a process or plan in place that helps guide you in land acquisition prioritization/decisions for drinking water supply protection?

Yes

- Have a prioritization list that based on whether lands are in Zone A, Zone B, adjacency to existing land we own.
- It is also key as to whether the land is on the market today.
- We have not been reaching out to owners of priority parcels; most end up contacting us to see if we are interested.

9. **What sources do you rely on most for water infrastructure financing and funding?**

Retained earnings / reserve funds
Massachusetts Clean Water Trust – State Revolving Fund
Community Development Block Grants
MEMA/FEMA
USDA Water Loan and Grant Program
EPA Water Infrastructure Finance and Innovation Act funding
Other (please identify): _____

- We usually pay for projects with cash or bonds
- We use SRF for wastewater project financing.
- We also use SRF on the drinking water side, which has a strong debt forgiveness element. We are using SRF on the clear well pump project currently.
- Now WIFFIA loan is going to help so much in doing critical projects
- For land protection we have had success with getting state grants

10. Is there anything else you think important for us to consider in exploring development of a regional drinking water plan?

- Changing nature of the forests is a big worry.
- What does a diverse and resilient forest for the future look like?
- Forests have been hard hit with pests. Ludlow Reservoir was recently hit hard by gypsy moth decimating oaks.
- Each tree species seems to have a pest: wooly adelgid on hemlock, scale on pine trees.
- We get funds from DCR for forest stewardship planning.

DRAFT
Notes - EASTHAMPTON

Greg Nuttelman, Easthampton Public Works Director, Conversation on November 30, 2021
Mike Czerwiec, Easthampton Water Department, Conversation December 2, 2021

1. What happened in taking survey, lost all but 5 survey takers one third of the way through? Was it clear that we are just in information collecting phase?
Could not recall exactly, but did have to go looking into answers on several questions. Logged in a couple of times, but likely got interrupted.

2. Please tell me about your experience with Water Management Act permitting to date?
Greg - Believe there was an extension issued by MassDEP to 2022, but check with Mike. Mike – no idea. Started and then did not hear anything. Everything listed as registered and permitted. 9-22-16 when went to meeting…20 year renewal application completed, but not clear if submitted.

3. Did you need to do water needs forecasting in this process? If yes, how was this done?
Mike will look to see what may have had, but not sure there was anything yet.

4. Easthampton wells supply residents and businesses in Town, but also provide water to Southampton. What are terms of that arrangement?
We provide water to Southampton whenever there is a need. We have a full pump station. They pay 85% of the residential rate. There are also several homes in other municipalities connected to our supply, including Southampton (Line Street, Torrey Street) and Northampton (Florence Road).

5. What are Easthampton's back up or emergency sources?
Maloney Well is back-up supply, but have so much redundancy in the system that not really needed. Have emergency interconnection with Northampton, but it is hydrant to hydrant where Easthampton

and Northampton roads meet. Northampton hydrant can be connected to Easthampton hydrant via hose. Easthampton supported Northampton through this connection around 10 to 12 years ago when they had an issue, but we have not drawn supply from Northampton through this connection.

6. What do you see as your top drinking water challenges?

Staffing – New state requirements on qualifications instituted in 2012 makes it far more difficult to find staff that have the full level 3 license to operate the system. We do our best, but we cannot fill the foreman position on the water side. We have 5 people on staff that help keep our system and service going every day.

Rates - Working to make rates more equitable across the utility. Have been exploring stormwater utility as a way to shift some of the burden to where it belongs: with large impervious areas.

Infrastructure – Plenty of ancient infrastructure, but really a question of having funding. We are doing our best currently through grant sources.

7. Any additional challenges when you think about increase in extremes, including frequency of larger storms, drought, and 90-degree days?

Not really, system and capacity is robust because of past industrial uses here. We have 6 million gallons in storage and we can draw from 3 different places for supply. Even with the drought in 2016, the pipe at Maloney acted as an artesian well.

Use of the CT River gauge at 391 in Chicopee to trigger watering restrictions is not a good reference for us, but state is using that.

8. Are there some of these issues and challenges that you think best to be addressed at regional scale?

Staffing

BAPAC model of municipal collaboration (perhaps picking up on idea of providing training to local boards so that can better review development projects with drinking water supply protection in mind)

9. How is the integrated water management plan helping the City to make decisions? How are priorities identified? What is the conversation with permitting agencies on priorities? Is there flexibility in meeting terms of permit?

One issue with the plan is that it identified lots of problems and the costs of fixing problems, but

no clear way of funding projects. Because water and sewer share one enterprise fund, we are able to prioritize projects across the different parts of the utility. We also are able to comply with permit requirements.

10. Have you a sense of the capacity Easthampton may have to take on additional communities or people if there is climate migration to our region?

Yes, we could take on Southampton's system if need be. With migration would be more a question of how to house all those people. We have plenty of water.

11. Do you have a process or plan in place that helps guide you in land acquisition prioritization/decisions for drinking water supply protection?

No, not sure there is much we could do on land protection.

Patty will send some of the notes from BAPAC's work on this, which dates back to Stuart Beckley's days and conversations with Bob Newton of Smith College (and Easthampton resident!) and Gerrit Stover of Pascommuck Trust.

12. **What sources do you rely on most for water infrastructure financing and funding?**
    Retained earnings / reserve funds
    Massachusetts Clean Water Trust – State Revolving Fund
    Community Development Block Grants
    MEMA/FEMA
    USDA Water Loan and Grant Program
    EPA Water Infrastructure Finance and Innovation Act funding
    Other (please identify): _____

City has been able to make good use of CDBG and MVP. Have not used SRF in recent years.

13. Is there anything else you think important for us to consider in exploring development of a regional drinking water plan?

Will think about and let Patty know if something else comes to mind.

Other notes of interest:

Water use went up in Town during the pandemic even when schools (and restaurants) closed down. Maybe using water for hygiene, etc.?

Jeff Auer, Deputy Director of Water, West Springfield - 9/9/21 phone conversation

Limits on pumping from our wells is tied to flow in Westfield River.

Have more than 10% of unaccounted water so have to follow up with three things, including leak detection and new meters.

Capital planning and asset management – have to do more of that.

Jeff spent 10 months working on age of pipes in certain locations with help of Ductile Iron Association. Found that 28 miles of pipe in the system is more than 100 years old.

Newer pipes are cement lined so that don't have "tuberculation"

Planning to redo Riverdale section. Hydraulically, entire northeastern end of town having trouble with water pressure given age of pipes there: (1890s are the oldest pipes in Town) Riverdale section varies in age but the oldest are 1910, a 10-inch unlined pipe run up from Morgan Rd to the Holyoke Line. We want to replace that pipe with 12-inch before state does its work at Riverdale. This will happen in next 2 years.

Withdrawal limits – DCR looking at 1984 when West Springfield had to buy from Springfield because of EDB contamination at wells. 4.5 MGD. Jeff, I need to clarify here with you: Were you saying that DCR is looking to set withdrawal limit back to 1984 rate, but it is a problem because that was when you had to draw from Springfield? This is correct. Were you able to resolve this with DCR? The DCR still set withdrawal limit using a study the Town produce before the wells were reactivated (new treatment plant in 1992).

Jeff had tried to get USGS to help with some monitoring to better understand withdrawal impacts, but way too expensive and they also wanted funding for maintenance over the long term. So instead, they are looking at using Wavelet, an Israeli tool, that provides sensors at the wells and the stream with real-time output.

Notes – GOSHEN AND WESTHAMPTON

Mark Bushee, Goshen and Westhampton Health Agent, Conversation on December 6, 2021
Cell: 413-824-5132 | Office: 413-268-8404
Foothills Health District Office, 141 Main St. Haydenville, MA 01039.
Referred by Goshen BOH Chair Tiffany Marcinek

1. Most residents and businesses in Goshen and Westhampton draw from private wells. What role does the Board of Health play in private wells? If these are different in Goshen and Westhampton, let's take them one at a time.
BOH approves wells unless PWS. Mark gets plans and makes sure that meet setbacks so not too close to septic tanks or anything underground that would impact water supply. Goshen setback 150 feet versus 100 (believes this was intended to help limit growth around lakes). Otherwise other towns use state setback from septic of 100 feet. Town receives application that must include sketch. Often do site visit. Once drilled (only 1 or 2 well drillers in area, send water test report, well completion report to Town. State also gets well drillers log that goes on state data base. Towns have hard copy of Information kept in "street file" where well and septic permitting information is kept together. Going to on-line permitting next calendar year. And at some point, hope to scan old documents.

2. Looking back, what have been the major issues or challenges for drinking water supply in Goshen? Westhampton?
Mark started as Board of Health Agent in 2019. Goshen has struggled with road salt contamination of wells along main road. Town hall, fire department both impacted. Fire department even drilled new well – all still salt contaminated. So can use water only for hand washing and toilet flushing. Have to bring in water for drinking. Westhampton –have not heard of any issues with contamination.

3. Looking forward, do you anticipate other issues or challenges? Goshen? Westhampton?
Still learning the area. Worked in North Adams where looked at flooding events. Nothing comes to mind for Goshen or Westhampton right now.

There are a fair number of shallow wells around the lake in Goshen. As people worry about well contamination, they are drilling deeper.

Westhampton and Goshen – MassDEP testing found no PFAS

4. Are there some of these issues and challenges that you think best to be addressed through regional approach?

Most water issues need to approach regionally. Needs to be considered as a whole…water does not stop at town boundaries.

As ice becomes more of an issue with changing winters, salt could become more problematic.
More rain in summer has been producing a lot of washouts with potential for contamination.
Also, groundwater seemed to be a lot higher this past year. Some septic systems failing and had to go to tight tanks.

5. Has there been any discussion about exploring new sources of public supply? Goshen? Westhampton?

No conversations either way.

Public supply at lakes on Goshen is only available seasonally so some look to tap into their own private well to extend the time they can use their 2nd home. (For 4-season homes, Goshen regs require lots to be 2 acres in size).

Try to encourage people to test regularly-seasonal homes on lake…farms..lots that can impact water supply. Unless testing…would not know if there is an issue.

Notes from 11-12-21 Meeting with Jen Pederson – Massachusetts Water Works Association

"The Massachusetts Water Works Association, Inc. is a membership organization dedicated to the advancement of the drinking water profession. Through education and advocacy, MWWA is committed to public health and to promoting a safe and sufficient supply of drinking water to Massachusetts consumers."

MWWA has various committees:

- Legislative
- Program
- Education
- Sponsorship
- Technical Advisory
- Finance
- Scholarship
- Historical
- Membership/Public Relations
- Awards

Insights on poor number of answers within survey

- Maybe people overwhelmed by number of questions (25)
- Provide more context – what is regional plan going to do? Just information gathering? Are survey respondents getting locked into anything?
- When use word "regional," a lot of people will think MWRA.
- Survey Monkey has a function where you can ping people who did not complete survey

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Questions

1. Given your understanding of drinking water issues across the state, what do you see as the top 10 challenges currently?

- *PFAS/PFOS*
- Regulatory overwhelm
- *Infrastructure replacement – pipes in the ground – making some headway with infrastructure package. Potentially good funding, but still not going to close gap on what need for investing. Fear around monies that everyone will think all set. $40 B legislature report need; auditor report still talking large $s. Level of need high. Keeping conversation going important. Dollars to spend over next 5 years, but huge supply chain issues: pipe, variable frequency speed drive – months in coming*
- Infrastructure funding – threshold where rates cannot/difficult to increase
- Workforce issues –difficulty in finding operators, training to get licensed (cost and time)
- Emerging contaminants – what next?
- Communication challenges around water quality – confidence in supply
    - *Changes with drought – some good important press to help inform*
- Integrated water management planning – looking across to see what are top needs and challenges (with regulatory overwhelm, tough to do everything…MVP may be helpful in this conversation)
- Trouble getting DW projects up food chain in MVP action grants, either locally or at state level
- Districts not eligible for MVP…but now with ARPA language that will make eligible

- New source development, redundancy, adequate supply, additional capacity – difficult to get through process, opposition from River groups

Ital = issues with good attention on them (from #3 below)

2. Any additional challenges when think about increase in extremes, both frequency of larger storms and 90 degree days?

- 2016 drought – private wells losing capacity and not a lot of TA, funding for private well owners
- Raises questions about whether communities with large numbers on private wells may want to be looking to tap into existing public supply or develop new public supply

- More people struggling with disinfection byproduct - water quality with increased storms
- More 90 degree days, more watering outdoors
  State very aggressive in water conservation and permits get renewed; can be huge revenue issue as well, especially during summer months
  (what are criteria to get exemptions that MWRA gets?)

3. What are the current conversations around (select ones that do not know about) these?

Familiar with all. No need to ask.

4. Of these, which do you think have good attention, which do not?

See italics on #1 above.

5. Are there some that you think best to be addressed at regional scale?

Workforce issues – benefit from regional attention

Infrastructure replacement and funding – nothing about water in last Auditor's report. Missed opportunity to bring back into focus for Western MA

6. Key people to talk to?

Greg Nuttleman - Easthampton

Matt Smith – Holyoke

Heather Stayton –Westfield

Kathy Baskin – DEP

Vandana Rao – EEA (led drought task force)

Dave Reckow – Umass Water Center

Other questions if have time:

Numerous Water Districts serve as drinking water supply operators. Do you know anything about story of how these came to be and why municipalities moved in this direction?

- *Look at local enabling act for districts*
- Legislation filed to better follow water districts– *take a look*
- Smaller districts becomes a challenge in meeting regulatory demands when have such a small base for rates
- Fire/water districts can often get tax revenue (Jen notes for some on the Cape)

Availability of funding for drinking water assessments. New technologies (isotopic analysis), Earth MRIs, etc.

- UMass has reuse system and Amherst may take that over. There is not a lot going on with reuse/reclaimed water in MA. Some pilot projects at Gillette stadium and Wrentham Village.
- For USGS projects, important to check in with Vandana Rao. She may also be able to identify other sources.

Notes

Conversation with Catherine Sarafinas-Hamilton, MassDEP Regional Planner and Wellhead Protection Coordinator – December 28, 2021

1. **From your perspective, what do you see as the top challenges for drinking water currently?**

   Capacity seems to be a huge issue, that is the ability to properly operate and maintain a water system. The issues range from the scarcity of certified operators to source protection, emergency response, and treatment. (Michael Maynard is a good MassDEP contact to explore this topic further.)

   Funding is also always an important issue. There are some possible ways to realize savings too. Monitoring waivers, for example can bring certain savings, if you meet certain criteria.

   Reciprocity between communities for adequate Zone II and Zone A protection can also be a challenge. These regulatory protection areas for drinking water supply in one community often extend into a neighboring community, but neighboring communities do not always apply needed protections. Cape Cod is a good example of where communities are really honoring the need for protection of areas that extend across municipal boundaries.

2. **Are there any additional challenges you would add to this list when you think about increased frequency of extremes: larger storms, drought, 90-degree days?**

   Duane LaVangie who works on Water Management Act permits is someone who keeps an eye on volumes, stressed basins, etc. He would be a good MassDEP contact to explore this topic further.)

3. **Is there any state planning/guidance under way on drinking water that you think important to consider for regional drinking water plan?**

   Not that I know of. I have seen that often times drinking water planning occurs with municipal officials or local committees and the drinking water operator is not even mentioned. It is important to include that person who is operating supply to be an active participant in these conversations. They have the hands-on understanding of the system and the related challenges.

