

7. Recommendation



3 7.1 Introduction to the Recommendation

4 From the beginning of this planning process, the Co-Trustees intended to present a plan for providing
 5 clean, sustainable drinking water to the 14 communities currently known to be affected by PFAS
 6 contamination in the East Metropolitan Area, now and into the future, taking into account both public
 7 water systems and private wells.

8 The Co-Trustees followed a strategic planning process that considered the region as a whole, starting
 9 from the source of the drinking water and ending when it comes out of the faucet. Because there is a
 10 clear community preference for groundwater sources over surface water, the recommended options are
 11 focused on **groundwater solutions to the extent possible**. The recommended options are designed to
 12 **invest in treatment systems, drinking water protection, and sustainability**. The Co-Trustees focused on
 13 balancing the building of **resilient systems** that can handle changing standards or contamination, with
 14 minimal impact on affected communities; with **reserving funding for O&M expenses and reducing**
 15 **these costs**, which would eventually need to be covered by residents after the Settlement funds are
 16 depleted.

17 The Co-Trustees have developed the following three recommended options for public review and
 18 comment, and, as described in Section 7.3.4 of this chapter, prefer recommended Option 1.

- | | | |
|--|--|--|
| <p>Option 1
(preferred)</p> | | <ul style="list-style-type: none"> • Treatment to a threshold of HI > 0.5 using GAC • Funding of public water system O&M for approximately 40 years • Funding of private well O&M for over 100 years • Funding for protecting a sustainable water supply into the future • Drinking water source remains groundwater |
| <p>Option 2</p> | | <ul style="list-style-type: none"> • Treatment to a threshold of HI > 0.3 using GAC • Funding of public water system O&M for approximately 35 years • Funding of private well O&M for over 100 years • Funding for protecting a sustainable water supply into the future • Drinking water source remains groundwater |

Option 3



- Treatment to a threshold of HI > 0.5 using GAC
- Funding of public water system O&M for approximately 21 years
- Funding of private well O&M for over 100 years
- Funding for protecting a sustainable water supply into the future
- Oakdale and Lake Elmo are supplied by SPRWS to ensure future water supply
- Drinking water source remains groundwater for other communities

1 This chapter describes the Co-Trustees' approach to developing the recommended options (Section 7.2),
 2 presents a summary of the three recommended options (Section 7.3), and describes the process for
 3 selecting a final preferred option (Section 7.4).

4 **7.2 Approach to develop recommended options**

5 The fifth step of developing the Conceptual Plan was to review the evaluation of the revised scenarios in
 6 Chapter 6, gather and consider feedback, modify the scenarios as necessary, and develop recommended
 7 options for public review and the eventual finalization of this Conceptual Plan.

8 In developing recommended options, the MPCA
 9 and DNR considered the long-term program goals
 10 for Priority 1 (see text box to the right) and
 11 evaluation criteria (see Chapter 6), the analysis of
 12 groundwater and drinking water models, feedback
 13 from the work groups and Subgroup 1, one-on-one
 14 meetings with elected officials and technical staff
 15 from the affected communities in the East
 16 Metropolitan Area, six public informational and
 17 listening sessions, and input received during a
 18 public comment period.

Long-term program goals for Priority 1 – Drinking water quality, quantity, and sustainability

- Provide clean drinking water to residents and businesses to meet current and future needs under changing conditions, population, and HBVs
- Protect and improve groundwater quality
- Protect and maintain groundwater quantity
- Minimize long-term cost burdens for communities.

19 As described in Chapter 6, all of the revised scenarios were developed to provide safe, sustainable
 20 drinking water to all of the affected communities in the East Metropolitan Area, but they differ in
 21 technology, the types of projects included, the HI threshold for treatment, and cost. To select which
 22 drinking water supply scenarios to include in the recommended options, the MPCA and DNR considered
 23 similar factors that were used to develop the options, specifically:

- 24 • How well the scenarios addressed the long-term program goals (see Section 1.2.1)
- 25 • How well the scenarios met the evaluation criteria (see Chapter 6 and Appendix G)
- 26 • How well the scenarios addressed feedback provided by the work groups, Subgroup 1, elected
 27 officials, and technical staff from the affected communities in the East Metropolitan Area; and
 28 members of the public.

29 The recommended options presented in this chapter are centered on three different drinking water
 30 supply scenarios, but also include broader recommendations to ensure that the plan addresses long-
 31 term program goals for Priority 1; by doing this, the MPCA and DNR are providing a roadmap for future
 32 decision-making.

1 7.3 Summary of recommended options

2 This section presents information about the three recommended options. Section 7.3.1 describes the
3 elements that are common to each of the three options; Section 7.3.2 provides additional information
4 on each option separately, including details on the elements of the option for each community in the
5 East Metropolitan Area; and Section 7.3.3 presents side-
6 by-side tables of the same information to facilitate a
7 comparison of the options. In Section 7.3.4, the MPCA
8 and DNR describe which option is currently preferred.

9 7.3.1 Common elements of all options

10 While developing the recommended options, the MPCA
11 and DNR determined that all of the recommendations
12 would have the following common components:

- 13 • **Each option uses a treatment threshold that is**
14 **less than an HI of 1.** As discussed earlier in this
15 Conceptual Plan, the HI threshold for treatment
16 determines which wells receive treatment or
17 become replaced by a hookup to a public water
18 system (see the text box to the right).
- 19 • **Each option sets aside contingency funds to**
20 **address additional wells should they become**
21 **impacted in the future.** The HI threshold for
22 treatment would be used to determine which
23 wells receive treatment or become replaced by a
24 hookup to a public water system.¹
- 25 • **Each option uses GAC as a treatment**
26 **technology.** Although IX is a well-established
27 technology used throughout the country, it is not
28 currently approved for use in Minnesota by
29 MDH. GAC tends to be more expensive than IX,
30 so recommending scenarios that use GAC is a
31 conservative approach that ensures there will be
32 sufficient funding for either technology in the
33 future.

What do the HI thresholds mean? An HI of 1 or greater indicates that one or more PFAS chemicals are present in sufficient concentrations to potentially have a health effect. An HI of 1 or greater triggers a well advisory from MDH.

The MPCA and DNR recommendations use a HI threshold below 1. PFAS is one of the most studied class of chemicals; the understanding of PFAS and the ability to detect it is continually evolving. As a result, HBVs or HRLs may change or new compounds added, or the contamination location may change in the future. Instead of being in a reactive mode when changes occur, the recommended options are proactive and build a degree of resiliency into communities' drinking water systems to be able to better cover future potential changes. There is substantial interest among the work groups, local governments, and the general public for using an HI threshold less than 1.

It should be noted that the 2007 Consent Order requires 3M to cover the cost of treatment for wells with an HI of 1 or greater, but does not require 3M to cover the cost for wells with lower HI values. As a result, O&M costs for treatment on wells with an HI of less than 1 may eventually have to be covered by ratepayers or homeowners. For more explanation on the PFAS HI, refer to Section 6.2.3.

