

EPA 2020 COVID-19 WATER SECTOR SURVEY

Appendix D: Data Tables for Wastewater Treatment Facilities

June 2021



810-R-21-001

Notes on Appendix D

Appendices C-G present tables with detailed findings from the EPA 2020 COVID-19 Water Sector Survey. This appendix, Appendix D, presents findings specifically for wastewater treatment facilities. Each table includes findings for subgroups based on size (population served).

The order of presentation in this appendix follows the order of questions in the survey (see Appendix B). The title of each table generally includes the applicable survey question number and the text of the question itself (or a close paraphrase). EPA used financial data from Part D of the survey to generate some derived measures. The tables presenting these measures are labeled as “calculated” rather than labelled with a question number.

Some questions asked survey participants specifically about experiences from January 2020 to the present day, or from present day to December 2020. For these questions, “January to the Present” or “Present to December” is listed above each table to show the time period covered by the table.

In most cases, findings are presented as point estimates and 95 percent confidence intervals. For an explanation of confidence intervals, see the discussion of methodology in Appendix A.

Several questions asked respondents to provide responses on a scale. For example, questions B1.1.1 and B2.1.1 asked respondents to rank the severity of their treatment chemical shortages as “no impact,” “slight impact,” “moderate impact,” or “severe impact.” EPA calculated a mean score for each such question by assigning numeric values to the responses (for example, 0 for no impact, 1 for slight impact, 2 for moderate impact, and 3 for severe impact) and averaging the results.

Each table lists the number of observations, which is the number of responses received from survey participants to a given question or response option. The quantitative findings presented in the tables are weighted to provide national estimates, using weightings calculated and assigned to each utility type and size subgroup. For more information on the weightings, see the discussion of methodology in Appendix A.

Blank cells indicate that no applicable responses were received. “N/A” indicates that a confidence interval cannot be calculated because there was no variance in responses.

Table D.1. Question B1.1: What kinds of shortages or supply chain disruptions did your organization experience from January 2020 through present day?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Treatment Chemicals	2.3% 1.1% - 5.0%	5.9% 3.7% - 9.4%	10.2% 5.6% - 18.0%	3.2% 1.9% - 5.1%
PPE	43.3% 37.3% - 49.5%	65.8% 59.6% - 71.5%	75.5% 65.4% - 83.4%	47.9% 42.9% - 53.1%
Durable Goods and Other Equipment and Supplies	11.8% 8.4% - 16.4%	18.7% 14.5% - 23.8%	20.8% 14.1% - 29.5%	13.2% 10.2% - 16.9%
None	53.5% 47.3% - 59.6%	29.6% 24.3% - 35.6%	23.7% 15.9% - 33.7%	48.8% 43.7% - 53.9%
Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Mean score (0 to 3)	0.008 -0.003 - 0.020	0.008 -0.007 - 0.022	0.000 0.000 - 0.000	0.008 -0.002 - 0.018
	No impact (0)	99.2% 96.8% - 99.8%	99.6% 97.6% - 99.9%	100.0% N/A - N/A	99.3% 97.4% - 99.8%
	Slight (1)	0.8% 0.2% - 3.2%	0.0% N/A - N/A	0.0% N/A - N/A	0.7% 0.2% - 2.6%
	Moderate (2)	0.0% N/A - N/A	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Severe (3)				
	Observations	276	242	95	613
Ferric chloride	Mean score (0 to 3)	0.010 -0.002 - 0.022	0.008 -0.002 - 0.018	0.049 0.005 - 0.093	0.011 0.001 - 0.021
	No impact (0)	99.1% 96.8% - 99.7%	99.2% 97.2% - 99.8%	96.7% 92.4% - 98.6%	99.0% 97.4% - 99.6%
	Slight (1)	0.8% 0.2% - 3.2%	0.8% 0.2% - 2.8%	1.6% 0.5% - 5.3%	0.9% 0.3% - 2.6%
	Moderate (2)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	1.6% 0.5% - 5.3%	0.1% 0.0% - 0.4%
	Severe (3)				
	Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Mean score (0 to 3)	0.004 -0.004 - 0.012	0.008 -0.007 - 0.022	0.000 0.000 - 0.000	0.005 -0.002 - 0.012
	No impact (0)	99.6% 97.1% - 99.9%	99.6% 97.6% - 99.9%	100.0% N/A - N/A	99.6% 97.9% - 99.9%
	Slight (1)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.0% - 2.3%
	Moderate (2)	0.0% N/A - N/A	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Severe (3)				
	Observations	276	242	95	613
Gaseous chlorine	Mean score (0 to 3)	0.005 -0.003 - 0.013	0.008 -0.002 - 0.018	0.000 0.000 - 0.000	0.005 -0.002 - 0.012
	No impact (0)	99.5% 97.4% - 99.9%	99.2% 97.2% - 99.8%	100.0% N/A - N/A	99.5% 98.1% - 99.9%
	Slight (1)	0.5% 0.1% - 2.6%	0.8% 0.2% - 2.8%	0.0% N/A - N/A	0.5% 0.1% - 1.9%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Severe (3)				
	Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Mean score (0 to 3)	0.006 -0.003 - 0.016	0.000 0.000 - 0.000	0.000 0.000 - 0.000	0.005 -0.002 - 0.013
	No impact (0)	99.5% 97.4% - 99.9%	100.0% N/A - N/A	100.0% N/A - N/A	99.6% 97.9% - 99.9%
	Slight (1)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.0% - 2.3%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Severe (3)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	276	242	95	613
Lime	Mean score (0 to 3)	0.006 -0.002 - 0.015	0.000 0.000 - 0.000	0.000 0.000 - 0.000	0.005 -0.002 - 0.012
	No impact (0)	99.4% 97.6% - 99.9%	100.0% N/A - N/A	100.0% N/A - N/A	99.5% 98.0% - 99.9%
	Slight (1)	0.5% 0.1% - 2.6%	0.0% N/A - N/A	0.0% N/A - N/A	0.4% 0.1% - 2.1%
	Moderate (2)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Severe (3)				
	Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Mean score (0 to 3)	0.004 -0.004 - 0.012	0.008 -0.002 - 0.018	0.000 0.000 - 0.000	0.005 -0.002 - 0.011
	No impact (0)	99.6% 97.1% - 99.9%	99.2% 97.2% - 99.8%	100.0% N/A - N/A	99.5% 98.0% - 99.9%
	Slight (1)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.8%	0.0% N/A - N/A	0.5% 0.1% - 2.0%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Severe (3)				
	Observations	276	242	95	613
Polymers	Mean score (0 to 3)	0.005 -0.003 - 0.013	0.056 0.022 - 0.089	0.059 0.010 - 0.108	0.015 0.006 - 0.023
	No impact (0)	99.5% 97.4% - 99.9%	96.0% 93.0% - 97.8%	94.9% 88.5% - 97.8%	98.8% 97.7% - 99.4%
	Slight (1)	0.5% 0.1% - 2.6%	2.4% 1.1% - 4.9%	4.3% 1.6% - 10.7%	0.9% 0.4% - 2.0%
	Moderate (2)	0.0% N/A - N/A	1.6% 0.6% - 3.9%	0.8% 0.2% - 4.3%	0.3% 0.1% - 0.6%
	Severe (3)				
	Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Mean score (0 to 3)	0.004 -0.004 - 0.012	0.020 -0.002 - 0.041	0.000 0.000 - 0.000	0.006 -0.001 - 0.014
	No impact (0)	99.6% 97.1% - 99.9%	98.8% 96.6% - 99.6%	100.0% N/A - N/A	99.5% 98.1% - 99.9%
	Slight (1)	0.4% 0.1% - 2.9%	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.4% 0.1% - 2.1%
	Moderate (2)	0.0% N/A - N/A	0.8% 0.2% - 2.8%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Severe (3)				
	Observations	276	242	95	613
Sodium hydroxide	Mean score (0 to 3)	0.006 -0.003 - 0.016	0.016 -0.002 - 0.034	0.008 -0.006 - 0.022	0.008 0.000 - 0.016
	No impact (0)	99.5% 97.4% - 99.9%	98.8% 96.6% - 99.6%	99.2% 95.7% - 99.8%	99.4% 98.1% - 99.8%
	Slight (1)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.8%	0.8% 0.2% - 4.3%	0.5% 0.1% - 1.9%
	Moderate (2)	0.0% N/A - N/A	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Severe (3)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	276	242	95	613

Table D.2. Question B1.1.1: How severe were the treatment chemical shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Mean score (0 to 3)	0.013 -0.005 - 0.031	0.032 0.007 - 0.057	0.051 0.008 - 0.094	0.018 0.002 - 0.033
	No impact (0)	99.1% 96.8% - 99.7%	97.6% 95.1% - 98.9%	94.9% 88.5% - 97.8%	98.7% 97.3% - 99.4%
	Slight (1)	0.5% 0.1% - 2.6%	1.6% 0.6% - 3.9%	5.1% 2.2% - 11.5%	0.8% 0.3% - 2.0%
	Moderate (2)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.8%	0.0% N/A - N/A	0.5% 0.1% - 2.0%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	276	242	95	613

N/A: confidence interval could not be calculated.

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Unavailable from supplier(s)	0.0% N/A - N/A	100.0% N/A - N/A		8.4% 8.4% - 8.4%
	Delayed / backordered from supplier(s)	50.0% 1.4% - 98.6%	0.0% N/A - N/A		45.8% 1.7% - 97.7%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Price	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	2	1		3
Ferric chloride	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Delayed / backordered from supplier(s)	45.8% 1.0% - 98.5%	50.0% 1.6% - 98.4%	75.0% 11.5% - 98.6%	49.7% 3.4% - 96.6%
	Transportation / distribution difficulties	8.4% 0.9% - 49.3%	50.0% 1.6% - 98.4%	25.0% 1.4% - 88.5%	15.6% 5.0% - 39.3%
	Price	8.4% 0.9% - 49.3%	0.0% N/A - N/A	0.0% N/A - N/A	6.3% 0.5% - 45.8%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	25.0% 1.4% - 88.5%	2.9% 0.3% - 25.2%
	Observations	3	2	4	9

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Price	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	1	1		2
Gaseous chlorine	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Transportation / distribution difficulties	15.5% 2.0% - 61.8%	50.0% 2.3% - 97.7%		23.6% 6.9% - 56.3%
	Price	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	2	2		4

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Unavailable from supplier(s)	0.0% N/A - N/A			0.0% N/A - N/A
	Delayed / backordered from supplier(s)	84.5% 84.5% - 84.5%			84.5% 84.5% - 84.5%
	Transportation / distribution difficulties	0.0% N/A - N/A			0.0% N/A - N/A
	Price	0.0% N/A - N/A			0.0% N/A - N/A
	Other	0.0% N/A - N/A			0.0% N/A - N/A
	Observations	2			2
Lime	Unavailable from supplier(s)	13.4% 0.8% - 75.1%			13.4% 0.8% - 75.1%
	Delayed / backordered from supplier(s)	100.0% N/A - N/A			100.0% N/A - N/A
	Transportation / distribution difficulties	13.4% 0.8% - 75.1%			13.4% 0.8% - 75.1%
	Price	0.0% N/A - N/A			0.0% N/A - N/A
	Other	0.0% N/A - N/A			0.0% N/A - N/A
	Observations	3			3

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	50.0% 0.0% - 100.0%		86.6% 4.3% - 99.9%
	Transportation / distribution difficulties	0.0% N/A - N/A	50.0% 0.0% - 100.0%		13.4% 0.1% - 95.7%
	Price	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	1	2		3
Polymers	Unavailable from supplier(s)	0.0% N/A - N/A	20.0% 4.2% - 58.7%	0.0% N/A - N/A	10.4% 2.3% - 36.0%
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	80.0% 41.3% - 95.8%	48.5% 11.5% - 87.2%	82.1% 57.7% - 93.9%
	Transportation / distribution difficulties	0.0% N/A - N/A	40.0% 13.9% - 73.4%	35.3% 6.2% - 81.7%	25.9% 11.3% - 49.1%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	16.2% 1.3% - 73.3%	2.4% 0.3% - 17.2%
	Observations	2	10	5	17

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Unavailable from supplier(s)	0.0% N/A - N/A	66.7% 4.9% - 98.7%		23.6% 5.9% - 60.6%
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	33.3% 1.3% - 95.1%		76.4% 39.4% - 94.1%
	Transportation / distribution difficulties	0.0% N/A - N/A	33.3% 1.3% - 95.1%		11.8% 0.8% - 68.2%
	Price	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	1	3		4
Sodium hydroxide	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Delayed / backordered from supplier(s)	84.5% 25.4% - 98.9%	33.3% 1.0% - 96.2%	0.0% N/A - N/A	65.1% 35.3% - 86.5%
	Transportation / distribution difficulties	0.0% N/A - N/A	66.7% 3.8% - 99.0%	100.0% N/A - N/A	24.8% 5.5% - 65.1%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	2	3	1	6

Table D.3. Question B1.1.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Unavailable from supplier(s)	45.8% 1.7% - 97.6%	16.7% 1.7% - 69.6%	32.3% 5.7% - 79.2%	35.5% 4.6% - 86.4%
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	50.0% 14.0% - 86.0%	32.3% 5.7% - 79.2%	76.3% 57.0% - 88.7%
	Transportation / distribution difficulties	8.4% 1.1% - 42.3%	50.0% 14.0% - 86.0%	67.7% 20.8% - 94.3%	28.5% 15.6% - 46.2%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	16.2% 1.4% - 72.7%	2.2% 0.3% - 15.8%
	Observations	3	6	5	14

N/A: confidence interval could not be calculated.

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Found alternative supplier	0.0% N/A - N/A	100.0% N/A - N/A		8.4% 3.2% - 20.1%
	Drew down existing inventory	50.0% 2.9% - 97.1%	100.0% N/A - N/A		54.2% 4.5% - 96.8%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	2	1	3	6
Ferric chloride	Found alternative supplier	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Drew down existing inventory	54.2% 5.7% - 95.8%	100.0% N/A - N/A	75.0% 21.8% - 97.0%	62.4% 12.7% - 95.0%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	50.0% 11.4% - 88.6%	5.8% 1.2% - 24.3%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	5	6	12	23

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Found alternative supplier	0.0% N/A - N/A	100.0% N/A - N/A		15.5% 2.4% - 57.7%
	Drew down existing inventory	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A		0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	3	1	3	6
Gaseous chlorine	Found alternative supplier	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Drew down existing inventory	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Coordinated with local or state emergency management agency	3.5% 0.5% - 20.7%	0.0% N/A - N/A	0.0% N/A - N/A	2.4% 0.3% - 15.5%
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	7	12	3	22

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Found alternative supplier	0.0% N/A - N/A			0.0% N/A - N/A
	Drew down existing inventory	84.5% 37.7% - 98.0%			84.5% 37.7% - 98.0%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A			0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A			0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A			0.0% N/A - N/A
	Observations	2	1	4	7
Lime	Found alternative supplier	0.0% N/A - N/A			0.0% N/A - N/A
	Drew down existing inventory	100.0% N/A - N/A			100.0% N/A - N/A
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A			0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A			0.0% N/A - N/A
	Coordinated with local or state emergency management agency	5.8% 0.8% - 31.6%		0.0% N/A - N/A	5.3% 0.7% - 29.9%
	Other	0.0% N/A - N/A			0.0% N/A - N/A
	Observations	4		3	7

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Found alternative supplier	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Drew down existing inventory	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A		0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	3	2	3	6
Polymers	Found alternative supplier	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Drew down existing inventory	100.0% N/A - N/A	90.0% 52.5% - 98.7%	83.8% 35.5% - 98.0%	92.4% 69.9% - 98.5%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	48.5% 12.9% - 85.7%	7.1% 2.1% - 21.2%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	10.0% 1.3% - 47.5%	0.0% N/A - N/A	5.2% 0.7% - 31.0%
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	14	21	19	54

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Found alternative supplier	0.0% N/A - N/A	33.3% 3.0% - 88.9%		11.8% 0.9% - 65.3%
	Drew down existing inventory	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A		0.0% N/A - N/A
	Observations	5	3	3	10
Sodium hydroxide	Found alternative supplier	0.0% N/A - N/A	33.3% 3.6% - 86.9%	0.0% N/A - N/A	10.1% 1.0% - 56.3%
	Drew down existing inventory	84.5% 24.1% - 98.9%	100.0% N/A - N/A	100.0% N/A - N/A	89.9% 43.7% - 99.0%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	33.3% 3.6% - 86.9%	100.0% N/A - N/A	14.7% 2.1% - 57.9%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	4	7	6	17

Table D.4. Question B1.1.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Found alternative supplier	0.0% N/A - N/A	16.7% 2.2% - 64.2%	16.2% 2.0% - 64.7%	7.0% 1.4% - 29.3%
	Drew down existing inventory	100.0% N/A - N/A	100.0% N/A - N/A	83.8% 35.3% - 98.0%	97.8% 84.7% - 99.7%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	16.7% 2.2% - 64.2%	0.0% N/A - N/A	4.8% 0.6% - 30.0%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	1.3% 0.2% - 8.8%	0.0% N/A - N/A	0.0% N/A - N/A	1.0% 0.1% - 6.8%
	Other	45.8% 5.3% - 92.7%	0.0% N/A - N/A	0.0% N/A - N/A	26.3% 3.9% - 75.9%
	Observations	17	19	13	49

N/A: confidence interval could not be calculated.

Table D.5. Question B1.2.1: How severe were the personal protective equipment shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Mean score (0 to 3)	0.467 0.368 - 0.567	0.787 0.676 - 0.898	1.035 0.867 - 1.204	0.536 0.454 - 0.619
	No impact (0)	68.9% 63.0% - 74.4%	48.6% 41.8% - 55.5%	30.8% 21.7% - 41.7%	64.5% 59.5% - 69.2%
	Slight (1)	19.9% 15.5% - 25.4%	30.5% 23.9% - 38.1%	43.5% 30.6% - 57.4%	22.4% 18.4% - 26.9%
	Moderate (2)	6.5% 4.1% - 10.3%	14.4% 10.7% - 19.2%	16.9% 11.0% - 25.2%	8.1% 5.9% - 11.1%
	Severe (3)	4.6% 2.6% - 7.9%	6.4% 4.1% - 10.0%	8.7% 4.4% - 16.5%	5.0% 3.3% - 7.6%
	Observations	276	239	94	609
Alternative mask options (surgical, cloth, etc.)	Mean score (0 to 3)	0.368 0.282 - 0.453	0.657 0.558 - 0.755	0.702 0.505 - 0.900	0.424 0.353 - 0.495
	No impact (0)	74.7% 69.0% - 79.7%	52.8% 45.8% - 59.7%	48.7% 36.0% - 61.6%	70.4% 65.7% - 74.8%
	Slight (1)	14.7% 10.9% - 19.6%	31.2% 24.5% - 38.7%	34.2% 24.5% - 45.4%	17.9% 14.5% - 22.0%
	Moderate (2)	9.7% 6.6% - 14.0%	13.6% 10.0% - 18.3%	15.3% 9.7% - 23.2%	10.5% 7.8% - 13.9%
	Severe (3)	0.9% 0.3% - 3.2%	2.4% 1.1% - 5.0%	1.8% 0.3% - 10.5%	1.2% 0.5% - 2.7%
	Observations	276	239	94	609

Table D.5. Question B1.2.1: How severe were the personal protective equipment shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Mean score (0 to 3)	0.245 0.179 - 0.312	0.371 0.283 - 0.458	0.454 0.306 - 0.602	0.272 0.216 - 0.328
	No impact (0)	80.4% 75.1% - 84.9%	73.4% 66.8% - 79.0%	63.3% 51.8% - 73.4%	78.8% 74.4% - 82.6%
	Slight (1)	15.1% 11.1% - 20.1%	18.2% 13.3% - 24.5%	28.0% 19.7% - 38.2%	16.0% 12.6% - 20.1%
	Moderate (2)	4.0% 2.2% - 7.2%	6.4% 4.1% - 10.0%	8.7% 4.4% - 16.5%	4.5% 2.9% - 7.0%
	Severe (3)	0.5% 0.1% - 2.6%	2.0% 0.9% - 4.5%	0.0% N/A - N/A	0.7% 0.3% - 1.9%
	Observations	276	239	94	609
Nitrile and/or latex gloves	Mean score (0 to 3)	0.525 0.426 - 0.625	0.775 0.637 - 0.912	0.818 0.678 - 0.957	0.574 0.490 - 0.658
	No impact (0)	64.0% 57.9% - 69.7%	47.2% 40.4% - 54.0%	39.4% 28.7% - 51.2%	60.6% 55.5% - 65.4%
	Slight (1)	22.9% 18.1% - 28.5%	33.6% 27.2% - 40.7%	42.8% 29.8% - 56.9%	25.2% 21.1% - 29.9%
	Moderate (2)	9.6% 6.5% - 13.9%	13.8% 10.2% - 18.5%	14.4% 9.0% - 22.3%	10.4% 7.7% - 13.8%
	Severe (3)	3.5% 1.8% - 6.6%	5.4% 2.3% - 12.2%	3.4% 1.4% - 7.7%	3.8% 2.2% - 6.3%
	Observations	276	239	94	609

Table D.5. Question B1.2.1: How severe were the personal protective equipment shortages or supply chain disruptions that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Mean score (0 to 3)	0.229 0.153 - 0.305	0.182 0.126 - 0.238	0.359 0.231 - 0.487	0.226 0.164 - 0.289
	No impact (0)	85.2% 80.3% - 89.1%	85.0% 80.3% - 88.8%	71.0% 60.5% - 79.6%	84.7% 80.7% - 88.0%
	Slight (1)	9.0% 6.0% - 13.3%	12.2% 8.8% - 16.6%	22.1% 14.9% - 31.5%	10.0% 7.4% - 13.3%
	Moderate (2)	3.5% 1.8% - 6.6%	2.4% 1.1% - 5.0%	6.9% 3.4% - 13.5%	3.4% 2.0% - 5.9%
	Severe (3)	2.3% 1.1% - 5.0%	0.4% 0.1% - 2.5%	0.0% N/A - N/A	1.9% 0.9% - 4.1%
	Observations	276	239	94	609
Sanitizing wipes, sprays for cleaning work offices, or gels for hand sanitizing	Mean score (0 to 3)	0.631 0.515 - 0.747	1.020 0.868 - 1.172	1.164 0.985 - 1.344	0.710 0.612 - 0.807
	No impact (0)	63.0% 56.9% - 68.8%	42.4% 35.8% - 49.2%	28.3% 19.7% - 38.9%	58.7% 53.6% - 63.5%
	Slight (1)	17.0% 12.9% - 22.1%	23.4% 18.0% - 29.8%	37.3% 24.3% - 52.5%	18.7% 15.1% - 22.9%
	Moderate (2)	13.8% 10.1% - 18.7%	24.0% 18.6% - 30.4%	24.0% 16.2% - 33.9%	15.7% 12.5% - 19.7%
	Severe (3)	6.2% 3.8% - 9.9%	10.2% 6.2% - 16.4%	10.4% 5.7% - 18.3%	6.9% 4.8% - 9.9%
	Observations	276	239	94	609

N/A: confidence interval could not be calculated.

