Needham Board of Health

AGENDA

Thursday January 23, 2020
7:00 – 9:00 p.m.

Multi-Purpose Room
Center at the Heights
300 Hillside Avenue, Needham MA 02494

- **7:00 to 7:05 – Welcome & Review of Minutes (December 10th)**
- **7:05 to 7:25 – PFAS and Water Supply: *Discussion with Water & Sewer Superintendent Sean Harrington and Water Treatment Plant Manager Steve Cusick***
- **7:25 to 7:45 – Staff Reports (December)**
- **7:45 to 8:00 – Continued Board Discussion about Enforceable Agreement for Sewer Connection at 57 Walker Lane Septic System**
- **8:00 to 8:10 – Domestic Violence Action Committee and January Book Club Event on *No Visible Bruises: What We Don't Know About Domestic Violence Can Kill Us***
- **8:10 to 8:40 – Health Needs Assessment of the Needham Housing Authority**
- **8:40 to 8:45 – FY 2021 Public Health Division and Health & Human Services Department Budgets**
- **8:45 to 8:50 – Board of Health Vote: Agent Re-designation and Board of Health Directive to Director and Staff re: Educating and Informing Community about Health Implications of Policies and Programs**
- **8:50 to 9:00 – Continued Policy Discussion re: Residential Parcels and Distance from Points of Sale for Intoxicating Substances**
- **Other Items – Next BOH meeting on Thursday, Feb. 27th from 9-11 AM @ RRC Multi-Purpose Room**
- **Adjournment**

(Please note that all times are approximate)

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Board of Health
TOWN OF NEEDHAM
AGENDA FACT SHEET

Prevent. Promote. Protect.

MEETING DATE: 1/23/2020

Agenda Item	PFAS
Presenter(s)	Tara Gurge, Assistant Public Health Director Sean Harrington, Superintendent - Water & Sewer Division Steve Cusick, Manager of Charles River Water Treatment Plant

1.	**BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED**

We have had an ongoing discussion over the past couple of months about PFAS, and discussion at the December Board meeting focused, in part, on PFAS in drinking water. Needham's drinking water is, dependent upon the season, between one-third and two-thirds MWRA water and water drawn from the Charles River well fields in town. We worked with Sean Harrington, Needham's Water & Sewer Superintendent, and Steve Cusick, Needham's Water Treatment Plant Manager, to gather information about Needham's water testing and PFAS in the Town's drinking water. (See attached.)

2.	**VOTE REQUIRED BY BOARD OF HEALTH**

No vote is required, nor is one expected.

3.	**BACK UP INFORMATION ATTACHED**

Tara Gurge

From: Steve Cusick
Sent: Friday, December 13, 2019 9:29 AM
To: Tara Gurge
Subject: RE: water testing question
Attachments: Nedham Finished.pdf; Nedham Raw Water Well #2.pdf; Nedham Raw Water Well # 3A.pdf; PFAS 9-26-19.pdf; 3199000 - DEP letter 6-13-19.pdf

Hi Tara,

Yes we have tested for PFAS, please see the attached sampling results from 10/22/19 for the Finished water and wells 2 ands 3A. Well #1A was OFF at the time the
samples were taken. The results of the samples were the following. FW 16.4 ng/l = PPT (parts per trillion), Well #2 13.4 PPT and Well #3A 9.98 PPT. The initial finished
water sample was taken on 9/26/19 and the results were 10.5 PPT. At that point DEP contacted me to conduct follow up sampling to confirm the initial results and
sample each individual well source. All samples were taken by MWRA. PFAS are NOT part our routine water sampling schedule provided by MA DEP.

The MA DEP ORSG (Office if Research Standards Guidelines) level of 70 PPT for the sum of six PFAS compounds or individually is now being considered to be lowered to
20 PPT? Please see the attached DEP letter. Sampling for PFAS were conducted back in 2013-2015 under the UCMR 3 program. Both water sources in town the Charles
River Wellfield and MWRA had no detections at that time frame. MWRA was re-sampled a couple of months I believe they only had trace amounts of PFAS.

I suspect MA DEP will be coming out with an MCL (Maximum Contaminant Level) within the next year. I just wanted to give you and Tim the heads up that I received a call
from MWRA that a story may be coming out in the Boston Globe regarding PFAS detections in Public Water Systems?

Stephen Cusick
Town Of Needham
Water Treatment Plant Manager
Tel: 781-416-4071
Fax: 781-416-9725
Cell: 781-983-0870

From: Tara Gurge <TGurge@needhamma.gov>
Sent: Wednesday, December 11, 2019 3:06 PM
To: Steve Cusick <SCusick@needhamma.gov>
Subject: water testing question

Steve –

Hello! So at our BOH monthly meeting last night, a question came up on whether we currently test for 'PFAS' in our town drinking water. Would you happen to know whether that is included in your routine water testing? And do you happen to have a recent water testing report that you could forward along to us?

Please let us know.

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3199000 **City / Town:** Needham

PWS Name: Needham Water Dept. **PWS Class:** COM ☒ NTNC ☐ TNC ☐

MassDEP LOCATION (LOC) ID#	MassDEP Location Name	Sample Information		Date Collected	Collected By
10030	Charles River Water Treatment Plant	☒ (M)ultiple ☐ (S)ingle	☐ (R)aw ☒ (F)inished	9/26/2019	

Routine or Special Sample	Original, Resubmitted or Confirmation Report	If Resubmitted Report, list below: (1) Reason for Resubmission	(2) Collection Date of Original Sample
☐ RS ☒ SS	Original ☒ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES – Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection.

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: E87856 **Primary Lab Name:** Battelle **Subcontracted? (Y/N)** N

Analysis Lab Cert. #: **Analysis Lab Name:**

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
537.1	9/30/2019	10/7/2019	I8713-FS	

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following: Results[3] µg/L	<MRL (Check ✔)	<1/3MRL (Check ✔)	ORSG[1] µg/L	MRL[2] µg/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	0.00366	☐	☐	0.070	0.00189
335-67-1	Perfluorooctanoic Acid (PFOA)	0.00349	☐	☐	0.070	0.00189
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	0.00167	☒	☐	0.070	0.00189
375-95-1	Perfluorononanoic Acid (PFNA)	0.00054	☒	☐	0.070	0.00189
375-85-9	Perfluorohepatanoic Acid (PFHpA)	0.00113	☒	☐	0.070	0.00189
375-73-5	Perfluorobutane sulfonic acid (PFBS)	0.00187	☒	☐	-	0.00189
335-76-2	Perfluorodecanoic acid (PFDA)	0.00013	☒	☐	-	0.00189
307-55-1	Perfluorododecanoic acid (PFDoA)	0.000	☐	☒	-	0.00189
307-24-4	Perfluorohexanoic acid (PFHxA)	.00187	☒	☐	-	0.00189
376-06-7	Perfluorotetradecanoic acid (PFTA)	0.000	☐	☒	-	0.00189
72629-94-8	Perfluorotridecanoic acid (PFTrDA)	0.000	☐	☒	-	0.00189
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.000	☐	☒	-	0.00189
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.000	☐	☒	-	0.00189
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.000	☐	☒	-	0.00189
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.000	☐	☒	-	0.00189
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	0.000	☐	☒	-	0.00189
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.000	☐	☒	-	0.00189
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.000	☐	☒	-	0.00189

[1] The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.

Per- and Polyfluoroalkyl Substances (PFAS) Report

[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

PWS ID#: 3199000 **Lab Sample ID#:** I8713-FS

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG[1] µg/L	MRL[2] µg/L
		Results[3] µg/L	<MRL (Check ✔)	<1/3MRL (Check ✔)		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

[1]The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.
[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

☒ Check this box if attaching lab report to show additional PFAS results/contaminants tested.

Surrogate Name	% Recovery (70 – 130%)
13C2-PFHxA	100
13C2-PFDA	89
d5-EtFOSAA	91
13C3-HFPO-DA	87

In addition to reporting the Surrogate Recoveries above you must attach the results of the ongoing quality control results for the extraction batch that includes this sample. These include LRB, LFB, LFSM and either a FD or LFSMD as specified in the method.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature: _____

Date: 10/16/2019

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

MassDEP REVIEW STATUS (Initial & Date) ☐ Accepted _____ ☐ Disapproved _____	Review Comments		☐ WQTS Data Entered

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3199000 **City / Town:** Needham

PWS Name: Needham Water Department **PWS Class:** COM ☒ NTNC ☐ TNC ☐

MassDEP LOCATION (LOC) ID#	MassDEP Location Name	Sample Information		Date Collected	Collected By
10030	Needham-Finished	☐ (M)ultiple ☒ (S)ingle	☐ (R)aw ☒ (F)inished	10/22/2019	J. Das

Routine or Special Sample	Original, Resubmitted or Confirmation Report	If Resubmitted Report, list below: (1) Reason for Resubmission	(2) Collection Date of Original Sample
☒ RS ☐ SS	Original ☒ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES – Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection.

None

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: E87856 **Primary Lab Name:** Battelle **Subcontracted? (Y/N)** N

Analysis Lab Cert. #: **Analysis Lab Name:**

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
537.1	10/24/2019	11/2/2019	I9650-FS	None

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following: Results[3] ng/L	<MRL (Check a)	<1/3MRL (Check a)	ORSG[1] ng/L	MRL[2] ng/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	0.00615	☐	☐	0.070	0.00172
335-67-1	Perfluorooctanoic Acid (PFOA)	0.00606	☐	☐	0.070	0.00172
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	0.00249	☐	☐	0.070	0.00172
375-95-1	Perfluorononanoic Acid (PFNA)		☒	☐	0.070	0.00172
375-85-9	Perfluorohepatanoic Acid (PFHpA)		☒	☐	0.070	0.00172
375-73-5	Perfluorobutane sulfonic acid (PFBS)	0.00270	☐	☐	-	0.00172
335-76-2	Perfluorodecanoic acid (PFDA)		☐	☒	-	0.00172
307-55-1	Perfluorododecanoic acid (PFDoA)		☐	☒	-	0.00172
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00298	☐	☐	-	0.00172
376-06-7	Perfluorotetradecanoic acid (PFTA)		☐	☒	-	0.00172
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		☐	☒	-	0.00172
2058-94-8	Perfluoroundecanoic acid (PFUnA)		☐	☒	-	0.00172
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		☐	☒	-	0.00172
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		☐	☒	-	0.00172
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		☐	☒	-	0.00172
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		☐	☒	-	0.00172
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		☐	☒	-	0.00172
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)		☐	☒	-	0.00172

[1] The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

PWS ID#: **3199000** **Lab Sample ID#:** I9650-FS

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG[1] ng/L	MRL[2] ng/L
		Results[3] ng/L	<MRL (Check a)	<1/3MRL (Check a)		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
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			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

[1]The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.
[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

☒ Check this box if attaching lab report to show additional PFAS results/contaminants tested.

Surrogate Name	% Recovery (70 – 130%)
13C2-PFHxA	123
13C2-PFDA	127
d5-EtFOSAA	122
13C3-HFPO-DA	121

In addition to reporting the Surrogate Recoveries above you must attach the results of the ongoing quality control results for the extraction batch that includes this sample. These include LRB, LFB, LFSM and either a FD or LFSMD as specified in the method.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature: _____

Date: 11/6/2019

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

MassDEP REVIEW STATUS (Initial & Date) ☐ Accepted _____ ☐ Disapproved _____	Review Comments		☐ WQTS Data Entered

8-21-19

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham-Finished						
Battelle ID		I9650-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.290						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	2.98	I9650-FS(0)	1.000	11/2/2019	0.20	0.43	1.72
PFHpA	375-85-9	1.70 J	I9650-FS(0)	1.000	11/2/2019	0.20	0.43	1.72
PFOA	335-67-1	6.06	I9650-FS(0)	1.000	11/2/2019	0.17	0.43	1.72
PFNA	375-95-1	0.88 J	I9650-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFDA	335-76-2	0.24 J	I9650-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFUnA	2058-94-8	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFDoA	307-55-1	0.43 U	I9650-FS(0)	1.000	11/2/2019	0.12	0.43	1.72
PFTrDA	72629-94-8	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFTeDA	376-06-7	0.43 U	I9650-FS(0)	1.000	11/2/2019	0.19	0.43	1.72
NMeFOSAA	2355-31-9	0.43 U	I9650-FS(0)	1.000	11/2/2019	0.17	0.43	1.72
NEtFOSAA	2991-50-6	0.43 U	I9650-FS(0)	1.000	11/2/2019	0.15	0.43	1.72
PFBS	375-73-5	2.70	I9650-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFHxS	355-46-4	2.49	I9650-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFOS	1763-23-1	6.15	I9650-FS(0)	1.000	11/2/2019	0.13	0.43	1.72
HFPO-DA	13252-13-6	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.08	0.34	1.72
Adona	919005-14-4	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
11Cl-PF3OUdS	763051-92-9	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
9Cl-PF3ONS	756426-58-1	0.34 U	I9650-FS(0)	1.000	11/2/2019	0.10	0.34	1.72

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	123	I9650-FS(0)	11/2/2019
13C2-PFDA	127	I9650-FS(0)	11/2/2019
d5-EtFOSAA	122	I9650-FS(0)	11/2/2019
13C3-HFPO-DA	121	I9650-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham-FRB						
Battelle ID		I9652-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.265						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.22	0.47	1.89
PFHpA	375-85-9	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.22	0.47	1.89
PFOA	335-67-1	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.19	0.47	1.89
PFNA	375-95-1	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.11	0.38	1.89
PFDA	335-76-2	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.10	0.38	1.89
PFUnA	2058-94-8	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.09	0.38	1.89
PFDoA	307-55-1	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.13	0.47	1.89
PFTrDA	72629-94-8	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.09	0.38	1.89
PFTeDA	376-06-7	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.21	0.47	1.89
NMeFOSAA	2355-31-9	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.19	0.47	1.89
NEtFOSAA	2991-50-6	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.16	0.47	1.89
PFBS	375-73-5	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.11	0.38	1.89
PFHxS	355-46-4	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.11	0.38	1.89
PFOS	1763-23-1	0.47 U	I9652-FS(0)	1.000	11/2/2019	0.14	0.47	1.89
HFPO-DA	13252-13-6	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.08	0.38	1.89
Adona	919005-14-4	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.11	0.38	1.89
11Cl-PF3OUdS	763051-92-9	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.09	0.38	1.89
9Cl-PF3ONS	756426-58-1	0.38 U	I9652-FS(0)	1.000	11/2/2019	0.11	0.38	1.89

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	125	I9652-FS(0)	11/2/2019
13C2-PFDA	117	I9652-FS(0)	11/2/2019
d5-EtFOSAA	104	I9652-FS(0)	11/2/2019
13C3-HFPO-DA	117	I9652-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID	Procedural Blank
Battelle ID	CW073PB-FS
Sample Type	PB
Collection Date	10/24/2019
Extraction Date	10/24/2019
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	WATER
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)		Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFHpA	375-85-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFOA	335-67-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
PFNA	375-95-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFDA	335-76-2	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.11	0.40	2.00
PFUnA	2058-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFDoA	307-55-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.14	0.50	2.00
PFTrDA	72629-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFTeDA	376-06-7	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.22	0.50	2.00
NMeFOSAA	2355-31-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
NEtFOSAA	2991-50-6	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.17	0.50	2.00
PFBS	375-73-5	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFHxS	355-46-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFOS	1763-23-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.15	0.50	2.00
HFPO-DA	13252-13-6	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.09	0.40	2.00
Adona	919005-14-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
11Cl-PF3OUdS	763051-92-9	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
9Cl-PF3ONS	756426-58-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	96	CW073PB-FS(0)	11/2/2019
13C2-PFDA	91	CW073PB-FS(0)	11/2/2019
d5-EtFOSAA	90	CW073PB-FS(0)	11/2/2019
13C3-HFPO-DA	91	CW073PB-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Laboratory Control Sample								
Battelle ID		CW074LCS-FS								
Sample Type		LCS								
Collection Date		10/24/2019								
Extraction Date		10/24/2019								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		WATER								
Sample Size		0.250								
Size Unit-Basis		L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	37.96	CW074LCS-FS(0)	1.000	11/2/2019	30.00	127		70	130
PFHpA	375-85-9	39.14	CW074LCS-FS(0)	1.000	11/2/2019	30.00	130		70	130
PFOA	335-67-1	36.28	CW074LCS-FS(0)	1.000	11/2/2019	30.00	121		70	130
PFNA	375-95-1	37.04	CW074LCS-FS(0)	1.000	11/2/2019	30.00	123		70	130
PFDA	335-76-2	35.78	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFUnA	2058-94-8	35.61	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFDoA	307-55-1	35.29	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTrDA	72629-94-8	35.44	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTeDA	376-06-7	35.34	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
NMeFOSAA	2355-31-9	37.79	CW074LCS-FS(0)	1.000	11/2/2019	30.00	126		70	130
NEtFOSAA	2991-50-6	37.52	CW074LCS-FS(0)	1.000	11/2/2019	30.00	125		70	130
PFBS	375-73-5	33.32	CW074LCS-FS(0)	1.000	11/2/2019	26.55	125		70	130
PFHxS	355-46-4	36.94	CW074LCS-FS(0)	1.000	11/2/2019	28.35	130		70	130
PFOS	1763-23-1	31.71	CW074LCS-FS(0)	1.000	11/2/2019	28.65	111		70	130
HFPO-DA	13252-13-6	34.31	CW074LCS-FS(0)	1.000	11/2/2019	30.00	114		70	130
Adona	919005-14-4	35.60	CW074LCS-FS(0)	1.000	11/2/2019	28.35	126		70	130
11Cl-PF3OUdS	763051-92-9	33.12	CW074LCS-FS(0)	1.000	11/2/2019	28.20	117		70	130
9Cl-PF3ONS	756426-58-1	33.93	CW074LCS-FS(0)	1.000	11/2/2019	27.90	122		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	129	CW074LCS-FS(0)	11/2/2019
13C2-PFDA	127	CW074LCS-FS(0)	11/2/2019
d5-EtFOSAA	121	CW074LCS-FS(0)	11/2/2019
13C3-HFPO-DA	127	CW074LCS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample							
Client ID		Needham-Finished#2	Needham-Finished							
Battelle ID		I9651MS-FS	I9650-FS							
Sample Type		MS	SA							
Collection Date		10/22/2019	10/22/2019							
Extraction Date		10/24/2019	10/24/2019							
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS							
% Moisture		NA	NA							
Matrix		AQ	AQ							
Sample Size		0.290	0.290							
Size Unit-Basis		L	L			Analysis			Control Limits	
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	31.40	2.98	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFHpA	375-85-9	29.83	1.70 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFOA	335-67-1	34.73	6.06	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFNA	375-95-1	29.74	0.88 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	84		70	130
PFDA	335-76-2	28.84	0.24 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFUnA	2058-94-8	27.05	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	78		70	130
PFDoA	307-55-1	25.63	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	74		70	130
PFTrDA	72629-94-8	24.01	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
PFTeDA	376-06-7	24.13	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
NMeFOSAA	2355-31-9	32.50	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	94		70	130
NEtFOSAA	2991-50-6	30.72	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	89		70	130
PFBS	375-73-5	26.77	2.70	I9651MS-FS(0)	1.000	11/2/2019	30.52	79		70	130
PFHxS	355-46-4	31.61	2.49	I9651MS-FS(0)	1.000	11/2/2019	32.59	89		70	130
PFOS	1763-23-1	30.06	6.15	I9651MS-FS(0)	1.000	11/2/2019	32.93	73		70	130
HFPO-DA	13252-13-6	27.97	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	81		70	130
Adona	919005-14-4	27.44	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.59	84		70	130
11Cl-PF3OUdS	763051-92-9	22.72	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.41	70		70	130
9Cl-PF3ONS	756426-58-1	26.27	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.07	82		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	99	I9651MS-FS(0)	11/2/2019
13C2-PFDA	92	I9651MS-FS(0)	11/2/2019
d5-EtFOSAA	90	I9651MS-FS(0)	11/2/2019
13C3-HFPO-DA	93	I9651MS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample											
Client ID		Needham-Finished#2	Needham-Finished											
Battelle ID		I9651MSD-FS	I9650-FS											
Sample Type		MSD	SA											
Collection Date		10/22/2019	10/22/2019											
Extraction Date		10/24/2019	10/24/2019											
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS											
% Moisture		NA	NA											
Matrix		AQ	AQ											
Sample Size		0.290	0.290											
Size Unit-Basis		L	L			Analysis				Control Limits				RPD
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFHxA	307-24-4	32.29	2.98	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFHpA	375-85-9	31.08	1.70 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFOA	335-67-1	35.17	6.06	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	1.2		≤ 30
PFNA	375-95-1	32.02	0.88 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	90		70	130	6.9		≤ 30
PFDA	335-76-2	28.33	0.24 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	81		70	130	2.4		≤ 30
PFUnA	2058-94-8	27.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	80		70	130	2.5		≤ 30
PFDoA	307-55-1	27.12	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	79		70	130	6.5		≤ 30
PFTrDA	72629-94-8	25.68	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	74		70	130	5.6		≤ 30
PFTeDA	376-06-7	25.22	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	73		70	130	4.2		≤ 30
NMeFOSAA	2355-31-9	32.92	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	95		70	130	1.1		≤ 30
NEtFOSAA	2991-50-6	31.88	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	92		70	130	3.3		≤ 30
PFBS	375-73-5	27.38	2.70	I9651MSD-FS(0)	1.000	11/2/2019	30.52	81		70	130	2.5		≤ 30
PFHxS	355-46-4	33.31	2.49	I9651MSD-FS(0)	1.000	11/2/2019	32.59	95		70	130	6.5		≤ 30
PFOS	1763-23-1	31.02	6.15	I9651MSD-FS(0)	1.000	11/2/2019	32.93	76		70	130	4.0		≤ 30
HFPO-DA	13252-13-6	29.00	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	3.6		≤ 30
Adona	919005-14-4	29.40	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.59	90		70	130	6.9		≤ 30
11Cl-PF3OUdS	763051-92-9	24.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.41	75		70	130	6.9		≤ 30
9Cl-PF3ONS	756426-58-1	26.91	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.07	84		70	130	2.4		≤ 30

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	98	I9651MSD-FS(0)	11/2/2019
13C2-PFDA	89	I9651MSD-FS(0)	11/2/2019
d5-EtFOSAA	85	I9651MSD-FS(0)	11/2/2019
13C3-HFPO-DA	92	I9651MSD-FS(0)	11/2/2019

BATTELLE
It can be done

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highest concentration level in the calibration
J	Analyte detected below the Limit of Quantitation (LOQ)
MI	Significant Matrix Interference - value could not be determined.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3199000 **City / Town:** Needham

PWS Name: Needham Water Department **PWS Class:** COM ☒ NTNC ☐ TNC ☐

MassDEP LOCATION (LOC) ID#	MassDEP Location Name	Sample Information		Date Collected	Collected By
Well #2	Needham Raw Water Well #2	☐ (M)ultiple ☒ (S)ingle	☒ (R)aw ☐ (F)inished	10/22/2019	J. Das

Routine or Special Sample	Original, Resubmitted or Confirmation Report	If Resubmitted Report, list below:	
		(1) Reason for Resubmission	(2) Collection Date of Original Sample
☒ RS ☐ SS	Original ☒ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES – Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection.

None

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: E87856 **Primary Lab Name:** Battelle **Subcontracted? (Y/N)** N

Analysis Lab Cert. #: **Analysis Lab Name:**

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
537.1	10/24/2019	11/2/2019	I9653-FS	None

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG[1] ng/L	MRL[2] ng/L
		Results[3] ng/L	<MRL (Check a)	<1/3MRL (Check a)		
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	0.00497	☐	☐	0.070	0.00172
335-67-1	Perfluorooctanoic Acid (PFOA)	0.00467	☐	☐	0.070	0.00172
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)	0.00202	☐	☐	0.070	0.00172
375-95-1	Perfluorononanoic Acid (PFNA)		☒	☐	0.070	0.00172
375-85-9	Perfluorohepatanoic Acid (PFHpA)		☒	☐	0.070	0.00172
375-73-5	Perfluorobutane sulfonic acid (PFBS)	0.00220	☐	☐	-	0.00172
335-76-2	Perfluorodecanoic acid (PFDA)		☐	☒	-	0.00172
307-55-1	Perfluorododecanoic acid (PFDoA)		☐	☒	-	0.00172
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00219	☐	☐	-	0.00172
376-06-7	Perfluorotetradecanoic acid (PFTA)		☐	☒	-	0.00172
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		☐	☒	-	0.00172
2058-94-8	Perfluoroundecanoic acid (PFUnA)		☐	☒	-	0.00172
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		☐	☒	-	0.00172
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		☐	☒	-	0.00172
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		☐	☒	-	0.00172
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		☐	☒	-	0.00172
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		☐	☒	-	0.00172
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)		☐	☒	-	0.00172

[1] The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.

Per- and Polyfluoroalkyl Substances (PFAS) Report

[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

PWS ID#: **3199000** **Lab Sample ID#:** I9653-FS

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG[1] mg/L	MRL[2] mg/L
		Results[3] mg/L	<MRL (Check a)	<1/3MRL (Check a)		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

[1]The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.
[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

☒ Check this box if attaching lab report to show additional PFAS results/contaminants tested.

Surrogate Name	% Recovery (70 – 130%)
13C2-PFHxA	105
13C2-PFDA	96
d5-EtFOSAA	84
13C3-HFPO-DA	98

In addition to reporting the Surrogate Recoveries above you must attach the results of the ongoing quality control results for the extraction batch that includes this sample. These include LRB, LFB, LFSM and either a FD or LFSMD as specified in the method.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature: _____

Date: 11/6/2019

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

MassDEP REVIEW STATUS (Initial & Date) ☐ Accepted _____ ☐ Disapproved _____	Review Comments		☐ WQTS Data Entered

8-21-19

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham Raw Water Well # 2						
Battelle ID		I9653-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.290						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	2.19	I9653-FS(0)	1.000	11/2/2019	0.20	0.43	1.72
PFHpA	375-85-9	1.30 J	I9653-FS(0)	1.000	11/2/2019	0.20	0.43	1.72
PFOA	335-67-1	4.67	I9653-FS(0)	1.000	11/2/2019	0.17	0.43	1.72
PFNA	375-95-1	0.77 J	I9653-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFDA	335-76-2	0.22 J	I9653-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFUnA	2058-94-8	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFDoA	307-55-1	0.43 U	I9653-FS(0)	1.000	11/2/2019	0.12	0.43	1.72
PFTrDA	72629-94-8	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
PFTeDA	376-06-7	0.43 U	I9653-FS(0)	1.000	11/2/2019	0.19	0.43	1.72
NMeFOSAA	2355-31-9	0.43 U	I9653-FS(0)	1.000	11/2/2019	0.17	0.43	1.72
NEtFOSAA	2991-50-6	0.43 U	I9653-FS(0)	1.000	11/2/2019	0.15	0.43	1.72
PFBS	375-73-5	2.20	I9653-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFHxS	355-46-4	2.02	I9653-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
PFOS	1763-23-1	4.97	I9653-FS(0)	1.000	11/2/2019	0.13	0.43	1.72
HFPO-DA	13252-13-6	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.08	0.34	1.72
Adona	919005-14-4	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.10	0.34	1.72
11Cl-PF3OUdS	763051-92-9	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.09	0.34	1.72
9Cl-PF3ONS	756426-58-1	0.34 U	I9653-FS(0)	1.000	11/2/2019	0.10	0.34	1.72

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	105	I9653-FS(0)	11/2/2019
13C2-PFDA	96	I9653-FS(0)	11/2/2019
d5-EtFOSAA	84	I9653-FS(0)	11/2/2019
13C3-HFPO-DA	98	I9653-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham Well # 2 FRB						
Battelle ID		I9654-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.260						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.22	0.48	1.92
PFHpA	375-85-9	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.22	0.48	1.92
PFOA	335-67-1	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.19	0.48	1.92
PFNA	375-95-1	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.12	0.38	1.92
PFDA	335-76-2	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.11	0.38	1.92
PFUnA	2058-94-8	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.10	0.38	1.92
PFDoA	307-55-1	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.13	0.48	1.92
PFTrDA	72629-94-8	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.10	0.38	1.92
PFTeDA	376-06-7	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.21	0.48	1.92
NMeFOSAA	2355-31-9	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.19	0.48	1.92
NEtFOSAA	2991-50-6	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.16	0.48	1.92
PFBS	375-73-5	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.12	0.38	1.92
PFHxS	355-46-4	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.12	0.38	1.92
PFOS	1763-23-1	0.48 U	I9654-FS(0)	1.000	11/2/2019	0.14	0.48	1.92
HFPO-DA	13252-13-6	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.09	0.38	1.92
Adona	919005-14-4	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.12	0.38	1.92
11Cl-PF3OUdS	763051-92-9	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.10	0.38	1.92
9Cl-PF3ONS	756426-58-1	0.38 U	I9654-FS(0)	1.000	11/2/2019	0.12	0.38	1.92

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	96	I9654-FS(0)	11/2/2019
13C2-PFDA	92	I9654-FS(0)	11/2/2019
d5-EtFOSAA	86	I9654-FS(0)	11/2/2019
13C3-HFPO-DA	91	I9654-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID	Procedural Blank
Battelle ID	CW073PB-FS
Sample Type	PB
Collection Date	10/24/2019
Extraction Date	10/24/2019
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	WATER
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)		Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFHpA	375-85-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFOA	335-67-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
PFNA	375-95-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFDA	335-76-2	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.11	0.40	2.00
PFUnA	2058-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFDoA	307-55-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.14	0.50	2.00
PFTrDA	72629-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFTeDA	376-06-7	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.22	0.50	2.00
NMeFOSAA	2355-31-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
NEtFOSAA	2991-50-6	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.17	0.50	2.00
PFBS	375-73-5	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFHxS	355-46-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFOS	1763-23-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.15	0.50	2.00
HFPO-DA	13252-13-6	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.09	0.40	2.00
Adona	919005-14-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
11Cl-PF3OUdS	763051-92-9	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
9Cl-PF3ONS	756426-58-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	96	CW073PB-FS(0)	11/2/2019
13C2-PFDA	91	CW073PB-FS(0)	11/2/2019
d5-EtFOSAA	90	CW073PB-FS(0)	11/2/2019
13C3-HFPO-DA	91	CW073PB-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Laboratory Control Sample								
Battelle ID		CW074LCS-FS								
Sample Type		LCS								
Collection Date		10/24/2019								
Extraction Date		10/24/2019								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		WATER								
Sample Size		0.250								
Size Unit-Basis		L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	37.96	CW074LCS-FS(0)	1.000	11/2/2019	30.00	127		70	130
PFHpA	375-85-9	39.14	CW074LCS-FS(0)	1.000	11/2/2019	30.00	130		70	130
PFOA	335-67-1	36.28	CW074LCS-FS(0)	1.000	11/2/2019	30.00	121		70	130
PFNA	375-95-1	37.04	CW074LCS-FS(0)	1.000	11/2/2019	30.00	123		70	130
PFDA	335-76-2	35.78	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFUnA	2058-94-8	35.61	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFDoA	307-55-1	35.29	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTrDA	72629-94-8	35.44	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTeDA	376-06-7	35.34	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
NMeFOSAA	2355-31-9	37.79	CW074LCS-FS(0)	1.000	11/2/2019	30.00	126		70	130
NEtFOSAA	2991-50-6	37.52	CW074LCS-FS(0)	1.000	11/2/2019	30.00	125		70	130
PFBS	375-73-5	33.32	CW074LCS-FS(0)	1.000	11/2/2019	26.55	125		70	130
PFHxS	355-46-4	36.94	CW074LCS-FS(0)	1.000	11/2/2019	28.35	130		70	130
PFOS	1763-23-1	31.71	CW074LCS-FS(0)	1.000	11/2/2019	28.65	111		70	130
HFPO-DA	13252-13-6	34.31	CW074LCS-FS(0)	1.000	11/2/2019	30.00	114		70	130
Adona	919005-14-4	35.60	CW074LCS-FS(0)	1.000	11/2/2019	28.35	126		70	130
11Cl-PF3OUdS	763051-92-9	33.12	CW074LCS-FS(0)	1.000	11/2/2019	28.20	117		70	130
9Cl-PF3ONS	756426-58-1	33.93	CW074LCS-FS(0)	1.000	11/2/2019	27.90	122		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	129	CW074LCS-FS(0)	11/2/2019
13C2-PFDA	127	CW074LCS-FS(0)	11/2/2019
d5-EtFOSAA	121	CW074LCS-FS(0)	11/2/2019
13C3-HFPO-DA	127	CW074LCS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample							
Client ID		Needham-Finished#2	Needham-Finished							
Battelle ID		I9651MS-FS	I9650-FS							
Sample Type		MS	SA							
Collection Date		10/22/2019	10/22/2019							
Extraction Date		10/24/2019	10/24/2019							
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS							
% Moisture		NA	NA							
Matrix		AQ	AQ							
Sample Size		0.290	0.290							
Size Unit-Basis		L	L			Analysis			Control Limits	
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	31.40	2.98	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFHpA	375-85-9	29.83	1.70 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFOA	335-67-1	34.73	6.06	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFNA	375-95-1	29.74	0.88 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	84		70	130
PFDA	335-76-2	28.84	0.24 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFUnA	2058-94-8	27.05	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	78		70	130
PFDoA	307-55-1	25.63	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	74		70	130
PFTrDA	72629-94-8	24.01	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
PFTeDA	376-06-7	24.13	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
NMeFOSAA	2355-31-9	32.50	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	94		70	130
NEtFOSAA	2991-50-6	30.72	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	89		70	130
PFBS	375-73-5	26.77	2.70	I9651MS-FS(0)	1.000	11/2/2019	30.52	79		70	130
PFHxS	355-46-4	31.61	2.49	I9651MS-FS(0)	1.000	11/2/2019	32.59	89		70	130
PFOS	1763-23-1	30.06	6.15	I9651MS-FS(0)	1.000	11/2/2019	32.93	73		70	130
HFPO-DA	13252-13-6	27.97	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	81		70	130
Adona	919005-14-4	27.44	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.59	84		70	130
11Cl-PF3OUdS	763051-92-9	22.72	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.41	70		70	130
9Cl-PF3ONS	756426-58-1	26.27	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.07	82		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	99	I9651MS-FS(0)	11/2/2019
13C2-PFDA	92	I9651MS-FS(0)	11/2/2019
d5-EtFOSAA	90	I9651MS-FS(0)	11/2/2019
13C3-HFPO-DA	93	I9651MS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample											
Client ID		Needham-Finished#2	Needham-Finished											
Battelle ID		I9651MSD-FS	I9650-FS											
Sample Type		MSD	SA											
Collection Date		10/22/2019	10/22/2019											
Extraction Date		10/24/2019	10/24/2019											
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS											
% Moisture		NA	NA											
Matrix		AQ	AQ											
Sample Size		0.290	0.290											
Size Unit-Basis		L	L			Analysis				Control Limits				RPD
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFHxA	307-24-4	32.29	2.98	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFHpA	375-85-9	31.08	1.70 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFOA	335-67-1	35.17	6.06	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	1.2		≤ 30
PFNA	375-95-1	32.02	0.88 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	90		70	130	6.9		≤ 30
PFDA	335-76-2	28.33	0.24 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	81		70	130	2.4		≤ 30
PFUnA	2058-94-8	27.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	80		70	130	2.5		≤ 30
PFDoA	307-55-1	27.12	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	79		70	130	6.5		≤ 30
PFTrDA	72629-94-8	25.68	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	74		70	130	5.6		≤ 30
PFTeDA	376-06-7	25.22	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	73		70	130	4.2		≤ 30
NMeFOSAA	2355-31-9	32.92	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	95		70	130	1.1		≤ 30
NEtFOSAA	2991-50-6	31.88	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	92		70	130	3.3		≤ 30
PFBS	375-73-5	27.38	2.70	I9651MSD-FS(0)	1.000	11/2/2019	30.52	81		70	130	2.5		≤ 30
PFHxS	355-46-4	33.31	2.49	I9651MSD-FS(0)	1.000	11/2/2019	32.59	95		70	130	6.5		≤ 30
PFOS	1763-23-1	31.02	6.15	I9651MSD-FS(0)	1.000	11/2/2019	32.93	76		70	130	4.0		≤ 30
HFPO-DA	13252-13-6	29.00	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	3.6		≤ 30
Adona	919005-14-4	29.40	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.59	90		70	130	6.9		≤ 30
11Cl-PF3OUdS	763051-92-9	24.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.41	75		70	130	6.9		≤ 30
9Cl-PF3ONS	756426-58-1	26.91	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.07	84		70	130	2.4		≤ 30

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	98	I9651MSD-FS(0)	11/2/2019
13C2-PFDA	89	I9651MSD-FS(0)	11/2/2019
d5-EtFOSAA	85	I9651MSD-FS(0)	11/2/2019
13C3-HFPO-DA	92	I9651MSD-FS(0)	11/2/2019

BATTELLE
It can be done

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highest concentration level in the calibration
J	Analyte detected below the Limit of Quantitation (LOQ)
MI	Significant Matrix Interference - value could not be determined.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

I. PWS INFORMATION: Please refer to your MassDEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3199000 **City / Town:** Needham

PWS Name: Needham Water Department **PWS Class:** COM ☒ NTNC ☐ TNC ☐

MassDEP LOCATION (LOC) ID#	MassDEP Location Name	Sample Information		Date Collected	Collected By
Well #3A	Needham Raw Water Well #3A	☐ (M)ultiple ☒ (S)ingle	☒ (R)aw ☐ (F)inished	10/22/2019	J. Das

Routine or Special Sample	Original, Resubmitted or Confirmation Report	If Resubmitted Report, list below: (1) Reason for Resubmission	If Resubmitted Report, list below: (2) Collection Date of Original Sample
☒ RS ☐ SS	Original ☒ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES – Such as, if a Manifold/Multiple sample, list the source(s) that were on-line during sample collection.

None

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab Cert. #: E87856 **Primary Lab Name:** Battelle **Subcontracted? (Y/N)** N

Analysis Lab Cert. #: **Analysis Lab Name:**

If Analysis Lab is not certified by MassDEP or U.S. EPA, list certification authority:

Lab Method	Date Extracted	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
537.1	10/24/2019	11/2/2019	I9655-FS	None

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following: Results[3] µg/L	<MRL (Check ✓)	<1/3MRL (Check ✓)	ORSG[1] µg/L	MRL[2] µg/L
1763-23-1	Perfluorooctane Sulfonic Acid (PFOS)	0.00393	☐	☐	0.070	0.00196
335-67-1	Perfluorooctanoic Acid (PFOA)	0.00433	☐	☐	0.070	0.00196
355-46-4	Perfluorohexane Sulfonic Acid (PFHxS)		☒	☐	0.070	0.00196
375-95-1	Perfluorononanoic Acid (PFNA)		☐	☒	0.070	0.00196
375-85-9	Perfluorohepatanoic Acid (PFHpA)		☒	☐	0.070	0.00196
375-73-5	Perfluorobutane sulfonic acid (PFBS)		☒	☐	-	0.00196
335-76-2	Perfluorodecanoic acid (PFDA)		☐	☒	-	0.00196
307-55-1	Perfluorododecanoic acid (PFDoA)		☐	☒	-	0.00196
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00266	☐	☐	-	0.00196
376-06-7	Perfluorotetradecanoic acid (PFTA)		☐	☒	-	0.00196
72629-94-8	Perfluorotridecanoic acid (PFTrDA)		☐	☒	-	0.00196
2058-94-8	Perfluoroundecanoic acid (PFUnA)		☐	☒	-	0.00196
2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		☐	☒	-	0.00196
2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		☐	☒	-	0.00196
763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		☐	☒	-	0.00196
756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		☐	☒	-	0.00196
919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		☐	☒	-	0.00196
13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)		☐	☒	-	0.00196

[1] The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.

Massachusetts Department of Environmental Protection - Drinking Water Program **PFAS**

Per- and Polyfluoroalkyl Substances (PFAS) Report

[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

PWS ID#: **3199000** **Lab Sample ID#:** I9655-FS

CAS#	REGULATED AND UNREGULATED PFAS CONTAMINANTS	Report One of the Following			ORSG[1] µg/L	MRL[2] µg/L
		Results[3] µg/L	<MRL (Check ✓)	<1/3MRL (Check ✓)		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		
			☐	☐		

[1]The MassDEP ORSG is 0.070 µg/L for PFOA, PFOS, PFHxS, PFNA, and PFHpA, individually or added together.
[2] The minimum reporting level (MRL) is the lowest concentration of the substance tested that can be reported reliably under normal laboratory conditions.
[3] A field reagent blank (FRB) must be analyzed and reported on a separate PFAS form if any PFAS are detected above the MRL.

☒ Check this box if attaching lab report to show additional PFAS results/contaminants tested.

Surrogate Name	% Recovery (70 – 130%)
13C2-PFHxA	94
13C2-PFDA	86
d5-EtFOSAA	76
13C3-HFPO-DA	90

In addition to reporting the Surrogate Recoveries above you must attach the results of the ongoing quality control results for the extraction batch that includes this sample. These include LRB, LFB, LFSM and either a FD or LFSMD as specified in the method.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Lab Director Signature: _____

Date: 11/6/2019

If not submitting these results electronically, mail TWO copies of this report to your MassDEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

MassDEP REVIEW STATUS (Initial & Date) ☐ Accepted _____ ☐ Disapproved _____	Review Comments		☐ WQTS Data Entered

8-21-19

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham Raw Water Well # 3A						
Battelle ID		I9655-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.255						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	2.66	I9655-FS(0)	1.000	11/2/2019	0.23	0.49	1.96
PFHpA	375-85-9	1.35 J	I9655-FS(0)	1.000	11/2/2019	0.23	0.49	1.96
PFOA	335-67-1	4.33	I9655-FS(0)	1.000	11/2/2019	0.20	0.49	1.96
PFNA	375-95-1	0.47 J	I9655-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFDA	335-76-2	0.12 J	I9655-FS(0)	1.000	11/2/2019	0.11	0.39	1.96
PFUnA	2058-94-8	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
PFDoA	307-55-1	0.49 U	I9655-FS(0)	1.000	11/2/2019	0.14	0.49	1.96
PFTrDA	72629-94-8	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
PFTeDA	376-06-7	0.49 U	I9655-FS(0)	1.000	11/2/2019	0.22	0.49	1.96
NMeFOSAA	2355-31-9	0.49 U	I9655-FS(0)	1.000	11/2/2019	0.20	0.49	1.96
NEtFOSAA	2991-50-6	0.49 U	I9655-FS(0)	1.000	11/2/2019	0.17	0.49	1.96
PFBS	375-73-5	1.95 J	I9655-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFHxS	355-46-4	1.58 J	I9655-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFOS	1763-23-1	3.93	I9655-FS(0)	1.000	11/2/2019	0.15	0.49	1.96
HFPO-DA	13252-13-6	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.09	0.39	1.96
Adona	919005-14-4	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
11Cl-PF3OUdS	763051-92-9	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
9Cl-PF3ONS	756426-58-1	0.39 U	I9655-FS(0)	1.000	11/2/2019	0.12	0.39	1.96

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	94	I9655-FS(0)	11/2/2019
13C2-PFDA	86	I9655-FS(0)	11/2/2019
d5-EtFOSAA	76	I9655-FS(0)	11/2/2019
13C3-HFPO-DA	90	I9655-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Needham Well # 3A FRB						
Battelle ID		I9656-FS						
Sample Type		SA						
Collection Date		10/22/2019						
Extraction Date		10/24/2019						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		AQ						
Sample Size		0.255						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.23	0.49	1.96
PFHpA	375-85-9	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.23	0.49	1.96
PFOA	335-67-1	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.20	0.49	1.96
PFNA	375-95-1	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFDA	335-76-2	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.11	0.39	1.96
PFUnA	2058-94-8	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
PFDoA	307-55-1	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.14	0.49	1.96
PFTrDA	72629-94-8	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
PFTeDA	376-06-7	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.22	0.49	1.96
NMeFOSAA	2355-31-9	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.20	0.49	1.96
NEtFOSAA	2991-50-6	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.17	0.49	1.96
PFBS	375-73-5	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFHxS	355-46-4	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
PFOS	1763-23-1	0.49 U	I9656-FS(0)	1.000	11/2/2019	0.15	0.49	1.96
HFPO-DA	13252-13-6	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.09	0.39	1.96
Adona	919005-14-4	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.12	0.39	1.96
11Cl-PF3OUdS	763051-92-9	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.10	0.39	1.96
9Cl-PF3ONS	756426-58-1	0.39 U	I9656-FS(0)	1.000	11/2/2019	0.12	0.39	1.96

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	102	I9656-FS(0)	11/2/2019
13C2-PFDA	98	I9656-FS(0)	11/2/2019
d5-EtFOSAA	95	I9656-FS(0)	11/2/2019
13C3-HFPO-DA	97	I9656-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID	Procedural Blank
Battelle ID	CW073PB-FS
Sample Type	PB
Collection Date	10/24/2019
Extraction Date	10/24/2019
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	WATER
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)		Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFHpA	375-85-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.23	0.50	2.00
PFOA	335-67-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
PFNA	375-95-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFDA	335-76-2	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.11	0.40	2.00
PFUnA	2058-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFDoA	307-55-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.14	0.50	2.00
PFTrDA	72629-94-8	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
PFTeDA	376-06-7	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.22	0.50	2.00
NMeFOSAA	2355-31-9	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.20	0.50	2.00
NEtFOSAA	2991-50-6	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.17	0.50	2.00
PFBS	375-73-5	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFHxS	355-46-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
PFOS	1763-23-1	0.50	U	CW073PB-FS(0)	1.000	11/2/2019	0.15	0.50	2.00
HFPO-DA	13252-13-6	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.09	0.40	2.00
Adona	919005-14-4	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00
11Cl-PF3OUdS	763051-92-9	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.10	0.40	2.00
9Cl-PF3ONS	756426-58-1	0.40	U	CW073PB-FS(0)	1.000	11/2/2019	0.12	0.40	2.00

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	96	CW073PB-FS(0)	11/2/2019
13C2-PFDA	91	CW073PB-FS(0)	11/2/2019
d5-EtFOSAA	90	CW073PB-FS(0)	11/2/2019
13C3-HFPO-DA	91	CW073PB-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

Client ID		Laboratory Control Sample								
Battelle ID		CW074LCS-FS								
Sample Type		LCS								
Collection Date		10/24/2019								
Extraction Date		10/24/2019								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		WATER								
Sample Size		0.250								
Size Unit-Basis		L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	37.96	CW074LCS-FS(0)	1.000	11/2/2019	30.00	127		70	130
PFHpA	375-85-9	39.14	CW074LCS-FS(0)	1.000	11/2/2019	30.00	130		70	130
PFOA	335-67-1	36.28	CW074LCS-FS(0)	1.000	11/2/2019	30.00	121		70	130
PFNA	375-95-1	37.04	CW074LCS-FS(0)	1.000	11/2/2019	30.00	123		70	130
PFDA	335-76-2	35.78	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFUnA	2058-94-8	35.61	CW074LCS-FS(0)	1.000	11/2/2019	30.00	119		70	130
PFDoA	307-55-1	35.29	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTrDA	72629-94-8	35.44	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
PFTeDA	376-06-7	35.34	CW074LCS-FS(0)	1.000	11/2/2019	30.00	118		70	130
NMeFOSAA	2355-31-9	37.79	CW074LCS-FS(0)	1.000	11/2/2019	30.00	126		70	130
NEtFOSAA	2991-50-6	37.52	CW074LCS-FS(0)	1.000	11/2/2019	30.00	125		70	130
PFBS	375-73-5	33.32	CW074LCS-FS(0)	1.000	11/2/2019	26.55	125		70	130
PFHxS	355-46-4	36.94	CW074LCS-FS(0)	1.000	11/2/2019	28.35	130		70	130
PFOS	1763-23-1	31.71	CW074LCS-FS(0)	1.000	11/2/2019	28.65	111		70	130
HFPO-DA	13252-13-6	34.31	CW074LCS-FS(0)	1.000	11/2/2019	30.00	114		70	130
Adona	919005-14-4	35.60	CW074LCS-FS(0)	1.000	11/2/2019	28.35	126		70	130
11Cl-PF3OUdS	763051-92-9	33.12	CW074LCS-FS(0)	1.000	11/2/2019	28.20	117		70	130
9Cl-PF3ONS	756426-58-1	33.93	CW074LCS-FS(0)	1.000	11/2/2019	27.90	122		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	129	CW074LCS-FS(0)	11/2/2019
13C2-PFDA	127	CW074LCS-FS(0)	11/2/2019
d5-EtFOSAA	121	CW074LCS-FS(0)	11/2/2019
13C3-HFPO-DA	127	CW074LCS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample							
Client ID		Needham-Finished#2	Needham-Finished							
Battelle ID		I9651MS-FS	I9650-FS							
Sample Type		MS	SA							
Collection Date		10/22/2019	10/22/2019							
Extraction Date		10/24/2019	10/24/2019							
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS							
% Moisture		NA	NA							
Matrix		AQ	AQ							
Sample Size		0.290	0.290							
Size Unit-Basis		L	L			Analysis			Control Limits	
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	31.40	2.98	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFHpA	375-85-9	29.83	1.70 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	82		70	130
PFOA	335-67-1	34.73	6.06	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFNA	375-95-1	29.74	0.88 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	84		70	130
PFDA	335-76-2	28.84	0.24 J	I9651MS-FS(0)	1.000	11/2/2019	34.48	83		70	130
PFUnA	2058-94-8	27.05	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	78		70	130
PFDoA	307-55-1	25.63	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	74		70	130
PFTrDA	72629-94-8	24.01	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
PFTeDA	376-06-7	24.13	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	70		70	130
NMeFOSAA	2355-31-9	32.50	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	94		70	130
NEtFOSAA	2991-50-6	30.72	0.43 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	89		70	130
PFBS	375-73-5	26.77	2.70	I9651MS-FS(0)	1.000	11/2/2019	30.52	79		70	130
PFHxS	355-46-4	31.61	2.49	I9651MS-FS(0)	1.000	11/2/2019	32.59	89		70	130
PFOS	1763-23-1	30.06	6.15	I9651MS-FS(0)	1.000	11/2/2019	32.93	73		70	130
HFPO-DA	13252-13-6	27.97	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	34.48	81		70	130
Adona	919005-14-4	27.44	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.59	84		70	130
11Cl-PF3OUdS	763051-92-9	22.72	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.41	70		70	130
9Cl-PF3ONS	756426-58-1	26.27	0.34 U	I9651MS-FS(0)	1.000	11/2/2019	32.07	82		70	130

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	99	I9651MS-FS(0)	11/2/2019
13C2-PFDA	92	I9651MS-FS(0)	11/2/2019
d5-EtFOSAA	90	I9651MS-FS(0)	11/2/2019
13C3-HFPO-DA	93	I9651MS-FS(0)	11/2/2019

Project Client: Massachusetts Water Resouce Authority (MWRA)
Project Name: MWRA - PFAS Drinking Water Analysis
Project No.: 100105456-0041

			MS/MSD Background Sample											
Client ID		Needham-Finished#2	Needham-Finished											
Battelle ID		I9651MSD-FS	I9650-FS											
Sample Type		MSD	SA											
Collection Date		10/22/2019	10/22/2019											
Extraction Date		10/24/2019	10/24/2019											
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS											
% Moisture		NA	NA											
Matrix		AQ	AQ											
Sample Size		0.290	0.290											
Size Unit-Basis		L	L			Analysis				Control Limits				RPD
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFHxA	307-24-4	32.29	2.98	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFHpA	375-85-9	31.08	1.70 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	85		70	130	3.6		≤ 30
PFOA	335-67-1	35.17	6.06	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	1.2		≤ 30
PFNA	375-95-1	32.02	0.88 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	90		70	130	6.9		≤ 30
PFDA	335-76-2	28.33	0.24 J	I9651MSD-FS(0)	1.000	11/2/2019	34.48	81		70	130	2.4		≤ 30
PFUnA	2058-94-8	27.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	80		70	130	2.5		≤ 30
PFDoA	307-55-1	27.12	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	79		70	130	6.5		≤ 30
PFTrDA	72629-94-8	25.68	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	74		70	130	5.6		≤ 30
PFTeDA	376-06-7	25.22	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	73		70	130	4.2		≤ 30
NMeFOSAA	2355-31-9	32.92	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	95		70	130	1.1		≤ 30
NEtFOSAA	2991-50-6	31.88	0.43 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	92		70	130	3.3		≤ 30
PFBS	375-73-5	27.38	2.70	I9651MSD-FS(0)	1.000	11/2/2019	30.52	81		70	130	2.5		≤ 30
PFHxS	355-46-4	33.31	2.49	I9651MSD-FS(0)	1.000	11/2/2019	32.59	95		70	130	6.5		≤ 30
PFOS	1763-23-1	31.02	6.15	I9651MSD-FS(0)	1.000	11/2/2019	32.93	76		70	130	4.0		≤ 30
HFPO-DA	13252-13-6	29.00	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	34.48	84		70	130	3.6		≤ 30
Adona	919005-14-4	29.40	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.59	90		70	130	6.9		≤ 30
11Cl-PF3OUdS	763051-92-9	24.45	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.41	75		70	130	6.9		≤ 30
9Cl-PF3ONS	756426-58-1	26.91	0.34 U	I9651MSD-FS(0)	1.000	11/2/2019	32.07	84		70	130	2.4		≤ 30

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C2-PFHxA	98	I9651MSD-FS(0)	11/2/2019
13C2-PFDA	89	I9651MSD-FS(0)	11/2/2019
d5-EtFOSAA	85	I9651MSD-FS(0)	11/2/2019
13C3-HFPO-DA	92	I9651MSD-FS(0)	11/2/2019

BATTELLE
It can be done

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highest concentration level in the calibration
J	Analyte detected below the Limit of Quantitation (LOQ)
MI	Significant Matrix Interference - value could not be determined.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

NEEDHAM WATER DEPT
500 DEDHAM AVE
NEEDHAM, MA 02492

Date: June 13, 2019
City/Town: NEEDHAM
PWS Name: NEEDHAM WATER DEPT
PWS ID: 3199000
Subject: UCMR3 Sampling Data for Per-and Polyfluoroalkyl Substances (PFAS) with Lower Reporting Levels

IMPORTANT NOTICE

Dear Public Water Supplier who participated in USEPA UCMR 3 (2013-2015) PFAS monitoring:

The purpose of this letter is to notify you that the laboratory you used for the USEPA third round of the Unregulated Contaminant Monitoring Rule (UCMR3) during the period of 2013-2015 may have lower reporting level data for your Per- and Polyfluoroalkyl substances (PFAS) samples, and we are writing to encourage you to contact the laboratory to obtain any such data.

As described in our recent April 17, 2019 communication, located at https://www.mass.gov/doc/letter-to-pws-about-important-updated-information-regarding-pfas/download, MassDEP is re-evaluating recommended limits for PFAS in drinking water and has proposed lowering them because new analysis of studies have identified public health risks associated with ingestion of lower levels of PFAS. MassDEP's activities include a recently-proposed groundwater cleanup standard for PFAS currently out for public comment, consideration of revisions to the current Office of Research and Standards Guideline (ORSG) for PFAS, and initiation of the process to establish a PFAS Maximum Contaminant Level (MCL). MassDEP's proposed groundwater cleanup Method 1 GW-1 Standard, which will be applicable to groundwater protected for its current and/or future use as drinking water, is 20 part-per trillion (ppt) for the sum of six PFAS compounds (PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFDA). Public comments received on the proposed GW-1 Standard will be considered by the Department in any revision to the ORSG and during MCL development.

Your UCMR3 PFAS Results

One hundred and seventy-nine (179) Massachusetts public water systems participated in the USEPA's UCMR3 monitoring program between 2013 and 2015. Your public water system was one of the participants and previously sampled your drinking water sources at each entrance point to the distribution system for six PFAS compounds (note that the UCMR3 PFAS list included perfluorobutanesulfonic acid, PFBS, and did not include PFDA). For more information on the UCMR3 see https://www.epa.gov/dwucmr.

At the time of the UCMR3 monitoring, the laboratory minimum reporting levels required by EPA for the six PFAS compounds varied from 10 ppt to 90 ppt (equivalent to 0.01 to 0.09 micrograms-per-liter (ug/L)). MassDEP is aware that some of the laboratories that analyzed the samples taken during UCMR3 achieved lower reporting limits than those required by EPA, but only reported concentrations greater than EPA's required reporting limits. Therefore, there may be lower level PFAS data available for your UCMR3 drinking water samples. For your UCMR3 testing results and laboratory contact information see the attached summary. These results are also located at https://www.mass.gov/files/documents/2017/11/15/ucmr3-2017-02.xlsx. Results from UCMR3 were reported in micrograms-per-liter (ug/L).

What should you do about your UCMR3 PFAS results?

Given the changes in PFAS information, including MassDEP's proposed groundwater cleanup standard, reevaluation of the ORSG, the development of a drinking water MCL, and the possible availability of lower level UCMR3 results, MassDEP is recommending that you do the following:

- **Contact your UCMR3 (2013-2015) laboratory** to see if your data was generated with lower reporting limits than was reported. Please be aware that only you, the client of the UCMR3 laboratory, can request this data. *Please note:*
    1. *MassDEP contacted one UCMR3 laboratory and they indicated that there may be a cost associated with obtaining a summary report of this data. If the laboratory already stored the results as a value below the UCMR3 MRL in their laboratory Information Management system (LIMS), it was estimated that a copy of the database summary could cost approximately $75.00 and that a formal new full report could cost approximately $150.00 – $200.00. However, if the laboratory only stored results in their LIMS as a value above the UCMR3 MRL and stored all others as non-detects then the cost of re-examining/retrieving the results could be higher. For comparison, please note current PFAS analysis cost is approximately $300.00 per sample.*
    2. *Much more is known now than when UCMR3 testing occurred about the importance of using appropriate sample protocols when collecting PFAS samples. If you are concerned that appropriate sample protocols may not have been followed during your UCMR3 sampling, you might consider resampling.*

- **If you can obtain results with lower reporting levels from your UCMR3 laboratory, please share them with MassDEP/DWP** by sending a copy of the data to program.director-dwp@mass.gov, Subject "PFAS". This additional data will inform follow up activities for any PWS that has PFAS values of concern, and it will help guide MassDEP in the future analysis and policy-making regarding PFAS in drinking water. For more information on detection limits and PFAS, see this presentation by the Eurofins Eaton Analytical laboratory at https://greensciencepolicy.org/wp-content/uploads/2017/12/Andy_Eaton_UCMR3_PFAS_data.pdf.
- **If your laboratory does not have or is unable to provide data with lower detection limits**, **and you are concerned about potential PFAS in your water, you may want to proactively retest your drinking water** at the entrance points to your distribution system and provide us with your analytical results.
- **If you retest, MassDEP strongly recommends that you do the following:**
    - Collect a sample at each entrance point to your distribution system.
    - Collect all samples following the Sample Collection procedures located at https://www.mass.gov/doc/field-sampling-guide-for-pfas/download.
    - Use EPA Method 537 or 537.1
    - Until MassDEP establishes a regulation and/or certification program for PFAS the MassDEP Drinking Water Program (DWP) will accept results of analyses performed by laboratories:
        - ✓ Previously Approved by EPA for UCMR3 monitoring using EPA Method 537 and also approved by the MassDEP DWP;
          Or

    - ✓ Certified by another state or certification authority for EPA Method 537 or 537.1 **and approved by the MassDEP Drinking Water Program in accordance with 310 CMR 22.11A (2)**. See list of MassDEP Drinking Water Program approved laboratories at: https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#laboratories-and-testing-for-pfas-
  - Report all contaminants in the scope of either method (537 or 537.1) and report PFOA, PFOS, PFNA, PFHxS and PFHpA at a Minimum Reporting Level (MRL) of 5 parts per trillion (ppt) or lower and all other contaminants at the same level or, if not achievable, at the lowest feasible MRL.
  - Report all results to your MassDEP regional office using the laboratory reporting form located at https://www.mass.gov/doc/per-and-polyfluoroalkyl-substances-pfas-report/download.
- **For a factsheet on Questions and Answers for Public Water Systems regarding PFAS** see https://www.mass.gov/media/1995511

What happens if PFAS is detected in your water at the entrance point(s) to the distribution system?

If PFAS is found in your finished water, another sample should be collected from the same location(s). This sample will be used to confirm the initial result(s). If the initial result was greater than 5 ppt, it may be prudent to also collect raw water samples from each source or manifold source(s) to determine which source(s) the PFAS came from. See the MassDEP Fact Sheet: PFAS in Public Drinking Water Supplies – Q&A for PWS for an explanation of how to interpret estimated values in a lab report.

- If the confirmed PFAS level (average of initial and confirmatory sample) is above the ORSG of 70 ppt, you will be encouraged to notify your elected officials and consumers of the results and updated information on PFAS and to reduce the level of PFAS in the finished water by using alternative sources, blending sources or installing treatment.

- If the confirmed PFAS level is between the ORSG of 70 ppt and the proposed Massachusetts Contingency Plan (MCP) groundwater cleanup standard of 20 ppt, MassDEP will encourage you to notify your elected officials and consumers to make them aware of the results and updated information on PFAS. You will be required to monitor quarterly for PFAS and MassDEP will also recommend that you consider what options are available to you to lower the PFAS level in the finished water.