4. **What are some good sources of existing information that can help with inventory of drinking water supply in the region?**

   Water withdrawal permits
   Sanitary Surveys – MassDEP inspections of drinking water treatment facility
   Consumer Confidence Reports – issued by operators
   Annual Statistical Reports

Appendix D

Survey of Drinking Water System Operators

Summary of drinking water survey results

Survey results

Summary of Drinking Water Survey Results

PVPC developed and then distributed a survey to drinking water system operators from throughout the region in November 2021. There were 24 respondents, but only 5 operators completed the survey (Amherst, Huntington, South Hadley – Fire District 2, Southwick, and West Springfield). PVPC heard back that some of the questions were not easily answerable and that there were also technical issues with the survey itself that did not enable easy movement back to earlier questions without loss of answers.

Nevertheless, the survey did yield some information for guiding this first stage of identifying key topics for a regional plan. Understanding from the survey includes:

- Some Zone 1 and Zone A Areas are in need of protection
- There are large areas of Zone Iis that are unprotected
- Most do not have process or plan in place that helps guide in land acquisition prioritization/decisions for drinking water supply protection; for those with land protection process, proximity to source is major consideration
- Many in the region are on private sources of supply
- Far more public supplies operating under registrations than permits
- Major concerns include: aging infrastructure, pollution from agricultural and landscaping uses, drought and impacts on water supply
- Some comments on regulation of water supply:
  - Using one gauge on a major river is not a true barometer of water use by a community.
  - Unfunded mandates are challenging
- Comments on concerns about more frequent extremes occurring in weather, including drought, downpours and heat:
  - Too much water used on lawns; needs a change of culture
  - Everyone should be concerned about climate change and the effects on the water supply.
  - Long periods of drought often lead to requirements to implement water use restrictions
- Top 5 greatest needs:
  - Funding for infrastructure upgrades
  - Update of drinking water protection bylaws/ordinances
  - Funding for proper operation of system
  - Recruiting additional talent to help operate system
  - Emergency back-up source of supply
- Range in percentage of annual operating budget going to debt service, from 11 to 20% (2), 21 to 30% (1), 41 to 50% (1), and 71 to 80% (1).

- What rely on most for water infrastructure financing and funding:
  - Retained earnings / reserve funds
  - Community development block grants
  - SRF
  - MEMA/FEMA
- Three things in order of importance that would be most helpful in managing or operating drinking water system:

1	2	3
Stand alone Water and Sewer Commission	Realist water and sewer rates that are fair to everyone	Change the culture of water use, as a limited resource
Additional funding sources - knowing where they are, how to access them, and example appropriate projects	More training/discussion to keep everyone up to date on regulation changes	Example regulations, bylaws, notifications, etc.
Money	Money	Money
Ability to draw more water into the system	Streamline WMA permitting process	Employee succession plan
grants		

There are specific challenges to rural systems whereby operations and management of supply no longer self-sustaining. New rules, new sampling, extra costs, such as PFAS, all making increasingly difficult. Financial aid is essential. Operators for small source also difficult as really only a 2-hour/day job.

1. Municipality served:

Answered 24

Skipped 0

Respondents	Response Date	Responses	Tags
1	Nov 09 2021 11:07 AM	Town of Southampton	
2	Nov 09 2021 10:16 AM	Cummington	
3	Nov 08 2021 03:17 PM	Hatfield	
4	Nov 08 2021 02:39 PM	1400 services	
5	Nov 08 2021 02:24 PM	Easthampton, MA	
6	Nov 08 2021 02:20 PM	Town of West Springfield	
7	Nov 08 2021 02:17 PM	Granville	
8	Nov 08 2021 02:16 PM	Ware	
9	Nov 08 2021 02:16 PM	South Hadley Fire District No.1	
10	Nov 08 2021 08:11 AM	Chicopee, MA	
11	Nov 08 2021 07:46 AM	Russell	
12	Nov 05 2021 11:38 AM	Springfield, Ludlow, Agawam, Longmeadow, East Longmeadow. Peak/Emergency water to Southwick, Westfield, Wilbraham, Chicopee	
13	Nov 05 2021 09:34 AM	Town of Blandford	
14	Nov 04 2021 03:21 PM	TOWN OF HADLEY, MA	
15	Nov 04 2021 02:54 PM	Springfield Region	
16	Nov 03 2021 11:36 AM	Three Rivers	
17	Nov 03 2021 11:01 AM	Amherst	
18	Nov 03 2021 10:46 AM	Town of Huntington	
19	Nov 03 2021 09:07 AM	Town of Monson	
20	Nov 03 2021 09:02 AM	Southwick	
21	Nov 03 2021 08:06 AM	Chicopee	
22	Nov 03 2021 07:59 AM	Northampton	
23	Nov 03 2021 07:58 AM	South Hadley Fire District No.2	
24	Nov 03 2021 07:33 AM	Town of East Longmeadow	

2. Official name of your department/service organization:

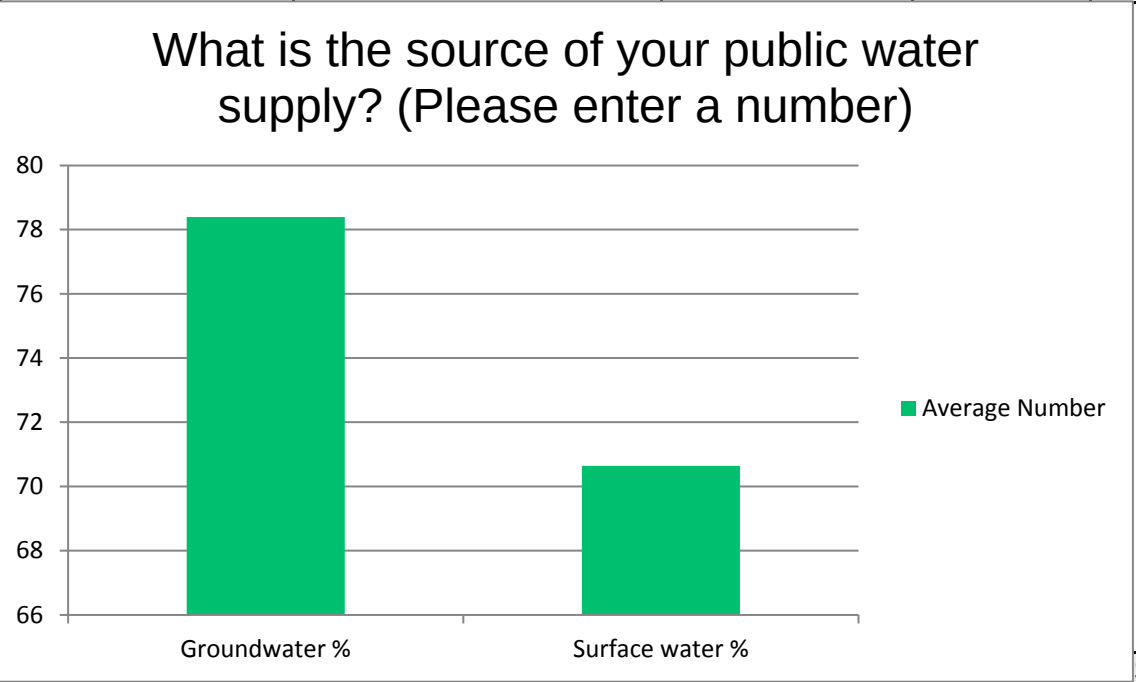
Answered 24

Skipped 0

Respondents	Response Date	Responses	Tags
1	Nov 09 2021 11:07 AM	Southampton Water Department	
2	Nov 09 2021 10:16 AM	Cummington water dept	
3	Nov 08 2021 03:17 PM	Hatfield Water Dept	
4	Nov 08 2021 02:39 PM	PALMER WATER DISTRICT #1	
5	Nov 08 2021 02:24 PM	Easthampton Water Department	
6	Nov 08 2021 02:20 PM	Town of West Springfield DPW Water Division	
7	Nov 08 2021 02:17 PM	Town of Granville	
8	Nov 08 2021 02:16 PM	Water Department - Fire District No.1	
9	Nov 08 2021 02:16 PM	Ware Water Department	
10	Nov 08 2021 08:11 AM	Chicopee Water Department	
11	Nov 08 2021 07:46 AM	Russell Water Dept	
12	Nov 05 2021 11:38 AM	Springfield Water and Sewer	
13	Nov 05 2021 09:34 AM	Blandford Water	
14	Nov 04 2021 03:21 PM	DEPARTMENT OF PUBLIC WORKS	
15	Nov 04 2021 02:54 PM	Springfield Water and Sewer Commission	
16	Nov 03 2021 11:36 AM	Three Rivers Water Dept	
17	Nov 03 2021 11:01 AM	Public Works Department	
18	Nov 03 2021 10:46 AM	Town of Huntington Water Department	
19	Nov 03 2021 09:07 AM	Monson Water & Sewer Department	
20	Nov 03 2021 09:02 AM	DPW	
21	Nov 03 2021 08:06 AM	Chicopee Water Department	
22	Nov 03 2021 07:59 AM	Northampton Water	
23	Nov 03 2021 07:58 AM	South Hadley Fire District No.2 Water Department	
24	Nov 03 2021 07:33 AM	Department of Public Works	

3. What is the source of your public water supply? (Please enter a number)

Answer Choices	Average Number	Total Number	Responses	
Groundwater %	78.38888889	1411	75.00%	18
Surface water %	70.64285714	989	58.33%	14
			Answered	**24**
			Skipped	**0**

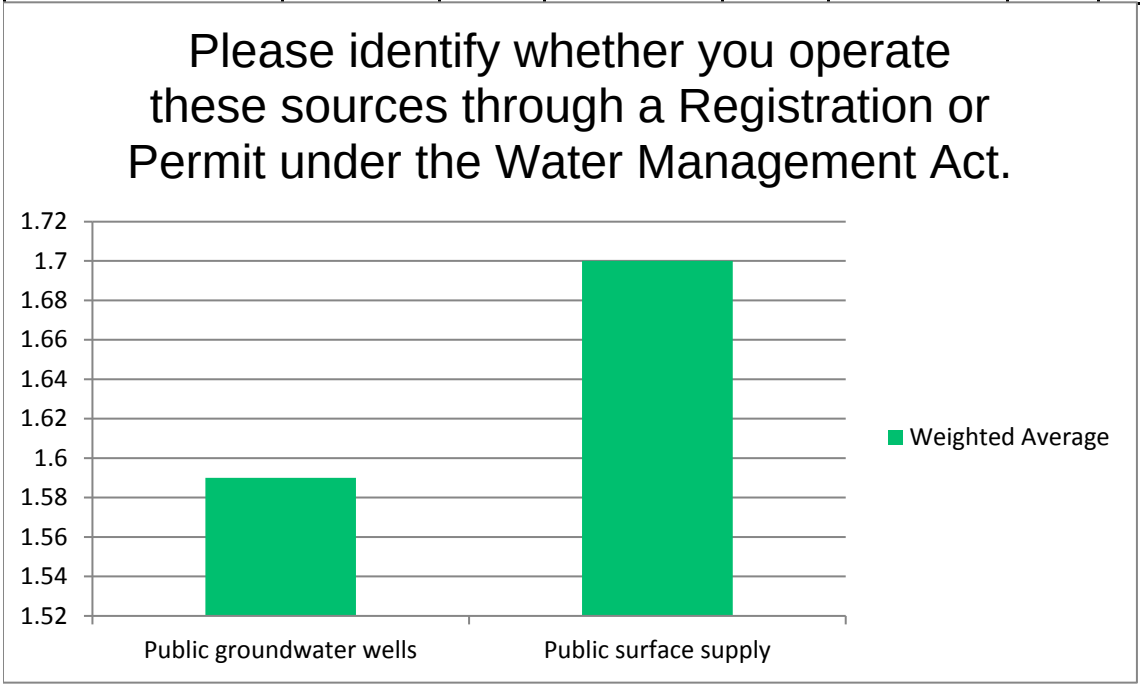


Respondents	Response Date	Groundwater %	Tags	Surface water %
1	Nov 09 2021 11:07 AM	100		
2	Nov 09 2021 10:16 AM	100		
3	Nov 08 2021 03:17 PM	30		70
4	Nov 08 2021 02:39 PM	50		50
5	Nov 08 2021 02:24 PM	100		
6	Nov 08 2021 02:20 PM	100		0
7	Nov 08 2021 02:17 PM	100		
8	Nov 08 2021 02:16 PM	100		0
9	Nov 08 2021 02:16 PM			100
10	Nov 08 2021 08:11 AM			100
11	Nov 08 2021 07:46 AM	100		
12	Nov 05 2021 11:38 AM	0		100
13	Nov 05 2021 09:34 AM			100
14	Nov 04 2021 03:21 PM	100		
15	Nov 04 2021 02:54 PM			100
16	Nov 03 2021 11:36 AM	100		
17	Nov 03 2021 11:01 AM	50		50
18	Nov 03 2021 10:46 AM	100		
19	Nov 03 2021 09:07 AM	100		
20	Nov 03 2021 09:02 AM	80		20

21	Nov 03 2021 08:06 AM			100
22	Nov 03 2021 07:59 AM	1		99
23	Nov 03 2021 07:58 AM	100		
24	Nov 03 2021 07:33 AM			100

4. Please identify whether you operate these sources through a Registration or Permit under the Water Management Act.

	Registration		Permit		Not sure		Total	Weighted Average
Public groundwater wells	52.94%	9	35.29%	6	11.76%	2	17	1.59
Public surface supply	60.00%	6	10.00%	1	30.00%	3	10	1.7
							Answered	**23**
							Skipped	**1**



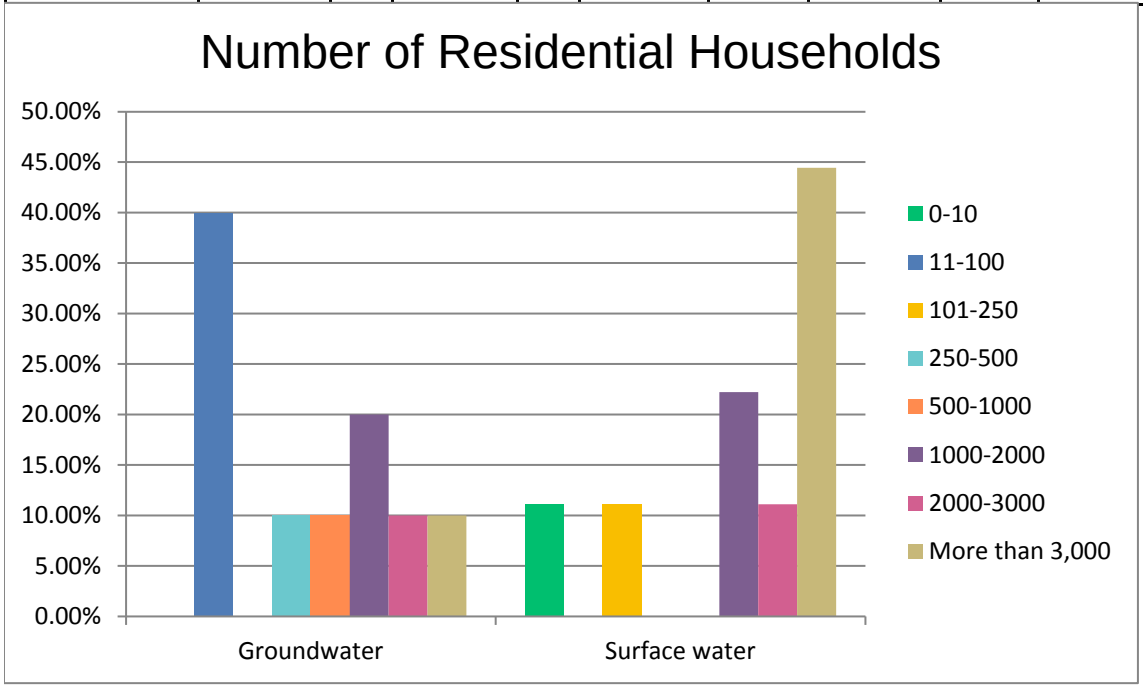
5. Do you also have residential household, businesses/institutional, and industrial users drawing from private sources of supply in your service area?