1. For any given well, the HI threshold would be used to determine whether that well will receive treatment or be replaced with a hookup to a municipal system. The Co-Trustees recommended a threshold lower than 1 to provide some resilience against future changes in contamination or future changes in HBVs or HRLs. As such, the initial capital investments have been determined using the HI threshold for each recommended option. In the future, if the HI for a given well exceeds the HI threshold because measured PFAS contamination increased, the well would receive treatment or a hookup to a municipal system. The Co-Trustees have not yet determined how to handle cases where the HI for a given well exceeds the treatment threshold due to changes in HBVs or HRLs, but the contamination does not cause an exceedance of the new HI of 1.

- 1 • Each option allocates approximately \$548 million in funding for projects that will deliver finished
 2 drinking water at the faucet. This funding would cover capital costs (including initial capital and
 3 potential additional neighborhood hookups), O&M costs for treatment facilities, and costs for
 4 unforeseen circumstances. The amounts for each option differ across these categories. As
 5 described in Section 6.1.2, costs that do not directly address PFAS contamination would not be
 6 covered.
- 7 • **Each option invests \$130 million in funding for projects that will ensure the communities’**
 8 **drinking water sources are protected and sustainable.** This includes \$70 million for drinking
 9 water protection and \$60 million for sustainability and conservation. The drinking water
 10 protection fund will be used for PFAS groundwater remediation, which can help reduce future
 11 treatment needs and costs, and will generally improve overall water quality. The sustainability
 12 and conservation fund would be used to support water conservation measures (among other
 13 activities) to help reduce water use and enhance long-term aquifer sustainability.
- 14 • **Each option would cover O&M costs for private well treatment for over 100 years.** To ensure
 15 effective treatment systems are maintained on private wells, it is necessary to plan for coverage
 16 of long-term O&M costs. While communities have the capability to plan for coverage of longer-
 17 term costs, the maintenance of private systems is more expensive and may be more difficult to
 18 achieve without dedicated funds.
- 19 • **Each option would cover O&M costs for new treatment infrastructure on public water systems**
 20 **for at least 21 years.** The projected coverage timeframe ranges from approximately 21 to
 21 40 years depending on how much is spent on initial capital costs and the amount reserved for
 22 future contingency funds. Options with lower projected capital costs and/or lower annual O&M
 23 costs could provide funding for O&M for longer periods of time.
- 24 • **Each option includes connections of some neighborhoods to municipal systems.** The initial
 25 capital amount for each option includes funding for connecting neighborhoods where a
 26 significant number of private wells have high levels of PFAS, while considering the long-term
 27 cost of connections compared to POETS.² Details on these assumptions are provided in
 28 Appendix E, Section E.4.1.1. Each option also includes approximately \$41 million in funding set
 29 aside for additional proposed neighborhood hookups that would require additional sampling or
 30 evaluation before making a decision about connecting them. For detailed information on wells
 31 that are recommended for connections, please visit <https://arcg.is/OfmHXS> where you can
 32 search by address.
- 33 • Each option includes feasible approaches for drinking water supply for future growth that could
 34 help address groundwater-use restrictions related to the current Court Order for White Bear
 35 Lake. Modeling based on projections of future water use indicates that Lake Elmo may need
 36 alternate sources of water to avoid adverse effects on White Bear Lake. If Oakdale were to seek
 37 additional capacity, there may be similar challenges. While the case remains in court and
 38 because future DNR regulatory requirements are not known, the Co-Trustees recommend two
 39 possible approaches for providing additional water supply to Oakdale and Lake Elmo. One
 40 approach provides funding for utilizing groundwater in ways that comply with the current Court
 41 Order for the cities’ future growth. The funding level is based on a cost estimate of creating an
 42 interconnect from southern Woodbury to Lake Elmo to provide water for their future growth.

2. Some wells with HI values less than the given threshold may still be connected to public water systems because of their proximity to those wells with HI values exceeding the threshold.

1 However, it provides Lake Elmo and the State flexibility to explore approaches within that
 2 funding range. This approach is applied in recommended Options 1 and 2. The other option
 3 would be to have SPRWS provide all of the water supply for Lake Elmo and Oakdale,³ as
 4 described in Chapter 6 as community-specific Scenario C. This approach is used in recommended
 5 Option 3.

6 **7.3.2 Overview of recommended options**

7 This section presents an overview of each of the three options. The key elements of each recommended
 8 option are provided in Figures 7.1–7.6, with two full-page figures per option. For each option, the first
 9 figure summarizes the key characteristics of the option, the estimated allocation of costs under the
 10 option, the primary infrastructure elements included in the initial capital, and the advantages of that
 11 option. The second figure summarizes the primary infrastructure elements for each community.
 12 Additional details about each option are provided in Appendix E.