- If the confirmed PFAS level is below the proposed MCP groundwater cleanup standard of 20 ppt but at or above 10 ppt, MassDEP will recommend that you evaluate your operations, review source protection practices, monitor at a frequency recommended by the Department and continue routine operations.

- If the confirmed PFAS level is below 10 ppt, MassDEP will recommend continuance of routine operations.

MassDEP must approve all required Public Notices and will work with you on all steps to address PFAS in drinking water. You are also reminded that you will have to include all detected unregulated contaminants in your Consumer Confidence Reports.

For more information about PFAS in drinking water see:

- MassDEP webpage https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas
- MassDEP Fact Sheet – PFAS in Public Drinking Water Supplies – Q&A for PWS https://www.mass.gov/media/1995511
- MassDEP Fact Sheet – PFAS in Drinking Water: Questions and Answers for Consumers. https://www.mass.gov/doc/massdep-fact-sheet-pfas-in-drinking-water-questions-and-answers-for-consumers
- USEPA's Drinking Water Health Advisories can be found at: https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos
- The Centers for Disease Control and Prevention's Public Health Statement for PFOS and PFOA can be found at: https://www.atsdr.cdc.gov/pfas/index.html

- For additional information on possible health effects, you may contact the Massachusetts Department Environmental Protection, Office of Research and Standards, at 617-556-1165.

MassDEP Drinking Water Program contacts:

Region	Name	Phone #	Email
Western	Catherine Wanat	413-755-2216	Catherine.wanat@mass.gov
Central	Robert Bostwick	508-849-4036	Robert.Bostwick@mass.gov
Northeast	Amy LaPusata	978-694-3291	Amy.lapusata@mass.gov
Southeast	William Schwartz	508-946-2818	William.schwartz@mass.gov
Boston: Program.director-dwp@mass.gov or Margaret Finn 617-292-5746			

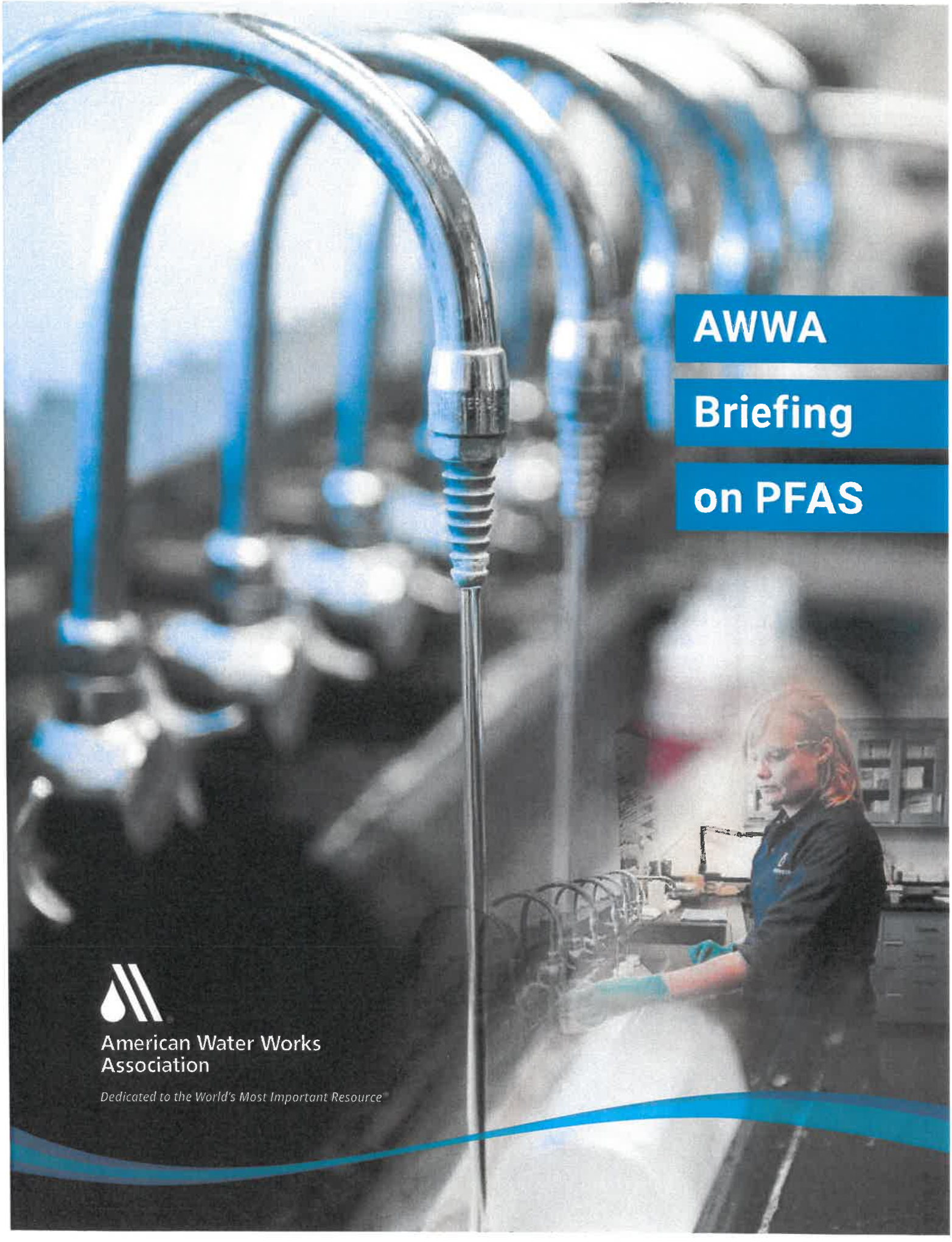
If you have any additional questions about what to do about your UCMR3 (2013-2015) PFAS results, please contact the Drinking Water Program at program.director-dwp@mass.gov, and use the subject line "PFAS."
We look forward to working with you on this important public health protection issue and will work with you on all steps to address PFAS in drinking water.

Sincerely,

A.M. Yvette DePeiza
Director, Drinking Water Program
MassDEP/BWR

ecc: MassDEP/DWP Regional Chief, ORS, MDPH, EPA

PWSID	FACILITY_ID	FACILITY_NAME	SAMPLE_ID	DATE_COLLECTED	CONTAMINANT	MRL	ANALYTICAL_METHOD	RESULT
3199000	00012	Charles River WTP	759234-10291	11/15/2013	PFNA	0.02	EPA 537	< 0.02
3199000	00012	Charles River WTP	759234-10291	11/15/2013	PFOS	0.04	EPA 537	< 0.04
3199000	00012	Charles River WTP	759234-10291	11/15/2013	PFHxS	0.03	EPA 537	< 0.03
3199000	00012	Charles River WTP	759234-10291	11/15/2013	PFOA	0.02	EPA 537	< 0.02
3199000	00012	Charles River WTP	759234-10291	11/15/2013	PFHpA	0.01	EPA 537	< 0.01
3199000	00012	Charles River WTP	792305-11451	5/21/2014	PFHpA	0.01	EPA 537	< 0.01
3199000	00012	Charles River WTP	792305-11451	5/21/2014	PFHxS	0.03	EPA 537	< 0.03
3199000	00012	Charles River WTP	792305-11451	5/21/2014	PFOA	0.02	EPA 537	< 0.02
3199000	00012	Charles River WTP	792305-11451	5/21/2014	PFOS	0.04	EPA 537	< 0.04
3199000	00012	Charles River WTP	792305-11451	5/21/2014	PFNA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1413190-001	11/17/2014	PFOA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1413190-001	11/17/2014	PFOS	0.04	EPA 537	< 0.04
3199000	00011	MWRA Intertie	K1413190-001	11/17/2014	PFNA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1413190-001	11/17/2014	PFHxS	0.03	EPA 537	< 0.03
3199000	00011	MWRA Intertie	K1413190-001	11/17/2014	PFHpA	0.01	EPA 537	< 0.01
3199000	00011	MWRA Intertie	K1502222-001	2/26/2015	PFHpA	0.01	EPA 537	< 0.01
3199000	00011	MWRA Intertie	K1502222-001	2/26/2015	PFHxS	0.03	EPA 537	< 0.03
3199000	00011	MWRA Intertie	K1502222-001	2/26/2015	PFOA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1502222-001	2/26/2015	PFOS	0.04	EPA 537	< 0.04
3199000	00011	MWRA Intertie	K1502222-001	2/26/2015	PFNA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1505735-001	5/26/2015	PFOA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1505735-001	5/26/2015	PFHpA	0.01	EPA 537	< 0.01
3199000	00011	MWRA Intertie	K1505735-001	5/26/2015	PFOS	0.04	EPA 537	< 0.04
3199000	00011	MWRA Intertie	K1505735-001	5/26/2015	PFNA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1505735-001	5/26/2015	PFHxS	0.03	EPA 537	< 0.03
3199000	00011	MWRA Intertie	K1509581-001	8/27/2015	PFNA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1509581-001	8/27/2015	PFOS	0.04	EPA 537	< 0.04
3199000	00011	MWRA Intertie	K1509581-001	8/27/2015	PFHpA	0.01	EPA 537	< 0.01
3199000	00011	MWRA Intertie	K1509581-001	8/27/2015	PFOA	0.02	EPA 537	< 0.02
3199000	00011	MWRA Intertie	K1509581-001	8/27/2015	PFHxS	0.03	EPA 537	< 0.03



AWWA Briefing on PFAS

American Water Works Association

Dedicated to the World's Most Important Resource

SOUND SCIENCE, PUBLIC HEALTH PROTECTION CRUCIAL FOR PFAS

AWWA members and friends,

If you are in the water sector, and even if you are not, you have likely heard about per- and polyfluoroalkyl substances (PFAS). PFAS are increasingly a topic of public concern, particularly when they are discovered in community drinking water supplies.

PFAS have been manufactured and used in various industries around the globe since the 1940s. Their prevalence and staying power in the environment—including drinking water sources—have raised concerns about the possibility of adverse health impacts.

In February 2019, after input from AWWA and other water organizations, EPA issued its PFAS Action Plan. The plan included a goal to move forward with a regulatory determination for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) before the year's end.

In the meantime, some states are unwilling to wait. As of October 2019, 21 states have established policies to protect drinking water sources from PFAS and three more are engaged in developing policies. Three states have drinking water MCLs for PFAS in effect, with five more somewhere in the development process.

PFAS concerns have also quickly generated a host of federal legislative proposals. In May 2019, AWWA testified on PFAS before both houses of U.S. Congress, noting that "we are eager to follow the data on PFAS compounds wherever it may go in the investigative process so that we may know how to best protect public health."

With PFAS, water systems again find themselves at the center of an emotional public health debate. It's worth noting that this cycle of uncertainty, public concern, and demand for action will likely be repeated with other emerging compounds. When that happens, just as with PFAS:

AWWA will stand by the twin pillars that uphold smart water policy: a commitment to public health protection and fidelity to rigorous scientific process.

AWWA provides this report—and many other resources related to PFAS—to help our communities understand and confront this latest challenge to water quality.

Sincerely,

David B. LaFrance, AWWA CEO

KEEPING A SEAT AT THE TABLE FOR SCIENCE

Before a packed, early-morning audience at AWWA's 2019 Annual Conference and Exposition in Denver, Carel Vandermeyden, Deputy Executive Director of the Cape Fear Public Utility Authority (CFPUA) in North Carolina, shared a story that has been repeated in various forms in communities throughout North America.

CFPUA customers first learned in 2017 that a "soup" of PFAS was detected in the Cape Fear River supplying water to 80 percent of the utility's customers, a legacy from decades of industrial pollution. Little was known about the health impacts of the compounds being found. No federal or state regulations existed. But the demand for action was swift from politicians, media and consumers.

"In a two-year period, CFPUA has gone through a pretty significant customer interaction... we did research and pilot testing, designed an upgrade for a 44 MGD treatment plant...while trying to explain to our customers why CFPUA has to spend approximately $46 million of ratepayer money to deal with this problem that came from a point source," Vandermeyden said.

PFAS a growing community concern

CFPUA has since filed a federal lawsuit against Chemours and DuPont–which operate an upstream chemical manufacturing facility—to recover costs and damages. By summer of 2019, the utility reported spending more than $8 million to address the PFAS issue. Its Board also awarded a $35.9 million construction contract to build eight new deep-bed granular activated carbon contactors to reduce PFAS in its finished water from the Cape River.

Carel Vandermeyden, left, and Peter Grevatt discuss PFAS at ACE19.

Water Research Foundation CEO Peter Grevatt, who moderated the ACE19 panel discussion, observed that PFAS seemed to be among the issues of greatest concern at the conference.

"This conversation about PFAS, there's something for almost everybody in the water sector," he said. "Whether you're thinking about drinking water...or whether you're thinking about wastewater and what's coming into your treatment plant or whether you're a reuse person... whether you're managing stormwater and thinking about runoff and how you're going to deal with those issues...One of the conversations that I think has been flowing through the conference—as we're all aware of the extraordinary public concern and also political action—is how do we try to still keep a seat at the table for science in the conversation around PFAS?"

More AWWA resources available at awwa.org/PFAS

PFAS THEN AND NOW

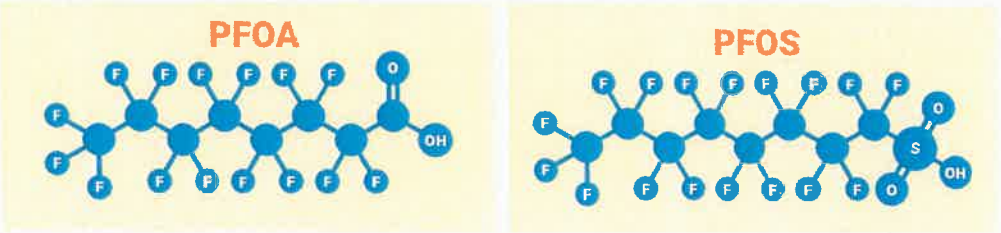
Chemical compounds are manufactured to make life easier, better or safer. But time and information sometime reveal unintended consequences, as exemplified by PFAS.

Over the last 70 years, these chemicals have been manufactured and used around the world to enhance many everyday products. They have been used to fight fires and recover oil, and to produce medical equipment, food packaging, cleaning products, nonstick cookware, stain- and water-resistant coatings, paints, inks and cosmetics.

Today, their use has led to a serious challenge for public water suppliers. PFAS are mobile, persistent and may have adverse health effects at very low concentrations.

Now phased out in the United States, PFOA and PFOS were among the first PFAS produced and remain the most well-understood and commonly detected PFAS. These and other legacy PFAS that are no longer used have already entered the environment at industrial sites, landfills, and at sites where firefighting foams were applied. While there are hundreds of banned PFAS, there are thousands more in existence, and more than 600 used commercially in the United States.

PFAS chemical properties



More AWWA resources available at awwa.org/PFAS

STUDYING POTENTIAL HEALTH EFFECTS OF PFAS

The same properties that made these chemicals attractive for industrial and consumer applications have fostered the accumulation of PFAS in the human body and in the environment. We know these chemicals accumulate in various tissues of living organisms, and that some are toxic, but we know relatively little else about many of them. Fortunately, that's rapidly changing because of growing scrutiny from health agencies, utilities and the public.

Research, studies needed for answers

The speed with which PFAS have emerged as a challenge for the water sector is stunning. In AWWA's 2019 State of the Water Industry Report, PFAS was the sector's second-highest ranked regulatory concern. In 2014, PFAS had just broken into the SOTWI top-ten emerging contaminant issues.

EPA and the U.S. Centers for Disease Control and Prevention describe the human health effects from exposure to low environmental levels of PFAS as uncertain. There are, however, studies of laboratory animals given large amounts of PFAS that found some PFAS compounds may negatively impact growth and development, reproduction, thyroid function, the immune system, and the liver. More research is needed to assess the human health effects of exposure to PFAS.

There is broad agreement that a great deal of research is needed to better understand which PFAS compounds – and at what levels – pose serious public health risks and how to cost-effectively remove PFAS contamination. With those goals in mind, AWWA is joining with colleagues across the water sector to support federal research funding.

Excerpted from June 2019 Opflow article by Dustin Mobley and Chris Tadanier

PFAS on rise in AWWA's 2019 State of the Water Industry Report

CURRENT REGULATORY CONCERNS

Rank	Area	% Extremely concerned
1	Non-point source pollution	17.1%
2	Per- and polyfluoroalkyl substances (PFAS)	15.8%
3	Cyanotoxins	14.6%
4	Chemical spills	16.0%
5	Point source pollution	13.5%
6	Combined sewer overflows	14.9%
7	Disinfection byproducts	12.3%
8	Nutrient removals	13.0%
9	Lead and copper	14.0%
10	Pathogens	14.4%
11	Radionuclides	10.9%
12	Arsenic	10.7%

SOURCES AND OCCURRENCES OF PFAS

In 2009, EPA included PFOA and PFOS on the Third Contaminant Candidate List and started the process of evaluating PFAS regulation under the Safe Drinking Water Act. The next step was developing a sound analytical method and sampling more than 4,900 water systems for six PFAS compounds through the Third Unregulated Contaminant Monitoring Rule (UCMR3). Samples collected from 2013 to 2015 showed a small number of water supplies–1.3%–had PFAS present above the current EPA Lifetime Health Advisory Level of 70 ng/L for PFOA and PFOS.

AWWA members are currently working with EPA to ensure that additional monitoring for PFAS compounds in the fifth UCMR cycle, 2021-2023, will utilize a well-tested analytical method and that states, EPA, and water systems are prepared to communicate effectively about observed levels.

Sources of PFAS Contamination

Aqueous film-forming foams (AFFFs)

AFFFs have been used at military bases, airports, and firefighting training sites to suppress flammable liquid fires, and several PFAS compounds have been ingredients in these products. Uncontained AFFF runoff has migrated through soil to contaminate nearby aquifers and surface waters at a number of sites in the United States.

Manufacturing

Facilities that produced PFAS products or used PFAS in manufacturing processes have released the chemicals through wastewaters, solid waste, and air emissions.

Landfill disposal

At several historic landfill sites, PFAS-contaminated waste has contributed to leachate—liquid that has passed through a landfill and extracted dissolved and suspended matter from it—that subsequently contaminated natural waters. Today, untreated landfill leachate may pose a contamination risk.

Excerpted from June 2019 Opflow article by Dustin Mobley and Chris Tadanier

Treatment options

To date, there are three widely applied technologies for PFAS reduction once water is contaminated. Each has advantages and limitations. All three generate waste streams that themselves must be managed. All require significant increases in capital and operating expenses. They include:

- Activated carbon, in which contaminants are adsorbed by the activated carbon media. The media needs to be regenerated periodically to renew adsorptive capabilities.
- Anion exchange, typically called ion exchange. The ion exchange process removes contaminants, such as PFAS, from water by exchanging them for another charged substance–typically chloride–on the surface of a resin. Removal rates vary by PFAS compound.
- Membrane filtration, using nanofiltration and/or reverse osmosis (RO) membranes. The technology removes dissolved substances by passage through a porous membrane at high pressure.

PFAS treatment methods

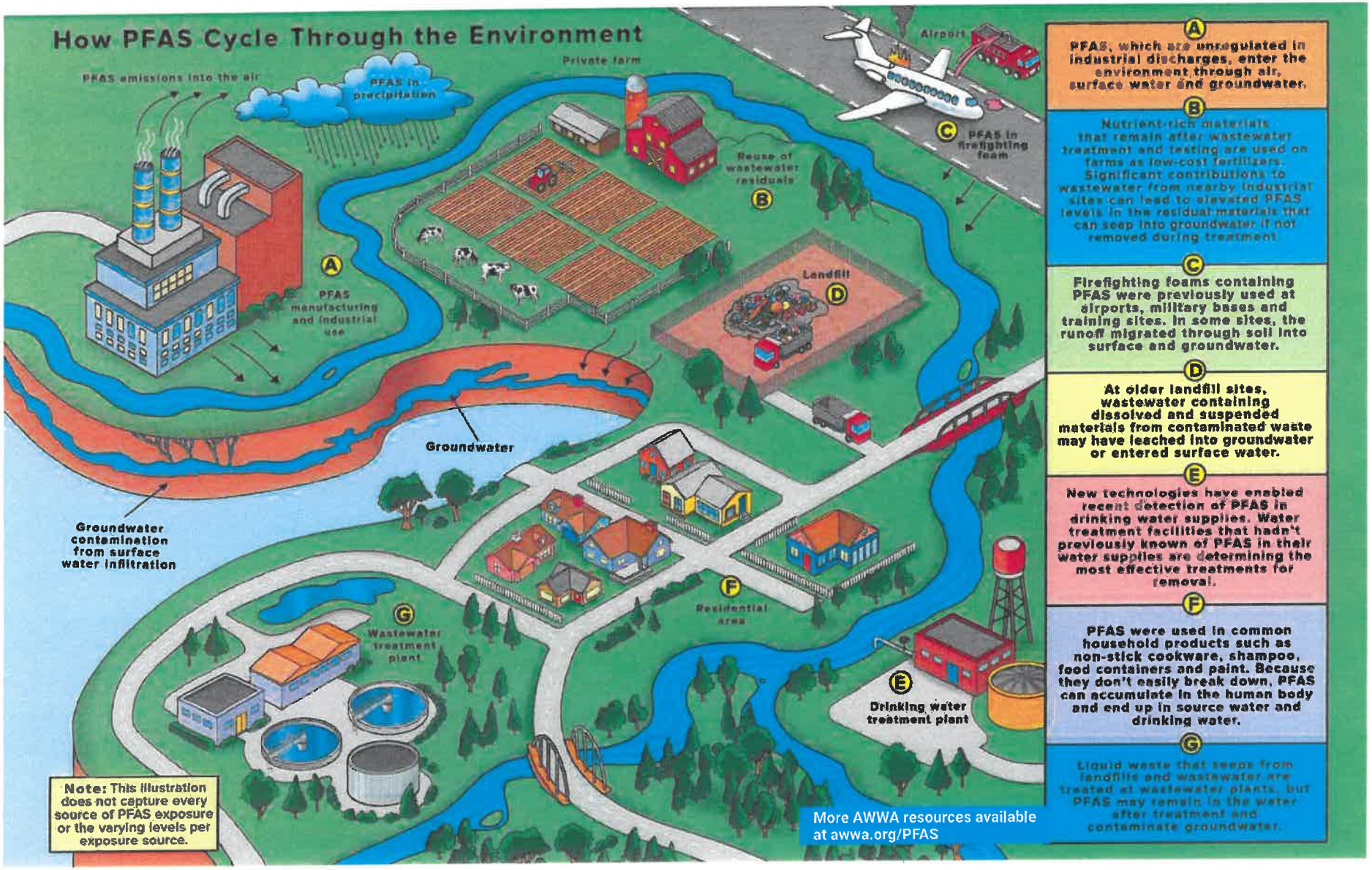
Treatment Method	Considerations	
	Pros	Cons
Granular Activated Carbon (GAC)	• Widely used for PFAS removal, high removal rates possible • Powder activated carbon is useful for responding to spills	• Lower removal rates for perfluoroalkyl acids and short-chain PFAS • Possibility of competitive adsorption with other compounds present, such as TOC • Low rate of adsorption in GAC may result in long mass transfer zones and adjustment of associated operating requirements • Requires thermal regeneration of GAC; regenerated GAC may not be as effective as virgin GAC • Creates waste residuals to dispose of exhausted carbon and potential opportunity for pollution
Anion Exchange (IX)	• Sorption rates depend on the resin and porosity • Can partially remove PFOA, PFNA, and PFOS • Resin can be specialized for specific PFAS and allows IX to have a higher capacity than activated carbon	• Life-cycle costs are similar to GAC but depend greatly on resin and treatment system • Rate of exchange will depend on many factors, including influent PFAS concentration, design of the IX, solution ionic strength and bead material • Surface water supplies may need clarification/filtration before treatment • Range of efficacy for long and short-chain PFAS
Membrane Filtration	• Excellent, broad spectrum removal of PFAS • Reasonable for groundwater systems	• Reject water must be treated before discharging • High capital expense with high energy demands • Susceptible to fouling and may require pre-treatment • Reverse osmosis is preferable to nanofiltration due to better removal efficiency but higher operating costs • Volume of water lost to brine waste stream can be significant

PFAS contaminated residuals

Water and wastewater treatment generate solid residuals as part of conventional treatment processes to protect public health. Biosolids from wastewater treatment are nutrient rich, and once treated and tested to meet federal and state or provincial standards, they often are recycled as lower-cost fertilizers and soil amendments on agricultural land.

PFAS are not used in water and wastewater treatment processes but may be found in drinking water sources or wastewater influent. PFAS compounds have been shown to accumulate in biosolids, so when there are significant contributions from industry, levels in biosolids have been high enough to lead to elevated levels in groundwater and uptake into the food chain. Reducing or eliminating PFAS at the source is the most efficient action to address potential concerns related to PFAS in biosolids and residuals.

More AWWA resources available at awwa.org/PFAS



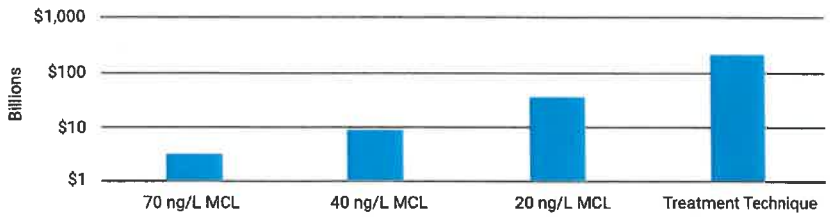
COSTS OF PFAS TREATMENT

With U.S. Congress considering legislation that would require a national regulation for PFAS, the Congressional Budget Office asked AWWA for information about the costs of PFAS removal through drinking water treatment.

AWWA prepared a preliminary estimate of drinking water treatment costs for two specific PFAS, PFOA and PFOS. The estimate detailed three different technologies for PFOA and PFOS removal – granular activated carbon (GAC), ion exchange and reverse osmosis. The cost of each of these technologies was estimated based on three potential maximum contaminant levels that EPA could set. A fourth scenario addressed the possibility of EPA setting a treatment technique standard that would apply to all community water systems. AWWA's full cost estimate analysis is available at awwa.org/pfas.

Depending on how PFAS-related legislation is finalized, the potential capital costs associated with treatment to remove PFOA and PFOS in drinking water would vary significantly. At a minimum, the potential capital cost would quickly exceed $3 billion nationally if regulation was aligned with EPA's lifetime health advisory level of 70 ng/L. It could exceed $38 billion if federal implementation mirrored state-level efforts of less than 20 ng/L. There is the potential, given the limited understanding of PFAS removal, that a treatment technique standard would be required and could entail more than $370 billion in capital investment and over $12 billion in annual O&M costs.

U.S. Cost of Drinking Water Treatment to Remove PFOA and PFOS Using GAC



Planning level costs are estimated to be conceptual and may be higher (+50%) or lower (-30%).

AWWA's cost estimate is based on several assumptions and is conservative because:

- It does not consider lost water supply capacity and associated system resiliency due to taking water sources off-line and water lost due to waste streams.
- It was not possible to account for the cost of treatment of waste residuals, particularly with the current regulatory uncertainty surrounding PFAS as a hazardous substance.
- It does not include administration costs for a primary drinking water standard.
- Available data on which to base a cost estimate is limited.

The Association analysis highlights the need for additional data and research to better understand the implications of a national drinking water standard.

GUIDING PRINCIPLES

AWWA Guiding Principles on PFAS Regulation

1. Commitment to public health protection

Protecting public health is AWWA's first core principle concerning PFAS and all drinking water matters. While human health impacts from PFAS exposure at levels found in drinking water are uncertain, AWWA recognizes PFAS as a growing public health concern that merits swift and serious attention.

2. Fidelity to scientific process

The Safe Drinking Water Act mandates a consistent, transparent, and science-based process for the consideration of new regulations. AWWA supports following the essential SDWA steps—without undue delay—to assure PFAS risks are effectively and efficiently reduced.

3. Protection of source water

The best way to keep drinking water safe is to protect it at its source. AWWA believes EPA should utilize existing laws to understand and control PFAS risks before harmful substances are introduced into commerce, and that PFAS producers—not consumers and water utilities—should be liable for cleaning up drinking water and the environment.

4. Investment in research

More funding for research is needed to assess and address the human health effects of exposure to PFAS; identify analytical methods that quantify levels of PFAS in source water, drinking water and wastewater; and further develop technologies to cost-effectively remove PFAS compounds to levels that do not post health concerns.

"... Regulatory actions need to be prudently implemented to avoid aggravating affordability issues for customers, particularly those with low incomes ... Water systems across the United States are striving to provide the best water quality possible at a reasonable cost to their customers. Investing in a treatment requirement based on inadequate information can leave fewer resources to address other known risks, such as failing infrastructure or lead service line replacement."
—AWWA response to the Congressional Budget Office

More AWWA resources available at awwa.org/PFAS

AWWA URGES PUBLIC HEALTH PROTECTION, SOUND SCIENCE

In Congressional testimony and communication with decision-makers, AWWA stressed the importance of source water protection, scientific process and continuing research to confront the challenge of PFAS in drinking water.

"We caution against setting a precedent of by-passing these established processes via legislative action...That said, we are eager to follow the data on PFAS compounds wherever it may go in the investigative process so that we may know how to best protect public health."
—Tracy Mehan, AWWA executive director of government affairs

AWWA emphasizes that EPA should use its existing authorities to address PFAS, including:

- The Toxic Substances Control Act of 1976, which gives EPA data-gathering authority to both collect data from manufacturers and restrict the use of industrial chemicals.
- The Safe Drinking Water Act (SDWA), which empowers EPA to decide which contaminants pose a meaningful opportunity to protect public health through drinking water standards.

AWWA advocates for proper federal funding to conduct research to:

- Understand the potential health effects and risks associated with PFAS
- Develop analytical methods to quantify levels of PFAS compounds in environmental samples, particularly in natural waters, wastewaters, and soil
- Develop technologies to more cost-effectively remove problematic PFAS from drinking water and wastewaters to levels that do not pose public health concerns

More AWWA resources available at awwa.org/PFAS

ADDRESSING PFAS AT THE FEDERAL LEVEL

In 2016, EPA released 70 nanogram per liter drinking water lifetime health advisories for PFOA and PFOS, as individual compounds and cumulatively. Health advisories are not enforceable standards but rather guides to inform state and local risk management. Health advisories are a first step in setting treatment objectives, based on available health effects research. They do not take practical implementation considerations into account, nor do they consider cost.

In 2018, AWWA participated in a PFAS National Leadership Summit sponsored by EPA to inform the agency's decision process for PFAS regulation. AWWA advised EPA to:

1. Use its statutory tools to collect the information needed to make sound risk management decisions
2. Follow the Safe Drinking Water Act process to determine if and what drinking water standards should be set
3. Utilize its regulatory tools to protect drinking water supplies from PFAS compounds that pose health concerns
4. Coordinate with other federal agencies, local governments and utilities to communicate more effectively to the public about PFAS risks

In February 2019, EPA released its PFAS Action Plan to identify, understand and deal with the breadth of PFAS contamination across the nation and its territories. The action plan includes developing regulations for PFOA and PFOS, both to set enforceable standards for drinking water and to designate these compounds as Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) hazardous substances. EPA is expected to make a regulatory determination for PFOA and PFOS by the end of 2019.

Trending in an Instant

With PFAS and all emerging contaminants, communicating risk is a monumental challenge for water utility professionals. AWWA recently published a new guide, *Trending in an Instant*, which helps utilities communicate with clarity in today's changing media landscape. Available as an AWWA utility member benefit, a summary of the guide is available at awwa.org/pfas.

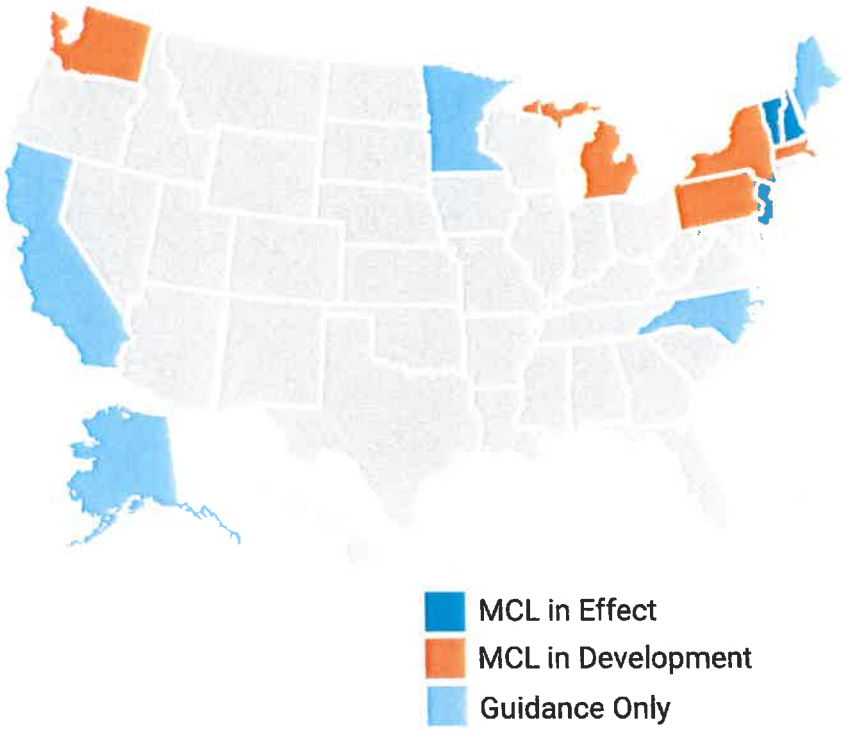
STATE REGULATORY OVERVIEW

Individual states are also taking steps to address PFAS contamination in the absence of federal regulations. As of October 2019, 21 states had established policies to protect drinking water sources and three more were engaged in developing policies.

As the map below shows, three states have drinking water MCLs for PFAS in effect and five more are somewhere in the development process.

AWWA's PFAS State Regulatory Overview, available at awwa.org/pfas, provides insight into the PFAS listed and maximum allowed concentrations reflected in each state's draft and final regulations.

State Drinking Water Standards and Guidance



"Our members are concerned about states setting a range of maximum contaminant levels for PFAS compounds using a range of different analytical techniques, sometimes without adequate cost-benefit analysis."

Tracy Mehan, AWWA executive director of government affairs

May 15, 2019 testimony before U.S. House Subcommittee on the Environment and Climate Change

AWWA RESOURCES ON PFAS – AVAILABLE AT AWWA.ORG

AWWA provides the following PFAS resources for members and continues to develop them as the issue evolves. Many of these resources provide greater detail.

AWWA Resource Pages

awwa.org/PFAS • Policy and Advocacy: awwa.org/Policy-Advocacy/Legislative-Activities

Fact Sheets

Summary of State Regulation to Protect Drinking Water • Treatment Methods • Overview and Prevalence of PFAS • Monitoring, Sampling, Analysis • Cost Estimate to Remove PFAS

Journal AWWA

The PFAS Problem, Nov. 2019 • Fast and Furious, PFAS, Sep. 2019 • Litigation Combats Hazards of Aqueous Film-Forming Foam Product, Aug. 2019 • States are Acting without USEPA, Aug. 2019 • PFAS 101, July 2019 • Monitoring UCMR Compounds in Drinking Water System Components and Treatment Chemicals, March 2019 • AWWA: Public health protection, scientific process, resources key in addressing PFAS, Feb. 2019

Opflow

Litigation Combats Hazards of Aqueous Film-Forming Foam Products, Aug. 2019 • PFAS: Why They Matter and How to Treat Them, June 2019

AWWA Water Science

Effectiveness of point-of-use/point-of-entry systems to remove per- and polyfluoroalkyl substances from drinking water, March 2019

AWWA Standards

Activated Carbon Treatment: B600 Powdered Activated Carbon • B604 Granular Activated Carbon • B605 Reactivation of Granular Activated Carbon

Ion Exchange: B116 Electrodialysis and Ion-Exchange Membrane Systems

Reverse Osmosis: B114 Reverse Osmosis and Nanofiltration Systems for Water Treatment • B110 Membrane Systems

G100 Water Treatment Plant Operation and Management

AWWA Manuals of Water Supply Practice

Reverse Osmosis: M46 Reverse Osmosis and Nanofiltration • M62 Membrane Applications for Water Reuse

AWWA Technical Reports

Activated Carbon: Solutions for Improving Water Quality

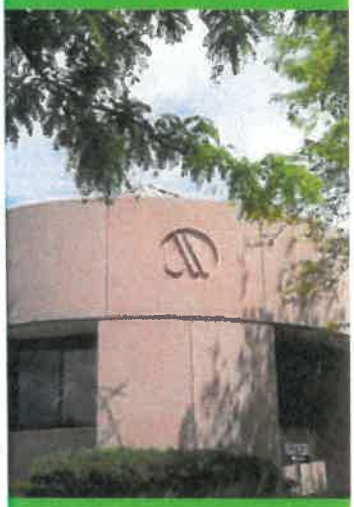
AWWA Communications Tool

Trending in an Instant: A Risk Communication Guide for Utilities

AWWA Events

Water Quality Technology Conference

More AWWA resources available at awwa.org/PFAS



MassDEP Fact Sheet

Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water: Questions and Answers for Consumers

What are PFAS and how are people exposed to them?

PFAS are fluorinated organic chemicals. Two PFAS chemicals, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were extensively produced and are the most studied and regulated of these chemicals. Several other PFAS that are similar to PFOS and PFOA exist. These PFAS are contained in some firefighting foams used to extinguish oil and gas fires. They have also been used in a number of industrial processes and to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease and stains. Because these chemicals have been used in many consumer products, most people have been exposed to them.

While consumer products and food are the largest source of exposure to these chemicals for most people, drinking water can be an additional source of exposure in communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility, for example, an airfield at which they were used for firefighting or a facility where these chemicals were produced or used.

What are the levels of concern?

Scientific information and regulatory actions on PFAS are rapidly evolving. Currently, there are no enforceable federal or Massachusetts state standards for these substances in public drinking water. However, in May 2016, the United States Environmental Protection Agency (EPA) issued a lifetime drinking water Health Advisory (HA) of 0.070 µg/L (70 parts per trillion or ppt) for any combination of PFOA and PFOS. In June 2018, MassDEP extended this advisory to include three additional related PFAS chemicals - perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS) and perfluoroheptanoic acid (PFHpA). This Massachusetts value, called a MassDEP Office of Research and Standards Guideline (ORSG), is a maximum recommended level for drinking water. It is set to be protective against adverse health effects for all people consuming the water for a lifetime and also applies to shorter-term exposures of weeks to months during pregnancy and breast-feeding.

Based on the current ORSG, MassDEP recommends that:

1) consumers in sensitive subgroups (pregnant women, nursing mothers and infants) not consume water when the level of the five PFAS substances, individually or in combination, is above 0.070 micrograms per liter (µg/L) or 70 parts per trillion (ppt); and,
2) public water suppliers take steps expeditiously to lower levels of the five PFAS, individually or in combination, to below 70 ppt for all consumers.

The June 2018 MassDEP ORSG and associated recommendations were developed out of an abundance of caution because the five PFAS compounds included in the ORSG share very similar chemical structures and the available data indicates they most likely exhibit similar toxicities.

New standards / guidelines under development

As part of its efforts to address the rapidly evolving science and policy on PFAS compounds, EPA is taking steps to further evaluate PFAS. As the national timeframes for action on drinking water are often long, MassDEP has

prioritized reviewing the current scientific information and assessments on these chemicals, and the agency taking actions to protect public health.

Based on this ongoing evaluation, MassDEP is currently engaged in a number of coordinated, concurrent efforts to inform its final decisions regarding PFAS at hazardous waste sites and in drinking water in MA. These efforts will be implemented over the next several months and include:

- Proposing draft amendments to the state's hazardous waste cleanup regulations (the Massachusetts Contingency Plan or "MCP") that include groundwater and soil cleanup standards for six PFAS. The proposed standard for groundwater that is used or may be used as drinking water is 20 ppt for 6 PFAS: the 5 compounds noted above, plus perfluorodecanoic acid (PFDA). MassDEP is accepting comment on the draft MCP regulations, including this proposed PFAS groundwater cleanup standard, until July 19, 2019.
- Having a group of independent scientists and public health professionals, coordinated by MassDEP's Office of Research and Standards, review the technical basis of the proposed MCP groundwater cleanup standard for these PFAS.
- Revising the state's PFAS drinking water guideline (ORSG).
- Working to establish a drinking water standard, called a Maximum Contaminant Level (MCL), for PFAS in public drinking water systems. The formal process to develop an MCL was launched in April 2019 and will align the MCL with the MCP GW-1 standard and revised ORSG and will include opportunities for public comment.

What does MassDEP currently recommend while the standard and guideline are being finalized?
If you are a sensitive consumer (pregnant women, nursing mothers, and infants) you can minimize your exposure by using bottled water that has been tested for PFAS for drinking, making infant formula and cooking of foods that absorb water or use a home water treatment system that is certified to remove PFAS by an independent testing group such as National Sanitation Foundation (NSF), Underwriters Laboratories (UL), Water Quality Association or the CSA Group. See MassDEP's website on PFAS (under "Bottled water and home water filters") for more information https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas.

What health effects are associated with exposure to PFAS?
EPA's 2016 Health Advisory values for PFOS and PFOA were based on studies of these substances in laboratory animals and were also informed by studies of exposed people. Overall, these studies indicate that exposure to sufficiently elevated levels of PFOA and PFOS, as well as other closely-related PFAS compounds, may cause developmental effects in fetuses during pregnancy and in breastfed infants. Effects on the thyroid, the liver, kidneys, hormone levels and the immune system have also been reported. Some studies suggest a cancer risk may exist in people exposed to levels well above the EPA Health Advisory.

It is important to note that consuming water with PFAS above the recommended limits does not mean that adverse effects will occur. The degree of risk depends on the level of the chemicals and the duration of exposure. The recommended limit assumes that individuals drink only contaminated water, which typically overestimates exposure, and are also exposed to PFAS from sources beyond drinking water, such as food. To enhance safety, several uncertainty factors are additionally applied to account for the differences between animals and humans, and to account for the differences between people. Scientists are still working to study and better understand the health risks posed by exposures to PFAS. If your water has been found to have PFAS and you have specific health concerns, you may wish to consult with your doctor.

How can I find out about contaminants in my drinking water?

If you get your water from a public water system, you should contact them for this information. For a contact list for all public water systems in the Commonwealth you may visit: https://www.mass.gov/lists/drinking-water-health-safety#contacts then under "Contacts" click on "MA Public Water Supplier contacts sorted By Town."

For private well owners, you may want to contact your local Board of Health, Town government or town public water supplier for information specific to your Town's water supply. For water testing, MassDEP recommends the use of a state certified analytical laboratory. Local Private Well Regulations may specify the use of a state certified lab. A searchable list of MassDEP certified labs can be found at: http://eeaonline.eea.state.ma.us/DEP/Labcert/Labcert.aspx

What options should be considered when PFAS in drinking water is above MassDEP's drinking water guideline (ORSG) or new draft recommendation?

- ✓ Sensitive subgroups, including pregnant women, nursing mothers and infants, should consider using bottled water that has been tested for PFAS, for drinking, cooking of foods that absorb water (like pasta) and to make infant formula. Bottled water that has been tested for PFAS, or formula that does not require adding water, are alternatives.
- ✓ For older children and adults, the recommended guideline is applicable to a lifetime of consuming the water. For these groups, shorter duration exposures present less risk. However, if you are concerned about your exposure while steps are taken to assess and lower the PFAS concentration in your drinking water, use of bottled water that has been tested for PFAS will reduce your exposure.
- ✓ Water contaminated with PFAS can be treated by some home water treatment systems that are certified to remove PFAS by an independent testing group such as NSF, UL, Water Quality Association or the CSA Group. These may include point of entry systems, which treat all the water entering a home, or point of use devices, which treat water where it is used, such as at a faucet.
- ✓ In most situations the water can be safely used for washing and rinsing foods, cleaning dentures and pacifiers and washing dishes.
- ✓ The water can be safely used by adults and older children for brushing teeth. However, use of bottled water should be considered for young children as they may swallow more water than adults when they brush their teeth. If you are concerned about your exposure, even though the risk is very low, you could use bottled water for these activities.
- ✓ Because PFAS are not well absorbed through the skin, routine showering or bathing are not a significant concern unless PFAS levels are high. Shorter showers or baths, especially for children who may swallow water while playing in the bath, or for people with skin conditions (rashes, cuts, etc.) would limit any absorption from the water. Based on information from the Connecticut Department of Health, which is the only State to have issued guidance on this issue, water should not be used, long-term, for showering and bathing if the PFAS level exceeds 210 ppt.
- ✓ For pets, the health effects and levels of concern to mammalian species, like dogs, cats and farm animals are likely to be similar to those for people. There is some evidence that birds may be more sensitive to PFAS. There is little data on PFAS effects on other species like turtles, lizards, snakes and fish. As a precaution, if you have elevated levels of PFAS in your water, you should consider using alternative water for your pets.
- ✓ For gardening or farming, some plants are likely to take up some PFAS from irrigation water and soil. Unfortunately, there is not enough scientific data to predict how much will end up in a specific crop. Since people eat a variety of foods, the risk from the occasional consumption of produce grown in soil or irrigated with water contaminated with PFAS is likely to be low. Families who grow a large fraction of their produce would experience higher potential exposures and should consider the following steps, which should help reduce PFAS exposures from gardening:

    - Maximize use of rainwater or water from another safe source for your garden.
    - Wash your produce in clean water after you harvest it.
    - Enhance your soil with clean compost rich in organic matter, which has been reported to reduce PFAS uptake into plants.
- **NOTE ON BOILING WATER:** Boiling water will not destroy these chemicals and will increase their levels somewhat due to water evaporation.
- **NOTE ON BOTTLED WATER:** Even though bottlers are not required to test for PFAS, some bottlers have tested. The best way to know if the bottled water you are drinking or plan to drink has been tested for PFAS is to contact the bottler and ask for the latest testing results. Contact information should be available on the bottle or you may need to search the internet. For more information, see MassDEP's website on PFAS (under "Bottled water and home water filters") https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas.

Where can I get more information on PFAS?

MassDEP PFAS Information. https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas

Interstate Technology and Regulatory Council (ITRC). PFAS.
https://www.itrcweb.org/Team/Public?teamID=78

Association of State Drinking Water Administrators PFAS webpage https://www.asdwa.org/pfas/

EPA's Drinking Water Health Advisories for PFOA and PFOS can be found at: https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos

The Centers for Disease Control and Prevention's Public Health Statement for PFOS and PFOA can be found at: https://www.atsdr.cdc.gov/pfas/index.html

For additional information on possible health effects, you may contact the Massachusetts Department Environmental Protection, Office of Research and Standards at 617-556-1165.

For information on the MassDEP Drinking Water Program, you may visit https://www.mass.gov/drinking-water-program or contact the program at program.director-dwp@state.ma.us or 617-292-5770.

Weston & Sampson

85 Devonshire Street, 3rd Floor, Boston, MA 02109
Tel: 617-412-4480

MEMORANDUM

TO:	Artificial Turf Field Interested Parties
FROM:	Steven LaRosa, PFAS Technical Leader Marie Rudiman, Senior Risk Assessor/Toxicologist
DATE:	10/14/19
SUBJECT:	Potential PFAS presence in Artificial Turf

Recent news articles (Boston Globe dated 10/09/19 and The Intercept dated 10/08/19) have discussed the potential presence of poly and perfluorinated alkyl substances (PFAS) in artificial turf sports fields. PFAS are a family of compounds used in numerous commercial products to provide durable waterproof coatings. The scientific community is rapidly evolving its understanding of PFAS in the environment. PFAS are considered to be contaminants of emerging concern (CECs). CECs are those chemicals that present potentially unacceptable human health effects or environmental risks, and either: (1) do not have regulatory cleanup standards, or (2) regulatory standards are evolving due to new science, detection capabilities or pathways, or both. Due to their presence in many products under brand names such as Teflon and Gortex, PFAS are ubiquitous in the environment. PFAS has been detected in human blood, sediments, surface and groundwater, and wildlife. Although the scientific research into PFAS is evolving, there is evidence there may be adverse health effects associated with long-term exposure to some PFAS compounds. The primary focus of USEPA and other regulatory agencies for exposure to PFAS is through consumption of PFAS in contaminated drinking water. Based on the limited research studies and what is known about the chemical composition of PFAS, dermal (skin) contact with PFAS containing materials is expected to pose minimal health risk. Similarly, based on available research and the chemical composition of PFAS, PFAS compounds do not appear to be volatile and are expected to pose minimal health risk through inhalation.

While the recently reported sampling and analysis of artificial turf appears to indicate that PFAS are present in some of the components of the turf system, Weston & Sampson has reviewed the reported sampling of the turf field materials for PFAS and found several potential issues with the reporting as highlighted below.

- Currently, there is no certified method for analyzing PFAS concentrations in materials other than an EPA method for analyzing PFAS in drinking water. Since the samples were carpet and not

drinking water, the methods used for analysis were almost certainly not certified and therefore, the results are questionable.

- The articles indicate that two samples of synthetic turf were analyzed and PFOS (one of the PFAS compounds) was detected in both samples. Two samples represent an extremely small sampling size. No scientific conclusions can be made with this small sampling size.
- The article noted that an additional eight samples were analyzed for total fluorine and further noted that total fluorine indicates that PFAS is present. What the article did not mention was that testing total fluorine is an extremely non-specific method that can indicate the presence of PFAS or many other non-PFAS compounds. For example, many household products contain fluorine such as toothpaste, mouthwash, and various household cleaners. The presence of fluorine does not necessarily indicate PFAS compounds are present.
- There was no indication of how the samples were collected or how the samples were preserved so that there is no cross contamination. In the field, cross contamination of PFAS is extremely common. For instance, there has been cross contamination reported in drinking water when field techs have been wearing rain-resistant clothing while collecting the sample.
- The article compared the concentration that was detected in one sample of synthetic turf to the drinking water health advisory. This drinking water health advisory is set very low to protect potential human exposure to PFAS in drinking water and it is not an applicable measure of potential exposures to a chemical while playing on synthetic turf.

Despite the apparent scientific shortcomings identified in the referenced news articles, Weston & Sampson takes this matter seriously. We have contacted synthetic turf suppliers to determine if PFAS are utilized in the manufacture of their products and we have reached out to the Massachusetts DEP for potential guidance. We are working with vendors and manufacturers to ensure that products do not contain PFAS and meet California Prop 65 and European REACH standards of safety.

Weston & Sampson will provide updates on this subject as additional information becomes available.

STC Statement on PFAS

I STC Members

Hello Leon,

A recent story published by The Intercept, a decidedly biased media outlet, purported to show PFAS found in synthetic turf fields based on research done by the Ecology Center, an environmental advocacy group based in Michigan. PFAS stands for a broad group of perfluoroalkyl and polyfluoroalkyl substances that are used in fast-food takeout containers, nonstick pans and pizza boxes. The Ecology Center findings have not been independently verified. Additionally, due to the widespread use of PFAS in everyday products, testing for PFAS runs the high risk of cross contamination and false positive results. The story was also picked up by the Boston Globe. In our initial review, a majority of STC's manufacturers do not use PFAS in the production process. As more information becomes available we will let you know.

If you do receive questions, media inquiries or would like additional information about the PFAS issue, please contact Dan Bond at dan@syntheticturfcouncil.org. The Synthetic Turf Council has talking points available as well upon request.

Dan Bond, CAE
President & Chief Executive Officer
Synthetic Turf Council
dan@syntheticturfcouncil.org

From: Robert May <RMay@fando.com>
Sent: Friday, November 15, 2019 10:49 AM
To: Tara Gurge <TGurge@needhamma.gov>
Cc: Timothy McDonald <tmcdonald@needhamma.gov>; Daniel LaFrance <DLaFrance@fando.com>; Jared Smith <jsmith@fando.com>
Subject: Re: Follow-up on PFAS Testing for Turf Conf. Call request

Tara,

I wanted to update you on our approach for the proposal. We had a conference call with our Risk Assessor/Toxicologist and subsequent conversation with laboratory we will use for analysis. We will develop a proposal for testing but wanted to identify a couple of things for you to consider.

1. We strongly recommend that you contact the contractor and supplier/manufacturer of the field and obtain a statement from them if you can on the use or lack thereof for PFAS materials. That could be an initial and maybe better step than testing if you in fact obtain a letter indicating no PFAS used in the current field products.
2. Sampling for PFAS in bulk matrices is problematic as there are no approved laboratory standards for this analysis at present. All current analytical methods are for water and soil. There are also no standards for PFAS in bulk matrices from a risk assessment standpoint.
3. We suggest if the testing route is to be undertaken, we can have the lab perform leachability analysis to determine if PFAS compounds are leachable to soil, groundwater or available for potential human contact.
4. We could also perform analysis in a qualitative way to determine presence or absence of various PFAS compounds in the materials.

Please review and let me know if you believe the approach would support your desired determinations of PFAS in materials. We recognize that in part this may not help totally address likely public concern over use of the fields and potential human exposures and are open to further discussion on right approach to meet your needs.

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Toxic chemicals are found in blades of artificial turf

By David Abel Globe Staff,October 9, 2019, 8:32 p.m.
49

Kyla Bennett (left) and Tracy Stewart of Medway looked over a pile of turf in Franklin.David L Ryan/Globe Staff

FRANKLIN — For two years, an abandoned pile of artificial turf had decomposed on a bluff here, a few feet above wetlands that are part of the suburb's drinking water supply. Nearby, ripped bags with the infill of the turf, tiny pellets of shredded tires, littered the embankment.

Public health advocates have long raised alarms about artificial turf pellets, which simulate the give of natural grass but have been shown to contain benzene, cadmium, and other known carcinogens. Now, for the first time, a new series of tests has found that the blades, and their plastic backing, may also contain toxic chemicals.

The test results showed that the turf contained elevated levels of per- and polyfluoroalkyl chemicals known as PFAS, which have been linked to kidney cancer, low infant birth weights, and a range of diseases. The findings have raised concerns about the safety of millions of square feet of artificial turf installed in recent years on public fields and playgrounds across the country.

"This is huge. It's the first time that PFAS chemistry used in plastic production has been found in finished consumer products," said Jeff Gearhart, research director of the Ecology Center, a nonprofit environmental research group based in Michigan that tested the turf. "This finding is maybe the tip of the iceberg. We suspect these PFAS chemicals may be found in other plastic building and consumer products."

The concentrations of chemicals found in the wetlands near Franklin's Beaver Field are below current federal and state health guidelines but well above standards some states have recently adopted in light of research suggesting that even low PFAS concentrations in drinking water can be harmful. Concerns about PFAS, called "forever chemicals" because they never fully degrade, have mounted in recent years. Developed in the 1940s, the chemicals have been used in products such as flame retardants, nonstick pans, pizza boxes, clothing, and furniture.

In Franklin, questions about the discarded turf led local environmental activists to send swatches of the turf and water samples for testing. The Ecology Center, working with the New England office of the Public Employees for Environmental Responsibility, a Washington D.C.-based advocacy group, found that the swatch of turf from Franklin contained 190 parts per trillion of one of the most common PFAS chemicals, well above federal safety standards for drinking water.

The group recently filed a complaint with state environmental officials about the discarded turf, saying it violated wetland protections. The water samples there contained nearly 10 parts per trillion of the same chemical found in the turf, as well as a combined 40 parts per trillion of two other PFAS chemicals.

Jamie Hellen, the Franklin town administrator, said he had no idea that the old turf was left there or that it was potentially toxic. He said he is waiting for guidance from the state Department of Environmental Protection on how to proceed.

"We will work with DEP to resolve the matter," he said.

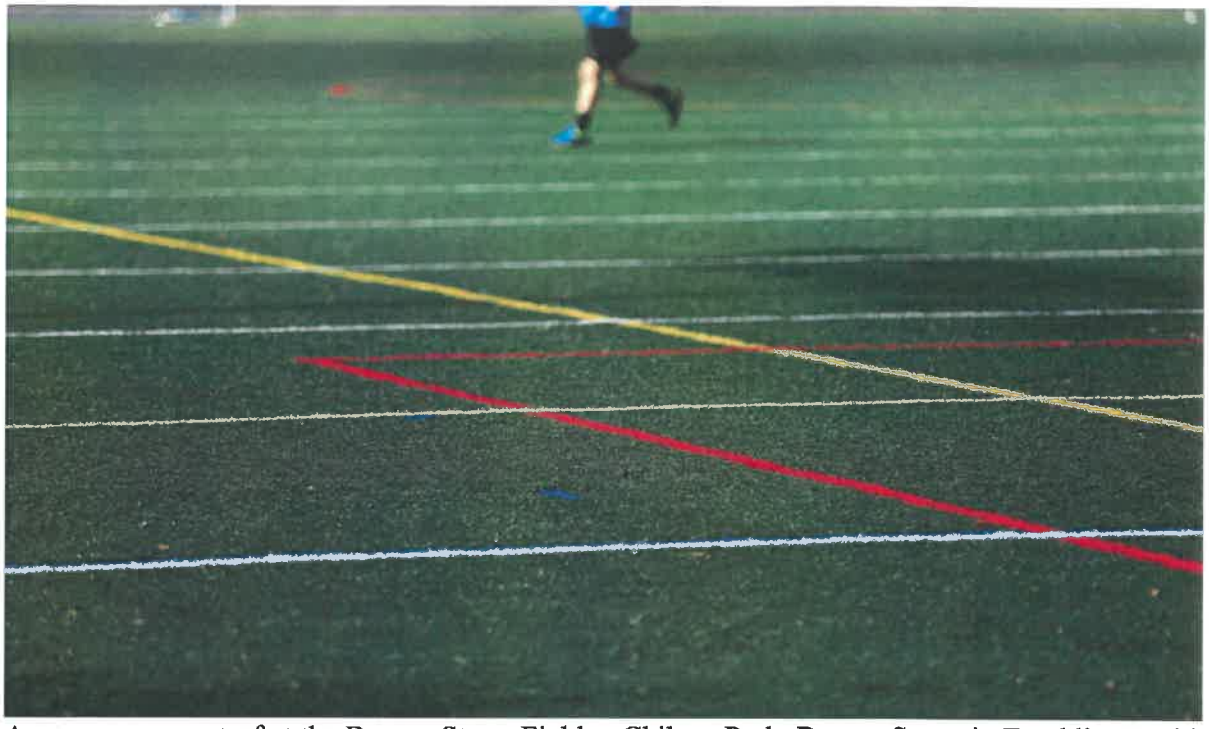
He noted there is no definitive link between the chemicals found in the turf and those in the water. After the Globe inquired about the piles of old turf, crews removed the material within hours.

Tracy Stewart held some runoff by the Beaver Street Field at Chilson Park in Franklin. The Boston Globe/Globe Staff

The Ecology Center also tested samples of turf installed this summer at Oliver Ames High School in Easton and found similarly high levels of another PFAS chemical. In addition, they tested eight other samples of turf blades, which they acquired directly from distributors of artificial turf, and found that all contained high amounts of fluorine, a chemical suggesting the presence of PFAS.

With as many as 1,500 new artificial turf fields installed every year — there are now some 13,000 in the United States, including hundreds in Massachusetts — public health advocates worry the potentially tainted runoff could contaminate water supplies around the country.

"PFAS in synthetic turf should sound alarm bells for all municipalities with these fields," said Kyla Bennett, science policy director of the Public Employees for Environmental Responsibility. "All turf manufacturers should immediately disclose whether they use PFAS in their manufacturing process."



A runner on new turf at the Beaver Street Field at Chilson Park, Beaver Street in Franklin. David L Ryan/Globe Staff

The EPA currently recommends municipalities alert the public if two of the most common PFAS chemicals reach 70 parts per trillion in drinking water, and Massachusetts uses the same threshold for five common PFAS chemicals.

But some recent studies have recommended that children not consume water with levels above 1 part per trillion and states such as New Hampshire and New Jersey have adopted stricter standards. Massachusetts is considering adopting a standard similar to one recently enacted in Vermont, advising residents to avoid drinking water if the concentration of six of the chemicals cumulatively reaches 20 parts per trillion.

A DEP spokesman said the agency is reviewing the wetlands complaint regarding Franklin, reaching out to town officials and planning a site visit.

Many communities have installed artificial turf fields because they offer clear advantages over natural grass. They don't have to be mowed or watered, require no expensive fertilizers, and allow for substantially more playing time.

Dan Bond, president of the Synthetic Turf Council, a trade group for an industry that earns $2.5 billion a year, said repeated studies have shown no elevated health risks from artificial turf, pointing to research by the Consumer Product Safety Commission, the EPA, and state agencies.

"I haven't seen any other reports that have shown any of these concerns," Bond said, referring to the PFAS findings.

The owner of one company that produced some of the turf that the group tested was skeptical about the findings.

"We have never heard any concerns about the chemical composition of our product," said Mike Hall, co-owner of Turf Factory Direct, a Georgia company. "I'd like to have my lawyer look at this."

Susan Farris, a spokeswoman for Shaw Industries, another Georgia company that sells artificial turf said, "These chemicals are commonly used by synthetic turf manufacturers as a non-stick agent in the manufacturing equipment."

Given the recent concerns about PFAS, she said, the company has phased out their use in other products, such as flooring and carpeting.

"As new formulations are available to perform the same or similar functions as PFAS chemicals have historically, Shaw has shifted to new ingredients," she said.

Questions about the safety of artificial turf emerged five years ago when Amy Griffin, a University of Washington soccer coach, cited a large number of goalkeepers who play on turf and had contracted cancer, mainly blood-related lymphomas. By January 2019, her list included 260 young athletes with cancer.