Table D.6. Question B1.2.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Unavailable from supplier(s)	44.4% 33.7% - 55.6%	50.2% 39.7% - 60.7%	55.6% 39.2% - 70.9%	46.4% 38.3% - 54.8%
	Delayed / backordered from supplier(s)	54.5% 43.3% - 65.3%	63.8% 53.1% - 73.3%	67.1% 44.1% - 84.0%	57.4% 49.0% - 65.5%
	Transportation / distribution difficulties	1.3% 0.2% - 9.0%	3.9% 1.7% - 8.9%	7.5% 3.0% - 17.6%	2.3% 1.0% - 5.6%
	Price	4.8% 1.8% - 12.0%	3.9% 1.7% - 8.9%	7.5% 3.0% - 17.6%	4.8% 2.3% - 9.5%
	Other	1.3% 0.2% - 9.0%	0.8% 0.1% - 5.1%	1.2% 0.2% - 7.1%	1.2% 0.2% - 5.7%
	Observations	90	118	62	270
Alternative mask options (surgical, cloth, etc.)	Unavailable from supplier(s)	18.4% 10.7% - 29.7%	25.8% 16.9% - 37.3%	38.5% 26.5% - 52.1%	21.4% 15.2% - 29.4%
	Delayed / backordered from supplier(s)	68.1% 55.6% - 78.4%	79.7% 67.9% - 87.9%	76.5% 63.0% - 86.1%	71.4% 62.4% - 79.0%
	Transportation / distribution difficulties	1.7% 0.2% - 11.0%	5.9% 2.9% - 11.9%	6.8% 2.2% - 19.6%	3.0% 1.3% - 6.8%
	Price	8.9% 3.9% - 18.9%	5.9% 2.9% - 11.9%	6.8% 2.2% - 19.6%	8.0% 4.3% - 14.7%
	Other	0.0% N/A - N/A	0.8% 0.1% - 5.5%	3.3% 0.9% - 11.2%	0.4% 0.1% - 1.3%
	Observations	77	107	54	238

Table D.6. Question B1.2.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Unavailable from supplier(s)	14.0% 6.8% - 26.8%	30.8% 18.1% - 47.3%	25.6% 14.2% - 41.6%	18.0% 11.3% - 27.4%
	Delayed / backordered from supplier(s)	79.2% 65.5% - 88.4%	67.7% 51.5% - 80.5%	79.4% 65.3% - 88.8%	76.9% 66.6% - 84.8%
	Transportation / distribution difficulties	2.5% 0.5% - 12.7%	4.5% 1.5% - 13.1%	9.6% 3.0% - 26.7%	3.3% 1.2% - 9.0%
	Price	4.7% 1.3% - 15.6%	3.0% 0.8% - 11.2%	5.0% 0.7% - 26.9%	4.4% 1.5% - 11.9%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	56	63	39	158
Nitrile and/or latex gloves	Unavailable from supplier(s)	26.0% 18.0% - 36.1%	22.7% 16.1% - 31.0%	22.4% 12.6% - 36.6%	25.2% 18.9% - 32.7%
	Delayed / backordered from supplier(s)	75.6% 65.6% - 83.4%	87.8% 81.0% - 92.4%	90.3% 80.6% - 95.4%	78.9% 71.3% - 84.9%
	Transportation / distribution difficulties	4.7% 1.8% - 11.8%	3.8% 1.6% - 8.7%	5.8% 1.8% - 17.5%	4.5% 2.1% - 9.4%
	Price	6.5% 2.9% - 13.6%	9.1% 5.3% - 15.3%	12.7% 6.0% - 24.9%	7.3% 4.3% - 12.3%
	Other	2.3% 0.6% - 8.9%	1.5% 0.4% - 5.7%	0.0% N/A - N/A	2.0% 0.6% - 6.5%
	Observations	105	121	53	279

Table D.6. Question B1.2.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Unavailable from supplier(s)	31.6% 18.7% - 48.2%	13.4% 5.7% - 28.4%	26.6% 13.6% - 45.4%	28.5% 18.1% - 41.9%
	Delayed / backordered from supplier(s)	55.0% 38.7% - 70.3%	70.6% 54.3% - 82.9%	79.7% 63.3% - 90.0%	59.0% 45.6% - 71.2%
	Transportation / distribution difficulties	2.8% 0.4% - 18.0%	5.4% 1.3% - 19.1%	12.1% 3.8% - 32.6%	3.8% 1.1% - 12.2%
	Price	3.9% 0.9% - 15.8%	5.4% 1.3% - 19.1%	2.9% 0.4% - 17.1%	4.0% 1.3% - 12.2%
	Other	2.8% 0.4% - 18.0%	2.7% 0.4% - 16.8%	0.0% N/A - N/A	2.6% 0.5% - 13.2%
	Observations	43	39	31	113
Sanitizing wipes, sprays for cleaning work offices, or gels for hand sanitizing	Unavailable from supplier(s)	39.6% 30.1% - 49.9%	49.3% 39.8% - 58.9%	53.5% 37.3% - 69.0%	42.5% 35.1% - 50.2%
	Delayed / backordered from supplier(s)	66.3% 56.1% - 75.2%	67.6% 58.9% - 75.3%	69.2% 46.0% - 85.6%	66.8% 59.1% - 73.7%
	Transportation / distribution difficulties	2.3% 0.6% - 8.6%	3.5% 1.5% - 7.9%	7.2% 2.9% - 16.9%	2.8% 1.2% - 6.4%
	Price	6.8% 3.1% - 14.3%	6.3% 3.3% - 11.5%	12.1% 5.9% - 23.5%	7.0% 3.9% - 12.1%
	Other	1.1% 0.2% - 7.6%	0.7% 0.1% - 4.5%	0.0% N/A - N/A	1.0% 0.2% - 5.1%
	Observations	109	134	65	308

N/A: confidence interval could not be calculated.

Table D.7. Question B1.2.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Found alternative supplier	32.1% 22.6% - 43.4%	45.5% 35.1% - 56.3%	52.8% 36.0% - 69.0%	36.5% 28.9% - 44.8%
	Drew down existing inventory	44.4% 33.7% - 55.6%	59.9% 49.3% - 69.7%	70.7% 56.7% - 81.5%	49.6% 41.3% - 57.9%
	Switched chemicals, procedures, or technologies	0.2% 0.0% - 1.6%	4.7% 2.1% - 9.9%	4.9% 1.9% - 11.8%	1.5% 0.9% - 2.8%
	Sought help from other utilities or mutual aid network (e.g., WARN)	9.5% 4.6% - 18.6%	10.5% 6.3% - 17.1%	16.4% 8.5% - 29.5%	10.2% 6.2% - 16.3%
	Coordinated with local or state emergency management agency	19.6% 12.2% - 30.1%	15.9% 10.5% - 23.3%	38.0% 20.7% - 58.9%	20.0% 14.1% - 27.5%
	Other	11.3% 5.9% - 20.5%	4.7% 2.1% - 9.9%	9.9% 4.6% - 20.3%	9.7% 5.6% - 16.2%
	Observations	90	118	62	270
Alternative mask options (surgical, cloth, etc.)	Found alternative supplier	29.7% 19.8% - 41.9%	60.2% 48.9% - 70.5%	52.7% 39.6% - 65.4%	38.6% 30.6% - 47.2%
	Drew down existing inventory	29.5% 19.5% - 41.9%	30.5% 21.1% - 42.0%	48.7% 35.8% - 61.7%	30.9% 23.2% - 39.8%
	Switched chemicals, procedures, or technologies	3.6% 1.0% - 12.2%	1.7% 0.4% - 6.4%	3.3% 0.9% - 11.2%	3.1% 1.1% - 8.6%
	Sought help from other utilities or mutual aid network (e.g., WARN)	19.0% 11.0% - 30.7%	21.6% 13.2% - 33.3%	25.8% 15.2% - 40.2%	20.0% 13.7% - 28.3%
	Coordinated with local or state emergency management agency	24.1% 15.1% - 36.3%	27.5% 18.4% - 39.0%	31.4% 20.8% - 44.3%	25.4% 18.3% - 34.0%
	Other	1.7% 0.2% - 11.0%	3.4% 1.3% - 8.6%	4.9% 1.7% - 13.2%	2.3% 0.8% - 6.4%
	Observations	77	107	54	238

Table D.7. Question B1.2.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Found alternative supplier	32.9% 21.0% - 47.4%	51.1% 37.4% - 64.7%	44.3% 29.4% - 60.2%	37.1% 27.4% - 47.9%
	Drew down existing inventory	44.2% 30.8% - 58.4%	41.4% 28.0% - 56.2%	58.0% 41.9% - 72.6%	44.4% 33.9% - 55.5%
	Switched chemicals, procedures, or technologies	2.7% 0.5% - 12.3%	3.0% 0.8% - 11.2%	4.6% 1.2% - 15.8%	2.9% 0.9% - 8.8%
	Sought help from other utilities or mutual aid network (e.g., WARN)	8.7% 3.3% - 20.9%	1.5% 0.2% - 9.8%	16.8% 7.1% - 34.8%	7.8% 3.5% - 16.6%
	Coordinated with local or state emergency management agency	11.1% 4.8% - 23.7%	10.5% 5.1% - 20.7%	14.1% 5.8% - 30.4%	11.2% 5.9% - 20.1%
	Other	0.4% 0.1% - 2.6%	3.0% 0.8% - 11.2%	4.6% 1.2% - 15.8%	1.1% 0.5% - 2.8%
	Observations	56	63	39	158
Nitrile and/or latex gloves	Found alternative supplier	34.9% 25.8% - 45.3%	54.6% 44.0% - 64.7%	45.1% 28.0% - 63.3%	39.5% 32.2% - 47.4%
	Drew down existing inventory	70.3% 60.0% - 78.8%	63.3% 52.8% - 72.6%	77.8% 64.5% - 87.2%	69.2% 61.4% - 76.0%
	Switched chemicals, procedures, or technologies	0.2% 0.0% - 1.4%	4.9% 2.3% - 10.0%	2.8% 0.7% - 9.9%	1.3% 0.7% - 2.4%
	Sought help from other utilities or mutual aid network (e.g., WARN)	8.2% 4.0% - 16.2%	7.2% 2.2% - 20.7%	8.6% 3.4% - 20.1%	8.0% 4.5% - 14.0%
	Coordinated with local or state emergency management agency	2.3% 0.6% - 8.9%	6.8% 3.6% - 12.5%	12.5% 6.3% - 23.1%	3.8% 1.9% - 7.3%
	Other	1.2% 0.2% - 7.8%	5.3% 2.6% - 10.6%	2.8% 0.7% - 9.9%	2.1% 0.9% - 5.0%
	Observations	105	121	53	279

Table D.7. Question B1.2.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Found alternative supplier	17.5% 8.1% - 33.6%	39.9% 25.8% - 56.0%	41.1% 25.1% - 59.1%	22.4% 13.8% - 34.2%
	Drew down existing inventory	50.4% 34.4% - 66.3%	52.1% 36.5% - 67.3%	71.1% 54.0% - 83.7%	52.0% 38.9% - 64.8%
	Switched chemicals, procedures, or technologies	6.4% 1.8% - 20.1%	5.4% 1.3% - 19.1%	5.8% 1.5% - 19.8%	6.2% 2.2% - 16.2%
	Sought help from other utilities or mutual aid network (e.g., WARN)	8.5% 2.7% - 23.6%	2.7% 0.4% - 16.8%	12.1% 3.8% - 32.6%	7.8% 3.0% - 19.2%
	Coordinated with local or state emergency management agency	8.5% 2.7% - 23.6%	8.0% 2.6% - 22.2%	5.8% 1.5% - 19.8%	8.2% 3.2% - 19.4%
	Other	6.2% 1.7% - 20.2%	2.7% 0.4% - 16.8%	5.8% 1.5% - 19.8%	5.6% 1.8% - 16.0%
	Observations	43	39	31	113
Sanitizing wipes, sprays for cleaning work offices, or gels for hand sanitizing	Found alternative supplier	47.6% 37.6% - 57.8%	58.3% 48.2% - 67.8%	67.5% 52.8% - 79.5%	51.1% 43.3% - 58.8%
	Drew down existing inventory	41.9% 32.3% - 52.2%	46.9% 37.2% - 56.7%	66.6% 51.9% - 78.6%	44.4% 36.9% - 52.2%
	Switched chemicals, procedures, or technologies	15.3% 9.3% - 24.3%	17.0% 11.7% - 24.2%	23.6% 14.5% - 36.1%	16.2% 11.4% - 22.6%
	Sought help from other utilities or mutual aid network (e.g., WARN)	10.7% 5.8% - 18.9%	7.3% 2.5% - 19.3%	6.1% 2.2% - 15.7%	9.7% 5.8% - 15.8%
	Coordinated with local or state emergency management agency	10.4% 5.6% - 18.6%	9.4% 5.6% - 15.2%	25.2% 15.2% - 38.8%	11.1% 7.1% - 16.8%
	Other	6.8% 3.1% - 14.3%	5.5% 2.9% - 10.3%	5.9% 2.5% - 12.9%	6.5% 3.5% - 11.6%
	Observations	109	134	65	308

Table D.8. Question B1.3.1: How severe were the shortages or supply chain disruptions involving durable goods and other critical equipment that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Mean score (0 to 3)	0.010 -0.006 - 0.026	0.020 -0.002 - 0.041	0.042 0.004 - 0.079	0.013 -0.001 - 0.026
	No impact (0)	99.4% 97.6% - 99.9%	98.8% 96.6% - 99.6%	96.7% 92.4% - 98.6%	99.2% 98.1% - 99.7%
	Slight (1)	0.2% 0.0% - 0.6%	0.4% 0.1% - 2.4%	2.5% 0.9% - 6.5%	0.3% 0.1% - 0.6%
	Moderate (2)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.8%	0.8% 0.2% - 4.4%	0.5% 0.1% - 1.9%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	275	242	94	611
Granular/ Powdered Activated Carbon (GAC/ PAC)	Mean score (0 to 3)	0.022 -0.007 - 0.051	0.008 -0.007 - 0.022	0.060 0.010 - 0.109	0.021 -0.003 - 0.045
	No impact (0)	99.0% 96.8% - 99.7%	99.6% 97.6% - 99.9%	94.9% 88.4% - 97.8%	99.0% 97.4% - 99.6%
	Slight (1)	0.1% 0.0% - 0.4%	0.0% N/A - N/A	4.3% 1.6% - 10.8%	0.2% 0.1% - 0.5%
	Moderate (2)	0.4% 0.1% - 2.9%	0.4% 0.1% - 2.4%	0.8% 0.2% - 4.4%	0.4% 0.1% - 2.0%
	Severe (3)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.0% - 2.3%
	Observations	275	242	94	611

Table D.8. Question B1.3.1: How severe were the shortages or supply chain disruptions involving durable goods and other critical equipment that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Mean score (0 to 3)	0.009 -0.007 - 0.026	0.024 -0.003 - 0.051	0.042 0.004 - 0.079	0.013 -0.001 - 0.027
	No impact (0)	99.5% 97.4% - 99.9%	98.8% 96.6% - 99.6%	96.7% 92.4% - 98.6%	99.3% 98.1% - 99.7%
	Slight (1)	0.1% 0.0% - 0.5%	0.4% 0.1% - 2.4%	2.5% 0.9% - 6.5%	0.2% 0.1% - 0.5%
	Moderate (2)	0.4% 0.1% - 2.9%	0.4% 0.1% - 2.4%	0.8% 0.2% - 4.4%	0.4% 0.1% - 2.0%
	Severe (3)	0.0% N/A - N/A	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	275	242	94	611
Pumps	Mean score (0 to 3)	0.093 0.045 - 0.141	0.196 0.134 - 0.258	0.175 0.089 - 0.260	0.112 0.072 - 0.152
	No impact (0)	94.0% 90.4% - 96.3%	85.5% 80.9% - 89.2%	87.5% 80.7% - 92.2%	92.5% 89.7% - 94.6%
	Slight (1)	3.1% 1.5% - 6.1%	10.1% 7.1% - 14.2%	8.3% 4.8% - 14.1%	4.4% 2.9% - 6.6%
	Moderate (2)	2.4% 1.1% - 5.1%	3.6% 1.9% - 6.5%	3.3% 1.4% - 7.6%	2.6% 1.4% - 4.6%
	Severe (3)	0.5% 0.1% - 2.6%	0.8% 0.2% - 2.8%	0.8% 0.2% - 4.4%	0.6% 0.2% - 1.9%
	Observations	275	242	94	611

Table D.8. Question B1.3.1: How severe were the shortages or supply chain disruptions involving durable goods and other critical equipment that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Mean score (0 to 3)	0.053 0.020 - 0.087	0.127 0.078 - 0.175	0.175 0.085 - 0.264	0.069 0.041 - 0.097
	No impact (0)	96.2% 93.1% - 97.9%	90.1% 86.1% - 93.1%	88.4% 81.8% - 92.8%	95.0% 92.7% - 96.6%
	Slight (1)	2.3% 1.0% - 5.0%	7.5% 5.0% - 11.2%	7.5% 4.2% - 13.1%	3.3% 2.0% - 5.2%
	Moderate (2)	1.5% 0.6% - 3.8%	2.0% 0.9% - 4.4%	2.5% 0.9% - 6.5%	1.6% 0.8% - 3.4%
	Severe (3)	0.0% N/A - N/A	0.4% 0.1% - 2.4%	1.7% 0.5% - 5.4%	0.1% 0.0% - 0.4%
	Observations	275	242	94	611
Pipes	Mean score (0 to 3)	0.051 0.019 - 0.082	0.103 0.059 - 0.146	0.125 0.056 - 0.193	0.061 0.035 - 0.088
	No impact (0)	95.9% 92.7% - 97.8%	91.7% 87.9% - 94.4%	90.9% 84.9% - 94.6%	95.1% 92.6% - 96.8%
	Slight (1)	3.1% 1.5% - 6.1%	6.7% 4.3% - 10.2%	5.8% 3.0% - 10.9%	3.8% 2.3% - 6.0%
	Moderate (2)	0.9% 0.2% - 3.2%	1.2% 0.4% - 3.4%	3.3% 1.4% - 7.6%	1.0% 0.4% - 2.6%
	Severe (3)	0.1% 0.0% - 0.5%	0.4% 0.1% - 2.4%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	275	242	94	611

Table D.8. Question B1.3.1: How severe were the shortages or supply chain disruptions involving durable goods and other critical equipment that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Mean score (0 to 3)	0.063 0.027 - 0.099	0.146 0.093 - 0.200	0.125 0.053 - 0.196	0.078 0.048 - 0.108
	No impact (0)	95.2% 91.7% - 97.2%	88.9% 84.7% - 92.1%	90.9% 84.9% - 94.6%	94.1% 91.4% - 95.9%
	Slight (1)	3.4% 1.8% - 6.6%	8.3% 5.6% - 12.1%	6.6% 3.6% - 12.0%	4.3% 2.8% - 6.7%
	Moderate (2)	1.3% 0.4% - 3.8%	2.0% 0.9% - 4.4%	1.7% 0.5% - 5.4%	1.4% 0.6% - 3.2%
	Severe (3)	0.1% 0.0% - 0.5%	0.8% 0.2% - 2.8%	0.8% 0.2% - 4.4%	0.2% 0.1% - 0.5%
	Observations	275	242	94	611
Fuel	Mean score (0 to 3)	0.010 -0.002 - 0.022	0.028 0.009 - 0.047	0.033 -0.001 - 0.068	0.014 0.004 - 0.023
	No impact (0)	99.0% 96.8% - 99.7%	97.2% 94.5% - 98.6%	97.5% 93.5% - 99.1%	98.7% 97.2% - 99.4%
	Slight (1)	1.0% 0.3% - 3.2%	2.8% 1.4% - 5.5%	1.7% 0.5% - 5.4%	1.3% 0.6% - 2.8%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.0% 0.0% - 0.2%
	Severe (3)				
	Observations	275	242	94	611

Table D.8. Question B1.3.1: How severe were the shortages or supply chain disruptions involving durable goods and other critical equipment that you experienced?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Mean score (0 to 3)	0.016 -0.003 - 0.034	0.036 0.010 - 0.062	0.050 0.005 - 0.094	0.020 0.004 - 0.036
	No impact (0)	99.0% 96.8% - 99.7%	97.2% 94.5% - 98.6%	96.7% 92.4% - 98.6%	98.6% 97.2% - 99.4%
	Slight (1)	0.5% 0.1% - 2.6%	2.0% 0.9% - 4.4%	1.7% 0.5% - 5.4%	0.8% 0.3% - 1.9%
	Moderate (2)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.8%	1.7% 0.5% - 5.4%	0.5% 0.1% - 1.9%
	Severe (3)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	275	242	94	611

N/A: confidence interval could not be calculated.

Table D.9. Question B1.3.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Unavailable from supplier(s)	13.4% 1.7% - 57.5%	33.3% 2.9% - 89.4%	50.0% 8.5% - 91.5%	23.7% 8.3% - 51.8%
	Delayed / backordered from supplier(s)	100.0% N/A - N/A	33.3% 2.9% - 89.4%	50.0% 8.5% - 91.5%	76.3% 48.2% - 91.7%
	Transportation / distribution difficulties	86.6% 42.5% - 98.3%	0.0% N/A - N/A	75.0% 16.2% - 97.9%	63.7% 44.1% - 79.6%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	3	3	4	10
Granular/ Powdered Activated Carbon (GAC/ PAC)	Unavailable from supplier(s)	44.1% 1.7% - 97.3%	100.0% N/A - N/A	32.3% 5.6% - 79.4%	45.5% 4.2% - 94.1%
	Delayed / backordered from supplier(s)	3.7% 0.5% - 24.3%	0.0% N/A - N/A	32.3% 5.6% - 79.4%	8.5% 3.5% - 19.2%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	83.8% 27.5% - 98.6%	14.6% 4.9% - 36.4%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	4	1	5	10

Table D.9. Question B1.3.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	25.0% 1.9% - 85.4%	4.1% 0.4% - 28.4%
	Delayed / backordered from supplier(s)	0.0% N/A - N/A	33.3% 2.3% - 91.4%	25.0% 1.9% - 85.4%	12.9% 2.2% - 49.0%
	Transportation / distribution difficulties	84.5% 38.7% - 97.9%	66.7% 8.6% - 97.7%	25.0% 1.9% - 85.4%	70.1% 43.1% - 87.9%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	25.0% 1.9% - 85.4%	4.1% 0.4% - 28.4%
	Observations	2	3	4	9
Pumps	Unavailable from supplier(s)	9.6% 2.0% - 35.5%	8.2% 2.7% - 22.8%	0.0% N/A - N/A	8.7% 2.8% - 24.1%
	Delayed / backordered from supplier(s)	96.1% 89.2% - 98.7%	94.5% 80.4% - 98.6%	86.7% 59.0% - 96.7%	95.1% 90.0% - 97.7%
	Transportation / distribution difficulties	9.6% 2.0% - 35.5%	15.0% 6.7% - 30.2%	46.7% 23.8% - 71.0%	13.3% 6.2% - 26.6%
	Price	15.4% 4.1% - 43.9%	2.7% 0.4% - 17.3%	6.7% 0.9% - 35.8%	11.1% 3.4% - 30.3%
	Other	1.3% 0.2% - 8.5%	0.0% N/A - N/A	0.0% N/A - N/A	0.8% 0.1% - 5.7%
	Observations	20	37	15	72

Table D.9. Question B1.3.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Unavailable from supplier(s)	15.2% 3.0% - 50.7%	12.0% 3.8% - 31.9%	7.1% 1.0% - 37.8%	13.6% 4.4% - 34.9%
	Delayed / backordered from supplier(s)	73.7% 38.4% - 92.7%	88.0% 68.1% - 96.2%	92.9% 62.2% - 99.0%	79.6% 55.8% - 92.4%
	Transportation / distribution difficulties	26.3% 7.3% - 61.6%	25.9% 12.5% - 46.2%	42.9% 20.4% - 68.7%	27.5% 12.9% - 49.2%
	Price	2.0% 0.3% - 13.0%	0.0% N/A - N/A	7.1% 1.0% - 37.8%	1.8% 0.4% - 7.7%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	14	26	14	54
Pipes	Unavailable from supplier(s)	12.3% 2.0% - 49.1%	9.6% 2.3% - 32.0%	0.0% N/A - N/A	10.8% 2.6% - 34.9%
	Delayed / backordered from supplier(s)	98.1% 87.8% - 99.7%	85.7% 63.1% - 95.4%	90.9% 54.9% - 98.8%	94.3% 87.2% - 97.6%
	Transportation / distribution difficulties	1.9% 0.3% - 12.2%	16.5% 5.9% - 38.3%	36.4% 14.0% - 66.8%	8.0% 4.2% - 14.8%
	Price	10.4% 1.3% - 51.2%	4.8% 0.6% - 28.2%	9.1% 1.2% - 45.1%	8.8% 1.7% - 35.6%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	13	22	11	46

Table D.9. Question B1.3.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Unavailable from supplier(s)	10.3% 1.7% - 43.2%	7.2% 1.8% - 25.0%	9.1% 1.2% - 45.1%	9.3% 2.5% - 29.4%
	Delayed / backordered from supplier(s)	89.7% 56.8% - 98.3%	92.8% 75.0% - 98.2%	100.0% N/A - N/A	91.1% 70.5% - 97.8%
	Transportation / distribution difficulties	10.3% 1.7% - 43.2%	23.1% 11.1% - 42.1%	36.4% 14.0% - 66.8%	15.4% 6.6% - 32.1%
	Price	8.7% 1.1% - 45.4%	0.0% N/A - N/A	9.1% 1.2% - 45.1%	6.2% 0.9% - 31.7%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	14	29	11	54
Fuel	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Delayed / backordered from supplier(s)	42.3% 1.9% - 96.5%	42.9% 12.1% - 80.3%	0.0% N/A - N/A	39.7% 6.1% - 87.1%
	Transportation / distribution difficulties	42.3% 1.9% - 96.5%	42.9% 12.1% - 80.3%	66.7% 8.1% - 97.9%	44.0% 7.5% - 88.3%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	7.7% 1.0% - 41.1%	0.0% N/A - N/A	0.0% N/A - N/A	4.7% 0.5% - 30.6%
	Observations	4	7	3	14

Table D.9. Question B1.3.2: What contributed to each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Unavailable from supplier(s)	0.0% N/A - N/A	14.3% 1.6% - 62.4%	0.0% N/A - N/A	4.6% 0.6% - 28.3%
	Delayed / backordered from supplier(s)	92.3% 60.9% - 98.9%	71.4% 29.6% - 93.7%	50.0% 9.0% - 91.0%	82.0% 62.8% - 92.5%
	Transportation / distribution difficulties	0.0% N/A - N/A	28.6% 6.3% - 70.4%	0.0% N/A - N/A	9.2% 2.3% - 30.4%
	Price	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	25.0% 2.3% - 82.8%	2.1% 0.3% - 14.2%
	Observations	4	7	4	15

N/A: confidence interval could not be calculated.