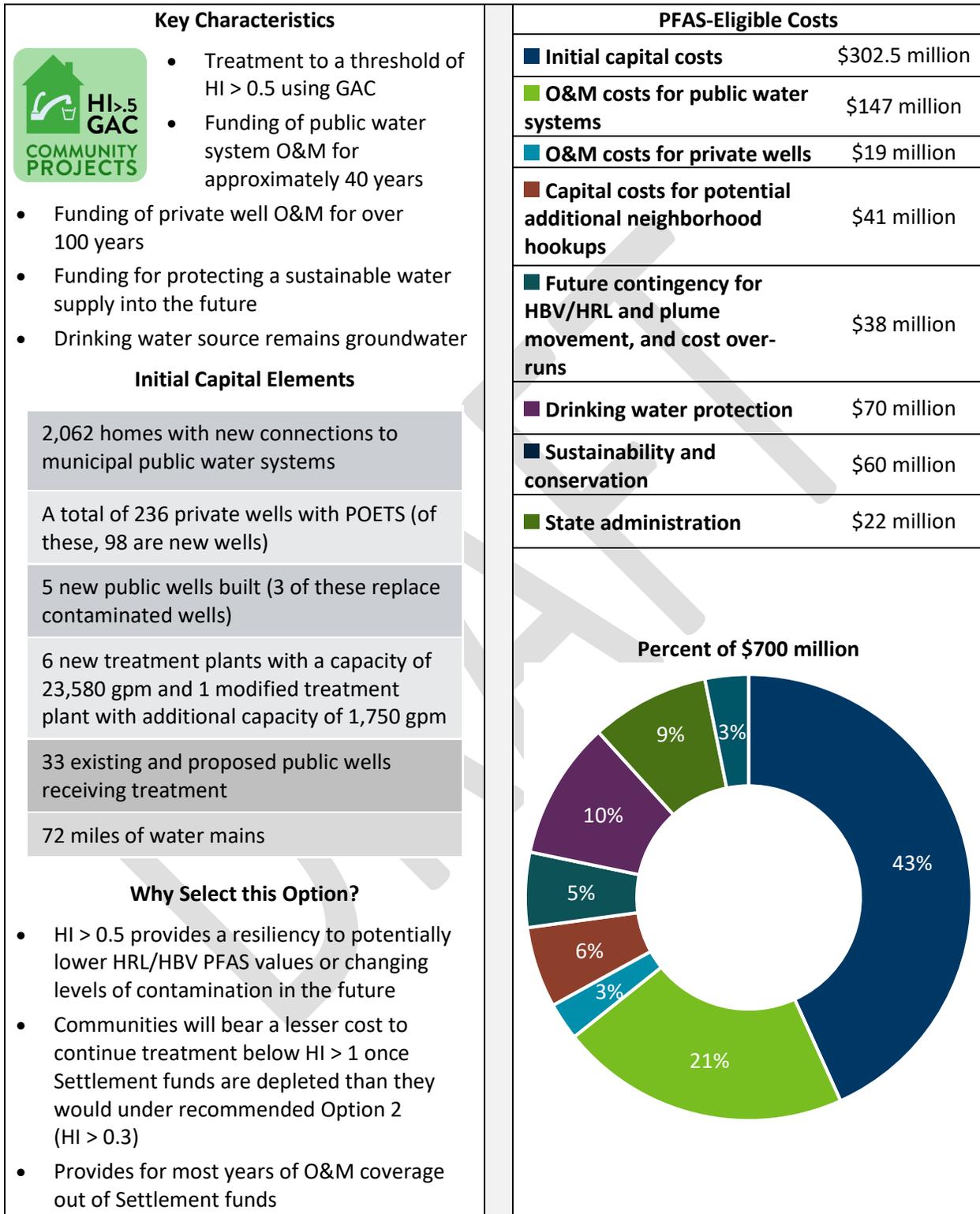
13 For each of the recommended options, the Co-Trustees allocated \$700 million, which is the amount of
 14 Settlement funding available after payment of legal fees and deducting the \$20 million set aside for
 15 Priority 2. This allocation does not include funding for sampling of wells for PFAS, which will continue to
 16 be covered by 3M under the Consent Order. The funding categories presented in Figures 7.1 (Option 1),
 17 7.3 (Option 2), and 7.5 (Option 3) are discussed below.

- 18 • **Initial capital costs** are costs to construct the drinking water supply infrastructure based on
 19 projected 2040 demand for the given option, including different combinations of treatment,
 20 distribution systems, home connections, and POETS. These costs include water mains and home
 21 connections that will be completed as part of the initial implementation. The MPCA and DNR
 22 recommend that neighborhoods be connected to public water systems if they currently have a
 23 significant number of wells with elevated HI values, and if the costs of water mains and
 24 connections are less than the cost of POETS after a reasonable amount of time. Many
 25 neighborhoods lacked sufficient sampling data to make the decision about connections at this
 26 time; these neighborhoods are discussed below.
- 27 • **O&M costs for public water systems and private wells** are estimated costs for the operation
 28 and maintenance of treatment facilities (e.g., media change-out, structure maintenance), or
 29 costs for purchasing water at bulk rates (applicable for Option 3). The recommended options
 30 include separate line items for funding for long-term O&M for treatment systems on public
 31 water systems and private wells. The Co-Trustees prioritized O&M costs for treatment since
 32 these costs are more directly tied to the PFAS contamination. Additionally, funding for POET
 33 O&M costs will be provided for as long as feasible so that these costs do not pose undue
 34 burdens on individual homeowners. Depending on actual future inflation and interest on funds,
 35 the number of years covered could be different from the estimates shown above. The allocation
 36 for O&M costs covers only treatment facilities (e.g., media change-out, structure maintenance)
 37 and does not cover distribution system O&M, which will be covered by the communities. For
 38 Option 3, the O&M allocation covers costs for purchasing water from SPRWS at their bulk water
 39 rate. It has been assumed that O&M costs would increase 3% annually due to inflation, and that
 40 funds would be set aside in an interest-bearing account that would generate an effective rate of
 41 return of 3.5%.

3. Oakdale would be provided water from SPRWS under recommended Option 3 to take advantage of infrastructure efficiencies and ensure future drinking water supply.