Federal and state officials have said evidence of the health risks is limited. In 2017, a report by the state of Washington found no connection between the incidence of cancer with soccer players and their exposure to artificial turf.

But evidence of elevated PFAS concentrations may change the calculus.

"That is a big concern, since this turf is in many communities and is designed to drain precipitation off the fields, which can carry soluble contaminants into ground water underlying the turf," said Betsy Southerland, former director of science and technology in the EPA Office of Water during the Obama administration. "Ground water, in turn, can be the direct source of drinking water for private wells and community water systems."

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REVIEW ARTICLE

A review of the pathways of human exposure to poly- and perfluoroalkyl substances (PFASs) and present understanding of health effects

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Abstract

Here, we review present understanding of sources and trends in human exposure to poly- and perfluoroalkyl substances (PFASs) and epidemiologic evidence for impacts on cancer, immune function, metabolic outcomes, and neurodevelopment. More than 4000 PFASs have been manufactured by humans and hundreds have been detected in environmental samples. Direct exposures due to use in products can be quickly phased out by shifts in chemical production but exposures driven by PFAS accumulation in the ocean and marine food chains and contamination of groundwater persist over long timescales. Serum concentrations of legacy PFASs in humans are declining globally but total exposures to newer PFASs and precursor compounds have not been well characterized. Human exposures to legacy PFASs from seafood and drinking water are stable or increasing in many regions, suggesting observed declines reflect phase-outs in legacy PFAS use in consumer products. Many regions globally are continuing to discover PFAS contaminated sites from aqueous film forming foam (AFFF) use, particularly next to airports and military bases. Exposures from food packaging and indoor environments are uncertain due to a rapidly changing chemical landscape where legacy PFASs have been replaced by diverse precursors and custom molecules that are difficult to detect. Multiple studies find significant associations between PFAS exposure and adverse immune outcomes in children. Dyslipidemia is the strongest metabolic outcome associated with PFAS exposure. Evidence for cancer is limited to manufacturing locations with extremely high exposures and insufficient data are available to characterize impacts of PFAS exposures on neurodevelopment. Preliminary evidence suggests significant health effects associated with exposures to emerging PFASs. Lessons learned from legacy PFASs indicate that limited data should not be used as a justification to delay risk mitigation actions for replacement PFASs.

Introduction

Poly- and perfluoroalkyl substances (PFASs) are a family of more than 4000 highly fluorinated aliphatic compounds manufactured for diverse applications [1]. They have been widely used for their hydrophobic and oleophobic properties in consumer products such as disposable food packaging, cookware, outdoor gear, furniture, and carpet. They are also one of the main components (1–5% w/w) [2] of aqueous film forming foams (AFFF) used frequently at airports and military bases for firefighting and training activities [3]. AFFF contamination of groundwater is a major source of drinking water contamination and has been identified as a nationally significant challenge in countries such as the US and Sweden [4, 5]. Releases of PFASs to the environment can occur next to chemical manufacturing locations, at industrial sites where PFASs are used, and at various stages of product use and disposal. The carbon–fluorine bond in these compounds is extremely strong and thus many PFASs are not appreciably degraded under environmental conditions

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[6]. This has resulted in their accumulation in the environment since the onset of production in the late 1940s [7].

International concern regarding potential health effects associated with PFAS exposure began in the early 2000s when perfluorooctanesulfonate (PFOS) was detected in the blood of polar bears in the Arctic and wildlife in other remote regions [8]. Early data on PFOS bioaccumulation in aquatic food webs indicated the propensity for human exposure to these compounds through seafood [9]. The U.S. Centers for Disease Control and Prevention (CDC) later reported these compounds are detectable in the blood of virtually all Americans (98%) [10–12]. Between 2000 and 2002, the main global manufacturer of PFASs (3M) voluntarily discontinued manufacturing of the parent chemical used to produce PFOS and its precursors [13]. The US introduced a variety of programs to curb the use of the most abundant environmental PFASs, including the PFOA Stewardship Program enacted in 2006 to end production of the longest chained compounds by 2015. PFOS was added to the Stockholm Convention's list of globally restricted Persistent Organic Pollutants (POPs) in 2009.

Human exposures to PFOS and PFOA have been declining in western countries and Japan over the last decade [14–16] due to these regulatory interventions while understanding of their adverse effects on human health has been rapidly advancing [17]. At the same time, a proliferation of new PFASs has been reported in the environmental literature as the industry has rapidly replaced PFOS and PFOA with shorter chain length PFASs and new chemicals that are difficult to detect using standard methods [3]. Emerging evidence from animal experiments suggests some of these alternative PFASs can be equally hazardous [18]. Environmental health scientists thus face a considerable challenge in understanding the relative importance of diverse exposure pathways to PFASs in different human populations and their potential effects on human health in a rapidly changing chemical landscape.

Here we review current understanding of: (1) the predominant exposure pathways for PFASs for different populations, (2) health impacts associated with exposure, and (3) critical research needs for the future. We focus on four health effects: cancer, immune effects, metabolic effects, and neurodevelopment. We use this review to summarize key knowledge gaps and future research needs.

PFAS nomenclature

All PFASs contain at least one perfluoroalkyl moiety (C_nF_{2n+1}-) [19]. Fully fluorinated aliphatic carbon chains are known as perfluoroalkyl substances while those with the incomplete replacement of hydrogen atoms by fluorine are referred to as polyfluoroalkyl substances. Perfluoroalkyl acids (PFAAs) include perfluoroalkyl carboxylic, sulfonic, phosphonic, and phosphinic acids, which are differentiated by their functional groups. Most research has focused on perfluoroalkyl carboxylic acids (PFCAs) and perfluoroalkyl sulfonic acids (PFSAs) with between four and sixteen (C4–C16) carbons. Long-chain PFASs are defined as PFCAs with seven or more perfluorinated carbons and PFSAs with six or more perfluorinated carbons. The fluorinated carbon chain of these chemicals is both hydrophobic and oleophobic but the head group for many PFASs is easily deprotonated, resulting in high stability in solution. High water solubility of some PFASs has led to their accumulation in groundwater, rivers, and the ocean and contamination of drinking water resources, fish and marine mammals.

PFAA precursors, hereon referred to as "precursors", are compounds that can biotically, and sometimes abiotically, degrade to PFAAs [6, 20]. Volatile precursors can be transported long distances in the atmosphere prior to deposition in regions remote from pollution sources [21, 22]. Precursors are often not measured during standard PFAA analysis, which can result in an underestimate of human exposure because they can be metabolized to terminal PFAAs in the human body [23, 24].

Human exposure pathways

Figure 1 provides an overview of the pathways for human exposure to PFASs. Human exposure to PFASs occurs through ingestion of contaminated drinking water and seafood, inhalation of indoor air, and contact with other contaminated media [25]. PFASs are often used for their "non-stick" and surface-tension lowering properties, which makes them useful for repelling oil and water (preventing stains) and modifying surface chemistry. The latter includes applications such as AFFF, processing aids for fluoropolymer manufacture, metal plating, and the production of semiconductors [26, 27]. Direct exposures due to use in products can be quickly phased out by shifts in chemical production but exposures driven by PFAS accumulation in the ocean and marine food chains and AFFF contamination of groundwater persist over long timescales [28, 29]. Understanding the relative importance of these different exposure pathways is thus critical for interpreting drivers of temporal differences in serum PFAS concentrations measured in biomonitoring studies [28, 30], and for anticipating future exposure risks.

Consumer products, indoor air, and dust

PFASs have been detected in jackets, upholstery, carpets, papers, building materials, food contact materials, impregnation agents, cleansers, polishes, paints, and ski waxes,

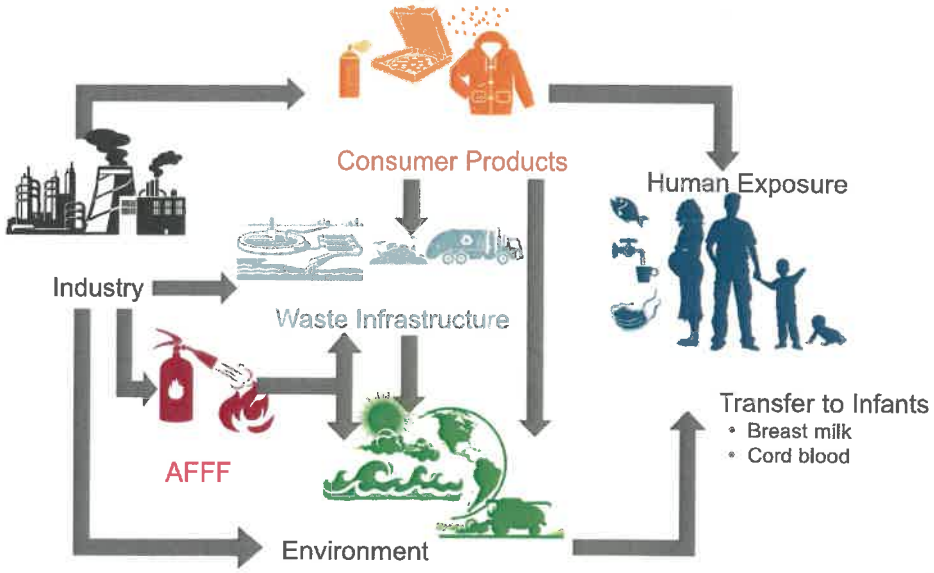

Fig. 1 Overview of PFAS exposure pathways for different human populations outside of occupational settings

among many other items commonly found in offices, households, and cars [31–40]. PFASs can migrate from fluorochemical-treated food contact papers into food-simulants such as butter, water, vinegar, and water/ethanol mixtures, indicating a direct exposure route to humans [36, 41, 42]. Dermal exposure to PFOS and PFOA from products is thought to be low [25]. In a study of 41 Norwegian women, Haug et al. [23] reported that food is typically the dominant exposure pathway, although the indoor environment (dust, air) could account for up to ~50% of the total PFAS intake.

Precursor compounds in many consumer products can be biotransformed in the human body to PFAAs, leading to additional uncertainty regarding the significance of exposures from this source [23, 24]. Inhalation of volatile precursors is known to occur and these precursors have been measured in indoor environments where PFAS containing products are used [43, 44]. The phase-out of PFOS and PFOA and their precursors has led to the increased production of short-chain compounds and structurally similar alternative compounds [3, 6], requiring a more holistic approach to determining human exposure from fluorinated compounds. To address this challenge, Robel et al. [32] measured total fluorine concentrations and determined the fraction of fluorine that can migrate from a select group of consumer products and is available for human exposure. The authors reported that typical measurement techniques for PFASs only account for up to 16% of the total fluorine measured using particle-induced gamma ray emission (PIGE) [32]. Additional research is thus needed to establish the link between the PFAS concentrations in products and the concentrations in dust, air, and food and their overall contributions to human exposure in populations with diverse product use patterns.

Drinking water

Drinking water has been identified as a substantial source of PFAS exposure for many populations, particularly those living near contaminated sites [4, 5]. The United States Environmental Protection Agency (U.S. EPA) proposed a lifetime health advisory level for PFOS+PFOA of 70 ng/L in drinking water in 2016 [45]. In 2018, the Agency for Toxic Substances and Disease Registry (ATSDR) in the US further lowered the Minimum Risk Levels (MRLs) for PFOS and PFOA by approximately an order of magnitude compared to the reference dose (RfD) used by the U.S. EPA to develop the 2016 lifetime advisory [46]. Drinking water advisory levels corresponding to the MRLs used by ATSDR would be 11 ng/L for PFOA and 7 ng/L for PFOS. Some lifetime drinking water advisories proposed by other state and international agencies include up to 11 or 12 PFASs (Sweden and Denmark) and range from less than 10 ng/L up to hundreds to thousands of ng/L for different PFASs in Canada [47]. Notably, Grandjean and Budtz-Jørgensen [48] estimated the lifetime drinking water advisory level should be less than 1 ng/L based on the benchmark dose for immunotoxicity associated with PFAS exposure for children in the Faroe Islands.

Figure 2 shows the growth in the identification of sites contaminated by PFASs across the US between 1999 and 2017. PFAS contamination of drinking water was first reported in the US in public and private drinking water supplies near a fluoropolymer manufacturing facility in Washington, WV in 1999 [49]. The average PFOA

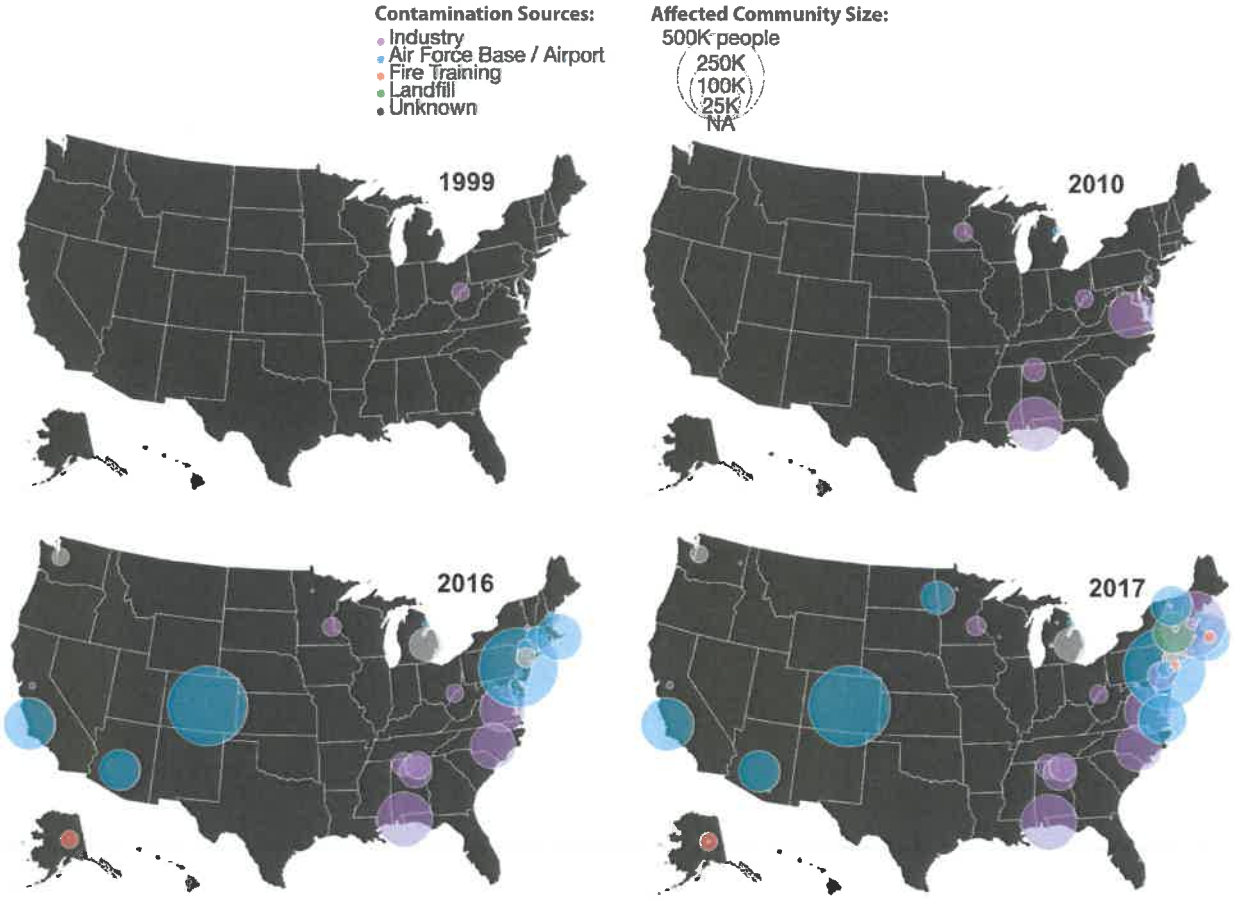

Fig. 2 Discovery of sites contaminated by PFASs leading to elevated concentrations in drinking water across the US. Figure adapted from data compiled by Northeastern University's Social Science Environmental Health Research Institute (SSEHRI) that was last updated 12/17/17 [162]. Colors of circles represent different types of pollution source, and magnitudes indicate sizes of local communities

concentration of in one public water supply, the Little Hocking water system, was 3550 ng L^{-1} (range 1500–7200 ng L^{-1}) between 2002 and 2005. Drinking water contamination near a military base was first discovered in Michigan in 2010. Many additional cases of high concentrations of PFASs in finished drinking water across the US have since been reported (Fig. 2).

Most of these cases focus on single communities or small areas with a known point source of contamination. The first statewide study of PFAS occurrence in the US drinking water was conducted by New Jersey, where PFOA was detected in 59% of the public water supplies and maximum concentrations reached 190 ng L^{-1} [50]. The first nationwide occurrence survey of PFASs in public water supplies was conducted between 2013 and 2015 by the U.S. EPA under the third Unregulated Contaminant Monitoring Rule (UMCR3) [51]. Hu et al. [4] noted that drinking water concentrations of PFOS and/or PFOA exceeding the U.S. EPA 2016 health advisory levels were detected in large public water supplies serving approximately six million Americans. Further, there are no data for approximately 100 million Americans who obtain their water from small public water supplies serving less than 10,000 individuals and private wells, representing a critical research need for the future.

Following the shift in PFAS production away from PFOS, PFOA and their precursors, different PFASs may now be accumulating in drinking water and become relevant for human exposure. Newer PFASs, such as GenX, have been detected at high concentration (hundreds of ng L^{-1}) in the Cape Fear River watershed in North Carolina, downstream of a PFAS manufacturing plant [52]. The large-scale implications of such findings have yet to be evaluated and knowledge of the international significance of drinking water contamination by PFASs continues to advance at a rapid pace.

Seafood

Elevated serum concentrations of PFASs have been reported for a number of seafood consuming populations, including Inuit men in Greenland who frequently consume

seafood and marine mammals [53], whaling men in the Faroe Islands [54], and commercial fishery employees in China [55]. Seafood PFAS concentrations vary considerably with highest concentrations measured next to contaminated sites [56, 57]. Environmental concentrations of long-chain compounds appear to be the main driver of variability in tissue concentrations across sites and species [56, 58, 59]. Long-chained compounds and PFSAs bioaccumulate to a greater degree than shorter chain length compounds and PFCAs [60, 61]. However, early studies of bioaccumulation potential were based on assays designed for highly lipophilic substances and therefore do not provide comprehensive information on all PFASs presently in use [58].

There is considerable variability in the contribution of seafood to the overall exposure of humans to PFASs. Cooking has been shown to reduce concentrations of some PFASs such as PFOS [59]. Christensen et al. [62] found higher concentrations of serum PFASs among high-frequency fish consumers in the U.S. National Health and Nutrition Exam Survey between 2007 and 2014. The European Food Safety Authority (EFSA) recently estimated that "fish and other seafood" account for up to 86% of dietary PFAS exposure in adults [57]. Hu et al. [63] showed that the presence of elevated serum concentrations of PFASs with $C \geq 9$ chain-length in humans is useful for identifying when seafood is a dominant exposure source. Birth cohort data from the Faroe Islands confirmed this observation by showing strong associations between serum concentrations of perfluoroundecanoic acid (PFUnDA, C11) and hair mercury concentrations, which are a strong tracer of seafood consumption [30]. Concentrations of legacy PFASs in marine biota have lagged shifts in production away from these compounds, resulting in increased significance of seafood as an exposure source [30].

Biosolids and agriculture

Many PFASs used in products or in industry enter the waste stream and are channeled to wastewater treatment plants. Wastewater treatment plants themselves are thus point sources for PFAS pollution [57]. The presence of greater than three treatment plants within a catchment has been associated with increased likelihood of PFAS detection in drinking water [4]. Data on the full suite of PFASs present in wastewater plumes are limited and this is expected to change temporally as chemical production and use in products shifts.

Figure 3 shows temporal changes in catchment level discharges of PFOS from wastewater treatment plants across the US between 1995 and 2005 [29]. PFOS discharges were modeled based on wastewater flow rates (m^3 day^{-1}) from the Clean Watersheds Needs Survey (CWNS)

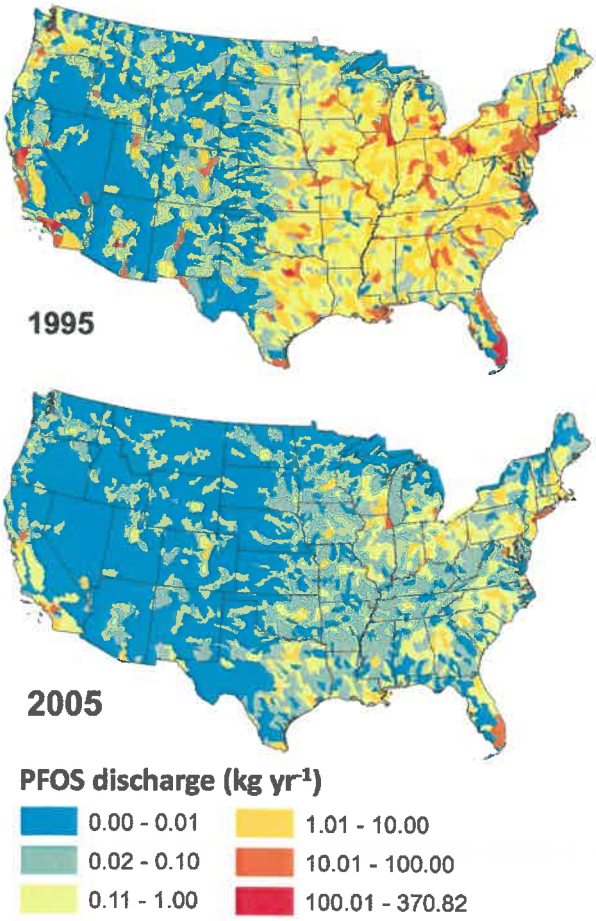

Fig. 3 PFOS discharges from wastewater treatment plants into streams and rivers across the US in 1995 and 2005. Adapted from data presented in Zhang et al. [29] and PFOS production estimates Wang et al. [166]

2008 Report to Congress and an empirical relationship between population served by wastewater treatment plants and PFOS concentrations, as described in Zhang et al. [29]. Higher levels of PFOS discharges from wastewater treatment plants are apparent in 1995 prior to the phase-out between 2000 and 2002 [26, 29]. Discharges from wastewater enter regional river networks and ultimately result in large inputs to marine ecosystems as the terminal sink. For PFOS, wastewater was thought to account for approximately 85% of releases on a continental scale, while industrial sites can be most significant at the local scale [64, 65].

Sewage sludge from wastewater treatment plants is often used for fertilizer in agriculture, presenting another potential vector for human exposure. Several studies have detected PFASs in such biosolids [66–68]. The 2001 U.S. EPA National Sewage Sludge Survey suggested that the load of PFASs in the US biosolids was 2749–3450 kg $year^{-1}$ based on the 13 PFASs measured. Of this total US load, an estimated 1375–2070 kg $year^{-1}$ was applied for agriculture and

467–587 kg year^{-1} was transported to landfills [68]. Several studies have also investigated the uptake of PFASs into crops and earthworms from biosolids application [69–71]. In one study, concentration factors for roots relative to soil up to 4.7 and 10.3 were found for PFOS and PFOA, respectively, and all seven plants investigated displayed root concentration factors greater than one [71]. Elevated PFAS concentrations in meat and dairy products have also been reported [57, 72], suggesting PFAS uptake from biosolids contaminated agriculture is a source of dietary exposure for farm animals. Additional research on the significance of human exposures to PFASs originating from biosolids and agriculture is needed.

Approaches for quantifying exposure sources

Table 1 presents some literature estimates of source contributions to overall PFAS exposures for adults. There is general agreement that dietary intake is the largest source of PFAS exposure rather than inhalation or dermal contact. However, the relative importance of different source categories varies dramatically across demographic groups and populations (Table 1). Next to contaminated sites, drinking water has been reported to account for up to 75% of total PFAS exposure [73, 74]. Using a compilation of numerous food samples, dietary survey data and toxicokinetic modeling, EFSA estimated that fish and other seafood dominate the chronic dietary exposure of adults to PFOS (up to 86% of total exposure). For the elderly, EFSA estimated meat and meat products account for up to 52% of PFOS exposure, while eggs and egg products account for up to 42% of infant exposure [57]. For PFOA, EFSA suggested the most important sources of chronic exposure were milk and dairy products for toddlers (up to 86% of exposure), drinking water (up to 60% for infants), and fish and other seafood (up to 56% in elderly).

Human exposures to PFASs (blood PFAS concentrations) are typically estimated using data on measured concentrations in exposure media, contact frequency, and toxicokinetic parameters [23, 25, 74–76]. The reliability of this approach depends on the accuracy of data needed to convert an external dose to internal concentrations. Many of these parameters for PFASs are poorly understood or hard to measure, resulting in large uncertainties about exposure sources (Table 1). For example, Vestergren and Cousins [74] relied on exposure estimates from multiple geographic regions to estimate total PFAS intake from the combination of dietary sources (German data), dust (data from the US and Spain) and inhalation (northwest Europe). Trudel et al. [25] tested a series of scenarios for chemical concentrations and contact frequencies across populations in Europe and

Table 1 Literature estimates of sources contributions (%) to adult PFAS exposures

PFAS	Diet	Dust	Tap water	Food Pkg.	Inhalation	Dermal	Other	Reference
PFOA	16	11		56	14		2[a]	Trudel et al. [25]
PFOA	85	6	1	3[b]			4[c]	Vestergren and Cousins [74]
PFOA	77	8	11		4			Haug et al. [23]
PFOA	66	9	24		<1	<1		Lorber and Egeghy [76]
PFOA	41		37				22[d]	Tian et al. [163]
PFOA	99		<1					Shan et al. [164]
PFOS	66	10	7		2		16[d]	Gebbink et al. [165]
PFOS	72	6	22		<1	<1		Egeghy and Lorber [75]
PFOS	96	1	1		2			Haug et al. [23]
PFOS	81	15					4[a]	Trudel et al. [25]
PFOS	93		4				3[d]	Tian et al. [163]
PFOS	100		<1					Shan et al. [164]
PFBA		4	96					Gebbink et al. [165]
PFHxA	38	4	38		8		12[d]	Gebbink et al. [165]
PFOA	47	8	12		6		27[d]	Gebbink et al. [165]
PFDA	51	2	4		15		28[d]	Gebbink et al. [165]
PFDoDA	86	2	2		4		5[d]	Gebbink et al. [165]

[a]Carpet
[b]Consumer goods
[c]Precursors
[d]Indirect

North America and found plausible ranges in PFAS exposures spanned two orders of magnitude.

Uncertainty in such estimates motivates an alternative solution that uses measured serum concentrations to identify predominant exposure sources. The ratio between two chemical homologues and the correlation among multiple chemical homologues in environmental samples, including human serum, contains information on their origin. This process is referred to as "chemometrics" and has been applied to polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) [77, 78]. Applying such techniques to PFASs is complicated by dramatic shifts in production over time and the complex metabolism of PFAS precursors. In prior work, researchers have used PFAS isomer profiles to assess the relative contributions from electrochemical fluorination (ECF) and telomere manufacturing to measured PFOA concentrations in the environment [79, 80]. Zhang et al. [81] showed that the measured PFAS composition in surface water provides useful information on sources of environmental pollution. Hu et al. [63] extended this approach to human biomarkers by comparing human serum samples collected at similar time periods and controlling for physiological differences. Using cohort data from the Faroe Islands and the U.S. National Health and Nutrition Examination Survey (NHANES), the authors showed that elevated C9–C12 PFCAs were associated with predominant exposures through seafood consumption. Further, PFHxS and N-EtFOSAA were linked to exposure from consumer products such as carpet and food packaging [63].

Serum samples are routinely collected during epidemiological studies, but environmental samples pertinent to multiple exposure pathways such as drinking water, diet, air, and dust samples are not [82]. Information on contact frequency is often collected using self-reported questionnaires with known recall bias [83]. In addition, there are limited data on chemical half-lives in the human body ($t_{1/2}$) and distribution volumes (V_D) for PFASs other than PFOS, PFOA, and PFHxS. This means that traditional exposure modeling is limited to only a few relatively well-characterized individual PFASs and cannot be easily applied to the PFAS mixtures that are more relevant for human exposures.

The results presented in Hu et al. [63] are mostly qualitative and cannot quantify the percentage of PFAS exposure from different exposure pathways. This preliminary approach can be enhanced by expanding the list of PFAS analytes. Regular epidemiological studies usually report six legacy PFASs (branched and linear PFOS, PFOA, PFHxS, PFNA, PFDA) but exposure analyses would be enhanced by including additional PFASs that are increasingly relevant to current production patterns. In addition, a total mass balance is needed to provide quantitative assessments of the relative importance of different exposure sources [84]. Routine measurements of extractable organic fluorine (EOF) in human sera would thus complement data on individual PFASs and allow such quantitative inferences from the chemometric approach [85, 86].

Temporal trends in human exposure to PFASs

The presence of organic fluorine in human blood was first detected by Taves [87] in the 1960s. Data on specific forms of organic fluorine such as PFOS and PFOA in human sera were not published until 1990 [88]. Grandjean [89] pointed out that there has been a lag of more than two decades between industry information on exposures and health effects of PFASs and academic research and regulatory action.

Declines in serum concentrations of PFASs following the phase-out in the production of the parent chemical to PFOS and its precursors between 2000 and 2002 have been reported across diverse populations worldwide and provide a success story for the effectiveness of industrial shifts and regulatory actions. These include children from the Faroe Islands [30] and the eastern US [90], adult women from the western US [91] and Sweden [92], the general Australian population [93], and Norwegian men [94]. However, declines in PFOS and PFOA have primarily driven decreasing legacy PFAS concentrations. Concentrations of total PFASs or EOF in human serum that include newer PFASs in production and precursors have not been measured for most populations. One study that examined EOF in human serum in China found the legacy PFASs measured in standard epidemiologic studies only comprised between 30 and 70% of the total fluorine [95]. These results suggest unquantified PFASs may be exhibiting different trends than legacy compounds.

Following the phase-outs in use of PFOS and PFOA in many products, C6-based fluorocarbons (including perfluorohexanesulfonic acid: PFHxS and perfluorohexanoic acid: PFHxA) were used as an initial replacement [96, 97]. Concentrations of PFHxS and PFCAs with 9–14 carbons in human serum have not decreased concomitantly with PFOS, PFOA and their precursors. No change and some increases in exposures to these compounds have been observed across populations. For example, significant increases in PFNA, PFDA, and PFUnDA and no change in PFHxS was observed in Swedish and Danish women through 2015 [92, 98]. Blood concentrations of PFNA, PFDA, PFUnDA, and PFDoDA from multiple countries show no significant change [13]. Similarly, PFHxS concentrations in the blood of Mexican American NHANES participants showed no

significant trend between 1999 and 2004 and increased from 2005 to 2008 [12, 99].

Increasing trends in concentrations of PFHxS and long-chain PFCAs are noteworthy since they significantly contribute to the overall body burden of PFASs and have longer half-lives than both PFOS and PFOA. Additionally, exposures to the C9–C11 PFCAs for some individuals are primarily from seafood consumption [30, 62, 63]. C9–C11 PFCAs exhibit different temporal patterns than PFOS and PFOA. They are bioaccumulative and concentrations in some seafood have been increasing, as discussed in Dassuncao et al. [30]. This suggests that while exposures to PFOS and PFOA have been successfully reduced by product phase-outs for many populations, exposures to C9–C11 PFCAs have not followed the same trends.

Health effects associated with exposure to PFASs

The 3M Company was the major global manufacturer of PFASs in the 1990s and conducted most of the early studies on the health effects of PFAS exposures in animals and humans [26, 100]. Many of these studies were not published in the peer-reviewed literature but can be found in the U.S. EPA public docket AR-226, and are reviewed in the section below.

Early industry studies

Before 1980, 3M conducted multiple studies of acute animal toxicity associated with exposure to legacy PFASs [101]. Serum PFAS concentrations measured as organic fluorine in 3M workers were ten times higher than the general population in 1980 [102]. Shortly after this, 3M carried out a series of subacute and chronic studies in various animal models such as rats, mice, and monkeys [103–105]. Results showed N-ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) was carcinogenic in rats after a 2-year chronic study concluded in 1988. However, the results were first misinterpreted as a null finding and only corrected a decade later [106, 107]. In a 90-day rhesus monkey study, all monkeys in all treatment groups died after 20 days and the study had to be aborted [104]. In later monkey studies with lower doses, reductions in total cholesterol, increased liver weight, and toxicity on the reticuloendothelial system (immune system) were observed [103].

Health surveillance of 3M workers produced inconsistent results, mainly due to small sample sizes and a scenario known in epidemiology literature as the "healthy worker effect" [108]. A doctoral thesis that focused on a cohort of 3M workers reported in 1992 that PFOA exposure may significantly alter male reproductive hormones and leukocyte counts [109]. Later investigations published by 3M did not find the same associations [110]. Differences between these findings may be caused by the exposure assessment methods used: Gilliland [109] measured serum total organic fluorine while Olsen [110] measured serum PFOA concentrations. This suggests adverse effects observed in Gilliland's work [109] may have result from exposures to fluorochemicals other than PFOA.

Academic studies

Most academic research on PFASs was initiated in the early 2000s after the voluntary phase-out in the production of the parent chemical to PFOS and its precursors by 3M, the major global manufacturer at the time. Results from experimental studies in rodents can be challenging to translate directly to human health impacts because of differences in peroxisome proliferation expression, which is one of the main mechanisms of PFASs toxicity [111]. The most comprehensive longitudinal evidence for adverse health effects associated with PFAS exposure (C8 Health Project) is from the population living near the West Virginia DuPont Washington Works fluorotelomer plant. Probable links between PFOA exposure and six diseases have been identified: high cholesterol, thyroid disease, pregnancy-induced hypertension, ulcerative colitis, and kidney and testicular cancer [112–115].

Children may be more vulnerable to PFAS exposures because they often have higher body burdens than adults and are going through sensitive windows for development. A recent systematic review of the children's health literature identified positive associations between PFAS exposures and dyslipidemia, immunity, renal function, and age at menarche [116]. Some health effects such as immunotoxicity can be detected at lower exposure levels than others. For example, Grandjean et al. [117] examined the impact of serum PFAS concentrations on serum antibody production in children at ages 5 and 7 years following routine vaccinations for tetanus and diphtheria. A doubling of serum PFOS, PFOA, and PFHxS concentrations at age 5 was associated with a 50% decline in antibody concentrations at age 7. If this effect is causal, average serum concentrations in the general population of most countries with biomonitoring data greatly exceed the benchmark doses of 1.3 ng/mL for PFOS and 0.3 ng/mL for PFOA calculated based on immunotoxicity in children [48].

Cancer

Numerous studies have investigated PFAS carcinogenicity, mainly focusing on PFOA and PFOS. PFHxA is the only other PFAS that has been investigated in an animal study and null findings were reported [118]. Human studies for

PFOS and PFOA include chemical workers, communities with contaminated drinking water, and the general population. A 3.3-fold increase (95% CI, 1.02–10.6) in prostate cancer mortality was reported for each month spent in the chemical division with PFOA production was observed among occupationally exposed workers, but the number of cases was small [119]. Later data from this occupational cohort did not support an association between occupational exposure and cancer mortality or incidence [120]. The strongest evidence for increased cancer risk has been reported by studies among community members whose drinking water was contaminated by PFOA. Barry et al. [112] and Vieira et al. [121] showed a positive association between PFOA levels and kidney and testicular cancers among participants in the C8 Health Project. These studies form the foundation of the overall conclusion from the C8 Health Project. Results among studies conducted in general population are inconsistent. Eriksen et al. [122] were the first to examine PFOA exposure and cancer in the general population and they did not find an association between plasma PFOA or PFOS concentration and prostate, bladder, pancreatic, or liver cancer. The International Agency for Research on Cancer (IARC) classified PFOA as a possibly carcinogenic to humans (Group 2B). No IARC evaluation is available for PFOS.

Immune effects

Immunotoxicity of PFASs has been demonstrated in multiple animal models, including rodents, birds, reptiles and other mammalian and non-mammalian wildlife. Epidemiological data is relatively sparse but mounting evidence suggests that the immunotoxic effects in laboratory animal models occur at serum concentrations that are comparable to body burden of highly exposed humans and wildlife [123].

Table 2 shows findings from a review of 25 epidemiological studies published between 2008 and 2018. Cohort data were from China, Denmark, the Faroe Islands, Japan, Norway, Taiwan, and the US and 14 out of the 25 studies reviewed were longitudinal. Two studies focused on occupational exposures and the remaining 23 were based on environmental exposures. Infants and children were the most studied demographic group for this health endpoint and accounted for 16 out of the 25 studies. Three studies considered data from teenagers in the U.S. NHANES survey. Six studies were based on either residents or workers from the C8 health project near a fluorotelomer plant in West Virginia. One study examined a group of healthy adults who received vaccination. Serum PFAS concentration measurements were the most widely used exposure assessment method, accounting for 22 out of 25 studies. Four studies from the C8 health project used job-exposure matrix or residential history to estimate lifetime cumulative exposures.

The health outcomes related to PFAS immunotoxicity include both molecular-level (i.e., antibody concentrations) and organ/system-level (i.e., infection of the respiratory system). In general, more consistent results across different studies were reported for molecular-level health endpoints such as vaccine antibody or other immune markers such as immunoglobulin (Table 1).

Five studies examined the association between PFAS exposure and suppression of antibody response to vaccination among children, adolescents or adults. Four out of the five found statistically significant associations between

Table 2 Summary of the epidemiologic literature on PFAS exposures and metabolic outcomes

Outcome	# of total studies	# of studies by results				Other PFASs
		PFOA	PFNA	PFHxS	PFOS	
Lipid profile[a]	39	21/10/1[b]	8/1/2	4/4/2	20/9/3	Inconsistent results for PFDA, PFUnDA, PFTeDA
Insulin resistance and diabetes	18	6/9/1	3/5/0	1/2/1	7/4/1	Mostly null for PFDA, PFUnDA, PFDoDA, N-EtFOSAA, N-MeFOSAA; One positive finding for PFDoDA and insulin resistance
Hypertension, vascular disease and stroke	10	3/5/1	3/0/1	0/3/1	1/3/1	Only one study reported null for PFDA and PFUnDA
Thyroid disease	8	4/3/0	1/2/0	1/2/0	1/3/0	Positive finding for PFDA and PFUnDA in two studies. Null for PFTrDA
Cardiovascular disease	6	1/4/1	1/0/0	0/1/0	0/1/0	No other PFASs have been investigated
Uric acid	5	4/0/0	0/0/0	0/1/0	2/2/0	No other PFASs have been investigated
Overweight and obese	4	1/3/0	1/1/0	1/1/0	3/1/0	Positive finding for PFDA in only one study (Liu et al. [134])

Details of the studies examined are provided in the Supporting Information Table S1

[a]Lipid profile includes low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), total cholesterol, and triglycerides

[b]Number of studies with adverse/null/protective results

higher PFAS exposure and suppressed immune response. Grandjean et al. [117] were the first to link PFAS exposure in children to deficits in immune function. The authors reported a 2-fold increase of major PFASs in child serum was associated with a −49% (95% confidence interval (CI), −67% to −23%) decline in tetanus and diphtheria antibody concentrations. This effect size is larger than later studies and can be attributed to different exposure levels, different vaccine strains, and different times elapsed since vaccination (peak antibodies vs. residual antibodies). Other studies have not examined tetanus and diphtheria, but similar associations have been found in PFAS exposure and other childhood vaccinations such as rubella and mumps [124, 125], and adult influenza vaccination such as FluMist [126] and anti-H3N2 [127].

Five out of seven studies that examined associations between PFAS exposure and immune markers found statistically significant evidence of immunosuppression. The strongest evidence has been generated for PFOA and PFOS with limited data for other PFASs. One example for other PFASs is from a case-control study in Taiwan [128] that reported that among children with asthma, nine out of the ten PFASs evaluated were positively associated with at least two of the three immunological biomarkers (immunoglobulin E (IgE), absolute eosinophil counts (AEC), and eosinophilic cationic protein (ECP)). However, this study did not account for the fact that multiple PFASs serum concentrations are positively correlated and therefore did not distinguish whether all PFASs or a subset of PFASs were associated with immune suppression.

Results with organ/system-level outcomes such as asthma, infection, and allergies are more inconsistent. Slightly more than half of the studies on asthma and infection show statistically significant results. Similar to the molecular-level outcomes, stronger evidence has been established for PFOS and PFOA than other more minor PFASs. Buser et al. [129] found serum levels of PFASs were associated with higher odds of self-reported food allergies among teenagers in NHANES 2007–2010. This is the only study out of the six studies reviewed with a statistically significant finding, but the cross-sectional design of this study necessitates further investigation using longitudinal studies. Existing studies have limitations such as outcome measurement error. For example, some studies measure asthma using a self-reported questionnaire but did not validate these data with medical records. Some studies used hospitalization due to infection as an outcome but hospitalization may not be necessary for most infections. In addition, since infection and allergy be caused by food and airborne allergens, it is challenging to identify the contribution of PFAS exposures in a low signal-to-noise setting.

Metabolic effects

We reviewed 69 epidemiological studies published between 1996 and 2018 based on human populations in Australia, Canada, China, several European countries, Japan, South Korea, Taiwan, UK, and the US. We identified 26 out of 69 studies as longitudinal and 59 out of 69 studies were based on environmental exposures. Diverse demographic groups have been studied for this health endpoint, including infants, mother–child pairs, children, teenagers, adults, workers, and special subpopulations such as diabetic patients and obese individuals in randomized clinical trials. Measured serum PFAS concentrations were the most widely used exposure assessment method (65 out of 69 studies). Two occupational studies used job-exposure matrix and work history to estimate lifetime cumulative exposures. Gilliland [130] was the earliest study and used total serum fluorine to quantify the exposure. Only one study [131] examined the different isomers of PFOA and PFOS (linear vs. branched) using data from NHANES 2013–2014.

There is relatively consistent evidence of modest positive associations with lipid profiles such as total cholesterol and triglycerides, although the magnitude of the cholesterol effect is inconsistent across different exposure levels. There is some but much less consistent evidence of a modest positive correlation with metabolic diseases such as diabetes, overweight, obesity, and heart diseases (Table 3). The majority of studies are cross-sectional, which have limited causal interpretation [132]. A few studies provided stronger evidence than observational studies, such as Diabetes Prevention Program Trial [133] and a diet-induced weight-loss trial [134].

The majority of the studies examined found associations between elevated serum PFASs and detrimental lipid profiles, such as elevated total cholesterol and low-density lipoprotein cholesterol (LDL-C), or reduced high-density lipoprotein cholesterol (HDL-C). PFOS and PFOA exhibit the most consistent finding across studies. The effect size varies across studies, which can be a result of different exposure levels. Increases in serum PFOA and PFOS from the lowest to the highest quintiles among children in C8 health project was associated with 4.6 and 8.5 mg/dL total cholesterol (reference level for children is <170 mg/dL) [135]. Among NHANES 2003–2004 participants, increases in serum PFOA and PFOS from the lowest to the highest quartiles were associated with 9.8 and 13.4 mg/dL total cholesterol (reference level for adults is <200 mg/dL) [136]. Maisonet et al. [137] reported a non-linear relationship between prenatal PFOA concentrations and total cholesterol at ages 7 and 15 of the child.

Eighteen studies have examined the associations between PFAS exposures and glucose metabolism, insulin resistance, and diabetes. Overall the results across different

Table 3 Summary of the epidemiologic literature on PFAS exposures and immunotoxicity

Outcome	# of total studies	# of significant studies	# of significant studies by each PFAS
Vaccine antibody	5	4	Mixture: 1; PFOA: 2; PFNA: 1; PFHxS: 1; PFOS: 2
Immune markers	7	5	PFHpA: 1; PFOA: 5; PFNA: 2; PFDA: 1; PFTeDA: 1; PFDoA: 1; PFBS: 1; PFHxS: 2; PFOS: 4
Asthma and biomarker of asthma	9	5	PFHpA: 1; PFOA: 5; PFNA: 3; PFDA: 3; PFDoDA: 1; PFBS: 1; PFHxS: 2; PFOS: 4
Infection and other autoimmune diseases	13	8	PFOA: 6; PFOS: 4; PFDA: 1; PFDoDA: 1; PFNA: 2; PFUnDA: 1; PFHxS: 2; PFOSA: 1
Allergy	6	1	PFOA: 1; PFHxS: 1; PFOS: 1

Details of the studies examined are provided in the Supporting Information Table S2

studies are inconclusive. Lin et al. [138] were the first to report a positive association between serum PFAS concentrations and glucose homeostasis among adults and adolescents in NHANES. They reported a considerable effective size—doubling serum PFNA concentrations was associated with hyperglycemia odds ratio (OR) of 3.16 (95% CI 1.39–7.16). Later studies tend to report smaller effect sizes. Exposure during pregnancy may affect the mother and child during gestation and later in life. In a small pregnancy cohort in the US, each standard deviation of increase in PFOA was associated with a 1.87-fold increase of gestational diabetes risk (95% CI 1.14–3.02) [139]. In a larger Spanish cohort, a null result was reported for PFOA, but PFOS, PFHxS, and gestational diabetes had positive associations: OR per log10-unit increase = 1.99 (95% CI: 1.06, 3.78) and OR = 1.65 (95% CI: 0.99, 2.76), respectively [140].

Results for hypertension and other vascular diseases including stroke are also inconsistent. Two of the earliest studies examined the relationship between PFAS exposure and hypertension among NHANES and found different results for children and adults. Adjusted OR = 2.62 for hypertension comparing 80th vs. 20th percentiles serum PFOA among NHANES adults in the US [141], while among children a null finding was reported [142]. In some later cohort studies, null results and even protective effects associated with PFAS exposure and hypertension were reported [143, 144]. A cross-sectional study on carotid artery intima-media thickness in adolescents reported increased risks with an increase in plasma PFOS [145]. However, a more recent study on artery stiffness found protective effects of PFOA and PFNA among children and adolescents enrolled in the World Trade Center Health Registry [146].

Other metabolic endpoints include thyroid disease (which could also be considered an endpoint for endocrine disruption), cardiovascular diseases, uric acid metabolism, and body weight. Except for uric acid metabolism, most results are inconclusive. An increase in hyperuricemia risks and PFOA exposure was observed in all four studies (two from NHANES and two from C8 Health Project).

In summary, the strongest evidence for a relationship between PFAS exposure and metabolic outcome is in the area of dyslipidemia. Animal studies have found decreases in serum cholesterol levels associated with increased PFAS exposures, which contradicts epidemiological findings. The difference may lie in different levels of expression for nuclear receptors involved in the toxicological pathway, such as peroxisome proliferator-activated receptor (PPAR)-alpha. It may also be related to differences in exposure levels. Dietary factors can influence metabolic outcomes [147], introducing bias into observed relationships if not controlled for properly. Explanations for null findings

include healthy worker effects and non-linear relationships, such as decreasing slopes as exposure increases (log-linear relationships) [148].

Neurodevelopmental effects

In vitro studies suggest PFOS can trigger the "opening" of tight junction in brain endothelial cells and increase the permeability of the blood brain barrier [149]. There has therefore been some interest in investigating the neurotoxic effects associated with PFAS exposures. In laboratory animals, it has been reported that PFOS, PFOA, and PFHxS exposures during the peak time of rapid brain growth in mice resulted in an inability to habituate in the unfamiliar environment [150]. Liew et al. [151] reviewed 21 epidemiological studies in 2018 and concluded that evidence is mixed regarding neurodevelopmental effects of PFAS exposures. Health outcomes examined included developmental milestones in infancy, attention-deficit/hyperactivity disorder (ADHD) and behaviors in childhood, and neuropsychological functions such as IQ and other scales or scores. Neurodevelopmental trajectories are highly complicated and there is great heterogeneity in the instruments and methods to evaluate neurodevelopmental endpoints. Additional research is needed to establish a link between neurodevelopmental outcomes and PFAS exposures.

Future directions

Challenges associated with quantifying the full-diversity of individual PFASs present in environmental samples and a paucity of toxicity data highlight the need for data and tools to better understand new and emerging fluorinated compounds. EOF provides an estimate of all combustible organofluorine compounds present and provides a proxy measure for unquantified PFASs [86]. Yeung and Mabury [152] reported that quantifiable PFASs accounted for 52–100% of EOF in human plasma samples collected between 1982 and 2009 in two German cities. The amount and proportion of unidentified organofluorine in human plasma increased after 2000 in one city. This study hypothesized that humans are exposed to many new and unidentified organofluorine compounds, which is consistent with the environmental exposure literature [3, 74, 153, 154].

The toxicity of new and emerging PFASs for ecosystems and humans is poorly understood. This is problematic because in communities with high concentrations of alternative PFASs, the magnitude of potential health impacts associated with exposures has not been quantified and such information is generally considered necessary to engage in risk mitigation actions. Chemical manufacturers have claimed that replacement PFASs are not associated with adverse health effects and that shorter-chain homologues with shorter half-lives in the human body are not likely to bioaccumulate [155, 156]. However, ongoing work suggests shorter chain compounds have a higher potential to interact with biomolecules due to less steric hindrance than the longer chain homologues [157, 158]. For example, fluorinated carbon chains in perfluoroalkyl ether carboxylic acids (PFECAs), an important new class of PFASs, are broken into shorter units by the insertion of oxygen molecules that are thought to make them more reactive [159]. One known PFOA alternative is the ammonium salt of perfluoro-2-propoxypropanoic acid, a PFECA that has been produced since 2010 with the trade name "GenX" [160]. A recent hazard assessment based on the internal dose of GenX suggests it has higher toxicity than PFOA after accounting for toxicokinetic differences [18]. The extreme environmental persistence, bioaccumulation, and potential toxicity of the entire class of PFASs has led some researchers to question the use of any highly fluorinated chemicals and call for a class approach in managing them [161].

In summary, additional research is needed to better understand the exposure pathways and health outcomes associated with emerging PFASs and to understand the timescales of exposures to legacy PFASs associated with drinking water and seafood contamination. Risk mitigation measures require new technology for reducing PFAS concentrations at contaminated sites and in drinking water supplies. Delayed action on legacy PFASs has resulted in widespread human exposures and risks and lessons should be learned from this example and not repeated for the newer PFASs entering the market [89]. Although additional data are needed to understand the full extent of impacts of PFAS exposures on human health, particularly at sensitive life stages, we assert that this should not be used as a justification for delaying risk mitigation actions. The phase-out in PFOS and its precursors between 2000 and 2002 was extremely effective at rapidly reducing exposures of humans and wildlife globally to these compounds and provides an example of the potentialx benefits from the coordinated global action.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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Total Fluorine Measurements in Food Packaging: How Do Current Methods Perform?

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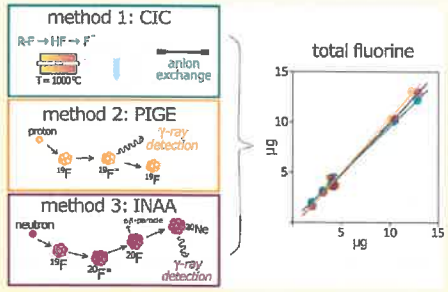
Supporting Information

ABSTRACT: Per- and polyfluoroalkyl substances (PFASs) represent a class of more than 4000 compounds. Their large number and structural diversity pose a considerable challenge to analytical chemists. Measurement of total fluorine in environmental samples and consumer products is therefore critical for rapidly screening for PFASs and for assessing the fraction of unexplained fluorine(i.e., fluorine mass balance). Here we compare three emerging analytical techniques for total fluorine determination: combustion ion chromatography (CIC), particle-induced γ-ray emission spectroscopy (PIGE), and instrumental neutron activation analysis (INAA). Application of each method to a certified reference material (CRM), spiked filters, and representative food packaging samples revealed good accuracy and precision. INAA and PIGE had the advantage of being nondestructive, while CIC displayed the lowest detection limits. Inconsistencies between the methods arose due to the high aluminum content in the CRM, which precluded its analysis by INAA, and sample heterogeneity (i.e., coating on the surface of the material), which resulted in higher values from the surface measurement technique PIGE compared to the values from the bulk volume techniques INAA and CIC. Comparing CIC-based extractable organic fluorine to target PFAS measurements of food packaging samples by liquid chromatography−tandem mass spectrometry revealed large amounts of unidentified organic fluorine not captured by compound-specific analysis.



1. INTRODUCTION

Per- and polyfluoroalkyl substances (PFASs) are a class of ubiquitous chemicals that have found innumerable industrial and consumer applications over the past seven decades.[1] PFASs can be categorized as polymeric or nonpolymeric,[2] collectively amounting to more than 4700 CAS-registered substances according to the OECD.[3] Environmental concerns pertaining to PFASs are centered primarily on the perfluoroalkyl acids (PFAA), a subclass of PFAS which display extreme persistence and chain-length-dependent bioaccumulation and adverse effects in biota.[2]

The water- and grease-repellent properties of PFASs have led to their extensive use in food contact paper and packaging. Concentrations in the range of 1.0−1.5% per fiber dry weight are typical in most finished products.[4] Historically, most fluorinated coatings for paper and board were based on perfluorooctanesulfonate (PFOS) precursors, such as *N*-ethyl perfluorooctane sulfonamido alcohol-based phosphate diesters (SamPAPs).[5,6] However, as a consequence of the phase-out of PFOS and its precursors by 3M in 2001, most contemporary formulations are now based on acrylate polymers with fluorotelomer or sulfonamido alcohol side chains or perfluoropolyether-based polymers (PFPEs).[4,7] Several peer-reviewed studies have reported the occurrence of PFAAs, polyfluoroalkyl phosphates (PAPs), fluorotelomer alcohols, and saturated and unsaturated fluorotelomer acids in various types of food packaging materials.[5,8−13] While the importance of PFASs in food packaging as a human exposure source remains unclear, some PFASs have been shown to migrate from food packaging into food.[14,15] In response to concerns surrounding PFASs, several states in the United States have implemented bans on the use of these chemicals in food packaging,[16] and the Danish Ministry of the Environment and Food has established a total fluorine indicator value of 0.1 $\mu g/cm^2$ in food packaging.[17]

Given their vast number and structural diversity, a comprehensive characterization of PFASs in consumer products represents a considerable analytical challenge.[18] Typically, a limited number of PFASs are quantified using a

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combination of solvent extraction and either liquid chromatography−tandem mass spectrometry (LC−MS/MS; ionic PFASs) or gas chromatography−mass spectrometry (GC−MS; semivolatile PFASs). These methods cannot capture all PFASs, and even when high-resolution MS is employed (i.e., suspect or nontarget screening), a lack of authentic standards precludes unequivocal identification and quantification. As a result, questions about how many PFASs are missed during routine analysis remain. Several analytical approaches have emerged for quantifying total fluorine (TF) regardless of chemical structure or molecular weight (reviewed by McDonough et al.[19]). These approaches can be used for rapid screening of PFASs or in combination with targeted analyses (i.e., LC−MS/MS or GC−MS) to assess the fluorine mass balance in a sample. Combustion ion chromatography (CIC) is the most common method and was first used for fluorine mass balance experiments in 2007 by Miyake et al.[20] Since then, there have been several applications of CIC for determination of TF in environmental samples and consumer products.[21−24] Another method, particle-induced γ-ray emission (PIGE) spectroscopy, is a long-established ion beam technique used for analysis of solid materials.[25−28] The approach was recently applied to papers and textiles by Robel et al., who showed that ΣPFAS concentrations accounted for a mere 0.2−14% of the TF content.[29] Lastly, instrumental neutron activation analysis (INAA) is another nuclear technique with widespread uses,[30−32] with one recent application involving measurement of fluorine in biological and environmental matrices.[33] The current paper reports the first application of INAA to consumer products. Other approaches for measuring TF exist, such as inductively coupled plasma (ICP) MS,[34] molecular absorption spectroscopy,[35] and X-ray photoelectron spectroscopy;[36] only the latter has recently been applied to fluorine mass balance experiments in consumer products. The data produced by these approaches have not yet been compared. This is clearly needed, given the growing interest in fluorine mass balance experiments and the use of TF for regulation of PFASs in consumer products.

The objectives of this study were (1) to compare the accuracy, precision, linearity, and detection limits of TF measurements by CIC, PIGE, and INAA, (2) to assess the limitations of each approach, and (3) to assess the fluorine mass balance in several food packaging materials from the Swedish market using LC−MS/MS and CIC.

2. MATERIALS AND METHODS

2.1. Sample Collection and Preparation. Total fluorine measurements from three different laboratories were compared using (a) a certified reference material (CRM), (b) PFOA-spiked cellulose filters, and (c) a variety of food packaging materials (Table S1). CIC analysis was carried out at Stockholm University (SU); PIGE analysis was carried out at the University of Notre Dame (UND), and INAA was carried out at the University of Missouri Research Reactor (MURR). The CRM (BCR-461, fluorine in clay) was purchased from Sigma-Aldrich and subsampled at SU into 13 mL polypropylene tubes prior to being shipped to UND and MURR for direct analysis. Cellulose filter papers (Whatman) were prepared by UND by spiking perfluorooctanoic acid (PFOA) solutions (prepared in methanol with food coloring to determine the area with which the standard was applied) with total masses of 0, 1.9, 3.8, 9.5, 19.1, and 38.2 μg of PFOA. The methanol was evaporated to dryness prior to analysis. Triplicates of each PFOA-spiked filter were sealed in individual zip-lock bags and shipped to SU and MURR for analysis. Finally, three french-fry bags (FF1−FF3) and six microwave popcorn bags (MP1−MP6) purchased in Sweden in 2012 were selected for analysis in this study. Pieces (2 cm × 2 cm) of each sample were cut and sealed in individual zip-lock bags and shipped to UND and MURR for analysis.

2.2. Extraction of Food Packaging. For targeted PFAS analysis, food packaging samples were extracted according to a Gebbink et al.[37] In short, samples (5 cm × 5 cm) were cut into small pieces, fortified with internal standards (0.5 ng each), and stirred in 40 mL of methanol at room temperature for 8 h. The extract was concentrated under a stream of nitrogen to approximately 1 mL, cleaned up using EnviCarb, and fortified with a recovery standard (0.5 ng). For analysis of total extractable organic fluorine (EOF), the extraction procedure was modified slightly by omitting the addition of internal and recovery standards and cleanup by EnviCarb.

2.3. Instrumental Analysis. Detailed descriptions of instrumental analysis and quantification for CIC, PIGE, and INAA can be found in the Supporting Information. A brief overview is provided here.

2.3.1. TF and EOF Analysis by CIC. TF and EOF were analyzed according to the method described by Schultes et al.[24] Briefly, samples (neat samples and extracts) were placed directly onto a ceramic boat that was introduced into a combustion oven (HF-210, Mitsubishi) heated to 1100 °C under an atmosphere of argon (carrier gas) and oxygen (combustion gas) for ∼5 min. All gases were collected in Milli-Q water (GA-210, Mitsubishi). Ions were separated on an ion exchange column and measured by conductivity detection.

2.3.2. TF Analysis by PIGE. TF was analyzed according to the method described by Ritter et al.[28] Briefly, samples were mounted across a stainless steel target frame and bombarded with a 3.4 MeV beam of protons (∼50 nA for 180 s) to produce γ-rays, which were measured using a high-purity germanium detector (HPGe, Canberra, 20%) located at approximately 75° to the beam. The combined number of counts of two γ-rays characteristic of the decay of the ^{19}F nucleus at 110 and 197 keV/μC of beam delivered is proportional to the TF. The beam intensity was measured in a suppressed Faraday cup before and after each 3 min run and normalized to a current measured in a tantalum collimator near the beam exit window. For the powdered CRM material, replicate targets were prepared by hydraulically compressing the powder into a self-supporting pellet at approximately 350 bar for 30 s and then taped onto target frames.

2.3.3. TF Analysis by INAA. Samples were analyzed according to the method described by Spate et al.[32] Briefly, samples were weighed into 0.5 mL high-density polyethylene (HDPE) vials. The vials were encapsulated in HDPE "rabbits" for irradiation in the pneumatic tube irradiation position of the MURR at a neutron flux of 5.5×10^{13} n cm^{-2} s^{-1}. Samples were irradiated for 7 s, decayed for 11 s, and were counted for 30 s using an HPGe detector (Canberra, 20%). The ^{20}F decays (11.03 s half-life) by β-particle emission with a characteristic γ-ray at 1633.6 keV. A correction was made for the fast neutron reaction ^{23}Na(n,α)^{20}F using a single-element Na standard irradiated and counted under the same conditions. The neutron activation product ^{24}Na emits a characteristic γ-ray at 1368.6 keV. The measured ratio of the 1633.6 keV/1368.6 keV γ-ray in the single-element standards is used to correct interference in the samples based on the measured 1368.6 keV

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γ-ray. The correction in samples analyzed in this study was <1%.

2.3.4. Target PFAS Analysis by UHPLC–MS/MS. Target PFASs, including perfluoroalkyl carboxylic acids (PFCAs, C4–C15), perfluoroalkyl sulfonic acids (PFSAs, C4, C6, C8, and C10), perfluorooctane sulfonamide (FOSA), perfluoroalkane sulfonamidoacetic acids, fluorotelomer sulfonates (4:2, 6:2, and 8:2 FTSAs), fluorotelomer carboxylic acids (5:3, 7:3, and 9:3), ADONA, F53-B, and polyfluoroalkyl phosphoric acid mono- and diesters (mono- and diPAPs, respectively), were analyzed using a Waters Acquity UHPLC instrument coupled to a Xevo TQ-S triple-quadrupole mass spectrometer according to the methods described by Vestergren et al.[38] and Gebbink et al.[37] Instrumental parameters are listed in Table S2. Limits of detection (LODs) for individual PFASs are based on the average concentration in the extraction blank plus 3 times the standard deviation. In the absence of a blank signal, the LOD was based on the concentration of the lowest calibration standard at a minimum signal-to-noise ratio of 3. Individual LODs are listed in Table S8.