Table D.10. Question B1.3.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Found alternative supplier	13.4% 1.7% - 57.5%	66.7% 10.6% - 97.1%	25.0% 2.1% - 83.8%	28.1% 11.7% - 53.7%
	Drew down existing inventory	86.6% 42.5% - 98.3%	33.3% 2.9% - 89.4%	75.0% 16.2% - 97.9%	71.9% 46.3% - 88.3%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	13.4% 1.7% - 57.5%	0.0% N/A - N/A	0.0% N/A - N/A	8.1% 0.9% - 45.6%
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	25.0% 2.1% - 83.8%	3.7% 0.5% - 24.7%
	Observations	3	3	4	10
Granular/ Powdered Activated Carbon (GAC/ PAC)	Found alternative supplier	0.0% N/A - N/A	0.0% N/A - N/A	51.5% 12.5% - 88.8%	9.0% 1.7% - 36.6%
	Drew down existing inventory	88.2% 60.1% - 97.4%	100.0% N/A - N/A	67.7% 20.6% - 94.4%	85.4% 63.6% - 95.1%
	Switched chemicals, procedures, or technologies	3.7% 0.5% - 24.3%	0.0% N/A - N/A	0.0% N/A - N/A	2.8% 0.3% - 20.4%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	0.0% N/A - N/A	32.3% 5.6% - 79.4%	5.6% 1.5% - 19.1%
	Observations	4	1	5	10

Table D.10. Question B1.3.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Found alternative supplier	84.5% 38.7% - 97.9%	0.0% N/A - N/A	50.0% 7.7% - 92.3%	56.5% 46.3% - 66.1%
	Drew down existing inventory	0.0% N/A - N/A	33.3% 2.3% - 91.4%	50.0% 7.7% - 92.3%	17.0% 4.2% - 48.6%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	33.3% 2.3% - 91.4%	0.0% N/A - N/A	8.9% 0.9% - 50.9%
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	0.0% N/A - N/A	66.7% 8.6% - 97.7%	25.0% 1.9% - 85.4%	21.8% 6.5% - 52.8%
	Observations	2	3	4	9
Pumps	Found alternative supplier	35.3% 15.1% - 62.5%	11.0% 4.1% - 26.0%	33.3% 14.4% - 59.7%	27.8% 14.4% - 46.9%
	Drew down existing inventory	29.5% 11.5% - 57.3%	35.7% 21.9% - 52.3%	40.0% 19.0% - 65.5%	32.0% 18.2% - 49.9%
	Switched chemicals, procedures, or technologies	8.3% 1.4% - 36.6%	5.5% 1.4% - 19.6%	0.0% N/A - N/A	7.0% 1.8% - 24.0%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	18.6% 6.0% - 44.8%	45.1% 29.9% - 61.3%	46.7% 23.8% - 71.0%	28.2% 16.9% - 43.1%
	Observations	20	37	15	72

Table D.10. Question B1.3.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Found alternative supplier	11.1% 1.3% - 53.7%	24.1% 11.1% - 44.7%	28.6% 11.0% - 56.5%	16.5% 6.4% - 36.4%
	Drew down existing inventory	48.5% 19.7% - 78.3%	38.0% 21.3% - 58.1%	50.0% 25.6% - 74.4%	45.4% 25.9% - 66.4%
	Switched chemicals, procedures, or technologies	2.0% 0.3% - 13.0%	4.0% 0.5% - 24.3%	0.0% N/A - N/A	2.5% 0.6% - 9.4%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	25.2% 6.7% - 61.1%	43.8% 26.0% - 63.3%	50.0% 25.6% - 74.4%	32.9% 17.3% - 53.6%
	Observations	14	26	14	54
Pipes	Found alternative supplier	33.0% 10.9% - 66.6%	19.1% 7.2% - 41.9%	27.3% 8.8% - 59.4%	29.0% 12.7% - 53.4%
	Drew down existing inventory	53.8% 23.9% - 81.2%	40.4% 21.9% - 62.2%	36.4% 14.0% - 66.8%	49.1% 28.1% - 70.5%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	9.1% 1.2% - 45.1%	0.6% 0.1% - 3.9%
	Sought help from other utilities or mutual aid network (e.g., WARN)	1.9% 0.3% - 12.2%	4.8% 0.6% - 28.2%	0.0% N/A - N/A	2.5% 0.6% - 9.5%
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	23.5% 6.3% - 58.4%	45.2% 25.7% - 66.4%	45.5% 19.8% - 73.8%	30.7% 15.2% - 52.3%
	Observations	13	22	11	46

Table D.10. Question B1.3.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Found alternative supplier	45.3% 19.8% - 73.5%	25.1% 12.3% - 44.4%	27.3% 8.8% - 59.4%	38.4% 21.0% - 59.5%
	Drew down existing inventory	43.7% 18.7% - 72.4%	37.5% 21.7% - 56.5%	54.5% 26.2% - 80.2%	42.4% 24.3% - 62.9%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	3.6% 0.5% - 22.1%	0.0% N/A - N/A	1.0% 0.1% - 7.1%
	Sought help from other utilities or mutual aid network (e.g., WARN)	1.6% 0.2% - 10.4%	0.0% N/A - N/A	0.0% N/A - N/A	1.0% 0.1% - 7.1%
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	28.5% 9.7% - 59.8%	42.7% 26.0% - 61.3%	45.5% 19.8% - 73.8%	33.6% 18.1% - 53.6%
	Observations	14	29	11	54
Fuel	Found alternative supplier	42.3% 1.9% - 96.5%	28.6% 5.9% - 71.8%	0.0% N/A - N/A	35.0% 4.6% - 85.9%
	Drew down existing inventory	0.0% N/A - N/A	57.1% 19.7% - 87.9%	33.3% 2.1% - 91.9%	20.9% 9.1% - 41.2%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	7.7% 1.0% - 41.1%	14.3% 1.5% - 64.6%	66.7% 8.1% - 97.9%	13.7% 4.7% - 33.6%
	Observations	4	7	3	14

Table D.10. Question B1.3.3: How did you address each shortage or supply chain disruption? (select all that apply)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Found alternative supplier	42.3% 2.2% - 96.1%	0.0% N/A - N/A	25.0% 2.3% - 82.8%	27.2% 2.8% - 82.9%
	Drew down existing inventory	7.7% 1.1% - 39.1%	42.9% 12.8% - 79.2%	0.0% N/A - N/A	18.4% 7.8% - 37.3%
	Switched chemicals, procedures, or technologies	0.0% N/A - N/A	28.6% 6.3% - 70.4%	0.0% N/A - N/A	9.2% 2.3% - 30.4%
	Sought help from other utilities or mutual aid network (e.g., WARN)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Coordinated with local or state emergency management agency	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Other	42.3% 2.2% - 96.1%	28.6% 6.3% - 70.4%	50.0% 9.0% - 91.0%	38.5% 6.5% - 85.0%
	Observations	4	7	4	15

N/A: confidence interval could not be calculated.

Table D.11. Question B2.1: What kinds of shortages or supply chain disruptions are you most concerned about from present day through December 2020?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Treatment Chemicals	11.1% 7.7% - 15.6%	15.8% 11.9% - 20.6%	20.1% 12.9% - 30.0%	12.1% 9.2% - 15.8%
PPE	23.5% 18.7% - 29.2%	40.5% 33.7% - 47.8%	43.6% 32.0% - 55.9%	26.9% 22.7% - 31.5%
Durable Goods and Other Equipment and Supplies	16.3% 12.2% - 21.4%	22.0% 16.7% - 28.4%	21.8% 14.3% - 31.8%	17.4% 13.9% - 21.6%
None	67.1% 61.0% - 72.6%	45.2% 38.6% - 52.1%	44.3% 31.3% - 58.1%	62.9% 57.9% - 67.6%
Observations	271	239	93	603

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Mean score (0 to 3)	0.009 -0.003 - 0.020	0.004 -0.003 - 0.011	0.034 -0.001 - 0.069	0.009 -0.001 - 0.018
	None (0)	99.1% 96.7% - 99.8%	99.6% 97.5% - 99.9%	97.5% 93.4% - 99.1%	99.2% 97.4% - 99.7%
	Slight (1)	0.9% 0.2% - 3.3%	0.4% 0.1% - 2.5%	1.7% 0.5% - 5.5%	0.8% 0.3% - 2.6%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.0% 0.0% - 0.2%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602
Ferric chloride	Mean score (0 to 3)	0.019 0.002 - 0.036	0.054 0.015 - 0.093	0.181 0.074 - 0.287	0.030 0.015 - 0.046
	None (0)	98.2% 95.5% - 99.3%	97.0% 94.3% - 98.4%	88.8% 81.5% - 93.5%	97.7% 95.8% - 98.7%
	Slight (1)	1.7% 0.6% - 4.4%	1.4% 0.5% - 3.5%	5.9% 3.1% - 11.1%	1.8% 0.8% - 3.8%
	Moderate (2)	0.0% N/A - N/A	0.8% 0.2% - 2.9%	3.5% 1.2% - 10.3%	0.2% 0.1% - 0.6%
	Severe (3)	0.1% 0.0% - 0.5%	0.8% 0.2% - 2.9%	1.7% 0.5% - 5.5%	0.2% 0.1% - 0.6%
	Observations	270	239	93	602

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Mean score (0 to 3)	0.017 -0.003 - 0.037	0.004 -0.003 - 0.011	0.034 -0.001 - 0.069	0.016 -0.001 - 0.032
	None (0)	98.7% 96.1% - 99.6%	99.6% 97.5% - 99.9%	97.5% 93.4% - 99.1%	98.8% 96.9% - 99.6%
	Slight (1)	0.9% 0.2% - 3.3%	0.4% 0.1% - 2.5%	1.7% 0.5% - 5.5%	0.8% 0.3% - 2.6%
	Moderate (2)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.4% 0.1% - 2.2%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602
Gaseous chlorine	Mean score (0 to 3)	0.030 0.003 - 0.058	0.086 0.034 - 0.138	0.072 -0.030 - 0.175	0.041 0.017 - 0.064
	None (0)	97.8% 95.0% - 99.1%	95.4% 92.3% - 97.3%	96.5% 89.7% - 98.8%	97.4% 95.3% - 98.6%
	Slight (1)	1.3% 0.4% - 3.9%	2.6% 1.3% - 5.2%	1.7% 0.5% - 5.5%	1.5% 0.7% - 3.3%
	Moderate (2)	0.9% 0.2% - 3.3%	0.0% N/A - N/A	0.0% N/A - N/A	0.7% 0.2% - 2.7%
	Severe (3)	0.0% N/A - N/A	2.0% 0.9% - 4.5%	1.8% 0.3% - 10.6%	0.4% 0.2% - 0.8%
	Observations	270	239	93	602

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Mean score (0 to 3)	0.009 -0.003 - 0.020	0.004 -0.002 - 0.010	0.051 0.005 - 0.096	0.009 0.000 - 0.019
	None (0)	99.1% 96.7% - 99.8%	99.8% 99.0% - 100.0%	96.6% 92.2% - 98.6%	99.2% 97.4% - 99.7%
	Slight (1)	0.9% 0.2% - 3.3%	0.0% N/A - N/A	1.7% 0.5% - 5.5%	0.7% 0.2% - 2.6%
	Moderate (2)	0.0% N/A - N/A	0.2% 0.0% - 1.0%	1.7% 0.5% - 5.5%	0.1% 0.0% - 0.2%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602
Lime	Mean score (0 to 3)	0.013 -0.001 - 0.027	0.004 -0.003 - 0.011	0.034 -0.001 - 0.069	0.012 0.000 - 0.024
	None (0)	98.7% 96.1% - 99.6%	99.6% 97.5% - 99.9%	97.5% 93.4% - 99.1%	98.8% 96.9% - 99.6%
	Slight (1)	1.3% 0.4% - 3.9%	0.4% 0.1% - 2.5%	1.7% 0.5% - 5.5%	1.2% 0.4% - 3.1%
	Moderate (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.0% 0.0% - 0.2%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Mean score (0 to 3)	0.010 -0.002 - 0.022	0.000 0.000 - 0.000	0.034 -0.001 - 0.069	0.009 0.000 - 0.019
	None (0)	99.1% 96.7% - 99.7%	100.0% N/A - N/A	97.5% 93.4% - 99.1%	99.2% 97.4% - 99.7%
	Slight (1)	0.9% 0.2% - 3.3%	0.0% N/A - N/A	1.7% 0.5% - 5.5%	0.7% 0.2% - 2.6%
	Moderate (2)	0.1% 0.0% - 0.5%	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.1% 0.0% - 0.4%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602
Polymers	Mean score (0 to 3)	0.059 0.024 - 0.094	0.154 0.089 - 0.219	0.366 0.196 - 0.537	0.084 0.054 - 0.115
	None (0)	95.8% 92.5% - 97.7%	91.2% 87.3% - 94.0%	79.9% 70.0% - 87.1%	94.5% 92.1% - 96.3%
	Slight (1)	2.6% 1.2% - 5.6%	4.6% 2.7% - 7.7%	9.6% 5.1% - 17.5%	3.2% 1.8% - 5.3%
	Moderate (2)	1.5% 0.6% - 3.9%	1.8% 0.8% - 4.1%	4.4% 1.7% - 11.0%	1.7% 0.8% - 3.4%
	Severe (3)	0.1% 0.0% - 0.5%	2.4% 1.1% - 5.0%	6.1% 2.8% - 12.7%	0.7% 0.4% - 1.1%
	Observations	270	239	93	602

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Mean score (0 to 3)	0.023 0.001 - 0.045	0.016 -0.007 - 0.039	0.034 -0.001 - 0.069	0.022 0.004 - 0.040
	None (0)	98.2% 95.5% - 99.3%	99.2% 97.1% - 99.8%	97.5% 93.4% - 99.1%	98.3% 96.3% - 99.3%
	Slight (1)	1.3% 0.4% - 3.9%	0.4% 0.1% - 2.5%	1.7% 0.5% - 5.5%	1.2% 0.4% - 3.1%
	Moderate (2)	0.5% 0.1% - 2.6%	0.0% N/A - N/A	0.8% 0.2% - 4.4%	0.4% 0.1% - 2.1%
	Severe (3)	0.0% N/A - N/A	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	270	239	93	602
Sodium hydroxide	Mean score (0 to 3)	0.014 0.000 - 0.029	0.050 0.016 - 0.084	0.098 0.015 - 0.181	0.023 0.010 - 0.036
	None (0)	98.6% 96.1% - 99.5%	97.2% 94.7% - 98.6%	92.9% 85.1% - 96.8%	98.2% 96.5% - 99.1%
	Slight (1)	1.3% 0.4% - 3.9%	0.6% 0.1% - 2.3%	4.4% 1.7% - 11.0%	1.3% 0.5% - 3.2%
	Moderate (2)	0.1% 0.0% - 0.5%	2.2% 1.0% - 4.6%	2.7% 0.7% - 9.9%	0.5% 0.3% - 0.9%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	270	239	93	602

Table D.12. Question B2.1.1: How severe are your concerns about treatment chemical shortages or supply chain disruptions?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Mean score (0 to 3)	0.074 0.034 - 0.114	0.116 0.064 - 0.167	0.233 0.110 - 0.357	0.086 0.052 - 0.120
	None (0)	94.2% 90.5% - 96.5%	92.4% 88.7% - 95.0%	87.0% 78.7% - 92.4%	93.7% 90.8% - 95.7%
	Slight (1)	4.7% 2.6% - 8.3%	4.4% 2.5% - 7.5%	5.2% 2.2% - 11.8%	4.7% 2.9% - 7.5%
	Moderate (2)	0.6% 0.1% - 2.5%	2.4% 1.2% - 4.8%	5.2% 2.2% - 11.8%	1.0% 0.5% - 2.1%
	Severe (3)	0.5% 0.1% - 2.6%	0.8% 0.2% - 2.9%	2.5% 0.9% - 6.6%	0.6% 0.2% - 1.9%
	Observations	270	239	93	602

N/A: confidence interval could not be calculated.

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	33.3% 2.3% - 91.4%	3.4% 0.4% - 22.7%
	Delayed / backordered from supplier(s)	50.0% 1.6% - 98.4%	100.0% N/A - N/A	66.7% 8.6% - 97.7%	55.5% 3.9% - 97.4%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	33.3% 2.3% - 91.4%	3.4% 0.4% - 22.7%
	Price	50.0% 1.6% - 98.4%	0.0% N/A - N/A	33.3% 2.3% - 91.4%	44.5% 2.6% - 96.1%
	Other				
	Observations	2	1	3	6
Ferric chloride	Unavailable from supplier(s)	0.0% N/A - N/A	59.8% 23.4% - 87.9%	15.2% 3.4% - 47.5%	14.8% 7.5% - 27.2%
	Delayed / backordered from supplier(s)	71.7% 18.5% - 96.6%	86.6% 39.3% - 98.5%	53.1% 24.6% - 79.7%	71.7% 34.4% - 92.4%
	Transportation / distribution difficulties	0.0% N/A - N/A	40.2% 12.1% - 76.6%	30.3% 10.7% - 61.2%	13.3% 6.4% - 25.7%
	Price	23.9% 2.1% - 81.9%	0.0% N/A - N/A	7.6% 0.9% - 42.1%	16.3% 2.0% - 64.7%
	Other			100.0% N/A - N/A	100.0% N/A - N/A
	Observations	5	8	12	25

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Unavailable from supplier(s)	33.3% 2.4% - 91.1%	100.0% N/A - N/A	33.3% 2.4% - 91.0%	36.9% 4.5% - 87.9%
	Delayed / backordered from supplier(s)	33.3% 2.4% - 91.1%	100.0% N/A - N/A	33.3% 2.4% - 91.0%	36.9% 4.5% - 87.9%
	Transportation / distribution difficulties	0.0% N/A - N/A	100.0% N/A - N/A	33.3% 2.4% - 91.0%	7.8% 4.1% - 14.3%
	Price	33.3% 2.4% - 91.1%	0.0% N/A - N/A	33.3% 2.4% - 91.0%	31.6% 2.9% - 87.5%
	Other				
	Observations	3	1	3	7
Gaseous chlorine	Unavailable from supplier(s)	19.7% 2.0% - 74.5%	34.9% 13.0% - 65.8%	76.1% 18.5% - 97.8%	26.5% 8.0% - 60.2%
	Delayed / backordered from supplier(s)	60.7% 17.1% - 92.0%	78.5% 46.9% - 93.8%	76.1% 18.5% - 97.8%	66.4% 30.9% - 89.7%
	Transportation / distribution difficulties	19.7% 2.0% - 74.5%	47.6% 21.3% - 75.3%	76.1% 18.5% - 97.8%	30.1% 10.2% - 61.9%
	Price	19.7% 2.0% - 74.5%	0.0% N/A - N/A	23.9% 2.2% - 81.5%	14.4% 1.9% - 59.1%
	Other				
	Observations	6	12	3	21

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Unavailable from supplier(s)	0.0% N/A - N/A	100.0% N/A - N/A	25.0% 1.8% - 85.8%	6.9% 1.7% - 24.6%
	Delayed / backordered from supplier(s)	50.0% 1.1% - 98.9%	100.0% N/A - N/A	50.0% 7.5% - 92.5%	51.7% 2.4% - 97.9%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	50.0% 7.5% - 92.5%	6.9% 1.7% - 24.6%
	Price	50.0% 1.1% - 98.9%	0.0% N/A - N/A	25.0% 1.8% - 85.8%	44.8% 1.8% - 97.3%
	Other				
	Observations	2	1	4	7
Lime	Unavailable from supplier(s)	33.3% 2.3% - 91.3%	100.0% N/A - N/A	33.3% 2.3% - 91.2%	36.9% 4.4% - 88.2%
	Delayed / backordered from supplier(s)	33.3% 2.3% - 91.3%	100.0% N/A - N/A	66.7% 8.8% - 97.7%	39.3% 5.1% - 88.6%
	Transportation / distribution difficulties	0.0% N/A - N/A	100.0% N/A - N/A	33.3% 2.3% - 91.2%	7.8% 4.1% - 14.4%
	Price	33.3% 2.3% - 91.3%	0.0% N/A - N/A	33.3% 2.3% - 91.2%	31.6% 2.9% - 87.8%
	Other				
	Observations	3	1	3	7

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Unavailable from supplier(s)	0.0% N/A - N/A		33.3% 2.4% - 91.1%	3.4% 0.4% - 22.2%
	Delayed / backordered from supplier(s)	45.8% 2.0% - 97.2%		66.7% 8.9% - 97.6%	48.0% 3.2% - 96.3%
	Transportation / distribution difficulties	0.0% N/A - N/A		33.3% 2.4% - 91.1%	3.4% 0.4% - 22.2%
	Price	45.8% 2.0% - 97.2%		33.3% 2.4% - 91.1%	44.5% 2.7% - 95.9%
	Other				
	Observations	3		3	6
Polymers	Unavailable from supplier(s)	42.6% 16.6% - 73.4%	34.0% 17.5% - 55.7%	31.0% 13.1% - 57.4%	39.0% 21.1% - 60.5%
	Delayed / backordered from supplier(s)	47.2% 19.7% - 76.5%	77.2% 55.1% - 90.3%	73.9% 48.2% - 89.6%	58.2% 37.4% - 76.4%
	Transportation / distribution difficulties	12.1% 1.9% - 48.6%	52.3% 32.0% - 71.9%	44.5% 23.3% - 67.9%	26.3% 14.7% - 42.6%
	Price	20.4% 4.7% - 57.1%	4.6% 0.6% - 27.1%	17.6% 5.3% - 45.2%	16.0% 5.1% - 40.2%
	Other	0.0% N/A - N/A		100.0% N/A - N/A	31.4% 2.8% - 87.8%
	Observations	14	23	19	56

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Unavailable from supplier(s)	0.0% N/A - N/A	0.0% N/A - N/A	33.3% 2.3% - 91.4%	1.7% 0.2% - 12.4%
	Delayed / backordered from supplier(s)	71.7% 18.2% - 96.6%	100.0% N/A - N/A	66.7% 8.6% - 97.7%	73.6% 23.0% - 96.3%
	Transportation / distribution difficulties	0.0% N/A - N/A	50.0% 2.8% - 97.2%	33.3% 2.3% - 91.4%	5.6% 1.1% - 23.1%
	Price	23.9% 2.1% - 82.2%	0.0% N/A - N/A	33.3% 2.3% - 91.4%	22.6% 2.5% - 77.1%
	Other	100.0% N/A - N/A			100.0% N/A - N/A
	Observations	5	2	3	10
Sodium hydroxide	Unavailable from supplier(s)	31.4% 2.3% - 89.7%	50.0% 17.2% - 82.8%	64.2% 27.4% - 89.4%	40.4% 11.0% - 78.8%
	Delayed / backordered from supplier(s)	62.8% 9.9% - 96.3%	64.5% 26.3% - 90.2%	88.1% 41.8% - 98.7%	66.7% 24.1% - 92.6%
	Transportation / distribution difficulties	31.4% 2.3% - 89.7%	57.8% 23.0% - 86.3%	38.1% 7.9% - 81.5%	38.8% 10.2% - 78.0%
	Price	31.4% 2.3% - 89.7%	14.5% 1.7% - 62.6%	38.1% 7.9% - 81.5%	28.2% 5.0% - 74.3%
	Other	100.0% N/A - N/A			100.0% N/A - N/A
	Observations	4	8	6	18

Table D.13. Question B2.1.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Unavailable from supplier(s)	38.3% 16.7% - 65.8%	39.4% 20.4% - 62.3%	27.2% 8.4% - 60.3%	37.7% 20.3% - 59.0%
	Delayed / backordered from supplier(s)	67.8% 39.7% - 87.1%	78.9% 54.7% - 92.0%	67.5% 39.7% - 86.7%	69.9% 48.2% - 85.2%
	Transportation / distribution difficulties	14.8% 3.5% - 45.4%	39.4% 20.4% - 62.3%	46.7% 21.0% - 74.3%	21.7% 10.0% - 40.7%
	Price	14.8% 3.5% - 45.4%	0.0% N/A - N/A	27.2% 8.4% - 60.3%	12.8% 3.8% - 35.6%
	Other	0.0% N/A - N/A		100.0% N/A - N/A	31.4% 2.8% - 87.9%
	Observations	16	20	13	49

N/A: confidence interval could not be calculated.