Answer Choices	Responses	
Yes	79.17%	19
No	20.83%	5
	Answered	**24**
	Skipped	**0**

6. If yes, please quantify as best you can.

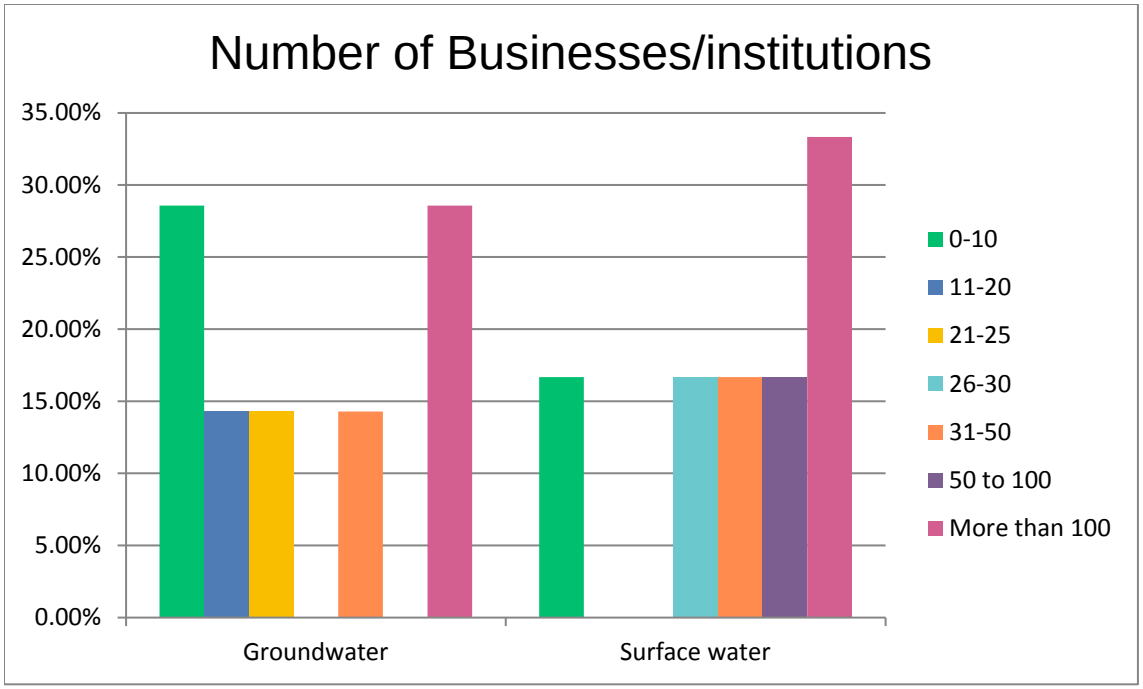
Number of Residential Households

	0-10		11-100		101-250		250-500		500-1000		1000-2000		2000-3000		More than		Total
Groundwater	0.00%	0	40.00%	4	0.00%	0	10.00%	1	10.00%	1	20.00%	2	10.00%	1	10.00%	1	10
Surface water	11.11%	1	0.00%	0	11.11%	1	0.00%	0	0.00%	0	22.22%	2	11.11%	1	44.44%	4	9
															Answered		**14**
															Skipped		**10**

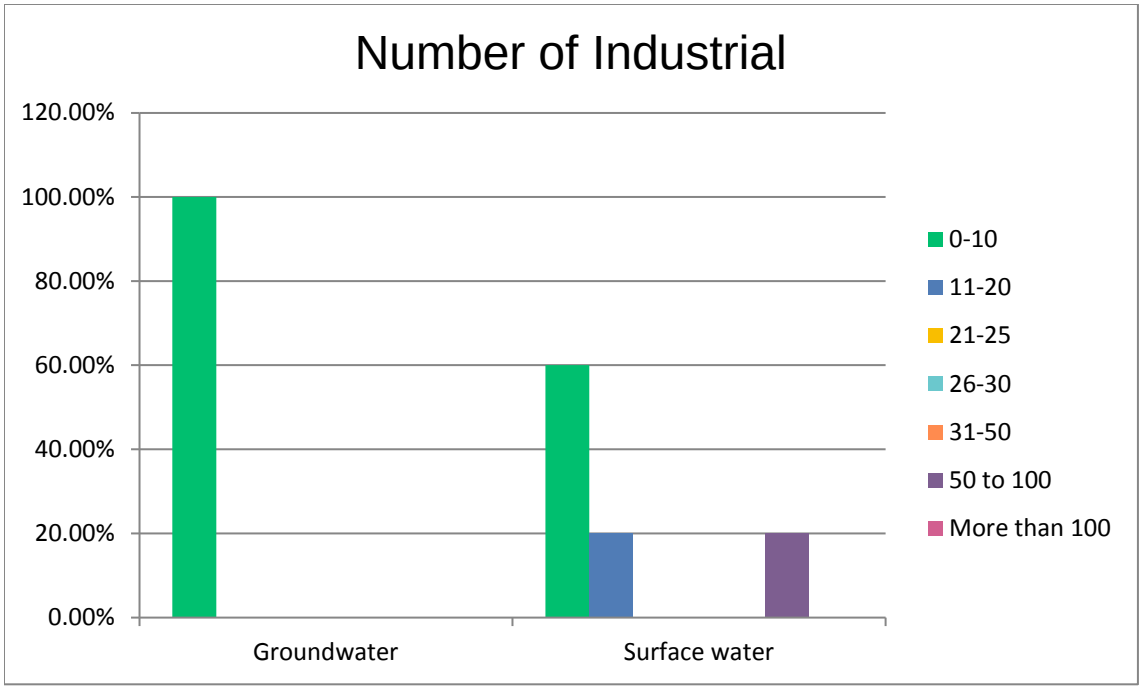


Number of Businesses/institutions

	0-10		11-20		21-25		26-30		31-50		50 to 100		More than 100		Total
Groundwater	28.57%	2	14.29%	1	14.29%	1	0.00%	0	14.29%	1	0.00%	0	28.57%	2	7
Surface water	16.67%	1	0.00%	0	0.00%	0	16.67%	1	16.67%	1	16.67%	1	33.33%	2	6
													Answered		**14**
													Skipped		**10**



Number of Industrial														
	0-10		11-20		21-25		26-30		31-50		50 to 100		More than 100		Total
Groundwater	100.00%	5	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	5
Surface water	60.00%	3	20.00%	1	0.00%	0	0.00%	0	0.00%	0	20.00%	1	0.00%	0	5
													Answered		**14**
													Skipped		**10**


Number of Industrial
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Groundwater
Surface water
0-10
11-20
21-25
26-30
31-50
50 to 100
More than 100

7. Groundwater source – please estimate what percentage of land protection you have (including any such area that may extend into another municipality) in your:

Answer Choices	Responses	
Zone I - % protected	100.00%	13
Zone II - % protected	84.62%	11
No groundwater source	0.00%	0
	Answered	**13**
	Skipped	**11**

Respondents	Response Date	Zone I - % protected	Tags	Zone II - % protected	Tags	No groundwater source	Tags
1	Nov 09 2021 10:19 AM	5					
2	Nov 08 2021 03:19 PM	100		20			
3	Nov 08 2021 02:26 PM	98		5			
4	Nov 08 2021 02:24 PM	100		50			
5	Nov 08 2021 02:16 PM	90		75			
6	Nov 05 2021 11:38 AM	na		na			
7	Nov 03 2021 11:40 AM	2		98			
8	Nov 03 2021 11:03 AM	100		80			
9	Nov 03 2021 10:46 AM	100					
10	Nov 03 2021 09:08 AM	100		100			
11	Nov 03 2021 09:05 AM	100%		100%			
12	Nov 03 2021 08:01 AM	100		25			
13	Nov 03 2021 07:45 AM	0		0			

8. Surface water source – please estimate what percentage of land protection you have (including any such area that may extend into another municipality) in your:

Answer Choices	Responses	
Zone A - % protected	100.00%	6
Zone B - % protected	83.33%	5
No surface water source	0.00%	0
	Answered	**6**
	Skipped	**18**

Respondents	Response Date	Zone A - % protected	Tags	Zone B - % protected	Tags	No surface water source	Tags
1	Nov 08 2021 03:19 PM	100		60			
2	Nov 08 2021 02:17 PM	N/A Quabbin system					
3	Nov 05 2021 11:38 AM	58		77			
4	Nov 03 2021 11:03 AM	100		60			
5	Nov 03 2021 08:08 AM	Quabbin reservoir MWRA		Quabbin reservoir			
6	Nov 03 2021 07:45 AM	0		0			

9. Do you have a process or plan in place that helps guide you in land acquisition prioritization/decisions for drinking water supply protection?

Answer Choices	Responses	
Yes	20.00%	1
No	80.00%	4
	Answered	**5**
	Skipped	**19**

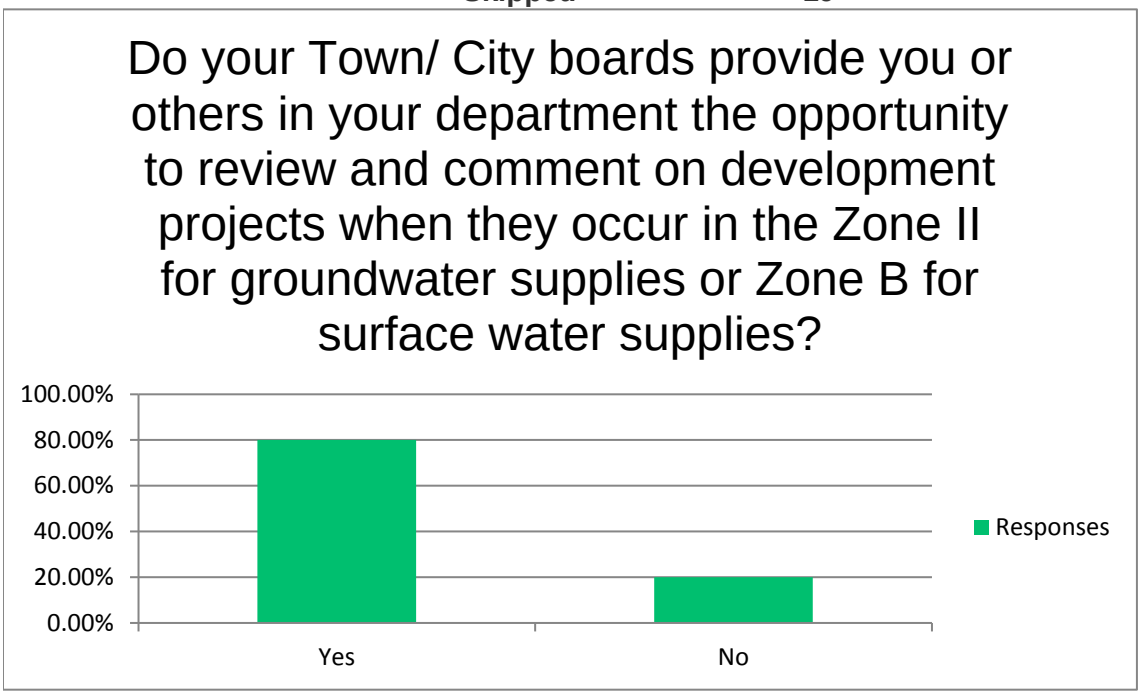
10. What considerations are important factors in setting priorities or making decisions on land acquisition for drinking water supply protection? (e.g., areas where the aquifer is more porous and vulnerable to contamination versus area of the aquifer that have a confining clay layer, Zone B areas around your reservoir that are not yet protected.)

Answered **4**
Skipped **20**

Respondents	Response Date	Responses	Tags
1	Nov 08 2021 02:54 PM	Zone II is 5,646 acres, the Town only owns 300 Acres, convincing the Town of Southwick, City of Westfield, and Town of Suffield CT to protect the aquifer as for surrounding landowners (including people that use chemicals on lawns) would be the priority in protecting the water supply	
2	Nov 03 2021 11:16 AM	proximity to source (or feeding streams), cost to obtain.	
3	Nov 03 2021 11:04 AM	We have no concerns	
4	Nov 03 2021 09:33 AM	Proximity to water source; Potential for contamination	

11. Do your Town/ City boards provide you or others in your department the opportunity to review and comment on development projects when they occur in the Zone II for groundwater supplies or Zone B for surface water supplies?

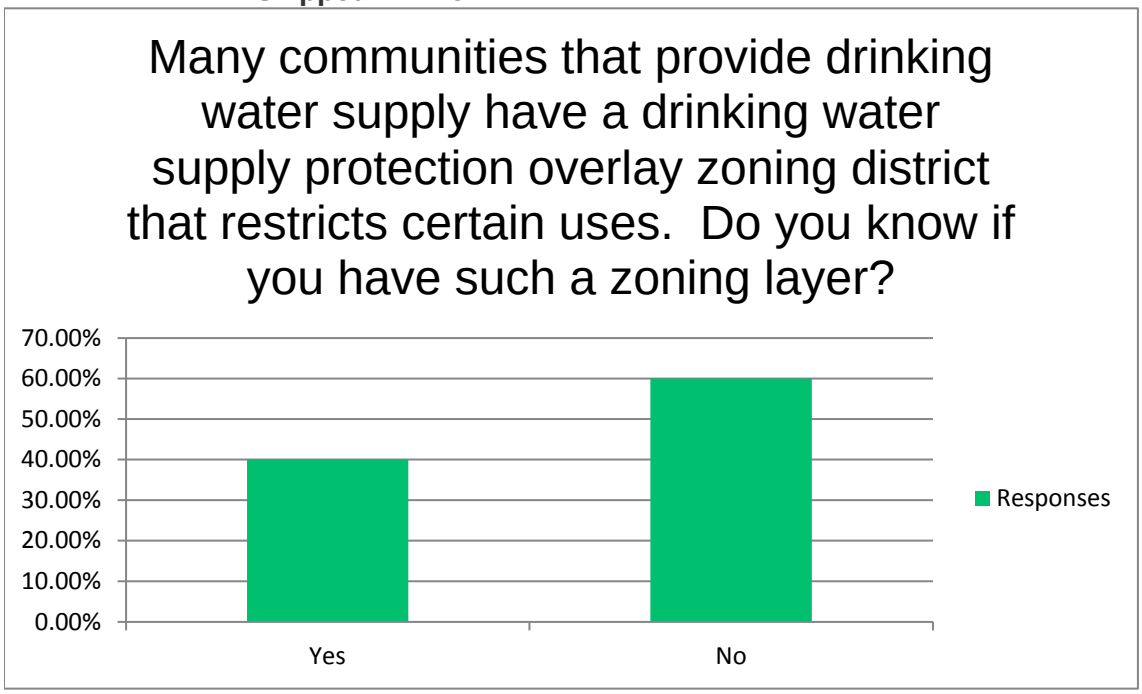
Answer Choices	Responses	
Yes	80.00%	4
No	20.00%	1
Please provide any additional information		2
	Answered	**5**
	Skipped	**19**



Respondents	Response Date	Please provide any additional information	Tags
1	Nov 08 2021 02:54 PM	Rarely, I saw an advertisement for work in the aquifer in the Town of Southwick and I sent in my comments, never heard what the outcome was.	
2	Nov 03 2021 11:04 AM	We have commissioners who make decisions	

12. Many communities that provide drinking water supply have a drinking water supply protection overlay zoning district that restricts certain uses. Do you know if you have such a zoning layer?