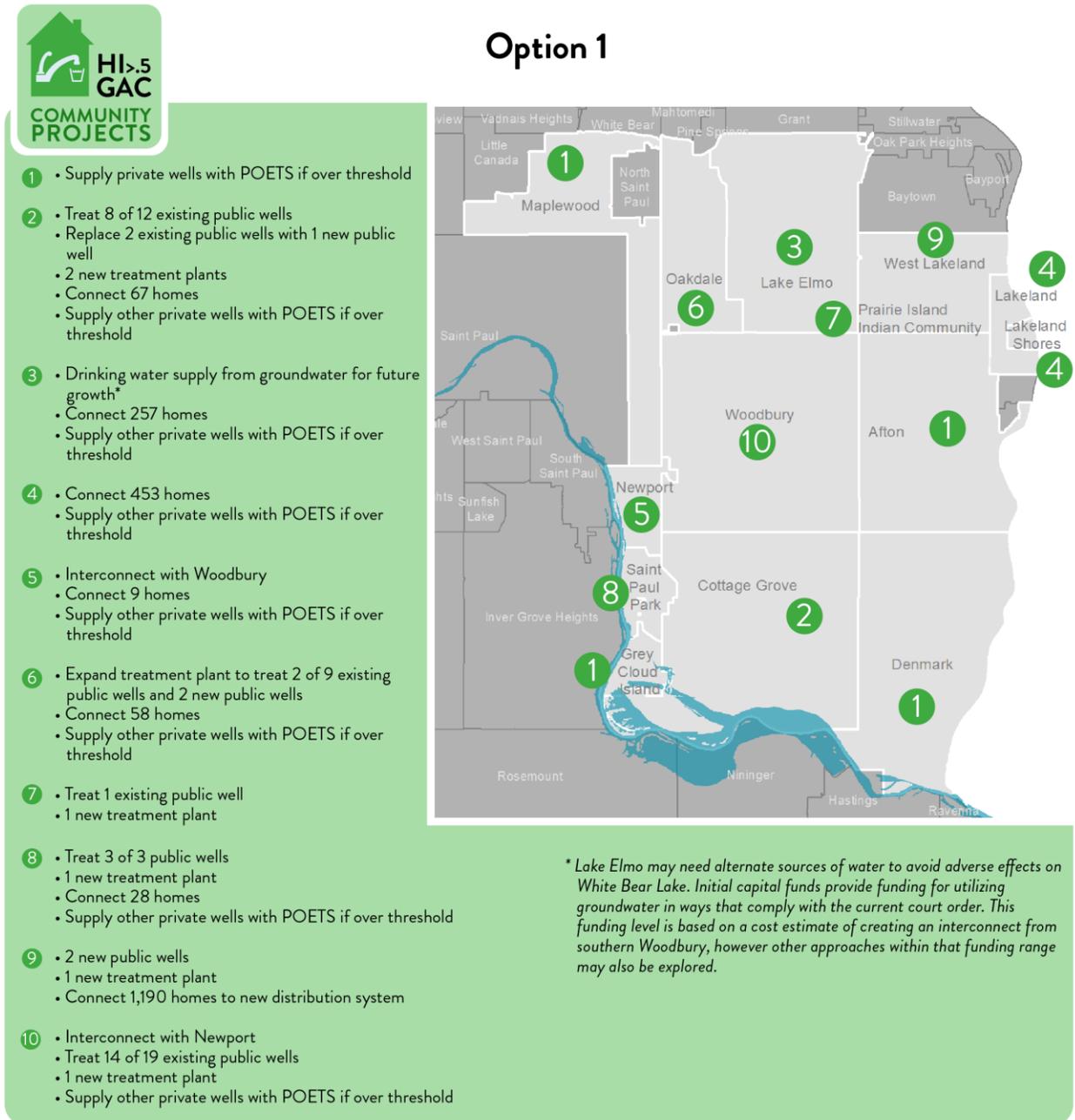
- 1 • **Capital costs for potential additional neighborhood hookups** include costs for additional water
2 mains and home connections that could be completed in the future; these decisions will be
3 based on future information, including additional well testing data. The MPCA and DNR
4 allocated Settlement funds for the ability to connect those neighborhoods in the future if and
5 when new sampling data show it is reasonable. Treating wells below an HI of 1 could result in
6 future expenses, once the Settlement dollars are depleted, due to O&M expenses not covered
7 for treatment of wells below an HI of 1.
- 8 • **Future contingency for HBV/HRL and plume movement, and cost over-runs** is funding set aside
9 to address expenses that are difficult to predict today, future plume movement, future changes
10 in HBV/HRLs, and cost over-runs. The amount is partially based on the cost for treatment and/or
11 hookups for homes with wells that are within the flow path of the PFAS plumes developed using
12 the groundwater model described in Appendix C. While the model is useful at predicting where
13 known PFAS particles may migrate, the actual plume movement may differ from these
14 predictions, and some areas may never encounter PFAS contamination to a level requiring
15 treatment. One option to address this uncertainty would be to provide treatment at
16 concentrations lower than an HI > 0.5 in the initial capital, which is why the contingency for
17 projected future impacts is accordingly lower for Option 2. In addition, this category of funding
18 is meant to cover additional treatment and/or municipal connection costs that may arise if
19 HBV/HRLs are reduced in the future.
- 20 • **Drinking water protection** is funding set aside to be used for the remediation of groundwater
21 not related to the actual 3M disposal sites, to help reduce future treatment needs and improve
22 overall source water quality. Remediation at the disposal sites is the responsibility of 3M under
23 the Settlement and Consent Order. Drinking water protection is a component of Priority 1 of the
24 Settlement and is emphasized in the long-term goals for Priority 1 set out by the agencies and
25 work groups at the beginning of this process.
- 26 • **Sustainability and conservation** is funding set aside to protect groundwater sustainability to
27 preserve groundwater as a drinking water source into the future, and to support sustainable
28 infrastructure enhancements for projects funded by the Settlement. Sustainability is a
29 component of Priority 1 of the Settlement and was a high priority in the public feedback
30 received.
- 31 • **State administration** is the anticipated cost to administer the Settlement in full. This estimate is
32 based on current spending for the 3M Settlement program projected over 20 years, which is
33 consistent with previous years of costs for the MPCA, DNR, and consultants.
- 34

1 **Figure 7.1. Overview of recommended Option 1 – Community projects with a treatment threshold of**
 2 **HI > 0.5 and GAC**



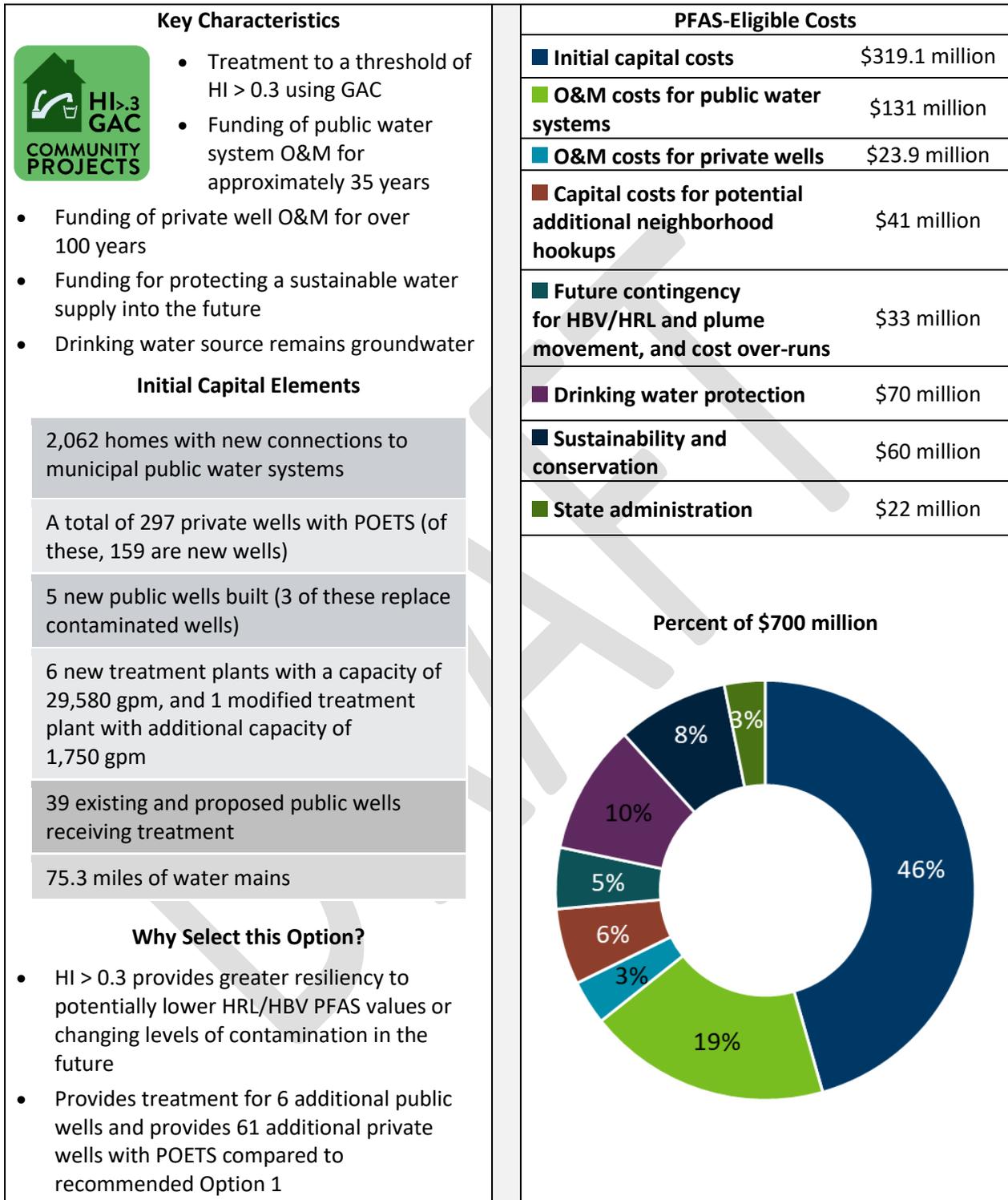
3

1 **Figure 7.2. Community elements of recommended Option 1 – Community projects with a treatment threshold of HI > 0.5 and GAC**
 2