2.4. Fluorine Mass Balance Calculations. To compare PFAS concentrations (C_{PFAS}, nanograms of PFAS per gram) derived from UHPLC–MS/MS analysis to EOF and TF (C_{F_EOF} and C_{F_TF}, respectively; nanograms of F per gram) measured by CIC, molecular PFAS concentrations are converted to fluorine equivalents using the following equation:

$$C_{F\_PFAS} = n_F \times A_F / MW_{PFAS} \times C_{PFAS} \quad (1)$$

where C_{F_PFAS} (nanograms of F per gram) is the corresponding fluorine concentration of a given PFAS, n_F is the number of fluorine atoms on the molecule, MW_{PFAS} is the molecular weight of the PFAS, and A_F is the atomic weight of fluorine.

The total known extractable fluorine concentration (ΣC_{F_PFAS}, nanograms of F per gram), which is the sum of all individual C_{F_PFAS} values, can be related to C_{F_EOF} by eq 2:

$$C_{F\_EOF} = \Sigma C_{F\_PFAS} + C_{F\_extr.unknown} \quad (2)$$

where $C_{F\_extr.\ unknown}$ (nanograms of F per gram) is the total concentration of unidentified, extractable organic fluorine.

Lastly, C_{F_EOF} and C_{F_TF} are related to each other via the total nonextractable fluorine concentration ($C_{F\_non\ extr.}$, nanograms of F per gram) according to eq 3:

$$C_{F\_TF} = C_{F\_EOF} + C_{F\_non\ extr.} \quad (3)$$

2.5. Quality Assurance and Quality Control. Accuracy and precision were assessed through (a) replicate (n = 3) spike–recovery experiments using printer paper fortified with 36 native PFASs (targeted analysis) and (b) comparison of replicate (n = 8) measurements of the CRM to certified concentrations (TF analysis). Extraction blanks were processed in every batch to monitor for background contamination, while solvent blanks were injected intermittently during UHPLC–MS/MS and CIC analysis to monitor for carryover. Statistical analysis was carried out at an α = 0.05 confidence level in all instances.

3. RESULTS AND DISCUSSION

3.1. Total Fluorine Method Comparison. A comparison of the measured (n = 8) versus certified concentrations (568 ± 60 μg/g) of CRM BCR-461 revealed no statistically significant differences for CIC (p = 0.18) or PIGE (p = 0.84) [one-sample t tests (Figure 1a and Table S3)], indicating good accuracy

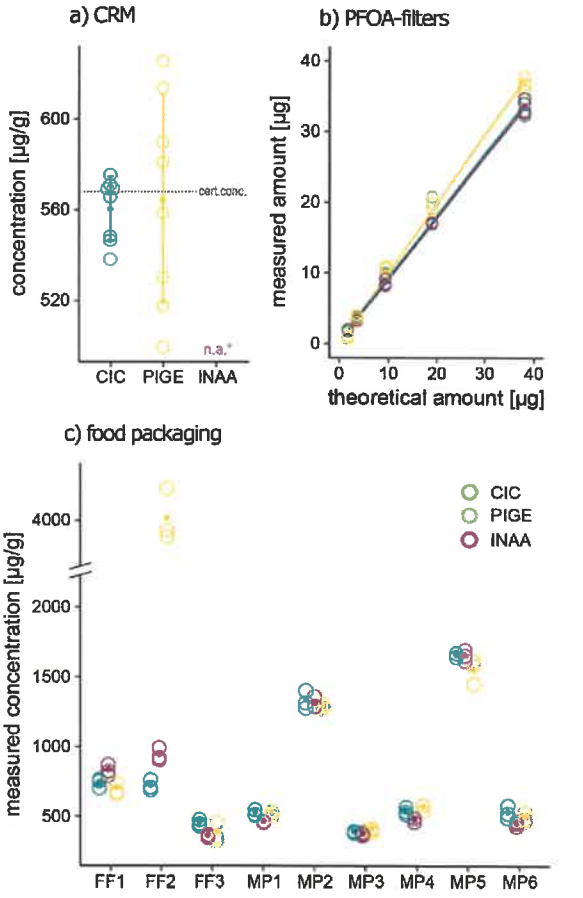

Figure 1. Comparison of TF methods (CIC, PIGE, and INAA) by means of (a) certified reference material (CRM) measurements (n = 8; circles) and means (dots) (the error bar represents the standard deviation, and the gray line indicates the certified concentration), (b) PFOA-spiked filter measurements vs theoretical concentrations (the gray line indicates slope = 1 and intercept = 0), and (c) food packaging samples (circles, data points; dots, means). Note the discrepancy in FF2 by PIGE due to the thickness and heterogeneity of this paperboard sample. *n.a., not analyzed due to interference.

for both methods. Precision was also reasonable for both approaches but slightly better for CIC (2.5% CV) than for PIGE (8.1%; p = 0.005; F-test). INAA was unable to measure F in the CRM due to the high Al content. The ^{27}Al captures a neutron, yielding unstable ^{28}Al, which decays by β-emission with a characteristic γ-ray at 1779 keV. The high levels of Al in geological materials result in detector dead times of >90% for the F analysis. Thus, INAA was deemed unsuitable for this matrix.

PFOA-fortified filters (six fortification levels, including a blank, each prepared in triplicate) were measured by CIC, PIGE, and INAA (Figure 1b and Table S4). The blank filters were below the LOD for all methods and therefore excluded from statistical analysis. Concentrations measured by CIC were, on average, 2.1% higher than those from PIGE and 4.1% higher than those from INAA, while those from PIGE were 1.9% higher than those from INAA. Repeated t tests with Bonferroni correction revealed that these differences were not statistically significant (for individual p values, see Table S6). All methods displayed good linearity (r^2 > 0.99) and precision

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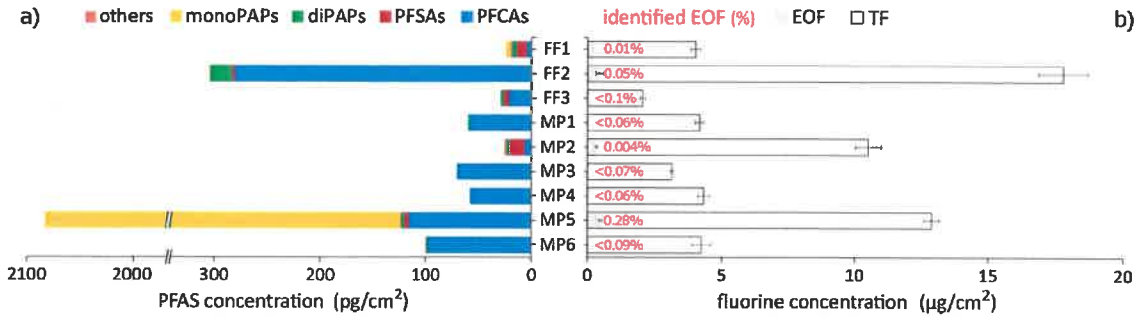

Figure 2. Fluorine mass balance in food packaging samples comprising (a) PFAS concentrations displayed as the sum of each class (in picograms per square centimeter) as measured by UHPLC–MS/MS and (b) total fluorine and extractable organic fluorine contents (error bars represent the standard deviation of triplicate measurements) in micrograms per square centimeter as measured by CIC. The percentage of EOF identified by the sum of target PFAS (ΣC_{F_PFAS}) is indicated in red.

[CV; 3–12% (CIC), 3–39% (PIGE), and 2–6% (INAA)] over the range of concentrations on the filters.

Nine food packaging materials were analyzed in triplicate by CIC, PIGE, and INAA (Figure 1c and Table S5). It is important to note that while measurement replicates were obtained for PIGE and INAA, the destructive nature of CIC requires technical replicates to assess precision. Another difference between methods arises from the fraction of the sample that contributes to the fluorine signal. For example, depending on the penetration depth of the PIGE particle beam, only the surface F content is measured in thick samples; in contrast, CIC and INAA measure the F content of the entire sample independent of material thickness. As a result, TF measurements determined by PIGE will be higher than those determined by INAA and CIC for surface-coated products when expressed on a weight basis. This difference is clearly demonstrated through measurements of FF2, which was the only thick paperboard material analyzed in this work and was over-reported by PIGE relative to CIC and INAA. When FF2 was excluded, CIC produced TF concentrations that were, on average, 2.4% higher than those produced by PIGE and 7.3% higher than those produced by INAA, while PIGE measurements were an average of 4.9% higher than INAA measurements. These differences were not statistically significant [two-way analysis of variance with replication (p = 0.39)]. All methods showed good precision [CV; 2–8% (CIC), 1–8% (PIGE), and 1–6% (INAA)]. Assuming a 10 mg sample size, detection limits were lowest for CIC (0.8 μg/g), followed by INAA (20 μg/g) and PIGE (38 μg/g).

3.2. Fluorine Mass Balance of Food Packaging Samples. *3.2.1. Target PFAS Analysis.* A total of 22 of 44 target PFASs were detected in the food packaging materials investigated here with Σ_{44}PFAS concentrations ranging from 23.9 to 2220 pg/cm² (Figure 2a and Table S8). Spike–recovery experiments demonstrated good accuracy and precision of the targeted PFAS analysis (see Table S7). PFTeDA, PFDoDA, PFHpA, 6:2 diPAP, PFHxA, 6:2/8:2 diPAP, and 8:2 diPAP were detected in >50% of the samples. 10:2 monoPAP was detected at by far the highest concentration (2100 pg/cm²) but only in a single sample (MP5). In all other samples, the contribution of PFAA precursors was minor. PFCAs were the major compound class in 6 samples (FF2, FF3, MP2–MP4 and MP6), with PFHxA (<0.37–160 pg/cm²) accounting for 53–90% of Σ_{44}PFAS concentrations in these samples. PFOA was detected in only FF2 and MP5 (4.32 and 22.4 pg/cm², respectively), possibly reflecting the shift among industries from C8 to C6 chain lengths.

3.2.2. Fluorine Mass Balance. CIC-based C_{F_TF} concentrations in food packaging [2.05–17.8 μg/cm² (Figure 2b)] were high relative to the Danish Ministry of the Environment and Food indicator value of 0.1 μg/cm². This value was established as a means of differentiating between intentionally added and background PFASs in food packaging.[39] The C_{F_EOF} was greater than the method detection limit (MDL) (0.04–0.07 μg/cm²) in four samples, but low (0.22–0.49 μg/cm²) compared to C_{F_TF} (accounting only for 0–5.5%). No significant correlations were observed among C_{F_TF}, C_{F_EOF}, and ΣC_{F_PFAS}. According to eq 3, $C_{F\_non\ extr.}$ was high in all samples, ranging from 94.5 to 99.9%. These findings affirm the presence of polymeric coatings [e.g., perfluoropolyethers and fluorotelomer (meth)acrylate-based side-chain fluorinated polymers] on these papers and paperboards, as polymers have low solubility in most nonfluorinated solvents.[40] Furthermore, the fractions of C_{F_TF} and C_{F_EOF} explained by ΣC_{F_PFAS} were negligible in all samples [means of 0.002 and 0.08%, respectively (Table S9)], leaving the majority of TF and EOF unattributed. Therefore, we assume that our UHPLC–MS/MS method does not capture the PFASs intentionally used in these products. Here it is germane to note that possible degradation products and/or unreacted monomers of the aforementioned polymeric coatings [e.g., FTOHs, fluorotelomer olefins, or fluorotelomer (meth)acrylates] were not included in our targeted analysis.

Previous reports on TF in food packaging align well with concentrations reported in our study. Robel et al. measured concentrations from below the LOD to 8.17 μg/cm², and Schaider et al. concentrations of ≤15.2 μg/cm² in U.S. fast food packaging.[13,29] To the best of our knowledge, no prior studies have performed direct quantification of EOF in food packaging. While Robel et al. analyzed TF by PIGE in packaging samples before and after extraction, thereby indirectly measuring EOF, the differences were not statistically significant.[29] This is a general problem arising when comparing two large numbers, whereby a small difference easily lies within the error bounds. In our study, that problem is avoided by direct measurement of EOF. Similar to our results, Robel et al. report that the sum of ionic PFASs accounted for only 0–0.03% of the TF.

3.3. Implications. The results of the method comparison revealed excellent agreement among all three total fluorine methods. However, technical differences help determine their

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applicability domains. For example, the rapid and non-destructive nature of PIGE and INAA allows for quick screening applications, as for example for regulatory purposes. CIC on the other hand excels at sensitivity and versatility, with lower detection limits and the possibility for direct IC analysis for determination of inorganic fluoride. All three methods can be used to analyze solid and liquid samples, although preconcentration methods are used to increase sensitivity for PIGE, which are not required for INAA and CIC.

In the case of food packaging materials, all three methods prove to be applicable. Because of the limited penetration depth of the particle beam, PIGE can distinguish between coated and uncoated surfaces. Most fluorine was persistent on the paper and paperboards after methanol extractions, as determined by comparably low EOF and target PFAS concentrations. More broadly, the cross-validation of these three TF methods means that they can be used as a complement to high-specificity targeted analysis. The mass balance measurements demonstrated in this work are critical in fate and transport studies of PFASs in the environment, such as those that can be found in the end-of-life options for paper packaging. For example, regardless of whether PFAS-treated paper decays in a landfill, is composted and used as fertilizer, or is recycled directly into more paper, these TF methods can be used to study the environmental release of all PFASs over a broad range of samples, disposal conditions, and locations. Such a broad question could not be answered in a timely manner with compound-specific analysis, yet LC–MS/MS identification of PFASs will remain an essential complement to these robust TF methods.

■ ASSOCIATED CONTENT

Supporting Information

The Supporting Information is available free of charge on the ACS Publications website at DOI: 10.1021/acs.estlett.8b00700.

Additional information about food packaging samples, instrumental methods, target PFAS compounds, quality assurance and quality control results, p values for statistical analysis, and tabular overviews of CIC, PIGE, INAA, and LC–MS/MS results (PDF)

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Notes

The authors declare no competing financial interest.

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Needham Public Health Division
December 2019

Assist. Health Dir. - Tara Gurge
Health Agents - Diana Acosta and Monica Pancare
Food Regulatory Program Analyst/Intern - Michelle Iovino

Unit: Environmental Health

Date: 1/23/2020

Staff members: Tara Gurge, Diana Acosta, Michelle Iovino and Monica Pancare

Activities and Accomplishments

Activity	Notes
2020 Permits issued	Approximately 225 annual permits were issued for animal, acupuncture / disposal of sharps, bodywork establishments, bodywork practitioners, biotech, food establishments, hotels, indoor pools including special purpose pools, medical waste haulers, septic installers, septage / grease haulers, and tobacco.
Standard 2 – Joint Inspections	Diana began conducting joint inspections with Pamela Ross-Kung to meet Standard 2. Thorough inspections of Sheraton, Dragon Chef, Ray's New Garden and Farmhouse were inspected.
New Tobacco Control Law in Effect - Sale of Vape Products Ban Lifted	Email sent out to all tobacco retailers on details of the new tobacco control law. Details include: Retail stores licensed to sell tobacco products, such as convenience stores, gas stations, and other retail outlets, are restricted to the sale of non-flavored nicotine products with a nicotine content of 35 milligrams per milliliter or less. The sale of non-flavored nicotine vaping products (with a nicotine content over 35 milligrams per milliliter) is restricted to licensed, adult-only retail tobacco stores and smoking bars. The sale and consumption of all flavored nicotine vaping products may only occur within licensed smoking bars. Beginning June 1, 2020, the sale of flavored combustible cigarettes and other tobacco products, including menthol cigarettes and flavored chewing tobacco, will be restricted to licensed smoking bars where they may be sold only for on-site consumption. Also taking effect on June 1st is the addition of a 75 percent excise tax on the wholesale price of nicotine vaping products, in addition to the state's 6.75 percent sales tax. (Our local regulation already restricts the sale of all flavored products, including menthol. And we currently do not have any licensed adult-only retail smoke shops or smoking bars.)

Other Public Health Division activities this month: (See attached report.)

Activities

Activity	*Notes*
Permits Issued	- 1 Animal - 7 – Acupuncture / Disposal of Sharps - 8 - Bodywork Establishments - 19 - Bodywork Practitioners - 1 - Biotech - 140 –Food Establishments (annual) - 3 – Hotels - 9 – Indoor Pools including special purpose pools - 2 – Medical Waste Haulers - 5 – Septic Installers - 20 – Septage / Grease Haulers - 10 – Tobacco
Bodyworks (New)	**1 – Bodywork Establishment Permits issued** - 360 Degrees of Fitness and Wellness **1 – Bodywork Practitioner Permits issued** - 360 Degrees of Fitness and Wellness
Demo Reviews/ Approvals	**3 - Demolition sign-offs:** - 82 Dawson Drive - 540 Hillside Ave - 700 Chestnut Street
Food – Temporary Food Event Permits	**2 – Temporary Food Permits issued**
Food – Food Permit Plan Reviews (Updates)	**1 – Plan Review submitted** - Home Kitchen, Inc. **1 – Food Establishment looking to start their Pre-operation inspection process:** - **Thai Story Restaurant (formerly known as Eat Well)** – (Still in process.)
Food – 6-Month Check-ins	**3 – 6-month check in with Level 1 Food Establishments** - Only required to be physically inspected once a year. Check in requires an update on food operations and new manager name(s).
Food Pre-operation Inspections conducted	**0 – Pre-operation inspections conducted.**
Food - Mobile	**0– Mobile Truck Inspections conducted.**
Food Complaints	**2/2 – Food Complaints/Follow-ups:** - **7-Eleven Highland Ave. –** Customer reported that the store was “filthy.” A wash bucket was observed near the hot dog area. Diana contacted the manager to remind staff to not have any chemicals or dirty mop water near food products. - **Trader Joe’s –** Customer reported top layer of boxes in freezers were “warm.” Diana spoke with the manager who reported the freezers were in a defrost cycle at the time. The staff was instructed by the manager to monitor the freezers to ensure they maintained temperature.
Housing Complaints /Follow-ups -	**0/2 – Housing Complaints/Follow-ups -** - **Linden St. (0/2) –** Called owner (x2). She has moved in with her son while she comes up with a plan. Still awaiting update on next steps with the family. Will check in again with her after the New Year in mid-January for the latest update.

Nuisance – Complaints/ Follow-ups	**1/2 – Nuisance Complaints/Follow-ups conducted for:** - **New dumpster enclosure for Hearth/Farmhouse (1/2) –** Complaint received about overflowing dumpsters in the new enclosure. Diana conducted 2 site visits over 2 days and saw the recycling dumpster was still over flowing on the second day. Owner of the dumpster was called and their hauler was contacted to remediate the situation.
Fire Department emergency call	**1/2 – Emergency Call/ Follow ups conducted for:** - **Baker's Best**- Ansul system was set off by accident while cleaning hood. Kitchen was thoroughly cleaned up and all open foods were discarded. Two follow-up inspections were conducted.
Septic – Addition to a Home on a Septic	**1 – Addition to a Home on a Septic plan review conducted:** - **#320 Charles River St.** – Plan review in process. Have call in to engineer for clarifications on rooms to be added as part of the proposed addition/renovation. Received updated copy of stamped house layout plans. **UPDATE:** Additional clarification still needed from engineer/builder (In process.)
Septic Final As-built plan review –	**1 – Septic final as-built plan review in process for:** - #**1407 Central Ave. (New Storage Bldg. at DPW) –** Tight Tank installed. Follow-up tank alarm inspection conducted. Final as-built plan submission pending for our review/approval. **UPDATE** – As-built plan submitted. Still looking to have engineer in charge of project come in to sign and stamp the final Certificate of Compliance. (Project manager in process of coordinating that.)
Septic – Certificates of Compliance	**2 – Certificates of Compliance issued for:** - **#260 Cartwright Rd. (for septic upgrade)** - **#745 Central Ave. (for septic upgrade)**
Planning Board Plan reviews	**0 – Subdivision Plan Reviews for Planning Board conducted.**
Zoning Board Plan reviews	**0 – Plan Reviews for Zoning Board conducted.**

Yearly

Category	*Jul*	*Au*	*S*	*O*	*N*	*D*	*J*	*F*	*M*	*A*	*Ma*	*Ju*	***FY '20***	FY' 19	*FY' 18*	FY' 17	*Notes/Follow-Up*
Biotech	0	0	0	0	0	1	0	0	0	0	0	0	**1**	1	1	2	Biotech registrations
Bodywork	0	0	0	1	2	4	0	0	0	0	0	0	**7**	14	11	6	Bodywork Estab. Insp.
Bodywork	0	0	0	0	1	8	0	0	0	0	0	0	**9**	9	6	4	Bodywork Estab. Permits
Bodywork	0	0	0	0	2	19	0	0	0	0	0	0	**21**	21	22	13	Bodywork Pract. Permits
Demo	11	10	8	12	6	3	0	0	0	0	0	0	**50**	104	105	112	Demo reviews
Domestic Animal	0	0	0	0	0	0	0	0	0	0	0	0	**0**	21	19	17	Animal permits/
Permits/Insp.	1	0	0	0	0	1	0	0	0	0	0	0	**2**	22	3	16	Inspections
Food Service	14	11	22	18	23	18	0	0	0	0	0	0	**106**	200	225	198	Routine insp.
Food Service	7	13	3	2	2	0	0	0	0	0	0	0	**27**	12	32	37	Pre-oper. Insp.
Retail	1	5	6	7	6	3	0	0	0	0	0	0	**28**	46	60	69	Routine insp. Or 6 month check in
Resid. kitchen	1	0	0	0	0	0	0	0	0	0	0	0	**1**	6	8	7	Routine insp.
Mobile	2	0	1	0	0	0	0	0	0	0	0	0	**3**	17	13	15	Routine insp.
Food Service	3	2	2	3	1	3	0	0	0	0	0	0	**14**	28	53	51	Re-insp.
Food Service/retail	1	3	1	1	0	140	0	0	0	0	0	0	**146**	140	171	177	Annual/Seasonal Permits
Food Service	11	8	25	8	1	2	0	0	0	0	0	0	**55**	134	163	158	Temp. food
	9	0	1	0	0	0	0	0	0	0	0	0	**10**	37	29	62	permits/Inspe
Food Service	1	1	0	0	0	0	0	0	0	0	0	0	**2**	14	14	7	Farmers Market permits
	28	41	40	37	0	0	0	0	0	0	0	0	**146**	229	127	33	Farmers Market insp.

Category	*Jul*	*Au*	*S*	*O*	*N*	*D*	*J*	*F*	*M*	*A*	*Ma*	*Ju*	***FY '20***	FY' 19	*FY' 18*	FY' 17	*Notes/Follow-Up*
Food Service	3	2	5	4	3	2	0	0	0	0	0	0	**19**	18	20	13	New Compl/
	3	3	4	5	2	2	0	0	0	0	0	0	**19**	21	21	17	Follow-ups
Food Service	5	1	1	1	0	1	0	0	0	0	0	0	**9**	20	42	33	Plan Reviews
Food Service	0	0	1	0	1	0	0	0	0	0	0	0	**2**	0	0	0	Admin. Hearings
Grease/ Septage Haulers	0	0	0	0	0	20	0	0	0	0	0	0	**20**	21	24	24	Grease/ Septage Hauler Permits
Housing (Chap II Housing)	7	0	0	0	0	0	0	0	0	0	0	0	**7**	0	14	14	Annual routine insp./
	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	5	4	Follow-up insp.
Housing	4	2	6	2	3	0	0	0	0	0	0	0	**17**	22	22	7	New Compl./
	4	2	6	7	9	2	0	0	0	0	0	0	**30**	28	24	11	Follow-ups
Hotel	0	0	0	0	0	3	0	0	0	0	0	0	**3**	3	3	3	Annual insp./
	0	1	14	0	0	0	0	0	0	0	0	0	**15**	0	0	0	Follow-ups
Nuisance	3	0	5	3	3	1	0	0	0	0	0	0	**15**	55	42	30	New Compl./
	12	4	8	5	4	2	0	0	0	0	0	0	**35**	69	42	45	Follow-ups
Pools	0	0	0	0	1	9	0	0	0	0	0	0	**10**	20	12	13	Pool insp./
	0	0	0	0	0	0	0	0	0	0	0	0	**0**	12	7	8	Follow up
Pools	0	0	0	0	0	9	0	0	0	0	0	0	**9**	19	12	9	Pool permits
Pools	0	0	0	0	0	0	0	0	0	0	0	0	**0**	3	44	19	Pool plan reviews
Pools	0	0	0	0	1	5	0	0	0	0	0	0	**6**	5	7	6	Pool variances
Septic	1	1	0	8	0	1	0	0	0	0	0	0	**11**	9	5	18	Septic Abandon
Septic	0	1	0	0	1	1	0	0	0	0	0	0	**3**	2	2	5	Addition to a home on a septic plan rev/approval
Septic	5	0	1	2	0	0	0	0	0	0	0	0	**8**	21	28	43	Install. Insp.
Septic	0	1	0	0	0	0	0	0	0	0	0	0	**1**	3	1	0	COC for repairs

Category	*Jul*	*Au*	*S*	*O*	*N*	*D*	*J*	*F*	*M*	*A*	*Ma*	*Ju*	***FY '20***	FY' 19	*FY' 18*	FY' 17	*Notes/Follow-Up*
Septic	0	0	0	0	0	2	0	0	0	0	0	0	**2**	4	4	3	COC for complete septic system
Septic	7	5	6	5	4	6	0	0	0	0	0	0	**33**	62	51	62	Info. requests
Septic	0	0	0	0	0	0	0	0	0	0	0	0	**0**	1	2	6	Soil/Perc Test.
Septic	2	1	0	0	0	0	0	0	0	0	0	0	**3**	6	5	8	Const. permits
Septic	0	1	0	0	0	5	0	0	0	0	0	0	**6**	8	9	11	Installer permits
Septic	0	1	0	0	0	1	0	0	0	0	0	0	**2**	5	3	6	Installer Tests
Septic	1	0	0	0	0	0	0	0	0	0	0	0	**1**	1	3	7	Deed Restrict.
Septic	3	1	0	0	3	1	0	0	0	0	0	0	**8**	9	23	14	Plan reviews
Sharps permits/Insp.	0	0	0	0	0	7	0	0	0	0	0	0	**7**	7	9	9	Disposal of Sharps permits/
	0	0	0	0	1	6	0	0	0	0	0	0	**7**	7	7		Inspections
Subdivision	0	0	0	0	1	0	0	0	0	0	0	0	**1**	1	1	0	Plan review-Insp. of lots /
	0	0	0	0	0	0	0	0	0	0	0	0	**0**	1	0	1	Bond Releases
Special Permit Planning/ Zoning Board memos	0	0	3	0	5	0	0	0	0	0	0	0	**8**	34	15	12	Special Permit/Zoning
Tobacco	0	0	0	0	0	10	0	0	0	0	0	0	**10**	10	11	12	Tobacco permits
Tobacco	1	0	2	0	1	0	0	0	0	0	0	0	**4**	14	18	25	Routine insp./
	0	2	6	0	0	0	0	0	0	0	0	0	**8**	3	3	6	Follow-up
Tobacco	10	0	10	0	0	0	0	0	0	0	0	0	**20**	30	41	34	Compliance checks
Tobacco	0	0	0	1	0	0	0	0	0	0	0	0	**1**	3	4	2	New compl./
	0	0	0	1	0	0	0	0	0	0	0	0	**1**	3	4	2	Compl. follow-ups
Trash Haulers	0	0	0	0	0	0	0	0	0	0	0	0	**0**	17	14	26	Trash Hauler permits
Medical Waste Haulers	0	0	0	0	0	2	0	0	0	0	0	0	**2**	2	1	2	Medical Waste Hauler permits
Wells	1	0	0	0	0	0	0	0	0	0	0	0	**1**	6	2	7	Permission to drill letters/
	0	1	0	0	0	0	0	0	0	0	0	0	**1**	1	0	3	Well Permits

FY 20 Priority FBI Risk Violations Chart (By Date)

Restaurant	Insp. Date	Priority Violation	Description
Hearth Pizzeria	7/13/2019	**3-302.11 (A)(2) Raw Animal Foods Separated from each other -** *Except when combined as ingredients, separating types of raw animal foods from each other such as beef, fish, lamb, pork and poultry during storage, preparation, holding, and display by: (a) Using separate equipment for each type, or (b) Arranging each type of food in equipment so that cross contamination of one type with another is prevented and (c) preparing each type of food at different times or in separate areas.*	A cooked turkey breast was stored in Same container as raw chub beef. PIC removed and stored properly
Briarwood Healthcare Center	7/13/2019	**4-501.114 (A)-(E) Chem.San. Temp./pH/Concentr./Hard.-** *A chemical sanitizer used in a sanitizing solution shall be used in accordance with the EPA-registered label use instructions. A chlorine solution shall have a temperature of 55°F-120°F, depending on water hardness, and concentration range of 25ppm to 100ppm. An iodine solution shall have a minimum temperature of 68°F with a concentration range of 12.5ppm to 25ppm. A quaternary ammonium compound solution shall have a minimum temperature of 75°F and be used according to the manufacturer's use directions.*	Sanitizer in the 3 compartment sink was not at 200 ppm. Test Frequently and at least once every four hours
Gari Japanese Fusion	7/27/2019	**3-501.19 (B)(1)(3)(4) Time as a Public Health Control - 4 Hours -** *If time rather than temperature is used as the public health control up to a maximum of 4 hours: the food shall have an initial temperature of 41°F or less when removed from cold holding temperature control, or 135°F or greater when removed from hot holding temperature control; the food shall be cooked and served, served at any temperature if RTE, or discarded, within 4 hours from the point in time when the food is removed from temperature control; and the food in unmarked containers or packages, or marked to exceed a 4-hour limit shall be discarded.*	Time as a public health control as required no charts were available as required. Cooked product did not have time stamp and other information as required. The most recent date was July 14 2019 it was observed that shrimp and other TCS foods were held at room temperature products were discarded
The Farmhouse	7/27/2019	**3-501.14 (A) Cooling Cooked Foods -** *Cooling cooked TCS foods shall be done within 2 hours from 135ºF to 70ºF and then within 4 hours from 70ºF to 41ºF.*	Corrected on site - Stockpot of beef stock cooling improperly 2 large containers of chicken stock cooling improperly. Repeat offense. Train staff on proper cooling techniques to get product to 70f within 2 hours and below 41f within the next 4 hours.
Fuji Steakhouse	8/9/2019	**3-304.11 Food Contact with Soiled Items** - *Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.*	Side towel used to store cut vegetables in rolltop on service line. Paper towel used layering products.

Fuji Steakhouse (cont.)	8/9/2019	**3-302.11 (A)(2) Raw Animal Foods Separated from each other** - *Except when combined as ingredients, separating types of raw animal foods from each other such as beef, fish, lamb, pork and poultry during storage, preparation, holding, and display by: (a) Using separate equipment for each type, or (b) Arranging each type of food in equipment so that cross contamination of one type with another is prevented and (c) preparing each type of food at different times or in separate areas..* **3-501.14 (D) Cooling When Receiving Raw Eggs** - *Raw eggs shall be received as specified under 3-202.11(C) and immediately placed in refrigerated equipment that maintains an ambient air temperature of 41ºF or less.*	Raw cut beef was stored on top shelves in walk-in above RTE Raw shell eggs 84F stored at room temp in kitchen. Discarded.
Beth Israel Deaconess Hospital Kitchen	8/10/2019	**2-301.14 When to Wash** - *Employees shall clean their hands and exposed portions of their arms immediately before engaging in food preparation including handling utensils and equipment and: after touching bare human body parts other than clean hands and clean, exposed portions of arms; after using the toilet; after handling animals; after coughing, sneezing, using a tissue, using tobacco, eating, or drinking; after handling soiled equipment or utensils; after any type of contamination; when switching between working with raw food and working with RTE food; and before donning gloves to initiate a task that involves working with food.*	During inspection two cooks present did not wash hands. Frequent handwashing is critical in between change of tasks. This inspector directed the chef to provide paper towels in the empty dispenser.
Brother's Pizza	8/15/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Deli prep unit was on the warmer side. Tuna salad in top well was at 46°F. To be discarded at end of service. Will keep top lid shut as often as possible. Adjust all front of house cooling units to be cooler.
Hungry Coyote	8/22/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Front of House - Front holding burrito units need to be cooler. Both units were in the mid 40's. Kitchen - Pork was cooked last night. Did not cool down properly. Temperature at 76'F. Discarded by PIC.
Founder's Café / Shark Ninja	8/22/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Deli prep unit and the salad bar in the front was running warm. Tuna salad observed at 45°F. See other temps in log. Manager to get facilities to adjust temperature of units. Staff instructed to set up deli area later the day right before start of service.
Dragon Chef	8/22/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *-All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Cooked chicken in cold holding unit had a prep date of 8/15. Checked temperature of center of bowl and was at 60°F. Manager instructed to dispose of food. Disposed of compromised item. Directed PIC to lower temperature of walk-in.

New Garden	8/24/2019	**2-301.14 When to Wash -** *Employees shall clean their hands and exposed portions of their arms immediately before engaging in food preparation including handling utensils and equipment and: after touching bare human body parts other than clean hands and clean, exposed portions of arms; after using the toilet; after handling animals; after coughing, sneezing, using a tissue, using tobacco, eating, or drinking; after handling soiled equipment or utensils; after any type of contamination; when switching between working with raw food and working with RTE food; and before donning gloves to initiate a task that involves working with food.* **3-304.11 Food Contact with Soiled Items -** *Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.* **3-302.11 (A)(2) Raw Animal Foods Separated from each other -** *Except when combined as ingredients, separating types of raw animal foods from each other such as beef, fish, lamb, pork and poultry during storage, preparation, holding, and display by: (a) Using separate equipment for each type, or (b) Arranging each type of food in equipment so that cross contamination of one type with another is prevented and (c) preparing each type of food at different times or in separate areas.* **4-702.11 Frequency-Before Use After Cleaning -** *Code: Utensils and food contact surfaces of equipment shall be sanitized before use and after cleaning.*	During the inspection many of the staff members went outside in parking lot to take a break. Some were observed eating/drinking, touching arms and face. Upon entering the kitchen from taking their break several staff members did not wash hands as required. This inspector required and observed each staff member to wash their hands again, as required. Ice machine underside has slime on rim. PIC directed to clean ASAP. Knives stored improperly on prep line. Do not store directly on soiled equipment prep top area. Improper storage of raw TCS foods in walk-in. Food uncovered. It was observed that a cook was “washing” a pail and beverage container in the middle of the 3-comp. sink without proper washing or sanitizing. The sinks were not set up yet or ready for ware washing tasks.
Residences at Wingate	9/7/2019	**3-801.11 (C) Special Requirements (Raw/Partially Cooked RTE) -** *Code: The following foods may not be served or offered for sale in a RTE form: raw animal foods such as raw fish, raw marinated fish, raw molluscan shellfish, and steak tartare, a partially cooked animal food such as lightly cooked fish, rare meat, soft-cooked eggs that are made from raw eggs, and meringue; and raw seed sprouts.*	Poached eggs and fried eggs were prepared from raw shell eggs unpasteurized. Poached egg was 135f Fried egg 145f HSP raw and partially under cooked foods may not be offered in this HSP environment. Use pasteurized shell eggs for this offering
Three Squares	9/14/2019	**3-301.11 (B) Preventing Contamination from Hands -** *Code: Except when washing fruits and vegetables, food employees may not contact exposed, ready-to-eat food with their bare hands and shall use suitable utensils such as deli tissue, spatulas, tongs, single-use gloves or dispensing equipment.*	Cook prepared toasted cheese bacon sandwich and removed it to cutting board. Touched product without wearing gloves. Product discarded. **Cook stated that he never heard of the regulation that requires you to wear gloves when touching ready to eat foods**.

Three Squares	9/14/2019	**3-304.11 Food Contact with Soiled Items -** *Code: Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.*	Ice machine inside surface has reddish slime Clean and sanitize
Dunkin Donuts Highland	9/12/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Bacon at 66°F and employee stated it was take out of the walk in 5-10 mins before. Items all discarded.
Cookies By Design	9/16/2019	**3-301.11 (B) Preventing Contamination from Hands -** *Code: Except when washing fruits and vegetables, food employees may not contact exposed, ready-to-eat food with their bare hands and shall use suitable utensils such as deli tissue, spatulas, tongs, single-use gloves or dispensing equipment.* **3-501.16 (A)(2) (B) Proper Cold Holding Temps. -** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.* **7-201.11 Storage Separation** *Code: Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single-service and single use articles.*	Staff decorating cookies without any gloves. Staff did not immediately know where gloves are located. Found the box of gloves and staff member who was decorated added gloves. Need to have adequate supply of gloves. Cookie dough in refrigerated unit is at 47°F. Peanut butter cookie dough at 51.2°F Floor cleaner stored right next to spatulas. Was moved
Fresco	9/28/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Corn beef hash held at room temp under grill line 76 F product discarded.
Cookies By Design	10/1/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.* **3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Peanut butter cookie dough seen at 52°F. Snickerdoodle cookie dough was at 51°F. All doughs were discarded. Reg. Sugar batch made 10/1 seen at 57°. Stuck thermometer in different parts of the dough and the lowest seen was 55°.

The James	10/12/2019	**3-501.14 (A) Cooling Cooked Foods-** *Code: Cooling cooked TCS foods shall be done within 2 hours from 135ºF to 70ºF and then within 4 hours from 70ºF to 41ºF.*	Ale sauce in walk-in cooling improperly >70F Corrected on site
The Rice Barn	10/12/2019	**3-302.11 (A)(1) Raw Animal Foods Separated from RTE -** *Code: Food shall be protected from cross-contamination by: (1) Separating raw animal foods during storage preparation, holding and display from: (a)Raw RTE food including other raw animal food such as fish for sushi or molluscan shellfish or other raw RTE food such as fruits and vegetables, and (b) cooked RTE food.* **7-201.11 Storage Separation -** *Code: Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single-service and single use articles.* **7-201.11 Storage Separation -** *Code: Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single-service and single use articles.*	Cooked sliced chicken stored below raw ground chicken and raw salmon filets Paint stored above food refrigerator near back door along with soiled cleaning gloves. Mice rodent traps also stored on top of refrigerator Store segregated away from all food and equipment Draino stored above sink in basement Store away from food equipment
The Farmhouse	10/26/2019	**3-501.14 (A) Cooling Cooked Foods -** *Code: Cooling cooked TCS foods shall be done within 2 hours from 135ºF to 70ºF and then within 4 hours from 70ºF to 41ºF.* **7-201.11 Storage Separation -** *Code: Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single-service and single use articles.* **4-702.11 Frequency-Before Use After Cleaning -** *Code: Utensils and food contact surfaces of equipment shall be sanitized before use and after cleaning.*	Prepared sauce cooling improperly on counter. Temp 138F Toxic chemicals stored above vegetable prep sink while employee was washing/ prepping product. Store segregated French fry potato cutter permanently mounted in dry room area, has significant debris and buildup of soil. Must be washed and sanitized before use and after cleaning. Equipment was removed from the wall, and staff is to mount or place it in a location where it can be easily washed rinsed and sanitized property
Masala Art	10/26/2019	**3-501.14 (A) Cooling Cooked Foods -** *Code: Cooling cooked TCS foods shall be done within 2 hours from 135ºF to 70ºF and then within 4 hours from 70ºF to 41ºF* **3-501.15 (A) Cooling Methods -** *Code: Cooling shall be accomplished in accordance with the time and temperature criteria specified under 3 501-14 by using one or more of the following: placing food in shallow pans; separating the food into smaller or thinner portions; using rapid cooling equipment; stirring the food in a container placed in an ice water bath; using containers that facilitate heat transfer; adding ice or other effective methods.*	Improper cooling of TCS foods Large Milk rice mix on countertop cooling Products brought to blast chiller. A large pan of cooked goat was stored in the refrigerator @179F product was removed and brought to the basement blast chiller

Avita of Needham	11/1/2019	**3-304.11 Food Contact with Soiled Items** - *Code: Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.*	Corrected on site: A kitchen side towel (moist/ wet) was used to wrap a challah bread, to thaw and proof for service. Discussion with Chef to use food grade materials
Briarwood Healthcare Center	11/1/2019	**4-501.114 (A)-(E) Chem.San. Temp./pH/Concentr./Hard.** *Code: A chemical sanitizer used in a sanitizing solution shall be used in accordance with the EPA-registered label use instructions. A chlorine solution shall have a temperature of 55°F-120°F, depending on water hardness, and concentration range of 25ppm to 100ppm. An iodine solution shall have a minimum temperature of 68°F with a concentration range of 12.5ppm to 25ppm. A quaternary ammonium compound solution shall have a minimum temperature of 75°F and be used according to the manufacturer's use directions.*	There was no sanitizer in the 3-compartment sink. Quaternary test strips registered 0ppm. Train staff for proper testing of concentration to ensure warewashing and sanitizing of equipment is done correctly. Cook corrected on site.
Gianni's Gourmet Deli	11/12/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Deli prep unit in front is at 43°F. May need repair.
North Hill Bistro	11/16/2019	**3-302.11 (A)(1) Raw Animal Foods Separated from RTE** *Code: Food shall be protected from cross-contamination by: (1) Separating raw animal foods during storage preparation, holding and display from: (a) Raw RTE food including other raw animal food such as fish for sushi or molluscan shellfish or other raw RTE food such as fruits and vegetables, and (b) cooked RTE food.*	Raw shell eggs stored above RTE
North Hill Main Kitchen	11/16/2019	**3-304.11 Food Contact with Soiled Items** - *Code: Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.*	Kitchen side towels were observed covering raw endive leaves. Side towels are not approved for food storage or protection. Use food grade approved products only to prevent contamination.
Mandarin Cuisine	11/16/2019	**3-302.11 (A)(1) Raw Animal Foods Separated from RTE** - *Code: Food shall be protected from cross-contamination by: (1) Separating raw animal foods during storage preparation, holding and display from: (a) Raw RTE food including other raw animal food such as fish for sushi or molluscan shellfish or other raw RTE food such as fruits and vegetables, and (b) cooked RTE food.* **7-207.11 (B) Restriction and Storage** - *Code: Medicines that are in a food establishment for the employees use shall be labeled and located to prevent the contamination of food, equipment, utensils, linens, and single-service and single-use articles.*	Raw chicken stored to thaw next to cook making dumplings. Prescription medicine stored on food/ takeout paper supply shelf

Sudbury Farms/ Mai Sushi	11/23/2019	**8-103.12 Conformation with Approved Procedures/HACCP** - *If the RA grants a variance or a HACCP plan is otherwise required, the permit holder shall comply with the HACCP plans and procedures that are submitted and approved as a basis for the modification or waiver.*	Upon arrival, inspection of Daily Logbook for sushi rice testing of Ph was not completed for the day. Review of previous logs note that sushi rice was not being tested for PH levels every 4 hours as required. Immediate attention is required to comply with all HACCP PLAN requirements. The PIC Jimmy Chen did not know how to use the Ph meter, and did not have test tape available. Failure to may result in Administrative actions by LBOH. This inspector provided PH tape and 4.0 was compliant.
Residence Inn	12/7/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Bev air refrigerator is not holding temperature <41F. All products discarded. Cease and Desist using this unit. Repair or replace. Deli Turkey 50F; Mayo based sauce 54F; Cooked cryovac chicken breast 51F.
Wingate at Needham	12/7/2019	**3-302.11 (A)(1) Raw Animal Foods Separated from RTE** - *Food shall be protected from cross-contamination by: (1) Separating raw animal foods during storage preparation, holding and display from: (a) Raw RTE food including other raw animal food such as fish for sushi or molluscan shellfish or other raw RTE food such as fruits and vegetables, and (b) cooked RTE food.*	Raw pork stored above cooked food in walk in cooler. Train staff to store TCS foods properly to prevent people from getting sick
Residences at Wingate	12/7/2019	**3-302.11 (A)(1) Raw Animal Foods Separated from RTE** - *Food shall be protected from cross-contamination by: (1) Separating raw animal foods during storage preparation, holding and display from: (a) Raw RTE food including other raw animal food such as fish for sushi or molluscan shellfish or other raw RTE food such as fruits and vegetables, and (b) cooked RTE food.* **3-302.13 Pasteurized Eggs Certain Recipes** - *Pasteurized eggs or egg products shall be substituted for raw shell eggs in the preparation of foods such as Caesar salad, hollandaise or Béarnaise sauce, mayonnaise, meringue, eggnog, ice cream, and egg fortified beverages that are not cooked thoroughly. (Pasteurized eggs do not need to be substituted if the consumer is advised.)*	Raw poultry stored above ready to eat foods sliced ham in walk in cooler. Raw lamb rack stored above RTE foods in walk in cooler on shelf. Upon review, it was noted that raw shell unpasteurized eggs were in walk in cooler opened (in use) from recent delivery. Chef stated that they have been using pasteurized shell eggs, and provided some existing product from service line. Discussion to send back to vendor and isolate from use.
Fresco	12/7/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	Walk in cooler was 45F. Maintain below 41F and check internal thermometer frequently.
Sheraton Needham	12/20/2019	**2-201.13 Removal of Exclusions/Restrictions** - *The PIC must adhere to all the conditions when removing, adjusting, or retaining the exclusion or restriction when removing, adjusting, or retaining the exclusion or restriction of a food employee as per FC 201.12 and FC 201.13.*	PIC could not explain company policy regarding employee exclusion

Sheraton Needham	12/20/2019	**2-301.14 When to Wash -** *Employees shall clean their hands and exposed portions of their arms immediately before engaging in food preparation including handling utensils and equipment and: after touching bare human body parts other than clean hands and clean, exposed portions of arms; after using the toilet; after handling animals; after coughing, sneezing, using a tissue, using tobacco, eating, or drinking; after handling soiled equipment or utensils; after any type of contamination; when switching between working with raw food and working with RTE food; and before donning gloves to initiate a task that involves working with food.* **4-501.114 (A)-(E) Chem.San. Temp./pH/Concentr./Hard. -** *A chemical sanitizer used in a sanitizing solution shall be used in accordance with the EPA registered label use instructions. A chlorine solution shall have a temperature of 55°F 120°F, depending on water hardness, and concentration range of 25ppm to 100ppm. An iodine solution shall have a minimum temperature of 68°F with a concentration range of 12.5ppm to 25ppm. A quaternary ammonium compound solution shall have a minimum temperature of 75°F and be used according to the manufacturer's use directions.* **3-501.16 (A)(2) (B) Proper Cold Holding Temps. -** *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.* **7-201.11 Storage Separation -** *Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single-service and single use articles* **7-201.11 Storage Separation -** *Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single service and single use articles.*	Employee in dish washing area was observed to just rinse hands but not engage in full hand washing procedures. Observed handling dirty and clean plates and utensils. Sanitizer not functioning in bar dishwasher. Dish washer cannot be used until sanitizer is functioning. Needs repair within 72 hours. Various items were observed above 41°F. Must provide adequate cold holding equipment to maintain items at or below 41°F All purpose cleaner found next to food items next to grill area. Corrected on site. Separate chemicals from food items on shelf.
Dragon Chef	12/26/2019	**2-301.14 When to Wash -** *Employees shall clean their hands and exposed portions of their arms immediately before engaging in food preparation including handling utensils and equipment and: after touching bare human body parts other than clean hands and clean, exposed portions of arms; after using the toilet; after handling animals; after coughing, sneezing, using a tissue, using tobacco, eating, or drinking; after handling soiled equipment or utensils; after any type of contamination; when switching between working with raw food and working with RTE food; and before donning gloves to initiate a task that involves working with food.*	Staff did not wash hands upon coming into establishment and beginning prep. Staff not observed to wash hands at any point during inspection.

Dragon Chef	12/26/2019	**3-202.11 (A)(C)(D) Temperature** - *TCS food shall be at a temperature of 41°F or below when received. Raw eggs shall be received in refrigerated equipment that maintains an ambient air temperature of 45°F or less. TCS food that is cooked to a proper temperature and received hot shall be at a temperature of 135°F or above.* **3-304.11 Food Contact with Soiled Items** - *Food shall only contact surfaces of: equipment and utensils that are cleaned and sanitized; single-service and single-use articles; or linens, such as cloth napkins that are used to line a container for the service of foods AND are replaced each time the container is refilled for a new consumer.* **3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *Code: All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.*	All items in deli prep unit are above 41°F Sauce used to darken rice in heavily soiled container Garlic in oil out at room temperature on prep line.
New Garden	12/26/2019	**3-501.16 (A)(2) (B) Proper Cold Holding Temps.** - *All cold TCS foods shall be held at 41ºF or below. Eggs that have not been treated to destroy all viable Salmonellae shall be stored in refrigerated equipment that maintains an ambient air temperature of 45ºF or less.* **7-201.11 Storage Separation** - *Poisonous or toxic materials shall be stored so they cannot contaminate food, equipment, utensils, linens, and single service and single use articles.* **8-103.12 Conformation with Approved Procedures/HACCP** - *If the RA grants a variance or a HACCP plan is otherwise required, the permit holder shall comply with the HACCP plans and procedures that are submitted and approved as a basis for the modification or waiver.*	Garlic in oil needs to be kept under 41°F. Can keep in ice bath. Cleaning items observed in food prep area Need to submit HACCP plan to Public Health Division. Need to have a copy available at the establishment.

DHAM PUBLIC HEALTH DIVISION

Unit: Public Health Nursing

Month: December 2019

Staff member: Tiffany Zike & Donna Carmichael

Activities and Accomplishments

Activity	Notes
Influenza vaccinations by appt	Continued to hold vaccinations by appt.
MHOA Intern Grant	Applied for and was awarded the MHOA internship grant
Cable Network Filming for Book Club	Filmed a mini-series about the No Visible Bruises book for promotion.
Metrowest Adolescent Health Survey Steering Team	Quarterly meeting for the MAHS about substance use and an interactive approach.

Summary overview for the month:

The Public Health Nurses have been advertising the flu vaccinations and doing office appts during Dec. They have been working with community partners and town agencies to help residents in need. The nurses have been preparing for the book club discussion and promotion around the activity.

DHAM PUBLIC HEALTH DIVISION

Needham Public Health
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COMMUNICABLE DISEASES:	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	Apr	MAY	JUN	T20	T19
Amebiosis	0	1											1	0
Chickungunya	1												1	0
BABESIOSIS	1	1											2	4
Borrelia Miyamota													0	0
CAMPYLOBACTER	2	2	2	2	1	1							10	6
CRYPTOSPORIDIUM													0	0
Cyclosporiasis	4	1											5	0
EHRLICHIOSIS/ HGA	2												2	4
Enterovirus		1											1	0
GIARDIASIS	1	1	1			1							4	2
Haemophilus Influenza													0	0
HEPATITIS B					1	1							2	9
HEPATITIS C		1	2			1							4	11
Influenza						19							19	98
Invasive Bacterial Infection		1											1	0
Legionellosis	1												1	0
Listeriosis													0	0
LYME	7	13	2	3	4	3							32	46
MEASLES													0	0
MENINGITIS						1							1	0
Meningitis(Aseptic)													0	0
Mumps	1					1							2	1
Noro Virus													0	5
PERTUSSIS	1	1											2	3
RMSF(Rocky Mt Spotted Fever)					1								1	0
SALMONELLA													0	3
SHIGA TOXIN													0	1
SHIGELLOSIS													0	3
STREP Group B		1											1	0
STREP (GAS)						1							1	2
STREP PNEUMONIAE													0	3
TUBERCULOSIS													0	0
TULAREMIA													0	0
Latent TB													0	1
Varicella	1	1			1								3	6
Vibrio													0	1
West Nile virus													0	0
Zika													0	0
TOTAL DISEASES	22	25	7	5	8	29	0	0	0	0	0	0	96	209
Revoked/Suspect Diseases Investigated		2		2									4	5

DHAM PUBLIC HEALTH DIVISION

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Contact Investigation													0	5
ANIMAL TO HUMAN BITES	**JUL**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**Apr**	**MAY**	**JUN**	**T20**	T19
DOG	1	1	1	0	1	1							5	23
CAT		1											1	0
BAT		1											1	0
SKUNK													0	1
RACOON													0	0
other													0	0
TOTAL BITES	1	3	1	0	1	1	0	0	0	0	0	0	7	24
IMMUNIZATIONS	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	FY20	FY19
B12	2	2	2	2	2	2							12	24
Flu (Seasonal)				525	185	74							784	712
Hep B													0	2
Polio													0	4
TDap			10										10	6
Varicella													0	0
Consult													0	702
Fire/Police	4	8	5	10	21								48	157
Schools	2	7	11	7	11								38	172
Town Agencies	2	2	3	8	4								19	267
Community Agencies	1	2	8	5	3								19	103
ASSISTANCE PROGRAMS	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	FY20	FY19
Food Pantry	2	2	0	2	3	1							10	14
Food Stamps		0	0	0	0	0							0	1
Friends		0	0	0	0	0							10	0
Gift of Warmth		2	0	1	3	1							7($1779)	20($5817)
Good Neighbor		0	0	0	0	0							0	2
Park & Rec	1	0	0	1	0	1							3	2
Salvation Army		0	0	0	0	0							0	1
Self Help	1	1	1	5	4	1							13	26

Donations to GOW: $1000.00
Carter Memorial
Gift Cards Distributed 4

NEEDHAM PUBLIC HEALTH DIVISION

Unit: Traveling Meals Program

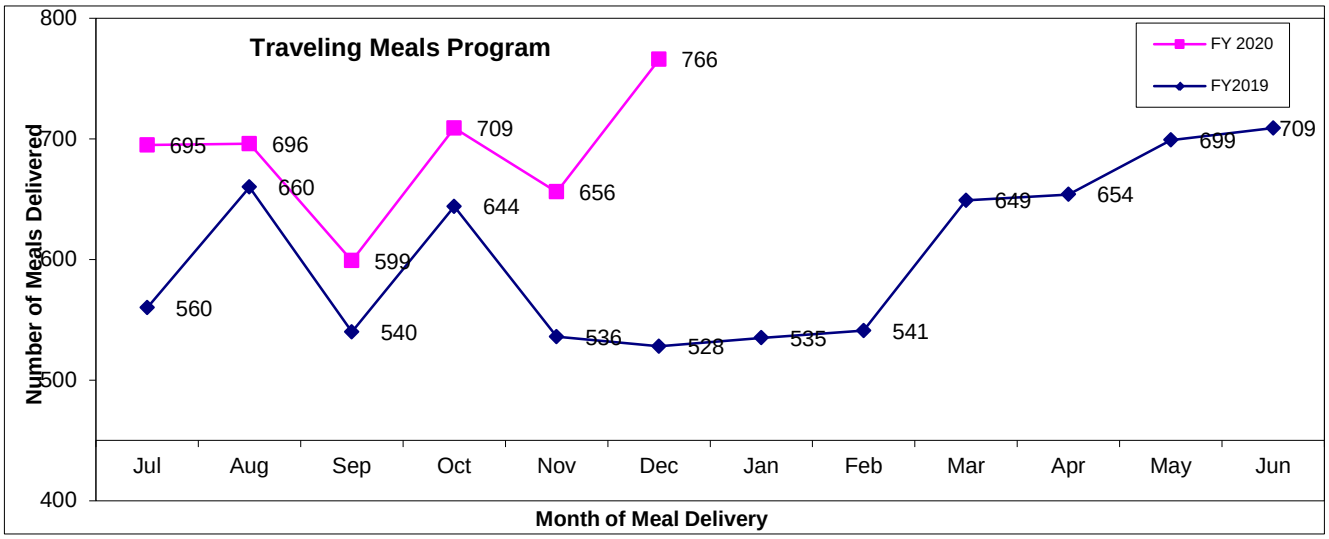
Monthly Report for December, 2019

Staff member: ***Maryanne Dinell, Program Coordinator***

Activities and Accomplishments

Activity	Notes
14 volunteers packed meals and 26 volunteers delivered 766 meals to 43 homebound Needham residents in need of food for the month of December.	***There were no incidents that required 911. Several times during the month, there was difficulty delivering meals to the clients with cognitive issues and to clients that were not at home to answer their door.***
No new consumers enrolled and 2 clients no longer need the Program ***Christmas meal provided by the Needham Community Council and Temple Beth Shalom and Project Ezra.***	***2 clients able to provide on their own.***

Summary overview for the month: December, 2019



Needham Public Health Division

Unit: Accreditation

Date: January 3, 2020 for December 2019

Staff member: Lynn Schoeff

Activities and Accomplishments

Activity	Notes
Policies and procedures	Worked on policy for response to media
Community Health Assessment	Evaluating the BID-N Community Health Needs Assessment in relation to the accreditation requirement for a community health assessment.

Other activities:

- Continued work on annual report. Beginning to review submissions from other divisions.
- With Rachael Cain, continued review of grant possibilities.

Summary overview for the month:

Continued work on policies and procedures; building on the BID-N Community Health Needs Assessment to meet the accreditation requirement; and work on the Annual Report.

Needham Public Health Division

Date: December 2019

Staff: Rachael Cain

Activities and Accomplishments

Housing Authority Assessment

Activity	Notes
Report Writing and Dissemination	• Final edits made to report and it was formatted by a graphic designer • Began planning launch event, multiple town presentations (including for the BOH and Select Board), and new programming at the Housing Authority, including a potential smoking cessation course to begin shortly after report is released

Accreditation Support

Activity	Notes
Community Health Assessment	• Beth Israel Deaconess Hospital-Needham completed the community health needs assessment and community health improvement plan and shared it with the Public Health Division. The document will be used to inform the Division's accreditation efforts.

Climate Change Project

Awarded $26,089 grant from the Metropolitan Area Planning Council (MAPC) to implement a one-year climate resiliency project for older adults. Activities will include creating and holding three workshops for older adults about extreme weather and how to prepare for it, as well as a related communications campaign.

Activity	Notes
Conduct Workshops	• All three workshops held, reaching a total of 93 older adults – **exceeding** the project goal to reach 75 attendees o 75 of the 93 attendees received emergency kits (the total purchased under the grant) o Interpreters and transportation were offered for all workshops o Evaluations collected at two of the three workshops showing high levels of satisfaction and increased knowledge o 14 individuals signed up for RAVE, Needham's emergency alert system
Communications	• Approximately 2,500 brochures were distributed to 96 locations throughout Needham, alongside flyers for each workshop. o Distributed Mandarin and Russian brochures and flyers to Housing Authority • Six social media posts were used strategically before the extreme storms and extreme cold workshops (using Twitter and Facebook) • Two segments were disseminated on a local cable channel
Reporting	• **Final report submitted to MAPC, outlining that deliverables were met and exceeded, and funds were spent**

Other Public Health Division activities this month:

- Continued Foundations of Public Health 15-week course
- Began serving on Needham's Youth Vaping Task Force
- Researched grant opportunities
- Began updating the Senior Corps program

Summary overview for the month:

- Completed the MAPC grant – exceeding deliverables – and submitted the final report
- Finalized the Needham Housing Authority Report and planned launch events
- Continued Foundations of Public Health 15-week course
- Began updating the Senior Corps program

Carol Read, M.Ed., CAGS, CPS **December 2019**

Substance Use Prevention and Education ~ Initiative Highlights

Needham NPHD, Needham SPAN and Substance Abuse Prevention Collaborative (SAPC) grant* collaboration with the towns of Dedham, Needham, Norwood and Westwood**.**

SAPC grant
Town coalition meetings:
Dedham DCDAA coalition: December 10th 6:00pm *Conflict Medfield Board of Health*
Impact Norwood coalition: December 12th Norwood High School 3:00pm
Westwood Cares coalition: No meeting scheduled
Needham SPAN coalition: December 10th 8:30am *Conflict BSAS Prevention Conference*

SAPC program, capacity building and strategy implementation preparation:
(1) SAPC Intern- Youth Engagement hired, Zendilli Depina, MPH candidate, BUSPH (2) Dedham – DFC grant operational support and 2020 Continuation grant review (3) Data collection: prioritization of regional data, police incident, youth survey, EMS (Dedham- Needham only) AlcoholEdu high school reports, alcohol compliance check data and parent surveys (Norwood-Dedham and Needham) preparation for consultant review (4) Impact Norwood forum promotion, Alex Berenson, marijuana impacts January 9, 2020 (5) Email: resource sharing Addiction Policy Forum- parent prevention tool-kit and FDA-Scholastic curriculum tool-kit: E-cigarettes/vaping.