Answer Choices	Responses	
Yes	40.00%	2
No	60.00%	3
	Answered	**5**
	Skipped	**19**

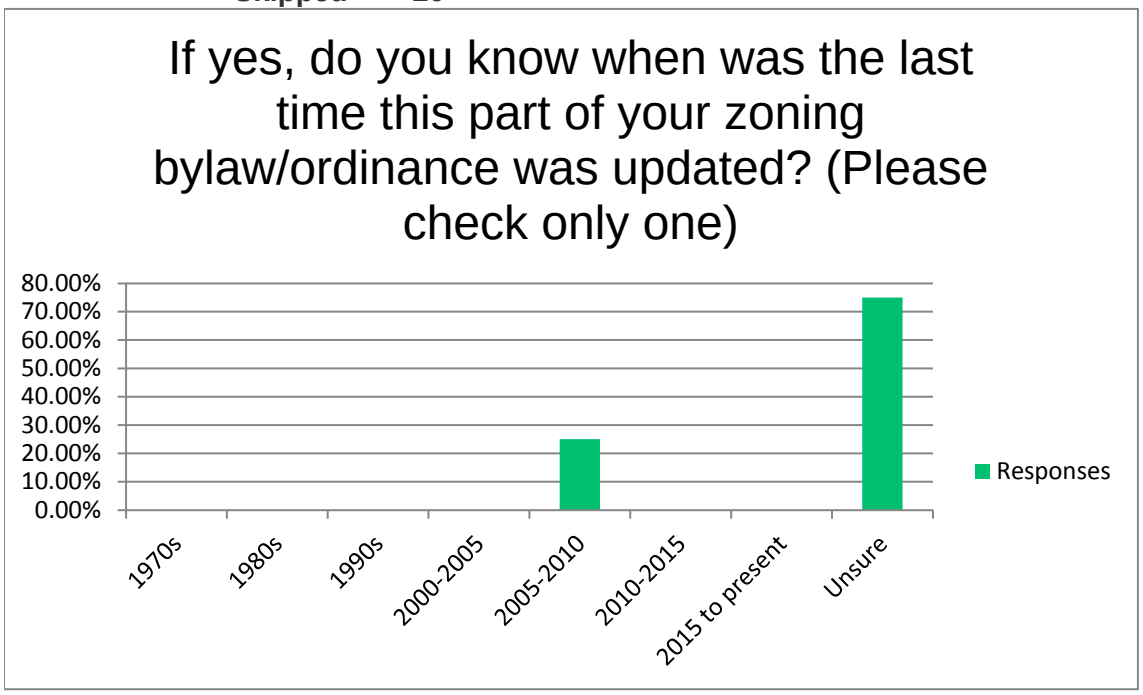


13. If yes, do you know when was the last time this part of your zoning bylaw/ordinance was updated? (Please check only one)

Answer Choices	Responses	
1970s	0.00%	0
1980s	0.00%	0
1990s	0.00%	0
2000-2005	0.00%	0
2005-2010	25.00%	1
2010-2015	0.00%	0
2015 to present	0.00%	0
Unsure	75.00%	3

Answered **4**

Skipped **20**

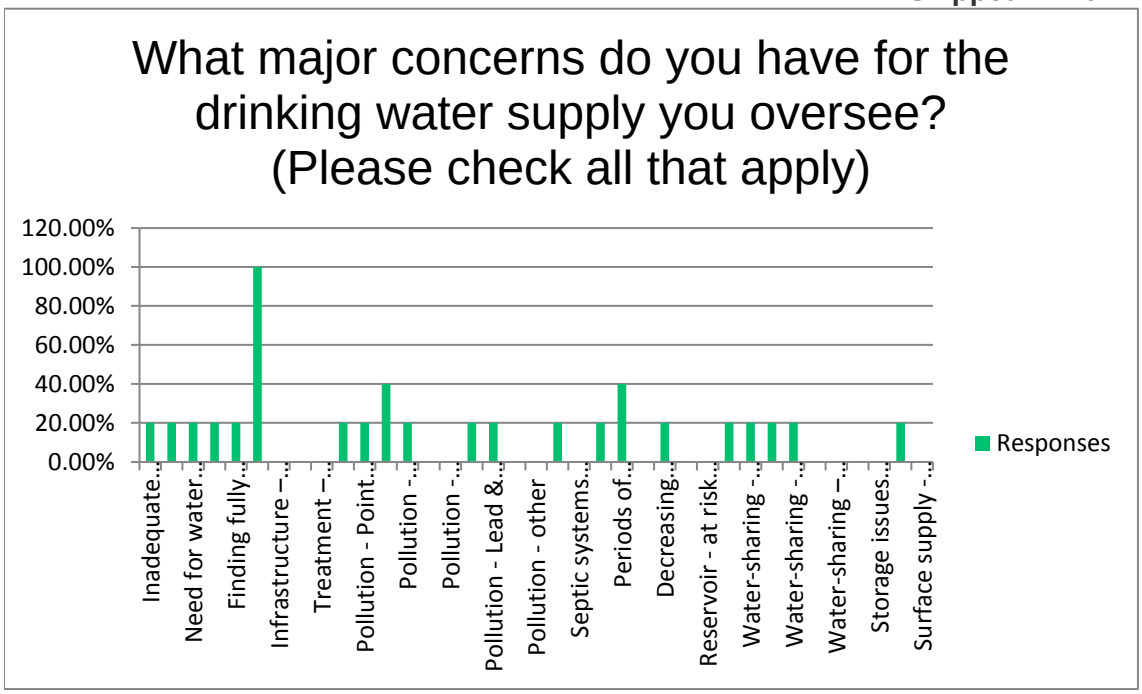


14. What major concerns do you have for the drinking water supply you oversee? (Please check all that apply)

Answer Choices	Responses	
Inadequate supply to meet demand	20.00%	1
Reaching withdrawal limits	20.00%	1
Need for water conservation	20.00%	1
Distribution/ Transmission Issues	20.00%	1
Finding fully licensed qualified staff	20.00%	1
Infrastructure – aged and in need of upgrades	100.00%	5
Infrastructure – flooding impacts	0.00%	0
Infrastructure - other extreme weather impacts	0.00%	0
Treatment – surface supply and haleocetic acids	0.00%	0
Treatment – other issues	20.00%	1
Pollution - Point Source	20.00%	1
Pollution - Agricultural, landscaping	40.00%	2
Pollution - Nitrate/Nitrite	20.00%	1
Pollution – Algal Blooms	0.00%	0
Pollution - Coliform bacteria from failing septic, agriculture, etc.	0.00%	0
Pollution - PFAS	20.00%	1
Pollution - Lead & Copper	20.00%	1
Pollution - Road salt	0.00%	0
Pollution - other	0.00%	0
Development and impacts on water supply and/or quality	20.00%	1
Septic systems and impacts on water supply and/or quality	0.00%	0
Forestry and impacts on water supply and/or quality	20.00%	1
Periods of drought and impacts on water supply and/or quality	40.00%	2
Periods of rainfall and impacts on water supply and/or quality	0.00%	0
Decreasing annual snowpack and water supply implications	20.00%	1
Reservoir - storage capacity too small/constrained	0.00%	0
Reservoir - at risk of pollution	0.00%	0
Reservoir – condition of dams	20.00%	1
Water-sharing - Interest in connecting with other communities to provide supply	20.00%	1
Water-sharing - Interest in connecting with other communities to receive supply	20.00%	1
Water-sharing - Interest in connecting with other communities for emergency back up supply	20.00%	1
Water-sharing - Dependency if receive supply from other community	0.00%	0
Water-sharing – Revenue loss if receive supply from other community	0.00%	0
Emergency sources & protocols	0.00%	0
Storage issues (inadequate quantity, quality, etc.)	0.00%	0
Groundwater supply - other concern(s) – please list below:	20.00%	1
Surface supply - other concern(s) – please list below:	0.00%	0

Other (please specify)		1

Answered 5
Skipped 19

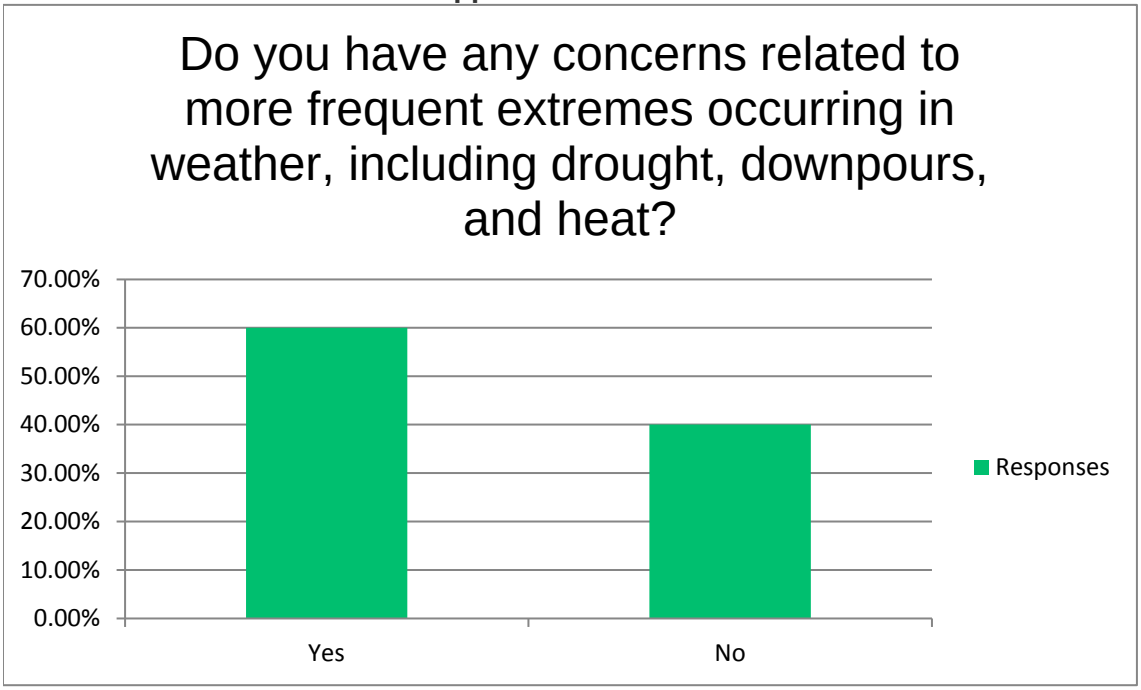


Respondents	Response Date	Other (please specify)	Tags
1	Nov 08 2021 02:54 PM	Impacts of withdrawal on the aquifer and streams in the local area.	

15. Do you have any concerns related to more frequent extremes occurring in weather, including drought, downpours, and heat?

Answer Choices	Responses	
Yes	60.00%	3
No	40.00%	2
If yes, please say a bit about your response:		3

Answered **5**
Skipped **19**

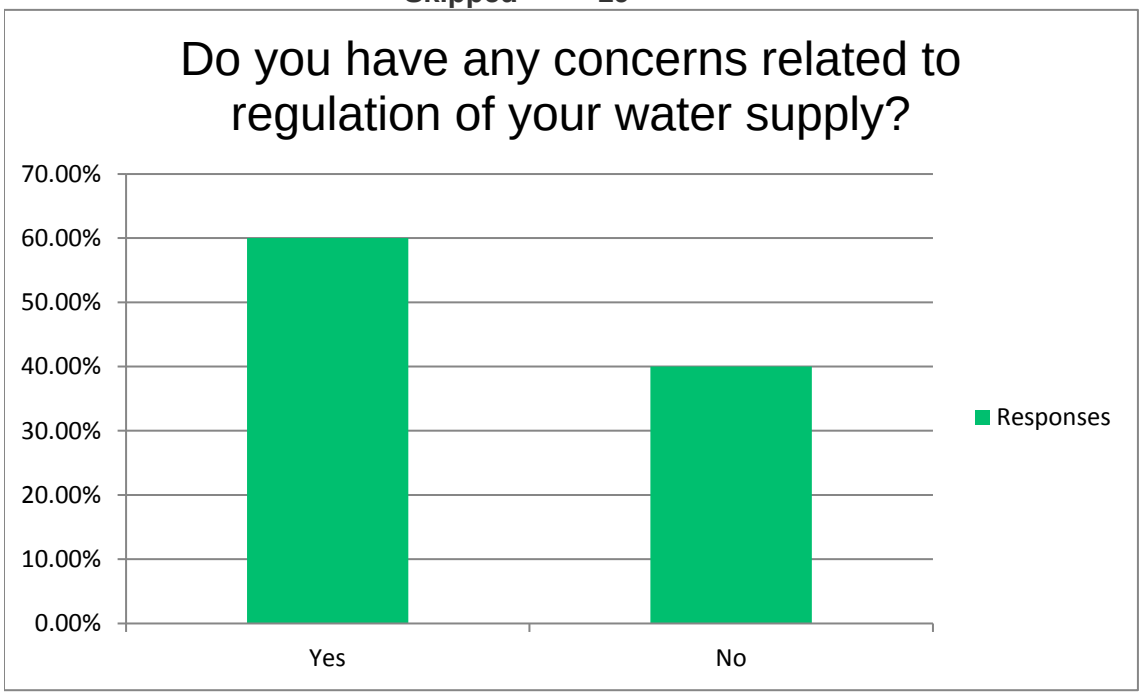


Respondents	Response Date	If yes, please say a bit about your response:	Tags
1	Nov 08 2021 02:54 PM	Too much water used on the lawn needs a change of culture.	
2	Nov 03 2021 11:16 AM	Everyone should be concerned about climate change and the effects on the	
3	Nov 03 2021 09:33 AM	Long periods of drought often lead to requirements to implement water use restrictions	

16. Do you have any concerns related to regulation of your water supply?

Answer Choices	Responses	
Yes	60.00%	3
No	40.00%	2
If yes, please say a bit about your response:		3