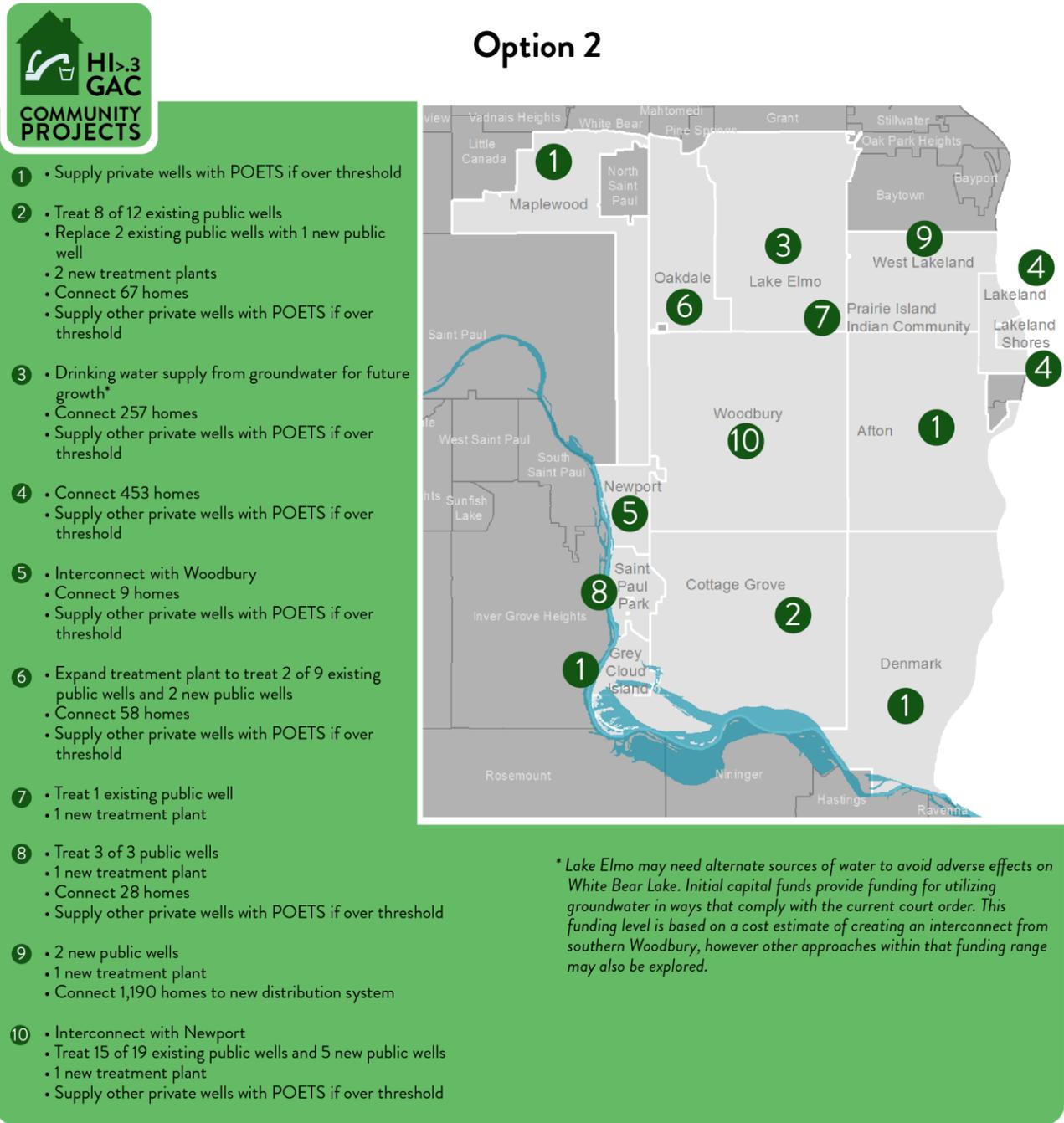
3

1 **Figure 7.3. Overview of recommended Option 2 – Community projects with a treatment threshold of**
 2 **HI > 0.3 and GAC**