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Carbon dioxide	Seek alternative supplier	50.0% 1.6% - 98.4%	0.0% N/A - N/A	66.7% 8.6% - 97.7%	48.0% 3.1% - 96.4%
	Increase purchasing / maintain a larger than typical inventory	0.0% N/A - N/A	100.0% N/A - N/A	66.7% 8.6% - 97.7%	14.4% 8.7% - 22.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	50.0% 1.6% - 98.4%	0.0% N/A - N/A	0.0% N/A - N/A	41.1% 2.1% - 95.7%
	Other				
	Observations	2	1	3	6
Ferric chloride	Seek alternative supplier	47.8% 8.8% - 89.7%	40.2% 12.1% - 76.6%	37.9% 15.1% - 67.7%	44.6% 15.5% - 77.9%
	Increase purchasing / maintain a larger than typical inventory	23.9% 2.1% - 81.9%	46.4% 15.6% - 80.1%	54.5% 26.1% - 80.2%	33.6% 10.7% - 68.1%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	15.2% 3.4% - 47.5%	2.5% 0.6% - 9.3%
	Make arrangements with neighboring utilities or mutual aid network	23.9% 2.1% - 81.9%	0.0% N/A - N/A	7.6% 0.9% - 42.1%	16.3% 2.0% - 64.7%
	Other			100.0% N/A - N/A	100.0% N/A - N/A
	Observations	5	8	12	25

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Fluoride	Seek alternative supplier	33.3% 2.4% - 91.1%	0.0% N/A - N/A	66.7% 9.0% - 97.6%	34.0% 3.6% - 87.6%
	Increase purchasing / maintain a larger than typical inventory	33.3% 2.4% - 91.1%	0.0% N/A - N/A	66.7% 9.0% - 97.6%	34.0% 3.6% - 87.6%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	33.3% 2.4% - 91.1%	0.0% N/A - N/A	0.0% N/A - N/A	29.1% 2.4% - 87.5%
	Other				
	Observations	3	1	3	7
Gaseous chlorine	Seek alternative supplier	60.7% 17.1% - 92.0%	52.4% 24.7% - 78.7%	23.9% 2.2% - 81.5%	56.6% 24.9% - 83.7%
	Increase purchasing / maintain a larger than typical inventory	19.7% 2.0% - 74.5%	56.4% 27.5% - 81.4%	76.1% 18.5% - 97.8%	32.5% 11.9% - 63.2%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	8.7% 1.1% - 45.5%	0.0% N/A - N/A	2.4% 0.3% - 16.0%
	Make arrangements w/ neighboring utilities or mutual aid network	39.3% 8.0% - 82.9%	0.0% N/A - N/A	0.0% N/A - N/A	26.6% 6.4% - 65.5%
	Other		100.0% N/A - N/A		100.0% N/A - N/A
	Observations	6	12	3	21

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Liquid oxygen	Seek alternative supplier	50.0% 1.1% - 98.9%	0.0% N/A - N/A	50.0% 7.5% - 92.5%	48.3% 2.1% - 97.6%
	Increase purchasing / maintain a larger than typical inventory	0.0% N/A - N/A	100.0% N/A - N/A	50.0% 7.5% - 92.5%	10.4% 4.0% - 24.4%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	50.0% 1.1% - 98.9%	0.0% N/A - N/A	0.0% N/A - N/A	41.3% 1.5% - 97.1%
	Other			100.0% N/A - N/A	100.0% N/A - N/A
	Observations	2	1	4	7
Lime	Seek alternative supplier	33.3% 2.3% - 91.3%	0.0% N/A - N/A	33.3% 2.3% - 91.2%	31.6% 2.9% - 87.8%
	Increase purchasing / maintain a larger than typical inventory	66.7% 8.7% - 97.7%	0.0% N/A - N/A	66.7% 8.8% - 97.7%	63.1% 11.8% - 95.6%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	33.3% 2.3% - 91.3%	0.0% N/A - N/A	0.0% N/A - N/A	29.1% 2.3% - 87.8%
	Other				
	Observations	3	1	3	7

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Orthophosphate	Seek alternative supplier	45.8% 2.0% - 97.2%		66.7% 8.9% - 97.6%	48.0% 3.2% - 96.3%
	Increase purchasing / maintain a larger than typical inventory	0.0% N/A - N/A		66.7% 8.9% - 97.6%	6.9% 2.5% - 17.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A		0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	45.8% 2.0% - 97.2%		0.0% N/A - N/A	41.1% 2.2% - 95.5%
	Other				
	Observations	3		3	6
Polymers	Seek alternative supplier	43.5% 17.2% - 74.0%	31.9% 15.9% - 53.9%	29.5% 14.2% - 51.3%	38.8% 20.9% - 60.2%
	Increase purchasing / maintain a larger than typical inventory	54.7% 24.8% - 81.5%	68.1% 46.1% - 84.1%	87.4% 66.6% - 96.0%	62.2% 40.5% - 79.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	4.2% 0.6% - 25.2%	0.5% 0.1% - 3.6%
	Make arrangements w/ neighboring utilities or mutual aid network	10.2% 1.2% - 50.8%	4.6% 0.6% - 27.1%	9.2% 1.3% - 43.4%	8.6% 1.8% - 32.7%
	Other	0.0% N/A - N/A	100.0% N/A - N/A	0.0% N/A - N/A	57.8% 14.9% - 91.5%
	Observations	14	23	19	56

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Potassium permanganate	Seek alternative supplier	47.8% 8.7% - 89.9%	50.0% 2.8% - 97.2%	66.7% 8.6% - 97.7%	49.0% 11.5% - 87.6%
	Increase purchasing / maintain a larger than typical inventory	47.8% 8.7% - 89.9%	50.0% 2.8% - 97.2%	66.7% 8.6% - 97.7%	49.0% 11.5% - 87.6%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	23.9% 2.1% - 82.2%	50.0% 2.8% - 97.2%	0.0% N/A - N/A	24.6% 3.1% - 77.1%
	Other	100.0% N/A - N/A			100.0% N/A - N/A
	Observations	5	2	3	10
Sodium hydroxide	Seek alternative supplier	62.8% 9.9% - 96.3%	43.4% 13.7% - 78.7%	35.8% 10.6% - 72.6%	54.4% 18.7% - 86.1%
	Increase purchasing / maintain a larger than typical inventory	62.8% 9.9% - 96.3%	50.0% 17.2% - 82.8%	88.1% 41.8% - 98.7%	63.1% 22.7% - 90.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	31.4% 2.3% - 89.7%	0.0% N/A - N/A	26.1% 3.6% - 77.1%	23.0% 3.0% - 73.9%
	Other	100.0% N/A - N/A	100.0% N/A - N/A		100.0% N/A - N/A
	Observations	4	8	6	18

Table D.14. Question B2.1.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Sodium hypochlorite	Seek alternative supplier	29.5% 11.0% - 58.6%	37.0% 18.5% - 60.3%	46.7% 21.0% - 74.3%	32.2% 16.3% - 53.5%
	Increase purchasing / maintain a larger than typical inventory	76.5% 47.3% - 92.2%	63.0% 39.7% - 81.5%	53.3% 25.7% - 79.0%	72.3% 51.8% - 86.4%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements w/ neighboring utilities or mutual aid network	22.1% 6.9% - 52.0%	0.0% N/A - N/A	20.7% 5.0% - 56.6%	17.9% 6.3% - 41.3%
	Other	0.0% N/A - N/A	100.0% N/A - N/A	0.0% N/A - N/A	57.8% 14.8% - 91.6%
	Observations	16	20	13	49

N/A: confidence interval could not be calculated.

Table D.15. Question B2.2.1: How severe are your concerns about personal protective equipment shortages or supply chain disruptions?
Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Mean score (0 to 3)	0.188 0.123 - 0.254	0.413 0.324 - 0.503	0.427 0.264 - 0.591	0.232 0.177 - 0.287
	None (0)	86.3% 81.5% - 90.1%	68.3% 60.7% - 74.9%	73.0% 62.2% - 81.6%	83.0% 79.0% - 86.4%
	Slight (1)	9.8% 6.7% - 14.2%	24.2% 17.8% - 32.0%	12.2% 7.0% - 20.3%	12.2% 9.3% - 15.8%
	Moderate (2)	2.5% 1.1% - 5.2%	5.6% 3.5% - 8.9%	14.0% 8.2% - 22.9%	3.3% 2.1% - 5.3%
	Severe (3)	1.4% 0.5% - 3.9%	2.0% 0.9% - 4.5%	0.8% 0.2% - 4.4%	1.4% 0.6% - 3.3%
	Observations	270	239	93	602
Alternative mask options (surgical, cloth, etc.)	Mean score (0 to 3)	0.160 0.104 - 0.216	0.341 0.261 - 0.422	0.356 0.225 - 0.488	0.195 0.148 - 0.242
	None (0)	87.8% 83.2% - 91.3%	70.7% 63.1% - 77.3%	72.1% 61.3% - 80.9%	84.6% 80.8% - 87.8%
	Slight (1)	9.0% 6.0% - 13.2%	25.4% 18.9% - 33.1%	20.1% 12.9% - 30.0%	12.0% 9.1% - 15.5%
	Moderate (2)	2.6% 1.3% - 5.3%	3.2% 1.7% - 5.9%	7.8% 4.0% - 14.6%	2.9% 1.7% - 4.9%
	Severe (3)	0.6% 0.1% - 2.5%	0.8% 0.2% - 2.9%	0.0% N/A - N/A	0.6% 0.2% - 1.9%
	Observations	270	239	93	602

Table D.15. Question B2.2.1: How severe are your concerns about personal protective equipment shortages or supply chain disruptions?
Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Mean score (0 to 3)	0.147 0.093 - 0.201	0.244 0.172 - 0.316	0.296 0.175 - 0.416	0.167 0.122 - 0.212
	None (0)	88.6% 84.1% - 92.0%	78.6% 71.4% - 84.4%	76.5% 66.3% - 84.4%	86.6% 82.9% - 89.7%
	Slight (1)	8.1% 5.2% - 12.2%	18.8% 13.2% - 26.0%	17.4% 10.9% - 26.6%	10.1% 7.5% - 13.4%
	Moderate (2)	3.3% 1.7% - 6.3%	2.2% 1.0% - 4.6%	6.1% 2.8% - 12.7%	3.2% 1.8% - 5.6%
	Severe (3)	0.0% N/A - N/A	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	270	239	93	602
Nitrile and/or latex gloves	Mean score (0 to 3)	0.291 0.211 - 0.371	0.487 0.379 - 0.596	0.525 0.343 - 0.707	0.330 0.262 - 0.397
	None (0)	80.4% 75.0% - 84.9%	64.5% 57.1% - 71.2%	66.7% 55.2% - 76.6%	77.4% 73.0% - 81.3%
	Slight (1)	11.8% 8.3% - 16.4%	23.5% 17.6% - 30.7%	15.7% 9.5% - 24.8%	13.7% 10.7% - 17.5%
	Moderate (2)	6.3% 3.8% - 10.1%	10.8% 6.7% - 17.0%	15.9% 9.5% - 25.4%	7.3% 5.1% - 10.4%
	Severe (3)	1.6% 0.6% - 3.9%	1.2% 0.4% - 3.4%	1.7% 0.5% - 5.5%	1.5% 0.7% - 3.3%
	Observations	270	239	93	602

Table D.15. Question B2.2.1: How severe are your concerns about personal protective equipment shortages or supply chain disruptions?
Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Mean score (0 to 3)	0.119 0.067 - 0.172	0.184 0.121 - 0.247	0.233 0.123 - 0.343	0.134 0.090 - 0.177
	None (0)	91.0% 86.8% - 94.0%	85.0% 78.8% - 89.6%	82.8% 73.9% - 89.0%	89.8% 86.4% - 92.4%
	Slight (1)	7.0% 4.4% - 11.0%	11.6% 7.4% - 17.8%	11.2% 6.5% - 18.5%	7.9% 5.6% - 11.1%
	Moderate (2)	0.9% 0.3% - 3.3%	3.4% 1.8% - 6.2%	6.1% 2.8% - 12.7%	1.5% 0.8% - 2.9%
	Severe (3)	1.0% 0.3% - 3.2%	0.0% N/A - N/A	0.0% N/A - N/A	0.8% 0.3% - 2.6%
	Observations	270	239	93	602
Sanitizing wipes, sprays for cleaning work offices, or gels for hand sanitizing	Mean score (0 to 3)	0.256 0.183 - 0.329	0.481 0.388 - 0.575	0.503 0.335 - 0.672	0.300 0.239 - 0.361
	None (0)	81.3% 76.0% - 85.7%	64.5% 57.1% - 71.2%	66.1% 54.5% - 75.9%	78.1% 73.7% - 82.0%
	Slight (1)	12.8% 9.2% - 17.5%	25.4% 18.9% - 33.1%	19.2% 12.2% - 29.0%	15.0% 11.7% - 18.9%
	Moderate (2)	4.9% 2.8% - 8.4%	7.8% 5.2% - 11.5%	13.0% 7.6% - 21.3%	5.6% 3.8% - 8.3%
	Severe (3)	1.0% 0.3% - 3.2%	2.4% 1.1% - 5.0%	1.7% 0.5% - 5.5%	1.3% 0.6% - 2.8%
	Observations	270	239	93	602

N/A: confidence interval could not be calculated.

Table D.16. Question B2.2.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Unavailable from supplier(s)	55.6% 38.5% - 71.4%	40.9% 28.5% - 54.6%	42.5% 24.4% - 62.8%	50.5% 38.6% - 62.4%
	Delayed / backordered from supplier(s)	57.3% 40.1% - 72.9%	67.8% 54.9% - 78.5%	76.9% 54.5% - 90.3%	61.5% 49.2% - 72.4%
	Transportation / distribution difficulties	3.7% 0.7% - 18.1%	5.1% 1.9% - 12.8%	16.2% 5.9% - 37.5%	4.8% 1.9% - 11.6%
	Price	17.4% 7.9% - 34.0%	7.6% 3.4% - 16.1%	26.2% 12.0% - 48.2%	15.0% 8.2% - 25.8%
	Other	3.1% 0.4% - 19.7%	1.3% 0.2% - 8.4%	0.0% N/A - N/A	2.4% 0.4% - 12.2%
	Observations	41	69	26	136
Alternative mask options (surgical, cloth, etc.)	Unavailable from supplier(s)	33.5% 19.0% - 52.1%	21.8% 13.1% - 33.8%	21.8% 9.7% - 42.0%	29.3% 19.1% - 42.0%
	Delayed / backordered from supplier(s)	71.9% 53.6% - 85.0%	81.6% 70.1% - 89.3%	77.6% 55.6% - 90.6%	75.2% 62.9% - 84.4%
	Transportation / distribution difficulties	4.2% 0.7% - 20.1%	5.5% 2.0% - 13.9%	16.3% 5.4% - 39.8%	5.3% 2.1% - 12.8%
	Price	18.9% 8.4% - 37.0%	9.6% 4.5% - 19.2%	18.8% 7.7% - 39.2%	16.1% 8.7% - 27.8%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	3.0% 0.4% - 18.1%	0.2% 0.0% - 1.2%
	Observations	40	63	27	130

Table D.16. Question B2.2.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Unavailable from supplier(s)	24.0% 11.5% - 43.4%	38.4% 22.0% - 57.9%	18.7% 6.8% - 42.1%	27.3% 16.8% - 41.1%
	Delayed / backordered from supplier(s)	78.1% 59.4% - 89.7%	57.9% 38.9% - 74.8%	58.3% 36.6% - 77.2%	71.8% 58.8% - 82.0%
	Transportation / distribution difficulties	4.5% 0.8% - 21.4%	9.4% 3.8% - 21.3%	11.5% 2.7% - 37.5%	6.1% 2.4% - 14.7%
	Price	5.1% 1.1% - 20.5%	11.3% 4.9% - 23.6%	18.7% 6.8% - 42.1%	7.5% 3.4% - 15.6%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	34	46	23	103
Nitrile and/or latex gloves	Unavailable from supplier(s)	51.4% 37.4% - 65.2%	42.7% 29.9% - 56.6%	42.1% 25.6% - 60.7%	48.8% 38.3% - 59.3%
	Delayed / backordered from supplier(s)	76.4% 62.4% - 86.3%	71.4% 56.9% - 82.4%	84.3% 66.2% - 93.6%	75.5% 65.4% - 83.5%
	Transportation / distribution difficulties	2.6% 0.5% - 13.0%	7.9% 3.8% - 15.8%	21.8% 9.5% - 42.5%	4.9% 2.4% - 9.7%
	Price	9.5% 3.9% - 21.6%	17.4% 10.6% - 27.4%	34.5% 19.3% - 53.7%	12.8% 7.7% - 20.3%
	Other	2.2% 0.3% - 14.2%	2.3% 0.6% - 8.5%	0.0% N/A - N/A	2.1% 0.5% - 8.8%
	Observations	59	79	31	169

Table D.16. Question B2.2.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Unavailable from supplier(s)	40.7% 22.2% - 62.3%	44.0% 24.8% - 65.3%	30.4% 12.7% - 56.7%	40.9% 26.3% - 57.2%
	Delayed / backordered from supplier(s)	74.0% 51.9% - 88.3%	56.0% 34.7% - 75.2%	64.7% 39.3% - 83.9%	69.3% 53.2% - 81.8%
	Transportation / distribution difficulties	0.0% N/A - N/A	5.4% 1.3% - 19.6%	20.5% 6.5% - 49.2%	2.4% 1.0% - 5.9%
	Price	7.4% 1.9% - 24.9%	13.4% 5.4% - 29.4%	20.5% 6.5% - 49.2%	9.5% 4.3% - 20.0%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	4.9% 0.7% - 28.2%	0.3% 0.0% - 1.9%
	Observations	26	34	18	78
Sanitizing wipes, sprays for cleaning work offices, or gels for hand sanitizing	Unavailable from supplier(s)	47.7% 33.7% - 62.1%	50.6% 36.9% - 64.2%	43.3% 27.3% - 60.9%	48.2% 37.7% - 58.9%
	Delayed / backordered from supplier(s)	63.8% 48.9% - 76.4%	65.1% 51.0% - 77.0%	87.1% 69.2% - 95.3%	65.3% 54.4% - 74.8%
	Transportation / distribution difficulties	2.7% 0.5% - 13.6%	4.5% 1.7% - 11.5%	15.9% 6.0% - 35.8%	3.9% 1.6% - 9.2%
	Price	19.2% 10.1% - 33.4%	10.2% 5.3% - 18.7%	31.3% 17.0% - 50.3%	17.5% 10.7% - 27.3%
	Other	2.3% 0.3% - 14.8%	0.0% N/A - N/A	0.0% N/A - N/A	1.6% 0.2% - 10.5%
	Observations	56	79	33	168

N/A: confidence interval could not be calculated.

Table D.17. Question B2.2.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
N95 masks and/or elastomeric respirators	Seek alternative supplier	56.1% 39.0% - 71.9%	53.4% 38.2% - 68.1%	48.1% 29.3% - 67.6%	54.9% 42.8% - 66.5%
	Increase purchasing / maintain a larger than typical inventory	53.6% 36.7% - 69.7%	71.0% 58.5% - 81.0%	64.4% 43.5% - 80.9%	59.3% 47.1% - 70.5%
	Switch chemicals, procedures, or technologies	0.6% 0.1% - 3.8%	5.1% 1.9% - 12.8%	6.3% 1.6% - 21.6%	2.2% 1.1% - 4.6%
	Make arrangements w/ neighboring utilities or mutual aid network	19.4% 9.1% - 36.7%	5.6% 2.3% - 13.3%	13.1% 4.0% - 35.1%	15.0% 7.9% - 26.6%
	Other	3.1% 0.4% - 19.7%	5.6% 2.3% - 13.3%	0.0% N/A - N/A	3.7% 1.2% - 11.2%
	Observations	41	69	26	136
Alternative mask options (surgical, cloth, etc.)	Seek alternative supplier	43.1% 26.8% - 61.1%	51.7% 35.8% - 67.3%	69.1% 49.3% - 83.7%	47.3% 35.4% - 59.6%
	Increase purchasing / maintain a larger than typical inventory	61.4% 43.1% - 76.9%	76.1% 63.7% - 85.3%	84.3% 63.5% - 94.3%	67.2% 54.4% - 77.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	2.7% 0.7% - 10.3%	3.0% 0.4% - 18.1%	1.0% 0.3% - 3.2%
	Make arrangements w/ neighboring utilities or mutual aid network	14.1% 5.3% - 32.3%	6.1% 2.4% - 14.4%	22.4% 9.4% - 44.4%	12.2% 5.9% - 23.6%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	40	63	27	130

Table D.17. Question B2.2.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Face shield and/or protective eye wear	Seek alternative supplier	56.2% 37.4% - 73.4%	39.2% 24.7% - 56.0%	43.9% 25.0% - 64.8%	51.2% 37.5% - 64.7%
	Increase purchasing / maintain a larger than typical inventory	47.3% 29.5% - 65.7%	69.1% 53.2% - 81.5%	59.0% 37.1% - 77.8%	53.5% 39.7% - 66.8%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	5.6% 1.8% - 16.4%	3.6% 0.5% - 21.5%	1.6% 0.6% - 4.3%
	Make arrangements w/ neighboring utilities or mutual aid network	11.3% 3.6% - 30.2%	5.6% 1.8% - 16.4%	11.5% 2.7% - 37.5%	9.9% 4.0% - 22.5%
	Other	0.0% N/A - N/A	3.8% 0.9% - 14.1%	0.0% N/A - N/A	0.9% 0.2% - 3.6%
	Observations	34	46	23	103
Nitrile and/or latex gloves	Seek alternative supplier	54.9% 40.8% - 68.4%	53.4% 39.4% - 66.8%	63.0% 43.9% - 78.7%	55.0% 44.3% - 65.2%
	Increase purchasing / maintain a larger than typical inventory	68.1% 53.6% - 79.8%	78.0% 63.0% - 88.1%	89.8% 76.1% - 96.1%	71.6% 60.8% - 80.4%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	10.7% 3.4% - 29.2%	10.7% 3.3% - 29.5%	3.2% 1.1% - 8.6%
	Make arrangements w/ neighboring utilities or mutual aid network	15.3% 7.4% - 28.8%	6.2% 2.7% - 13.4%	13.2% 4.8% - 31.5%	12.9% 7.1% - 22.4%
	Other	0.0% N/A - N/A	2.3% 0.6% - 8.5%	0.0% N/A - N/A	0.6% 0.1% - 2.1%
	Observations	59	79	31	169

Table D.17. Question B2.2.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Tyvek suite and/or disposable coveralls	Seek alternative supplier	58.9% 37.4% - 77.4%	64.0% 44.9% - 79.5%	54.9% 31.2% - 76.5%	59.8% 43.7% - 74.1%
	Increase purchasing / maintain a larger than typical inventory	41.6% 23.0% - 63.0%	47.9% 29.0% - 67.4%	74.5% 47.2% - 90.5%	45.0% 30.2% - 60.6%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	2.7% 0.4% - 17.2%	4.9% 0.7% - 28.2%	0.9% 0.2% - 3.9%
	Make arrangements w/ neighboring utilities or mutual aid network	19.0% 7.2% - 41.8%	5.4% 1.3% - 19.6%	15.6% 3.8% - 46.5%	15.7% 6.8% - 32.3%
	Other	4.8% 0.6% - 28.3%	2.7% 0.4% - 17.2%	4.9% 0.7% - 28.2%	4.3% 0.8% - 19.0%
	Observations	26	34	18	78
Sanitizing wipes, sprays for cleaning work offices, or gels for hand	Seek alternative supplier	57.3% 42.6% - 70.7%	50.5% 36.9% - 64.1%	66.7% 48.5% - 81.0%	56.0% 45.3% - 66.3%
	Increase purchasing / maintain a larger than typical inventory	70.2% 55.5% - 81.7%	80.3% 70.0% - 87.7%	92.5% 79.7% - 97.5%	74.0% 63.4% - 82.4%
	Switch chemicals, procedures, or technologies	3.1% 0.7% - 12.9%	6.2% 2.7% - 13.4%	23.8% 11.2% - 43.6%	5.0% 2.4% - 10.0%
	Make arrangements w/ neighboring utilities or mutual aid network	18.3% 9.4% - 32.7%	5.0% 2.0% - 11.9%	17.9% 8.0% - 35.4%	14.9% 8.4% - 25.0%
	Other	2.3% 0.3% - 14.8%	2.3% 0.6% - 8.5%	2.5% 0.4% - 14.9%	2.3% 0.6% - 8.9%
	Observations	56	79	33	168

N/A: confidence interval could not be calculated.