SAPC Leadership Team: December 9th **Meeting agenda: (1)** Youth Engagement Project Coordinator: Zendilli Depina, MPH candidate BUSPH Welcome and introduction *PhotoVoice* manual review- group discussion of all processes and procedures. **(2)** BSAS grant compliance: Programmatic (quarterly) and financial (monthly expense reimbursement EIM system) reporting. **(3)** BSAS FY21 prevention funding**:** SABG procurement, expected January 2020. SAPC grant funding through June 2020- No final 2-year extension expected **(4)** Data review: Prioritization of data analysis- quantitative Police- EMS incident-MWAHS. TIPs survey, SAPC TIPS attendee questions and Alcohol Compliance checks **(5)** MDPH conference**:** BSAS Statewide Substance Use Prevention *Conference Constructing a Collective Vision for Prevention: The Connection Between Partnerships, Processes, and Results* No charge Tuesday, December 10th **(6)** Town prevention support and Coalition meeting schedule: *Dedham*- DOSA Coalition December 10th 6:00pm *Norwood:* Impact Norwood coalition meeting: December 12th January 9th Alex Berenson *Tell Your Children the Truth About Marijuana, Mental Illness and Violence* Norwood High School 7pm. **(7)** E-cig/Vaping curriculum: FDA- Scholastic tool kits- Middle School/High School data sheets, curriculum and social media content | Stanford University model**. (8)** SAPC strategies update**: TIPS all licensee trainings:** *Next regional trainings May 2020* | **Alcohol Compliance Checks:** *Spring 2020 schedule pending* | **AlcoholEdu for High School students**: Curriculum engagement 2019/2020- registration and engagement by grade (9) **Pending 2020** SAPC strategies: **Alcohol Training binders**: Connecting best practice policies to all licensee staff. Patrick Bishop, Norwood Police Department, TIPS trainer. **Community Awareness -Alcohol access:** *Lock It Up* poster SAMHSA *Talk They Hear You* campaign 9-13yrs.

Positive Community Norms training: December 3rd Montana Institute, Senior Communications Trainer, Sara Thompson. The Science of the Positive Framework (SOTP) improving health and safety through transformation of norms, policies and enforcement. Training content: 7- Step Montana Communications Model, SOTP framework (spirit/science/action/return) and PCN approach to prevention including environmental advocacy.

Dedham Public Health- DFC grant: December 9th DFC grant request for support for strategic planning, carry- over request FY19 and DFC Continuation grant application. Krissy King, DFC Program Director, Cassandra Bigness, Project Coordinator.

Framingham Public Schools, student support: December 9th Request for information on SBIRT implementation protocols for program implementation. Review BU training binder resources, Needham Public Schools initial implementation, Director School Health Services, Mimi Stamer, NP and school counseling staff engagement in student screening. Cameron Middle School.

BSAS Statewide Substance Use Prevention Conference: December 10th *Constructing a Collective Vision for Prevention: The Connection Between Partnerships, Processes, and Results* Jose Morales, Director of Prevention, BSAS. Moderator, Ben Thomas, Government Affairs Manger, Mass. Health Policy Commission. Keynote speakers: Rev. Mariama White- Hammond Imagination as Prevention- Changing our Vision of What is Possible | Mark Fenton, Ph.D. Tufts University Friedman School of Nutrition Science and Policy *Building Community Health Through Environmental Design* | Rev. Karlene Griffiths Sekou, Dignity Project International *Stronger Together: Community Care as Praxis* | Pride of Ownership Panels: Moderator, Wayne Harding PhD., Founder, Social Science Research & Evaluation (SSRE). Sponsored by: MA Department of Public Health, Bureau of Substance Addiction Services, Center for Strategic Prevention Support (CSPS), Education Development Center (EDC) and AdCare Educational Institute, Inc. Four Points Sheraton Norwood.

Massachusetts Conference for Women: December 11th Opening night forum. Featured keynote: Dr. Brene Brown, University of Houston- Research presentation *Dare to Lead*. Exhibit Hall resource tables including: strategic leadership, cultural competency and strategic planning consultants.

SAPC Youth Engagement intern: December 18th Zendilli Depina, MPH candidate June 2020. Review NPHD new hire orientation packet, coordinate Needham IT (NPHD log-in access-email contact- ID badge) Discussion and review of *Photovoice* project timeline, Needham SAPC manual content, outreach first steps and communication protocols to Dedham, Needham, Norwood and Westwood leadership.

Dedham Public Health- DFC continuation grant: December 30th Conference call. Krissy King, MPH. Overview of FY21 DFC question framework, data synthesis, capacity achievements, FY19 outcome framing and 12 month action plan priorities.

Needham Public Health Division:
NPHD – SPAN initiatives:

NPHD programs meeting preparation outreach for research and resource gathering:
(1)NPHD monthly report November **(2)** CCIT Needham resident support | housing resources (**3)** DMH Jail Arrest/Diversion grant-content and contextual review, co-application framework with CR- TTAC Director, Sarah Abbott, Ph.D. Advocates.

Suffolk- MMA Moakley Center for Public Management program: December 6th-13th Certificate in Local Government & Leadership Management. 25 sessions: Strategic Leadership | Budgeting & Financial Management | Human Resource Management | Administrative Strategies of Local Government: Seminar in Public Policy, Contemporary Challenges for Local Government & Collaborative Management. Littleton, Fridays, 9:00am-4:00pm. Module: Budgeting & Financial Management.

Community Crisis Intervention Team (CCIT): December 11th Collaboration to support residents navigating acute and chronic substance use disorders and/or mental health conditions. **Core Team:** Lt. Chris Baker, Officer Mike Lamb, Needham Police Department, Tiffany Zike, RN, MPH, Kristen Lindley, LICSW, COA Sara Shine, Director, Needham Youth & Family Services, Karen Shannon, NPHD and Caitlyn Collins- Watt, Riverside Emergency Services Crisis Supervisor.

NPHD- Park & Recreation staff: December 11th All RRC staff breakfast gathering.

Health & Human Services Department staff training: December 12th Jon Wortmann, Principal, Thought Leaders, LLC. *Be Your Best: An Assessment, The Stories We Tell Ourselves, and New Behaviors. Research on optimal human performance, attitudes, habits and behavioral patterns.* Tools for self evaluation, strategies and behaviors to improve work performance.

NPHD administrative meeting: December 16th Kim Parsons, newly hired office administrator. Review of SAPC grant prevention scope of work, NPHD staff resident support role and CCIT program liaison responsibilities.

Town Accountant: December 16th Conference call. Michelle Vaillancourt, Town Accountant. FY20- November 2019 invoice submission, SAPC grant expense reimbursement. Virtual Gateway EIM system. Dawn Stiller, NPHD Office Administrator.

SAPC grant FY20 organization: December 18th Maureen Doherty, office administrator. Review of SAPC files and storage bins from CATH move to RRC- discard for organization.

Public Health – Park & Recreation staff training: December 18th Emergency Preparedness training, Rebecca Ping, MS**.** Protocols and procedures for acute threat incidents, scenario review with Lt. John McGrath, Needham Police Department and Needham Emergency Services EMTs and . Municipal employee protocols related to **1st** Amendment initiative: David Davison, Assistant Town Manager/Director of Finance. Municipal employee standard operating procedures (SOP) related to public access filming initiative.

NPHD prevention capacity: December 19th Karen Shannon, CPS- SPAN Program Director. Review of Needham community prevention capacity, collaboration with SAPC grant program and SPAN strategic plan.

Needham Public Health Division staff meeting: December 20th Michelle Iovino, BUSPH NPHD intern. Staff thank you, graduation send off.

NPHD SAPC financial planning: December 20th Review YTD SAPC FY20 spending by UFR code, forecasting. Tim McDonald, Dawn Stiller and Michelle Vaillancourt, Town Accountant (call in)

Resident Support: Respond to calls and/or meeting requests related to mental health conditions and/or substance use disorder. Referral to Riverside Emergency Services 24/7 support and counseling, assessment, treatment and recovery resources.
F 63yrs. SUD- SMI In- person check in.
M 40yrs SUD- SMI Referral, Riverside Emergency Supervisor, evaluation- family support.

Town holidays (1.5) December 24th and December 25th
Vacation (2) December 26th & 27th
Medical (1) December 5th

Respectfully submitted by Carol Read January 7, 2020 **Page 3 of 3 Pages END**

Needham
Public Health Division

Unit: Substance Use Prevention

Date: December 2019

Staff: Karen Shannon, Karen Mullen, and Monica DeWinter

Activities and Accomplishments

Activity	Notes
Board of Health letter on youth vaping	On 12/11/19 the Board of Health published a letter on youth vaping to the community. Karen S. launched a publicity campaign which included distribution channels such as: guest column in The Needham Times (published 12/19/19), posting in school and PTC newsletters, NPH and SPAN websites, social media (Facebook and Twitter), Superintendent Gutekanst, and Rep. Denise Garlick network.
SPAN Quarterly Meeting	Held 12/10/19, 24 in attendance. Discussion included review of substance prevention planning basics followed by breakout discussions for the three Action Teams.
SPAN Action Team Meetings	The Community, Youth and Steering Committee meetings convened during the week of 12/16/19
Presentation to Select Board	On 12/5/19 Karen S. conducted a presentation on SPAN to the Select Board.
Superintendent Gutekanst Spotlight Program	Dan Gutekanst invited Karen S. and Karen M. to participate in a story on vaping for the Superintendent of School's Spotlight cable news program. The Karens joined Keith Ford, Sara Shine and 3 SALSA students in the interview, taped on 12/18, aired on 12/20 and Tweeted in early January 2020.
Vaping Task Force	Added two new members: Jeremy Greenwood, AVP at Pollard Middle School and Hasmeena Kathuria, Needham parent and pulmonologist and Director of the Tobacco Treatment Center at Boston Medical Center.
Part-time student intern position	Efforts are underway to hire a part-time student intern for a 7 month position with the Substance Prevention Team.
SALSA Vaping Awareness initiative Action Team Meetings	NHS SALSA Students worked with NHS administration to educate peers about the risks of vaping and developed a Vaping Awareness Week at NHS the week of 12/9-13/2019. Objectives included Prevention (for students who do not vape) and Harm reduction/education (for students who need help quitting). Students created posters with vaping prevention messaging for their peers, taped a PSA for teachers explaining Vaping Awareness week and organized other awareness activities. Students also interviewed for stories published in the Needham Times and WGBH News, and participated in Dr. Gutekanst's Spotlight cable news program (see above).

Needham
Public Health Division

Twitter Messaging	Created or retweeted content for 5 Tweets for December, including messaging on new tobacco regulations in MA and promotion of hands free driving in anticipation of new MA law banning hand- held cell phone usage (eff. 2/23/2020)
SPAN Website	Updated site with vaping resources for students and parents
Norfolk District Attorney Morrissey Municipal Vaping Education Training	Monica attended on 12/3/19, held in Canton, MA.
Montana Institute Positive Community Norms Communications training	Karen S. attended on 12/3/19, hosted by Stoughton Prevention Coalition.
MetroWest Health Foundation, "Using Data to Identify & Reduce Disparities"	Karen S. attended on 12/5/19, hosted by MWHF, Framingham.
MA Bureau of Substance Addiction Services annual prevention conference	Conference title: "Constructing a Collective Vision for Prevention: The Connection between Partnerships, Processes, and Results" Karen S., Monica DeW., Karen M. and Maureen D. attended the 12/10/19 conference held in Norwood, MA.
Webinar: An Act Modernizing Tobacco Control	Karen S. participated on 12/12/19 for training on new MA law on tobacco control, focused primarily on new retail sales restrictions on vaping products.

Board of Health
TOWN OF NEEDHAM
AGENDA FACT SHEET

Prevent. Promote. Protect.

MEETING DATE: 1/23/2020

Agenda Item	#57 Walker Lane Sewer Connection Timeline Review
Presenter(s)	Tara Gurge, Assistant Public Health Director

1.	**BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED**
Developed draft timeline for sewer connection project along with Town Engineer, Tony DelGaizo. Timeline also contains routine required check-in dates for homeowner to reach out to Town to give us status of his progress. Goal is to finalize this timeline and have Dave Tobin review, prior to sending to homeowner. Also discuss consequences that will be adhered to if homeowner does not comply with required check-in dates/final deadline for sewer connection.	
2.	**VOTE REQUIRED BY BOARD OF HEALTH**
No vote is required, nor is one expected.	
3.	**BACK UP INFORMATION ATTACHED**
Draft Timeline for review.	

1/14/2020 – For BOH Discussion

#57 Walker Lane Sewer Connection Proposed Timeline (Draft) done by Tara and Tony --

(Deadline of 18 months was given to homeowner, so must be completed *on or before June 1, 2021*.)

February 28, 2020 (or as soon as possible) – Public Health Division needs to receive a signed/dated (and notarized) letter from homeowner which states that existing residence at #57 Walker Lane is not occupied, and it must clearly state in the letter that this home will remain vacant until the BOH issues a final approval to allow re-occupancy, which is after the home has been connected to sewer, and final sign-offs have been approved. Get Building Dept. in the loop on that requirement. (Dave Tobin made that a requirement.)

May 1, 2020 – Need to let Tara/Tony know if neighbor at #67 Walker Lane is in or out on joint sewer connection process. List specifics, i.e. get in writing from neighbor on his agreement to tie in. Get copy of signed/dated Water and Sewer connection application which states fee was paid. (Since #67 is the only neighbor on this street that may be affected by the BOH requirement, the Health Division can plan on setting up a meeting with this neighbor ahead of this deadline to explain the alternatives to him, i.e., if his Title Five septic system inspection fails this coming spring when he plans on selling his house.)

July 1, 2020 – Touch base with Tara/Tony - Submit estimates from contractors for sewer connection job to Tara and Tony to show good faith effort that working on this sewer connection process. Decide which estimate is feasible and make a decision on which contractor to work with. (Need to get estimates in writing from potential contractors.)

September 1, 2020 – Touch base with Tara/Tony - Secure contractor for the sewer connection job and get plans and sewer connection permits/fees submitted to town for review/approval. Ensure that the Engineering Division and the Water & Sewer Division (and Conservation Commission- just so they also have a heads up) are in the loop on sewer connection process. Need to receive a timeframe from contractor for when job will start and how long job will take. (Contractor to work with Tony on surveying the area, etc.) Get copy of homeowners signed/dated contract from contractor that has agreed to do the job.

October 1, 2020 – Touch base with Tara/Tony - Start sewer connection job, which should take approximately 3 weeks. *Due to the unpredictable New England weather, we decided to have this sewer connection job start process be on the conservative side, with starting this job in the fall, so we have more flexibility to help accommodate the contractors schedule.*

Nov. – Dec., 2020 – Check in with Tara/Tony - Depending on when job will start, need to continue to receive check-ins on status of sewer connection job start date/completion date and work with Engineering/Water and Sewer staff on an on-going basis on conducting the proper site visits throughout the sewer connection process. Keep Health Division in the loop on this process as well. Health Division must receive signed copies of septic system abandonment forms and final septic system pump reports for abandoned septic systems for those properties that were connected to sewer.

January 1, 2021 – Check in with Tara/Tony - Sewer connection as-built plans and final documentation submitted to town for review and approval once job is complete. (***Engineering and Water & Sewer will also verify this through their inspectors.)***

On or before June 1, 2021 – Sewer Connection job is complete and as-built plan has been approved by town. Final approval from Town given (on or before this final deadline.) (***Engineering and Water & Sewer will also verify this through their inspectors.)***

Discuss Consequences - - Need to discuss possible consequences we could issue if homeowner does not follow these requirements OR misses a check-in deadline and is not communicating to Tara/Tony on this process. One option is to require him to come in before the BOH during our monthly meeting to discuss.

Board of Health
TOWN OF NEEDHAM
AGENDA FACT SHEET

Prevent. Promote. Protect.

MEETING DATE: 1/23/2020

Agenda Item	Needham Housing Authority Report
Presenter(s)	Rachael Cain, Senior Public Health Associate

1.	**BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED**

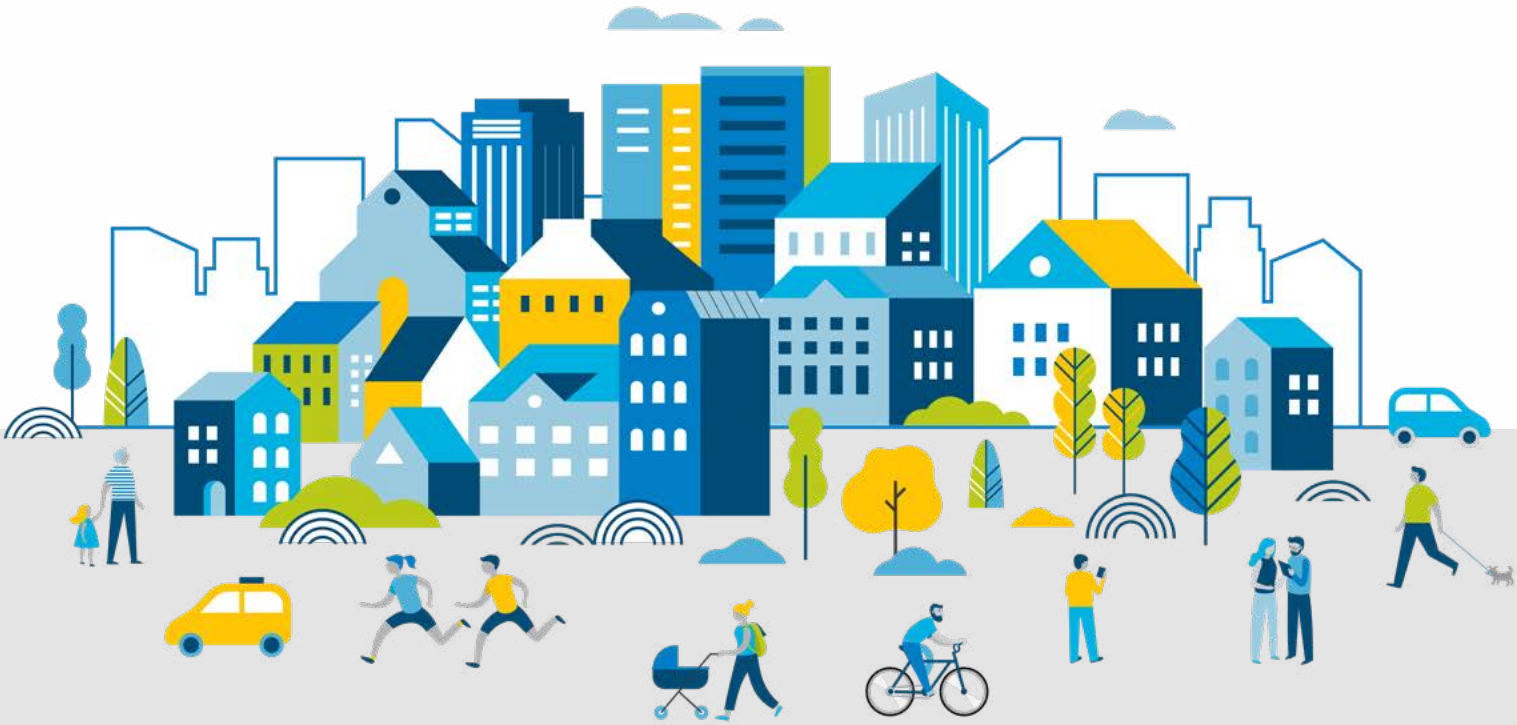
Staff will present information on the recently released report on the Needham Housing Authority. The report was conducted by the Public Health Division and is focused on the wellbeing and quality of life of Needham Housing Authority residents. Assets and challenges of the Housing Authority are discussed and opportunities for the Town and community partners are outlined in the report.

2.	**VOTE REQUIRED BY BOARD OF HEALTH**

No vote is required, nor is one expected.

3.	**BACK UP INFORMATION ATTACHED**

The Needham Housing Authority Report is included with packet.



AN ASSESSMENT OF NEEDHAM HOUSING AUTHORITY RESIDENTS: ASSETS AND OPPORTUNITIES

JANUARY 2020

Executive Summary

The Needham Housing Authority (NHA) is home to 455 Needham residents and is a valuable local resource. In an effort to understand the needs of residents and to increase access to a range of Town services, the Needham Department of Health and Human Services conducted an assessment of NHA residents. The assessment sought to better understand NHA residents' sense of the strengths and challenges regarding needs, resources, and opportunities within the community. The results will be used to inform community planning to improve NHA residents' quality of life.

Through interviews, focus groups, and a survey, assets and challenges were identified and grouped into major themes. The themes are listed below, along with the related key findings.

NHA is an important part of the town's community. It provides homes for a number of families, older adults, and people with disabilities in Needham. The challenges faced by residents can be addressed, but only through the strong partnership of Needham's government, community organizations, and residents.

> *"Even though we don't own property, we still consider this our home".*
>
> – Needham Housing Authority Resident

The Built Environment

The built environment is physical surroundings, such as buildings and open spaces. Respondents:

- Greatly valued the plant and vegetable garden at the Linden-Chambers complex, noting its beauty and functionality
- Perceived that maintenance of housing and landscaping was inadequate
- Were concerned about accessibility for those with disabilities and said the homes were not fully accommodating to those with limited mobility

Community Engagement

Community engagement includes community events, neighbor relations, tenant organization, interactions between cultures, and connection to greater Needham.

- Respondents appreciated events offered on-site and also said that more and higher quality activities could be offered more consistently

- Some respondents noted a sense of community among residents while others felt that there were excessive neighborhood conflict and social bullying
- Respondents said they appreciated living at the Housing Authority, as it provided them with an affordable home
- Respondents were concerned that some residents experienced isolation, based on the number who live alone and those who do not often engage with others
- The Housing Authority is home to individuals from several cultures, including those who do not speak English as their primary language. Respondents reported a lack of services, translation, and interpretation

Food Access

- Respondents were grateful for and utilized local food resources, such as the Community Council's food pantry. Some respondents were unaware of local resources.
- Access to food was a major concern of respondents due to difficulty paying for food and finding transportation to food markets. The high expense at local grocery stores was frequently noted as a barrier

Mental Health

- Social workers and case managers were viewed as beneficial to the community
- Respondents noted that some residents experience depression and stress, among other mental health issues
- Several respondents expressed concerns about stigma related to mental health issues, and noted that it may mean fewer people discuss mental health issues or seek services for them

Substance Use

- Respondents noted that residents were concerned about the use of tobacco, alcohol, and marijuana by other Housing Authority residents
- The Housing Authority's no-smoking policy was largely viewed positively, however, many stated the policy was not adequately enforced and, at times, secondhand smoke exacerbated health issues
- Alcohol and marijuana use at the complexes has led to noise disturbances and concerns of substance misuse

Transportation

- Many respondents appreciated the Center at the Heights van and the Community Council transportation options, although some were not familiar with such services
- Respondents were less familiar with other local services, such as those provided by Springwell, Inc.
- Respondents stated that transportation options were lacking, expensive, or did not meet their needs, especially for social contact and access to community resources such as visiting a nursing home or attending a religious service

The following recommendations are based on the findings of the assessment:

The Built Environment

- Provide regular and timely maintenance services, including leaf, grass, and snow removal
- NHA should consider reviewing its maintenance and repair protocols to ensure they are responsive to residents' needs

Community Engagement

- Provide more services for those whose first language is not English, including English classes at different levels of proficiency, translated materials, and interpreter services
- Increase on-site activities. Residents have suggested workshops from the public health nurses, assistance with paperwork for benefits such as Medicare, workshops to address bullying, and programs for children and middle-aged adults
- Find other ways in addition to the tenants' association to provide residents with an opportunity to voice their concerns. Offer mediation services to address neighbor conflicts
-

Food Access

- Provide options for food purchases at the complexes
- Organize more frequent transportation directly from the NHA to affordable grocery stores
- Provide information to residents about the various food resource programs available in Needham

Mental Health

- Institute a program to provide wellness checks on elderly and people with disabilities
- Employ an on-site social worker who rotates among Housing Authority properties
-

Substance Use

- Offer smoking cessation classes on-site
- Add shelters or canopies to the smoking areas to encourage smoking outdoors, even in poor weather
- Assess interest in marijuana and alcohol cessation programs, including AA and counseling
-

Transportation

- Increase regular, accessible, and affordable transportation options to locations throughout Needham
- Compile and distribute a comprehensive and descriptive list of transportation options
- Promote existing community programs through multiple communication channels, such as newsletters, Needham Cable, and on-site events

Table of Contents

Introduction

The Needham Housing Authority (NHA) is home to 455 Needham residents and is a valuable part of the community. In an effort to understand the needs of residents and to increase access to a range of Town services, the Needham Department of Health and Human Services conducted an assessment of NHA residents. The assessment sought to better understand NHA residents' sense of the strengths and challenges regarding needs, resources, and opportunities within the community. The results will be used to help inform community planning across Town departments.

The Needham Department of Health and Human Services ("the Department") conducted the study, which included key informant interviews, focus groups, and a survey. A research and evaluation consultant designed and analyzed the survey in collaboration with the Department.

About the Needham Housing Authority

The Needham Housing Authority manages 296 housing units across several properties in Needham.[1] This includes properties on Seabeds Way, Linden Street and Chambers Street (often referred to as Linden-Chambers), High Rock Estates, and Captain Robert Cooke Drive. The Needham Housing Authority "strives to create the best living environment and the highest quality housing opportunities for the families and individuals we serve".

About the Needham Department of Health and Human Services

The Town of Needham's Department of Health and Human Services includes four divisions: Public Health, Aging Services, Youth and Family Services, and Veteran's Services. The Department works across its divisions, with other Town departments, and with external partners to serve Needham residents.

Acknowledgements

The assessment was conducted by several staff members at the Department, including Catherine Delano, Angela Giordano, and Rachael Cain. Lynn Schoeff provided editorial support. Maureen Doherty, Kerrie Cusack, Kristen Lindley, and Jessica Moss provided support for data collection.

The support of the Department's leadership, including Director Timothy Muir McDonald along with the Board of Health and Council on Aging, was instrumental in the report's development.

The Department is grateful for continued collaboration with the NHA, especially that of Hien Tran, NHA's prior Resident Coordinator.

[1] Needham Housing Authority. Available from: http:/www.needhamhousing.org/home.html

Methods

Several methods were used to conduct the assessment, including a survey of residents, resident focus groups, and key informant interviews. Participation in all methods was voluntary. Table 1 outlines the data collection methods.

Table 1: Data Collection Methods

METHOD	TIMEFRAME	QUANTITY
Key Informant Interviews	Summer and Fall 2017	12
Focus Groups	Fall 2017 and Spring 2018	8
Survey	Winter 2018-2019	115 (out of 296 households[2])

Survey

A survey was designed by Scott Formica, a research and evaluation consultant, in collaboration with the Department. The survey included 58 questions in four categories: demographics; attitudes and perceptions; issues and stressors; and resources and opportunities. Survey questions were determined, in part, by the findings in focus groups and interviews.

The survey was distributed in November 2018 via door-to-door delivery and in January 2019 by mail. One hundred and fifteen households (out of 296) responded to the survey. The response rate was 39%, which was a large enough sample to conduct a meaningful analysis. Surveys were available in English, Mandarin, and Russian.

Detailed information about the methods and respondents can be found in the technical report (Appendix A).

[2]American Fact Finder. 2019. Available from: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

Characteristics of Needham Housing Authority Survey Respondents

Predominantly female (65%) and over 60 years of age (69%)

The Town of Needham has 25% of residents over the age of 60[2]

Largely self-identified as White, non-Hispanic (79%)

Needham has 87% of residents identifying as White, non-Hispanic[2]

Most often reported speaking English in their home (87%)

Needham has 83% of residents who speak only English at home[2]

Majority were single, with 34% separated or divorced and 32% never married (32%)

Almost half the sample reported that they were retired or not working at all (48%)

Needham has 34% of residents over 16 not in the labor force[2]

Most respondents (82%) reported that they have lived in Needham for five or more years – with half reporting that they have lived in Needham for 15 or more years

The majority of respondents (84%) reported that they have lived in their current residence for at least three years

Most respondents currently live on Chambers Street (34%), Linden Street (27%), or Seabeds Way (23%)

Three-quarters of respondents (75%) indicated that they live alone and only one in ten (10%) reported living with someone under 18 years of age

Needham has 21% of residents living in a single person household[2]

Almost two-thirds reported having access to a vehicle for personal use (63%)

Respondents were more likely to report their health as poor, fair, or good (81.4%) versus being very good or excellent (18.5%) when comparing themselves to others their age

Many respondents reported difficulty doing errands alone (34%) or reported difficulty walking or climbing stairs (50%)

[2]American Fact Finder. 2019. Available from: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

Focus Groups

Focus groups began in the summer of 2017, followed by additional focus groups in spring of 2018. Five English-speaking focus groups with 11 participants total were conducted in Summer 2017 followed by six focus groups in Spring 2018. Of the six focus groups in 2018, two were for English-speakers (14 attendees), and two were for those who speak Mandarin (4 attendees). There were also two focus groups offered for Russian-speakers, but no one attended. Focus groups were scheduled at various times for 30-60 minutes.

Focus groups were promoted via flyers distributed by the NHA Resident Coordinator and during a tenant association meeting. Flyers were in English, Russian, and Mandarin. One focus group was held in conjunction with a weekly resident coffee hour to promote attendance. Focus groups were held in the community rooms at Seabeds Way complex and the Linden-Chambers complex. Transportation was offered between complexes. All participants received a $5 gift card to Dunkin Donuts. Staff from the Department facilitated the focus groups and took notes.

Interviews

A total of 12 key informant interviews were conducted with staff from organizations and Town departments in Needham. In addition to flyer distribution, recruitment included individual outreach. Interviews sought to understand the most pressing health and wellbeing challenges, NHA community strengths, and barriers to accessing community resources. Interviews were either recorded electronically or notes were taken.

Qualitative data was coded and analyzed for themes and connections across the different perspectives.

Limitations

The methods have several limitations. First, due to Department capacity, the data were collected over approximately 18 months – a long time span which may introduce biases. For this reason, additional focus groups were conducted in 2018 and all data was triangulated. Second, Russian and Mandarin speakers did not participate as fully as English-speaking residents. Multiple attempts were made to reach all populations, which resulted in some participation in Mandarin-speaking focus groups and in the Mandarin version of the survey. No Russian-speaking individuals participated in focus groups. Several attempts were made to connect with Russian-speaking residents for key informant interviews but were unsuccessful. Additionally, respondents were recruited based on convenience, which may introduce biases, such as only hearing from individuals who chose to participate and not the wider group of residents.

Major Findings

Six quality of life themes related to health and wellness were identified, based on the patterns and frequencies of each during the assessment.

The themes are discussed in detail below and are:

The Built Environment

Mental Health

Community Engagement

Substance Use

Food Access

Transportation

Respondents defined their perception of positive health and wellbeing as:

- Good mental and physical health
  - Respondents spoke of “being happy”, going to the doctor, and exercising as important to good health
- Purpose and productivity
  - Respondents believe having a “reason to get up in the morning”, such as a hobby or job is critical to wellbeing
- Positive living environment
  - Respondents spoke of the importance of accessible housing and transportation
- Interpersonal relationships
  - Respondents noted the importance of being connected to others to avoid isolation
- Independence
  - Respondents reported that a sense of independence is important to well-being

Residents clearly stated that they believe these elements contribute to positive health and wellbeing. In the following sections, each of the themes is discussed in detail.

The Built Environment

The built environment is physical surroundings, such as buildings and open spaces. Respondents spoke about the built environment in two ways: maintenance of Housing Authority complexes and accessibility for those with limited mobility.

Assets

One asset of the physical surroundings discussed during focus groups is the garden at the Linden-Chambers complex. Mandarin-speaking residents were particularly enthusiastic about the garden. Focus group participants spoke of how it added beauty to the area and was a welcome improvement to the complex. Being able to grow vegetables and plants was valued by the participants. There was a desire to see more gardens throughout the complexes.

Issues

Respondents spoke of several ways the built environment of the Housing Authority could be improved. Maintenance of homes and outdoor spaces was frequently noted as a concern. Focus group participants discussed slow responses to service requests and described feeling disrespected by having their personal items removed without their consent.

There was also discussion of how maintenance was not done frequently enough. One survey respondent wrote: “There is no regular upkeep to the inside of buildings and no maintenance to clean the grounds and parking lots. No effort to maintain landscaping in a proper way.” Focus group participants and survey respondents spoke of a need for better snow removal, especially as it is a challenge for older adults and those with disabilities.

Survey respondents noted several ways the NHA could reduce risk of injury and increase feelings of safety. One respondent wrote: “Railing from sidewalk up to unit has moved and leans too far from sidewalk to be of any use. In addition, water comes off the roof and freezes just outside front door making first step outside dangerous.” Another stated: “More outside lighting is needed. Don’t always feel safe coming home at night.”

Adequate accessibility of apartments and outdoor spaces was noted as a concern in interviews, focus groups, and the survey. One resident commented that if this is a complex for the elderly and people with disabilities then the complex and units should “truly meet the needs of those populations.” One key informant noted that there is no elevator at the Seabeds Way complex.

They said,

> "My other potential concern is the inaccessibility of the apartments. People with severe mobility problems live downstairs and those [residents] with minimal problems live upstairs. [There is] no elevator, so using the stairs can either be good exercise or a pain in the hip, back, knees and feet! Especially carrying bags."

The above quote illustrates some of the mobility challenges in the complexes: older people or those with limited mobility may find apartments are not well-designed for them. Additionally, laundry facilities located in separate buildings make it difficult for people get to, and the facilities are shared among residents, which causes problems for those with fragrance sensitivities.

Community Engagement

Community engagement, which includes community events, neighborhood relations, tenant organization, and connection to greater Needham, was a significant theme throughout the assessment.

The survey found 48% of respondents feel mostly (24%) or very (24%) connected to Needham and 71% feel mostly (36%) or very (35%) safe in their unit or home. Some respondents stated they felt the surrounding community had a lot to offer, as one respondent stated: “Needham is the greatest community ever in terms of things to do”.

Assets

Respondents appreciated several aspects that connected them to one another and the greater community. Among them were activities that are available to residents of the Linden-Chambers complex. For example, Mandarin-speaking residents organized a daily Tai Chi practice, open to all residents, in the community room. Outside organizations have brought in various workshops, such as wellness workshops from public health nurses.

Additionally, several individuals said that the Housing Authority had a sense of community. For example, some residents helped others get rides or borrow goods. Engaging with others and making friends was considered a key benefit.

Respondents identified the Housing Authority itself as a major asset. Having subsidized housing provided “peace of mind” and helped some residents connect to other resources. Residents were grateful for the opportunity to live there, especially to maintain their independence. One focus group participant said, “Even though we don’t own property, we still consider this our home”.

Another strength consistently noted by key informants and a sentiment voiced in the focus group discussions was a desire to foster community among the neighbors within the complexes. One of the residents from the Linden-Chambers focus group mentioned how tight-knit a community the Mandarin-speaking population is. One key informant described how many residents’ care for one another and how they take notice of the wellbeing of their neighbors:

> “There are a lot of people that really look out for each other there for sure. It’s a lot of people who’ve lived there for a very long time. That will say ‘I haven’t seen my neighbor for a week’.”

The existence of a tenants’ association at Linden-Chambers was recognized as a strength. One key informant said,

> "I really think that it's a resource for some of the residents, excluding the social, like cliques or bullying or whatever. They feel comfortable like 'Oh we have this resident representing our voice, or representing our needs.' Or, 'I can go tell her and not have to put my name out there that I contacted the Executive Director of housing because I'm mad'."

The existence and operation of the tenants' association appears to provide some residents with an outlet to voice their concerns. Though it is important to also consider who feels able to access this venue and if there may be other ways to help the residents' voices be heard from all complexes.

Issues

Community engagement was also identified as an area that could be improved. While some respondents' statements were quite positive, other individuals said that there was not enough interaction among residents and that this contributed to loneliness and isolation.

In particular, the older adult residents were noted as lacking quality social relationships. One key informant described it saying: "In fact, probably a majority of our seniors don't really have any quality family relationships. Which definitely leads to isolationism." Another key informant mentioned that some individuals are not on the radar of the Resident Services Coordinator or the Town social workers and may end up without any one to reach out to connect with them. In addition, some of those who are connected to resources in the town, such as the social workers, have also been noted as lacking family support.

While some respondents appreciated the activities offered at the complexes, others felt the activities were lacking and inconsistent. Further, many more activities were felt to be held in the Linden-Chambers community room but not in the Seabeds Way community room.

Conflict among neighbors was also mentioned as an issue. While some had positive relationships with neighbors, others felt that there was social exclusion and bullying between Linden-Chambers residents. As one key informant described it,

> "We have like this big thing here between like Linden and Chambers and there's a lot of social bullying between these [two]. It reminds me of high school to be honest. Like, one building is against the other building."

This social bullying atmosphere was illustrated with examples such as residents choosing to sit only with their Linden-Chambers cohort at community meetings and social cliques where residents have reported being targeted because of who they associate with.

Neighbor-to-neighbor conflicts were also characterized by a difference in age and reason for living in public housing. In the interviews it appeared that there is a divide between the younger people with disabilities and the older adult residents. These differences in needs and age seem to create a rift for some residents and feelings that the mixing of these populations within the complexes may be unsafe. One key informant described their concern that older residents may

be uncomfortable and fearful living in proximity with people with mental health disabilities. The Department recognizes that this is a challenging issue with many viewpoints, and that all residents, staff, and community members will need to work together to address this disconnect at NHA.

Neighbor-to-neighbor conflicts were highlighted as an issue that may need additional resources to address. One key informant mentioned the need for mediation services to address neighbor conflicts.

Residents have organized a tenants' association at the Linden-Chambers complex to voice their concerns. There had been a similar organization at Seabeds Way, but it was disbanded and there has been no recent interest to revive it. Respondents identified issues with the Linden-Chambers tenant's association, including social bullying and residents' discomfort expressing concerns about the complex. More broadly, interviewees indicated that NHA residents are a population that may not be heard by others in the community.

Respondents also reported that a homicide in 2017 impacted their community and the feeling of safety. One survey respondent stated, "Two years ago, a well-cultured 80-year-old Russian woman was murdered. Therefore, I do not feel safe." Another said, "Since murder occurred, we were promised outside cameras, and nothing has been done."

Cultural and linguistic barriers also exist at the Housing Authority. Residents speak several languages, with sizeable components of the population speaking primarily Russian or Mandarin. Most programming and written materials are not offered in multiple languages, which presents an issue for building community with the entire resident population. The tenant association meetings have a volunteer Mandarin translator, but it is unclear if this is a consistent presence. Focus group respondents specifically requested more services for those whose first language is not English, including various levels of courses to learn English.

Further, cultural sensitivity beyond language can be an issue. One key informant stated:

> "I think every month they have a community breakfast [at Linden-Chambers] and I was sitting with the interpreter and a couple of Chinese residents and [a resident]…[we] were talking about the breakfast and…with the interpreter, she [the resident] was saying 'you know we really want you guys to come and X,Y,Z.' And we said, 'you know we really haven't been coming because we don't enjoy this type of breakfast food'. So, there were just little nuances, if that was just communicated more, or a way to communicate what would be beneficial for everybody, I think that it would lead to more community building."

Food Access

Access to affordable and healthy food was discussed often by key informants, focus group participants, and survey respondents. While there are food sources in Needham, many felt that there was inadequate access for NHA residents.

Assets

There are several organizations in Needham that provide free or affordable food, including:

- Needham Community Council food pantry
- Springwell free lunch program at Linden-Chambers
- Needham Community Farm (mobile market that visits three Housing Authority sites)
- Springwell community dining at the Center at the Heights
- Needham Public Health Division's Traveling Meals program

Many identified these resources, especially the Community Council food pantry and the Needham Community Farm mobile market, as important in the community. However, about one-third of residents were unfamiliar with the Traveling Meals Program or the Community Dining Program at the Center at the Heights. See Figure 1.

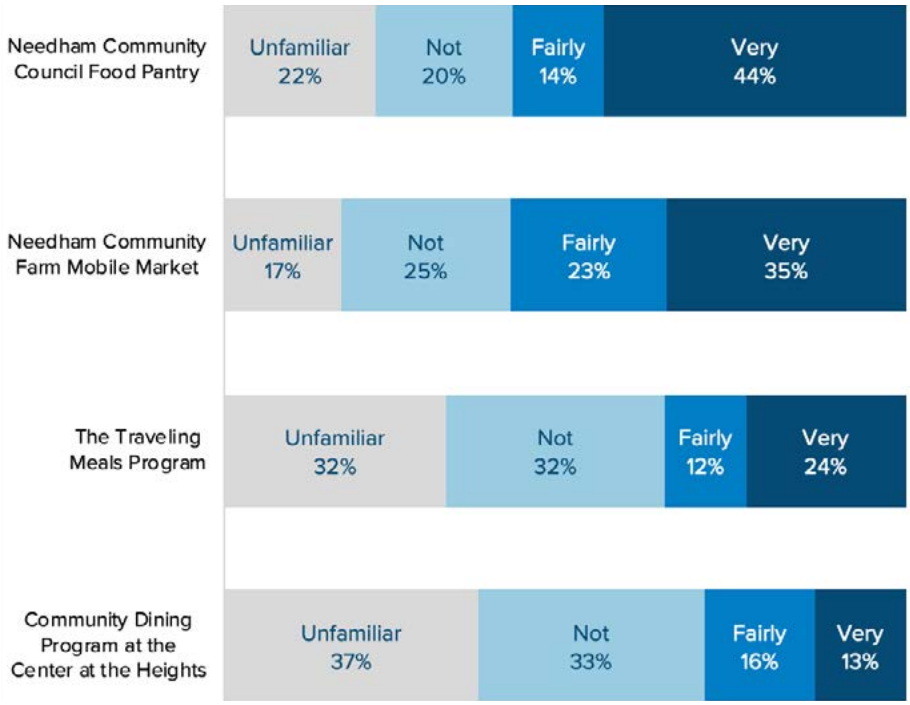


Figure 1: Importance of Food Resources

Issues

A barrier to food accessibility is the cost of food. The Needham Community Council offers a food pantry that some residents of NHA patronize. Some resistance or non-use of the food pantry was noted, but there was not a clear understanding as to why. One key informant hypothesized that residents don't fully understand how the food pantry operates:

> "Getting people to come [to the food pantry], for their food, for some people it's not a problem at all, for other people it's a problem. There are people that 1. don't understand it [how to use the food pantry], or 2. don't want to take advantage of that."

Understanding the value of programs, such as the food pantry, and how to access Supplemental Nutrition Assistance Program (or SNAP) benefits was identified as a challenge. In addition, residents feel that the local grocery stores in town are too expensive. One survey respondent said,

> "I think we do not have enough choices when it comes to grocery stores. Needham is a great town. Nice community where everyone would love to live in. So, we need more options and affordable grocery stores [...] on top of what we have."

Another respondent stated, "I feel that even though our grocery stores do a lot for Needham, their prices are way too high." Several respondents echoed this sentiment.

The Springwell free lunch program was also highlighted as a resource which residents do not always use. In the focus group discussion, the lunches were described as limited to being eaten on-site at the senior center within a 30-minute time frame. They also mentioned that leftover food must be thrown away and that having to sign up in advance with Springwell is a barrier to participating. While the lunch is offered for free, donations are requested. One key informant explained that the request for donations can hinder resident participation.

Mental Health

Mental health issues and the related support were discussed, although to a lesser extent than other themes. This may indicate a smaller perceived problem or a stigma regarding mental health leading individuals to avoid open discussions on the topic.

Assets

Key informants, focus group participants, and survey respondents stated that the Springwell Case Manager at the Linden-Chambers complex (position has been vacant for periods of time in the past) and the social workers at the Center at the Heights are valuable resources to improving mental health among residents. Sixty four percent of survey respondents rated the availability of case managers and social workers as the most important resource in the community. Based on this input, having trained, accessible professionals is important to addressing mental health challenges. Such professionals can provide access to mental health services, coping strategies, and connections to other community supports.

Issues

Respondents spoke of mental health issues, such as depression and stress, impacting residents. The challenges to seeking mental health support included insurance; limited transportation; stigma and resistance to accessing mental health support; and the range and diversity of mental health needs. Generally, respondents requested “more free resources for physical and mental health.”

Social and individual stigma related to seeking support for mental health was indicated by some key informants. One key informant described it, “I think sometimes when you talk about counseling, the first thing they go to think about— ‘oh am I crazy?’” Other interviewees also spoke of residents’ resistance to seeking mental health help.

Hoarding was another mental health issue that came up during interviews. This issue has been identified during routine apartment inspections and was described as having a negative impact on the neighbors of those who hoard.

Substance Use

Substance use, specifically cigarettes, marijuana, and alcohol, were identified as a concern among residents.

Assets

Residents who participated in the focus groups generally spoke of appreciating the no-smoking policy throughout the Housing Authority. While residents saw value in the policy, there were concerns with enforcement. Participants also stated that smoking cessation counseling was beneficial, but it appears that such counseling was offered inconsistently. Participants were not able to identify any positive developments regarding preventing or reducing alcohol or marijuana use.

Issues

Cigarette smoking was identified as a major issue. The complexes are smoke-free but have designated tobacco smoking areas. A number of individuals said that the smoking rule is not enforced and smoking takes place throughout the complexes. This upsets residents who prefer to live in an area without second-hand smoke. For example, one survey respondent said, “Regarding neighbors smoking. I was a smoker and after quitting if I go outside and someone is smoking it really bothers me and I start coughing.” Secondhand smoke is a particularly difficult issue for residents with respiratory conditions.

In addition, residents who do smoke said that the smoking area has no shelter or canopy to protect from the rain or elements, and they would like to see this added.

Focus group participants also spoke about other substances, such as alcohol and marijuana use, as an issue of concern for their neighbors. One resident from a focus group remarked that there is a lot of substance use and described smelling marijuana frequently from her neighbor’s deck area.

One key informant characterized substance use issues in the population as “lots of alcoholism, a lot of marijuana use.” A survey respondent noted, “Substance abuse (i.e., alcohol abuse) is spilling out of the apartments. We are experiencing people acting inappropriately in the corridors. Ambulances for rehab for alcohol arrive often. It’s destabilizing and raises safety issues.”

Another key informant linked substance use with anxiety and depression and said that residents may choose to self-medicate with alcohol and other drugs. They said, “I think it’s easy to get access to anything over there…alcohol…different substances.”

Residents may choose not to report parties or substance use by their neighbors out of fear of retaliation. One key informant gave an example of a woman in her 80s who lives near a younger person who “like[s] to party with all their buddies.” They said, “it’s noisy for this woman, but she’s afraid to say anything because she’s afraid of retribution [from the neighbor].”

Transportation

Transportation was a frequent topic of discussion during focus groups and interviews, and was mentioned widely on the survey. While residents appreciate that there are several transportation services available to them, most note that enhanced transportation options could significantly improve their quality of life.

The survey found that 63% of respondents had access to a vehicle for personal use, making this the most common means of transportation for residents. Residents without vehicles use a variety of transportation methods, including walking, driving with others, public transit, special transportation services and ride sharing services (see Figure 2 below).

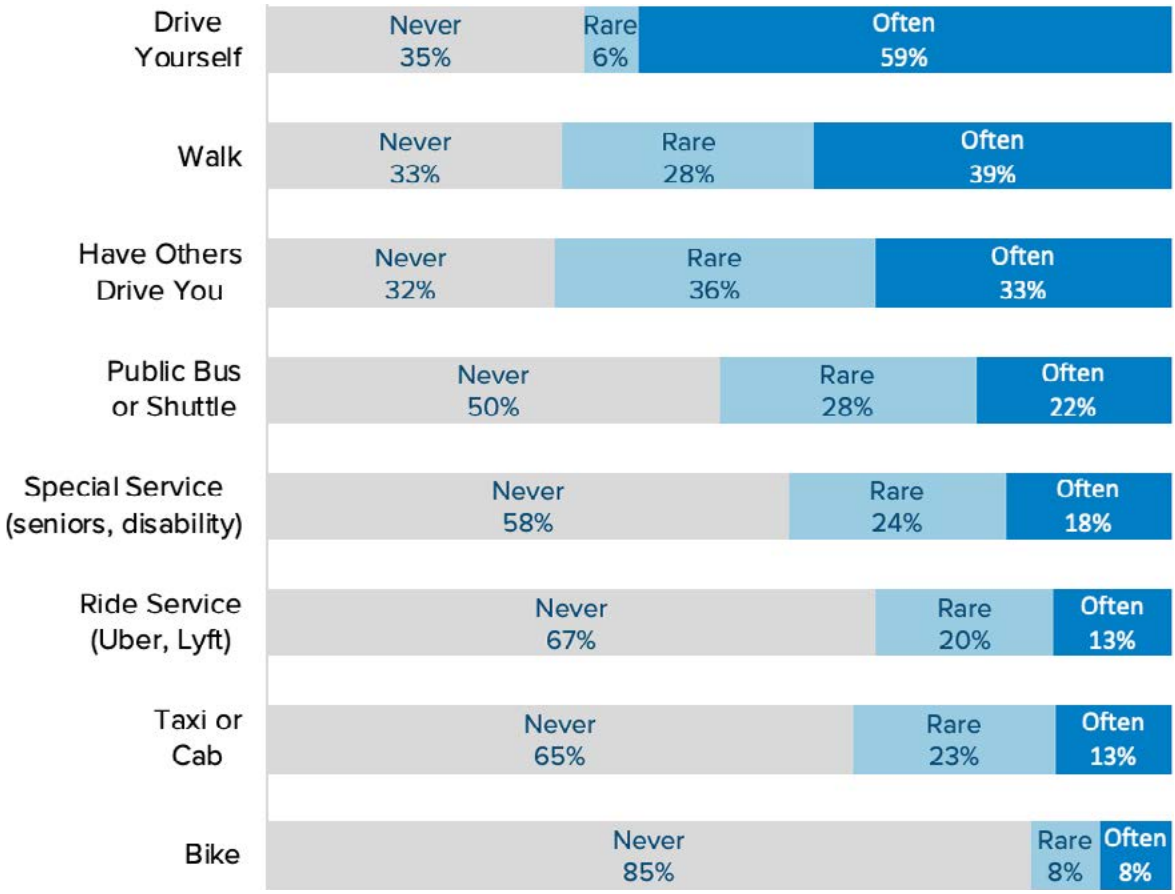


Figure 2: Current Transportation Methods

Assets

Needham has several transportation options available to residents (see Figure 3). Focus group participants and survey respondents stated that the Center at the Heights van and Community Council transportation options were very important to them. Needham's Medical Ride Program and transportation options from Springwell, Inc. were noted as well, although rated as important by fewer individuals.

Strikingly, large percentages of survey respondents were not familiar with several transportation options (see Figure 3).

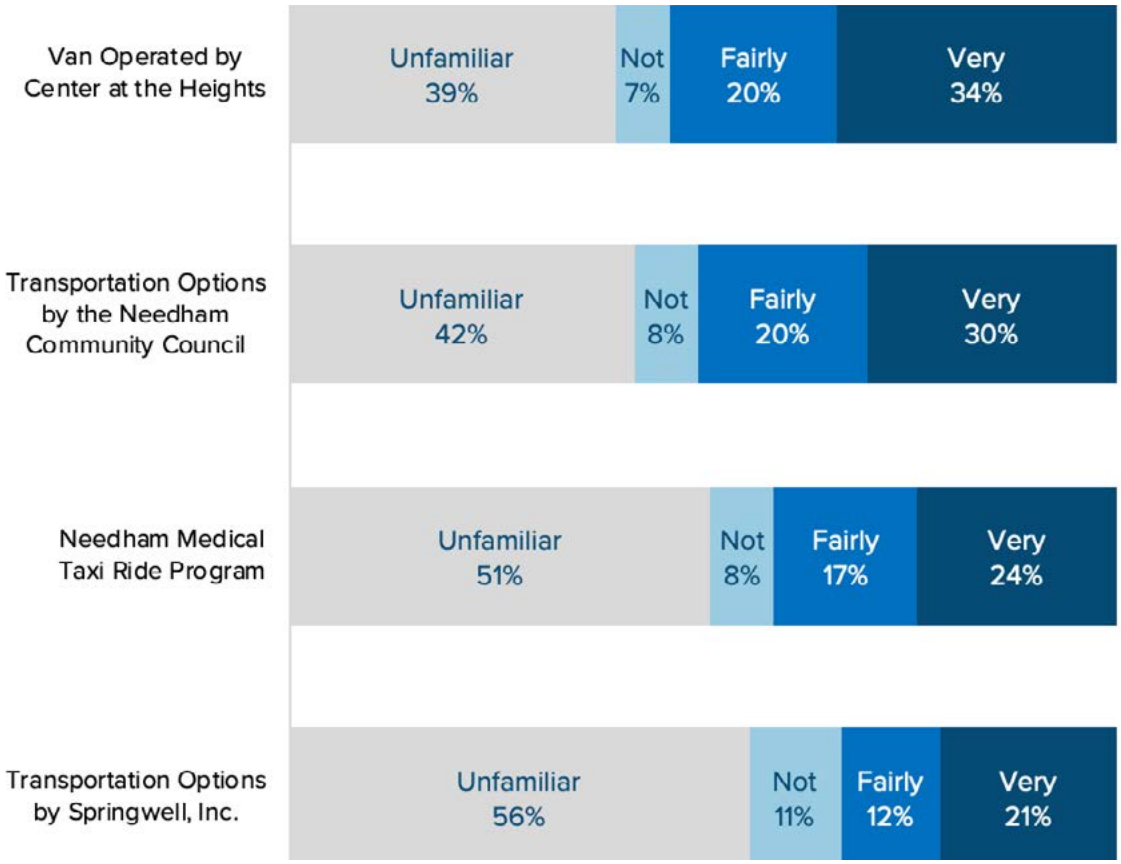


Figure 3: Importance of Transportation Methods

Issues

Throughout interviews, focus groups, and the survey, residents stated that there were few transportation options and those that existed did not meet their needs. Limited transportation options were discussed along with how that made it difficult to get to doctor appointments and community resources such as Riverside, Community Council, and Springwell. While residents may be interested in using public transportation, it is difficult to access and has a limited range within Needham. As one key informant explained:

> "Many of them don't drive, so they're over reliant upon either public transportation, which in the Linden and Chambers apartments, public transportation doesn't go by there. If they want to take the bus they would have to walk up to Highland Avenue, which is, if you're elderly, that's a long walk."

A survey respondent stated:

> "If there is public transportation, it is not explained to residents. Most have stopped driving due to age or physical restrictions. It would allow residents to attend religious services if they desired or just going to the community."

Other options, such as taxis and shared ride services, are expensive for residents.

As one key informant put it, "if they don't have transportation [for an Uber or taxi service], they say, 'Well, I'm not doing that because that money that I could put towards the Uber, I need to put towards food, or pay a bill this month."

Another key informant commented: "[In] my experience here thus far, that the seniors, that if they don't have a car then that's it. Because [the] Housing Authority here is not built in the middle of the community."

Residents, especially those without cars, may have needs that require special transportation. For example, one survey respondent noted that they need a ride alone or with minimal additional passengers, due to a "low immune system".

The ability to move about the community to get food, mental health and medical services, social interactions, and for day-to-day errands was clearly indicated as an ongoing issue. As one survey respondent stated, "Without better local transportation, one becomes a recluse."

Opportunities and Next Steps

This assessment gathered information from key stakeholders – including residents – regarding assets and issues of concern within the Needham Housing Authority. Based on the findings, several recommendations are outlined below.

To identify high priority issues, the survey asked respondents to rate stressors in their community. When rating 14 stressors, all were rated in the middle of the scale between "not an issue" and "a big issue", indicating that all were moderate stressors (see Appendix A).

The survey also asked the respondents to identify issues they would most want to see changed. They were:

- Home and building maintenance
- Public transportation
- Food and groceries

Organizations should consider what was most important to respondents when deciding which improvements to pursue first. (See Appendix A, Page 27)

Building on Existing Resources

Respondents spoke often of existing positive resources in the community. For example, one key informant said, "I hear from people, particularly people who know how to reach out and access services, I hear that they are just sort of blown away from all that's available." Another interviewee noted, "here in Needham you have such a [...] solid infrastructure in the town that it's [...] a wonderful thing." And another person interviewed spoke about the senior center and the social workers that work for Aging Services and said, "This is a real model for Massachusetts." It was clear that the network and range of available resources is an asset to the residents of Needham. (See Figure 4)

Assets in the community include:

- Case managers and social workers at the Center at the Heights
- Library
- YMCA van
- Community Council
- Recycling and Transfer Station
- Fitness facilities at the YMCA, the Center at the Heights, and the Rosemary Recreation Complex
- Needham Concert Society
- Activities and amenities in the community rooms at the Needham Housing Authority (including weekly coffees)
- Programming at the Center at the Heights
- Gardening at the Needham Housing Authority
- Smoking Cessation Counseling services

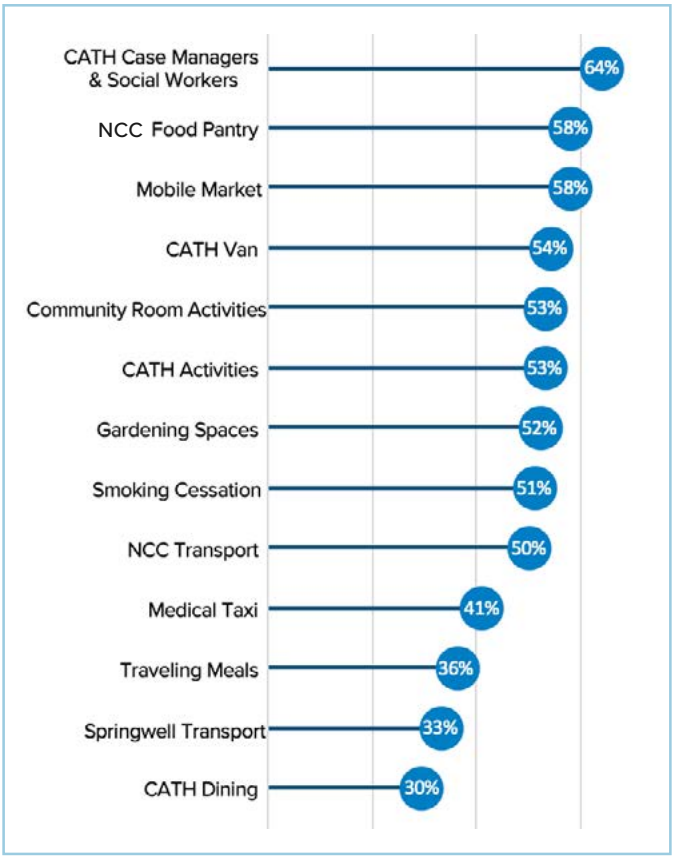


Figure 4: Percent Rating Different Community Resources as Important

Responses in this study indicate that organizations should communicate more effectively about their programs to encourage maximum resident use of these resources. Suggestions include:

- Provide more organized and direct ways of getting information, beyond using bulletin boards, such as a resource manual
- Ensure all materials are easy to read for people with lower literacy and visual acuity
- Use the Needham Housing Authority newsletter as a vehicle for promoting local resources, at least twice a month

Below is a list of recommendations gleaned from residents and specific to each of the themes described above.

The Built Environment

- Provide regular and timely maintenance services, including leaf, grass, and snow removal
- NHA should consider reviewing its maintenance and repair protocols to ensure they are responsive to residents' needs

Community Engagement

- Provide more services for those whose first language is not English, including English classes at different levels of proficiency, translated materials, and interpreter services
- Increase on-site activities. Residents have suggested workshops from the public health nurses, assistance with paperwork for benefits such as Medicare, workshops to address bullying, and programs for children and middle-aged adults
- Find other ways, in addition to the tenants' association, to provide residents with an opportunity to voice their concerns
- Offer mediation services to address neighbor conflicts

Food Access

- Provide options for food purchases at the complexes
- Organize more frequent transportation directly from the NHA to affordable grocery stores
- Provide information to residents about the various food resource programs available in Needham

Mental Health

- Institute a program to provide wellness checks on elderly and people with disabilities
- Employ an on-site social worker who rotates among Housing Authority properties

Substance Use

- Offer smoking cessation classes on-site
- Add shelters or canopies to the smoking areas to encourage smoking outdoors, even in poor weather
- Assess interest in marijuana and alcohol cessation programs, including AA and counseling

Transportation

- Increase regular, accessible, and affordable transportation options to locations throughout Needham
- Compile and distribute a comprehensive and descriptive list of transportation options
- Promote existing transportation programs through multiple communication channels, such as newsletters, Needham Cable, and on-site events

Conclusion

The Needham Housing Authority is a valued resource in Needham, providing affordable housing to many town residents. This assessment provides an overview of the residents' sense of the strengths and challenges they face living in the community. The information gathered here can be used to improve the quality of life for residents by building on these strengths and focusing resources on addressing the challenges.

While not all resident comments were included in the body of this report, there is an opportunity to address these and other concerns raised in the course of this study (see Appendix A, Page 27). Residents provided many practical, feasible, and reasonable suggestions that can be pursued. The Town of Needham, the Needham Housing Authority, and community partners should make concerted effort to address the recommendations of residents.

The Needham Housing Authority is an important part of the town's community. It provides homes for a number of families, older adults, and people with disabilities in Needham. The challenges faced by residents can be addressed, but only through the strong partnership of Needham's government, community organizations, and residents.

Appendix A: Survey Technical Report

SURVEY OF NEEDHAM HOUSING RESIDENTS

Technical Report
June 2019

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SUMMARY OF FINDINGS

The Needham Public Health Department and Needham Housing Authority, in collaboration with an external research and evaluation consultant, conducted a survey of Needham Housing Authority residents to learn more about their perceptions of needs, resources, and opportunities within the community. This report presents findings from 115 heads of household who took part in the survey at the beginning of calendar year 2019.

Respondent Characteristics (page 4)
Survey respondents were predominantly female and over 60 years of age. Most respondents self-identified as White, non-Hispanic and reported speaking English in their home. Few respondents reported being married at the time of the survey – the majority were separated or divorced or had never been married. Approximately one-third of respondents were currently in the labor force either part-time or full-time. Almost half the sample reported that they were retired and not working at all.