Answered **5**
Skipped **19**

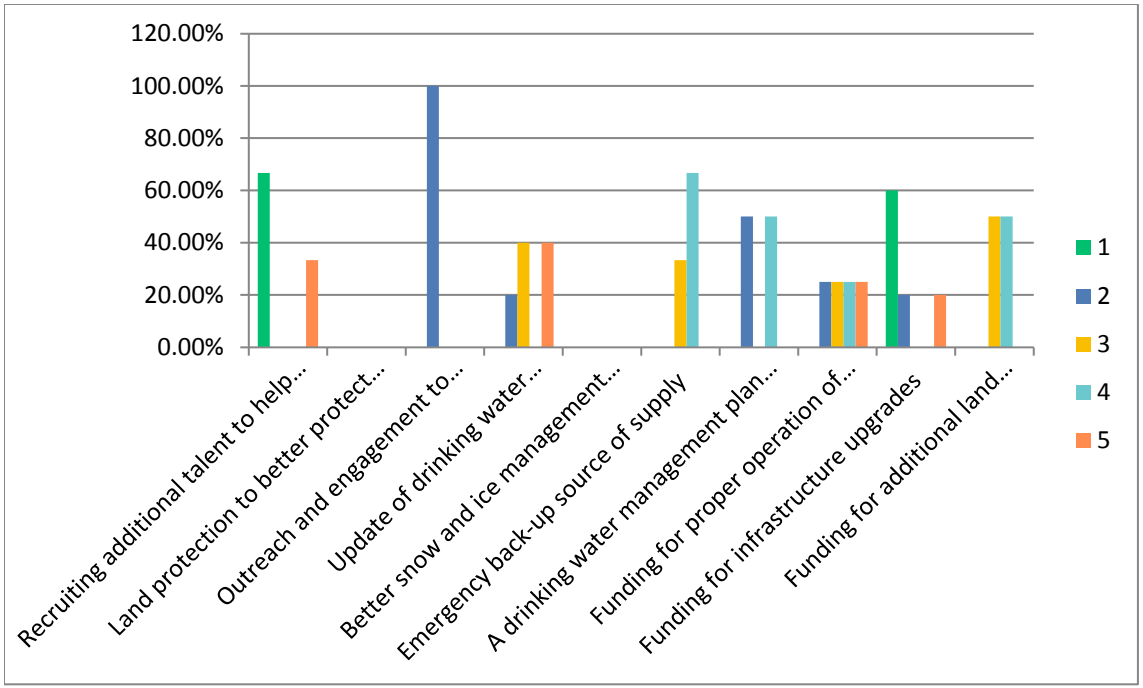


Respondents	Response Date	If yes, please say a bit about your response:	Tags
1	Nov 08 2021 02:54 PM	Need regionalization of water use and its regional impact on water supplies. Using one gauge on a major river is not a true barometer of water use by a community.	
2	Nov 03 2021 11:16 AM	Unfunded mandates are challenging.	
3	Nov 03 2021 08:15 AM	registration renewal proposed regulation changes	

17. Please identify your top five needs from greatest to least needs (greatest is 1; 5 is least):

	1		2		3		4		5		Total
Recruiting additional talent to help operate system	66.67%	2	0.00%	0	0.00%	0	0.00%	0	33.33%	1	3
Land protection to better protect drinking water supply	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0
Outreach and engagement to better inform landowners about best practices (septic system, fertilizer use, etc.)	0.00%	0	100.00%	1	0.00%	0	0.00%	0	0.00%	0	1
Update of drinking water protection bylaws/ordinances	0.00%	0	20.00%	1	40.00%	2	0.00%	0	40.00%	2	5
Better snow and ice management practices to reduce risk of contamination	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0
Emergency back-up source of supply	0.00%	0	0.00%	0	33.33%	1	66.67%	2	0.00%	0	3
A drinking water management plan to help prioritize investments	0.00%	0	50.00%	1	0.00%	0	50.00%	1	0.00%	0	2
Funding for proper operation of system	0.00%	0	25.00%	1	25.00%	1	25.00%	1	25.00%	1	4
Funding for infrastructure upgrades	60.00%	3	20.00%	1	0.00%	0	0.00%	0	20.00%	1	5
Funding for additional land protection	0.00%	0	0.00%	0	50.00%	1	50.00%	1	0.00%	0	2
Please specify other needs:											1

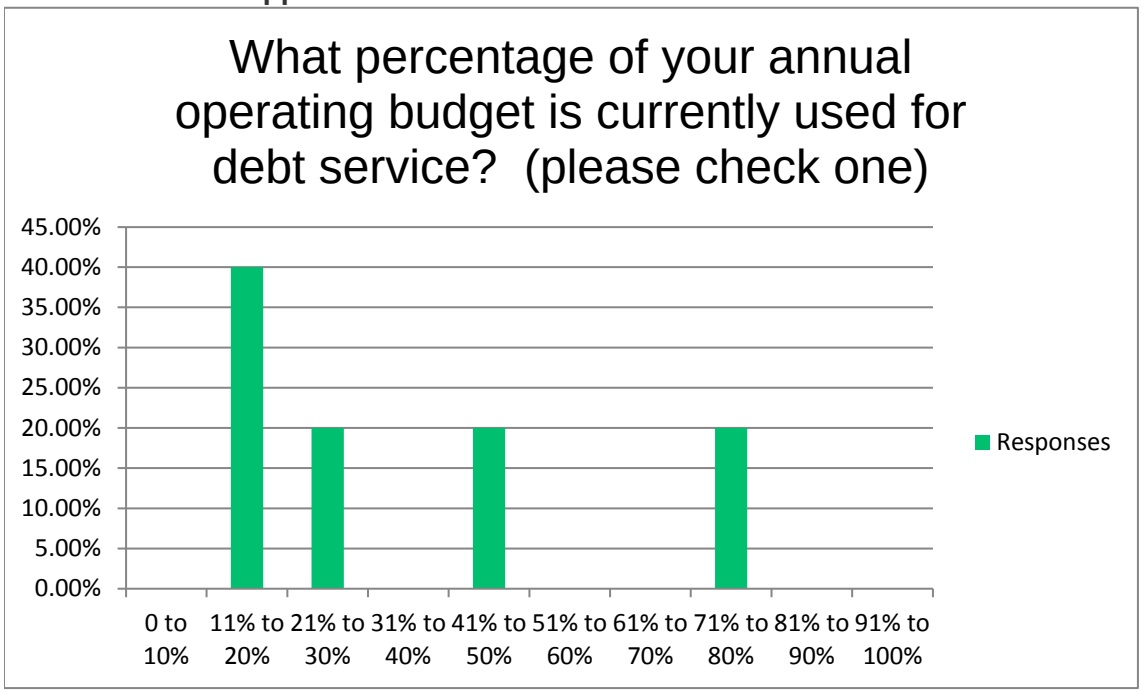
Answered	**5**
Skipped	**19**



Respondents	Response Date	Please specify other needs:	Tags
1	Nov 03 2021 11:16 AM	4. Meeting regulatory requirements 5. Adapting to climate change. **This required me to put in a #4 and #5 above, but they aren't accurate for my system.	

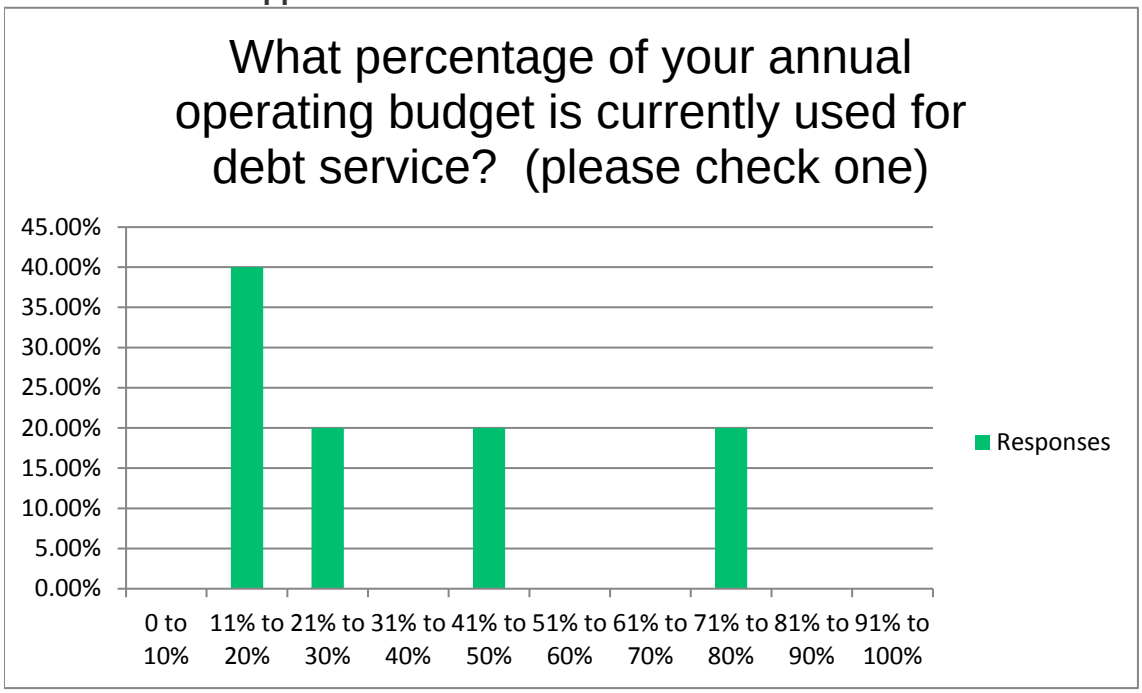
18. What percentage of your annual operating budget is currently used for debt

Answer Choices	Responses	
0 to 10%	0.00%	0
11% to 20%	40.00%	2
21% to 30%	20.00%	1
31% to 40%	0.00%	0
41% to 50%	20.00%	1
51% to 60%	0.00%	0
61% to 70%	0.00%	0
71% to 80%	20.00%	1
81% to 90%	0.00%	0
91% to 100%	0.00%	0
	Answered	**5**
	Skipped	**19**



18. What percentage of your annual operating budget is currently used for debt

Answer Choices	Responses	
0 to 10%	0.00%	0
11% to 20%	40.00%	2
21% to 30%	20.00%	1
31% to 40%	0.00%	0
41% to 50%	20.00%	1
51% to 60%	0.00%	0
61% to 70%	0.00%	0
71% to 80%	20.00%	1
81% to 90%	0.00%	0
91% to 100%	0.00%	0
	Answered	**5**
	Skipped	**19**

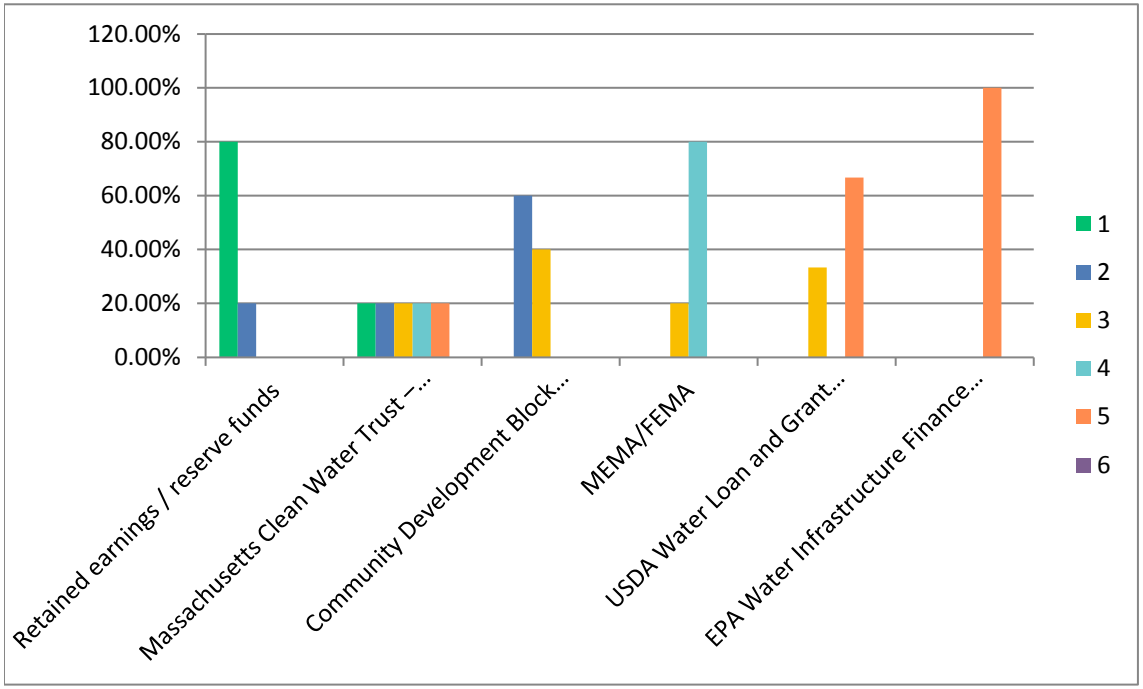


19. Please rank the following in terms of what you rely on most for water infrastructure financing and funding? (1 being

	1		2		3		4		5		6		Total
Retained earnings / reserve funds	80.00%	4	20.00%	1	0.00%	0	0.00%	0	0.00%	0	0.00%	0	5
Massachusetts Clean Water Trust – State Revolving Fund	20.00%	1	20.00%	1	20.00%	1	20.00%	1	20.00%	1	0.00%	0	5
Community Development Block Grants	0.00%	0	60.00%	3	40.00%	2	0.00%	0	0.00%	0	0.00%	0	5
MEMA/FEMA	0.00%	0	0.00%	0	20.00%	1	80.00%	4	0.00%	0	0.00%	0	5
USDA Water Loan and Grant Program	0.00%	0	0.00%	0	33.33%	1	0.00%	0	66.67%	2	0.00%	0	3
EPA Water Infrastructure Finance and Innovation Act funding	0.00%	0	0.00%	0	0.00%	0	0.00%	0	100.00%	2	0.00%	0	2
Other (please specify)													3

Answered **5**

Skipped **19**



Respondents	Response Date	Other (please specify)	Tags
1	Nov 03 2021 11:16 AM	1. Current FY Water Rates **This answer required that I put in a #1, #3, #4 and #5 but none are accurate for my system.	
2	Nov 03 2021 11:04 AM	We have not received any funding from any of the above entities. In the past we have funded these projects ourselves or they are combined with a highway department project. We have spent hours compiling info	
3	Nov 03 2021 08:15 AM	being a District restricts us from some avenues	

20. Please name and describe three things in order of importance that would be most helpful to you in managing or operating your drinking water supply:

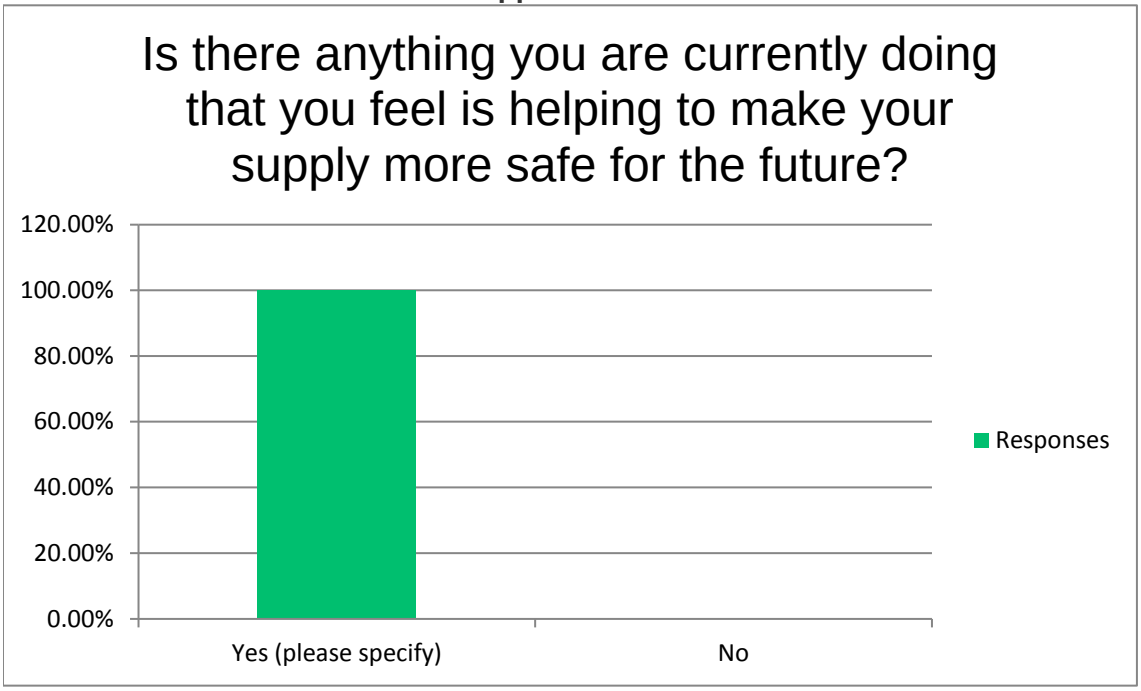
Answer Choices	Responses	
1.:	100.00%	5
2.:	80.00%	4
3.:	80.00%	4
	Answered	**5**
	Skipped	**19**

Respondents	Response Date	1.:	2.:	3.:
1	Nov 08 2021 02:54 PM	Stand alone Water and Sewer Commission	Realist water and sewer rates that are fair to everyone	Change the culture of water use, as a limited resource
2	Nov 03 2021 11:16 AM	Additional funding sources - knowing where they are, how to access them, and example appropriate projects	More training/discussion to keep everyone up to date on regulation changes	Example regulations, bylaws, notifications, etc.
3	Nov 03 2021 11:04 AM	Money	Money	Money
4	Nov 03 2021 09:33 AM	Ability to draw more water into the system	Streamline WMA permitting process	Employee succession plan
5	Nov 03 2021 08:15 AM	grants		

21. Is there anything you are currently doing that you feel is helping to make your supply more safe for the future?

Answer Choices	Responses	
Yes (please specify)	100.00%	5
No	0.00%	0
If yes, please say a bit about your response:		5

Answered 5
Skipped 19



Respondents	Date	If yes, please say a bit about your response:
1	Nov 08 2021 02:54 PM	purchased land around the existing water source
2	Nov 03 2021 11:16 AM	We are investing in projects that improve the resiliency of our system.
3	Nov 03 2021 11:04 AM	Slowly upgrading the plant due to DEP inspections and the requirements they have issued. We have funded almost $80,000 worth of upgrades over a 4 year period trying to complete the DEP orders. We are still working on it mas we need to use our budget money to do these improvements, instead of receiving funding to do the entire project in a timely fashion. Water and sewer in these small towns are not self sustainable anymore with the new rules, new sampling at extra cost, such as PFAS. Financial aid must be made available to small towns and it needs to be easier to find and receive this type of funding or their will be no water or sewer services available to small towns.
4	Nov 03 2021 09:33 AM	In the process of increasing our capacity to draw from Springfield Water & Sewer's system.
5	Nov 03 2021 08:15 AM	We are always doing everything to the best of our ability to keep our drinking water safe.

22. Is there anything else you think important for us to consider in exploring development of a regional drinking water plan?

Answered **3**
Skipped **21**

Respondents	Response Date	Responses	Tags
1	Nov 08 2021 02:54 PM	The more water we save the long the resource is going to last, conservation is key, consistent rules and regs to all communities in regards to water conservation.	
2	Nov 03 2021 11:16 AM	Some of these questions required only one answer where 2 are correct...or didn't allow me to select the correct option. I did my best to answer as accurately as possible with the limits of how the survey was set up. You may want to consider round tables or discussions to talk to water utilities before writing anything. Some of the questions asked here show a lack of understanding for the needs of water utilities.	
3	Nov 03 2021 11:04 AM	Operators are the next need. It is impossible to find them for a small source as it is only a two hour a day job.	

23. We would appreciate the additional three pieces of information so that we may follow up with you if needed.

Answer Choices	Responses	
Your Name:	100.00%	5
Your Title:	100.00%	5
Address:	0.00%	0
Address 2:	0.00%	0
City/Town:	0.00%	0
State/Province:	0.00%	0
ZIP/Postal Code:	0.00%	0
Country:	0.00%	0
Your Email Address:	100.00%	5
Phone Number:	0.00%	0
	Answered	**5**
	Skipped	**19**

Respondents	Response Date	Your Name:	Your Title:	Your Email Address:
1	Nov 08 2021 02:54 PM	Jeffrey R. Auer	Deputy Director of Water	jauer@townofwestspringfield.org
2	Nov 03 2021 11:16 AM	Amy Rusiecki	Asst. Superintendent	rusieckia@amherstma.gov
3	Nov 03 2021 11:04 AM	Kathy Engwer	Administrative Assistant	waterandsewer@huntingtonma.us
4	Nov 03 2021 09:33 AM	Randy Brown	DPW Director	rbrown@southwickma.net
5	Nov 03 2021 08:15 AM	Mark Aiken	Superintendent	maiken@comcast.net

APPENDIX B

Size and Sources of Public Water Suppliers in Hampden and Hampshire Counties, Massachusetts

Prepared by PVPC – October 2022 (data Source MassDEP – October 2021)

SWP = Surface Water Purchased SWNP – Surface Water Non-Purchased GWP = Ground Water Purchased GWNP = Ground Water Non-Purchased

Small Population served = <3,300			Medium Population served = 3,300 to 50,000			Large Population served = >50,000		
Municipality	**Pop. Served**	**Source**	**Municipality**	**Pop. Served**	**Source**	**Municipality**	**Pop. Served**	**Source**
Belchertown	3,399	GWNP	Agawam (SWP)	28,613	SWP	Chicopee	55,126	SWP - MWRA
Blandford	874	SWNP	Amherst	37,819	GWNP SWNP	Springfield	228,554	SWNP
Chester	750	SWNP	E. Longmeadow	16,053	SWP	Ludlow (retail)		
Cummington	379*	GWNP	Easthampton	16,439	GWNP	Springfield (retail)		
Hatfield	3,307	GWNP SWNP	Hadley	5,173	GWNP	Agawam (wholesale)		
Huntington	1,200	GWNP	Holyoke	40,124	SWNP	E. Longmeadow (wholesale)		
Palmer – Thorndike WD	1,435	GWP	Longmeadow	15,358	SWP	Longmeadow (wholesale)		
Palmer – Bondsville WD	1,429	GWNP	Monson	4,169	GWNP	Chicopee (peak-emergency		
Palmer – Three Rivers WD	3,258	GWNP	Northampton	28,549	GWNP SWNP	Southwick (peak-emergency		
Russell	1,228	GWNP	Palmer Water – Dist. #1	4,789	GWNP SWNP	W. Springfield (peak-emergency		
Williamsburg	1,953	GWNP	S. Hadley – Dist. #1	14,450	SWP-MWRA	Westfield (peak-emergency		
Worthington	565*	GWNP	S. Hadley – Dist. #2	6,200	GWNP	Wilbraham (peak-emergency		
			Southampton	4,763	GWNP			
			Southwick	7,552*	GWNP SWP			
			Ware	7,376	GWNP			
			W. Springfield	28,391	GWNP SWP			
			Westfield	42,000	GWNP SWP			
			Wilbraham	8,533	SWP-MWRA			

** Summer population served because greater than Winter population served.*

A Regional Drinking Water Plan
What Makes Sense?

Virtual Roundtables

Small Drinking Water System Operators - November 16, 2022

Medium Drinking Water System Operators – November 18, 2022

Patty Gambarini, Chief Environmental Planner
Pioneer Valley Planning Commission

Catalyst for Regional Progress
PVPC

Finding our way to a meaningful plan that can help advance drinking water supply operations and protection.

What are the key ingredients that will help translate to regional action?

Size and Sources - Public Water Suppliers in Hampden and Hampshire Counties, Massachusetts

Prepared by PVPC – November 2022 (data Source MassDEP – October 2021

SWP = Surface Water Purchased SWNP – Surface Water Non-Purchased GWP = Ground Water Purchased GWNP = Ground Water Non-Purchased

Small Population served = <3,300			Medium Population served = 3,300 to 50,000			Large Population served = >50,000		
Municipality	**Pop. Served**	**Source**	**Municipality**	**Pop. Served**	**Source**	**Municipality**	**Pop. Served**	**Source**
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Blandford	874	SWNP	Amherst	37,819	GWNP SWNP	Springfield	228,554	SWNP
Chester	750	SWNP	E. Longmeadow	16,053	SWP	Ludlow (retail)		
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Hatfield	3,307	GWNP SWNP	Hadley	5,173	GWNP	Agawam (wholesale)		
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Palmer – Bondsville WD	1,429	GWNP	Monson	4,169	GWNP	Chicopee (peak-emergency		
Palmer – Three Rivers WD	3,258	GWNP	Northampton	28,549	GWNP SWNP	Southwick (peak-emergency		
Russell	1,228	GWNP	Palmer Water – Dist. #1	4,789	GWNP SWNP	W. Springfield (peak-emergency		
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Worthington	565*	GWNP	S. Hadley – Dist. #2	6,200	GWNP	Wilbraham (peak-emergency		
			Southampton	4,763	GWNP			
			Southwick	7,552*	GWNP SWP			
			Ware	7,376	GWNP			
			W. Springfield	28,391	GWNP SWP			
			Westfield	42,000	GWNP SWP			
			Wilbraham	8,533	SWP-MWRA			

** Summer population served because greater than Winter population served.*

1. **Water 2000**
2. **Results from 2021 Review of Local MVP and Open Space Plans**
3. **Draft 2021 Outline for Updated Regional Plan/Action Plan**
   What's good; what's missing?
4. **Regional Plan/Action Plan**
   What matters most?

1 Water 2000

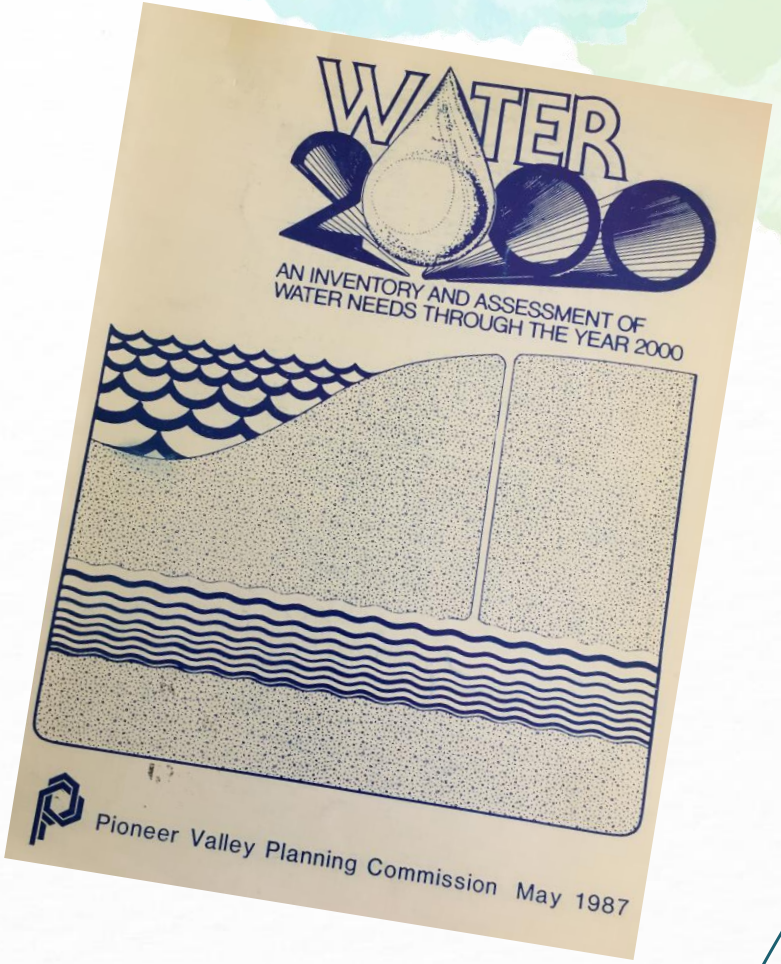
Water 2000 – May 1987

Plan purpose:

- Inventory the quality and adequacy of drinking water supply in the 43 communities
- Assess the areas where water supply quality or quantity problems exist in the region
- Provide a series of recommended actions for community water supply management

Plan elements:

- Regional overview
- Community by community inventory
- Water supply protection strategies



Principal findings from plan:

- Water supply deficits projected for 9 communities by 2000
- Water supply contamination adversely affected 13 communities
- Drought restrictions cause major impacts on communities
- Potential emergency intermunicipal water supply connections exist in many communities
- Existing water pricing policies do not encourage water conservation

2 Results from 2021 Review of Local MVP and Open Space Plans

Overview

12 topics mentioned by at least 10 or more communities.

Some topics, such as private wells and road salt pollution, stand out as of greater concern to rural versus more urbanized communities.

Other topics, such as aging infrastructure or distribution/transmission that appear to be of greater concern to urban communities.

Table 1: Local plans and references to specific drinking water issues and concerns

	41		27		14	
Issue/Concern	**Total Municipalities Referencing**	**%**	**Number of Rural Municipalities Referencing**	**% of Rural**	**Number of Urban Municipalities Referencing**	**% of Urban**
Private Well Issues (contamination, need for testing, etc.)	24	58.54%	20	74.07%	4	28.57%
Pollution - Road salt	21	51.22%	20 out of 27	74.07%	1	7.14%
Development impacts on water supply and quality – general	21	51.22%	15 out of 27	55.56%	6	42.86%
Drought	19	46.34%	13	48.15%	6	42.86%
Aging infrastructure/ Need for upgrades	19	46.34%	8	29.63%	11	78.57%
Pollution - Coliform bacteria from failing septic, agriculture, etc.	18	43.90%	14	51.85%	4	28.57%
Pollution- Agricultural, landscaping	15	36.59%	12	44.44%	3	21.43%
Distribution/ Transmission Issues	15	36.59%	6	22.22%	9	64.29%
Public Well/ Aquifer Issues (contamination, need for testing, etc.)	13	31.71%	8	29.63%	5	35.71%
Emergency sources & protocols	11	26.83%	6	22.22%	5	35.71%
Water-sharing - Dependency on other communities	11	26.83%	4	14.81%	7	50.00%
Flooding impact on infrastructure	10	24.39%	6	22.22%	4	28.57%

Rural communities identified through: https://www.ruralcommonwealth.org/about-us/where-is-rural-massachusetts/

Drinking water issues/concerns in order of those mentioned most frequently

- *Private Well Issues (contamination, need for testing, etc.)*
- *Pollution - Road salt*
- Development impacts on water supply and quality – general
- Drought
- Aging infrastructure/ Need for upgrades
- *Pollution - Coliform bacteria from failing septic, agriculture, etc.*
- *Pollution- Agricultural, landscaping*
- Distribution/ Transmission Issues
- Public Well/ Aquifer Issues (contamination, need for testing, etc.)
- Emergency sources & protocols
- Water-sharing - Dependency on other communities
- Flooding impact on infrastructure

Ital = greater concern to rural

Poll questions 1 and 2

3

Draft 2021 Outline for Updated Regional Plan/Action Plan

What's good; what's missing?