Table D.18. Question B2.3.1: How severe are your concerns about shortages or supply chain disruptions involving durable goods and other critical equipment and supplies, etc.?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Mean score (0 to 3)	0.025 0.002 - 0.047	0.040 -0.004 - 0.083	0.082 0.000 - 0.163	0.029 0.010 - 0.048
	None (0)	98.1% 95.5% - 99.2%	96.0% 88.5% - 98.7%	94.6% 86.5% - 97.9%	97.6% 95.5% - 98.7%
	Slight (1)	1.4% 0.5% - 3.9%	4.0% 1.3% - 11.5%	2.7% 0.7% - 10.0%	1.9% 0.9% - 3.9%
	Moderate (2)	0.5% 0.1% - 2.6%	0.0% N/A - N/A	2.7% 0.7% - 10.0%	0.5% 0.1% - 2.0%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	269	239	92	600
Granular/ Powdered Activated Carbon (GAC/ PAC)	Mean score (0 to 3)	0.035 0.002 - 0.068	0.030 -0.013 - 0.072	0.109 -0.003 - 0.220	0.037 0.009 - 0.065
	None (0)	97.8% 95.0% - 99.0%	97.0% 88.2% - 99.3%	93.7% 85.8% - 97.3%	97.5% 95.2% - 98.7%
	Slight (1)	1.4% 0.5% - 3.9%	3.0% 0.7% - 11.8%	3.6% 1.2% - 10.4%	1.7% 0.8% - 3.7%
	Moderate (2)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.9% 0.2% - 4.5%	0.4% 0.1% - 2.2%
	Severe (3)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	1.9% 0.3% - 10.7%	0.4% 0.1% - 2.1%
	Observations	269	239	92	600

Table D.18. Question B2.3.1: How severe are your concerns about shortages or supply chain disruptions involving durable goods and other critical equipment and supplies, etc.?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Mean score (0 to 3)	0.022 0.000 - 0.044	0.034 -0.009 - 0.077	0.017 -0.003 - 0.037	0.024 0.005 - 0.043
	None (0)	98.2% 95.5% - 99.3%	96.6% 88.5% - 99.1%	98.3% 94.5% - 99.5%	98.0% 95.8% - 99.0%
	Slight (1)	1.4% 0.5% - 3.9%	3.4% 0.9% - 11.5%	1.7% 0.5% - 5.5%	1.7% 0.8% - 3.7%
	Moderate (2)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.0% - 2.4%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	269	239	92	600
Pumps	Mean score (0 to 3)	0.171 0.104 - 0.239	0.210 0.141 - 0.279	0.283 0.139 - 0.426	0.181 0.125 - 0.237
	None (0)	89.1% 84.6% - 92.4%	84.0% 77.8% - 88.7%	83.3% 74.1% - 89.7%	88.1% 84.5% - 91.0%
	Slight (1)	5.9% 3.6% - 9.6%	11.4% 7.2% - 17.5%	6.0% 3.1% - 11.2%	6.8% 4.6% - 9.7%
	Moderate (2)	3.7% 2.0% - 6.9%	4.2% 2.4% - 7.2%	9.9% 5.0% - 18.6%	4.0% 2.4% - 6.4%
	Severe (3)	1.3% 0.4% - 3.9%	0.4% 0.1% - 2.5%	0.9% 0.2% - 4.5%	1.1% 0.4% - 3.1%
	Observations	269	239	92	600

Table D.18. Question B2.3.1: How severe are your concerns about shortages or supply chain disruptions involving durable goods and other critical equipment and supplies, etc.?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Mean score (0 to 3)	0.139 0.079 - 0.200	0.194 0.127 - 0.261	0.300 0.150 - 0.449	0.153 0.103 - 0.204
	None (0)	90.9% 86.7% - 93.9%	85.0% 78.8% - 89.6%	83.3% 74.1% - 89.7%	89.7% 86.3% - 92.4%
	Slight (1)	5.1% 2.9% - 8.6%	11.0% 6.9% - 17.1%	5.1% 2.5% - 10.1%	6.0% 4.0% - 8.8%
	Moderate (2)	3.2% 1.6% - 6.2%	3.6% 2.0% - 6.5%	9.9% 5.0% - 18.6%	3.5% 2.0% - 5.8%
	Severe (3)	0.9% 0.2% - 3.3%	0.4% 0.1% - 2.5%	1.7% 0.5% - 5.5%	0.8% 0.3% - 2.6%
	Observations	269	239	92	600
Pipes	Mean score (0 to 3)	0.112 0.062 - 0.162	0.138 0.080 - 0.195	0.179 0.064 - 0.293	0.118 0.077 - 0.160
	None (0)	91.4% 87.2% - 94.3%	88.2% 82.1% - 92.4%	88.4% 79.6% - 93.7%	90.8% 87.4% - 93.4%
	Slight (1)	6.3% 3.9% - 10.1%	9.8% 5.8% - 15.9%	5.3% 2.2% - 11.9%	6.9% 4.7% - 9.9%
	Moderate (2)	1.8% 0.7% - 4.5%	2.0% 0.9% - 4.5%	6.3% 2.7% - 14.2%	2.0% 1.0% - 3.9%
	Severe (3)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.0% - 2.4%
	Observations	269	239	92	600

Table D.18. Question B2.3.1: How severe are your concerns about shortages or supply chain disruptions involving durable goods and other critical equipment and supplies, etc.?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Mean score (0 to 3)	0.121 0.069 - 0.172	0.186 0.121 - 0.251	0.238 0.114 - 0.363	0.135 0.092 - 0.178
	None (0)	91.0% 86.7% - 94.0%	85.0% 78.8% - 89.6%	84.2% 75.0% - 90.4%	89.8% 86.4% - 92.5%
	Slight (1)	5.9% 3.6% - 9.6%	11.8% 7.6% - 17.9%	7.8% 4.0% - 14.7%	6.9% 4.8% - 9.9%
	Moderate (2)	3.1% 1.5% - 6.2%	2.8% 1.4% - 5.5%	8.0% 3.9% - 15.9%	3.2% 1.8% - 5.6%
	Severe (3)	0.0% N/A - N/A	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.1% 0.0% - 0.4%
	Observations	269	239	92	600
Fuel	Mean score (0 to 3)	0.044 0.014 - 0.075	0.102 0.047 - 0.157	0.064 -0.011 - 0.140	0.054 0.028 - 0.081
	None (0)	96.4% 93.2% - 98.1%	92.0% 85.7% - 95.7%	95.4% 87.1% - 98.5%	95.7% 93.1% - 97.3%
	Slight (1)	2.7% 1.3% - 5.7%	5.8% 2.6% - 12.4%	2.7% 0.7% - 10.0%	3.2% 1.8% - 5.6%
	Moderate (2)	0.9% 0.2% - 3.3%	2.2% 1.0% - 4.6%	1.9% 0.3% - 10.7%	1.1% 0.4% - 2.7%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	269	239	92	600

Table D.18. Question B2.3.1: How severe are your concerns about shortages or supply chain disruptions involving durable goods and other critical equipment and supplies, etc.?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Mean score (0 to 3)	0.053 0.016 - 0.090	0.042 -0.002 - 0.086	0.054 -0.016 - 0.125	0.051 0.021 - 0.082
	None (0)	96.4% 93.2% - 98.1%	95.8% 88.4% - 98.6%	96.4% 89.6% - 98.8%	96.3% 93.7% - 97.9%
	Slight (1)	1.9% 0.8% - 4.5%	4.2% 1.4% - 11.6%	1.7% 0.5% - 5.5%	2.2% 1.1% - 4.4%
	Moderate (2)	1.7% 0.7% - 4.4%	0.0% N/A - N/A	1.9% 0.3% - 10.7%	1.4% 0.6% - 3.6%
	Severe (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	269	239	92	600

N/A: confidence interval could not be calculated.

Table D.19. Question B2.3.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Unavailable from supplier(s)	22.0% 2.3% - 77.2%	59.7% 16.6% - 91.7%	50.0% 9.0% - 91.0%	34.1% 9.5% - 71.9%
	Delayed / backordered from supplier(s)	78.0% 22.8% - 97.7%	34.9% 6.9% - 79.4%	65.7% 14.7% - 95.5%	65.7% 27.8% - 90.5%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	50.0% 9.0% - 91.0%	3.9% 0.8% - 16.1%
	Price	26.0% 3.6% - 76.7%	0.0% N/A - N/A	15.7% 1.6% - 68.2%	18.4% 3.0% - 61.7%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	7	6	4	17
Granular/ Powdered Activated Carbon (GAC/ PAC)	Unavailable from supplier(s)	38.6% 8.0% - 81.9%	73.2% 20.4% - 96.7%	13.6% 1.3% - 65.1%	43.0% 13.9% - 78.0%
	Delayed / backordered from supplier(s)	57.9% 16.7% - 90.4%	26.8% 3.3% - 79.6%	100.0% N/A - N/A	55.6% 21.1% - 85.4%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	13.6% 1.3% - 65.1%	1.2% 0.2% - 8.3%
	Price	19.3% 2.0% - 73.5%	0.0% N/A - N/A	13.6% 1.3% - 65.1%	15.1% 1.9% - 61.7%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	6	3	5	14

Table D.19. Question B2.3.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Unavailable from supplier(s)	23.9% 2.2% - 81.2%	64.5% 17.2% - 94.1%	50.0% 1.6% - 98.4%	35.3% 7.7% - 78.1%
	Delayed / backordered from supplier(s)	76.1% 18.8% - 97.8%	23.6% 3.2% - 74.2%	100.0% N/A - N/A	63.0% 21.1% - 91.6%
	Transportation / distribution difficulties	0.0% N/A - N/A	0.0% N/A - N/A	50.0% 1.6% - 98.4%	1.4% 0.2% - 10.4%
	Price	23.9% 2.2% - 81.2%	0.0% N/A - N/A	50.0% 1.6% - 98.4%	18.4% 2.1% - 69.9%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	5	4	2	11
Pumps	Unavailable from supplier(s)	24.7% 11.7% - 44.8%	36.1% 18.3% - 58.7%	37.7% 16.6% - 64.8%	27.7% 16.4% - 43.0%
	Delayed / backordered from supplier(s)	88.2% 68.5% - 96.2%	81.3% 48.9% - 95.2%	78.6% 48.7% - 93.4%	86.2% 71.5% - 94.0%
	Transportation / distribution difficulties	17.2% 7.0% - 36.6%	13.7% 5.9% - 28.7%	21.4% 6.6% - 51.3%	16.7% 8.3% - 30.8%
	Price	25.4% 12.3% - 45.4%	10.0% 3.7% - 24.6%	10.2% 2.5% - 33.7%	21.4% 11.3% - 36.8%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	32	37	16	85

Table D.19. Question B2.3.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Unavailable from supplier(s)	29.6% 14.1% - 51.8%	38.5% 19.8% - 61.3%	37.7% 16.6% - 64.8%	32.1% 19.1% - 48.6%
	Delayed / backordered from supplier(s)	85.8% 63.4% - 95.5%	80.0% 46.8% - 94.8%	78.6% 48.6% - 93.4%	84.1% 67.6% - 93.1%
	Transportation / distribution difficulties	20.6% 8.3% - 42.6%	13.4% 5.4% - 29.4%	21.4% 6.6% - 51.4%	19.0% 9.3% - 34.8%
	Price	29.6% 14.1% - 51.8%	10.7% 3.9% - 26.1%	10.2% 2.5% - 33.8%	24.2% 12.7% - 41.1%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	27	34	16	77
Pipes	Unavailable from supplier(s)	30.4% 14.2% - 53.5%	38.7% 17.2% - 65.8%	47.0% 18.7% - 77.4%	32.8% 18.7% - 50.9%
	Delayed / backordered from supplier(s)	80.0% 56.6% - 92.5%	78.0% 38.9% - 95.2%	83.9% 39.8% - 97.6%	79.8% 61.1% - 90.8%
	Transportation / distribution difficulties	15.9% 5.4% - 38.7%	17.0% 6.7% - 36.9%	23.5% 5.4% - 62.2%	16.5% 7.3% - 33.0%
	Price	31.3% 14.9% - 54.2%	10.2% 3.1% - 28.7%	14.8% 3.4% - 45.7%	26.3% 13.6% - 44.7%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	25	26	10	61

Table D.19. Question B2.3.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Unavailable from supplier(s)	19.4% 7.4% - 42.0%	35.8% 17.4% - 59.6%	39.7% 17.5% - 67.2%	24.3% 13.2% - 40.5%
	Delayed / backordered from supplier(s)	84.8% 62.8% - 94.9%	80.0% 46.9% - 94.8%	82.8% 49.7% - 95.9%	83.6% 67.1% - 92.7%
	Transportation / distribution difficulties	15.2% 5.1% - 37.2%	13.4% 5.4% - 29.4%	17.2% 4.1% - 50.3%	14.8% 6.6% - 30.1%
	Price	25.1% 11.0% - 47.5%	8.0% 2.5% - 22.8%	10.8% 2.6% - 35.4%	20.4% 9.9% - 37.2%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	26	34	15	75
Fuel	Unavailable from supplier(s)	23.9% 5.4% - 63.2%	49.8% 21.2% - 78.5%	59.3% 10.3% - 94.9%	32.8% 13.8% - 59.8%
	Delayed / backordered from supplier(s)	52.2% 20.7% - 82.0%	42.5% 17.7% - 71.7%	59.3% 10.3% - 94.9%	49.6% 25.8% - 73.5%
	Transportation / distribution difficulties	0.0% N/A - N/A	35.1% 14.1% - 64.2%	59.3% 10.3% - 94.9%	12.4% 7.3% - 20.4%
	Price	35.9% 11.1% - 71.5%	5.0% 0.6% - 31.1%	59.3% 10.3% - 94.9%	27.7% 10.2% - 56.3%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	10	16	3	29

Table D.19. Question B2.3.2: For each item, what are you most concerned about? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Unavailable from supplier(s)	23.9% 5.4% - 63.3%	61.8% 19.2% - 91.7%	23.9% 1.6% - 85.7%	30.7% 10.5% - 62.7%
	Delayed / backordered from supplier(s)	64.1% 28.4% - 89.0%	38.2% 8.3% - 80.8%	100.0% N/A - N/A	60.7% 30.6% - 84.3%
	Transportation / distribution difficulties	12.0% 1.4% - 56.3%	0.0% N/A - N/A	23.9% 1.6% - 85.7%	10.2% 1.4% - 47.0%
	Price	47.8% 17.9% - 79.4%	0.0% N/A - N/A	23.9% 1.6% - 85.7%	38.4% 15.1% - 68.6%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	10	6	3	19

N/A: confidence interval could not be calculated.

Table D.20. Question B2.3.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Filter media	Seek alternative supplier	52.0% 12.9% - 88.8%	30.2% 5.9% - 74.9%	31.4% 8.1% - 70.5%	44.7% 15.6% - 78.0%
	Increase purchasing / maintain a larger than typical inventory	26.0% 3.6% - 76.7%	79.8% 34.8% - 96.7%	65.7% 14.7% - 95.5%	43.2% 14.7% - 77.1%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	26.0% 3.6% - 76.7%	0.0% N/A - N/A	0.0% N/A - N/A	17.1% 2.5% - 62.1%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	7	6	4	17
Granular/ Powdered Activated Carbon (GAC/ PAC)	Seek alternative supplier	38.6% 8.0% - 81.9%	13.4% 1.0% - 70.1%	100.0% N/A - N/A	39.1% 12.3% - 74.6%
	Increase purchasing / maintain a larger than typical inventory	42.1% 9.6% - 83.3%	100.0% N/A - N/A	86.4% 34.9% - 98.7%	57.0% 22.0% - 86.1%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	19.3% 2.0% - 73.5%	0.0% N/A - N/A	0.0% N/A - N/A	14.0% 1.5% - 62.9%
	Other	19.3% 2.0% - 73.5%	0.0% N/A - N/A	0.0% N/A - N/A	14.0% 1.5% - 62.9%
	Observations	6	3	5	14

Table D.20. Question B2.3.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Membrane modules	Seek alternative supplier	52.2% 10.7% - 90.9%	23.6% 3.2% - 74.2%	100.0% N/A - N/A	46.1% 13.0% - 82.9%
	Increase purchasing / maintain a larger than typical inventory	28.3% 3.5% - 80.9%	88.2% 33.1% - 99.1%	100.0% N/A - N/A	46.1% 13.0% - 82.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	23.9% 2.2% - 81.2%	0.0% N/A - N/A	0.0% N/A - N/A	16.9% 1.7% - 70.9%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	5	4	2	11
Pumps	Seek alternative supplier	63.8% 43.8% - 79.9%	67.6% 49.7% - 81.5%	73.5% 44.9% - 90.4%	65.1% 49.7% - 77.9%
	Increase purchasing / maintain a larger than typical inventory	40.9% 23.8% - 60.5%	30.1% 16.8% - 47.9%	41.9% 20.0% - 67.5%	38.6% 25.3% - 54.0%
	Switch chemicals, procedures, or technologies	3.9% 0.5% - 24.1%	0.0% N/A - N/A	0.0% N/A - N/A	2.9% 0.4% - 18.6%
	Make arrangements with neighboring utilities or mutual aid network	16.5% 6.4% - 36.2%	10.0% 3.7% - 24.6%	0.0% N/A - N/A	14.3% 6.4% - 29.0%
	Other	4.7% 0.8% - 22.3%	6.2% 1.8% - 18.8%	5.1% 0.7% - 29.4%	5.0% 1.5% - 15.8%
	Observations	32	37	16	85

Table D.20. Question B2.3.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Motors	Seek alternative supplier	66.1% 44.0% - 82.9%	60.1% 37.6% - 79.0%	73.5% 44.9% - 90.4%	65.1% 48.5% - 78.7%
	Increase purchasing / maintain a larger than typical inventory	39.5% 21.4% - 61.1%	44.0% 24.8% - 65.3%	52.1% 27.5% - 75.7%	41.2% 26.7% - 57.5%
	Switch chemicals, procedures, or technologies	4.7% 0.6% - 28.1%	0.0% N/A - N/A	0.0% N/A - N/A	3.4% 0.5% - 21.1%
	Make arrangements with neighboring utilities or mutual aid network	18.9% 7.1% - 41.5%	8.0% 2.5% - 22.8%	0.0% N/A - N/A	15.3% 6.5% - 32.0%
	Other	5.6% 1.0% - 26.1%	2.7% 0.4% - 17.2%	5.1% 0.7% - 29.6%	4.9% 1.2% - 18.4%
	Observations	27	34	16	77
Pipes	Seek alternative supplier	69.1% 46.1% - 85.4%	56.0% 31.1% - 78.2%	76.5% 37.8% - 94.6%	66.8% 48.7% - 80.9%
	Increase purchasing / maintain a larger than typical inventory	31.8% 15.3% - 54.6%	23.8% 10.7% - 44.9%	30.9% 9.1% - 66.5%	30.2% 16.8% - 48.0%
	Switch chemicals, procedures, or technologies	5.0% 0.7% - 29.4%	18.6% 3.1% - 62.3%	14.8% 3.4% - 45.7%	8.2% 2.2% - 25.9%
	Make arrangements with neighboring utilities or mutual aid network	15.9% 5.4% - 38.7%	10.2% 3.1% - 28.7%	0.0% N/A - N/A	14.1% 5.5% - 31.4%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	25	26	10	61

Table D.20. Question B2.3.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Valves	Seek alternative supplier	76.2% 53.4% - 89.9%	62.8% 39.4% - 81.4%	72.1% 42.7% - 89.9%	72.8% 56.2% - 84.9%
	Increase purchasing / maintain a larger than typical inventory	34.2% 17.3% - 56.4%	38.7% 19.8% - 61.7%	54.9% 28.8% - 78.5%	36.3% 22.5% - 52.9%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	15.2% 5.1% - 37.2%	10.7% 3.9% - 26.1%	0.0% N/A - N/A	13.3% 5.5% - 29.0%
	Other	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Observations	26	34	15	75
Fuel	Seek alternative supplier	76.1% 36.8% - 94.6%	25.1% 9.0% - 53.2%	40.7% 5.1% - 89.7%	59.9% 34.8% - 80.7%
	Increase purchasing / maintain a larger than typical inventory	12.0% 1.4% - 56.0%	52.5% 23.5% - 79.9%	40.7% 5.1% - 89.7%	24.9% 9.3% - 51.7%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	12.0% 1.4% - 56.0%	0.0% N/A - N/A	0.0% N/A - N/A	8.0% 1.0% - 43.1%
	Other	0.0% N/A - N/A	5.0% 0.6% - 31.1%	0.0% N/A - N/A	1.5% 0.2% - 10.0%
	Observations	10	16	3	29

Table D.20. Question B2.3.3: What steps have you taken or are you taking to prepare for potential shortages and supply chain disruptions? (select all that apply)

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Supply Chain Issue	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Vehicles	Seek alternative supplier	64.1% 28.4% - 89.0%	19.1% 3.2% - 62.9%	23.9% 1.6% - 85.7%	54.7% 26.3% - 80.3%
	Increase purchasing / maintain a larger than typical inventory	23.9% 5.4% - 63.3%	61.8% 19.2% - 91.7%	23.9% 1.6% - 85.7%	30.7% 10.5% - 62.7%
	Switch chemicals, procedures, or technologies	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Make arrangements with neighboring utilities or mutual aid network	26.1% 6.5% - 64.0%	0.0% N/A - N/A	52.2% 13.0% - 88.9%	22.3% 6.2% - 55.2%
	Other	12.0% 1.4% - 56.3%	9.6% 0.9% - 54.4%	0.0% N/A - N/A	11.1% 1.8% - 46.3%
	Observations	10	6	3	19

N/A: confidence interval could not be calculated.

Table D.21. Question B3: Has your organization made any requests for personnel, supplies, or equipment to your tribal, local, or state emergency operations center (EOC), primacy agency, or similar organization?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Response	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Yes, entirely fulfilled	11.9% 8.4% - 16.5%	21.2% 16.0% - 27.6%	28.4% 15.5% - 46.3%	13.9% 10.8% - 17.7%
Yes, partly fulfilled	5.8% 3.5% - 9.5%	7.3% 4.8% - 11.0%	11.3% 6.5% - 18.7%	6.2% 4.2% - 9.1%
Yes, not fulfilled	0.4% 0.1% - 2.9%	0.0% N/A - N/A	1.9% 0.3% - 10.7%	0.4% 0.1% - 2.1%
No, support was not needed	70.6% 64.6% - 75.9%	58.1% 51.0% - 64.9%	52.3% 39.0% - 65.3%	68.0% 63.1% - 72.6%
No, but we would have used it if it had been available or if we had known of it	4.1% 2.2% - 7.4%	5.1% 2.0% - 12.0%	2.6% 1.0% - 6.7%	4.2% 2.5% - 6.9%
Do not know	7.3% 4.6% - 11.3%	8.3% 5.6% - 12.2%	3.6% 1.2% - 10.4%	7.3% 5.0% - 10.5%
Observations	271	236	92	599

N/A: confidence interval could not be calculated.