Most respondents reported that they lived in Needham for five or more years – with half reporting that they have lived in Needham for 15 or more years. Over half of respondents reported that they have lived in their current residence for more than five years. Most respondents currently live on Chambers Street, Linden Street, or Seabeds Way. Three-quarters of respondents indicated that they live alone and only one in ten reported living with someone under 18 years of age. Almost two-thirds reported having access to a vehicle for personal use.

Respondents were more likely to report their health as *poor*, *fair*, or *good* versus being *very good* or *excellent* in comparison to others their age. Over half of the respondents reported difficulty doing errands alone or reported difficulty walking or climbing stairs.

Attitudes and Perceptions (page 10)
Most respondents reported being satisfied with their unit/home and reported that they feel safe in their unit/home. Less than half of the respondents reported feeling mostly or very connected to the Needham community.

Issues and Stressors (page 11)
Respondents were most likely to report daily stressors and issues related to lack of affordable food and grocery options; people smoking in their units or too close to building entrances; outside property maintenance such as snow removal, landscaping, ramps, porches, steps; and lack of easy access to establishments or places where they can purchase food or groceries.

When asked to identify the single biggest issue affecting their quality of life that they would like to see changed, the largest proportion of respondents identified home/building maintenance, public transportation, and food and groceries. Clarifying open-ended comments revealed perceived issues with the upkeep of properties both inside and outside (including snow removal), lack of convenient public transportation options (especially on weekends), and high prices of groceries at local stores as the biggest issues. Although not a top issue, a sizeable subset of respondents also commented on lack of enforcement of non-smoking policies.

Resources and Opportunities (page 19)

Respondents rated the availability of case managers and social workers at the Center at the Heights as the most important community resource, followed by the Needham Community Council Food Pantry, and the Needham Community Farm mobile market. A sizeable subset of respondents also reported that they use the Needham Public Library and other educational services. When asked what services or resources they need that aren't currently offered (or are perceived as being inadequate) in the community, many identified some type of transportation-related need, the need for more community support services, and more on-site social activities.

BACKGROUND AND METHODS

BACKGROUND AND PURPOSE

The Needham Public Health Department and Needham Housing Authority, in collaboration with an external research and evaluation consultant, conducted a survey of Needham Housing Authority residents at the beginning of calendar year 2019 to learn more about their perceptions of needs, resources, and opportunities within the community. The results of this survey are intended to help inform community planning efforts across multiple departments within the municipality.

SURVEY CONTENT

The survey instrument consisted of 58 discrete questions across four broad thematic areas.

Respondent Characteristics

- Background and Personal Characteristics: gender, age, race and ethnicity, languages spoken at home, marital status, employment status.
- Housing and Transportation: years living in Needham, years in current residence, location of current residence, number of people in household, individuals under 18 years of age in household, access to vehicle for personal use.
- Health and Physical Mobility: perceived health status, physical mobility.

Attitudes and Perceptions

- Feelings of connection to the community
- Satisfaction with unit/home
- Feelings of safety in unit/home

Issues and Stressors

- Perceived issues and stressors related to public transportation, food and groceries, maintenance, sense of community, and health and wellness
- Biggest issues affecting quality of life

Resources and Opportunities

- Current transportation methods
- Importance of community resources (transportation, food, community activities)
- Other community resources currently being utilized
- Needed services or resources not currently provided in Needham

A complete copy of the survey instrument is provided in Appendix A.

METHODS

The survey was administered anonymously as both a paper-based and online questionnaire between November 2018 and February 2019. Potential respondents were given the option to complete the survey online, return the survey to one of three convenient locations (Seabeds Community Room, Linden-Chambers Community Room, Center at the Heights), or by mail in a stamped envelope that was provided with the survey. The survey was available in English, Russian, and Mandarin. All Needham Housing Authority residents received a small incentive ($5 gift card) to a local coffee store with the survey, and everyone who completed and returned a survey was entered in a drawing to win one of four $25 gift cards for an online retailer. The drawing entry form was completed separate from the survey to ensure anonymity of responses.

SAMPLE AND ESTIMATED RESPONSE RATE

The sample for the survey consisted of the head of household (single respondent) for each unit/home under the purview of the Needham Housing Authority (NHA). According to the NHA website, there are 288 units/homes spread across Captain Robert Cook Drive, Chambers Street, Linden Street, Seabeds Way, and High Rock Estates. The head of household in 115 units returned a completed survey – 40% response rate. This ranged from a low of 8% from High Rock Estates residents to a high of 57% from Seabeds Way residents.

Overall, it is estimated that roughly 2 of every 5 heads of household completed the survey. It is important to note that the results are generalizable only to those Needham Housing residents who took part in the survey and may not reflect the attitudes, opinions, and needs of other Needham Housing residents in the community.

Estimated Response Rate			
	NHA Units	**Completed Surveys**	**Percentage**
Captain Robert Cook Drive	30	8	27%
Chambers Street	80	38	48%
Linden Street	72	30	42%
Seabeds Way	46	26	57%
High Rock Estates	60	5	8%
Unknown	-	5	-
Total	**288**	**115**	**40%**

NHA data retrieved from Needham Housing Authority: http://www.needhamhousing.org/nhahousingportfolio.html

Of the 115 completed surveys, 99 were completed in English, 8 in Russian, and 8 in Mandarin. Most surveys were completed on paper: 103 on paper, and 12 online.

Survey Method and Language				
	English	**Russian**	**Mandarin**	**Total**
Paper	89	8	6	**103**
Online	10	-	2	**12**
Total	**99**	**8**	**8**	**115**

ANALYSIS

Data were analyzed using the Statistical Program for Social Sciences (SPSS) Version 25. Descriptive statistics are presented for each item in the survey (i.e., the number and percentage of all respondents that answered each response option for each item in the questionnaire). Some of the questions in the survey allowed responds to write-in (or type-in) a response. These items were thematically coded to extract the major theme(s) present in the data.

VALIDITY AND RELIABILITY

One of the challenges associated with survey research is the potential for error in the data. This can stem from multiple sources such as the same respondent submitting multiple surveys, poor question wording, lack of appropriate response options that accurately reflect the experiences of all potential respondents, frivolity, and misinterpretation of the underlying meaning of a question. Several steps were taken to increase confidence in the results from this project.

1. Use of clear and unambiguous language in the instructions – prominently indicating who the intended target audience was (i.e., Needham Housing Authority residents) and indicating what the questions were about (i.e., perception of needs, opportunities, and resources).

2. Anonymity of results – ensuring respondents that their answers were anonymous and that they would not face any personal, social, or financial penalties or retribution for providing candid and honest responses to the questions.

3. Interpretability and accessibility – the survey was written at an eighth-grade reading level, available in three languages, used large serif type font for the visually-impaired, and was made available in multiple formats (i.e., paper and online).

4. Use of existing questions – when available, questions were taken from existing instruments and standardized scales (e.g., questions about perceived personal health, demographics, etc.).

5. Key stakeholder review – the survey instrument was reviewed by representatives from multiple town departments to identify potential areas of confusion or ambiguity.

6. Data screening – visual and statistical screening methods were enlisted to identify and remove cases in which the respondent provided obviously frivolous responses (i.e., always choosing the same or extreme response options for every item).

7. Identical case analysis – statistical sub-routines were programmed to identify any duplicate records to minimize the chances that the same person intentionally or accidentally submitted multiple surveys.

While these are not failsafe methods, they do help to ensure a clean dataset that minimizes the chances that there are gross errors present in the final set of data. Each of these steps was taken during the administration and analysis of the Survey of Needham Housing Residents.

FINDINGS – RESPONDENT CHARACTERISTICS

Sixteen of the questions in the survey asked about different respondent characteristics. Seven questions assessed respondents' background and personal characteristics, six examined housing and transportation, and three covered health and physical mobility.

BACKGROUND AND PERSONAL CHARACTERISTICS

Gender. Approximately two-thirds of respondents (65%) indicated that they were female and 34% reported that they were male.

Which of the following best describes you?		
	Frequency	**Percentage**
Female	71	65.1%
Male	37	33.9%
Other	1	0.9%
Missing	6	-
Total Valid	109	94.8%

The Total Valid percent row is the percentage of all respondents (n=115) that answered each question.

Age. Almost all respondents (96%) were over 40 years of age – with over two-thirds (69%) reporting that they were over 60 years of age.

How old are you?		
	Frequency	**Percentage**
20 or younger	-	0.0%
21-30 years	2	1.8%
31-40 years	2	1.8%
41-50 years	12	10.5%
51-60 years	19	16.7%
61-70 years	33	28.9%
71-80 years	34	29.8%
81 years or older	12	10.5%
Missing	1	-
Total Valid	114	99.1%

Race and Ethnicity. Respondents were asked to self-identify their race and ethnicity according to the categories in the U.S. Census. Overall, 98% of respondents selected one race and 2% selected more than one race. Most respondents (82%) identified as White, followed by Asian (8%), and Black or African American (7%). A total of 5% reported Hispanic or Latino ethnicity.

What is your race? / Are you Hispanic or Latino?		
	Frequency	**Percentage**
Not Hispanic or Latino	106	95.5%
White alone	88	79.3%
Black or African American alone	7	6.3%
American Indian or Alaska Native alone	3	2.7%
Asian alone	9	8.1%
Some other race alone	1	0.9%
Two or more races	2	1.8%
	Frequency	**Percentage**
Hispanic or Latino	5	4.5%
White alone	3	2.7%
Black or African American alone	1	0.9%
Some other race alone	1	0.9%
Missing	5	-
Total Valid	111	96.5%

The two multiracial individuals both reported that they were White and American Indian or Alaskan Native. Percentages do not sum to 100% in this table because respondents were able to select multiple race categories.

Languages Spoken at Home. Overall, 87% of respondents reported speaking one language at home and 13% reported speaking multiple languages. Most respondents reported speaking English at home (87%), followed by Russian (9%), Mandarin (7%), and Spanish (5%).

Which of the following languages are spoken in your home?		
	Frequency	**Percentage**
English	96	86.5%
Russian	10	9.0%
Mandarin	8	7.2%
Spanish	5	4.5%
Other	6	5.4%
Missing	4	-
Total Valid	111	96.5%

The six individuals who reported speaking other languages at home reported speaking: Albanian, Creole Haitian, Greek, Ukraine, and Vietnamese. Percentages do not sum to 100% because respondents were able to select multiple languages.

Marital Status. The largest proportion of respondents reported they were separated or divorced (34%) or never married (32%), 16% were married, and 16% were widowed.

What is your current marital status?		
	Frequency	**Percentage**
Married	17	15.5%
Not married, living with a partner	3	2.7%
Separated or divorced	37	33.6%
Widowed	18	16.4%
Never married	35	31.8%
Missing	5	-
Total Valid	110	95.7%

Employment Status. Roughly half of the respondents indicated that they are currently retired (48%) and 16% are not in the labor force for other reasons (64% combined). Twenty-nine percent (29%) are currently employed either part-time (18%) or full-time (11%). An additional 7% of respondents reported that they are currently unemployed and looking for work.

Which of the following best describes your current employment status?		
	Frequency	**Percentage**
Employed or self-employed, part-time	20	18.0%
Employed or self-employed, full-time	12	10.8%
Unemployed, but looking for work	8	7.2%
Retired, not working at all	53	47.7%
Not in labor force for other reasons	18	16.2%
Missing	4	-
Total Valid	111	96.5%

HOUSING AND TRANSPORTATION

Years Living in Needham. Roughly half the respondents (51%) reported they lived in Needham for less than 15 years and 49% reported that they have lived in Needham for 15 years or more.

How long have you lived in Needham?		
	Frequency	**Percentage**
Less than 5 years	21	18.4%
5-14 years	37	32.5%
15-24 years	20	17.5%
25-34 years	14	12.3%
35-44 years	6	5.3%
45 years or more	16	14.0%
Missing	1	-
Total Valid	114	99.1%

Years in Current Residence. Most respondents (84%) reported that they have lived in their current unit/home for at least three years. Over a third of all respondents (34%) reported that they have lived in their current home/unit for 11 years or more.

How many years have you lived in your current unit/home?		
	Frequency	**Percentage**
Less than 1 year	6	5.4%
1-2 years	12	10.7%
3-5 years	27	24.1%
6-10 years	29	25.9%
11-15 years	15	13.4%
16 years or more	23	20.5%
Missing	3	-
Total Valid	112	97.4%

Location of Current Residence. The largest proportion of respondents reported they currently live on Chambers Street (34%), followed by Linden Street (27%), and Seabeds Way (23%), and Captain Robert Cook Drive (7%).

Where are you currently living?		
	Frequency	**Percentage**
Chambers Street	38	33.9%
Linden Street	30	26.8%
Seabeds Way	26	23.2%
Captain Robert Cook Drive	8	7.1%
High Rock Estates	5	4.5%
Other	5	4.5%
Missing	3	-
Total Valid	112	97.4%

Number of People in Household. Three-quarters of respondents (75%) reported that they are in a single person household.

Including yourself, how many people are currently living in your household?		
	Frequency	**Percentage**
One	85	75.2%
Two	19	16.8%
Three	6	5.3%
Four	-	0.0%
Five	3	2.7%
More than Five	-	0.0%
Missing	2	-
Total Valid	113	98.3%

Individuals Under 18 Years of Age in Household. Most respondents (90%) reported that there are not currently any individuals under 18 years of age living in their household.

Are there any individuals under 18 years of age currently living in your household?		
	Frequency	**Percentage**
No	101	90.2%
Yes	11	9.8%
Missing	3	-
Total Valid	112	97.4%

Access to Vehicle for Personal Use. Nearly two-thirds of respondents (63%) reported that they have access to a car or vehicle for personal use.

Do you currently have access to a car or other vehicle for personal use?		
	Frequency	**Percentage**
No	41	37.3%
Yes	69	62.7%
Missing	5	-
Total Valid	110	95.7%

HEALTH AND PHYSICAL MOBILITY

Perceived Health Status. Half the respondents (49%) reported their health was *poor* or *fair* in comparison to others their age.

In general, when compared to most people your age, how would you rate your health?		
	Frequency	**Percentage**
Poor	15	13.3%
Fair	40	35.4%
Good	37	32.7%
Very Good	17	15.0%
Excellent	4	3.5%
Missing	2	-
Total Valid	113	98.3%

Physical Mobility. One-third of respondents (34%) reported difficulty doing errands alone and 50% reported difficulty walking or climbing stairs. Over half the respondents (57%) reported difficulty in at least one of these areas.

Do you have difficulty doing errands alone such as visiting your doctor's office or shopping?		
	Frequency	**Percentage**
No	71	65.7%
Yes	37	34.3%
Missing	7	-
Total Valid	108	93.9%

Do you have difficulty walking or climbing stairs?		
No	54	50.5%
Yes	53	49.5%
Missing	8	-
Total Valid	107	93.0%

FINDINGS – ATTITUDES AND PERCEPTIONS

Three questions in the survey asked about respondents' attitudes and perception of feeling connected to Needham, feeling satisfied with their unit/home, and feeling safe in their unit/home.

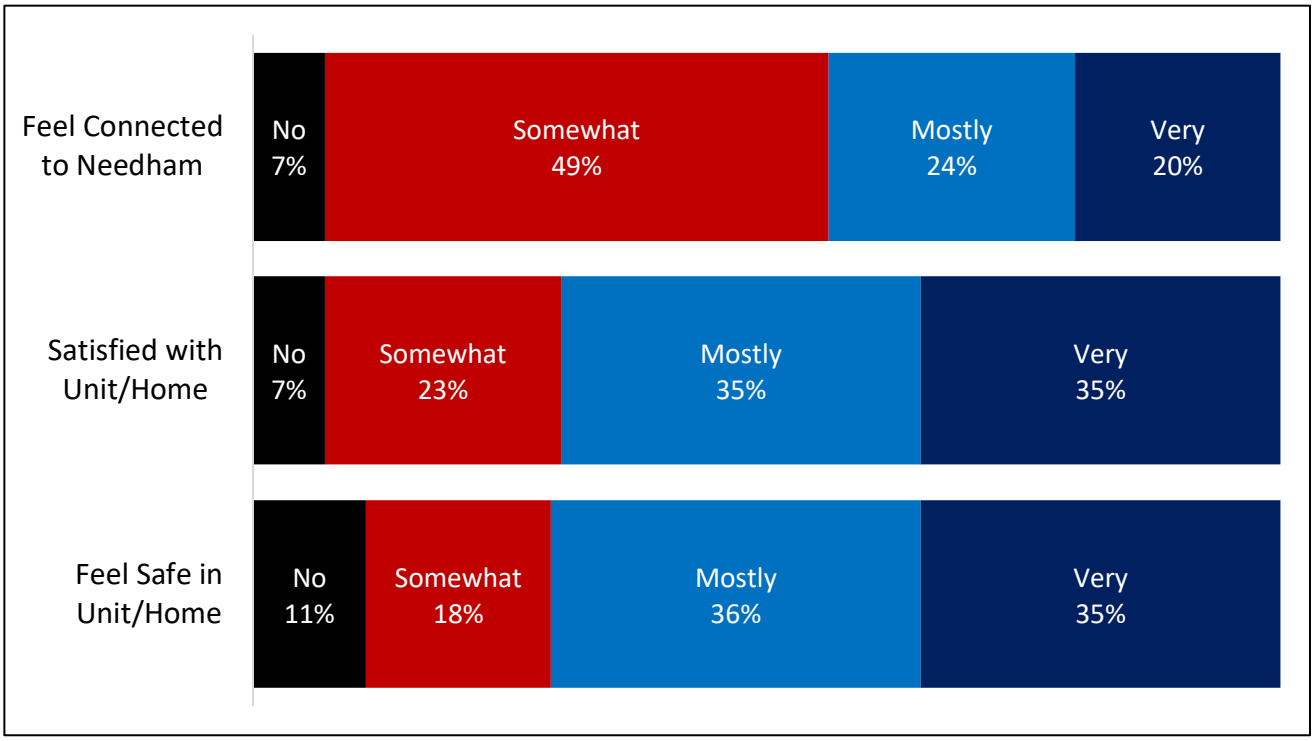
ATTITUDES AND PERCEPTIONS

Feelings of Connection, Satisfaction, and Safety

Respondents were asked: (1) how connected do you feel to Needham, (2) how satisfied are you with your unit/home, and (3) how safe do you feel in your unit/home? Each question was asked using a four-point scale with the same basic structure [Not at All, Somewhat, Mostly, Very].

Forty-four percent of respondents feel *mostly* (24%) or *very* (24%) connected to Needham, seventy percent are *mostly* (35%) or *very* (35%) satisfied with their unit or home, and seventy-one percent feel *mostly* (36%) or *very* (35%) safe in their unit or home.

Figure 1: Attitudes and Perceptions



FINDINGS – ISSUES AND STRESSORS

A multi-part question on the survey asked respondents to indicate how much of an issue fourteen different things were that might be affecting their quality of life (i.e., stressors). Respondents were asked to rate each item on a scale from 1 (not an issue) to 5 (a big issue).

The question was divided into five conceptual areas: (1) public transportation, (2) food and groceries, (3) maintenance, (4) sense of community, and (5) health and wellness.

Public Transportation

- Affordable Public Transport – Affordable public transportation options.
- Easy Access to Public Transport – Easy access to public transportation close to home.
- Public Transport Routes – Public transportation options that go where you need.
- Public Transport Schedules – Public transportation options on the times or days that you need.

Food and Groceries

- Affordable Food and Grocery – Affordable food and grocery options.
- Easy Access to Food and Grocery – Easy access to establishments or places where you can purchase food or groceries.

Maintenance

- Outside Property Maintenance – Outside property maintenance such as snow removal, landscaping, ramps, porches, steps.
- Inside Property Maintenance – Home maintenance such as heat, plumbing, electrical.

Sense of Community

- Feeling Sense of Community – Feeling like a part of the community (feeling welcome, having friends and neighbors to talk to).
- Relations Between Neighbors – Relationships between neighbors and people treating neighbors respectfully.
- Neighborhood Activities – Availability of neighborhood activities (interesting activities, ways to meet and interact with neighbors).

Health and Wellness

- Health and Wellness Services – Having services and resources available for positive physical and mental health (exercise, yoga, stress reduction, addiction services, mental health services).
- Access to Health and Wellness Services – Easy access to services and resources for maintaining positive physical and mental health.
- Smoking Inside or Too Close to Entry – People smoking in their units/homes or too close to building entrances.

ISSUES AND STRESSORS

The 14 different issues/stressors were rated similarly. All fell within a narrow range around the mid-point of the five-point scale [range: 2.61 to 3.32] – indicating that all 14 areas were viewed as being moderate issues/stressors. Figure 2 displays these data according to the five thematic areas and mimics the order in which they were asked in the survey.

The items at the high end of the range were: affordable food and grocery options (mean = 3.32 out of 5.00), people smoking in their units or too close to building entrances (mean = 3.04), outside property maintenance such as snow removal, landscaping, ramps, porches, steps (mean = 3.03), and easy access to establishments or places where you can purchase food or groceries (mean = 3.01).

Figure 2: Issues and Stressors [Grouped by Area]

Figure 3 presents the same set of data that were presented in Figure 2, but rank orders the 14 items rather than grouping them thematically.

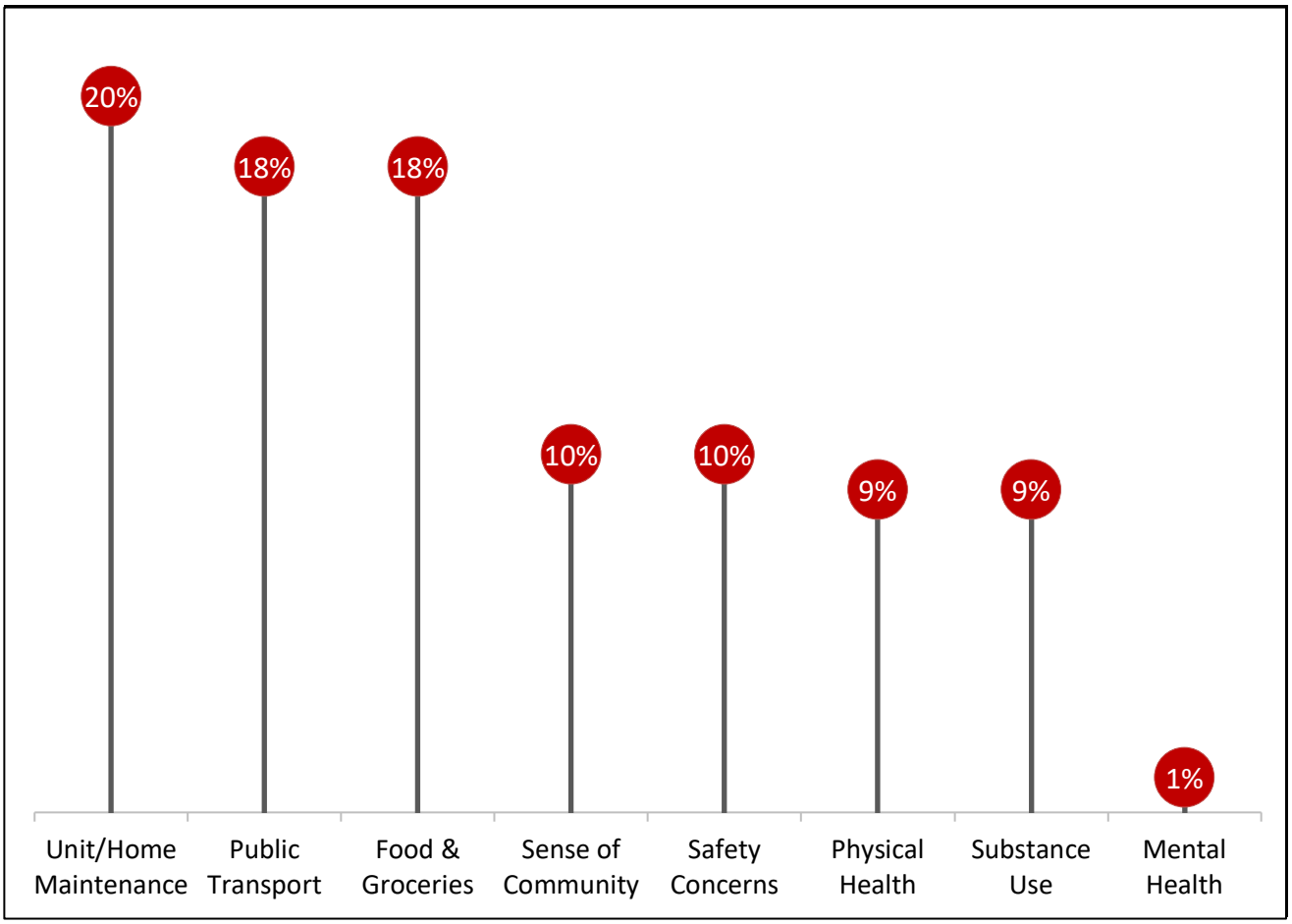
Figure 3: Issues and Stressors [Grouped by High to Low]

BIGGEST ISSUE RESPONDENTS WANT TO SEE CHANGED

Respondents were asked to identify the biggest issue currently affecting their quality of life that they would like to see changed based on a list of eight areas: public transportation, food and groceries, home/building maintenance, sense of community, physical health, mental health, substance use, and safety concerns.

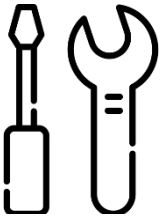
The largest proportion of respondents (20%) identified home/building maintenance as the biggest issue currently affecting their quality of life that they would like to see changed, followed by public transportation (18%), and food and groceries (18%).

Figure 4: Biggest Issue Respondents Want to See Changed



Three percent of respondents (n=3) indicated that the biggest issue affecting their quality of life that they would like to see changed wasn't listed.

Home/Building Maintenance – Issues. Thirteen of the 20 respondents who identified home/building maintenance as the biggest issue affecting their quality of life provided a clarifying comment.



"NHA refuses to replace broken refrigerator and worn out rugs and comes into the unit when I am not here even when asking them to plan visits."

"Noise. Squeaky floors (loud)."

"There is no regular upkeep to the inside of buildings and no maintenance to clean the grounds and parking lots. No effort to maintain landscaping in a proper way."

"The maintenance guy just sits in his truck half the day. There was no fall clean up this year."

"Please keep in-check residents and visitors driving vehicles on landscape around housing units. They wreck and dig up nice lawn areas."

"It would be helpful to have the whole parking lot resurfaced due to potholes and uneven areas in the parking lot. Also, uneven sidewalks that can throw you off balance when walking."

"Railing from sidewalk up to unit has moved and leans too far from sidewalk to be of any use. In addition, water comes off the roof and freezes just outside front door making first step outside dangerous."

"More washers and dryers needed."

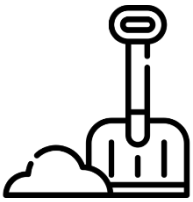
"More handicap accessories in the units."

"More outside lighting is needed. Don't always feel safe coming home at night."

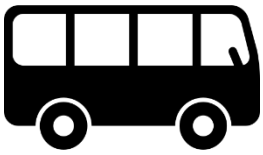
"Clearing of parking spots after snow could use improvement!"

"It's hard to remove snow in the winter. I get back and hand pain from shoveling when the snow is heavy."

"Snow removal. Please do not plow parked cars in. Do not pile snow behind or in front or parked cars. Please shovel sidewalks as well."



Public Transportation – Issues. Seven of the 18 respondents who identified public transportation as the biggest issue affecting their quality of life provided a clarifying comment.



"Bus to supermarket, drugstore, bank, on certain times and days."

"If there is public transportation, it is not explained to residents. Most have stopped driving due to age or physical restrictions. It would allow residents to attend religious services if they desired or just going to the community."

"It is quite challenging for me since I don't have a car. Makes getting around Needham and to the YMCA hard. I need a ride with not too many passengers since I have a low immune system."

"Public transportation is not easily accessed. Walking up St. Mary's Street is difficult, limited bus route, and the RIDE is a joke. Uber and Lyft may be financially stressing, and you need a smart phone. The NCC transportation is limited to specific hours and destination. Plus, a reservation is needed."

"Reliable transit is cut on weekends when we can shop. More frequent access to Needham on weekends would be great."

"The RIDE is great, but not always available when needed or has such lousy scheduling that it is honestly painful to use. Need practical options for food shopping."

"Without better local transportation, one becomes a recluse."

Food and Groceries – Issues. Thirteen of the 18 respondents who identified food and groceries as the biggest issue affecting their quality of life provided a clarifying comment.

"As a senior citizen, Roche Brothers is extremely expensive. I don't drive; therefore, I am limited."

"Roche Brothers is too expensive. I can only get half of the groceries, then eat cereal until next social security check. I called several Roche Brothers to ask about having a morning, once a week, that could be senior morning. Nobody answered my request. Let's see if you can help."

"We should have a Market Basket. Cheap and good quality. We're all being forced into shopping at Roche Brothers/Sudbury Farms and spend a fortune!"

"Only two grocery stores in town. Both are expensive."

"I think we do not have enough choices when it comes to grocery stores. Needham is a great town. Nice community where everyone would love to live in. So, we need more options and affordable grocery stores like Stop and Shop on top of what we have."

"I feel that even though our grocery stores do a lot for Needham, their prices are way too high."

"I am disabled with a rollator to walk. I have nobody to go food shopping for me. Would like help with shopping and not have to spend a lot on expensive products when there are stores that are cheaper."

"Have to travel too far for affordable groceries and too expensive if delivered."

"Poor cost of living increases from social security as costs for many things increase. Have to get help from the Food Pantry."

"The only store close to me is very expensive. I'm on a fixed income, so this poses a real concern."

"Food and groceries are too costly at the local markets."

"Food prices in town are very expensive."

"The food is not affordable."

Safety Concerns – Issues. Six of the 9 respondents who identified safety concerns as the biggest issue affecting their quality of life provided a clarifying comment.

"Abusive neighbor."

"There are too many permanent 'house guests' residing here. Those 'guests' are not on any lease and they have not had to pass background checks."

"Two years ago, a well-cultured 80-year-old Russian woman was murdered. Therefore, I do not feel safe."

"No more murders."

"Since murder occurred, we were promised outside cameras and nothing has been done."

Sense of Community – Issues. Seven of the 10 respondents who identified sense of community as the biggest issue affecting their quality of life provided a clarifying comment.

"I feel isolated."

"Elderly should not have to live with loud music, fire alarms going off all the time, mentally ill that can't live alone successfully. People look down in low income and elderly. Pretty mean sometimes to Captain Cook children. I feel bad for them."

"Noisy neighbors."

"Hope to have friends who I can trust so we can take care of each other, communicate with each other, and learn from each other. Friends who make me feel confident that I am part of the community and someone useful."

"I want to be a neighbor and be loved and liked. Times have changed here. People pass away and are no more. The old days."

"In the four years that I have lived here I have seen a tremendous decline in our community. People do not get along. People don't respect one another. Our current tenant association president is a bully. Something needs to change.

"There needs to be a new election of the tenant's association – the current president is the biggest problem – violent, vulgar.

Substance Use – Issues. All 10 respondents who identified substance use as the biggest issue affecting their quality of life provided a clarifying comment.

"Make sure no smoking rules are enforced. No smoking in apartments."

"Regarding neighbors smoking. I was a smoker and after quitting if I go outside and someone is smoking it really bothers me and I start coughing."

"I have asthma, so I wear a mask when downstairs because of smokers."

"People smoking is a problem."

"People still smoking in their units."

"Tenants still smoke inside units and they need to be more mindful of their neighbors."

"The NHA is too limited by regulations to deal effectively with residents who violate their housing contract by smoking, by causing fire, or by most anything that endangers or blights the community. The NHA has terrible relations with its residents."

"There are many alcoholics here whose behavior affects quality of life and security for others."

"Substance abuse (i.e., alcohol abuse) is spilling out of the apartments. We are experiencing people acting inappropriately in the corridors. Ambulances for rehab for alcohol arrive often. It's destabilizing and raises safety issues."

"There are a group of neighbors that drink a lot, they make noise late at night."

Physical and Mental Health. Three of the 9 respondents who identified physical health or mental health as the biggest issue affecting their quality of life provided a clarifying comment.

"More free resources for physical and mental health."

"Poor physical and mental health are problems."

"I have problems with balance, depth perception, and endurance."

Other Issues. All 3 respondents who identified an issue not listed in the survey as the biggest issue affecting their quality of life provided a clarifying comment.

"Many of my neighbors have pets. The laundry room has cat hair and bird feathers in and on the machines. I have severe allergies and asthma and can't use the machines. I'm forced to go to laundromats and pay more. My stove is old and rusty. My kitchen is outdated.

"There are no programs for kids or for middle-aged parents in the Linden/High Rock neighborhood. Also, no yard, no snow removal, no grocery store, no transportation, no physical or mental health programs or assistance in times of sickness, loss, injury, crisis, etc. Middle-aged moms and the elderly have no help/support at home with kids when they are sick. I feel scared to ask for help, maintenance, or updates to the unit. NHA charges $100 for yard help. NHA refused to help with snow removal when I was injured/sick.

"There are myriad issues – lack of respect from staff, lack of concern and/or follow-through when residents violate their lease or cause problems for other residents, sub-standard living conditions in units, fear among residents of speaking out due to backlash, not feeling safe in the building and/or the community, maintenance of common areas is lacking… all this makes living in NHA traumatizing, at worst, and makes us feel unimportant and disrespected, at best. It's a stressful place to live."

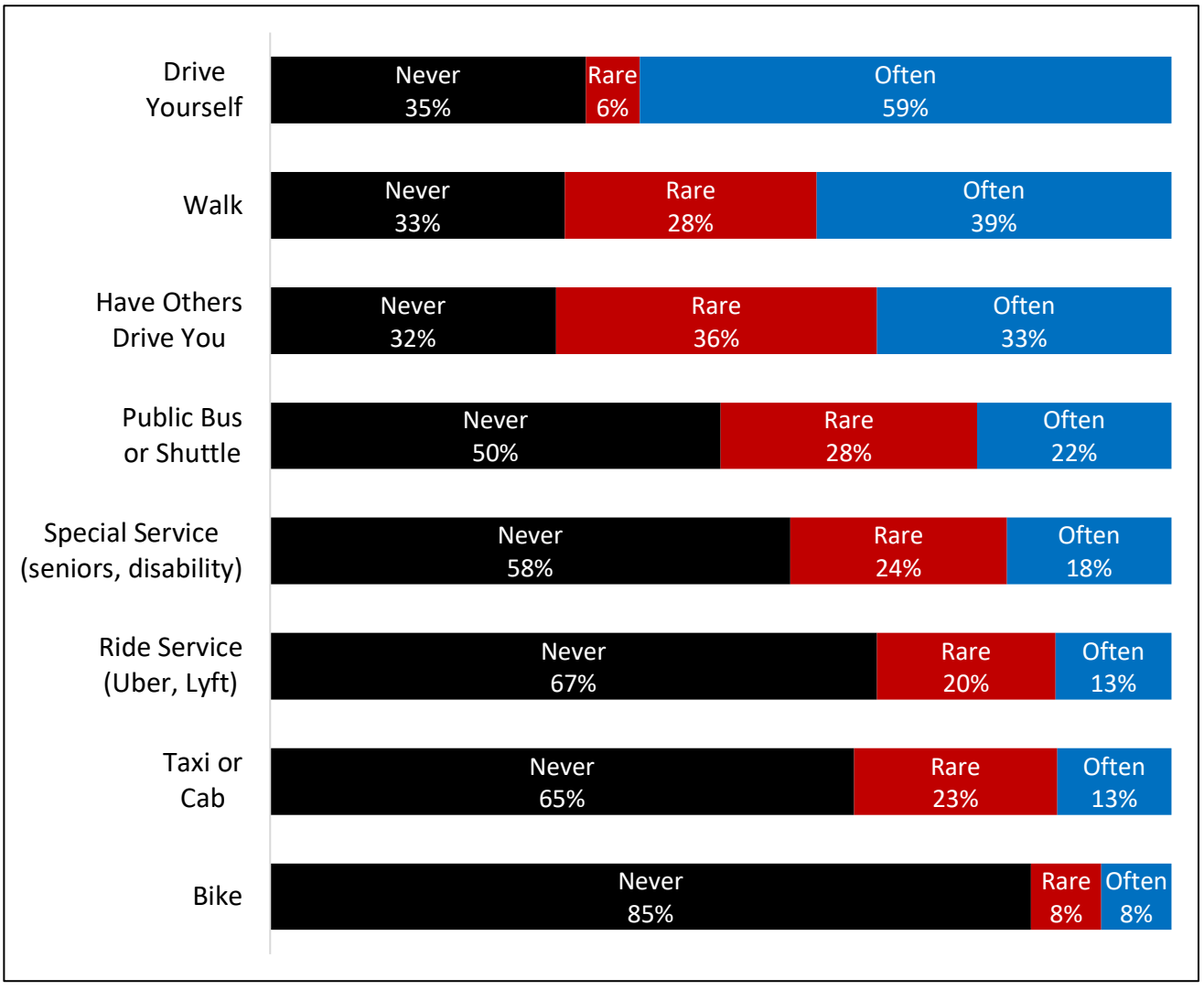
FINDINGS – RESOURCES AND OPPORTUNITIES

The second part of the survey asked respondents about resources and opportunities. The first question in this section asked about transportation resources. Specifically, respondents were asked how often they currently use eight different modes/methods of transportation to get around Needham for trips like shopping, visiting the doctor, visiting friends, and running errands.

CURRENT TRANSPORTATION METHODS

Respondents were most likely to report that they often drive themselves (59%) – which corresponds to the earlier finding that 63% of respondents have access to a vehicle for personal use. An additional 39% reported that they often walk, 33% often have others drive them, 22% often use the public bus or shuttle, 18% often use a special transportation service for seniors or persons with disabilities, 13% often use a ride sharing service such as Uber or Lyft, 13% often take a taxi or cab, and 8% often bike.

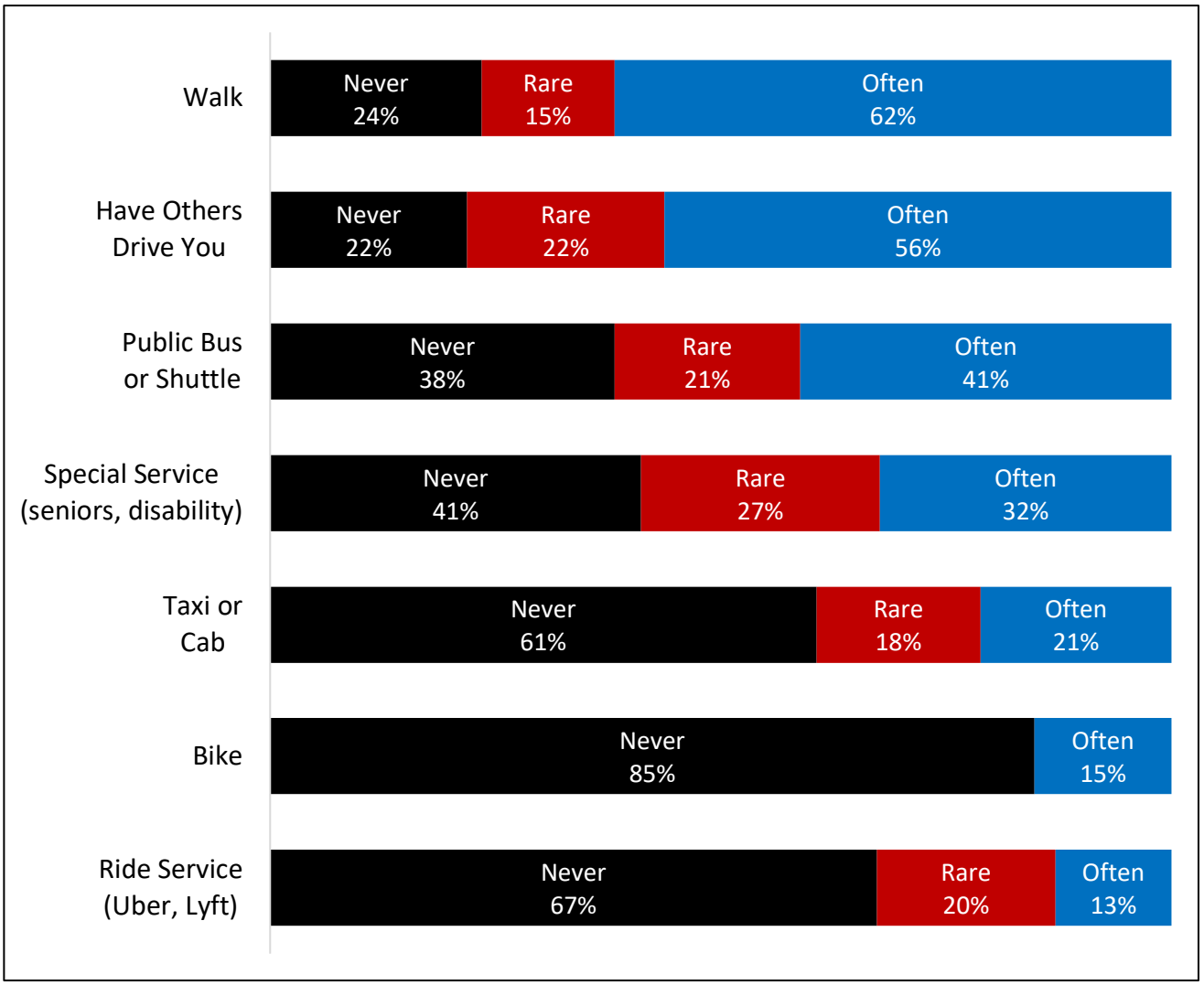
Figure 5: Current Transportation Methods



CURRENT TRANSPORTATION METHODS AMONG THOSE WITHOUT ACCESS TO A VEHICLE

Among the 41 respondents who reported that they do not have access to a vehicle for personal use, 62% reported that they often walk to their destination, 56% often have others drive them, 41% often use the public bus or shuttle, 32% often use a special transportation service for seniors or persons with disabilities, 21% often take a taxi or cab, 15% often bike, and 13% often use a ride sharing service such as Uber or Lyft.

Figure 6: Current Transportation Methods Among Those Without Access to a Vehicle



IMPORTANCE OF DIFFERENT COMMUNITY RESOURCES

Respondents were asked to rate the importance of 13 different resources in the community, even if they aren't currently using them. Four items asked about transportation resources, four ask about food resources, and five asked about other community activities, services, and resources. The response options for each of these questions were: I don't know about this, not important, somewhat important, and very important.

Transportation Resources

- The van operated by the Center at the Heights.
- Needham's Medical Taxi Ride Program.
- Transportation options by Springwell, Inc.
- Transportation options by the Needham Community Council.

Food Resources

- Needham Community Council food pantry.
- Community Dining Program at the Center at the Heights.
- The Traveling Meals program.
- Needham Community Farm mobile market.

Community Activities, Services, and Resources

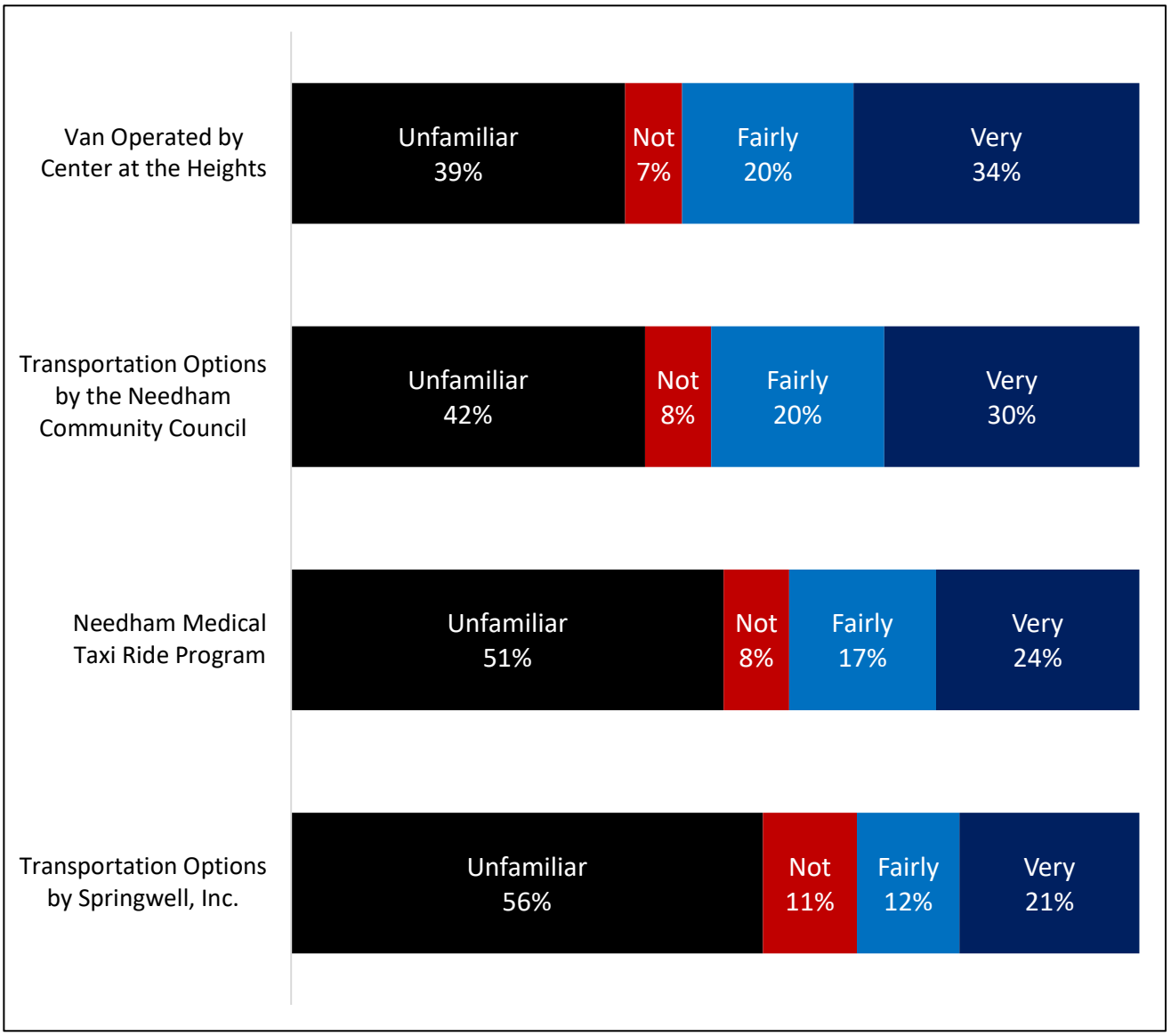
- Community programming and activities at the Center at the Heights.
- Activities and amenities in the community room at your housing development.
- Spaces for gardening or growing at your housing development.
- Smoking cessation counseling services by Needham Housing Authority.
- The availability of case managers and social workers at the Center at the Heights.

Importance of Community Transportation Resources

Among the four community transportation resources asked about in the survey, respondents provided the highest importance ratings to the van operated by the Center at the Heights (54% rated this as important), followed by transportation options by the Needham Community Council (50% rated this as important), Needham's Medical Taxi Ride Program (41% rated this as important), and transportation options by Springwell, Inc. (33% rated this as important).

Less than half of the respondents were familiar with the Needham Medical Taxi Ride Program and with transportation options by Springwell, Inc.

Figure 7: Importance of Community Transportation Resources

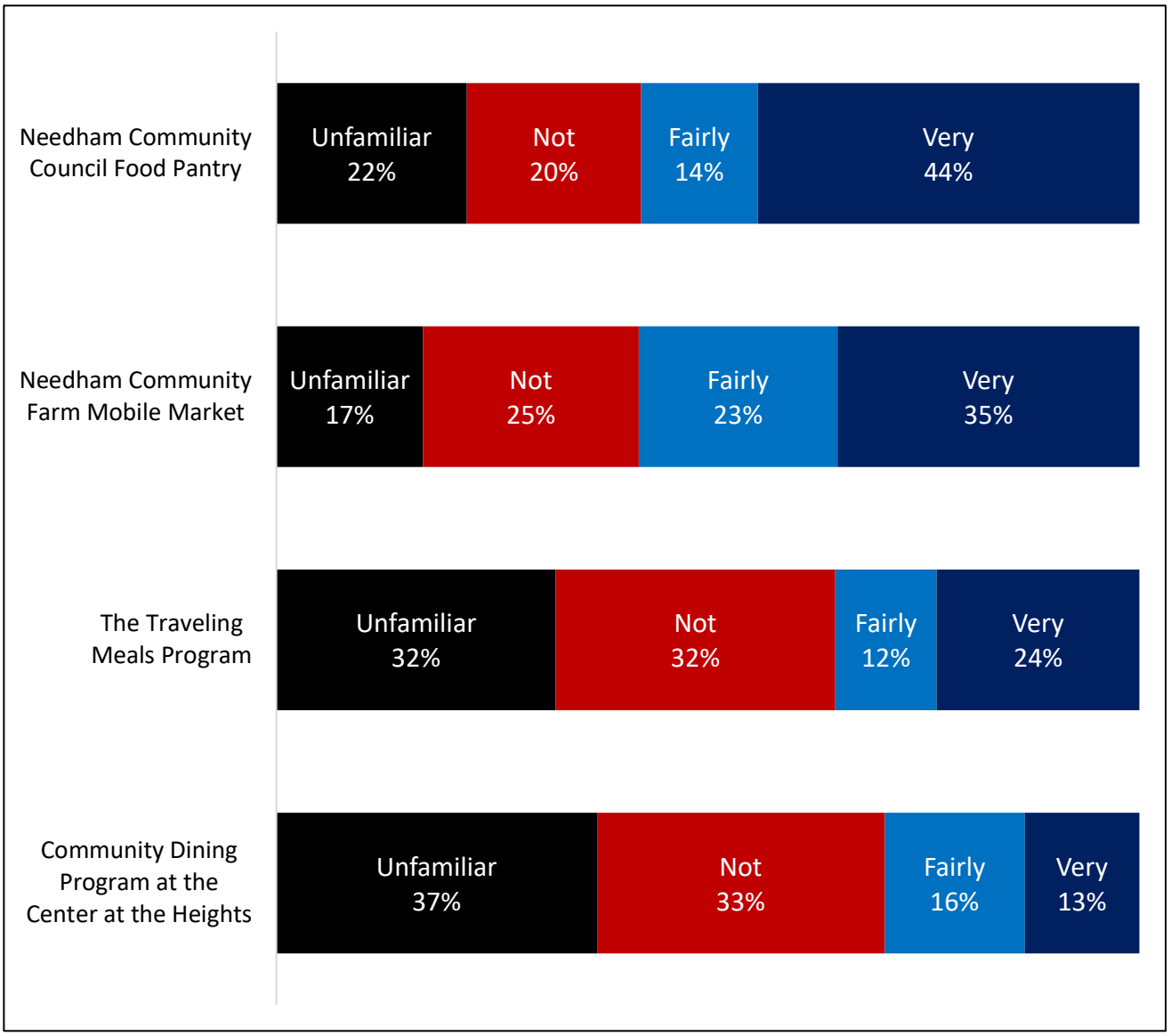


Importance of Food Resources

Among the four food resources asked about in the survey, respondents provided the highest importance ratings to the Needham Community Council Food Pantry (58% rated this as important), followed by the Needham Community Farm mobile market (58% rated this as important), the Traveling Meals program (36% rated this as important), and the Community Dining Program at the Center at the Heights (29% rated this as important).

Approximately one-third of respondents indicated that they were not familiar with the Traveling Meals Program or familiar with the Community Dining Program at the Center at the Heights.

Figure 8: Importance of Food Resources



Importance of Other Community Activities, Services, and Resources

Among the five other community activities, services, and resources asked about in the survey, respondents provided the highest importance ratings to the availability of case managers and social workers at the Center at the Heights (64% rated this as important), followed by activities and amenities in the community room at housing developments (53% rated this as important), community programming and activities at the Center at the Heights (53% rated this as important), spaces for gardening or growing at housing developments (52% rated this as important), and smoking cessation counseling services by Needham Housing Authority (51% rated this as important).

Figure 9: Importance of Community Activities, Services, and Resources

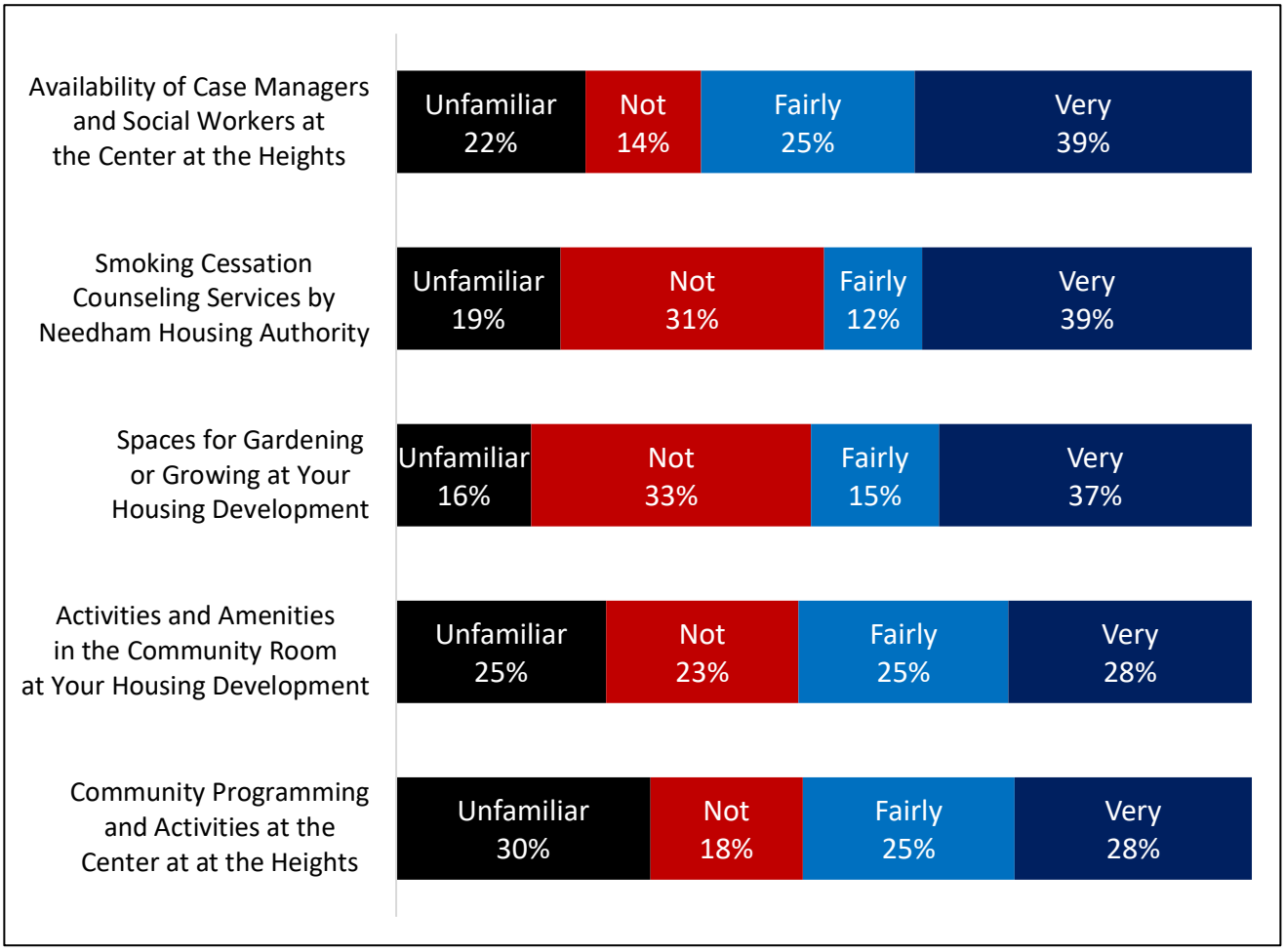
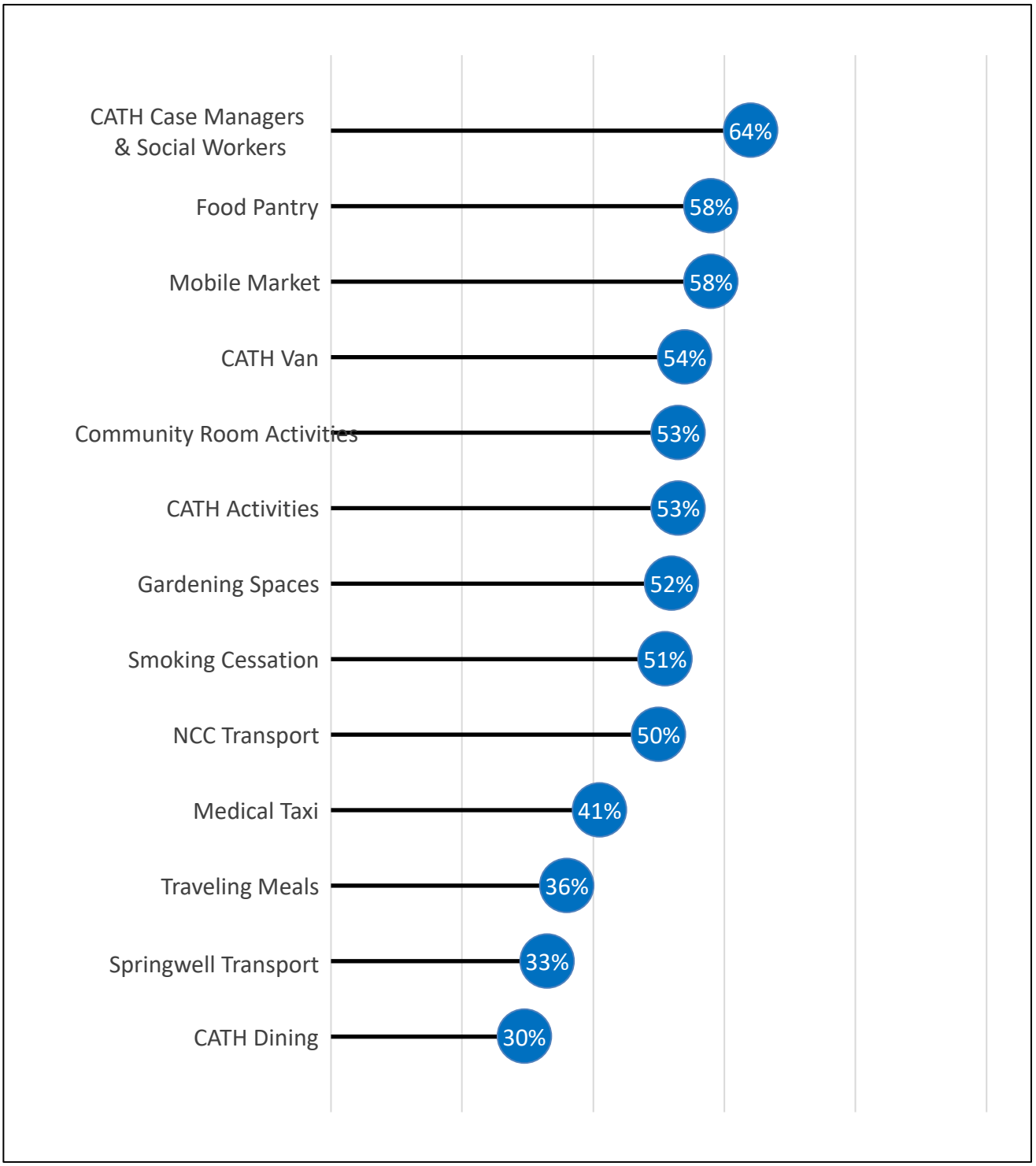


Figure 8 presents the same data as Figure 7 but collapses those who reported that each service was *fairly* or *very important* into a single value. Respondents rated the availability of case managers and social workers at the Center at the Heights as the most important community resource, followed by the Needham Community Council Food Pantry, and the Needham Community Farm mobile market.

Figure 10: % Rating Different Community Resources as Important



OTHER SERVICES OR RESOURCES CURRENTLY USING

Respondents were asked to indicate what other services they currently use in the community. Seven respondents mentioned the Needham Public Library or educational services, six identified transportation services, six mentioned various agencies and services in the community, four identified exercise facilities and pools, two mentioned cleaning services, and two mentioned social activities.

 (7)	"Needham Public Library" (5 mentions) "Going to the library to use the computer for informational reasons." "Needham Community Education, but their programs are too expensive and they don't allow scholarships unless your family receives free lunch."
 (6)	"The RIDE." (2 mentions) "Bus." "Lyft provided by Needham Council on Aging for medical appointments with Commonwealth Care Alliance." "MBTA." "I use the YMCA van, etc. available on M, W, F."
 (6)	"Love the Needham Community Council. Especially good bank and thrift shop, holiday program." "Needham Community Council." "Springwell." "Tax preparation at Center at the Heights." "The dump (Needham's recycling and transfer station) – Very well managed." "Thrift shop."
 (4)	"Exercise gyms." "Pool." "Rosemary pool." "YMCA."
 (2)	"Homemaker laundry service." "Springwell Homemaker Services."
 (2)	"Needham concert society. Great hall performances." "Weekly coffee. It's a good communication opportunity between housing residents. It has been a real morale booster. It facilitates care. Book groups were great. It reinforces tenant capability."