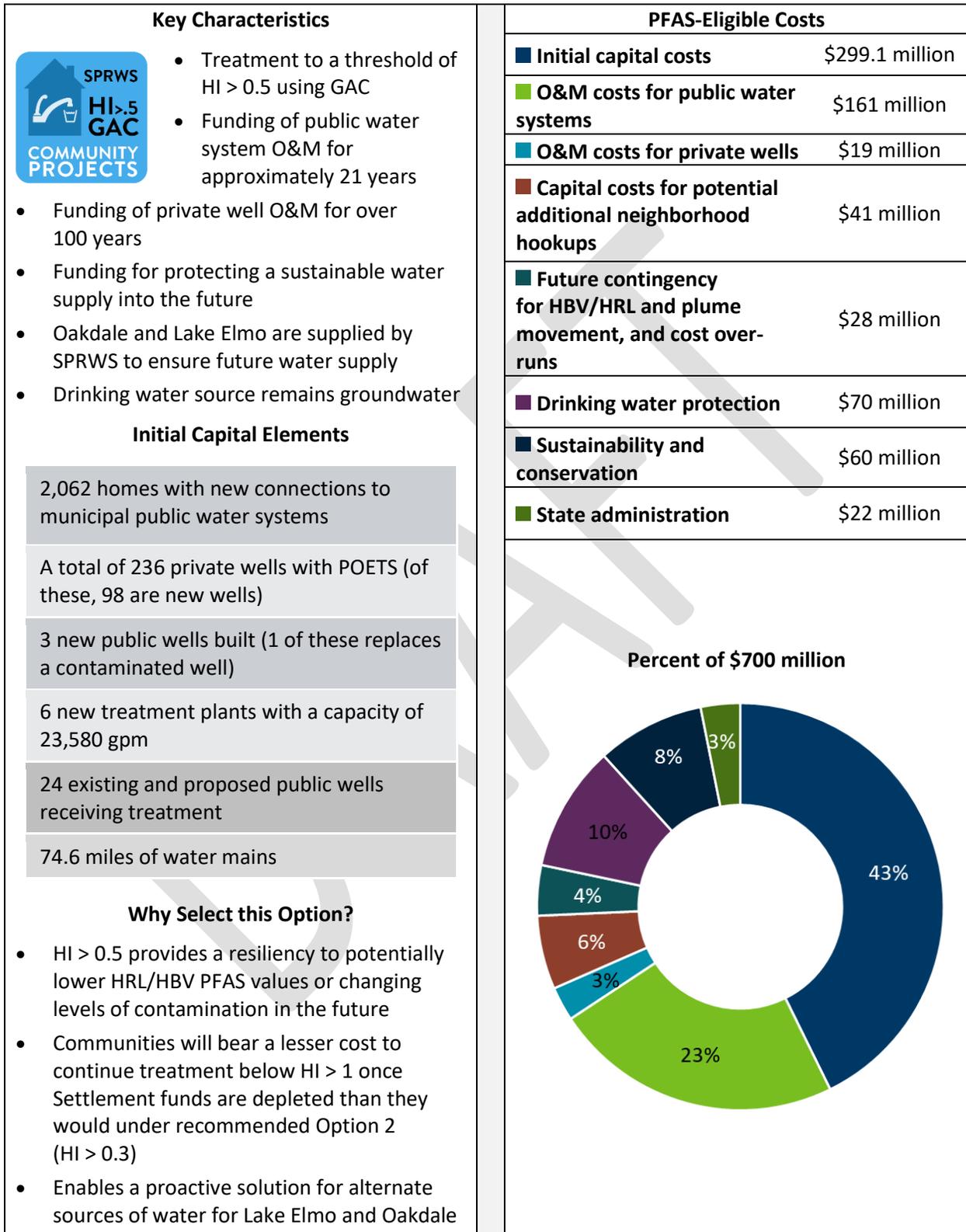
3

1 **Figure 7.4. Community elements of recommended Option 2 – Community projects with a treatment**
 2 **threshold of HI > 0.3 and GAC**

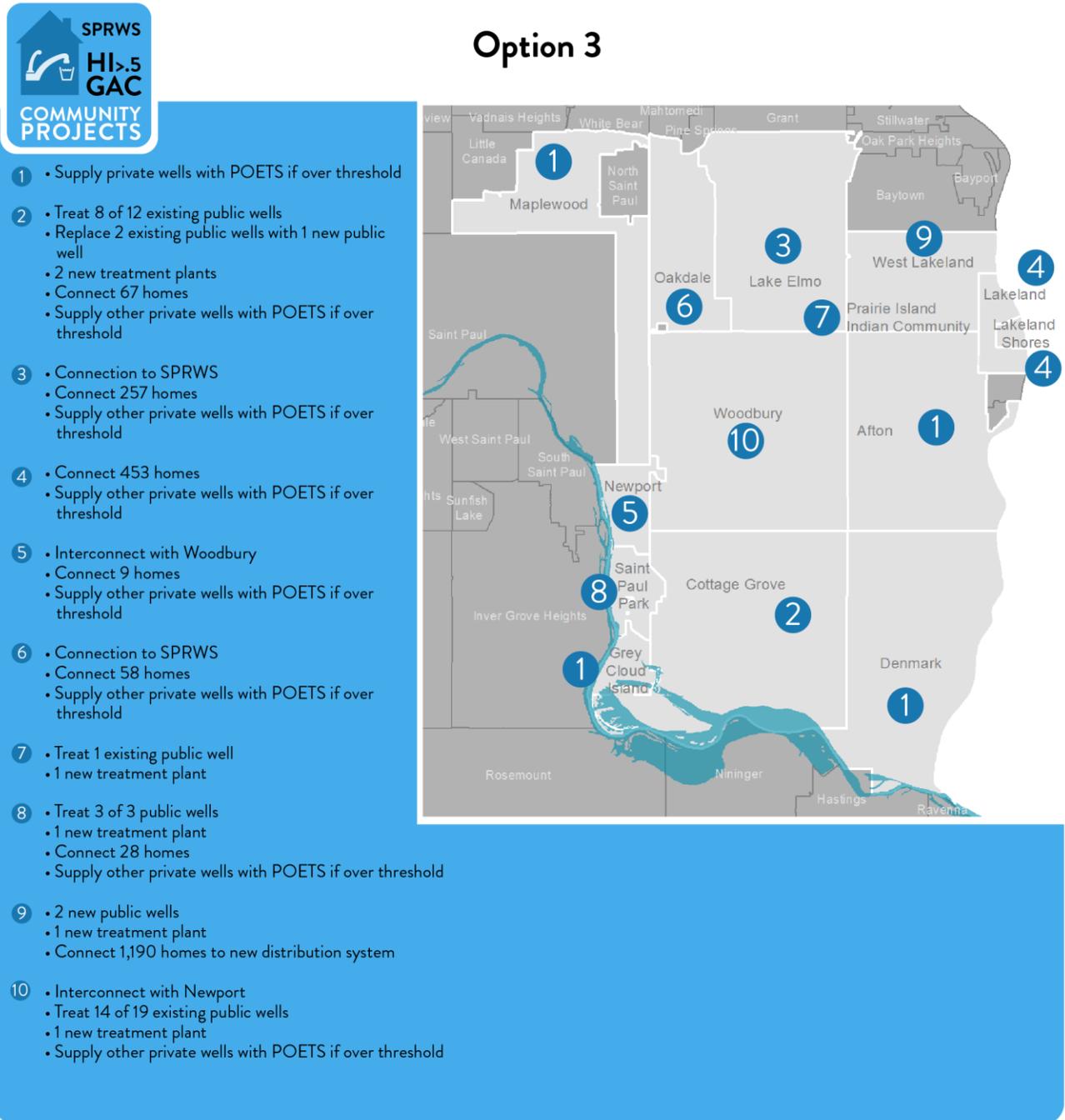


3
4

1 **Figure 7.5. Overview of recommended Option 3 – Community projects, except Oakdale and Lake Elmo**
 2 **are supplied by SPRWS, with a treatment threshold of HI > 0.5 and GAC**



1 **Figure 7.6. Community elements of recommended Option 3 – Community projects, except Oakdale and Lake Elmo are supplied by SPRWS, with a treatment threshold of HI > 0.5 and GAC**
 2

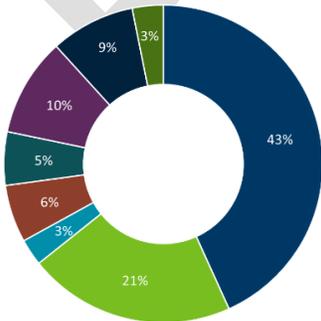
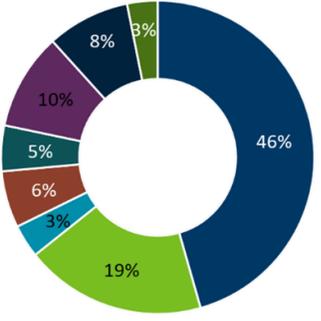
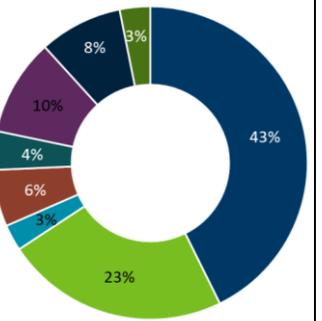


3
4

1 **7.3.3 Comparison of recommended options**

2 This section provides the same information presented in Section 7.3.2 in a side-by-side format to allow
 3 for comparison of the three recommended options. Table 7.1 compares the estimated allocation of
 4 costs for the options, Table 7.2 compares the initial capital investments of the options, and Table 7.3
 5 compares the initial capital investments of the options on a community-by-community basis. For
 6 explanations of the cost categories in Table 7.1, refer to Section 7.3.2.