Table D.22. Question C.1: To what extent did your organization experience shortages of key personnel, including contractors performing critical functions to maintain operations, from January 2020 through present day?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Licensed or certified operators	Mean Score (0-3)	0.28 0.20 - 0.36	0.53 0.44 - 0.63	0.49 0.34 - 0.65	0.33 0.26 - 0.39
	No Shortage (0)	80.1% 74.7% - 84.6%	60.5% 53.7% - 66.9%	63.6% 52.2% - 73.7%	76.5% 72.1% - 80.4%
	Slight Shortage (1)	13.3% 9.6% - 18.2%	26.0% 20.4% - 32.6%	23.4% 15.9% - 33.1%	15.7% 12.4% - 19.6%
	Moderate Shortage (2)	5.2% 3.1% - 8.7%	13.1% 9.6% - 17.6%	13.0% 7.9% - 20.7%	6.7% 4.8% - 9.4%
	Severe Shortage (3)	1.4% 0.5% - 3.9%	0.4% 0.1% - 2.5%	0.0% N/A - N/A	1.2% 0.4% - 3.1%
Laboratory technicians/ sample analysts	Mean Score (0-3)	0.14 0.08 - 0.19	0.33 0.25 - 0.41	0.42 0.27 - 0.56	0.18 0.13 - 0.22
	No Shortage (0)	90.0% 85.7% - 93.1%	74.4% 67.9% - 80.0%	70.5% 59.8% - 79.3%	86.9% 83.4% - 89.7%
	Slight Shortage (1)	6.6% 4.1% - 10.4%	19.1% 14.1% - 25.4%	18.3% 11.8% - 27.3%	9.0% 6.7% - 12.0%
	Moderate Shortage (2)	3.0% 1.5% - 5.9%	5.6% 3.5% - 9.0%	10.4% 5.9% - 17.7%	3.6% 2.3% - 5.8%
	Severe Shortage (3)	0.4% 0.1% - 2.9%	0.8% 0.2% - 2.9%	0.9% 0.2% - 4.5%	0.5% 0.1% - 2.0%

Table D.22. Question C.1: To what extent did your organization experience shortages of key personnel, including contractors performing critical functions to maintain operations, from January 2020 through present day?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Field Workers (meter reading, sampling, maintenance, etc.)	Mean Score (0-3)	0.26 0.19 - 0.33	0.42 0.34 - 0.51	0.48 0.32 - 0.65	0.29 0.23 - 0.35
	No Shortage (0)	80.8% 75.4% - 85.2%	67.3% 60.5% - 73.3%	66.8% 55.5% - 76.3%	78.2% 73.9% - 82.0%
	Slight Shortage (1)	13.2% 9.6% - 18.1%	23.7% 18.2% - 30.2%	19.1% 12.6% - 27.9%	15.1% 11.8% - 19.0%
	Moderate Shortage (2)	5.0% 3.0% - 8.4%	8.5% 5.7% - 12.3%	13.3% 7.8% - 21.7%	5.8% 4.0% - 8.4%
	Severe Shortage (3)	0.9% 0.3% - 3.2%	0.6% 0.2% - 2.3%	0.9% 0.2% - 4.6%	0.9% 0.3% - 2.6%
Engineering/design/construction personnel	Mean Score (0-3)	0.11 0.07 - 0.15	0.24 0.17 - 0.30	0.30 0.20 - 0.41	0.14 0.10 - 0.17
	No Shortage (0)	90.3% 86.0% - 93.4%	80.7% 74.4% - 85.7%	73.0% 62.6% - 81.4%	88.2% 84.7% - 90.9%
	Slight Shortage (1)	8.4% 5.5% - 12.5%	15.1% 10.5% - 21.3%	23.6% 15.8% - 33.6%	9.9% 7.4% - 13.2%
	Moderate Shortage (2)	1.4% 0.5% - 3.9%	4.2% 2.4% - 7.1%	3.4% 1.5% - 7.8%	1.9% 1.0% - 3.6%
	Severe Shortage (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A

Table D.22. Question C.1: To what extent did your organization experience shortages of key personnel, including contractors performing critical functions to maintain operations, from January 2020 through present day?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Critical equipment repair	Mean Score (0-3)	0.15 0.09 - 0.21	0.30 0.23 - 0.38	0.37 0.25 - 0.50	0.18 0.14 - 0.23
	No Shortage (0)	88.7% 84.2% - 92.0%	74.6% 68.1% - 80.2%	69.6% 58.8% - 78.6%	85.8% 82.2% - 88.8%
	Slight Shortage (1)	8.3% 5.5% - 12.4%	20.4% 15.2% - 26.8%	24.4% 16.5% - 34.5%	10.8% 8.2% - 14.1%
	Moderate Shortage (2)	2.0% 0.9% - 4.6%	5.0% 3.0% - 8.2%	5.1% 2.5% - 10.1%	2.6% 1.5% - 4.5%
	Severe Shortage (3)	0.9% 0.3% - 3.3%	0.0% N/A - N/A	0.9% 0.2% - 4.5%	0.8% 0.2% - 2.6%
Administrative	Mean Score (0-3)	0.14 0.08 - 0.19	0.30 0.23 - 0.38	0.24 0.13 - 0.35	0.17 0.12 - 0.21
	No Shortage (0)	89.8% 85.4% - 92.9%	76.4% 70.0% - 81.9%	79.7% 69.8% - 87.0%	87.3% 83.8% - 90.2%
	Slight Shortage (1)	7.8% 5.0% - 11.8%	17.1% 12.3% - 23.4%	16.7% 10.3% - 25.9%	9.6% 7.1% - 12.8%
	Moderate Shortage (2)	1.6% 0.6% - 3.9%	6.0% 3.8% - 9.5%	3.6% 1.2% - 10.4%	2.4% 1.4% - 4.0%
	Severe Shortage (3)	0.9% 0.2% - 3.3%	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.8% 0.2% - 2.6%

Table D.22. Question C.1: To what extent did your organization experience shortages of key personnel, including contractors performing critical functions to maintain operations, from January 2020 through present day?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Customer Service	Mean Score (0-3)	0.14 0.09 - 0.20	0.24 0.17 - 0.31	0.20 0.09 - 0.30	0.16 0.11 - 0.21
	No Shortage (0)	89.5% 85.0% - 92.7%	82.6% 77.6% - 86.7%	83.9% 74.5% - 90.2%	88.2% 84.7% - 91.0%
	Slight Shortage (1)	7.1% 4.5% - 11.0%	11.3% 8.1% - 15.7%	12.5% 7.2% - 20.9%	7.9% 5.6% - 11.0%
	Moderate Shortage (2)	3.0% 1.5% - 5.9%	5.7% 3.5% - 9.0%	3.6% 1.2% - 10.6%	3.5% 2.1% - 5.6%
	Severe Shortage (3)	0.4% 0.1% - 2.9%	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.4% 0.1% - 2.1%
Other	Mean Score (0-3)	0.58 -0.11 - 1.27	0.19 -0.12 - 0.50	1.50 -1.51 - 4.51	0.52 -0.04 - 1.07
	No Shortage (0)	71.1% 31.6% - 92.9%	80.9% 36.7% - 96.9%	50.0% 1.8% - 98.2%	72.7% 39.4% - 91.6%
	Slight Shortage (1)	0.0% N/A - N/A	19.1% 3.1% - 63.3%	0.0% N/A - N/A	3.8% 1.0% - 13.4%
	Moderate Shortage (2)	28.9% 7.1% - 68.4%	0.0% N/A - N/A	0.0% N/A - N/A	22.7% 5.7% - 58.6%
	Severe Shortage (3)	0.0% N/A - N/A	0.0% N/A - N/A	50.0% 1.8% - 98.2%	0.9% 0.1% - 6.2%
Observations		271	237	93	601

N/A: confidence interval could not be calculated.

Table D.23. Question C.2: To what extent do you expect to experience shortages of key personnel, including contractors performing critical functions to maintain operations, from present day through December 2020?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Licensed or certified operators	Mean Score (0-3)	0.22 0.16 - 0.28	0.52 0.43 - 0.61	0.44 0.30 - 0.58	0.27 0.22 - 0.33
	No Shortage (0)	83.2% 78.0% - 87.3%	59.5% 52.3% - 66.3%	64.0% 52.4% - 74.2%	78.9% 74.7% - 82.6%
	Slight Shortage (1)	11.9% 8.4% - 16.5%	28.7% 22.4% - 36.0%	29.1% 20.1% - 40.0%	15.1% 11.9% - 18.9%
	Moderate Shortage (2)	4.8% 2.8% - 8.2%	11.8% 8.4% - 16.2%	6.0% 3.1% - 11.3%	5.9% 4.1% - 8.5%
	Severe Shortage (3)	0.2% 0.0% - 0.6%	0.0% N/A - N/A	0.9% 0.2% - 4.5%	0.2% 0.1% - 0.5%
Laboratory technicians/ sample analysts	Mean Score (0-3)	0.13 0.08 - 0.19	0.33 0.26 - 0.41	0.29 0.18 - 0.40	0.17 0.13 - 0.22
	No Shortage (0)	89.9% 85.6% - 93.1%	72.5% 65.8% - 78.3%	74.5% 64.2% - 82.7%	86.7% 83.2% - 89.6%
	Slight Shortage (1)	6.7% 4.2% - 10.5%	21.9% 16.5% - 28.4%	22.0% 14.5% - 31.9%	9.6% 7.2% - 12.6%
	Moderate Shortage (2)	3.4% 1.7% - 6.4%	5.2% 3.1% - 8.5%	3.4% 1.5% - 7.9%	3.6% 2.2% - 6.0%
	Severe Shortage (3)	0.0% N/A - N/A	0.4% 0.1% - 2.5%	0.0% N/A - N/A	0.1% 0.0% - 0.4%

Table D.23. Question C.2: To what extent do you expect to experience shortages of key personnel, including contractors performing critical functions to maintain operations, from present day through December 2020?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Field Workers (meter reading, sampling, maintenance, etc.)	Mean Score (0-3)	0.19 0.13 - 0.25	0.35 0.28 - 0.43	0.32 0.19 - 0.44	0.22 0.17 - 0.27
	No Shortage (0)	85.1% 80.1% - 89.0%	70.4% 63.7% - 76.4%	74.5% 64.2% - 82.7%	82.5% 78.4% - 85.9%
	Slight Shortage (1)	11.2% 7.8% - 15.8%	23.9% 18.3% - 30.4%	19.3% 12.5% - 28.5%	13.4% 10.4% - 17.2%
	Moderate Shortage (2)	3.3% 1.7% - 6.1%	5.7% 3.6% - 9.0%	6.2% 2.8% - 13.0%	3.7% 2.3% - 5.9%
	Severe Shortage (3)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.4% 0.1% - 2.4%
Engineering/design/construction personnel	Mean Score (0-3)	0.11 0.07 - 0.16	0.23 0.17 - 0.30	0.20 0.12 - 0.29	0.14 0.10 - 0.18
	No Shortage (0)	91.1% 86.9% - 94.0%	81.1% 75.9% - 85.5%	80.6% 70.9% - 87.5%	89.2% 85.9% - 91.8%
	Slight Shortage (1)	6.4% 3.9% - 10.2%	14.4% 10.6% - 19.2%	18.6% 11.8% - 28.1%	8.0% 5.8% - 11.0%
	Moderate Shortage (2)	2.5% 1.2% - 5.3%	4.5% 2.6% - 7.6%	0.9% 0.2% - 4.5%	2.8% 1.6% - 4.9%
	Severe Shortage (3)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A

Table D.23. Question C.2: To what extent do you expect to experience shortages of key personnel, including contractors performing critical functions to maintain operations, from present day through December 2020?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Critical equipment repair	Mean Score (0-3)	0.13 0.08 - 0.18	0.28 0.22 - 0.35	0.33 0.21 - 0.45	0.16 0.12 - 0.20
	No Shortage (0)	90.0% 85.7% - 93.2%	76.9% 71.2% - 81.7%	72.8% 62.3% - 81.3%	87.4% 83.9% - 90.2%
	Slight Shortage (1)	7.8% 5.0% - 11.9%	18.2% 13.9% - 23.4%	22.0% 14.5% - 31.9%	9.9% 7.4% - 13.1%
	Moderate Shortage (2)	1.8% 0.8% - 4.1%	4.5% 2.6% - 7.7%	4.3% 2.0% - 9.1%	2.3% 1.3% - 4.0%
	Severe Shortage (3)	0.4% 0.1% - 3.0%	0.4% 0.1% - 2.5%	0.9% 0.2% - 4.5%	0.4% 0.1% - 2.1%
Administrative	Mean Score (0-3)	0.11 0.06 - 0.15	0.25 0.19 - 0.32	0.15 0.07 - 0.23	0.13 0.09 - 0.17
	No Shortage (0)	90.8% 86.5% - 93.8%	78.1% 71.6% - 83.4%	86.6% 78.1% - 92.2%	88.6% 85.2% - 91.4%
	Slight Shortage (1)	8.1% 5.2% - 12.2%	18.4% 13.4% - 24.8%	11.6% 6.5% - 19.9%	9.8% 7.2% - 13.1%
	Moderate Shortage (2)	0.7% 0.2% - 2.4%	3.5% 1.9% - 6.4%	1.7% 0.5% - 5.6%	1.2% 0.6% - 2.3%
	Severe Shortage (3)	0.4% 0.1% - 3.0%	0.0% N/A - N/A	0.0% N/A - N/A	0.4% 0.1% - 2.4%

Table D.23. Question C.2: To what extent do you expect to experience shortages of key personnel, including contractors performing critical functions to maintain operations, from present day through December 2020?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Personnel Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Customer Service	Mean Score (0-3)	0.12 0.07 - 0.16	0.21 0.15 - 0.27	0.13 0.06 - 0.21	0.13 0.09 - 0.17
	No Shortage (0)	90.4% 86.0% - 93.5%	83.8% 78.8% - 87.8%	87.5% 79.1% - 92.8%	89.3% 85.8% - 92.0%
	Slight Shortage (1)	8.0% 5.2% - 12.1%	11.9% 8.6% - 16.3%	11.6% 6.5% - 19.9%	8.7% 6.3% - 12.0%
	Moderate Shortage (2)	1.2% 0.4% - 3.3%	4.3% 2.5% - 7.4%	0.9% 0.2% - 4.6%	1.7% 0.9% - 3.1%
	Severe Shortage (3)	0.4% 0.1% - 2.9%	0.0% N/A - N/A	0.0% N/A - N/A	0.3% 0.1% - 2.4%
Other	Mean Score (0-3)	0.00 0.00 - 0.00	0.33 -0.31 - 0.98	3.00 3.00 - 3.00	0.18 0.08 - 0.27
	No Shortage (0)	100.0% N/A - N/A	66.7% 9.8% - 97.4%	0.0% N/A - N/A	91.0% 75.6% - 97.1%
	Slight Shortage (1)	0.0% N/A - N/A	33.3% 2.6% - 90.2%	0.0% N/A - N/A	4.7% 0.6% - 30.0%
	Moderate Shortage (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Severe Shortage (3)	0.0% N/A - N/A	0.0% N/A - N/A	100.0% N/A - N/A	4.3% 4.3% - 4.3%
Observations		268	233	92	593

N/A: confidence interval could not be calculated.

Table D.24. Question C.3: What factors contribute to personnel shortages you identified in questions C.1 and C.2? (check all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Absenteeism (illness, care of family members, daycare closure, virtual schooling, etc.)	Mean Score (0-2)	1.18 1.02 - 1.33	1.24 1.11 - 1.37	1.21 1.07 - 1.35	1.19 1.08 - 1.31
	Does Not Contribute (0)	19.9% 12.7% - 29.6%	14.4% 8.2% - 23.9%	9.7% 4.7% - 18.9%	18.1% 12.6% - 25.2%
	Contributes Somewhat (1)	42.6% 32.5% - 53.3%	47.4% 38.7% - 56.2%	59.5% 47.4% - 70.6%	44.5% 36.9% - 52.4%
	Contributes Significantly (2)	37.6% 28.0% - 48.3%	38.2% 30.5% - 46.6%	30.8% 21.0% - 42.6%	37.4% 30.2% - 45.3%
Layoffs or furloughs	Mean Score (0-2)	0.19 0.07 - 0.31	0.22 0.12 - 0.33	0.17 0.01 - 0.33	0.20 0.11 - 0.28
	Does Not Contribute (0)	85.9% 75.5% - 92.4%	83.2% 72.7% - 90.2%	86.9% 73.8% - 94.0%	85.3% 78.0% - 90.5%
	Contributes Somewhat (1)	9.3% 4.3% - 18.9%	11.2% 5.2% - 22.5%	9.1% 4.1% - 19.2%	9.8% 5.6% - 16.5%
	Contributes Significantly (2)	4.8% 1.6% - 13.2%	5.6% 2.8% - 10.8%	4.0% 0.6% - 21.8%	4.9% 2.3% - 10.2%
Reduced work hours of current staff	Mean Score (0-2)	0.50 0.34 - 0.67	0.60 0.48 - 0.72	0.61 0.40 - 0.82	0.53 0.41 - 0.65
	Does Not Contribute (0)	62.7% 51.2% - 72.9%	54.3% 44.7% - 63.6%	56.4% 42.9% - 69.0%	60.3% 51.9% - 68.2%
	Contributes Somewhat (1)	24.2% 15.8% - 35.4%	31.8% 22.7% - 42.4%	26.5% 16.3% - 40.0%	26.2% 19.5% - 34.3%
	Contributes Significantly (2)	13.1% 7.1% - 22.9%	13.9% 9.2% - 20.7%	17.2% 8.9% - 30.4%	13.5% 8.8% - 20.2%

Table D.24. Question C.3: What factors contribute to personnel shortages you identified in questions C.1 and C.2? (check all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Delayed or cancelled plans to hire staff	Mean Score (0-2)	0.32 0.18 - 0.45	0.55 0.38 - 0.71	0.80 0.61 - 0.98	0.40 0.29 - 0.50
	Does Not Contribute (0)	75.8% 64.9% - 84.2%	61.5% 52.0% - 70.3%	37.8% 26.4% - 50.7%	70.4% 62.7% - 77.1%
	Contributes Somewhat (1)	16.7% 9.8% - 26.8%	22.4% 16.3% - 30.1%	44.9% 32.6% - 57.8%	19.5% 14.0% - 26.4%
	Contributes Significantly (2)	7.5% 3.3% - 16.1%	16.0% 9.3% - 26.2%	17.3% 9.4% - 29.8%	10.1% 6.3% - 16.0%
Lack of backup certified personnel	Mean Score (0-2)	0.80 0.63 - 0.96	0.63 0.51 - 0.74	0.71 0.49 - 0.94	0.75 0.63 - 0.88
	Does Not Contribute (0)	39.9% 29.6% - 51.2%	49.0% 39.9% - 58.2%	48.9% 35.7% - 62.4%	42.4% 34.4% - 50.8%
	Contributes Somewhat (1)	40.6% 30.2% - 52.0%	39.4% 30.5% - 49.2%	30.7% 19.9% - 44.2%	39.9% 31.9% - 48.4%
	Contributes Significantly (2)	19.5% 12.1% - 29.7%	11.6% 7.1% - 18.2%	20.3% 11.0% - 34.6%	17.7% 12.1% - 25.2%
Operators unable to obtain or maintain needed certification due to lack of in-person training	Mean Score (0-2)	0.84 0.66 - 1.03	0.58 0.45 - 0.72	0.30 0.15 - 0.46	0.76 0.62 - 0.90
	Does Not Contribute (0)	43.4% 33.0% - 54.5%	56.6% 47.3% - 65.4%	78.5% 66.6% - 87.0%	48.0% 39.9% - 56.2%
	Contributes Somewhat (1)	28.6% 19.8% - 39.5%	28.5% 21.4% - 37.0%	12.6% 6.4% - 23.1%	27.9% 21.1% - 35.9%
	Contributes Significantly (2)	27.9% 19.1% - 38.8%	14.9% 9.8% - 21.9%	9.0% 4.0% - 18.8%	24.1% 17.5% - 32.2%

Table D.24. Question C.3: What factors contribute to personnel shortages you identified in questions C.1 and C.2? (check all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Restrictions on travel	Mean Score (0-2)	0.59 0.43 - 0.74	0.54 0.42 - 0.66	0.63 0.44 - 0.82	0.58 0.46 - 0.69
	Does Not Contribute (0)	52.8% 41.6% - 63.8%	58.4% 49.7% - 66.7%	50.7% 37.9% - 63.4%	54.1% 45.7% - 62.2%
	Contributes Somewhat (1)	35.7% 25.6% - 47.1%	29.2% 22.1% - 37.4%	35.7% 24.3% - 49.0%	34.1% 26.6% - 42.5%
	Contributes Significantly (2)	11.5% 6.0% - 20.9%	12.4% 7.9% - 18.9%	13.7% 6.7% - 25.8%	11.8% 7.4% - 18.3%
Lack of I.T. infrastructure (e.g., equipment, network capacity)	Mean Score (0-2)	0.43 0.26 - 0.59	0.27 0.18 - 0.36	0.25 0.12 - 0.39	0.38 0.26 - 0.50
	Does Not Contribute (0)	69.0% 57.1% - 78.9%	76.9% 68.8% - 83.4%	78.1% 65.0% - 87.3%	71.5% 63.0% - 78.7%
	Contributes Somewhat (1)	19.2% 11.4% - 30.5%	18.9% 13.1% - 26.6%	18.3% 9.9% - 31.3%	19.1% 13.2% - 26.8%
	Contributes Significantly (2)	11.8% 6.0% - 21.8%	4.2% 1.9% - 8.9%	3.6% 1.0% - 12.1%	9.4% 5.2% - 16.3%
Other	Mean Score (0-2)	0.49 -0.03 - 1.01	0.37 0.02 - 0.73	1.00 0.12 - 1.88	0.48 0.10 - 0.86
	Does Not Contribute (0)	70.5% 36.4% - 90.9%	76.7% 50.0% - 91.6%	50.0% 14.6% - 85.4%	71.5% 46.3% - 87.9%
	Contributes Somewhat (1)	9.8% 1.2% - 49.6%	9.3% 2.0% - 33.6%	0.0% N/A - N/A	9.3% 1.9% - 35.1%
	Contributes Significantly (2)	19.6% 4.5% - 55.9%	14.0% 4.0% - 39.1%	50.0% 14.6% - 85.4%	19.2% 6.6% - 44.4%
Observations		101	149	57	307

Table D.25. Question C.4: What strategies or resources has your organization used to address potential shortages of certified operators, laboratory staff, or other trained personnel during the COVID-19 pandemic? (select all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Strategy or Resource	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Used technology to allow some operational tasks to be performed remotely	24.8% 19.0% - 31.6%	38.8% 32.0% - 46.1%	43.1% 30.5% - 56.5%	28.0% 23.2% - 33.4%
Used telework for job functions that could be performed remotely	9.8% 6.3% - 14.9%	42.7% 35.7% - 50.0%	73.9% 62.8% - 82.6%	18.3% 14.9% - 22.3%
Decreased staffing/changed shift work while maintaining core operations	30.4% 24.1% - 37.5%	65.2% 58.0% - 71.8%	74.1% 63.3% - 82.5%	38.5% 33.1% - 44.1%
Delayed non-critical work	45.6% 38.5% - 52.9%	64.8% 57.2% - 71.8%	83.6% 74.5% - 89.9%	50.6% 44.8% - 56.4%
Increased use of contractors	7.2% 4.3% - 11.9%	9.4% 5.2% - 16.5%	9.7% 5.1% - 17.7%	7.7% 5.2% - 11.4%
Accessed operators from nearby utilities, via WARN or other mutual aid networks	9.1% 5.7% - 14.3%	3.4% 0.8% - 13.4%	0.0% N/A - N/A	7.7% 4.9% - 11.9%
Utilized backup laboratory services	8.7% 5.4% - 13.8%	11.9% 8.4% - 16.6%	14.7% 8.5% - 24.1%	9.5% 6.7% - 13.4%
Other	23.1% 17.5% - 29.8%	12.4% 8.8% - 17.3%	5.7% 2.8% - 11.5%	20.5% 16.0% - 25.8%
Observations	204	211	82	497

N/A: confidence interval could not be calculated.