NEEDED RESOURCES NOT CURRENTLY OFFERED

Respondents were asked to identify what services or resources they need that aren't currently offered in the community. Nineteen identified some type of transportation-related need, five mentioned various community services and activities, four mentioned on-site social activities, two mentioned assistance with yardwork and snow removal, two mentioned cleaning services, two identified the need for vending machines, and two commented on relations with NHA.

 (19)	"Rides to different shopping stores. Walmart. Kohls. Home Depot." (6 mentions) "Rides to and from doctor's appointments." (5 mentions) "Daily local transportation to pharmacies." (2 mentions) "A local bus that has regular 7-day schedule (route)." "Bring back the YMCA ride. Clean, courteous, on-time." "Chambers Street transportation to Needham Center." "More shuttle services." "Occasional direct transportation to either Dedham or Wellesley. MBTA green line extension to Needham Heights via Newton Highlands station." "List of available transportation options and destinations."
 (5)	"Programs for High Rocks kids/teens." "Regular wellness checks on elderly and disabled. A real social worker at NHA to assist elderly and disabled – not a social director." "Some kind of religious services for all faiths." "It would be nice to have a drop-in center in Needham – a place to socialize." "YMCA membership."
 (4)	"A more active Needham Housing Authority social services coordinator. Something better than Springwell, "More social activities at the Chambers Community Center." "More on-site activities." "Health and wellness programs for middle ages."
 (2)	"Free help with snow removal and car cleaning for those who are physically limited and personal yard help for raking trapped leaves and trimming small shrubs not planted by NHA." "There is a huge need for help with leaves, grass, and snow removal."
 (2)	"Change machine in the laundry room." "Get a Busy Bee type service back so there is flexibility – great service."
 (2)	"Two stores in the area close on Sundays. We can't go anywhere nearby for a coke, sandwich, or quart of milk. Vending machines or a beverage machine might help." "Vending machine for soft drinks because the neighborhood shuts down on Sunday. We are in no man's land. Everything is closed."
 (2)	"A more involved NHA Board of Commissioners." "Ombudsman/advocate for NHA-related issues."

Appendix B: Focus Group Discussion Guide

Background:

The Needham Department of Public Health is gathering information to inform future programs and activities that aim to improve the health and quality of life for the residents of the Needham public housing locations.

A piece of this process is speaking directly with you, the residents, to gain your thoughts about the needs that you experience so that the activities, programs, and resources developed help to meet the needs you feel are most important.

Participation is completely voluntary. The Town will summarize this information into a brief memo to be shared with the public; however, individual responses and information will be kept strictly confidential.

Questions:

1. How do you define health and wellbeing?

2. What about living in the residences is beneficial to your physical health and social wellbeing?

    a. Please describe or give examples.

3. Could you describe any challenges you face day to day when it comes to maintaining your health and wellbeing?

    a. Could you provide examples from your life or stories you've heard from others?

4. Could you list the 6 major problems you see in your community?

    a. Rank these problems in order of importance to you

    b. Where does health/wellbeing rank?

5. What kinds of programs or activities that are not currently offered do you think would help enhance your health and wellbeing as a resident?

    a. Could you describe or give examples? How might these influence your health and wellbeing or that of your neighbors?

    b. What specific actions could the town take? What resources do you think would help address these issues?

6. In your opinion, what already exists that helps you feel healthy and well? (physically, mentally, emotionally?)

   a. How do these aspects help? Do you feel like all residents are able to participate?

   b. Do neighbors help each other? Look out for one another?

7. What are the important resources in your community? Where are they located?

   a. How do you learn about these resources?

   b. What if any are the challenges for residents to access programs in the town?

8. Is there anything else you would like to add?

Thank you again for your time. If you find you have anything additional to add or any questions, you can reach out to ---.

Appendix C: Interview Guide

Background:

The Needham Department of Public Health is gathering data as a part of a plan to assess both the strengths and needs of the communities residing in the Needham Housing Authority residences to inform plans and programs that aim to improve the health and quality of life of the residents.

We have asked you to participate as a key informant because of your knowledge, insight, and familiarity working in the community. Through the interview, I hope to learn about your work, thoughts, and perspectives about the health and resource needs and strengths of the communities and individuals who live in the Needham Housing Authority locations.

I will be recording this interview along with the others that I will conduct in order to have an accurate record of our conversation to refer back to. I may reach out to you again following the completion of all interviews to verify my interpretation with you. The themes that emerge from this interview and others will be summarized and compiled into a brief memo to be shared with the public; however, individual interviews will be kept confidential.

Do you have any questions for me before we get started?

Questions:

1. Could you describe your role in the community and how long you have been working in this role?

    a. In what capacity have you worked with the housing authority or its residents?

2. In general, how would you rate the health and quality of life for the residents of the Needham Housing Authority locations?

    a. Is this different depending on which location?

    b. Why do you feel the health and quality of life is _____?

3. What do you think are the most important health issues and needs present among the housing authority resident population?

    a. Could you describe examples of what you've seen and/or provide stories or anecdotes that illustrate why you believe these needs are present?

4. What do you think needs to be done to address these issues?

a. What specific actions could the town take? What resources do you think would help address these issues?

b. Who should be involved in providing these resources?

5. What do you think will improve the health and quality of life of the residents?

a. Any particular strategies, programs, or activities?

6. What do you think helps to facilitate good health and well-being among the residents?

a. How do these aspects help? In your opinion, are these facilitators accessible by all individuals and at all locations?

b. In your opinion are there ways to build on these strengths to promote good health and quality of life among the residents?

7. What barriers, if any, exist to improve the health and quality of life of the NHA residents?

a. Could you describe or provide examples of the social, physical, or other aspects that hinder good mental, social, and physical well-being of the residents. Provide examples wherever possible.

Mental Health:

8. In your opinion, what are the most important needs or resources related to mental health for the residents living in the NHA locations?

Social Wellbeing:

9. Could you describe the opportunities for the NHA residents to participate in social, leisure, and cultural activities with others in Needham?

10. How could the social wellbeing of NHA residents be improved?

Closing:

11. Is there anything else you would like to add before we wrap up for today?

Thank you again for your time today speaking with me about this topic. As I mentioned at the beginning, I may be in touch in the future to verify interpretation of our conversation, or to clarify particular points.

If you find you have anything additional to add to this conversation or any questions for me beyond today, you can reach me at ---.

Thank you again!

Board of Health
TOWN OF NEEDHAM
AGENDA FACT SHEET

Needham Public Health
Prevent. Promote. Protect.

MEETING DATE: 1/23/2020

Agenda Item	FY 2021 Budget Discussion and BOH Priorities
Presenter(s)	Tara Gurge, Assistant Public Health Director

1.	**BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED**

The Board of Health will review the FY2021 Public Health Division and Health & Human Services Department Budget submissions and discuss its priorities for funding to support the Public Health Division's operations and to advance the Board of Health's goals and objectives.

PLEASE NOTE: The Health & Human Services' **budget hearing** in front of the Finance Committee was rescheduled to take place in the **Multi-Purpose Room at CATH on Wednesday January 29th**. HHS is not the first department on the agenda, so it is likely that the HHS hearing **will be at or after 8:15 p.m**.

2.	**VOTE REQUIRED BY BOARD OF HEALTH**

No vote is required, nor is one expected.

3.	**BACK UP INFORMATION ATTACHED**

Department Information DSR1	
Department	Health & Human Services
Department Mission	

The **Needham Department of Health & Human Services (HHS)** provides programs and services that support and enhance the quality of life in Needham. HHS includes the following divisions: Aging Services, Public Health, Veterans' Services, and Youth & Family Services. Its mission is to protect, preserve, and promote the health, wellness, and social and emotional well-being of all Needham residents.

* *

Aging Services Division

Mission:
The mission of the Aging Services Division is to provide a welcoming, inclusive, and secure environment where individuals and their families can benefit from services and resources that enhance their quality of life and provide opportunities for growth.

Aging Services fulfills its mission by providing services at the Center at the Heights, as well as in community settings. The programs are designed to support adults aged 60 and older to live healthy and independent lives. Services include: outreach and counseling, advocacy, transportation, daily meals, information and referral, Medicare benefits counseling, volunteer opportunities, health & wellness information and screening, educational programs, and special events and trips.

The Center at the Heights (CATH) is a 20,000 square foot, handicapped-accessible building which accommodates many programs. The facility includes: a large community room that seats up to 250 people, a fitness center, a cafeteria, an art room, a computer room, a library, several meeting rooms, and a roof deck. CATH promotes health and wellness by providing a place for Needham's older adults to socialize and participate in many recreational, health, educational, and social activities.

On the Horizon:
Needham's seniors are living longer and are becoming a larger proportion of the populations. With their growing numbers, older adults are presenting with a wide range of needs and interests. According to data from the U.S. Census Bureau, the number of people aged 65 years and older will reach 55 million by 2020. By 2030, there will be about 72.1 million older persons in the US who will make up roughly 20 percent of the U.S. population. The team at the Aging Services Division delivers comprehensive programs that promote the health and wellness of seniors 60 years of age and older. As the proportion of older adults increases, Aging Services will have to adjust programs to meet the growing needs.

The Needham Council on Aging continues to support the needs of older residents and families through an eight dimensions of wellness approach, incorporating education, exercise, and entertainment in its programming. The eight dimensions of wellness are: emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual. The Aging services Division continues the movement to improve the quality of life for Needham's older residents with Memory enhancement, Exercise, Music/art, Social, Education Support for caregivers.

Department Information DSR1	
Department	Health & Human Services

Budget Statement:
This year's base budget submission for the Aging Services Division reflects very modest increases for some line items. The largest increase is for wireless communications, which will allow mobile phones for the new Assistant Director and for the new vans that were purchased with state earmark funding. Costs for usage of the Aging Services Division vans (Vehicle Supplies and Gasoline) have been reduced slightly. Past usage increased at a slower rate than expected, despite a significant increase in programs and associated transportation costs (reflecting efficiencies in route planning and the timing of trips). As programs continue to increase and CATH's hours continue to expand, these costs categories will be closely monitored. Please also note that the Aging Services Division has a significant number of part-time and temporary staff members, many of which were affected by an increase in the Schedule C rates for some positions (notably Van Drivers and Building/Kitchen Monitor).

Aging Services Division

Line	Div.	Description	Change from FY20	Comments
Professional/ Technical Software License Fee	Aging Division	Annual license cost for Aging Program	($500)	Information Technology is absorbing these costs into its budget
Postage	Aging Division	Mailing	$250	Reflects increased mailing costs for distribution of The Compass (newsletter)
Wireless Communications	Aging Division	Mobile Phones	$1,300	Mobile phones for new Assistant Directors and new phone assigned to new COA handicap accessible Van
Office Supplies	Aging Division	Office Supplies	Unchanged	
Vehicle Supplies	Aging Division	Brakes, windshield wipers, etc.	($250)	Reduced by $250 to better reflect anticipated vehicle maintenance costs.
Gasoline/ Diesel	Aging Division	Fuel	($500)	Reduced to better reflect anticipated usage
Seminars & Trainings	Aging Division	Trainings and registration costs	Unchanged	
Dues & Memberships	Aging Division	Memberships	Unchanged	
Conf In-State	Aging Division	Registration costs for	Unchanged	

Department Information DSR1				
Department		Health & Human Services		
		trainings		
Other Expenses	Aging Division	Transponder Charges	$500	Reflect charges against vehicle transponder for tolls taken by COA Vans.

The Aging Services Division submitted a DSR4 spending request to support the costs of evening and weekend programs, the design of *The Compass*, the Fitness Program, and transportation to support the new hours of programming and services. This is the second year of a multi-year request, and totals $25,000 in expense costs and $48,635 in salary costs, all of which are for part-time staff members. The benefit costs associated with those part-time staff members total $4,935.

Grants and Donations:
The Aging Services Division relied upon two state/federal pass-through grants. It receives $84,664 in funding for the SHINE program, which funds two 30-hour per week positions and supports the training of dozens of SHINE counselors. The Division also received $77,976 in funding from the Formula Grant, which supported part-time staff members, programs, recreational supplies, furniture replacements, and upgrades for CATH technology. Those grants were supplemented by a $90K earmark in the state budget (secured by Needham's legislative delegation led by Representative Denise Garlick) which supported the purchase of two new vans for the Aging Services Division (a six passenger mini-van, and a 7-passenger handicap-accessible van).

The Division received a substantial donation (greater than $50K) from the Friends of the Center at the Heights in FY 2019, which supported the operation of the Fitness Program at CATH and which helped to support the expansion and mailing of the *Compass* newsletter six times per year. Additionally, FY 2019 was the first year of the substantial five-year (almost $160,000) commitment that the Beth Israel Deaconess Hospital-Needham has provided to support senior health and wellness.

Volunteers:
The Aging Services Division relies upon a committed group of community volunteers to support the wide array of programs and services which Division provides to the community. Volunteers serve as SHINE Counselors, staff the front desk, answer phones, assist patrons with registering for classes, assist seniors with tax preparation, and assist in the kitchen with the congregate lunch program. There are nearly 150 volunteers in FY 2019, and those volunteers provided an estimated 8,000 hours of service.

Accomplishments and Activities:
Programs at CATH continually evolve to meet the needs of the growing number of older adults in Needham. In recent years well-attended programs have included exercise, meditation, Reiki, smoking cessation, nutrition, cooking, chronic disease management, and other health-focused topics. There are also support groups, creative arts activities, intergenerational programs, movies, and other entertainment.

Social workers provide a wide range of supportive services including: assistance in addressing problems with housing, transportation, utilities, and other concrete problems; supporting individuals struggling with depression, anxiety, grief, and loneliness; offering support groups;

Department Information DSR1	
Department	Health & Human Services

and working with public health nurses on the Safety at Home program.

In FY 2019, the Aging Services Division expanded its programs and services into weekday evenings and piloted offering programs and services on Saturday mornings. The Division also implemented a once-a-month Wednesday breakfast program, which has been very popular. SHINE (Serving the Health Information Needs of Everyone) Counselors provided 7,572 counseling sessions with seniors about health insurance options. This worked saved an estimated $2,000,000 through drug plan enrollments. Transportation services were expanded and transportation added routes to holiday shopping centers to give seniors the freedom to shop for their loved ones without needing to drive.

On the Horizon

Public Health

Mission:
The Needham Public Health Division is empowered through the Needham Board of Health by the Massachusetts General Laws to enforce state and local public health and environmental regulations.

The mission of the Division is to prevent disease, promote health, and protect the public health and the social well-being of Needham residents, especially those who are most vulnerable. Public Health staff work toward fulfilling this mission through collaboration with state and local agencies and community partners. The work largely consists of promoting health practices based on research and evidence, enforcing local and state regulations, and advocating for policy and regulatory changes that promote health and well-being.

On the Horizon:
The Public Health Division and the Board of Health adapt programs and services as emerging issues or new research indicate needs. Recent examples of emerging issues have included concerns about concussions, the potential dangers of vaping, pest management, worrisome infectious diseases.

For the coming fiscal year, the Public Health Division anticipates the end of a significant grant that has funded youth-focused substance use prevention. Staff members have been exploring options for maintaining this important work once the Federal funding is gone.

Budget Statement:
Public Health has been very successful in securing grant funding in numerous areas. Significant grants have supported several years of substance use prevention through the Substance Prevention Alliance of Needham (SPAN). This has allowed the Division to conduct school and community-based awareness programs, work with restaurants and stores with liquor licenses, and work with pharmacists on issues related to prescription drugs. However, the Drug Free Community grant, which has funded so much prevention work, will expire in September 2020, leaving Needham without dedicated youth substance use prevention funding.

Smaller grants, ranging from $1,400 to $20,000, have supported programs such as elder fall-prevention, adaptation to climate change, initial efforts toward public health accreditation, innovations in sanitary code enforcement, emergency preparedness, and work supporting

housing options for older adults.

This year's base budget submission from the Public Health Division reflects a modest cost increase of $1,715. There is a $250 reduction in general office supplies, but that savings is offset by the addition of $250 for medical supplies to support the replacement of Stop the Bleed kits co-located with First Aid Kits and AEDs in Town buildings.

Software charges are transferred to the ITC budget, and service from Constant Contact is eliminated. There are small reductions in the funding for wireless communications and licensing charges, but a sizable increase in the cost of services for environmental monitoring of synthetic turf fields. The cost of testing has increased, and the Board of Health now requires that the testing examine not only crumb rubber in-fill and water runoff, but also PFAS chemical applications to the synthetic grass blades. The cost increase of $2,500 in this line is based off of a preliminary estimate from an environmental testing company on state contract. Please also note that the Public Health Division has a significant number of part-time and temporary staff members, although only a small number of those staff members were affected by an increase in the Schedule C rates for some positions (notably Traveling Meals Program Summer Drivers).

Public Health

Line	Division	Description	Change from FY2020	Comments
Professional/ Technical Software License Fees	Public Health	Software costs for Survey Monkey and Constant Contact	($660)	Information Technology is absorbing the costs for Survey Monkey into its budget and those costs have increased slightly due to a change in the company's licensing; the contract with Constant Contact will be terminated
Professional/ Technical Licensed Professional	Public Health	Environmental Testing Services	$2,500	Costs to cover the full-range of BOH-required environmental testing for new synthetic turf fields (added PFAS tests which nearly double previous cost)
Wireless Communications	Public Health	Mobile Phones	($75)	Monthly charges for mobile phones reduced.
Office Supplies	Public Health	General Office Supplies	($250)	Reduced costs to more accurately reflect the previous years' spending levels for office supplies

Department Information DSR1				
Department		Health & Human Services		
Medical Supplies	Public Health	Medical Supplies for Town Buildings	$250	Updated to reflect costs of replacement of Stop the Bleed kits co-located with First Aid
Governmental Charges	Public Health	Licensing charges	($50)	Reduction in funding for required licenses
Mileage	Public Health	Mileage	Unchanged	
Conference Out-of-State	Public Health	Conferences & Trainings	Unchanged	

The Public Health Division has submitted two DSR4 budget requests, both of which are high priorities of the Board of Health. The top priority is the request for $125,000 in funding to support the Substance Prevention Alliance of Needham (SPAN) when its federal grant expires in early FY 2021. The benefit costs for the personnel (one full-time staff member, one 19.5 hr/week part time staff member) in this budget request totals $36,514, yet it is important to note that these benefit costs have been paid by the Town for the last decade, so this would not be a newly assumed cost.

The second priority is funding to support Public Health Division staffing with a Director for the Public Health Division ($108,928 in salary costs), expanded hours for environmental health inspections from a part-time staff member ($18,200 in salary costs), and the benefit costs for those personnel ($36,866).

Grants and Donations:
Public Health has been very successful in securing grant funding in numerous areas. Significant grants have supported several years of substance use prevention through the Substance Prevention Alliance of Needham (SPAN). This has allowed the Division to conduct school and community-based awareness programs, work with restaurants and stores with liquor licenses, and work with pharmacists on issues related to prescription drugs. However, the Drug Free Community grant, which has funded so much prevention work, will expire in September 2020, leaving Needham without dedicated youth substance use prevention funding.

Smaller grants, ranging from $1,400 to $20,000, have supported programs such as elder fall-prevention, adaptation to climate change, initial efforts toward public health accreditation, innovations in sanitary code enforcement, emergency preparedness, and work supporting housing options for older adults. In FY 2019, the Public Health Division received $125,000 for Drug Free Communities grant, $100,000 for regional Substance Abuse Prevention Collaborative grant, approximately $22,000 from the federal Food & Drug Administration for food safety projects, a $10,000 smoking cessation grant, a $26,089 climate resiliency for seniors grant, and a $33,000 grant for community vulnerability assessment to climate change.

Volunteers:
The Public Health Division relies upon a committed group of community volunteers to support the Traveling Meals Program, which delivers two-meal packets to home-bound or vulnerable community members. Meals are cooked by the food program staff at the Beth Israel Deaconess Hospital-Needham; volunteers assist with packing the meals and then drivers deliver the meal packets to program recipients. There are approximately 40 program recipients and over 60

Department Information DSR1	
Department	Health & Human Services

volunteers. Those volunteers provided an estimated 1,850 hours of service in FY 2019.

Accomplishments and Activities:
Public Health plays a key role in several important community initiatives. The Community Crisis Intervention Team (CCIT) is a joint initiative of the Public Health Division and the Needham Police Department, which includes the Fire Department, the Aging Services Division, and Beth-Israel Deaconess Hospital-Needham. This group offers resources and support to Needham residents who are in crisis. Similarly, Public Health plays a leadership role with the Police Department in the Domestic Violence Action Committee, and co-chairs the Local Emergency Planning Committee with the Fire Department.

During the 2020 fiscal year, the Environmental Health Unit successfully transitioned to the new food code and conducted well-received training for all food handlers, while continuing to manage and enforce regulations, permitting, and inspections in food establishments, housing, construction, waste management, hotels, swimming pools, among many areas. Environmental Health has also addressed emerging issues in cannabis, electromagnetic fields, and other concerns.

Needham's Public Health Nursing Program, as the clinical arm of the Public Health Division, continued to provide expertise in communicable diseases, illness and injury prevention, and wellness. One very visible example of the nurses' work was the ongoing public education and response to concerns about Eastern Equine Encephalitis (EEE) during the summer of FY2020. The Public Health nurses offered monthly blood pressure clinics to residents and to Town employees and coordinated the annual flu clinics. The nurses also coordinated a range of assistance programs that help residents apply for assistance with utility bills, food stamp applications, and coping with ongoing issues such as housing problems, hoarding, and home safety. In addition to their annual CPR classes, the Public Health nurses also taught a new Stop the Bleed class in conjunction with the installation of kits throughout Town buildings.

Public Health continued to manage contracts with Riverside Community Home Based Care (to provide services to high risk adults and seniors and for consultation to critical local committees addressing crisis intervention, domestic violence, and substance use) and with INTERFACE, a referral service for people seeking mental health services.

Budget Statement

Veterans Services

Mission:
The mission of the Veterans Services Division is to provide services determined by Massachusetts law including: the administration of benefits for veterans and their families who meet eligibility criteria; the care of veterans' graves, ensuring the burial of indigent veterans and their eligible family members; the ceremonial observance of national and state holidays dedicated to veterans and patriotic purposes; to take such actions as may be necessary to ensure the well-being of Needham's veterans; and to actively pursue available federal benefits for veterans and their families.

Department Information DSR1	
Department	Health & Human Services

Needham is a member of the West Suburban Veterans District, which was established in fiscal year 2010. The District also includes Wellesley, Weston, and Wayland.

On the Horizon:
Long-term challenges including providing support and services to the population of post-9/11 veterans in Needham and meeting the needs of a larger population of pre-9/11 veterans as they continue to age in our community. On the latter front, existing and new collaborations with the Aging Services Division on programs like a Veterans Writing Group have been a valuable arena for engaging veterans.

Budget Statement:
As a member of the West Suburban Veterans District (WSVD), Needham receives dedicated support for the administration of benefits and services to veterans and their families. There is a modest amount of additional funding available in the Veterans Services budget to support other programs and expenses.

Some of the funds spent on veterans benefits and other services are eligible for up to 75% reimbursement from the Commonwealth. The WSVD has not notified officially Needham of its FY 2021 Assessment. This base budget is preliminary, as the WSVD Board will begin its FY2021 budget discussions towards the end of the calendar year.

This budget was developed based on previous year's spending increases and the surplus that was available in FY 2019 from the two primary funding lines (Governmental Charges and Veterans' Benefits) and the projected spending levels in FY 2020. It reflects a modest reduction (less than 1%) in key budget lines.

Veterans Services

Line	Division	Description	Change from FY 2020	Comments
Governmental Charges	Veteran	District Assessment	($290)	Slight reduction in District Assessment costs
Mileage	Veteran	Mileage	Unchanged	
Veterans' Benefits	Veterans	Veterans' Benefits	($389)	Benefits Costs reduced slightly to better reflect anticipated expenses

There are no DSR4 budget requests for the Veterans Services Division.

Accomplishments and Activities:
During the last year there were over 2,400 American flags on the graves of Veterans in St. Mary's and Needham cemeteries. Veterans Services coordinated and operated the Memorial Day and the Veterans Day observations. Veterans and widows of veterans have been assisted in identifying and applying for benefits and services to which they are entitled.

Department Information DSR1	
Department	Health & Human Services
Accomplishments and Activities	

Youth & Family Services Division

Mission:
The mission of Needham Youth & Family Services Division is to provide leadership and a community focus on youth and family issues, and to promote community wellness by: advocating for youth and family interests; developing and implementing quality programs and services; educating and communicating with the public regarding youth and family issues; identifying and addressing youth and family needs; and partnering with other youth and family serving agencies.

Needham Youth & Family Services operates as a mental health resource offering a wide array of confidential clinical and programmatic services to children, adolescents, and families. While the division's services are reaching more people and having a greater impact, it is clear that there is an escalating demand for services, and Youth & Family Services has worked diligently to construct meaningful programs designed to meet these needs.

On the Horizon:
Youth & Family Services has gone through many changes over the past year as many of the programs and services have been assessed and the development of strong community partners has started to develop. Over the next year, the division hopes to accomplish a number of initiatives, in addition to continuing to run past programs that the community has seen as so valuable.

- Constantly assessing the community needs ensuring that the programs are addressing these appropriately and providing community members the necessary amount of support.
- Address the vaping epidemic by creating a task force and increasing community involvement and planning. We have seen a drastic increased need for vaping awareness, prevention, education and cessation as 35% of Needham High School students and 7% of Middle School students report having used electronic vapor products. This number is steadily increasing in Needham and across all MetroWest regions.
- Develop additional programs to address areas of depression, anxiety, suicidality as surveys have recently showed there is such a high need for this
- Continue to train Youth Mental Health First Aid to all adult who have any contact with youth so that interventions can be implemented as early as possible. If the Town can be the forefront of have a high percentage of residents and staff trained, mental health crises will decrease, and everyone will be more prepared to intervene when necessary. This effort was initially supported by a grant, and this year is being supported by High Rock Church by organizing a 5K to build awareness and funds for this program.
- As families and youth in crisis are increasing in frequency and intensity, additional crisis clinical supports are being implemented.
- We are working on building relationships across other Town divisions – we have started running programs with the COA, school system and SPAN, work on crisis intervention with Police, Fire and Rescue and Public Health. In addition, the division is collaborating closely with a number of community organizations such as the Housing Authority, the YMCA, the

Department Information DSR1	
Department	Health & Human Services

Walker School, the clergy, the hospitals, Early Intervention and many others.

Due to the increased clinical responsibilities necessary to address the needs of the community, constant training and clinical consultation is necessary for all staff. Not only does this allow for the staff to stay current with successful therapeutic techniques and interventions, it also keeps them stimulated and allows for professional growth. Staff members who feel like they are being professionally supported are more likely to have longevity and higher efficiency which will further benefit the community.

Budget Statement:

The Youth & Family Services Division's base budget request includes modest cost increases to replenish/refurbish the Division's stock of therapeutic games and supplies, add a hotspot to the YFS Division Director's work phone, and to support the costs for program supplies, materials, and refreshments for programs aimed at low-income families. This is part of the Division's effort to expand the reach of its services and programs.

Youth & Family Services

Line	Div.	Description	Change from FY2020	Comments
Postage	Y&FS		Unchanged	
Wireless Communication	Y&FS	Cell phones	$275	Increased cost for conversion to smart phone and an expanded data plan (Hotspot) for the Director.
Printing and Mailing	Y&FS		Unchanged	
Recreation	Y&FS		Unchanged	
Office Supplies	Y&FS		Unchanged	
Food & Services Supplies	Y&FS	Food supplies for programs	$1,000	Increased costs for materials and access programs, including programs targeted for low income families
Other Supplies and Equipment	Y&FS	Publicity materials, resource cards therapeutic games and activities.	$500	The cost for publication and advertising has increased and the budget has not kept up with these increased costs. This would enhance the level of outreach and additional therapeutic activities.
Conf Out of State	Y&FS		Unchanged	
Dues and Memberships	Y&FS		Unchanged	

Department Information DSR1	
Department	Health & Human Services

There are no DSR4 budget requests for Youth & Family Services within the Health & Human Services Department budget. A request for a total of $4,000 was submitted as part of the Information Technology budget submission, which would support two small software applications for YFS – a registration program and a mental health case notes program.

Grants and Donations:
The Youth & Family Services Division received a $20,000 grant from the MetroWest Health Foundation to support the implementation of Mental Health First Aid trainings in the community. Additionally, the Division also received small community donations from residents and modest size donations from businesses and community partners like the Needham Community Council. In FY 2019, donations totaled $1,895.

Volunteers:
The Youth & Family Services Division engages youth in community-service and give-back activities throughout the year. The Peer Tutor program provides approximately 1,200 hours of service from more than three dozen high-school age tutors. The VIP program provides more than 300 hours of peer support, and Project VAN (Volunteers Around Needham) expanded its offerings and had service projects throughout the community over April school vacation in addition to the summer vacation.

Accomplishments and Activities:
The services provided by the division include direct clinical services to youth and families, educational outreach and support for families and youth, and involvement in community-based initiatives, groups and trainings. During the 2019 fiscal year, the Division provided several sessions of training for Town staff and for residents about Youth Mental Health First Aid.

Clinical service continues to be a strength of the division with the staff providing hundreds of clinical hours to Needham youth and their families. An effort to decrease the waitlist has paid off as there has been a significant drop in wait-time for clients. Other services have included school-based projects, wellness and prevention services, and babysitting training.

Youth & Family staff members have been active members of several town-wide committees addressing substance use prevention, domestic violence, as well as groups of peers from youth and family services in other communities.

Other accomplishments include:

- Youth and Family Services offers almost 1000 hours of clinical services each year to youth and families, in addition to providing crisis management when needed. Also imbedded in these clinical hours, the division offers Substance Abuse Awareness and a Behavior Intervention Program, both which have a specific curriculum to best intervene with youth struggling with substance use or behavioral difficulties.
- Over the past decade, the Needham community has grappled with critical youth issues such as loss, self-injury, depression, and anxiety. Youth & Family Services has responded by outreaching to youth, parents, and families in a variety of ways including individual meetings, group sessions, and the distribution of informational materials. In addition, the department was actively involved with groups such as the Needham Coalition for Suicide Prevention and the Substance Abuse Prevention Alliance of Needham (SPAN). A

Department Information DSR1	
Department	Health & Human Services

significant number of staff hours were devoted to creating materials, meeting with community leaders and to directly assisting youth and/or their parents with a crisis. In February of 2018, there was a tragedy during which 2 High School students were killed after being hit by a car while crossing the street in a crosswalk. Youth & Family Services responded to this event and at the year anniversary, providing a significant amount of time and support to the students and the school. The division is also dedicating a tremendous number of hours teaching Youth Mental Health First Aid.

- We engaged youth in wellness/prevention services such as the Peer Tutor Program (that provided over 1,200 hours of support to youth in the past year); VIP (that provided about 300 hours of support to youth in the past year; Needham Unplugged (in which hundreds of families participated); Project VAN which expanded this past year, offering services to the community during April break in addition to all of the summer projects; we trained 30 new babysitters through our Babysitting Training Seminar and Make A Statement Day (in which we had over 1,000 participated).
- We continue to honor an adult in our community with the Patrick and Patricia Forde Good Person Memorial Award to acknowledge the contributions the recipient has made to the lives of youth in the Needham Community
- We play a leadership role on the Needham Youth Resource Network by convening a large group of youth serving agency providers together each month to tackle the difficult circumstances and situations that some Needham youth and their families face. In addition, the division plays a role in CCIT (Community Crisis Intervention Team) which also discusses individuals and families in crisis and how the town can best support these individuals.

Youth and Family Services provides a number of educational workshops in the schools, being part of the entire 6th, 7th, 8th and 9th grade. The workshops that are being presenting included information about safely surfing the internet, sexual harassment, the relation between social media, body image and self-esteem, and teen dating violence.

Spending Request Recap

Description	Base Request DSR2	Additional Request DSR4	Total (DSR2 + DSR4)
a) Salary and Wages	$1,734,921	$278,608	$2,013,529
b) Expenses	$392,885	$47,155	$440,040
c) Capital			
d)			
e)			
f)			
g) Total DSR2 & DSR4 Request (a through f)	$2,127,806	$325,763	$2,453,569

V2021

Department Expenditure Detail DSR2										
Department				Health & Human Services						
Object				Description						Amount
DSR2A										
Permanent Personnel	Last Year (FY2019)			Current Year (FY2020)			Next Year (FY2021)			
	FT Head Count	PT Head Count	Full Time Equivalent (FTE)	FT Head Count	PT Head Count	Full Time Equivalent (FTE)	FT Head Count	PT Head Count	Full Time Equivalent (FTE)	
	15	6	17.66	15	4	17.14	15	4	17.67	
Non-Budget Personnel: Will the department rely on grant/revolving fund positions to provide services?						Yes	No	FT Head Count	PT Head Count	
						X		2	2	
Union Positions:	BCTIA		Fire A		Fire C	X	ITWA		NIPEA		Police		Police Superior		NA	
1. Salary and Wage Permanent Positions.										
a.	PRD1 Salary and Wages Base									$1,419,858
b.	PRD1 Differentials (Conditions, Requirements, Shifts)									
c.	PRD1 Education									
d.	PRD1 Extra Holiday									
e.	PRD1 Longevity									$5,149
f.	PRD1 Snow Program									
g.	PRD1 Uniform									
h.	PRD1 Other Compensation									
i.	PRD1 Budget Adjustments									$5,481
									PRD1 Sub Total	
J	DSR3 Other Compensation									
									Sub Total 1	$1,430,488
2. Salary and Wage Seasonal & Temporary Positions (Itemized Below)										
a.	Aging Services – Recording Secretary at $2,960 plus DSR3 costs listed below									$2,960
b.	Public Health – Temp office coverage at $3,500, Recording Secretary at $2,960, After hours inspections at $14,110, and Program Support Assistants at $36,525, also includes the date gathering, plus DSR3 costs listed below									$57,095
c.	Veterans – Care of Graves at $2,500 and Seasonal Assistance at $500									$3,000
d.	Youth Services – Part-time Social Workers at $40,730 and Recording Secretary at $2,960									$43,690
e.	DSR3 Total									$174,088
									Sub Total 2	$280,833
3. Salary and Wage Overtime (Itemized Below)										
a.	Scheduled Overtime (contractually obligated)									$3,000
b.	Training and Development									$0
c.										
d.										
e.	DSR3 Total									
									Sub Total 3	$3,000
4. Other Salary and Wage Expenses – (Itemized Below)										
a.	Incentive Programs									
b.	Pay In Lieu of Accrued Leave									$12,100
c.	Program Stipend									$8,500
d.	Tuition Reimbursement									
e.	Working Out of Grade									

Department Expenditure Detail DSR2		
Department	Health & Human Services	
f. DSR3 Other Compensation		
	Sub Total 4	$20,600
5. Total Salary and Wages (1+2+3+4)		$1,734,921
DSR2B		
Object	Description	Amount
Energy (521x)		
Repairs & Maintenance Services (524x – 525x)	5245 – Maintenance @ $500) Maintenance and Calibrations on Monitoring Equipment for Environmental Health Inspections needed every other year. This is an on-year for equipment calibration. (PH)	500
Rental & Leases (527X)		
Other Property Related Services (529x)	5290 – Pest Control @ $500 (PH) Veterans' Event $1,400 (Vet)	1,900
Professional & Technical Services (530x – 531x)	5300 – Professional & Technical @ $28,000 for data surveys, technical consultant (PH) 5300 – Professional & Technical @ $8,500 for group activities (Youth) 5300 – Professional & Technical @ $8,000 for group activities (Aging) 5303 – Seminars & Trainings @ $2,000 (PH) 5303 - Seminars & Trainings @ $2,000 (Aging) 5303 – Seminars & Training @ $1,800 (Youth) 5309-Licensed Professional Services @ $87,500 (Riverside, Fuss & O'Neil, etc.) (PH); 5311 – Advertising of flu clinics, public health forums, healthy notes @ $2,500 (PH)	140,300
Communications (534x)	5340 – Graphic Design @ $2,000 to support the design of community education materials and public health awareness campaigns (PH)	28,150

Department Expenditure Detail DSR2		
Department	Health & Human Services	
	5341 – Postage @ $1,500 for mailing permits and licenses and renewal applications (PH) Postage @ $2,500 (Aging) Postage @ $100 (Vet) Postage @ $1,000 Youth 5344 – Wireless Communications @ $4,925 covering costs of smart phones for Director, two Public Health Nurses, Assistant Director, Environmental Health Agent, Substance Use Prevention Specialists, smart phone for Traveling Meals Program Coordinator, as well as three IPADS for Environmental Health (PH) Wireless Communications @ $4,250 covering costs of smart phones and data plan for Director and one of two van drivers (Aging) Wireless Communications @ $1,975 covering costs of smart phone and data plan for Director (Youth) 5345 – Mailing, Printing, and Photocopying @ $3,250 for both internal (photocopier) and external printing (includes copying of inspection forms, business cards, and posters) (PH) Mailing, Printing, and Photocopying @ $2,250 for external printing, includes printing of certain program flyers or materials that cannot be produced "in-house" as well as business cards (Aging) Mailing, Printing, and Photocopying @ $400 for external printing of brochures and program flyers or materials that cannot be produced "in-house" as well as business cards (Youth) 5347 - Legal Notices @$4,000 for mandated posting of Board of Health	

Department Expenditure Detail DSR2		
Department	Health & Human Services	
	regulations...everytime the BOH adopts a new regulation or revises an existing regulation there is a two-week public notice period pre-hearing and at least a one week posting period post hearing, which costs at least $657 to post in the Needham Times and Hometown Weekly (PH)	
Recreational & Cultural Services (535x)	Memorial Day Luncheon $500 (Vet) Program instructors or vendors @ $28,000 (Aging)	28,500
Other Purchased Services (538x)	5380 – Nuisance Abatement @ $1,000 (PH)	1,000
Office Supplies (542x)	5420 – Office Supplies and equipment for 6 full time, 3 part-time regular, and 10 part-time/per diem employees, as well as for three committees – Domestic Violence Action Committee, Coalition for Suicide Prevention, and Local Emergency Planning Committee @ $4,000 (PH) Supplies and equipment necessary for the program and service delivery such as but not limited to paper, pens, files, labels @ $3,000 (Aging) To purchase basic office supplies --- paper, pens, folders, mailers, etc @ $800 (Youth) Office Supplies @ $100 (Vet)	7,900
Building & Equipment Supplies (543x)		
Custodial Supplies (545x)		
Grounds Keeping Supplies (546x)		
Vehicular Supplies (548x)	Parts such as tires, brakes, batteries, inspection stickers for Aging Vans @ $2,750 (Aging)	2,750
Gasoline and Diesel Fuel (5481)	Gas and oil for the Aging Vans @ $9,500 (Aging)	9,500
Food and Service Supplies (549x)	Supplies related to program operation @ $300 Aging and @ $2,200 Youth	2,500
Medical Supplies (550x)	5500 – Medical Supplies and health materials, largely for public health nursing purposes @ $1,750 (PH) Supplies related to medical purposes	1,900

Department Expenditure Detail DSR2		
Department	Health & Human Services	
	such as first aid kits @ $150 (Aging)	
Public Works Supplies (553x)		
Other Supplies & Equipment (558x)	5580 – Other Supplies & Equipment @ $7,175 Other Supplies & Equipment @ $2,175 for Wellness Supplies (examples include Stress Balls, Hand Sanitizer Kits) and unexpected expenses like the purchase of Sharps Disposal Containers to be provided free of charge for residents with limited resources and the purchase of water bottles as gift to sports coaches that attended a concussion training offered by the Public Health Department. (PH) Flags and Holders @ $4,000 (Vet) For a variety of expenses including program materials, off-site printing, etc. To purchase books, manuals, and literature regarding youth/family issues and treatment @ $3,250 (Youth) Special Event and Public Recognition Expenses @ $1,750 (Aging)	11,175
Governmental Charges (569x)	5690 – Governmental Charges for the annual cost for Environmental Health Agent licensure for MA Division of Professional Licensure for Environmental Health Agent and for Public Health Specialist @ $200 (PH) West Suburban Veterans' District Assessment @ $82,500 (Vet) Licensure for Social Workers @ $800 (Youth)	83,500
Travel & Mileage (571x – 572x)	5710 – In-State Travel Expenses @ $2,500 for in-state registration fees (PH) In-State Travel Expenses @ $1,000 for in-state registration fees (Aging) In-State Travel Expenses @ $1,500 for	19,500

Department Expenditure Detail DSR2		
Department	Health & Human Services	
	in-state registration fees (Youth) 5711 – Mileage @ $3,500 for 6 full time, 3 part-time regular, and 10 part-time/per diem employees (PH) Mileage @ $1,300 (Youth) Mileage @ $1,100 (Aging) Mileage @ $100 (Vet) 5720 – Out-of-State Travel Expenses @ $3,000 for the cost of attendance for one staff member at regional or national event such as training (Youth) Out-of-State Travel Expenses @ $5,500 for the cost of attendance for one staff member at regional or national events and trainings such as National Association of County and City Health Officials Annual Meeting or the CADCA Leadership Institute in Washington D.C (PH)	
Dues & Subscriptions (573X)	5730 – Dues & Subscriptions for Departmental and staff membership in professional associations and organizations, including the MA Environmental Health Association, the National Association of Local Boards of Health, and the Community Anti-Drug Coalitions of America @ $2,750 (PH) Professional Subscriptions such as National Association of Social Workers $1,500 (Aging) Veterans' Association @ $60 (Vet) Professional Subscriptions @ $1,000 (Youth)	5,310
Other Expenses (574 X – 579x)	5740 – $500 for Transponder charges for COA Vans (Aging)	48,500

Department Expenditure Detail DSR2					
Department	Health & Human Services				
	Veterans' Benefits @ $48,000 (Vets)				
6. Total Expenses					392,885
DSR2C					
Capital Equipment Replacement (587X)					0
7. Total Operating Budget Capital					0
8. Total Base Request (Line 5 + Line 6 + Line 7)					2,127,806
Does the Department depend on any Federal or State grants to provide services?	YES	X	NO		
Did the Department submit any requests for FY2021 for the replacement or upgrade of technology or software to the Information Technology Center?	YES	X	NO		
Did the Department submit any requests for FY2021 to the Department of Public Works/Building Maintenance division to improve or upgrade a public building or facility?	YES		NO	X	
					V2021

Department Personnel Supplement DSR3						
Department	Health & Human Services					
	Description	Amount	Amount Reflected DSR2A Section			
			1	2	3	4
1	Kitchen Assistant/Building Monitor at $19,140	$19,140		X		
2	Program Support Assistant III (15.0 hrs - Saturdays)	$28,710		X		
3	Program Support Assistant II (10.0 hrs - Evenings)	$11,670		X		
4	Van Drivers (two at 19.5 hrs, one at 7.5 hrs)	$48,360		X		
5	Per Diem and Substitute Nurses	$55,840		X		
6	Traveling Meals Program Summer Drivers	$10,368		X		
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
I	Total	$174,088				
	Sections					
	Amount Reported Under DSR2A Section 1					
	Amount Reported Under DSR2A Section 2					
	Amount Reported Under DSR2A Section 3					
	Amount Reported Under DSR2A Section 4					
II	Total					
						V2021

Performance Improvement Funding Request DSR4				
Department	Health & Human Services/ Public Health Division			
Title	Substance Prevention Alliance of Needham (SPAN)		Priority	1

DSR4				
Expenditure Classification	FTE	Frequency Recurring Amount (A)	One Time Only Amount (B)	Total Amount (A + B)
1. Salary and Wage	1.5	$102,845		$102,845
2. Expense		$22,155		$22,155
3. Operating Capital				
4. Department Total (1+2+3)		$125,000		$125,000
5. Other Costs		$36,514		$36,514
6. Grand Total (4+5)		$161,514		$161,514

Budgetary Considerations	Yes	No
Does this request address a goal of the Select Board or other Board or Committee?	X	
If yes, which Board or Committee?	Board of Health	
Has this request been submitted in the last three fiscal years and not funded?	X	
Are there additional costs to implement this request (except for future year operating costs which would be ongoing if funding is approved) which are NOT included in this request?		X
Will the assistance of another department be required to provide support (personnel or financial) for this request to be implemented?		X
Will additional staff (beyond the staff requested in this DSR4 submission) be required if the request is approved?		X
Does the request support activities which produce revenue for the Town?		X
If the request is not approved, will current Town revenues be negatively impacted?		X
Is there an increased exposure for the Town if the request is not approved?	X	
Is specialized training or licensing required (beyond the initial purchase)?		X
Does this request address a documented health or safety issue?	X	

All "YES" responses above must be explained in the narrative below

Description and Explanation

Needham youth face many challenges related to substance use which may impact their health and well-being. The 2018 MetroWest Adolescent Health Survey results show:

- Electronic vaping has increased from 16% in 2016 to 23% in 2018.
- Marijuana use has increased. One fifth of Needham youth reported current marijuana use in 2018, compared to 16% in 2016.
- Since the first administration of the survey in 2006, results have consistently shown that the prevalence of marijuana use increases over the high school years.
- Self-reported binge drinking remains a problem. The percentage of binge drinking has remained at 19% from 2016 to 2018.

Mission and Current State

The Substance Prevention Alliance of Needham (SPAN) incorporates a collaborative, community-based, and data-driven approach to reduce alcohol, marijuana, and other drug use among Needham youth. SPAN offers Needham residents education, support, and resources to

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Substance Prevention Alliance of Needham (SPAN)	Priority	1

address substance use and misuse among youth.

For the past ten years, SPAN has received funding from the US Substance Abuse and Mental Health Services Administration (SAMHSA) under its Drug Free Communities grant program. SPAN received $125,000 in FY2020. When the grant expires in September 2020, Needham will have received a total of $1.25M over a decade. However, the termination of that grant will leave the Town without a dedicated source of funding to support youth substance use prevention. Funding for SPAN is essential in order to continue addressing substance use among Needham youth.

Prior Activities and Accomplishments
SPAN has led many successful initiatives to address youth substance use in Needham. Data from the adolescent survey includes:

- Alcohol use among Needham High School students declined substantially: from 2006 to 2018, reported lifetime use decreased from 66% to 49%; current use from 28% to 19%.
- Lifetime prescription drug misuse has decreased from 11% in 2006 to 4% in 2018.

SPAN has several projects that have influenced the decreases in youth substance use rates:

- **Education and Awareness**
  - SPAN conducts educational forums along and other activities to raise awareness about youth substance use. Topics have included vaping, underage access to alcohol, marijuana legalization, and opioids.
  - An average of 100 community members attended forums in 2018 and 2019.
- **Policy**
  - Policy and enforcement efforts have included alcohol licensee compliance checks with the Needham Police Department. These visits ensure licensees are following state and local regulations regarding underage alcohol service.
  - SPAN supports a diversion program which helps Needham youth facing juvenile charges avoid prosecution.
- **Programs**
  - Medication Disposal: SPAN works with Needham Police to host semiannual Drug Take Back Days. SPAN also worked with Beth Israel Deaconess-Needham hospital to add a medication disposal kiosk.
  - Students Advocating Life Without Substance Abuse (SALSA): SPAN supports a club at Needham High School where high school students teach refusal skills and other prevention strategies to middle school students. Since its inception seven years ago, over 3,000 eighth grade students have participated in the program.
  - 5th Quarter: For over a decade, SPAN has hosted this popular social program at the end of home football games in order to provide a healthy, fun, and substance-free environment for the students. Each event has attracted 200 to 300 students.
  - Hidden in Plain Site: An interactive display of a teenager's bedroom which contains common items that can hide substances shows parents how to spot signs of risky

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Substance Prevention Alliance of Needham (SPAN)	Priority	1

behavior in their teens.

Elected Board Goals

Continuation of SPAN will achieve the Board of Health's FY19- FY20 Substance Use Prevention Goal #1: *Identify and acquire stable local funding to support Needham's substance use prevention activities and the Substance Prevention Alliance of Needham (SPAN) in light of the expiration of a 10-year federal Drug Free Communities grant in 2020.*

Budget

SPAN plays an essential role in preventing and reducing youth substance use and in supporting Needham families. SPAN has contributed to decreases in youth use of alcohol and prescription drugs. To ensure continuation of this important work, the Public Health Division requests funding for staffing and associated expenses.

Staffing: $105,000 is requested for a full-time Program Director and a part-time Program Coordinator.

Position	Grade Level	Annual Salary/Rate
Senior Substance Use Prevention Program Coordinator	GE - 20 scale	$74,568
Project Coordinator	Program Support Asst. III	$28,277
Total		**$102,845**

Description:

The Senior Substance Use Prevention Program Coordinator manages all aspects of the substance prevention work, including data collection, project coordination, community relations, membership recruitment and engagement. The Project Coordinator supports community initiatives including coalition communications, research, mobilizing volunteers, and coordinating coalition logistics.

Expenses: $22,155 is requested to support evaluation and data collection, office supplies, program marketing, professional development and travel.

Expenses	FY 2021
Program evaluation, reporting, and data collection	$8,000
Educational materials and publicity	$8,000
Office and Other Supplies	$1,000
Wireless Communications	$750
Community education; staff training and development	$4,155
Total	**$22,155**

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Substance Prevention Alliance of Needham (SPAN)	Priority	1

Description:

- Program evaluation will be conducted with a consultant and will include analyzing program efforts and outcomes, analyzing data from the adolescent survey, and generating reports. A consultant will also be employed to implement and evaluate a survey of parents of children in 6th through 12th grades as a complement to the student survey.
- Educational material and publicity costs will include graphic design services and printing of brochures, flyers, and website updates.
- Community education and staff training includes: membership in the Community Anti-Drug Coalitions of America; training and development of SPAN volunteers and staff, especially in evidenced-based approaches to youth substance use prevention.

Scope of substance prevention work:

Over the years SPAN has worked to keep its cost low while providing comprehensive, high quality programs for Needham.

SPAN would like to continue offering the safe, substance free social events (the 5th Quarter) for teens, and the community education awareness events that address the risks of youth substance use along with strategies to prevent such use.

With the end of the Drug Free Communities grant, there is some opportunity to expand SPAN's scope beyond restrictions imposed by the Federal government. The Public Health Division looks forward to addressing substance prevention work beyond youth to include adults during their college and working years, as well as older adults. The Public Health Division will continue to pursue grant opportunities, fundraising, and community support through in-kind services. SPAN will also leverage resources through partnerships with other Town departments and community partners.

V2021

Performance Improvement Funding Request Supplement DSR4S											
Position Title	Senior Substance Use Prevention Program Coordinator								Priority	1	
Classification	X	FT		PT		Seasonal					
Part Time /Seasonal	Hours Per Week					Number of Weeks Per Year					
Compensation Detail											
Base Rate	$74,568										
Other											
Other											
Other											
Other											
Other											
Other											
Other											
Salary and Wage Total										$74,568	
If Funded the Position Will Require the Following Additional Items											
Description	No	Yes	Explain					Start Up Cost $		Annual Recurring Cost $	
Workstation	X		Workstation already present, current grant-funded position.								
Vehicle	X										
Computer	X		Ibid.								
Software	X		Ibid.								
Mobile Communication Device	X		Ibid.								
Uniform	X										
Tools	X										
Equipment	X										
Other											
Other											
Other											
Totals											
Estimated Annual Benefit Cost										$34,339	
Description and Explanation											

The Senior Substance Use Prevention Program Coordinator manages the substance use prevention program which is currently funded by the Drug Free Communities (DFC) grant. This program, which has been grant-funded for the past 10 years, provides substance education to Needham youth and parents with emphasis on prevention of substance use among youth. With the grant expiring, Town funding is needed to continue the important work of the Substance Alliance Prevention of Needham (SPAN).

Substance use prevention is an ongoing need that responds to changing community conditions; funding this position will allow SPAN to continue the important ongoing work (such as, Drug Take Back Day, SALSA and 5th Quarter events) and to be responsive to emerging needs.

Performance Improvement Funding Request Supplement DSR4S			
Position Title	Senior Substance Use Prevention Program Coordinator	Priority	1
If this budget request is approved, this currently grant-funded position would continue without interruption. The current occupant of the grant-funded position already has a workstation and other startup items noted above.			
V2021			

Performance Improvement Funding Request Supplement DSR4S										
Position Title	Substance Use Prevention Program Support (PSA III)							Priority	1	
Classification		FT	X	PT		Seasonal				
Part Time /Seasonal	Hours Per Week		19.5		Number of Weeks Per Year			52		
Compensation Detail										
Base Rate	$28,277				$27.78 x 19.5 hours per week x 52.2 weeks					
Other										
Other										
Other										
Other										
Other										
Other										
Other										
Salary and Wage Total					$28,277					
If Funded the Position Will Require the Following Additional Items										
Description	No	Yes	Explain		Start Up Cost $			Annual Recurring Cost $		
Workstation	X		Workstation already present, current grant-funded position.							
Vehicle	X									
Computer	X		Ibid.							
Software	X		Ibid.							
Mobile Communication Device	X									
Uniform	X									
Tools	X									
Equipment	X									
Other										
Other										
Other										
Totals										
Estimated Annual Benefit Cost								$2,175		
Description and Explanation										
This part-time position works on youth substance use prevention and is supervised by the Senior Substance Use Prevention Program Coordinator. This position supports the efforts of SPAN and the Sr. Substance Use Prevention Program Coordinator, and coordinates focus groups, recruits community volunteers, and coordinates program evaluation and reporting. If this budget request is approved, this currently grant-funded position would continue without interruption. The current occupant of the grant-funded position already has a workstation and other startup items.										
V2021										

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

DSR4				
Expenditure Classification	FTE	Frequency Recurring Amount (A)	One Time Only Amount (B)	Total Amount (A + B)
1. Salary and Wage	1.0	$48,635		$48,635
2. Expense		$25,000		$25,000
3. Operating Capital				
4. Department Total (1+2+3)		$73,635		$73,635
5. Other Costs		$4,935		$4,935
6. Grand Total (4+5)		$78,570		$78,570

Budgetary Considerations	Yes	No
Does this request address a goal of the Select Board or other Board or Committee?	X	
If yes, which Board or Committee?	Council on Aging, Select Board, Board of Health	
Has this request been submitted in the last three fiscal years and not funded?	X	
Are there additional costs to implement this request (except for future year operating costs which would be ongoing if funding is approved) which are NOT included in this request?		X
Will the assistance of another department be required to provide support (personnel or financial) for this request to be implemented?		X
Will additional staff (beyond the staff requested in this DSR4 submission) be required if the request is approved?		X
Does the request support activities which produce revenue for the Town?		X
If the request is not approved, will current Town revenues be negatively impacted?		X
Is there an increased exposure for the Town if the request is not approved?	X	
Is specialized training or licensing required (beyond the initial purchase)?		X
Does this request address a documented health or safety issue?	X	

All "YES" responses above must be explained in the narrative below

Description and Explanation

This is the second year that the Health & Human Services Department has submitted a budget request to expand the programs, services, and hours of operation at the Center at the Heights (CATH). Last year, just over 50% of the requested funding was approved.

This year's request was revised in light of that funding support and incorporates additional staff insight and input from the Council on Aging board members on the need for a continued expansion of programs, services, and hours. It is anticipated that this will be the second year of a combined three year request.

In 2013 the Aging Services Division moved from a sub-standard space in the basement of the Stephen Palmer Building into the Center at the Heights (CATH), more than tripling the available space for programs and services. The move into a much larger space did not, however, come with additional staffing or financial resources, and in the interim the Aging Services Division staff has endeavored to expand programs and services to keep up with the increased demands of Needham's aging population.

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

Usage of the Center at the Heights has increased as the Aging Services Division expands its classes, trainings, events, and services. The total count of daily guests is a rough measure of how active and vibrant CATH is, and from FY 2018 to FY 2019 the average number of daily guests increased by 29% and totaling 180 daily guests. The first three months of FY 2020 have seen slower growth, but the count of daily guests has continued to increase by a modest 5% and is now 190 guests per day.

Some highlights which show the continued progress in programmatic activity are:

- The Fitness Center saw a 32.1% increase in participant hours between FY 2018 and FY 2019, increasing from an average of 2011 hours per month to 2,656 hours per month;
- Participation in Social Events like cooking classes, the Halloween Party, and the mocktail Sing-Alongs increased by more than 18% between FY 2018 and FY 2019, totaling more than 129,000 participant hours in the most recent fiscal year;
- Participant hours spent watching classic movies dropped 12% between FY 2018 and FY 2019, representing a decrease of more than 330 participant hours;1 and
- Overall participant hours across all program categories increased by 12.45% between FY 2018 and FY 2019, representing an additional 21,000+ hours that seniors spent engaged in programs or using the services at CATH.

Social work, client support, and mental health services have also expanded significantly over the last fiscal year. Case management services include financial support, resource gathering, referrals, and home visits for seniors in need, and the hours committed to those functions increased 39% and represented 2,634 hours of direct client service time. Part of the reason for this increase was the Aging Services Division conducted additional outreach to, and provided additional support for, the families of seniors and other residents in need (all-age) for which there are not dedicated Town resources.

Group support includes caregiver support groups, respite support groups (which includes both the support group for the caregiver as well as the care and supervision of the client in need), and other classes such as grief support. The demand for these services increased markedly from FY 2018 to FY 2019, increasing from an average of just under three hours per month in FY 2018 to 10 hours per month in FY 2019.

The Aging Services clinicians are involved in CCIT, or Community Crisis Intervention Team. CCIT is multi-disciplinary group of Town and state agencies along with community partners. CCIT meets monthly to address the highest need residents or those residents experiencing crisis. Examples of a resident in crisis might include an individual or family who has experience domestic or intimate partner violence, or a family dealing with the substance use of a loved one. As the CCIT has become better established in the Needham community, additional referrals have been provided to the Needham Police Department and to the clinical team at the Aging Services Division. In many instances, a CCIT referral to the clinical team opens the door

1 It may seem odd to highlight a decrease in hours, but the fact that fewer residents attended classic and contemporary movie screenings, when combined with the sharp increase in overall participant hours, means that there are additional programs and more compelling programs that are pulling seniors away from the TV/movies.

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

to a range of supports and services including the aforementioned support groups, state-mandated treatments (i.e. sections), legal assistance, and others.

The demand for transportation services has grown in-line with the expansion of programs and social work services. As the Aging Services Division has increased the number of programs offered at CATH, the Division has expanded the times when programs are offered to include evenings and select Saturdays as part of a pilot program, and has offered a number of new transportation options to make sure those programs are accessible to the broadest possible group of Needham's seniors.

As a result of the strong emphasis on programming, transportation has continued to increase. The total number of rides provided increased 8% between FY 2018 and FY 2019. The total number of clients served by the transportation program increased 35%; 263 individual residents received transportation assistance from the Aging Services Division in FY 2019. There was also a 76% increase in the number of clients participating in different transportation activities—this is one of the Aging Services Division's most important metrics and it indicates that more of the seniors are relying upon our transportation program for rides and are expanding the number and types of programs in which they participate.2

The increased demand for programs, support services, and transportation should come as no surprise, given that Needham has one of the highest populations of adults age 60 and over in the MetroWest region. According to demographic information maintained by the Needham Town Clerk, in 2015 fully 24.4% of the town's population (a total of 7,455 residents) are age 60 and above; and this age group represents a great and growing proportion3 of all Needhamites. The number of 60-plus Needham residents has increased by more than 700 over the past two years alone, and that age cohort is projected to grow by 14.9% in Needham over the next five years according to the McCormack School at UMass Boston. By 2020, residents age 60 and older will represent 27.1% of the Town's residents, and a decade later will hit 31%. After two decades of growth that aligned with the Town's overall population trend, by 2010 Needham's senior population began growing both absolutely and in relation to the Town's overall growth rate.

Budget

This funding request represents an opportunity for continued expansion of the programs and services provided by the Aging Services Division. This expansion would be supported by significant additional funding for the Fitness Program at the Center at the Heights and by the addition of two new, part-time positions: a program assistant with primary responsibility for designing and producing the Aging Services Division's *Compass* newsletter, and an additional Van Driver to support the continued expansion of evening and weekend hours at CATH.

2 For example, if a senior receives daily transportation to the Center at the Heights he or she is counted amongst the unique clients served. But if that senior then decides to participate in our grocery shopping program, he or she is counted once per activity. This measures shows seniors, especially seniors who rely upon transportation, are taking advantage of more of the rides and programs made available to them.

3 McCormack Graduate School of Policy and Global Studies at the University of Massachusetts Boston and its Center for Social and Demographic Research on Aging. Demographic fact sheet available at: https://www.umb.edu/editor_uploads/images/centers_institutes/center_social_demo_research_aging/Dem_Brief_2.pdf And Dataset available at: https://www.umb.edu/editor_uploads/images/centers_institutes/center_social_demo_research_aging/Projections_by_MA_town_2010_2030_1.xlsx

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

Program Planning and Design of The Compass: this request would fund one part-time staff member in the Aging Services Division. A 19.5 hour per week Program Support Assistant III would be responsible for planning, developing, and scheduling a range of programs and would have primary responsibility for developing and designing *The Compass*, the Aging Services Division's newsletter. At 32 pages, *The Compass* is tied for the biggest senior center newsletter in the state, which is a reflection of the wealth of programs, classes and services which are offered at CATH. Thanks for a unique arrangement with LPI Publisher, there is no cost to Needham for printing *The Compass* and the total print run each month has increased substantially.