1: Nature of drinking water supply in the Pioneer Valley region

2: A pathway for drinking water supply planning

3: Community engagement

4: Water system infrastructure

5: Financing and funding

6: Water rates and affordability

7: Disruptions, adaptation, and resilience

8: Drinking water supply protection

9: A workforce for water supply

10: Water for the future in the Pioneer Valley

Italics = apply only to public supply

Chapter 1: Nature of drinking water supply in the Pioneer Valley region

Characterize sources of supply, as well as operation and management throughout the region

Explore questions that include:

- Where does water supply come from (e.g., surface reservoirs, surficial aquifers, bedrock aquifers)?
- How much of the region is served by public supply versus private wells?
    - Who are the public drinking water operators in our region (municipalities, districts, etc.) and how are they characterized by size of system/numbers served?
    - What are the key current challenges for public supply?
    - How are municipalities and the state involved in safeguarding private wells?
    - What are the key current challenges for private well supply?

This chapter will be informed by data from latest Annual Statistical Reports. Information on private wells will take some digging.

Annual Statistical Reports
Information that seems useful
November 2022

System information
Population service
service connections
Finished water storage capacity
% source type – groundwater, surface water, purchased groundwater, purchased surface water
Emergency response information

Cross connection control program ***(not really useful for regional plan)***

Water production and consumption information
Month by month and year total for finished water
Month by month and year total for raw water
Max daily
Water sold
Metered water consumption by service type (if over 10%) – residential, institutional, etc.

Source protection – watersheds (includes descriptions of any violations of 310 CMR)

Source protection – zone 2s (includes descriptions of any violations of 310 CMR)

Water Management Act Annual Report - Distribution
Metered finished water
Unaccounted for H2O
Metered water use – more detailed than above

Water Management Act Annual Report – Basin Withdrawal
Authorized versus actual withdrawal volumes

Treatment plants
Pump stations
Storage facilities

Groundwater sources
Provides statistics on individual groundwater sources, both active and inactive sources

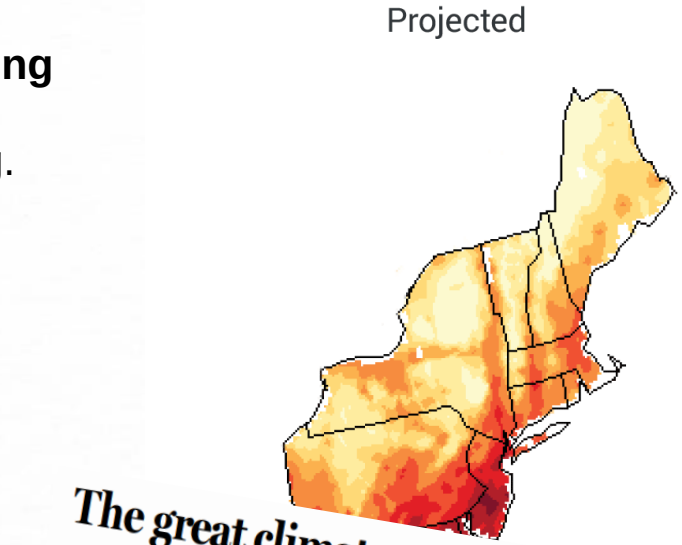
Surface water sources
Provides statistics on individual surface water sources, both active and inactive sources

Purchased water sources

Staffing and contact information

Chapter 2: A pathway for drinking water supply planning

- Explore and identify the future for which we are planning.
- Highlight major considerations for drinking water supply planning, including demographic and climate changes.
- Understand climate change risks from increasing downpours, temperature, and drought on source water quality and treatment processes.
- Understand expectations for demand, and possible land use changes impacting supply.
- Seek best information or development of information by technical experts.



The great climate migration has started. Are Bay State communities ready?

Massachusetts inland communities will become havens for people fleeing rising seas and temperatures — whether they plan for it or not.

By The Editorial Board Updated November 13, 2022, 4:00 a.m.

Poll questions 3 and 4

Source: Philadelphia Inquirer

Chapter 3: Community engagement / education

Identify greatest needs for communication and explore best methods for public engagement across the diversity of populations in the region (Philadelphia Water good innovator in this regard).

Examine common communications needs that might be developed in collaboration through regional effort.

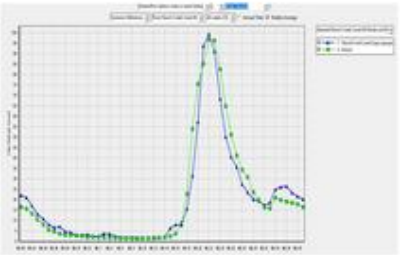
Poll questions 5 and 6

Chapter 4: Water system infrastructure

- Build on the infrastructure issues highlighted in:
  - MA State Auditor's 2017 report;
  - EPA's *Drinking Water Infrastructure Needs Survey and Assessment* report to Congress, and
  - ASCE *Infrastructure Report Card on Drinking Water.*
- Explore local infrastructure needs and extent to which system operators have been able to map and evaluate condition of their systems
- Highlight collective needs and those that seem most important from a regional standpoint

System Mapping Resource: MassDEP Water Utility Resilience Program - Enhancing Resilience and Emergency Preparedness of Water Utilities through Improved Mapping. Only 4 communities in region seem to have participated--Cummington, Palmer, Southwick, and Ware.
See: www.mass.gov/guides/water-utility-resilience-program

Poll questions 7 and 8



Chapter 5: Financing and funding

- Characterize key financing and funding issues for drinking water operators and degree to which Clean Water Trust and other resources (American Rescue Plan – state and local fiscal recovery funds, EPA Water Infrastructure Finance and Innovation Act (WIFIA), etc.) have been/could be used and invested
- Make any needed distinctions between smaller, medium, larger system operators
- Identify and describe major barriers for financing and funding and identify strategies to overcome

Poll questions 9 and 10

Chapter 6: Water rates and affordability

Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity.

- What are ratepayer costs in the region, how much has this increased in 10 years?
- How much of overall revenue comes from ratepayers?
- What are the pricing/rate structures used by water suppliers in the region?
- What are shut off policies and practices and to what extent are these used in the region?
- What are best practices in structuring rates and payments to help limit the number of shutoffs or liens on property in the region yet enable water suppliers the income they need to maintain good operations and service?

Two resources could be useful to inform this chapter

- Massachusetts water rates dashboard: https://dashboards.efc.sog.unc.edu/ma
- Massachusetts DER and DCR project to support PWS and Water Districts in restructuring rates: www.mass.gov/service-details/water-rates

Poll questions 11 and 12

Chapter 7: Disruptions, adaptation, and resilience

Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning

Explore tensions and how to build resilience (toward keeping disruptions from becoming disasters) in key areas

- MA Auditor's 2017 report, "only 6% developed any formal climate change plans or policies that affect water infrastructure systems."
- Leading national practitioners from Water Utility Climate Alliance - only way to avoid future cost and liability is to "mainstream," proactively embedding and streamlining climate change information into practice, planning, and decisions
- MAWWA has indicated that barriers in state law impede resiliency. "Our water systems need the flexibility to operate optimally; new sources would give water systems more options and may actually be more beneficial to the environment."

Topics will likely include: contaminants (ie, PFAS, HAAs, and lead and copper); flood; drought; extreme heat; and invasive species

Source: SWSC

Poll questions 13 and 14

Chapter 8: Drinking water supply protection

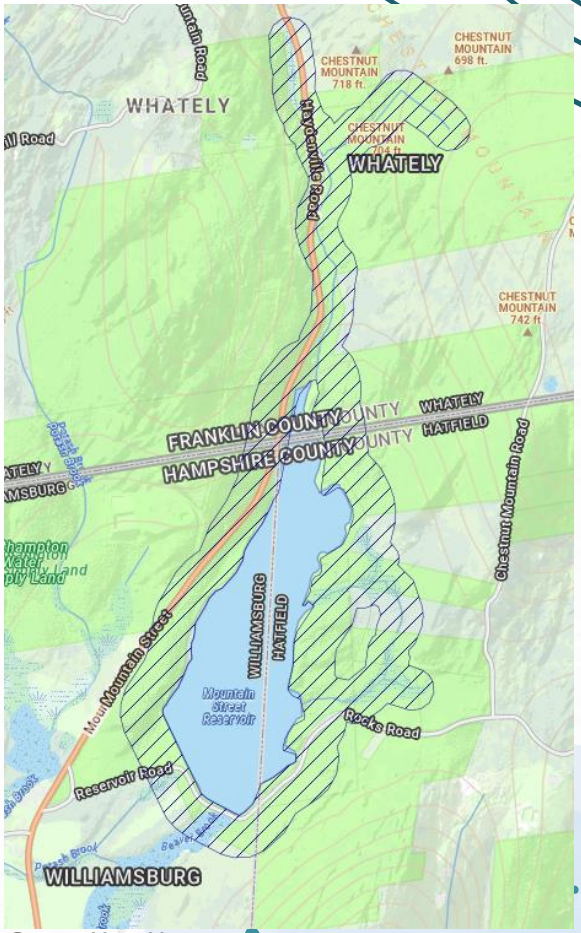
Chapter will focus on:

- Evaluating controls for protection,
- Flagging needed improvements, and
- Highlighting opportunities to advance drinking water protection

Topics to cover will include:

- Identify Zone A and Zone I areas (closest to water sources) that are not protected
- Research and recommend process for prioritizing land for conservation to protect drinking water supply, perhaps drawing from good example within region already
- Review local regulations for drinking water supply protection and make recommendations for improvements
- Identify pathways to resolving road salting practices and impacts to supply as well as identify strategies to averting future contamination as winter icing occurs more frequently

Poll questions 15 and 16



Source: Mass Mapper

Source: SWSC

Chapter 9: A workforce for water supply

Licensed drinking water operators are scarce. Current operators are retiring, and few young people are coming into the profession.

While Springfield Water & Sewer Commission is collaborating with MWWA and STCC toward solving this problem, there are additional questions that this chapter can help address.

- How might this current effort be further supported?
- What other opportunities are there to promote entry into the profession?
- What are the requirements for knowing how to operate a system and how do these requirements relate to the different types of systems in the region?
- How might professionals be further shared among smaller drinking water operators and what are successful existing models?
- What are important measures to take now to ensure long-term succession planning for drinking water supply?

Poll questions 17 and 18

Poll questions 19 and 20

Chapter 10: Water for the future in the Pioneer Valley

Drawing from chapters 2 and 6, frame discussion and strategies around addressing future water needs.

Considerations will include: MassDCR's water forecasting for drinking water suppliers; MassDEP's Sustainable Water Management Initiative elements within the Water Management Act; capability for drinking water conservation within the region; population increases that could be supported with current sources; and priority emergency interconnections.

If an exploration of potential new sources of supply is warranted in this chapter, there could be additional needs for information:

- Sources in the region indicated as back-up supply or not used actively
- Issues with those back-up sources and last estimated costs to bring those sources back on-line
- Criteria for identifying back-up sources most important to protect over the long term
- Potential to connect to larger systems (Springfield Water & Sewer or MWRA systems)
- New potential sources of supply in the region

Finding our way to a meaningful plan that can help advance drinking water supply operations and protection.

What are the key ingredients that will help translate to regional action?

Rank top 5 most important topics

Nature of drinking water supply – Overview that characterizes sources of supply, as well as operation and management throughout region

A pathway for drinking water supply planning - Identify future for which we are planning, including projected demographic and climate changes that can impact supply and demand

Community engagement – Explore greatest needs for communication and identify best methods for engagement and potential for regional collaboration

Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint

Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers

Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity.

Disruptions, adaptation, and resilience - Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning to help keep disruptions from becoming disasters

Drinking water supply protection - Evaluate controls for protection, flag needed improvements, and highlight opportunities to advance drinking water protection

A workforce for water supply - Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region

Water for the future in the Pioneer Valley – Highlight greatest issues and frame discussion and strategies around addressing future water needs

Poll questions 21 and 22

Any questions and/or further thoughts?

APPENDIX D

Meeting Notes and Poll Results
Virtual Roundtable - Small System Water Operators
November 16, 2022, 10:00 AM

Attendees via Zoom:

- Bob Daley, Tommy Bean - Chester
- Bryan Osetek - Williamsburg Water
- Patty Gambarini and Emily Tully – PVPC

Overall format:

Patty walked through presentation entitled, "A Regional Drinking Water Plan – What Makes Sense?" As part of the presentation, Patty provided background on planning related to drinking water and elaborated on the proposed content for each chapter.

Emily pulled up poll questions related to each chapter when cued and then shared results with participants. Participants provided additional comments – as noted below – as part of the ongoing conversation throughout the meeting.

Following are poll questions and additional comments made by roundtable participants on particular topics/poll questions:

1.Do these issues flagged in our review of Open Space and Municipal Vulnerability Preparedness Plans jibe with your experience?	2.Any additional thoughts on this list of issues?
Yes	Funding to repair Infrastructure
Yes	See also comments below made in the course of conversation.

From Chester's viewpoint, two top priority concerns:

Development impacts on surface water source (Horn Pond) – Horn Pond is surrounded by 17 privately owned parcels, 8 developed with large homes, 4-5 of those converted to timeshares, 2 on market advertised as waterfront and water access, inaccurate due to water supply protection needs

Aging infrastructure on Horn Pond – Town bought the water rights in 1913 for $50 and the infrastructure dates to that time

Now having issues with Total Organic Carbon, disinfection byproduct.

Trying to switch to Austin Brook supply, but having difficulty getting permission from MassDEP.

Williamsburg has additional concerns about availability of funding to repair Infrastructure.

3.Do these topics make sense in this chapter on a pathway for **drinking water supply planning**?	4.What else should we cover in this chapter?
Yes	No responses within poll to #4, but see comment below made in the course of conversation.
Yes	

Chester – warming of surface water leads to algae formation

5.Do these topics make sense in this chapter on community **engagement/education**?	6.What else should we cover in this chapter?
Yes	No responses within poll to #6, but see comments below made in the course of
Yes	

Chester is interested in testing comparison of bottled water vs Town water, highlighted need for water supply operators throughout the State.

Had really good compliance with watering restrictions during the drought this past summer

7.Do these topics make sense in this chapter on **water system infrastructure**?	8.What else should we cover in this chapter?
Yes	Evaluating systems will be important to also plan on funding in future
Yes	See also comments below made in the course of conversation.

Chester is doing an Asset Management Grant with Tighe & Bond, includes GIS map of system

In Williamsburg, Mass Rural Water Association is helping with GPS mapping of curb stops

9.Do these topics make sense in this chapter on **financing and funding**?	10.What else should we cover in this chapter?
Yes	Agree
Yes	See also comments below made in the course of conversation.

Chester did joint grant application with Blandford for Efficiency in Regionalization Program. Ira Brzezinski helped prepare proposal.

11.Do these topics make sense in this chapter on **water rates and affordability**?	12.What else should we cover in this chapter?
Yes	Agree
Yes	

No additional comments here.

13.Do these topics make sense in this chapter on **disruptions, adaptation, and resilience**?	14.What else should we cover in this chapter?
Yes	
Yes	

No additional comments here.