Table D.26. Question C.4.1: Did the strategies you implemented help mitigate staffing shortages?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Strategy or Resource	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Used technology (e.g., live video feeds) to allow some operational tasks to be performed remotely	Strategy Did Not Help	10.3% 4.2% - 22.9%	4.8% 1.9% - 11.5%	2.2% 0.4% - 11.4%	8.4% 4.0% - 17.0%
	Strategy Helped	72.3% 57.6% - 83.4%	82.8% 73.6% - 89.3%	95.6% 86.1% - 98.7%	76.4% 65.9% - 84.4%
	Not Sure	17.4% 8.8% - 31.3%	12.4% 7.1% - 20.8%	2.2% 0.4% - 11.4%	15.2% 8.9% - 24.8%
Used telework for job functions that could be performed remotely	Strategy Did Not Help	6.0% 0.8% - 32.1%	3.3% 1.1% - 9.1%	2.6% 0.7% - 8.6%	4.3% 1.3% - 13.1%
	Strategy Helped	75.0% 50.7% - 89.8%	83.6% 74.9% - 89.7%	74.0% 45.8% - 90.6%	78.5% 67.0% - 86.7%
	Not Sure	19.0% 6.7% - 43.3%	13.1% 7.8% - 21.3%	23.4% 7.4% - 53.8%	17.3% 9.9% - 28.3%
Decreased staffing/changed shift work while maintaining core operations	Strategy Did Not Help	6.1% 2.2% - 15.6%	2.7% 1.1% - 6.7%	1.3% 0.2% - 6.9%	4.7% 2.1% - 10.4%
	Strategy Helped	83.0% 71.1% - 90.7%	83.5% 76.8% - 88.6%	75.9% 46.8% - 91.9%	82.7% 75.1% - 88.3%
	Not Sure	10.9% 5.0% - 22.1%	13.7% 9.1% - 20.0%	22.8% 7.2% - 53.0%	12.6% 7.9% - 19.5%
Delayed non-critical work	Strategy Did Not Help	16.3% 9.7% - 26.1%	4.3% 2.0% - 8.9%	2.3% 0.7% - 7.6%	12.5% 7.8% - 19.5%
	Strategy Helped	63.5% 52.4% - 73.3%	83.5% 76.8% - 88.6%	71.3% 47.9% - 87.1%	68.7% 60.6% - 75.9%
	Not Sure	20.2% 12.7% - 30.5%	12.2% 7.9% - 18.4%	26.4% 10.9% - 51.1%	18.7% 13.1% - 26.1%

Table D.26. Question C.4.1: Did the strategies you implemented help mitigate staffing shortages?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Strategy or Resource	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Increased use of contractors	Strategy Did Not Help	4.8% 1.5% - 14.4%	0.0% N/A - N/A	0.0% N/A - N/A	3.4% 1.1% - 10.0%
	Strategy Helped	84.8% 59.3% - 95.5%	95.1% 73.3% - 99.3%	80.4% 50.2% - 94.3%	86.9% 68.8% - 95.3%
	Not Sure	10.4% 1.9% - 40.6%	4.9% 0.7% - 26.7%	19.6% 5.7% - 49.8%	9.6% 2.6% - 29.9%
Accessed operators from nearby utilities, including via WARN or other mutual aid networks	Strategy Did Not Help	12.9% 3.3% - 39.2%	73.2% 20.8% - 96.6%		17.7% 5.9% - 42.6%
	Strategy Helped	66.7% 41.6% - 84.9%	0.0% N/A - N/A		61.3% 38.0% - 80.3%
	Not Sure	20.5% 7.2% - 46.1%	26.8% 3.4% - 79.2%		21.0% 8.1% - 44.4%
Utilized backup laboratory services	Strategy Did Not Help	2.5% 0.6% - 9.1%	3.9% 0.6% - 20.9%	6.5% 1.1% - 29.5%	3.0% 1.1% - 7.9%
	Strategy Helped	90.8% 67.6% - 97.9%	84.5% 66.8% - 93.7%	79.3% 46.6% - 94.4%	88.7% 74.5% - 95.5%
	Not Sure	6.7% 0.9% - 35.1%	11.6% 4.1% - 28.9%	14.2% 2.4% - 52.8%	8.3% 2.5% - 24.0%
Other	Strategy Did Not Help	29.9% 16.5% - 48.0%	5.1% 0.8% - 26.5%	0.0% N/A - N/A	26.9% 15.1% - 43.4%
	Strategy Helped	46.2% 29.9% - 63.4%	79.4% 57.9% - 91.6%	80.0% 37.1% - 96.4%	50.1% 35.0% - 65.2%
	Not Sure	23.9% 12.1% - 41.7%	15.4% 5.4% - 36.7%	20.0% 3.6% - 62.9%	22.9% 12.3% - 38.8%
Observations		91	144	66	297

N/A: confidence interval could not be calculated.

Table D.27. Question C.5: What is the greatest concern your organization has associated with maintaining staffing during the pandemic? (select one)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Concern	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Availability of testing for illness	5.2% 3.0% - 9.1%	10.2% 6.0% - 16.6%	9.4% 4.8% - 17.9%	6.2% 4.1% - 9.3%
Availability of PPE	12.7% 8.9% - 17.9%	13.2% 9.6% - 17.9%	14.9% 8.9% - 24.0%	12.9% 9.7% - 17.0%
Ability to house personnel on site	1.7% 0.7% - 4.5%	3.4% 1.8% - 6.2%	3.6% 1.5% - 8.4%	2.1% 1.1% - 4.0%
Cross-training personnel	10.0% 6.6% - 14.8%	6.4% 4.0% - 10.1%	3.6% 1.5% - 8.4%	9.2% 6.4% - 13.0%
Protecting high-risk employees	19.9% 15.1% - 25.8%	28.0% 22.2% - 34.8%	20.4% 13.2% - 30.2%	21.3% 17.2% - 26.0%
Adhering to changing local and state	32.0% 26.1% - 38.6%	26.4% 20.6% - 33.1%	28.9% 19.7% - 40.3%	31.0% 26.1% - 36.3%
Other	18.4% 13.7% - 24.2%	12.5% 9.0% - 17.1%	19.1% 6.9% - 42.7%	17.4% 13.6% - 22.1%
Observations	239	229	87	555

Table D.28. Question D1.1.2: Please indicate the state of your organization's operating budget from January 2020 to the present
Wastewater Treatment Facilities
January to the Present

Parameter	Average Operating Budget by Population Served (Dollars)			
	< 10,000	10,000 - 99,999	100,000 or more	All
Budgeted	\$429,298	\$6,598,849	\$37,195,840	\$2,779,409
Revenue	\$271,304 - \$587,293	\$4,599,047 - \$8,598,651	\$19,933,940 - \$54,457,740	\$2,048,660 - \$3,510,159
Actual	\$384,127	\$6,022,095	\$36,490,040	\$2,624,270
Revenue	\$240,503 - \$527,750	\$4,248,025 - \$7,796,165	\$19,675,001 - \$53,305,079	\$1,922,033 - \$3,326,507
Budgeted	\$329,312	\$5,311,308	\$26,367,852	\$2,092,331
Expenses	\$216,229 - \$442,394	\$3,430,910 - \$7,191,706	\$17,344,372 - \$35,391,332	\$1,621,127 - \$2,563,534
Actual	\$292,847	\$4,595,734	\$24,650,398	\$1,884,492
Expenses	\$184,074 - \$401,619	\$3,005,737 - \$6,185,731	\$16,042,032 - \$33,258,764	\$1,451,679 - \$2,317,304
Observations	58	80	34	172

Table D.29. Average Budgeted and Actual Net Revenue (Calculated)**Wastewater Treatment Facilities****January to the Present****Estimates and 95 Percent Confidence Intervals**

Parameter	Average Net Revenue by Population Served (Dollars)			
	< 10,000	10,000 - 99,999	100,000 or more	All
Budgeted Net	\$99,987	\$1,287,541	\$10,827,987	\$687,078
Revenue	\$32,776 - \$167,197	\$572,923 - \$2,002,160	\$1,790,724 - \$19,865,250	\$334,492 - \$1,039,665
Actual Net	\$91,280	\$1,426,361	\$11,839,642	\$739,778
Revenue	\$26,662 - \$155,898	\$680,355 - \$2,172,367	\$2,932,919 - \$20,746,365	\$389,975 - \$1,089,582
Observations	58	80	34	172

Table D.30. Percentage of Utilities with a Deficit/Loss, and Total Deficit/Loss at Those Utilities (Calculated)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Parameter	Utility Deficits by Population Served (Dollars in Millions)			
	< 10,000	10,000 - 99,999	100,000 or more	All
Percentage of Utilities with Deficit/Loss	18% 10% - 31%	21% 13% - 32%	17% 8% - 34%	19% 12% - 29%
Total Deficit/Loss (Utilities with Deficit/Loss)	\$92.4 \$18.3 - \$166.5	\$442.3 -\$106.0 - \$990.6	\$128.3 \$24.5 - \$232.2	\$663.0 \$106.6 - \$1,219.4
Observations	58	80	34	172

Table D.31. Average Difference between Actual and Budgeted Net Revenue, Percentage of Utilities with a Shortfall, and Total Shortfall at Those Utilities (Calculated)

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Parameter	Difference between Actual and Budgeted Net Revenue by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Average Difference in Net Revenue (Actual Minus Budgeted Net Revenue)	-\$8,707 -\$67,336 - \$49,922	\$138,820 -\$164,368 - \$442,008	\$1,011,655 -\$134,255 - \$2,157,565	\$52,700 -\$27,440 - \$132,840
Percentage of Utilities with Shortfall	40% 28% - 54%	39% 26% - 55%	23% 11% - 41%	40% 29% - 51%
Total Shortfall in Utilities with Shortfall (Millions of Dollars)	\$458.8 \$81.0 - \$836.6	\$583.9 \$169.9 - \$997.9	\$263.9 \$30.6 - \$497.2	\$1,306.6 \$718.2 - \$1,895.0
Observations	58	80	34	172

Table D.32. Question D.1.2: Your answers indicate that actual operating revenue was lower than budgeted during the January to present period. What COVID-19-related factors contributed to this?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Nonpayment of bills	Mean Score (0 to 2)	0.85 0.58 - 1.12	0.69 0.42 - 0.96	0.99 0.65 - 1.33	0.83 0.61 - 1.06
	Not a Contributor (0)	40.1% 25.6% - 56.7%	43.3% 28.5% - 59.4%	22.8% 8.2% - 49.6%	39.9% 27.6% - 53.5%
	Contributor (1)	31.1% 18.1% - 47.9%	26.9% 15.2% - 42.9%	45.6% 23.5% - 69.6%	31.0% 20.1% - 44.7%
	Significant Contributor (2)	25.5% 13.9% - 42.2%	16.3% 7.5% - 31.8%	22.0% 9.2% - 44.0%	24.0% 14.2% - 37.5%
	Do Not Know	3.3% 0.6% - 16.3%	13.5% 5.7% - 28.7%	9.6% 1.4% - 43.9%	5.1% 2.0% - 12.7%
Decreased use	Mean Score (0 to 2)	0.35 0.13 - 0.57	0.42 0.21 - 0.63	0.59 0.25 - 0.94	0.37 0.19 - 0.56
	Not a Contributor (0)	75.5% 59.3% - 86.7%	56.9% 40.8% - 71.6%	50.0% 26.9% - 73.1%	71.6% 59.0% - 81.6%
	Contributor (1)	12.9% 5.5% - 27.4%	22.9% 12.2% - 38.9%	27.2% 10.9% - 53.2%	15.0% 8.2% - 26.0%
	Significant Contributor (2)	11.1% 4.2% - 26.4%	6.7% 2.0% - 19.7%	13.2% 4.2% - 34.5%	10.5% 4.6% - 22.5%
	Do Not Know	0.5% 0.1% - 3.5%	13.5% 5.7% - 28.7%	9.6% 1.4% - 43.9%	2.9% 1.4% - 5.6%

Table D.32. Question D.1.2: Your answers indicate that actual operating revenue was lower than budgeted during the January to present period. What COVID-19-related factors contributed to this?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Reduction in rates/fees	Mean Score (0 to 2)	0.03 -0.03 - 0.08	0.14 -0.02 - 0.31	0.15 -0.06 - 0.35	0.05 0.00 - 0.10
	Not a Contributor (0)	96.7% 83.7% - 99.4%	86.5% 71.3% - 94.3%	81.6% 53.8% - 94.4%	94.5% 87.1% - 97.8%
	Contributor (1)	2.8% 0.4% - 17.7%	2.7% 0.4% - 17.0%	4.4% 0.6% - 26.0%	2.8% 0.6% - 12.9%
	Significant Contributor (2)	0.0% N/A - N/A	5.4% 1.4% - 19.3%	4.4% 0.6% - 26.0%	1.0% 0.3% - 3.2%
	Do Not Know	0.5% 0.1% - 3.5%	5.4% 1.4% - 19.3%	9.6% 1.4% - 43.9%	1.6% 0.6% - 4.2%
Observations		41	38	18	97

N/A: confidence interval could not be calculated.

Table D.33. Question D.1.3: Your answers indicate that actual operating expenses were higher than budgeted during the January to present period. What COVID-19-related factors contributed?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Personnel Costs	Mean Score (0 to 2)	0.39 0.09 - 0.70	0.56 0.10 - 1.03	0.97 0.22 - 1.73	0.44 0.19 - 0.70
	Not a Contributor (0)	60.7% 30.0% - 84.7%	56.2% 29.0% - 80.1%	34.3% 4.8% - 84.5%	58.9% 34.0% - 79.9%
	Contributor (1)	39.3% 15.3% - 70.0%	19.7% 5.8% - 49.5%	34.3% 4.8% - 84.5%	35.8% 16.1% - 61.9%
	Significant Contributor (2)	0.0% N/A - N/A	16.1% 3.8% - 47.8%	31.4% 7.3% - 72.8%	4.0% 1.4% - 10.4%
	Do Not Know	0.0% N/A - N/A	8.0% 1.0% - 42.1%	0.0% N/A - N/A	1.4% 0.2% - 9.3%
Consumables	Mean Score (0 to 2)	0.70 0.30 - 1.10	1.00 0.75 - 1.25	0.97 0.22 - 1.73	0.76 0.44 - 1.08
	Not a Contributor (0)	39.3% 15.3% - 70.0%	8.0% 1.0% - 42.1%	34.3% 4.8% - 84.5%	33.8% 14.6% - 60.4%
	Contributor (1)	51.3% 23.2% - 78.6%	75.9% 45.1% - 92.4%	34.3% 4.8% - 84.5%	54.8% 30.5% - 77.0%
	Significant Contributor (2)	9.4% 1.2% - 48.0%	8.0% 1.0% - 42.1%	31.4% 7.3% - 72.8%	10.0% 2.1% - 37.1%
	Do Not Know	0.0% N/A - N/A	8.0% 1.0% - 42.1%	0.0% N/A - N/A	1.4% 0.2% - 9.3%

Table D.33. Question D.1.3: Your answers indicate that actual operating expenses were higher than budgeted during the January to present period. What COVID-19-related factors contributed?

Wastewater Treatment Facilities

January to the Present

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Utilities Costs	Mean Score (0 to 2)	0.31 0.00 - 0.62	0.32 0.05 - 0.59	0.34 -0.19 - 0.87	0.31 0.07 - 0.56
	Not a Contributor (0)	62.4% 31.1% - 85.9%	67.9% 38.3% - 87.8%	65.7% 15.5% - 95.2%	63.4% 37.5% - 83.4%
	Contributor (1)	28.2% 8.8% - 61.6%	32.1% 12.2% - 61.7%	34.3% 4.8% - 84.5%	29.1% 11.8% - 55.7%
	Significant Contributor (2)	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A	0.0% N/A - N/A
	Do Not Know	9.4% 1.2% - 48.0%	0.0% N/A - N/A	0.0% N/A - N/A	7.4% 0.9% - 40.6%
PPE	Mean Score (0 to 2)	0.32 0.03 - 0.60	0.83 0.49 - 1.17	0.63 -0.13 - 1.39	0.41 0.17 - 0.65
	Not a Contributor (0)	68.3% 36.5% - 89.0%	24.1% 7.6% - 54.9%	68.6% 27.2% - 92.7%	60.8% 37.0% - 80.4%
	Contributor (1)	31.7% 11.0% - 63.5%	59.9% 31.7% - 82.7%	0.0% N/A - N/A	35.2% 16.4% - 60.1%
	Significant Contributor (2)	0.0% N/A - N/A	8.0% 1.0% - 42.1%	31.4% 7.3% - 72.8%	2.6% 0.8% - 8.1%
	Do Not Know	0.0% N/A - N/A	8.0% 1.0% - 42.1%	0.0% N/A - N/A	1.4% 0.2% - 9.3%
Observations		14	13	4	31

N/A: confidence interval could not be calculated.

Table D.34. Question D.2.1: Do you expect your financial situation for the remainder of the year to improve, to worsen, or to stay about the same, compared with the January to present timeframe?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Value Type	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Operating Revenue	Mean Score (0 to 2)	1.03 0.97 - 1.10	1.02 0.96 - 1.08	1.05 0.95 - 1.14	1.03 0.98 - 1.08
	Improve (0)	7.6% 4.8% - 12.0%	8.5% 5.6% - 12.7%	7.9% 3.5% - 16.5%	7.8% 5.3% - 11.3%
	Stay About the Same (1)	68.8% 62.3% - 74.6%	70.3% 64.1% - 75.9%	74.1% 63.1% - 82.8%	69.2% 63.9% - 74.1%
	Worsen (2)	10.4% 7.0% - 15.2%	10.2% 7.0% - 14.6%	12.4% 7.1% - 20.6%	10.4% 7.5% - 14.3%
	Do Not Know	13.2% 9.2% - 18.4%	11.0% 7.6% - 15.6%	5.6% 2.7% - 11.2%	12.6% 9.3% - 16.8%
Operating Expenses	Mean Score (0 to 2)	1.09 1.04 - 1.15	1.01 0.96 - 1.05	1.02 0.94 - 1.09	1.08 1.03 - 1.12
	Improve (0)	2.0% 0.8% - 5.1%	5.5% 3.2% - 9.2%	6.0% 2.3% - 14.8%	2.7% 1.5% - 4.9%
	Stay About the Same (1)	72.4% 66.0% - 78.0%	81.3% 75.8% - 85.7%	85.6% 76.4% - 91.6%	74.3% 69.0% - 78.9%
	Worsen (2)	10.0% 6.7% - 14.9%	6.2% 3.8% - 9.9%	7.5% 4.0% - 13.6%	9.3% 6.5% - 13.2%
	Do Not Know	15.5% 11.2% - 21.0%	7.1% 4.5% - 11.0%	0.9% 0.2% - 5.0%	13.7% 10.2% - 18.1%
Observations		236	217	85	538

Table D.35. Question D.2.2: To what COVID-19-related factors do you attribute the worsening outlook for operating revenue in the remainder of 2020?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Nonpayment of bills	Mean Score (0 to 2)	1.18 0.81 - 1.56	1.36 1.09 - 1.62	0.91 0.42 - 1.41	1.20 0.90 - 1.50
	Not a Contributor (0)	26.5% 11.8% - 49.3%	9.0% 2.2% - 30.1%	33.7% 12.5% - 64.6%	24.0% 11.9% - 42.5%
	Contributor (1)	24.7% 10.4% - 47.9%	46.5% 27.7% - 66.4%	27.2% 8.5% - 60.1%	28.3% 15.4% - 46.0%
	Significant Contributor (2)	44.0% 24.6% - 65.4%	44.5% 26.0% - 64.7%	26.0% 9.6% - 53.9%	43.1% 27.1% - 60.7%
	Do Not Know	4.9% 0.6% - 29.3%	0.0% N/A - N/A	13.0% 3.1% - 41.0%	4.6% 0.8% - 22.1%
Decreased use	Mean Score (0 to 2)	0.43 0.11 - 0.75	0.75 0.43 - 1.07	0.71 0.36 - 1.06	0.50 0.25 - 0.76
	Not a Contributor (0)	61.0% 39.1% - 79.2%	46.9% 28.0% - 66.8%	33.7% 12.5% - 64.6%	57.4% 40.1% - 73.0%
	Contributor (1)	19.3% 7.8% - 40.3%	31.0% 15.7% - 52.1%	53.3% 25.9% - 78.8%	22.9% 12.3% - 38.5%
	Significant Contributor (2)	9.9% 2.4% - 33.0%	22.1% 9.7% - 42.8%	6.5% 0.9% - 35.7%	11.6% 4.3% - 27.6%
	Do Not Know	9.9% 2.4% - 33.0%	0.0% N/A - N/A	6.5% 0.9% - 35.7%	8.1% 2.1% - 26.8%

Table D.35. Question D.2.2: To what COVID-19-related factors do you attribute the worsening outlook for operating revenue in the remainder of 2020?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Reduction in rates/fees	Mean Score (0 to 2)	0.12 -0.11 - 0.34	0.40 0.16 - 0.64	0.26 -0.04 - 0.56	0.18 -0.01 - 0.36
	Not a Contributor (0)	80.3% 57.0% - 92.6%	64.5% 43.5% - 81.1%	80.5% 52.5% - 93.9%	77.8% 60.2% - 89.0%
	Contributor (1)	0.0% N/A - N/A	31.0% 15.7% - 52.1%	13.0% 3.1% - 41.0%	5.6% 3.1% - 10.0%
	Significant Contributor (2)	4.9% 0.6% - 29.3%	4.5% 0.6% - 26.5%	6.5% 0.9% - 35.7%	4.9% 1.0% - 21.6%
	Do Not Know	14.8% 4.7% - 38.0%	0.0% N/A - N/A	0.0% N/A - N/A	11.7% 3.8% - 30.9%
Observations		26	25	13	64

N/A: confidence interval could not be calculated.

Table D.36. Question D.2.3: To what COVID-19-related factors do you attribute the worsening outlook for operating expenses in the remainder of 2020?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Personnel Costs	Mean Score (0 to 2)	0.54 0.20 - 0.88	1.11 0.75 - 1.48	1.13 0.55 - 1.70	0.62 0.32 - 0.92
	Not a Contributor (0)	58.4% 36.5% - 77.4%	18.3% 5.4% - 46.8%	25.0% 5.8% - 64.5%	53.3% 34.8% - 70.9%
	Contributor (1)	22.1% 9.2% - 44.4%	52.0% 26.5% - 76.5%	37.5% 11.6% - 73.2%	25.7% 13.2% - 44.0%
	Significant Contributor (2)	14.6% 4.6% - 37.8%	29.7% 11.2% - 58.7%	37.5% 11.6% - 73.2%	16.8% 6.9% - 35.5%
	Do Not Know	4.9% 0.6% - 29.1%	0.0% N/A - N/A	0.0% N/A - N/A	4.2% 0.6% - 25.9%
Consumables	Mean Score (0 to 2)	1.11 0.73 - 1.49	1.41 1.06 - 1.75	0.88 0.30 - 1.45	1.13 0.81 - 1.46
	Not a Contributor (0)	25.2% 10.9% - 48.3%	7.4% 1.0% - 40.0%	37.5% 11.6% - 73.2%	23.7% 11.0% - 44.0%
	Contributor (1)	30.1% 14.1% - 53.1%	44.6% 21.0% - 70.9%	37.5% 11.6% - 73.2%	31.8% 17.0% - 51.6%
	Significant Contributor (2)	35.0% 17.5% - 57.7%	48.0% 23.5% - 73.5%	25.0% 5.8% - 64.5%	36.0% 20.1% - 55.8%
	Do Not Know	9.7% 2.3% - 32.8%	0.0% N/A - N/A	0.0% N/A - N/A	8.4% 2.0% - 29.0%

Table D.36. Question D.2.3: To what COVID-19-related factors do you attribute the worsening outlook for operating expenses in the remainder of 2020?

Wastewater Treatment Facilities

Present to December

Estimates and 95 Percent Confidence Intervals

Factor	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Utilities Costs	Mean Score (0 to 2)	0.63 0.33 - 0.94	0.97 0.48 - 1.45	0.13 -0.12 - 0.37	0.65 0.39 - 0.92
	Not a Contributor (0)	44.7% 24.9% - 66.4%	40.6% 18.3% - 67.5%	87.5% 43.2% - 98.5%	45.5% 27.6% - 64.5%
	Contributor (1)	40.7% 21.8% - 62.8%	22.3% 7.0% - 52.1%	12.5% 1.5% - 56.8%	38.0% 21.5% - 57.9%
	Significant Contributor (2)	9.7% 2.3% - 32.8%	37.2% 15.8% - 65.0%	0.0% N/A - N/A	12.3% 4.5% - 29.7%
	Do Not Know	4.9% 0.6% - 29.1%	0.0% N/A - N/A	0.0% N/A - N/A	4.2% 0.6% - 25.9%
PPE	Mean Score (0 to 2)	0.49 0.18 - 0.80	1.18 0.82 - 1.55	0.75 0.26 - 1.24	0.57 0.30 - 0.84
	Not a Contributor (0)	59.3% 37.2% - 78.2%	14.9% 3.5% - 45.4%	37.5% 11.6% - 73.2%	54.0% 35.4% - 71.6%
	Contributor (1)	25.2% 10.9% - 48.3%	52.0% 26.5% - 76.5%	50.0% 18.7% - 81.3%	28.7% 15.0% - 48.0%
	Significant Contributor (2)	10.6% 2.8% - 32.7%	33.1% 13.5% - 61.2%	12.5% 1.5% - 56.8%	13.0% 5.0% - 30.0%
	Do Not Know	4.9% 0.6% - 29.1%	0.0% N/A - N/A	0.0% N/A - N/A	4.2% 0.6% - 25.9%
Observations		23	14	8	45

N/A: confidence interval could not be calculated.