7 **Table 7.1. Comparison of cost elements of the recommended options**

Funding priorities	Option 1 (preferred) 	Option 2 	Option 3 
Total	\$700 million	\$700 million	\$700 million
Initial capital costs	\$302.5 million	\$319.1 million	\$299.1 million
O&M costs for public water systems	\$147 million for public water systems for approximately 40 years	\$131 million for public water systems for approximately 35 years	\$161 million for public water systems for approximately 21 years
O&M costs for private wells	\$19 million for private wells covering over 100 years	\$24 million for private wells covering over 100 years	\$19 million for private wells covering over 100 years
Capital costs for potential additional neighborhood hookups	\$41 million	\$41 million	\$41 million
Future contingency for HBV/HRL and plume movement, and cost over-runs	\$38 million	\$33 million	\$28 million
Drinking water protection	\$70 million	\$70 million	\$70 million
Sustainability and conservation	\$60 million	\$60 million	\$60 million
State administration	\$22 million	\$22 million	\$22 million
			

8

1 **Table 7.2. Comparison of initial capital investments of the recommended options**

Category		Option 1 (preferred)	Option 2	Option 3
				
Source water		All groundwater	All groundwater	Groundwater and SPRWS
Homes receiving treatment	Number of new POETS proposed	98	159	98
	Cumulative number of POETS; includes existing and proposed	236	297	236
	New connections to public water systems	2,062	2,062	2,062
Wells	Total existing and proposed public wells receiving treatment	33	39	24
	New public wells built	5 new wells (3 of these replace contaminated wells)	5 new wells (3 of these replace contaminated wells)	3 new wells (1 of these replaces a contaminated well)
	Wells sealed; includes public and private wells	2,070	2,070	2,070
Treatment plants	New treatment plants (total capacity)	6 (total capacity is 23,580 gpm)	6 (total capacity is 29,580 gpm)	6 (total capacity is 23,580 gpm)
	Modifications to existing treatment plants (additional capacity)	1 (additional capacity is 1,750 gpm)	1 (additional capacity is 1,750 gpm)	–
Miles of water mains; includes raw water distribution, treated water distribution, and neighborhood mains		72	75.3	74.6

2

1 **Table 7.3. Comparison of community-by-community initial capital investments for the recommended**
 2 **options**

Community	Option 1 (preferred) 	Option 2 	Option 3 
Afton			
Grey Cloud Island	<ul style="list-style-type: none"> Supply private wells with POETS if over threshold 		
Denmark			
Maplewood			
Cottage Grove	<ul style="list-style-type: none"> Treat 8 of 12 existing public wells Replace 2 existing public wells with 1 new public well 2 new treatment plants Connect 67 homes Supply other private wells with POETS if over threshold 		
Lake Elmo	<ul style="list-style-type: none"> Drinking water supply from groundwater for future growth^a Connect 257 homes Supply other private wells with POETS if over threshold 	<ul style="list-style-type: none"> Connection to SPRWS Connect 257 homes Supply other private wells with POETS if over threshold 	
Lakeland	<ul style="list-style-type: none"> Connect 453 homes 		
Lakeland Shores	<ul style="list-style-type: none"> Supply other private wells with POETS if over threshold 		
Newport	<ul style="list-style-type: none"> Interconnect with Woodbury Connect 9 homes Supply other private wells with POETS if over threshold 		
Oakdale	<ul style="list-style-type: none"> Expand public water system to treat 2 of 9 existing public wells and 2 new public wells Connect 58 homes Supply other private wells with POETS if over threshold 	<ul style="list-style-type: none"> Connection to SPRWS Connect 58 homes Supply other private wells with POETS if over threshold 	
Prairie Island Indian Community	<ul style="list-style-type: none"> Treat 1 existing public well 1 new treatment plant 		
St. Paul Park	<ul style="list-style-type: none"> Treat 3 of 3 public wells 1 new treatment plant Connect 28 homes Supply other private wells with POETS if over threshold 		
West Lakeland	<ul style="list-style-type: none"> 2 new public wells 1 new treatment plant Connect 1,190 homes to new distribution system 		

Community	Option 1 (preferred)	Option 2	Option 3
Woodbury	 <ul style="list-style-type: none"> • Interconnect with Newport • Treat 14 of 19 existing public wells • 1 new treatment plant • Supply other private wells with POETS if over threshold 	 <ul style="list-style-type: none"> • Interconnect with Newport • Treat 15 of 19 existing public wells and 5 new public wells • 1 new treatment plant • Supply other private wells with POETS if over threshold 	 <ul style="list-style-type: none"> • Interconnect with Newport • Treat 14 of 19 existing public wells • 1 new treatment plant • Supply other private wells with POETS if over threshold

a. Lake Elmo may need alternate sources of water to avoid adverse effects on White Bear Lake. Initial capital funds provide funding for utilizing groundwater in ways that comply with the current Court Order. This funding level is based on a cost estimate of creating an interconnect from southern Woodbury; however, other approaches within that funding range may also be explored.

1 **7.3.4 Preferred option**

2 The Co-Trustees prefer **recommended Option 1 – Community projects with a treatment threshold of**
 3 **HI > 0.5 and GAC.** Any of the three options would be reasonable and necessary in response to PFAS
 4 releases in the East Metropolitan Area, and not inconsistent with provisions found in Minn. Stat. 115B,
 5 MERLA. However, the Co-Trustees believe that recommended Option 1 is preferable because it provides
 6 resiliency to potentially lower HRL/HBV PFAS values or changing levels of contamination in the future
 7 without overspending on initial capital infrastructure. As a result, it allows for more years of O&M
 8 coverage by Settlement funds and a larger contingency fund to address future uncertainty that can be
 9 directed where it is needed. Further, once Settlement funds are depleted, the 2007 Consent Order will
 10 cover O&M costs for treatment only to HI > 1; all of the options address this concern for private
 11 residential wells with POETS by providing O&M funding for more than 100 years; however,
 12 recommended Option 1 reduces this additional cost burden for public water supply to continue
 13 treatment below HI > 1 relative to recommended Option 2.