15.Do these topics make sense in this chapter on **drinking water supply protection**?	16.What else should we cover in this chapter?
Yes	No responses within poll to #16, but see comment below made in the course of
Yes	

Chester is concerned about Zone A of Horn Pond but do not currently have ability to enforce limitations on development and threats

17.Do these topics make sense for this chapter on a **workforce for drinking water supply**?	18.What else should we cover in this chapter?
Yes	No responses to #18 within poll, but see comments below made in the course of
Yes	

Chester is partnering with Gateway Regional School District, Blandford, Huntington, STCC, and Mass Water Works for paid internships with on-site training course and class, going to start with new semester in January, will have meeting on the 30th that will invite Patty to.

19.Do these topics make sense for this chapter on **water for the future in the Pioneer Valley**?	20.What else should we cover in this chapter?
Yes	
Yes	

No additional comments here.

21. What are your top 5 choices for topics we ought to cover in the regional drinking water plan?	22. Please share any thoughts you might have on your choice of topics.
1. A pathway for drinking water supply planning - Identify future for which we are planning, including projected demographic and climate changes that can impact supply and demand;	No responses within poll to #22, but see comments below made in the course of conversation.
2. Community engagement – Explore greatest needs for communication and identify best methods for engagement and potential for regional collaboration;	
3. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;	
4. Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity;	
5. A workforce for water supply - Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region	
1. A pathway for drinking water supply planning - Identify future for which we are planning, including projected demographic and climate changes that can impact supply and demand;	
2. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;	

3. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;	
4. Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity;	
5. A workforce for water supply - Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region	

Representatives from both Towns indicated would like to select more than 5 priorities.

Top 2 for Chester are infrastructure/equipment and workforce

Additional comments before end of meeting:

Representatives from both Towns indicated they are glad to have this plan in process, and they are interested in helping out

Bryan consults with Hatfield when he has questions; he is fairly new. Hatfield has helped Williamsburg for a few years since lost their operator. A lot of catch up at this point.

Williamsburg has groundwater wells that are pumped to tanks. Use chlorine and sodium hydroxide for treatment.

Chester uses surface water and sand filter. Also, chlorine and sodium hydroxide for treatment, but organic matter in Horn Pond is reacting to create HAAs as disinfection byproducts.

Chester is meeting with MassDEP next week on switching to Austin Brook, impounded by 14 ft dam, smaller surface area than Horn Pond, less open and less vulnerable to development pressure, within conservation parcel.

Chester could use assistance with enforcement of land use restrictions on parcels around Horn Pond (realtors promoting parcels as having waterfront access)

Patty reminded Chester and Williamsburg that Towns can request LTA from PVPC Executive Director for small tasks, like GIS analysis of status of protection of parcels around Horn Pond or looking at regulations. Email Patty with project idea and she can help coordinate.

APPENDIX E

Meeting Notes and Poll Results
Virtual Roundtable - Medium System Water Operators
November 18, 2022, 10:00 AM

Attendees via Zoom:

- Amy Rusiecki - Amherst
- Greg Nuttelman and Clay Weglarz - Easthampton
- Randy Brown - Southwick
- Jeffrey Auer and Michael O'Connor - West Springfield
- Patty Gambarini and Emily Tully – PVPC

Overall format:

Patty walked through presentation entitled, "A Regional Drinking Water Plan – What Makes Sense?" As part of the presentation, Patty provided background on planning related to drinking water and elaborated on the proposed content for each chapter.

Emily pulled up poll questions related to each chapter when cued and then shared results with participants. Participants provided additional comments – as noted below – as part of the ongoing conversation throughout the meeting.

Following are poll questions and any additional comments made by roundtable participants on particular topics/poll questions:

	1.Do these issues flagged in our review of Open Space and Municipal Vulnerability Preparedness Plans **jibe with your experience**?	2.Any additional thoughts on this list of issues?
Southwick	Yes	
West Springfield	Yes	WMA - DEP control over how much water can be used.
West Springfield	Yes	
Easthampton	Yes	Also include staffing
Amherst	Yes	

	3. Do these topics make sense in this chapter on **a pathway for drinking water supply planning**?	4. What else should we cover in this chapter?

Easthampton	Yes	
West Springfield	Yes	I would also add a topic for supply chain issues. Sourcing materials has become increasingly difficult
Southwick	Yes	
West Springfield	Yes	Who makes the decisions for Water Use (Homerule)
Amherst	Yes	
Easthampton	Yes	

	5.Do these topics make sense for this chapter on **community engagement/education**?	6.What else should we cover in this chapter?
Easthampton	Yes	A section on rates and how they apply to our finance and operation
West Springfield	Yes	
Amherst	Yes	Would be good to have templates developed that could be easily used by municipalities.
West Springfield	Yes	I also like to increase public access to our facilities through public education programs. It helps reduce the stigmas that often surround water departments.
Southwick	Yes	can't think of any
Easthampton	Yes	

	7.Do these topics make sense for chapter on **water system infrastructure**?	8.What else should we cover in this chapter?
Amherst	Yes	Would be careful about collective needs and how they are presented - what is important to one community, if placed low on your priority list, could be detrimental to that community.
Easthampton	Yes	
West Springfield	Yes	
Southwick	Yes	
West Springfield	Yes	

Easthampton	Yes	Northampton, Easthampton, Southampton & Williamsburg completed an intermunicipal emergency interconnect feasibility study about 10 years ago.

	9.Do these topics make sense for this chapter **on financing and funding**?	10.What else should we cover in this chapter?
West Springfield	Yes	
West Springfield	Yes	WIFIA need $100,000 for a application, no way that going to happen. Just give us some money we know what to do with it. Don't need over sight for each project.
Easthampton	Yes	
Amherst	Yes	$$$ is at the root of so many of our challenges, so this is important. However, seems like funding opportunities change rapidly, so hard to capture in a plan.
Southwick	Yes	highlight the need for routine rate study updates and asset management plans
Easthampton	Yes	

	11.Do these topics make sense for this chapter on **water rates and affordability**?	12.What else should we cover in this chapter?
Easthampton	Yes	
Amherst	Yes	
West Springfield	Yes	I would like to see some strategies for convincing the politicians that control the rates to increase the rates at appropriate levels
Easthampton	Yes	
West Springfield	Yes	Key to pay for existing system to be upkeep with padding for rebuilding system without making it unaffordable.
Southwick	Yes	highlight need for long term capital plans and asset management plans

	13.Do these topics make sense for this chapter on **disruptions, adaptation, and resilience**?	14.What else should we cover in this chapter?
West Springfield	Yes	Assist Water system in testing of UCMR and other unfunded testing requirements for public water and for private wells owners.
Southwick	Yes	
West Springfield	Yes	
Amherst	Yes	
Easthampton	Yes	
Easthampton	Yes	

	15.Do these topics make sense for this chapter on **drinking water supply protection**?	16.What else should we cover in this chapter?
Easthampton	Yes	This is an issue we have been monitoring. Our well field is at the bottom of the mountain and run off is a concern
Easthampton	Yes	
Amherst	Yes	Clear cutting and solar installations in Zone B/Zone II areas should be included. Remember that local regulations can become political, so recommendations must come with suggested strategies.
Southwick	Yes	identify possible funding opportunities for purchasing land for water supply protection
West Springfield	Yes	I would also talk about the difficulties of protecting source water against contamination from farmlands due to the legal protections that farmers have.
West Springfield	Yes	My fantasy was to change all the political line to follow watersheds areas. But that not going to happen, need help and cooperation of the Town and states to protect water supply

Randy agreed with importance of addressing the difficulties of protecting source water against contamination from farm land activity due to the legal protections that farmers have.

	17.Do these topics make sense for this chapter on a **workforce for drinking water supply**?	18.What else should we cover in this chapter?
Amherst	Yes	
Southwick	Yes	
Easthampton	Yes	Raising water system operator salaries to align more closely with hourly rates for gas and electric utility workers. We lose staff to gas companies frequently.
Easthampton	Yes	Salary is an issue. We have many requirements for employment and municipal pay is lower than a qualified person can make in private the sector
West Springfield	Yes	In house training seems to be the key, always training people it seems to the way thing are.
West Springfield	Yes	One of the issues with finding qualified staff is limitations in payrates. Our staff are part of a larger DPW union. We have limited control over the pay we can offer to attract quality talent.

	19.Do these topics make sense for this chapter on **water for the future in the Pioneer Valley**?	20.What else should we cover in this chapter?
Easthampton	Yes	
Amherst	Yes	
West Springfield	Yes	
Southwick	Yes	
Easthampton	Yes	
West Springfield	Yes	State-wide drought response is problematic as each community has its own rules. Need to stop confusing the Public.

	21.What are your **top 5 choices for topics we ought to cover in the regional drinking water plan**?
Amherst	1. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;
	2. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	3. Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity;
	4. Drinking water supply protection - Evaluate controls for protection, flag needed improvements, and highlight opportunities to advance drinking water protection
Easthampton	1. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;
	2. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	3. Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity;
	4. Disruptions, adaptation, and resilience - Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning;
	5. A workforce for water supply - Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region
Easthampton	1. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;
	2. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	3. Disruptions, adaptation, and resilience - Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning;
	4. A workforce for water supply - Explore strategies to support existing programs and identify other approaches to building a stronger workforce in the region;
	5. Water for the future in the Pioneer Valley – Highlight greatest issues and frame discussion and strategies around addressing future water needs
Southwick	1. A pathway for drinking water supply planning - Identify future for which we are planning, including projected demographic and climate changes that can impact supply and demand;
	2. Community engagement – Explore greatest needs for communication and identify best methods for engagement and potential for regional collaboration;
	3. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;
	4. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	5. Disruptions, adaptation, and resilience - Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning

West Springfield	1. Community engagement – Explore greatest needs for communication and identify best methods for engagement and potential for regional collaboration;
	2. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	3. Water rates and affordability - Examine water rates in terms of ability to cover utility costs, as well as drinking water affordability and equity;
	4. Drinking water supply protection - Evaluate controls for protection, flag needed improvements, and highlight opportunities to advance drinking water protection;
	5. Water for the future in the Pioneer Valley – Highlight greatest issues and frame discussion and strategies around addressing future water needs
West Springfield	1. Water system infrastructure - Examine infrastructure needs and highlight those that seem most important from regional standpoint;
	2. Financing and funding - Characterize key financing and funding issues for drinking water in the region and identify strategies to overcome barriers;
	3. Disruptions, adaptation, and resilience - Revisit chief vulnerabilities and risks and identify approaches to integrating adaptation within local and regional planning;
	4. Drinking water supply protection - Evaluate controls for protection, flag needed improvements, and highlight opportunities to advance drinking water protection;
	5. Water for the future in the Pioneer Valley – Highlight greatest issues and frame discussion and strategies around addressing future water needs

Additional comments and discussion before end of meeting:

Jeff Auer - Limitations on water seem to be more about regulatory limits rather than physical limits

- Patty – how does that jibe with potential future increases in demand from climate change, climate migration?
- Jeff – is why we had to implement water use restrictions, will need to start building in policies at Planning Board for things like xeriscapes and low water use landscaping for developments, should lean on UMass school that specializes in those kinds of designs
- When do you start worrying about amount of remaining water available requested by projects – for example, new project requesting 10% of what is available?
- Considering not continuing WMA permitting, a lot of work for only a relatively small amount of water

Randy - Southwick is a permitted system like West Springfield, one of only communities in the area that has requirements for things like water restrictions, the whole program with MassDEP is difficult to understand, confusing standards to both the municipality and the public

- Patty – has Southwick received permit from MassDEP yet?
- Randy – still in progress, MassDEP is creating needs forecast, after that will issue draft permit

- Patty – would be interested in seeing what goes into the needs forecast
- Randy – trying to beef up our needs, particularly commercial demand, since there is vacant land zoned commercial/industrial, are projects that have gone before the boards that haven't broken ground yet, trying to convince MassDEP that this demand will exist within the 10 year timeframe of the permit

Amy – agree with what Randy and Jeff have said. At the end of the day, want to make sure that this report is useful to us in Amherst

- For example, on priorities for regional projects, are going to be local winners and those who lose out, will need to be carefully balanced to make sure doesn't impact funding requests for local Towns
- For rates, trying to balance what is needed and what the public will tolerate
- Patty – can tone down in terms of regional needs, any need that relates to drinking water is of course important, but want to make sure we're being effective as regional actors – where are those places where the PVPC can drop in and really help, not trying to rank what is most important in the region against each other since everyone has their own local priorities

Greg – Randy was right on the with water use restrictions. In Easthampton have water that we could physically pump and sell that we're not allowed to, impacts our already losing water model

- Amy – submit comment letter (due today) to MassDEP on proposed regulations, how MassDEP makes progress on these because water utilities are divided between permitted and not
- Greg – conservation is great, but are running short on materials and funding
- Amy – no ability for community to be unique in permitting process, for example half our population leaves in the summer, but we're still told that we have to conserve water
- Clay – monitoring numbers from CT River flow are really variable because of utilities, and that is what the Town has to base restrictions on
- Patty – response from MassDEP?
- Clay – still have to do it; all communities have different issues, for example our community's water is groundwater so have minimal treatment issues

Clay – One of the unifying issues is staffing; we have had positions open for 2 years

- Requirements for entry level staff are not commensurate with salary able to offer, often lose staff to large corporations
- Retaining staff is a challenge, seems like municipal jobs are used as training ground before staff move on to organizations like Eversource
- Patty – do you think you have a good handle on what water utility salaries are across the types of jobs (municipal, private, etc.)?
- Greg – what we need for qualifications, it's not a 1:1 against what private sector needs, for example often need CDL Class A license, almost like requirements for 1 position in municipal drinking water is like 3 private sector jobs

- Patty – would a salary analysis in the workforce chapter be useful to know what competitive salaries look like?
- Amy – the problem is that we are also a DPW, so don't have separate pay scales for water operators vs tree climbers vs Town Engineer vs wastewater operators
- Michael – have same problem in West Springfield, all are paid on same pay scale; were able to get water operators to be paid based on level of licensure, but can't compare to private pay like at SWSC, limitation is union contract that staff work under, have to hire staff within that pay scale
- Amy – union contracts can get tricky for Town Administrators, have to also consider pay for other Town departments like Police

Annual Statistical Reports
Information useful for characterizing nature of supply in the Pioneer Valley
October 2022

System information
Population service
service connections
Finished water storage capacity
% source type – groundwater, surface water, purchased groundwater, purchased surface water
Emergency response information

Cross connection control program ***(not really useful for regional plan)***

Water production and consumption information
Month by month and year total for finished water
Month by month and year total for raw water
Max daily
Water sold
Metered water consumption by service type (if over 10%) – residential, institutional, etc.

Source protection – watersheds (includes descriptions of any violations of 310 CMR)

Source protection – zone 2s (includes descriptions of any violations of 310 CMR)

Water Management Act Annual Report - Distribution
Metered finished water
Unaccounted for H2O
Metered water use – more detailed than above

Water Management Act Annual Report – Basin Withdrawal
Authorized versus actual withdrawal volumes

Treatment plants
Pump stations
Storage facilities

Groundwater sources
Provides statistics on individual groundwater sources, both active and inactive sources

Surface water sources
Provides statistics on individual surface water sources, both active and inactive sources

Purchased water sources

Staffing and contact information