Table D.37. Question D.3.1: If your organization has experienced or anticipates a decrease in cash flow due to COVID-19, what mitigating actions are you taking or planning? (select all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Response	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Drawing down days cash on hand	12.3% 8.4% - 17.9%	9.2% 6.1% - 13.7%	16.9% 10.4% - 26.4%	12.0% 8.7% - 16.4%
Drawing on reserve funds	26.9% 21.1% - 33.6%	33.7% 27.1% - 41.1%	32.0% 21.8% - 44.4%	28.2% 23.3% - 33.7%
Delaying maintenance	22.5% 17.1% - 29.0%	25.8% 19.7% - 33.1%	16.9% 10.4% - 26.4%	22.8% 18.3% - 28.1%
Reducing staff hours	8.3% 5.1% - 13.2%	4.6% 2.6% - 8.2%	3.0% 1.1% - 7.9%	7.5% 4.9% - 11.4%
Reducing staff pay and/or benefits	1.6% 0.5% - 5.0%	4.9% 2.7% - 8.6%	4.1% 1.3% - 12.1%	2.3% 1.1% - 4.5%
Laying off staff	2.7% 1.2% - 6.4%	3.2% 1.6% - 6.3%	1.0% 0.2% - 5.3%	2.8% 1.4% - 5.5%
Incurring additional debt	4.5% 2.3% - 8.6%	5.6% 3.3% - 9.3%	3.9% 1.6% - 9.2%	4.7% 2.8% - 7.8%
Refinancing debt and/or deferring debt payments	4.5% 2.3% - 8.6%	3.2% 1.6% - 6.3%	6.9% 3.5% - 13.1%	4.4% 2.5% - 7.5%
Delaying/canceling capital improvement projects	25.5% 19.8% - 32.2%	39.3% 32.4% - 46.6%	34.0% 23.3% - 46.6%	28.1% 23.2% - 33.5%
Adjusting rates higher than originally planned	8.1% 5.0% - 12.9%	10.0% 6.7% - 14.7%	5.1% 1.9% - 12.9%	8.3% 5.6% - 12.1%
Not applicable (no decrease in cash flow)	47.3% 40.3% - 54.4%	36.7% 30.0% - 44.1%	37.1% 22.3% - 54.7%	45.2% 39.5% - 51.1%
Observations	210	202	80	492

Table D.38. Question D.3.2: What type of impact do you think these actions are making or will make in mitigating the decrease in your organization's cash flow?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Action	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Drawing down days cash on hand	Mean Score (1 to 2)	1.17 1.00 - 1.35	1.28 1.05 - 1.52	1.07 0.94 - 1.19	1.18 1.03 - 1.33
	Small Impact (1)	68.0% 46.2% - 84.0%	52.7% 31.0% - 73.3%	82.5% 57.0% - 94.4%	66.8% 48.9% - 80.9%
	Large Impact (2)	14.2% 4.8% - 35.4%	20.8% 8.2% - 43.5%	5.8% 0.8% - 32.2%	14.6% 6.0% - 31.2%
	Do Not Know	17.8% 6.7% - 39.8%	26.6% 11.3% - 50.6%	11.6% 2.9% - 37.0%	18.6% 8.5% - 36.0%
	Observations	25	21	16	62
Drawing on reserve funds	Mean Score (1 to 2)	1.28 1.14 - 1.42	1.33 1.19 - 1.46	1.41 1.20 - 1.62	1.29 1.18 - 1.41
	Small Impact (1)	55.4% 41.5% - 68.5%	55.0% 41.8% - 67.6%	49.7% 32.0% - 67.5%	55.1% 44.1% - 65.6%
	Large Impact (2)	21.3% 12.1% - 34.9%	26.8% 17.4% - 39.1%	34.9% 19.3% - 54.6%	23.0% 15.3% - 33.1%
	Do Not Know	23.2% 13.5% - 37.0%	18.1% 10.6% - 29.3%	15.4% 6.6% - 31.7%	21.9% 14.1% - 32.4%
	Observations	59	67	29	155
Delaying maintenance	Mean Score (1 to 2)	1.26 1.12 - 1.41	1.34 1.15 - 1.53	1.26 1.04 - 1.49	1.28 1.16 - 1.40
	Small Impact (1)	61.1% 45.7% - 74.6%	57.7% 40.7% - 73.0%	65.1% 40.3% - 83.7%	60.6% 48.0% - 71.8%
	Large Impact (2)	21.8% 11.9% - 36.5%	30.1% 15.7% - 49.8%	23.3% 8.9% - 48.4%	23.4% 14.6% - 35.2%
	Do Not Know	17.1% 8.3% - 32.0%	12.3% 5.7% - 24.3%	11.6% 2.9% - 36.4%	16.1% 8.7% - 27.7%
	Observations	51	52	16	119

Table D.38. Question D.3.2: What type of impact do you think these actions are making or will make in mitigating the decrease in your organization's cash flow?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Action	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Reducing staff hours	Mean Score (1 to 2)	1.44 1.09 - 1.79	1.25 0.75 - 1.75	1.00 N/A - N/A	1.42 1.10 - 1.73
	Small Impact (1)	33.7% 14.3% - 60.8%	31.7% 9.7% - 66.7%	100.0% N/A - N/A	34.5% 16.4% - 58.5%
	Large Impact (2)	26.5% 9.8% - 54.5%	10.6% 1.3% - 52.2%	0.0% N/A - N/A	24.5% 9.6% - 49.9%
	Do Not Know	39.8% 18.3% - 66.1%	57.7% 25.8% - 84.3%	0.0% N/A - N/A	41.0% 21.1% - 64.4%
	Observations	16	10	3	29
Reducing staff pay and/or benefits	Mean Score (1 to 2)	1.67 0.97 - 2.36	1.00 N/A - N/A	1.00 N/A - N/A	1.46 0.98 - 1.94
	Small Impact (1)	33.3% 2.3% - 91.5%	60.0% 27.3% - 85.7%	76.1% 13.4% - 98.5%	45.7% 13.6% - 81.7%
	Large Impact (2)	66.7% 8.5% - 97.7%	0.0% N/A - N/A	0.0% N/A - N/A	38.6% 10.6% - 76.9%
	Do Not Know	0.0% N/A - N/A	40.0% 14.3% - 72.7%	23.9% 1.5% - 86.6%	15.8% 6.8% - 32.5%
	Observations	3	10	3	16
Laying off staff	Mean Score (1 to 2)	1.67 0.96 - 2.37	1.81 1.49 - 2.13	1.00 N/A - N/A	1.67 1.07 - 2.27
	Small Impact (1)	20.0% 1.9% - 76.2%	7.1% 1.0% - 36.9%	100.0% N/A - N/A	18.6% 2.6% - 66.3%
	Large Impact (2)	40.0% 7.7% - 84.3%	31.0% 6.4% - 74.6%	0.0% N/A - N/A	37.8% 9.7% - 77.4%
	Do Not Know	40.0% 7.7% - 84.3%	61.9% 22.3% - 90.2%	0.0% N/A - N/A	43.6% 12.9% - 80.1%
	Observations	5	7	1	13

Table D.38. Question D.3.2: What type of impact do you think these actions are making or will make in mitigating the decrease in your organization's cash flow?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Action	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Incurring additional debt	Mean Score (1 to 2)	1.77 1.29 - 2.24	1.27 0.93 - 1.61	2.00 N/A - N/A	1.66 1.30 - 2.02
	Small Impact (1)	12.1% 1.4% - 57.1%	47.2% 21.8% - 74.2%	0.0% N/A - N/A	18.6% 5.9% - 45.5%
	Large Impact (2)	39.5% 12.9% - 74.2%	17.6% 4.1% - 51.6%	50.0% 10.8% - 89.2%	35.6% 14.0% - 65.1%
	Do Not Know	48.4% 17.8% - 80.2%	35.2% 13.3% - 65.7%	50.0% 10.8% - 89.2%	45.9% 20.9% - 73.0%
	Observations	10	13	4	27
Refinancing debt and/or deferring debt payments	Mean Score (1 to 2)	1.70 1.22 - 2.18	1.33 0.86 - 1.79	1.14 0.86 - 1.42	1.59 1.23 - 1.96
	Small Impact (1)	15.3% 2.6% - 54.7%	46.5% 14.0% - 82.2%	85.7% 38.2% - 98.3%	23.1% 8.5% - 49.2%
	Large Impact (2)	36.3% 10.9% - 72.7%	22.6% 4.3% - 65.3%	14.3% 1.7% - 61.8%	33.4% 11.7% - 65.5%
	Do Not Know	48.4% 17.7% - 80.4%	31.0% 6.8% - 73.5%	0.0% N/A - N/A	43.5% 18.1% - 72.8%
	Observations	10	7	7	24
Delaying/ canceling capital improvement projects	Mean Score (1 to 2)	1.46 1.30 - 1.61	1.31 1.18 - 1.43	1.39 1.20 - 1.59	1.42 1.30 - 1.54
	Small Impact (1)	46.3% 32.6% - 60.5%	54.0% 41.5% - 66.1%	49.7% 32.7% - 66.9%	48.3% 37.8% - 59.0%
	Large Impact (2)	38.6% 25.9% - 53.1%	23.7% 15.6% - 34.4%	32.4% 18.2% - 50.7%	34.8% 25.3% - 45.7%
	Do Not Know	15.1% 7.3% - 28.6%	22.2% 14.3% - 32.9%	17.9% 7.5% - 37.0%	16.9% 10.5% - 26.1%
	Observations	53	82	31	166

Table D.38. Question D.3.2: What type of impact do you think these actions are making or will make in mitigating the decrease in your organization's cash flow?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Action	Response	Percentage Reporting by Population Served			
		< 10,000	10,000 - 99,999	100,000 or more	All
Adjusting rates higher than originally planned	Mean Score (1 to 2)	1.64 1.30 - 1.97	1.54 1.30 - 1.78	1.81 1.41 - 2.21	1.62 1.37 - 1.86
	Small Impact (1)	21.6% 7.2% - 49.6%	39.1% 20.6% - 61.4%	19.3% 1.8% - 75.4%	25.0% 11.7% - 45.7%
	Large Impact (2)	37.7% 17.1% - 63.9%	46.2% 26.2% - 67.6%	80.7% 24.6% - 98.2%	40.4% 22.7% - 61.0%
	Do Not Know	40.7% 19.0% - 66.8%	14.7% 4.7% - 37.7%	0.0% N/A - N/A	34.6% 17.7% - 56.6%
	Observations	18	21	4	43

N/A: confidence interval could not be calculated.

Table D.39. Question D.4: Which of the following is your organization considering regarding capital infrastructure projects due to COVID-19? (select all that apply)
Wastewater Treatment Facilities
Estimates and 95 Percent Confidence Intervals

Changes	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Not applicable (no projects planned)	37.4% 31.1% - 44.2%	8.1% 5.3% - 12.3%	4.0% 1.3% - 11.8%	31.6% 26.5% - 37.2%
No changes to current or planned projects	34.8% 28.6% - 41.5%	55.0% 47.9% - 61.8%	44.3% 31.5% - 57.9%	38.3% 33.1% - 43.8%
Pausing/slowng a project for which construction has begun	3.5% 1.7% - 7.2%	9.5% 5.3% - 16.6%	8.7% 4.8% - 15.3%	4.7% 2.9% - 7.5%
Delaying starting a project	9.9% 6.5% - 14.8%	20.2% 15.5% - 25.8%	25.3% 16.9% - 36.0%	12.1% 9.1% - 15.9%
Accelerating starting a project	3.1% 1.4% - 6.6%	1.1% 0.4% - 3.4%	17.5% 5.3% - 44.3%	3.3% 1.8% - 6.1%
Reducing the scope or funding for a project which construction has begun	1.1% 0.3% - 3.8%	3.5% 1.8% - 6.6%	4.8% 2.2% - 10.3%	1.6% 0.8% - 3.3%
Increasing the scope or funding for a project (current or planned)	1.5% 0.5% - 4.5%	3.0% 1.5% - 6.0%	3.9% 1.6% - 9.0%	1.8% 0.8% - 3.9%
Delaying applying for a subsidized loan/grant by at least six months	1.2% 0.4% - 3.8%	2.3% 1.0% - 4.9%	3.1% 0.8% - 11.4%	1.4% 0.6% - 3.2%
Accelerating interest in applying for a subsidized loan/grant for a shovel-ready project	1.1% 0.3% - 3.8%	4.4% 2.5% - 7.8%	4.8% 2.2% - 10.3%	1.8% 0.9% - 3.5%
Other	4.2% 2.2% - 8.0%	2.1% 0.9% - 4.8%	1.9% 0.6% - 6.4%	3.8% 2.1% - 6.8%
Do not know	5.7% 3.3% - 9.9%	4.2% 2.3% - 7.6%	1.9% 0.6% - 6.4%	5.4% 3.3% - 8.6%
Observations	229	213	82	524

Table D.40. Question D.5: In response to COVID-19, what actions has your organization taken to help alleviate economic impacts on customers? (select all that apply)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Actions	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Suspended service shutoffs	43.5% 37.0% - 50.2%	52.5% 45.5% - 59.4%	47.8% 33.9% - 62.1%	45.0% 39.6% - 50.6%
Waived late payment fees	34.6% 28.6% - 41.2%	35.6% 29.2% - 42.6%	31.8% 21.9% - 43.7%	34.7% 29.6% - 40.1%
Provided extensions on bill payment	39.1% 32.8% - 45.8%	42.8% 36.1% - 49.8%	35.6% 24.9% - 47.9%	39.6% 34.3% - 45.1%
Expanded customer assistance programs	5.6% 3.2% - 9.6%	12.6% 9.0% - 17.4%	19.1% 12.2% - 28.6%	7.1% 4.9% - 10.2%
Expanded water conservation programs	0.0% N/A - N/A	2.3% 1.0% - 5.2%	2.8% 1.0% - 7.5%	0.5% 0.2% - 0.9%
Delayed or eliminated planned rate adjustment	4.6% 2.5% - 8.3%	11.5% 8.1% - 16.2%	14.2% 8.8% - 22.1%	6.0% 4.0% - 8.8%
Lowered rates	0.0% N/A - N/A	0.5% 0.1% - 2.9%	11.3% 1.8% - 47.1%	0.5% 0.1% - 2.4%
Other	1.0% 0.2% - 3.8%	2.1% 0.9% - 4.7%	5.9% 2.5% - 13.3%	1.3% 0.6% - 3.1%
None (no actions taken)	31.7% 25.8% - 38.3%	18.7% 14.2% - 24.2%	20.2% 12.9% - 30.4%	29.3% 24.4% - 34.7%
Do not know	7.6% 4.7% - 12.0%	16.6% 11.4% - 23.5%	9.6% 5.1% - 17.5%	9.1% 6.5% - 12.6%
Observations	236	215	84	535

N/A: confidence interval could not be calculated.

Table D.41. Question E1: What COVID-19-related conditions have interfered with your organization's ability to complete the required sampling needed to operate your system and to determine compliance with regulations?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Response	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Lack of available personnel for sample collection	1.7% 0.6% - 4.5%	5.7% 3.4% - 9.4%	10.6% 6.1% - 17.8%	2.7% 1.5% - 4.5%
Lack of available supplies for sampling and/or shipping	1.2% 0.4% - 3.8%	3.2% 1.6% - 6.3%	0.0% N/A - N/A	1.5% 0.7% - 3.2%
Lack of available personal protective equipment	1.2% 0.4% - 3.8%	3.2% 1.6% - 6.3%	5.0% 1.9% - 12.6%	1.6% 0.8% - 3.3%
Lack of access to approved monitoring locations	1.6% 0.5% - 4.5%	6.2% 3.8% - 10.0%	8.7% 4.8% - 15.3%	2.6% 1.5% - 4.5%
Other	0.7% 0.2% - 2.9%	2.3% 1.0% - 5.2%	1.0% 0.2% - 5.2%	0.9% 0.4% - 2.3%
None	93.0% 88.7% - 95.7%	83.9% 78.7% - 88.1%	79.6% 69.7% - 86.8%	91.1% 87.8% - 93.5%
Do not know	1.0% 0.3% - 3.8%	0.9% 0.2% - 3.3%	1.0% 0.2% - 5.2%	1.0% 0.3% - 3.0%
Observations	233	216	82	531

N/A: confidence interval could not be calculated.

Table D.42. Question E2: What COVID-19-related conditions have interfered with your organization's ability to complete required laboratory analyses needed to operate your system and to determine compliance with regulations?

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Response	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Lack of available laboratory personnel	1.8% 0.7% - 4.5%	6.2% 3.8% - 10.0%	15.3% 9.6% - 23.5%	2.9% 1.8% - 4.8%
Lack of available supplies for sampling and/or shipping	0.6% 0.1% - 3.1%	1.8% 0.7% - 4.6%	0.0% N/A - N/A	0.8% 0.3% - 2.3%
Lack of available personal protective equipment	0.7% 0.2% - 2.9%	3.0% 1.5% - 6.0%	4.0% 1.3% - 11.7%	1.2% 0.5% - 2.5%
Internal laboratory capacity shortages that delay timely analysis	0.5% 0.1% - 3.4%	0.5% 0.1% - 2.9%	5.7% 2.8% - 11.4%	0.7% 0.2% - 2.2%
Decreased access to external laboratory services	1.5% 0.5% - 4.5%	2.5% 1.2% - 5.4%	4.8% 2.2% - 10.2%	1.8% 0.8% - 3.8%
Delays in external laboratory services	4.6% 2.5% - 8.5%	4.2% 2.3% - 7.5%	6.7% 3.4% - 12.7%	4.6% 2.8% - 7.6%
Sample transport delays	2.2% 0.9% - 5.2%	3.7% 1.9% - 7.0%	2.9% 1.1% - 7.6%	2.4% 1.3% - 4.7%
Travel restrictions	1.1% 0.3% - 3.8%	0.9% 0.3% - 3.3%	3.8% 1.6% - 8.9%	1.2% 0.4% - 3.0%
Revenue interruption	1.1% 0.3% - 3.8%	0.2% 0.0% - 1.1%	0.0% N/A - N/A	0.9% 0.3% - 3.0%
Other	0.0% N/A - N/A	3.2% 1.6% - 6.4%	5.7% 2.8% - 11.4%	0.7% 0.4% - 1.2%
None	88.5% 83.5% - 92.1%	81.8% 76.4% - 86.2%	73.1% 62.2% - 81.7%	86.9% 82.9% - 90.1%
Do not know	2.1% 0.8% - 5.2%	1.4% 0.5% - 4.0%	1.0% 0.2% - 5.1%	1.9% 0.9% - 4.3%
Observations	233	215	83	531

N/A: confidence interval could not be calculated.

Table D.43. Question F1: Has your organization experienced any issues or concerns related to cybersecurity during the pandemic? (Yes/No)

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Response	Percentage Reporting by Population Served			
	< 10,000	10,000 - 99,999	100,000 or more	All
Percentage of Systems	2.1%	4.4%	12.7%	2.8%
with Cybersecurity Concerns	0.8% - 5.1%	2.4% - 7.7%	7.3% - 21.3%	1.6% - 4.9%
Observations	235	216	82	533

Table D.44. G1. Looking ahead to the next several months, please indicate your level of concern about topics covered in this survey.

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Topics of Concern	Response	Percentage Reporting by Population Served			
		< 10,000	> 10,000	100,000 or more	All
Supply Chain	Mean Score	0.73 0.64 - 0.82	0.97 0.86 - 1.07	0.91 0.81 - 1.01	0.77 0.70 - 0.85
	No Concern	36.6% 30.3% - 43.5%	19.4% 14.8% - 25.0%	14.9% 8.9% - 24.0%	33.1% 28.0% - 38.8%
	Mild Concern	50.3% 43.5% - 57.1%	63.2% 55.7% - 70.2%	76.8% 65.6% - 85.2%	53.3% 47.6% - 58.9%
	Serious Concern	10.3% 6.9% - 15.2%	16.0% 10.1% - 24.4%	6.3% 2.4% - 15.6%	11.1% 8.0% - 15.1%
	Do Not Know	2.7% 1.2% - 6.0%	1.4% 0.5% - 4.1%	2.0% 0.6% - 6.5%	2.5% 1.2% - 5.1%
	Observations	228	209	80	517
Workforce	Mean Score	0.70 0.61 - 0.80	1.05 0.97 - 1.14	1.00 0.75 - 1.25	0.77 0.69 - 0.85
	No Concern	41.7% 35.1% - 48.6%	20.5% 15.8% - 26.2%	24.2% 10.7% - 46.2%	37.7% 32.3% - 43.4%
	Mild Concern	42.7% 36.0% - 49.6%	53.3% 46.4% - 60.1%	51.3% 37.0% - 65.4%	44.7% 39.2% - 50.3%
	Serious Concern	12.9% 9.0% - 18.3%	25.8% 20.5% - 31.8%	24.5% 16.1% - 35.4%	15.4% 12.0% - 19.6%
	Do Not Know	2.7% 1.2% - 6.0%	0.5% 0.1% - 2.9%	0.0% N/A - N/A	2.2% 1.0% - 4.9%
	Observations	226	213	82	521

Table D.44. G1. Looking ahead to the next several months, please indicate your level of concern about topics covered in this survey.

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Topics of Concern	Response	Percentage Reporting by Population Served			
		< 10,000	> 10,000	100,000 or more	All
Financial	Mean Score	0.71 0.62 - 0.81	0.72 0.63 - 0.82	0.76 0.54 - 0.98	0.72 0.64 - 0.80
	No Concern	42.5% 35.8% - 49.4%	38.6% 31.9% - 45.8%	36.7% 22.1% - 54.3%	41.7% 36.1% - 47.4%
	Mild Concern	41.4% 34.7% - 48.3%	46.7% 39.7% - 53.8%	48.2% 34.3% - 62.3%	42.5% 37.0% - 48.2%
	Serious Concern	14.4% 10.2% - 20.0%	11.9% 8.3% - 16.6%	13.2% 7.3% - 22.7%	14.0% 10.5% - 18.4%
	Do Not Know	1.7% 0.6% - 4.7%	2.9% 1.4% - 6.0%	2.0% 0.6% - 6.5%	1.9% 0.9% - 4.1%
	Observations	223	208	80	511
Analytical Support	Mean Score	0.33 0.26 - 0.40	0.47 0.39 - 0.55	0.45 0.29 - 0.60	0.36 0.30 - 0.42
	No Concern	66.2% 59.3% - 72.4%	55.5% 48.4% - 62.5%	59.5% 46.0% - 71.8%	64.2% 58.6% - 69.4%
	Mild Concern	28.8% 22.9% - 35.5%	38.8% 32.0% - 46.0%	36.3% 25.0% - 49.5%	30.7% 25.7% - 36.1%
	Serious Concern	1.7% 0.6% - 4.7%	3.3% 1.7% - 6.6%	4.1% 1.3% - 12.1%	2.0% 1.0% - 4.2%
	Do Not Know	3.3% 1.6% - 6.9%	2.4% 1.0% - 5.4%	0.0% N/A - N/A	3.1% 1.6% - 5.9%
	Observations	222	208	80	510

Table D.44. G1. Looking ahead to the next several months, please indicate your level of concern about topics covered in this survey.

Wastewater Treatment Facilities

Estimates and 95 Percent Confidence Intervals

Topics of Concern	Response	Percentage Reporting by Population Served			
		< 10,000	> 10,000	100,000 or more	All
Cybersecurity	Mean Score	0.27 0.20 - 0.34	0.45 0.37 - 0.52	0.68 0.54 - 0.81	0.31 0.26 - 0.37
	No Concern	72.7% 66.2% - 78.4%	56.0% 48.8% - 63.0%	39.9% 28.0% - 53.2%	68.9% 63.5% - 73.7%
	Mild Concern	21.6% 16.5% - 27.8%	39.7% 32.8% - 46.9%	51.2% 37.1% - 65.1%	25.6% 21.1% - 30.6%
	Serious Concern	2.3% 0.9% - 5.5%	1.9% 0.8% - 4.8%	7.9% 4.2% - 14.4%	2.4% 1.2% - 4.8%
	Do Not Know	3.4% 1.6% - 7.0%	2.4% 1.1% - 5.4%	1.0% 0.2% - 5.3%	3.1% 1.6% - 5.9%
	Observations	222	206	80	508

N/A: confidence interval could not be calculated.