14 **7.4 Process for developing a final recommendation**

15 A 45-day public comment period and meetings on the 3 recommendations will be held during
 16 September 10–October 26.

17 The Co-Trustees are planning a series of meetings with communities and the public to explain the
 18 recommended options, answer questions, and to continue discussions about community needs. This
 19 process will include the following:

- 20 • September 9: Briefing for work groups and legislature
- 21 • September 10: Release of the draft Conceptual Plan to the public
- 22 • September 15: Citizen-Business Group meeting
- 23 • September 16: Government and 3M Working Group meeting
- 24 • September 22 and 23: Four virtual public meetings (at 3–5 PM and 7–9 PM each day)
- 25 • Late September–October: One-on-one technical and leadership meetings with LGUs
- 26 • October 26: Close of public comment period.

- 1 A recording of one of the public meetings will also be posted on the 3M Settlement website for those
- 2 who cannot attend a live public meeting. For more information or to submit feedback, please see the
- 3 3M Settlement website at <https://3msettlement.state.mn.us/>.
- 4 Once the public comment period has closed, the Co-Trustees will review feedback from the public, and
- 5 the work groups and communities; finalize the evaluations of the recommended options; and make the
- 6 final decision. They will then draft Chapter 8 describing the outcome of the Conceptual Plan, and
- 7 provide the final Conceptual Plan to the public in January 2021.

DRAFT

8. References

- 1 AACE International. 2019. Recommended Practice 18R-97: Cost Estimate Classification System – As
2 Applied in Engineering, Procurement, and Construction for the Process Industries. March 6.
- 3 Bauer, E.J. 2016. C-39, Geologic Atlas of Washington County, Minnesota. Minnesota Geological Survey.
4 Available: <http://hdl.handle.net/11299/178852>.
- 5 Berg, J.A. 2019. Groundwater Atlas of Washington County, Minnesota. Minnesota Department of
6 Natural Resources, County Atlas Series C-39, Part B, Report and Plates 7–9. Available:
7 https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/washcga.html.
- 8 DNR. 2018. Minnesota Water Conservation Report 2018. November. Minnesota Department of Natural
9 Resources. Available:
10 https://files.dnr.state.mn.us/waters/watermgmt_section/water_conservation/2018-water-
11 [conservation-report.pdf](https://files.dnr.state.mn.us/waters/watermgmt_section/water_conservation/2018-water-conservation-report.pdf).
- 12 EPA. 2019. *EPA’s Per- and Polyfluoroalkyl Substances (PFAS) Action Plan*. EPA 823R18004.
13 U.S. Environmental Protection Agency. February. Available:
14 [https://www.epa.gov/sites/production/files/2019-](https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf)
15 [02/documents/pfas_action_plan_021319_508compliant_1.pdf](https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf).
- 16 Metropolitan Council. 2014a. 2040 Thrive MSP 2040 Plan. Available:
17 <https://metro council.org/Planning/Projects/Thrive-2040/Thrive-MSP-2040-Plan.aspx?source=child>.
- 18 Metropolitan Council. 2014b. Twin Cities Metropolitan Area Groundwater Flow Model Version 3.0.
19 Available: [https://metro council.org/Wastewater-Water/Planning/Water-Supply-Planning/Metro-Model-](https://metro council.org/Wastewater-Water/Planning/Water-Supply-Planning/Metro-Model-3/MM3/MM3-Report.aspx)
20 [3/MM3/MM3-Report.aspx](https://metro council.org/Wastewater-Water/Planning/Water-Supply-Planning/Metro-Model-3/MM3/MM3-Report.aspx).
- 21 Metropolitan Council. 2016a. Regional Groundwater Recharge and Stormwater Capture and Reuse
22 Study, North and East Metro Study Area. Final Report. Prepared by HDR. Metropolitan Council: Saint
23 Paul. May. Available: [https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-](https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-SUPPLY-PLANNING/Regional-Groundwater-Recharge-Stormwater-Capture.aspx)
24 [SUPPLY-PLANNING/Regional-Groundwater-Recharge-Stormwater-Capture.aspx](https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-SUPPLY-PLANNING/Regional-Groundwater-Recharge-Stormwater-Capture.aspx).
- 25 Metropolitan Council. 2016b. Washington County Municipal Water Coalition Water Supply Feasibility
26 Assessment. Prepared by Short Elliott Hendrickson Inc. Metropolitan Council, Saint Paul. October.
27 Available: [https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-SUPPLY-](https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-SUPPLY-PLANNING/Washington-County-Municipal-Water-Coalition.aspx)
28 [PLANNING/Washington-County-Municipal-Water-Coalition.aspx](https://metro council.org/Wastewater-Water/Publications-And-Resources/WATER-SUPPLY-PLANNING/Washington-County-Municipal-Water-Coalition.aspx).
- 29 MPCA. 2019. St. Croix River Basin TMDLs. Minnesota Pollution Control Agency. Available:
30 <https://www.pca.state.mn.us/water/tmdl/st-croix-river-basin-tmdls>.
- 31 NPS. 2001. Final Cooperative Management Plan Environmental Impact Statement: Lower St. Croix
32 National Scenic Riverway. National Park Service. Available:
33 https://www.nps.gov/sacn/learn/management/upload/Final_St_Croix_CMP_EIS.pdf.
- 34 NPS and Friends of the Mississippi River. 2016. State of the River Report 2016. National Park Service and
35 Friends of the Mississippi River. Available: <http://stateoftheriver.com/state-of-the-river-report/>.
- 36 Sanocki, C.A., S.K. Langer, and J.C. Menard. 2008. Potentiometric Surfaces and Changes in Groundwater
37 Levels in Selected Bedrock Aquifers in the Twin Cities Metropolitan Area, March–August 2008 and 1988–
38 2008. U.S. Geological Survey Scientific Investigations Report 2009–5226.

- 1 Washington County. 2014. Washington County Groundwater Plan 2014–2024. Available:
- 2 <https://www.co.washington.mn.us/DocumentCenter/View/794/Groundwater-Plan-2014-2024?bidId>.
- 3 Washington County. 2018. Washington County 2040 Comprehensive Plan. A Policy Guide to 2040.
- 4 Available: [https://www.co.washington.mn.us/DocumentCenter/View/21955/Washington-County-2040-](https://www.co.washington.mn.us/DocumentCenter/View/21955/Washington-County-2040-Comprehensive-Plan-Draft-Submitted-to-Met-Council)
- 5 [Comprehensive-Plan-Draft-Submitted-to-Met-Council](https://www.co.washington.mn.us/DocumentCenter/View/21955/Washington-County-2040-Comprehensive-Plan-Draft-Submitted-to-Met-Council).

DRAFT