That agreement saved the Aging Services Division and the Friends of the Center at the Heights (which provided financial support for those costs not covered by the Town) $4,000 per issue for a total of $24,000 during FY 2019. It also has allowed for *The Compass* to be mailed to every address in Needham where a senior resides, greatly expanding the reach of The Compass and encouraging new seniors to come to CATH and join in the community there.4 While the Aging Services Division has increased (and will continue to increase) its use of social media and electronic advertising, a printed brochure is still the most effective way to reach the senior population in Needham.

The tradeoff for the larger size of The Compass and for its expanded reach5 is that the Aging Services Division is now responsible for the editing, formatting, and graphic design of each issue. And thus the need for a dedicated staff member to support that important work. The Program Support Assistant III would be working 19.5 hours per week at $27.78 per hour for an annualized salary of $28,277. The benefits costs for a 19.5 hr/week Program Support Assistant III total $2,175.

The *Senior Transportation* budget request exists to provide Needham's seniors with the ability to participate in the full range of the Aging Services Division's programs in the evenings and on weekends. The additional part-time Van Driver funded in FY 2020 has allowed for greater access to transportation in the late afternoons and early evenings, and additional funding would support transportation for participants in the expanded evening programs (on Mondays through Thursdays) and for the transition from one Saturday a month to three Saturdays a month beginning in August 2020. If approved, this would support an additional Van Driver working 19.5 hours per week at a rate of $20.00 per hour for an annualized salary cost of $20,358. The benefits costs for a 19.5 hr/week Van Driver total $2,760.

The *Fitness Program and Activities* budget request would bridge the gap between the resources needed to operate the Fitness Program at CATH and the amount of Town funding provided. The total cost to operate the CATH Fitness Program is about $95,000 in FY 2020 and will increase to just over $110,000 per year for FY 2021 and 2022 based on the winning bid in the three-year Request for Proposals (RFP), conducted in October 2019. Those costs are based upon the expanded Fitness Program, including weekday evenings and Saturday mornings, that is the

4 *The Compass* is now received in 5,500 approximately households, where it previously was only mailed to 800 addresses.
5 That is a nearly six-fold increase (587.5%).

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

high priority of the Council on Aging. The resources available to meet those costs have been assembled from a variety of sources. They are:

- Effective in the FY 2020 budget, the Town approved $26,000 to support the costs of the Fitness Program;
- Monthly charges for residents provide revenue of approximately $18,000 per year thanks to the increase in the monthly fees during FY 2019;
- Small donations from residents and local businesses have historically been modest but are slowing increasing;
- The Friends of the CATH provided approximately $50,000 in FY 2019 and have committed to a further $35,0006 in FY 2020 and $20,000 in FY 2021. The Friends will have exhausted their resources by that point and have indicated that no further funding for the Fitness Program will be provided; and
- Determination of Need money focused upon senior health and wellness from Beth Israel Deaconess-Needham. The funding available to support the Fitness Program at CATH will gradually increase from $15,000 to about $25,000 in FY 2023. There is no funding commitment beyond FY 2023.

Funding Support

	FY 2019	FY 2020	FY 2021	FY 2022
Town Operating Budget	$0.00	$26,000.00	$50,000.00	$65,000.00
Fees	$12,000.00	$18,000.00	$18,000.00	$20,000.00
Friends of CATH	$50,000.00	$35,000.00	$20,000.00	$0.00
BID-N Determination of Need	$0.00	$15,000.00	$20,000.00	$22,500.00
Other (Misc. Donations)	$500.00	$1,200.00	$1,300.00	$1,500.00
Total	**$62,500.00**	**$95,200.00**	**$109,300.00**	**$109,000.00**

Costs

	FY 2019	FY 2020	FY 2021	FY 2022
Weekdays (M-F)	$52,000.00	$54,600.00	$58,500.00	$58,500.00
Evenings (M-Th p.m.) & Weekends	$0.00	$25,000.00	$32,760.00	$32,760.00
Fitness Classes	$10,452.00	$15,600.00	$19,110.00	$19,110.00
Total	**$62,452.00**	**$95,200.00**	**$110,370.00**	**$110,370.00**

Variance between Projected Funding and Anticipated Costs

	FY 2019	FY 2020	FY 2021	FY 2022
Total	**$48.00**	**$0.00**	**($1,070.00)**	**($1,370.00)**

6 An additional $20,000 will be given in December 2019, supplementing the more than $15,000 donated to the CATH so far this year.

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

To achieve full funding of the Fitness Program and to gradually reduce the reliance on external grants and donations, the Town of Needham must gradually increase its operating budget support. This request for additional funds will be phased in over a three-year period, and FY 2021 is the second year of that three-year request.

Requested Salary Costs

Personnel	Rate	Hrs per week	Annual Costs	Comments
Program Support Assistant III	$27.78	19.5	$28,277	The Aging Services Division has undergone a renaissance, with a widespread expansion of programs and services over the last 2.5 years. This part-time staff position would assist with developing and coordinating programs, and would take on the primary role of designing and producing *The Compass*, the Aging Services Division's bi-monthly newsletter and program bulletin.
Van Driver	$20.00	19.5	$20,358	Van Driver at 19.5 hrs a week to provide transportation for expanded evening programs and for the transition from one Saturday a month to three Saturdays a month in August 2020. This would allow Division to take advantage of new Vans purchased with FY 2017 and 2019 state budget earmarks.

Requested Expense Costs

Spending Category	Expense Type	DSR4 Request	Comments
Postage	Mailing	$500	Additional funding to support the mailing costs for *The Compass*, the Aging Services Division's bi-monthly newsletter
Recreation	Activity Instructors	$24,000	Partial cost support for the Fitness Program at its current practice of 5 hrs from 9:00 a.m. to 2:00 p.m. every weekday, along with expanded weekday evening and Saturday morning hours
Other Supplies	Branded Items	$500	Branded items and promotional materials for programs like *Healthy Aging at Home* and *Matter of Balance* used to increase visibility and encourage participations.

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/ Public Health Division		
Title	Program and Service Expansion at the Center at the Heights	Priority	2

Goals

Continuing the expansion of programs and services for Needham's seniors into the evenings and on Saturdays would address a number of goals from elected and appointed boards. Most directly it address the Council on Aging's Overarching Goal #1 which is to expand services and programs available to Needham's residents.

Additionally, it would directly address the following goal of the Select Board:

- FY 2020 & FY 2021 Guiding Principles #7 "The Town should be an age friendly community."

This budget request would tangentially address the following goal of the Select Board:

- FY 2020 & FY 2021 Guiding Principles #12 "Opportunities to collaborate on additional programs and services that will benefit Needham's veterans will be explored and implemented."

That is because the vast majority of Needham's veterans are seniors who are served by the Aging Services Division in addition to the Veterans Agent.

This budget request would also address following Community Health goals of the Board of Health in FY 2019 and FY 2020:

- CH #2—"Advocate for resources to support and enhance Healthy Aging in the community";
- CH #4—"Identify financial resources to expand the Safety at Home Program, which addresses older adult falls through home visits, exercise programming, and referrals, to support more comprehensive home modifications"; and
- CH #8—"Support existing community initiatives that address public health concerns including senior nutrition, elder isolation, mental health promotion, and domestic violence awareness".

V2021

Performance Improvement Funding Request Supplement DSR4S										
Position Title	Program Support Assistant III – *The Compass* newsletter							Priority	2	
Classification		FT		PT		Seasonal				
Part Time /Seasonal	Hours Per Week		19.5		Number of Weeks Per Year				52	
Compensation Detail										
Base Rate	$27.78/hr, 19.5 hrs/week								$28,277	
Other										
Other										
Other										
Other										
Other										
Other										
Other										
Salary and Wage Total									$28,277	
If Funded the Position Will Require the Following Additional Items										
Description	No	Yes	Explain				Start Up Cost $		Annual Recurring Cost $	
Workstation	X		Part-time staff member will use existing share workstation.							
Vehicle	X									
Computer	X		Part-time staff member will use existing shared computer.							
Software	X									
Mobile Communication Device	X									
Uniform	X									
Tools	X									
Equipment	X									
Other										
Other										
Other										
Totals										
Estimated Annual Benefit Cost									$2,175	
Description and Explanation										
The Program Support Assistant III would support the development and delivery of programs and would focus upon the layout and design of *The Compass*, the Aging Services Division's newsletter. *The Compass* reflects the programs and services offered at CATH and it is the										

Performance Improvement Funding Request Supplement DSR4S			
Position Title	Program Support Assistant III – *The Compass* newsletter	Priority	2
primary entrée for attracting new seniors to visit CATH and participate in the programs. If this budget request is approved, this part-time position would share use of a workstation and a computer with existing part-time staff members within Aging Services.			
V2021			

Performance Improvement Funding Request Supplement DSR4S										
Position Title	Van Driver							Priority	2	
Classification		FT		PT		Seasonal				
Part Time /Seasonal	Hours Per Week		19.5		Number of Weeks Per Year		52			
Compensation Detail										
Base Rate	$20.00/hr, 19.5 hrs/week							$20,358		
Other										
Other										
Other										
Other										
Other										
Other										
Other										
Salary and Wage Total								$20,358		
If Funded the Position Will Require the Following Additional Items										
Description	No	Yes	Explain				Start Up Cost $		Annual Recurring Cost $	
Workstation	X		Part-time staff member does not need access to a workstation.							
Vehicle	X									
Computer	X		Part-time staff member will not need access to a computer.							
Software	X									
Mobile Communication Device	X									
Uniform	X									
Tools	X									
Equipment	X									
Other										
Other										
Other										
Totals										
Estimated Annual Benefit Cost									$2,760	
Description and Explanation										
The Van Driver will provide transportation services to Needham' seniors. The additional part-time Van Driver funded in FY 2020 has allowed for greater access to transportation in the late afternoons and early evenings, and additional funding would support transportation for participants in the expanded evening programs (on Mondays through Thursdays) and for the transition from one Saturday a month to three Saturdays a month beginning in August 2020.										

Performance Improvement Funding Request Supplement DSR4S			
Position Title	Van Driver	Priority	2

If this budget request is approved, this part-time position will not need access to a workstation or computer or any other accessories noted above. Safety gear (high visibility vest and clothing) will be provided from the Aging Services Division existing budget and the staff member will receive specific safe driver training; funding for that training will also be drawn from the existing Aging Services Division budget. No startup costs are anticipated.

V2021

Performance Improvement Funding Request DSR4				
Department	Health & Human Services/Public Health Division			
Title	Public Health Division Staffing		Priority	3
DSR4				
Expenditure Classification	FTE	Frequency Recurring Amount (A)	One Time Only Amount (B)	Total Amount (A + B)
1. Salary and Wage	1.5	$127,128		$127,128
2. Expense				
3. Operating Capital				
4. Department Total (1+2+3)		$127,128		$127,128
5. Other Costs		$36,866		$36,866
6. Grand Total (4+5)		$163,994		$163,994

Budgetary Considerations	Yes	No
Does this request address a goal of the Select Board or other Board or Committee?	X	
If yes, which Board or Committee? Board of Health		
Has this request been submitted in the last three fiscal years and not funded?	X	
Are there additional costs to implement this request (except for future year operating costs which would be ongoing if funding is approved) which are NOT included in this request?		X
Will the assistance of another department be required to provide support (personnel or financial) for this request to be implemented?		X
Will additional staff (beyond the staff requested in this DSR4 submission) be required if the request is approved?		X
Does the request support activities which produce revenue for the Town?		X
If the request is not approved, will current Town revenues be negatively impacted?		X
Is there an increased exposure for the Town if the request is not approved?	X	
Is specialized training or licensing required (beyond the initial purchase)?		X
Does this request address a documented health or safety issue?	X	

All "YES" responses above must be explained in the narrative below

Description and Explanation

Through this budget request, the Public Health division seeks sufficient staffing so that:

- The Public Health Division has a full-time director who is able to devote his/her full time and attention to advancing the goals and objectives of the Board of Health and the Public Health Division; and
- The Public Health Division's Environmental Health Team will be supported by additional hours for part-time staff to conduct after-hours inspections of food service establishments in Needham.

Public Health Director

The position of Director of Public Health has been vacant since December 31, 2016 when the Health & Human Services Department was fully established. That length of vacancy affects the operations and efficiency of a division entrusted with a range of public health and sanitary responsibilities, all of which have a material effect on the health and wellness of the Town.

If/when occupied, the Director of Public Health position oversees a division with:

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/Public Health Division		
Title	Public Health Division Staffing	Priority	3

- 19 staff members (10.95 FTE including grant positions – 6 full-time benefitted staff, 3 part-time benefitted staff, and 10 part-time staff members ranging from 5 hours a week to 19.5 hours a week); and
- extensive policy and regulatory authority afforded to it by the Needham Board of Health through M.G.L. Chapters 111, Sections 31, 31A, 31B, 122, 127, 127A, and 143; and

A Director of Public Health position was requested in FY 2019 and FY 2020. It was not selected for funding during either fiscal year. Without a Director of Public Health, the Director of Health & Human Services divides his/her attention between larger work that crosses divisions and departments, and the more focused activities of one division which has extensive policy and regulatory authority. Progress on updating and revising the Board of Health's existing regulations has been limited since the HHS transition, and research into new policy positions has also stalled. A Public Health Division Director would allow the division to continue to respond to the demands and needs of the growing town by having a direct leader in policy regulation/adaption and changes that are required to meet the growing needs of Needham.

If a Director of Public Health were hired, that individual would focus on Public Health Division and Board of Health priorities, and the Director of Health & Human Services would concentrate on interdepartmental activities, Town-wide priorities, and oversight of each division's activities.

Funding
Funding needed to support the position of Director of Public Health (K-24) is estimated at $108,298 which represents the midpoint on the K-24 salary range. The benefits costs of the Public Health Division Director position total $34,999.

Goals
Filling the long vacant position of Public Health Division Director would address the Board of Health's overarching goal from the Administrative section of the FY 2019 and FY 2020 Board of Health Goals: "Ensure the necessary infrastructure to effectively provide essential public health services."

Environmental Health Inspection Hours

The Needham Public Health Division's Environmental Health team provides a broad range of public health services to the community while enforcing the State Sanitary, Food Protection, and Environmental Codes. These services include policy development, issuance of permits and licenses, ongoing inspection and surveillance, reporting of potential foodborne illnesses, as well as public education through trainings and published articles.

The Environmental Health team currently consists of the Assistant Director, one full-time Environmental Health Agent and one part-time agent for off-hours inspections who works six hours per week. Over the last several years, the team has balanced increasing demands with spearheading new initiatives to improve the health and safety of Town residents. For example, increased demands for more (and more complex) inspections, permits, and plan reviews - due to the Town's continued economic development - mount as the team has also adopted new food

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/Public Health Division		
Title	Public Health Division Staffing	Priority	3

standards, updated the technical capability of the team, and written grants.

The Environmental Health team is responsible for generating the vast majority of the revenue produced by the Public Health Division through the costs for permits, plan reviews, fees, and fines.

As demands increase, the Environmental Health team finds its time is limited to effectively and efficiently enforce Board of Health regulations, research best practices, and ensure that the Public Health Division's processes reflect an evidence-based approach to public health.

The Public Health Division respectfully requests funding to support the employment of a second part-time Environmental Health Agent to support essential activities of the team, including:

- Conducting more detailed food service inspections
  - The Board of Health recently adopted a new risk-based food inspection protocol that improves health and safety outcomes of inspections but also increases the time needed to conduct each inspection.
- Implementing new regulations and ordinances
  - The Board of Health has a pending regulation regarding dumpsters and a new ordinance for pest control, which will require more staff time to conduct follow-up inspections and complete enforcement activities.
- Maintaining FDA National Retail Food Regulatory Program Standards
  - The Board of Health will soon adopt the FDA National Retail Food Regulatory Program Standards which will require more staff time for maintenance, ongoing audits, and the coordination of a new Food Advisory Board.
- Expanding the team's reach
  - The team plans to make Needham's environmental health work some of the strongest in Massachusetts through: applying for more grants to increase funding; increasing services (such as an annual healthy eating week called Nourishing Needham); updating existing Board of Health regulations; developing new Board of Health regulations; conducting a food safety education campaign; and developing a public food grading system.

As the demands mount, the Environmental Health team requires additional capacity to enforce Board of Health regulations and meet the Board's goals. Lapses in the quality and efficiency of services may negatively impact the health of residents and will begin to affect the revenue generated by the Public Health Division.

Funding

Funding is requested in the amount of $18,200 for the part-time Environmental Health Agent to work ten hours per week. The benefits costs for a part-time environmental health inspector total $1,867.

Goals

Funding a part-time Environmental Health Agent will address the Board of Health's FY 2019 and FY 2020 Environmental Health (EH) Goals:

Performance Improvement Funding Request DSR4			
Department	Health & Human Services/Public Health Division		
Title	Public Health Division Staffing	Priority	3

- EH#1: Hire additional staff or provide additional resources to maintain EH Unit capacity for inspections, environmental health monitoring, training, and vendor and general public education.
- EH #2: Prioritize positive communication and relationships with food service owners and staff and tobacco vendor owners and staff.
- EH #3: Work towards the achievement of all nine (9) FDA Voluntary National Retail Food Regulatory Program Standards; pursue federal, state, and non-profit grant resources to offset the costs for achieving full compliance and apply for future FDA grants to make this possible.
- EH #4: Implement FDA Standard 9 through categorization of Needham food establishments and use of risk-based inspections

Increasing the Environmental Health team's capacity will allow for more efficiency and the continuation of high-quality services, while achieving several Board of Health goals.

V2021

Performance Improvement Funding Request Supplement DSR4S										
Position Title	Public Health Director							Priority	3	
Classification	X	FT		PT		Seasonal				
Part Time /Seasonal	Hours Per Week				Number of Weeks Per Year					
Compensation Detail										
Base Rate	$108,928									
Other										
Other										
Other										
Other										
Other										
Other										
Other										
Salary and Wage Total									$108,928	
If Funded the Position Will Require the Following Additional Items										
Description	No	Yes	Explain				Start Up Cost $		Annual Recurring Cost $	
Workstation	X		Workstation will be assigned at RRC.							
Vehicle	X									
Computer	X		Computer at RRC will be assigned.							
Software		X	Standard office suite is needed.							
Mobile Communication Device		X	Mobile phone with hotspot needed.							
Uniform	X									
Tools	X									
Equipment	X									
Other										
Other										
Other										
Totals										
Estimated Annual Benefit Cost									$34,999	
Description and Explanation										

The Public Health Division is the only major department/division in the Town of Needham without a dedicated Director. The Board of Health, an elected Board with wide-ranging statutory authority, has been without a director to implement its vision since January 1, 2017.

While existing staff members in the Public Health Division and in the Health & Human Services Department do provide some little staffing and support, the Board of Health's policy priorities need the support and attention of a full-time director.

If this budget request is approved, the newly hired Public Health Director will require a

Performance Improvement Funding Request Supplement DSR4S			
Position Title	Public Health Director	Priority	3
computer, phone, and other startup items noted above. A workstation will be made available at the Rosemary Recreation Complex but changing around the existing workstation assignments.			
			V2021

Performance Improvement Funding Request Supplement DSR4S										
Position Title	Environmental Health Inspections							Priority	3	
Classification	X	FT		PT		Seasonal				
Part Time /Seasonal	Hours Per Week		10.0		Number of Weeks Per Year			52		
Compensation Detail										
Base Rate	$35 per hour, 10 hrs/ week							$18,200		
Other										
Other										
Other										
Other										
Other										
Other										
Other										
Salary and Wage Total								$18,200		
If Funded the Position Will Require the Following Additional Items										
Description	No	Yes	Explain				Start Up Cost $		Annual Recurring Cost $	
Workstation	X		Primary assignment is field inspections.							
Vehicle	X									
Computer	X		No computer needed beyond swing spaces at RRC.							
Software	X									
Mobile Communication Device	X	X	Tablet for inspections is already purchased.							
Uniform	X									
Tools	X									
Equipment	X									
Other										
Other										
Other										
Totals										
Estimated Annual Benefit Cost									$1,867	
Description and Explanation										
The Public Health Division is the only major department/division in the Town of Needham without a dedicated Director. The Board of Health, an elected Board with wide-ranging statutory authority, has been without a director to implement its vision since January 1, 2017. While existing staff members in the Public Health Division and in the Health & Human Services Department do provide some little staffing and support, the Board of Health's policy priorities need the support and attention of a full-time director.										

Performance Improvement Funding Request Supplement DSR4S			
Position Title	Environmental Health Inspections	Priority	3
If this budget request is approved, the newly part-time Environmental Health Agent will be primarily based in the field. He/she would have a tablet with the inspection software (tablet and software already purchased) and would rarely sit at a workstation in the Public Health Division. On those instances, the environmental health agent can use one of the existing computers already assigned for part-time staff. He/she will not require a computer, phone, and other startup items noted above.			
			V2021

Special Financial Warrant Article Request DSR5			
Title	**Public Health Division Accreditation**		
Fiscal Year	FY 2021	Department	Health & Human Services
Funding Amount	$70,000	Funding Source	Operating Budget

Article Information

Formal recognition by the national Public Health Accreditation Board has become an important goal for local and state health departments across the country. Accreditation outcomes include improved performance and quality of services, and increased ability to be responsive to existing and emerging health needs in Needham. Accreditation is a mark of a highly functional, proactive, and professional public health department and its attainment will enhance the Public Health Division's competitiveness for future grant and foundation funding.

Disclosures	YES	NO
1. Was this request submitted last year?	X	
2. Is this a recurring special financial warrant article?	X	X
3. Is this a matching grant funding request?		X
4. Is this a CPA funding request?		X
5. Is this a revolving fund request?		X
6. Is this a pilot program request?		X
7. Is this a study?		X
8. Is this a program that is planned to be in place for more than one year?	X	
9. Is this required by a court or other jurisdictional order?		X
10. Is this a personnel related request?	X	
11. Is this a local option acceptance request?		X
12. Is this in support of a goal of a Board or Committee?	X	

All "YES" responses must be explained Below

Disclosure Explanation

Achieving accreditation for the Public Health Division is a long-standing priority of the Needham Board of Health (BOH), and this request, or one like it, has been submitted four times in total. Public Health Division accreditation has been included in the BOH's goals for five fiscal years, and is the first long-term goal under the Administrative Section of the FY 2019 – 2020 BOH goals. *"Pursue Public Health Division accreditation and support the establishment of a culture of continuous quality improvement."*

The process of achieving accreditation is rigorous and requires significant staff time and resources to conduct health assessments, develop specific plans, procedures, and policies, and complete a formal application. In 2018, the Public Health Division received a nine-month Accreditation Support Initiative grant of $14,960 from the National Association of County and City Health Officials to help advance these efforts. Additional funding is requested to support these efforts moving forward; funding will cover approximately 5 hours per week from a part-time staff member along with other accreditation-related expenses.

Once successful in achieving all of the requirements and pre-requisites for accreditation, the Public Health Division will formally apply using the funding remaining in the Special Warrant Article to cover the initial application fee of $14,000. If the accreditation application is successful, there will be an annual fee of approximately $6,000 to maintain accreditation and to support the costs of re-accreditation every five years.

Special Financial Warrant Article Request DSR5			
Title	**Funding to Retain Scientific Experts and Consultants**		
Fiscal Year	FY 2021	Department	Health & Human Services
Funding Amount	$50,000	Funding Source	Operating Budget

Article Information

The Public Health Division requests funding to support a Board of Health (BOH) goal, a Select Board priority, and pressing community priority. The request is to establish a source of funding that allows the BOH to retain outside scientific experts and consultants to evaluate novel and emerging health issues about which the Board and the Public Health Division lack the necessary expertise. For example, this fund would allow for the retention of an outside expert to evaluate a proposed utility project that has unknown or uncertain environmental and health impacts, such as the Eversource Underground Utility Line Redundancy project. When there is a permit application process, the BOH has the ability to require applicants to pay an 'outside consultant fee.' This funding request addresses the need to access expertise to evaluate community impact in instances when there is no permit application, such as utility projects.

Disclosures	YES	NO
1. Was this request submitted last year?		X
2. Is this a recurring special financial warrant article?	X	X
3. Is this a matching grant funding request?		X
4. Is this a CPA funding request?		X
5. Is this a revolving fund request?		X
6. Is this a pilot program request?		X
7. Is this a study?		X
8. Is this a program that is planned to be in place for more than one year?	X	
9. Is this required by a court or other jurisdictional order?		X
10. Is this a personnel related request?		X
11. Is this a local option acceptance request?		X
12. Is this in support of a goal of a Board or Committee?	X	

All "YES" responses must be explained Below

Disclosure Explanation

There have been a number of large-scale utility projects which have emerged suddenly as a community concern due to possible environmental health impacts; examples include the Eversource underground utility project and Verizon 5G Cell Sites. There is a need to access expertise to understand potential impacts of such projects. There is limited ability to anticipate such projects, and no ability to require utilities to pay for outside experts.

Having the resources necessary to understand and respond to new and emerging environmental health challenges in Needham is a high priority of the BOH and was included as the top goal in the Environmental Health Section of the FY 2019 – 2020 BOH goals. *"Hire additional staff or provide additional resources to maintain EH unity capacity for inspections, environmental health monitoring, training, and vendor and general public education."* Additionally, one of the Select Board's New Initiatives in its FY20-21 Goals is to: *"Investigate the potential impact of Small Cell and 5G Technology on the Town and formalize a policy for considering Grant of Location Requests."* Funding this request would help reach such goals and strengthen Needham's capacity to assess emerging environmental health threats.

Performance Improvement Funding Request DSR4				
Department	ITC via HHS/Youth & Family Services			
Title	Electronic Medical Record and Program Registration		Priority	TBD

DSR4				
Expenditure Classification	FTE	Frequency Recurring Amount (A)	One Time Only Amount (B)	Total Amount (A + B)
1. Salary and Wage		0	0	0
2. Expense		$4,000	0	$4,000
3. Operating Capital		0	0	0
4. Department Total (1+2+3)		$4,000	0	$4,000
5. Other Costs				
6. Grand Total (4+5)		$4,000	0	$4,000

Budgetary Considerations	Yes	No
Does this request address a goal of the Select Board or other Board or Committee?	X	
If yes, which Board or Committee?	Youth Commission	
Has this request been submitted in the last three fiscal years and not funded?		X
Are there additional costs to implement this request (except for future year operating costs which would be ongoing if funding is approved) which are NOT included in this request?		X
Will the assistance of another department be required to provide support (personnel or financial) for this request to be implemented?	X	
Will additional staff (beyond the staff requested in this DSR4 submission) be required if the request is approved?		X
Does the request support activities which produce revenue for the Town?	X	
If the request is not approved, will current Town revenues be negatively impacted?		X
Is there an increased exposure for the Town if the request is not approved?		X
Is specialized training or licensing required (beyond the initial purchase)?		X
Does this request address a documented health or safety issue?		X

All "YES" responses above must be explained in the narrative below

Description and Explanation

The Youth and Family Services (YFS) Division has met with clients for treatment since the division was established. Since this time, the division has maintained paper records on all clients and sessions. These thousands of records are then kept in physical file storage. This is also true for all program information and registration. Part of the mission of the division, in addition to the goals of the Youth Commission, is providing services to the community without any barriers to treatment. The division is dedicated to this mission and would like to help eliminate these barriers so that residents can access needed mental health services and program support.

Youth and Family Services seeks funding for two software programs, one that would allow for individual client/family records to be kept (Theranest), and one that would allow for online program book-keeping and registration (MyRec). Both of these systems would help the division function at a higher level, being able to have a greater impact on the residents we serve. These systems would help to prevent errors and misprints and have safety features to ensure that the correct information is communicated.

Performance Improvement Funding Request DSR4			
Department	ITC via HHS/Youth & Family Services		
Title	Electronic Medical Record and Program Registration	Priority	TBD

The Electronic Medical Record (EMR) would provide the opportunity to avoid paper records and move to an electronic record keeping system. Youth & Family Services has three full time clinical staff members and three, soon to be four, part-time staff members. The addition of these part-time staff members has allowed the division to expand its mental health services tremendously, offering after-hours appointments and community outreach. YFS has significantly cut down on our waitlist which will allow residents to get quicker access to services which is crucial as evidence shows that the sooner treatment is sought out, the higher chance for more positive outcomes. The division is providing hundreds of clinical sessions every year, serving several dozen residents at any given time. These numbers are not exact as there is no simple, electronic way to track this data at this time. An EMR allows for all of this data to be tracked much more accurately. This system would further enhance clinical services and improve quality of care as it would allow for notes to be linked directly to the treatment plans and treatment objectives, more easily access an overview of their treatment, past goals that have been met and interventions that have been successful. It would meet HIPAA standards and would allow for easier oversight to ensure that all records are appropriately maintained and that all documentation is completed. In addition, it would improve office workflow, providing a platform for easier scheduling and communication both internally and externally. Staff would also be able to access client records when they are not on site, which is essential when staff members are meeting with clients and families in the community. On another note, the EMR will allow the division to track data and trends, so that we can be more aware of what is going on in the community. For example, the system could analyze what mental health disorders are most present, what treatment has been most successful, how long people require treatment depending on their mental health disorders. This EMR system is first priority in improving the division and will cost about $1,000 per year.

The Youth & Family Services Division has created and implemented a number of different programs over the years, ranging from volunteer programs to peer mentor programs to support groups and parents' seminars and trainings. The division is constantly assessing the needs of the community and implementing additional programing to meet these needs. Last year, the division had approximately 500 participants enrolled in the various programs. At this time, residents have to mail-in or drop off program registrations and payments. This creates a barrier for some families who may have difficulties getting this information to the division. An online system would make registration easy, and would increase participation in YFS programs; residents could just go online, register and submit payment if required. This system would allow YFS to easily monitor all of its programs, allow for electronic signatures and waivers, track attendance and all other required paperwork. In addition, the division staff could easily see who enrolls in which programs, carry over information if families sign up for multiple programs, and structure future program development on some of this information gathered. If the division could cut down on the time needed around organizing paper, it could spend that time planning and implementing new programs to best serve the community. The Aging Services Division is in the process of switching over to this same system, which would also allow for better connectivity across divisions. Although we would require our own license for the program, it would be easier to manage when programs are run collaboratively. This system is our second priority and runs about $3, 000 per year.

To successfully implement the EMR and the program registration software, the YFS division will need assistance from the Information Technology to install the software, and from the

Performance Improvement Funding Request DSR4			
Department	ITC via HHS/Youth & Family Services		
Title	Electronic Medical Record and Program Registration	Priority	TBD
financial departments (Accounting/Treasurer) to help process payments that are completed through the system.			
			V2021

Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted
Salary and Wage	$1,734,921.00	$44,223.00	2.6%	$278,608.00	$2,013,529.00	$322,831.00	19.1%	$1,690,698
Expenses	$392,885.00	$3,611.00	0.9%	$47,155.00	$440,040.00	$50,766.00	13.0%	$389,274
Operating Capital								
Other								
Total	$2,127,806.00	$47,834.00	2.3%	$325,763.00	$2,453,569.00	$373,597.00		$2,079,972

Health and Human Services	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
Salary and Wage	$1,422,940	$1,304,912	$1,194,266
Expenses	$326,153	$282,046	$254,800
Operating Capital			
Other			
Total	$1,749,093	$1,586,958	$1,449,066

Salary and Wage Health and Human Services	$1,734,921.00 FY2021 DSR2 Request	$44,223.00 BASE $ Change from FY2020	2.6% BASE % Change	$278,608.00 FY2021 DSR4 Request	$2,013,529.00 FY2021 Total Request	$322,831.00 Total $ Change from FY2020	19.1% Total % Change	1,690,698.00 FY2020 Budgeted	1,422,939.91 FY2019 Expenditures	1,304,911.85 FY2018 Expenditures	1,194,266.33 FY2017 Expenditures
HEALTH SALARIES PERMANENT	$576,703.00	$14,759	2.6%	$183,496.00	$760,199.00	$198,255	35.3%	561,944.00	540,129.21	563,424.80	428,005.60
HEALTH SALARIES TEMPORARY	$123,303.00	$513	0.4%	$46,477.00	$169,780.00	$46,990	38.3%	122,790.00	101,183.52	72,212.52	77,753.10
HEALTH SALARIES OVERTIME	$3,000.00				$3,000.00			3,000.00			
HEALTH SALARIES REGULAR Other	$4,600.00	-$25	-0.5%		$4,600.00	-$25	-0.5%	4,625.00	4,605.24	4,442.76	2,115.38
HEALTH TUITION REIMBURSEMENT									4,000.00	3,500.00	
HEALTH SALARIES STIPENDS	$6,500.00	$500	8.3%		$6,500.00	$500	8.3%	6,000.00	3,000.00	3,000.00	1,500.00
AGING SERVICES SALARIES PERMANENT	$525,887.00	$24,310	4.8%		$525,887.00	$24,310	4.8%	501,577.00	389,294.46	328,735.08	348,535.29
AGING SERVICES SALARIES TEMPORARY	$110,840.00	-$13,949	-11.2%	$48,635.00	$159,475.00	$34,686	27.8%	124,789.00	81,028.89	49,829.82	43,610.48
AGING SERVICES SALARIES OVERTIME									181.33	237.22	
AGING SERVICES SALARIES Other	$4,100.00	-$19	-0.5%		$4,100.00	-$19	-0.5%	4,119.00		3,000.08	
AGING SERVICES SALARIES STIPENDS											
YOUTH AND FAMILY SERVICES SALARIES REGULAR	$327,898.00	$18,221	5.9%		$327,898.00	$18,221	5.9%	309,677.00	264,478.68	204,012.44	261,501.11
YOUTH AND FAMILY SERVICES SALARIES TEMPORARY	$43,690.00				$43,690.00			43,690.00	32,538.58	31,908.08	19,470.41
YOUTH AND FAMILY SERVICES SALARIES OVERTIME											
YOUTH AND FAMILY SERVICES SALARIES Other	$3,400.00	-$587	-14.7%		$3,400.00	-$587	-14.7%	3,987.00		38,051.40	6,275.00
YOUTH AND FAMILY SERVICES SALARIES STIPENDS	$2,000.00	$500	33.3%		$2,000.00	$500	33.3%	1,500.00		57.69	3,000.00
VETERANS' SVCS SALARIES REGULAR											
VETERANS' SVCS SALARIES TEMPORARY											
VETERANS' SVCS SALARIES OVERTIME											
VETERANS' SVCS SALARIES REGULAR Other											
VETERANS' SVCS SALARIES STIPEND	$3,000.00				$3,000.00			3,000.00	2,500.00	2,499.96	2,499.96

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
1	Animal Permit	100	**Annual**	**Article 4- Keeping of Domestic Animals**	**April 2019**
2	Additional animal per species for laboratory animals	20	**Annual**	**Article 4- Keeping of Domestic Animals**	**April 2019**
3	Biotechnology Initial Registration	750	**One time fee**		**April 2019**
4	Biotechnology Renewal	500	**Annual**		**April 2019**
5	Body Art Establishment	700	**Annual**	**Article 7- Regulation for Body Art Establishments & Practitioners**	**April 2019**
6	Body Art Practitioner	575	**Annual**	**Article 7- Regulation for Body Art Establishments & Practitioners**	**April 2019**
7	Bodyworks Establishment Plan Review	200	**One time fee**	**Article 19- Regulation Governing the Practice of Bodywork**	**April 2019**
8	Bodyworks Establishment Permit	100	**Annual**	**Article 19- Regulation Governing the Practice of Bodywork**	**April 2019**
9	Bodyworks Practitioner	50	**Annual**	**Article 19- Regulation Governing the Practice of Bodywork**	**April 2019**
10	Breast Milk Registration	25	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
11	Camp license	175	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
12	Demolition	60	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
13	Bottling Permit	500	**Annual**	**M.G.L., Chapter 111, Section**	**April 2019**
14	Food service-less than 50 seats, retail 1500-3000 sq. ft.	265	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
15	Food Service-more than 50 seats, retail 3000-6000 sq. ft.	460	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
16	Food Service-150-250 seats, retail 6000-10,000 sq. ft.	525	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
17	Food Service-more than 250 seats	625	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
18	Mobile Food; food prep or PHF's; small; retail less than 1500 sq. ft.	Note	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
19	Food Plan Review	225	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
20	Food Plan review – per revision	30	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
21	Food - Prepackaged (no refrigeration); very limited retail; no coffee; good compliance record	75	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
22	Food - Prepackaged (refrigeration); limited retail; mobile prepackaged	125	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
23	Food – Retail more than 10,000 sq. ft	700	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
24	Food – Temporary/one day event	30	**One time fee**	**M.G.L., Chapter 111, Section 31**	**Unknown**
25	Food – Farmers market/seasonal	50	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
26	Hauler Truck – septic, grease, rubbish	100	**Annual**	**Article 2- Regulation for Disposal of Refuse**	**April 2019**
27	Hotel/Motel	200	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
28	Marijuana Plan review (dispensary site)	1000	**One time fee**	**Article 20- Regulation to**	**April 2019**

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
				Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs	
29	Marijuana Plan review (cultivation/processing site)	1000	**One time fee**	**Article 20- Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	**April 2019**
30	Marijuana Plan review (storage disposal)	1000	**One time fee**	**Article 20- Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	**April 2019**
31	Marijuana Plan review (continuity of	0	**One time**	**Article 20-**	**April 2019**

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
	business/continuity of operations		**fee**	**Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	
32	Marijuana Plan review (security)	0	**One time fee**	**Article 20- Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	**April 2019**
33	Registered Marijuana Dispensary	2500	**Annual**	**Article 20- Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	**April 2019**

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
34	Marijuana Home Cultivation	150	**Annual**	**Article 20- Regulation to Ensure the Sanitary and Safe Operations of Registered Marijuana Dispensaries and the Sale of Marijuana to Persons with Documented Medical Needs**	**April 2019**
35	Medical Waste Hauler	100	**Annual**	**Article 2- Regulation for Disposal of Refuse**	**April 2019**
36	Non-Profit	50%	**One time or Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
37	Disposal of Sharps	100	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
38	Public/semi public pool – Plan review	250	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
39	Public/semi public – seasonal permit	175	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
40	Public/semi public pool – annual permit	250	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
					V2019

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
1	Swimming Pool – variance initial application	140	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
2	Swimming pool – variance renewal	75	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
3	Indoor Tanning – establishment	500	**Annual**	**Article 21- Regulation of Indoor Tanning Facility**	**April 2019**
4	Indoor Tanning – each booth	250	**Annual**	**Article 21- Regulation of Indoor Tanning Facility**	**April 2019**
5	Septic Intaller's permit & test	250/125	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
6	Septic Installer's test	30	**Every two years**	**M.G.L., Chapter 111, Section 31**	**April 2019**
7	Soil application (less than 2 hours)	425	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
8	Soil application (each additional hour 2 initial hours)	75	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
9	Septic Plan review	275	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
10	Addition to home with Septic	75	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
11	Deed restriction	125	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
12	Additional Plan Reviews for septic design	50	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
13	Septic construction permit	350	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
14	Excavation & trench permit	50	**One time fee**	**Article 18- Excavation and Trench Safety**	**April 2019**
15	Construction permit – minor system repair	125	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**

Schedule of Fees and Charges					
Department	**Health Division**				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
16	Septic variance request	150	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
17	Tobacco Permit to sell	700	**Annual**	**Article 1- Regulation Affecting Smoking and the Sale and Distribution of Tobacco Products in Needham**	**April 2019**
18	Vaccine administration fee: clinics (per shot)	10	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
19	Well application – irrigation	150	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
20	Well application – geothermal	225	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
21	Well application – site visit to well per hour	75	**One time fee**	**M.G.L., Chapter 111, Section 31**	**April 2019**
22	Woodburning boiler permit	100	**Annual**	**M.G.L., Chapter 111, Section 31**	**April 2019**
23	Beaver Removal Permit	75	**One time fee**	**M.G.L. Chapter 111, Section 31**	**April 2019**
24	Pre-Residency Housing Inspection	75	**One time fee**	**M.G.L. Chapter 111, Section 31**	**April 2019**
25					
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Schedule of Fees and Charges					
Department	Health and Human Services – Aging Services				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
1	Scott Brumit – Tai Chi	$48.00	Per Session	Council on Aging Board of Directors	10/10/2019
2	Steve Cadigan – Train the Brain (Monday)	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
3	Steve Cadigan - Arthritis Exercise (Tuesday)	$72.00	Per Session	Council on Aging Board of Directors	10/10/2019
4	Lisa Karger -Barre	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
5	Steve Cadigan - Arthritis Exercise (Thursday)	$72.00	Per Session	Council on Aging Board of Directors	10/10/2019
6	Hsiu-Hui Chen – NIA	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
7	Hsiu-Hui Chen – Line Dancing	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
8	Betty Hood – Ballroom Dancing/Hustle	$32.00	Per Session	Council on Aging Board of Directors	10/10/2019
9	Lisa Karger - Pilates	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
10	Beth Knaus – Creative Writing	Free	Per Session	Council on Aging Board of Directors	10/10/2019
11	Michelle Lawlor –Yoga (Thursday)	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
12	Adrienne Lederman – Printmaking/Drawing	$15.00	Per Session	Council on Aging Board of Directors	10/10/2019
13	Sandra Levy – Yoga (Monday)	$32.00	Per Session	Council on Aging Board of Directors	10/10/2019
14	Chris Morrison - Zumba	Free	Per Session	Council on Aging Board of Directors	10/10/2019
15	Pearl Pressman – Strength Training (Monday)	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
16	Pearl Pressman – Strength Training (Friday)	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
17	Randy Sharek - Train the Brain (Monday)	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
18	Randy Sharek- Arthritis Exercise (Tuesday)	$72.00	Per Session	Council on Aging Board of Directors	10/10/2019
19	Randy Sharek - Train the Brain (Thursday)	$72.00	Per Session	Council on Aging Board of Directors	10/10/2019
20	Randy Sharek - Ball Arthritis Exercise (Thursday)	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
21	Carol Wein – Technology Classes	$15.00	Per Session	Council on Aging Board of Directors	10/10/2019
22	Marjorie Wein – Technology Classes	$15.00	Per Session	Council on Aging Board of Directors	10/10/2019
23	Leslie Worris – Better Bones	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
24	Leslie Worris – Better Balance	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
25	Pearl Pressman - Weight Management	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019

Schedule of Fees and Charges					
Department	Health and Human Services – Aging Services				
	Description	**Rate**	**Frequency**	**Authority**	**Last Reviewed**
26	Steve Cadigan-PITT Exercise Program	$64.00	Per Session	Council on Aging Board of Directors	10/10/2019
27	Fitness Room	$25.00	Monthly	Council on Aging Board of Directors	10/10/2019
28	Lunch Bunch	$5.00	Per Session	Council on Aging Board of Directors	10/10/2019
29	Beaded Jewelry Class	$5.00	Per Session	Council on Aging Board of Directors	10/10/2019
30	Betty Hood-Ballroom Dancing/Waltz	$40.00	Per Session	Council on Aging Board of Directors	10/10/2019
31	Leslie Worris- Better Bones [Thursday]	$56.00	Per Session	Council on Aging Board of Directors	10/10/2019
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Schedule of Fees and Charges					
Department		Youth & Family Services			
	Description	Rate	Frequency	Authority	Last Reviewed
1	Employment Listings	10	Per list	Youth Commission	2018
2	Peer Tutor	45	Per year	Youth Commission	2018
3	Family Fun Night	25	Per night	Youth Commission	New
4	Wilderness	25-35	Per program	Youth Commission	new
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Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
Salary and Wage	$1,734,921.00	$44,223.00	2.6%	$278,608.00	$2,013,529.00	$322,831.00	19.1%	$1,690,698	$1,422,940	$1,304,912	$1,194,266
Expenses	$392,885.00	$3,611.00	0.9%	$47,155.00	$440,040.00	$50,766.00	13.0%	$389,274	$326,153	$282,046	$254,800
Operating Capital											
Other											
Total	$2,127,806.00	$47,834.00	2.3%	$325,763.00	$2,453,569.00	$373,597.00		$2,079,972	$1,749,093	$1,586,958	$1,449,066

Salary and Wage Health and Human Services	$1,734,921.00 FY2021 DSR2 Request	$44,223.00 BASE $ Change from FY2020	2.6% BASE % Change	$278,608.00 FY2021 DSR4 Request	$2,013,529.00 FY2021 Total Request	$322,831.00 Total $ Change from FY2020	19.1% Total % Change	1,690,698.00 FY2020 Budgeted	1,422,939.91 FY2019 Expenditures	1,304,911.85 FY2018 Expenditures	1,194,266.33 FY2017 Expenditures
HEALTH SALARIES PERMANENT	$576,703.00	$14,759	2.6%	$183,496.00	$760,199.00	$198,255	35.3%	561,944.00	540,129.21	563,424.80	428,005.60
HEALTH SALARIES TEMPORARY	$123,303.00	$513	0.4%	$46,477.00	$169,780.00	$46,990	38.3%	122,790.00	101,183.52	72,212.52	77,753.10
HEALTH SALARIES OVERTIME	$3,000.00				$3,000.00			3,000.00			
HEALTH SALARIES REGULAR Other	$4,600.00	-$25	-0.5%		$4,600.00	-$25	-0.5%	4,625.00	4,605.24	4,442.76	2,115.38
HEALTH TUITION REIMBURSEMENT									4,000.00	3,500.00	
HEALTH SALARIES STIPENDS	$6,500.00	$500	8.3%		$6,500.00	$500	8.3%	6,000.00	3,000.00	3,000.00	1,500.00
AGING SERVICES SALARIES PERMANENT	$525,887.00	$24,310	4.8%		$525,887.00	$24,310	4.8%	501,577.00	389,294.46	328,735.08	348,535.29
AGING SERVICES SALARIES TEMPORARY	$110,840.00	-$13,949	-11.2%	$48,635.00	$159,475.00	$34,686	27.8%	124,789.00	81,028.89	49,829.82	43,610.48
AGING SERVICES SALARIES OVERTIME									181.33	237.22	
AGING SERVICES SALARIES Other	$4,100.00	-$19	-0.5%		$4,100.00	-$19	-0.5%	4,119.00		3,000.08	
AGING SERVICES SALARIES STIPENDS											
YOUTH AND FAMILY SERVICES SALARIES REGULAR	$327,898.00	$18,221	5.9%		$327,898.00	$18,221	5.9%	309,677.00	264,478.68	204,012.44	261,501.11
YOUTH AND FAMILY SERVICES SALARIES TEMPORARY	$43,690.00				$43,690.00			43,690.00	32,538.58	31,908.08	19,470.41
YOUTH AND FAMILY SERVICES SALARIES OVERTIME											
YOUTH AND FAMILY SERVICES SALARIES Other	$3,400.00	-$587	-14.7%		$3,400.00	-$587	-14.7%	3,987.00		38,051.40	6,275.00
YOUTH AND FAMILY SERVICES SALARIES STIPENDS	$2,000.00	$500	33.3%		$2,000.00	$500	33.3%	1,500.00		57.69	3,000.00
VETERANS' SVCS SALARIES REGULAR											
VETERANS' SVCS SALARIES TEMPORARY											
VETERANS' SVCS SALARIES OVERTIME											
VETERANS' SVCS SALARIES REGULAR Other											
VETERANS' SVCS SALARIES STIPEND	$3,000.00				$3,000.00			3,000.00	2,500.00	2,499.96	2,499.96

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
HEALTH ENERGY											
HEALTH ELECTRIC											
HEALTH OIL											
HEALTH NATURAL GAS											
HEALTH NON-ENERGY UTILITIES											
HEALTH REPAIRS & MAINTENANCE									986.12	280.50	274.98
HEALTH R&M BUILDING											
HEALTH R&M MEP											
HEALTH HARDWARE MAINT AGREEMENTS	$500.00				$500.00			500.00			
HEALTH R&M EQUIP											
HEALTH R&M VEHICLES											
HEALTH RENTALS & LEASES										635.60	
HEALTH SOFTWARE LIC & USER FEES									1,480.50		
HEALTH OTHER PROP REL SERVICES	$500.00				$500.00			500.00	184.40		
HEALTH SOLID WASTE DISPOSAL											
HEALTH PROFESSIONAL & TECHNICAL	$28,000.00				$28,000.00			28,000.00	108,070.48	94,524.49	5,157.59
HEALTH P&T SEM & TRAIN	$2,000.00			$2,000.00	$4,000.00	$2,000	100.0%	2,000.00	7,698.99	8,338.70	3,303.00
HEALTH P&T SFTWR LIC FEE		-$660	-100.0%			-$660	-100.0%	660.00		7,224.00	514.00
HEALTH P&T LIC PROF	$87,500.00	$2,500	2.9%	$8,000.00	$95,500.00	$10,500	12.4%	85,000.00			93,605.91
HEALTH P&T LEGAL SVCS											
HEALTH ADVERTISING	$2,500.00			$2,000.00	$4,500.00	$2,000	80.0%	2,500.00	2,997.60	2,450.00	2,000.00
HEALTH COMMUNICATIONS	$2,000.00			$4,000.00	$6,000.00	$4,000	200.0%	2,000.00			980.88
HEALTH POSTAGE	$1,500.00				$1,500.00			1,500.00	1,034.99	1,019.33	879.07
HEALTH COMM - LANDLINE											

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
HEALTH COMM - CABLE/INTERNET										179.22	
HEALTH WIRELESS COMMUNICATIONS	$4,925.00	-$75	-1.5%	$750.00	$5,675.00	$675	13.5%	5,000.00	6,992.85	4,875.00	3,521.88
HEALTH PRINTING & MAILING	$3,250.00			$2,000.00	$5,250.00	$2,000	61.5%	3,250.00	3,041.41	1,869.77	1,263.50
HEALTH LEGAL NOTICES	$4,000.00				$4,000.00			4,000.00	1,700.00	1,200.00	2,400.00
HEALTH RECREATION											
HEALTH OTHER PURCHASED SERVICES	$1,000.00				$1,000.00			1,000.00	390.00	325.55	693.24
HEALTH OFFICE ENERGY SUPPLIES											
HEALTH OFFICE SUPPLIES	$4,000.00	-$250	-5.9%	$1,000.00	$5,000.00	$750	17.6%	4,250.00	4,233.46	2,160.60	2,585.22
HEALTH BUILD & EQUIP SUPPLIES											
HEALTH CUSTODIAL SUPPLIES									22.53		
HEALTH GROUNDSKEEPING SUPPLIES											
HEALTH VEHICLE SUPPLIES											
HEALTH GASOLINE/DIESEL											
HEALTH FOOD & SERVICE SUPPLIES									2,085.01	2,272.19	1,260.12
HEALTH MEDICAL SUPPLIES	$1,750.00	$250	16.7%		$1,750.00	$250	16.7%	1,500.00			400.00
HEALTH EDUCATIONAL SUPPLIES											
HEALTH BUILD & EQUIP SUPPLIES											
HEALTH OTHER SUPPLIES	$2,175.00			$250.00	$2,425.00	$250	11.5%	2,175.00	23,542.49	10,156.34	7,592.55
HEALTH COMPUTER SUPPLIES & EQUIPMENT										9,086.69	11,993.22
HEALTH GOVERNMENTAL CHARGES	$200.00	-$50	-20.0%		$200.00	-$50	-20.0%	250.00	234.00	243.00	66.00
HEALTH CONF IN-STATE	$2,500.00			$375.00	$2,875.00	$375	15.0%	2,500.00	448.71	777.00	1,165.60
HEALTH MILEAGE	$3,500.00			$375.00	$3,875.00	$375	10.7%	3,500.00	3,373.20	4,429.47	3,962.35
HEALTH CONF OUT-STATE	$5,500.00			$1,050.00	$6,550.00	$1,050	19.1%	5,500.00	3,501.33	2,884.02	2,563.64
HEALTH DUES & MEMBERSHIPS	$2,750.00			$355.00	$3,105.00	$355	12.9%	2,750.00	2,550.00	2,748.00	1,305.00

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
HEALTH OTHER EXPENSES									111.00		
AGING SERVICES ENERGY											
AGING SERVICES ELECTRIC											
AGING SERVICES OIL											
AGING SERVICES NATURAL GAS											
AGING SERVICES NON-ENERGY UTILITIES											
AGING SERVICES REPAIRS & MAINTENANCE											
AGING SERVICES R&M BUILDING											
AGING SERVICES R&M MEP											
AGING SERVICES HARDWARE MAINTENANCE AGREEMENTS											776.10
AGING SERVICES R&M EQUIP											
AGING SERVICES R&M VEHICLES									1,425.00	35.00	
AGING SERVICES RENTAL & LEASES											
AGING SERVICES SOFTWARE LICENSE & USER FEES											
AGING SERVICES OTHER PROPERTY RELATED SERVICES											
AGING SERVICES SOLID WASTE DISPOSAL											
AGING SERVICES PROFESSIONAL & TECHNICAL	$8,000.00				$8,000.00			8,000.00	5,400.00	1,820.00	
AGING SERVICES P&T SEM & TRAIN	$2,000.00				$2,000.00			2,000.00	709.00		
AGING SERVICES P&T SFTWR LIC FEE		-$500	-100.0%			-$500	-100.0%	500.00	4,665.00	1,360.00	990.00
AGING SERVICES P&T LIC PROF											
AGING SERVICES P&T LEGAL SVCS											
AGING SERVICES ADVERTISING											
AGING SERVICES COMMUNICATIONS											
AGING SERVICES POSTAGE	$2,500.00	$250	11.1%	$500.00	$3,000.00	$750	33.3%	2,250.00	1,157.16	43.75	370.20

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
AGING SERVICES COMM - LANDLINE											
AGING SERVICES COMM - CABLE/INTERNET											
AGING SERVICES WIRELESS COMMUNICATIONS	$4,250.00	$1,300	44.1%		$4,250.00	$1,300	44.1%	2,950.00	1,205.76		
AGING SERVICES PRINTING & MAILING	$2,250.00				$2,250.00			2,250.00	1,059.23	352.07	510.50
AGING SERVICES LEGAL NOTICES											
AGING SERVICES RECREATION	$28,000.00			$24,000.00	$52,000.00	$24,000	85.7%	28,000.00	917.67	350.36	675.00
AGING SERVICES OTHER SERVICES									263.54		
AGING SERVICES ENERGY SUPPLIES											
AGING SERVICES OFFICE SUPPLIES	$3,000.00				$3,000.00			3,000.00	4,502.19	2,000.00	994.82
AGING SERVICES BUILD & EQUIP SUPPLIES											
AGING SERVICES CUSTODIAL SUPPLIES											
AGING SERVICES GROUNDSKEEPING SUPPLIES											
AGING SERVICES VEHICLE SUPPLIES	$2,750.00	-$250	-8.3%		$2,750.00	-$250	-8.3%	3,000.00			
AGING SERVICES GASOLINE/DIESEL	$9,500.00	-$500	-5.0%		$9,500.00	-$500	-5.0%	10,000.00	6,217.00	5,205.05	3,000.00
AGING SERVICES FOOD & SERVICE SUPPLIES	$300.00				$300.00			300.00	1,529.64		486.37
AGING SERVICES MEDICAL SUPPLIES	$150.00				$150.00			150.00			
AGING SERVICES EDUCATIONAL SUPPLIES											
AGING SERVICES PUBLIC WORKS SUPPLIES											
AGING SERVICES OTHER SUPPLIES & EQUIPMENT	$1,750.00			$500.00	$2,250.00	$500	28.6%	1,750.00	171.76	1,032.00	
AGING SERVICES GOVERNMENTAL CHARGES									164.00	173.00	
AGING SERVICES CONF IN-STATE	$1,000.00				$1,000.00			1,000.00	41.80		
AGING SERVICES MILEAGE	$1,100.00				$1,100.00			1,100.00	327.32		
AGING SERVICES CONF OUT-STATE											
AGING SERVICES DUES & MEMBERSHIPS	$1,500.00				$1,500.00			1,500.00	200.00	1,299.60	1,730.00

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
AGING SERVICES OTHER EXPENSES	$500.00	$500			$500.00	$500			974.37	225.00	228.15
YOUTH AND FAMILY SERVICES ENERGY											
YOUTH AND FAMILY SERVICES ELECTRIC											
YOUTH AND FAMILY SERVICES OIL											
YOUTH AND FAMILY SERVICES NATURAL GAS											
YOUTH AND FAMILY SERVICES NON-ENERGY UTILITIES											
YOUTH AND FAMILY SERVICES REPAIRS & MAINTENANCE											
YOUTH AND FAMILY SERVICES R&M BUILDING											
YOUTH AND FAMILY SERVICES R&M MEP											
YOUTH AND FAMILY SERVICES HARDWARE MAINT AGREE											
YOUTH AND FAMILY SERVICES R&M EQUIP											
YOUTH AND FAMILY SERVICES R&M VEHICLES											
YOUTH AND FAMILY SERVICES RENTAL & LEASES											
YOUTH AND FAMILY SERVICES SOFTWARE LIC & USER FEES											
YOUTH AND FAMILY SERVICES OTHR PROP REL SVCS											
YOUTH AND FAMILY SERVICES SOLID WASTE DISPOSAL											
YOUTH AND FAMILY SERVICES PROFESSIONAL & TECHNICAL	$8,500.00				$8,500.00			8,500.00	5,970.00	1,500.00	1,500.00
YOUTH AND FAMILY SERVICES P&T SEM & TRAIN	$1,800.00				$1,800.00			1,800.00	3,408.97	654.99	492.67
YOUTH AND FAMILY SERVICES P&T SFTWR LIC FEE											
YOUTH AND FAMILY SERVICES P&T LIC PROF											
YOUTH AND FAMILY SERVICES P&T LEGAL SVCS											
YOUTH AND FAMILY SERVICES ADVERTISING											
YOUTH AND FAMILY SERVICES COMMUNICATIONS											
YOUTH AND FAMILY SERVICES POSTAGE	$1,000.00				$1,000.00			1,000.00	325.21	254.76	139.20

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
YOUTH AND FAMILY SERVICES COMM - LANDLINE											
YOUTH AND FAMILY SERVICES COMM - CABLE/INTERNET											
YOUTH AND FAMILY SERVICES WIRELESS COMMUNICATIONS	$1,975.00	$275	16.2%		$1,975.00	$275	16.2%	1,700.00	1,861.63	1,240.00	1,223.76
YOUTH AND FAMILY SERVICES PRINTING & MAILING	$400.00				$400.00			400.00	200.00	115.50	239.98
YOUTH AND FAMILY SERVICES LEGAL NOTICES											
YOUTH AND FAMILY SERVICES RECREATION											
YOUTH AND FAMILY SERVICES OTHER PURCHASED SERVICES											81.00
YOUTH AND FAMILY SERVICES ENERGY SUPPLIES											
YOUTH AND FAMILY SERVICES OFFICE SUPPLIES	$800.00				$800.00			800.00	1,150.32	416.61	546.70
YOUTH AND FAMILY SERVICES BUILD & EQUIP SUPPLIES											
YOUTH AND FAMILY SERVICES CUSTODIAL SUPPLIES											
YOUTH AND FAMILY SERVICES GRNDSKPG SUPPLIES											
YOUTH AND FAMILY SERVICES VEHICLE SUPPLIES											
YOUTH AND FAMILY SERVICES GASOLINE/DIESEL											
YOUTH AND FAMILY SERVICES FOOD & SVC SUPPLIES	$2,200.00	$1,000	83.3%		$2,200.00	$1,000	83.3%	1,200.00	2,464.67	332.43	553.69
YOUTH AND FAMILY SERVICES MEDICAL SUPPLIES											
YOUTH AND FAMILY SERVICES EDUCATIONAL SUPPLIES											
YOUTH AND FAMILY SERVICES PUBLIC WORKS SUPPLIES											
YOUTH AND FAMILY SERVICES OTHR SUPPLIES & EQUIP	$3,250.00	$500	18.2%		$3,250.00	$500	18.2%	2,750.00	439.52		187.97
YOUTH AND FAMILY SERVICES GOVERNMENTAL CHGS	$800.00				$800.00			800.00	354.00		
YOUTH AND FAMILY SERVICES CONF IN-STATE	$1,500.00				$1,500.00			1,500.00	98.50	10.00	
YOUTH AND FAMILY SERVICES MILEAGE	$1,300.00				$1,300.00			1,300.00	1,322.97	1,123.37	418.99
YOUTH AND FAMILY SERVICES CONF OUT-STATE	$3,000.00				$3,000.00			3,000.00	1,414.01		
YOUTH AND FAMILY SERVICES DUES & MEMBERSHIPS	$1,000.00				$1,000.00			1,000.00			85.00

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
YOUTH AND FAMILY SERVICES OTHER EXPENSES										65.56	92.73
VETERANS' SVCS ENERGY									500.00		
VETERANS' SVCS ELECTRIC											
VETERANS' SVCS OIL											
VETERANS' SVCS NATURAL GAS											
VETERANS' SVCS NON-ENERGY UTILITIES											
VETERANS' SVCS REPAIRS & MAINT											
VETERANS' SVCS R&M BUILDING											
VETERANS' SVCS R&M MEP											
VETERANS' SVCS HRDWR MAINT AGREE											
VETERANS' SVCS R&M EQUIP											
VETERANS' SVCS R&M VEHICLES											
VETERANS' SVCS RENTAL & LEASES											
VETERANS' SVCS SFTWR LIC & USER FEE											
VETERANS' SVCS OTHR PROP REL SVCS	$1,400.00				$1,400.00			1,400.00	1,500.00	1,500.00	1,500.00
VETERANS' SVCS SOLID WASTE DISPOSAL											
VETERANS' SVCS PROF & TECH											
VETERANS' SVCS P&T SEM & TRAIN											
VETERANS' SVCS P&T SFTWR LIC FEE											
VETERANS' SVCS P&T LIC PROF											
VETERANS' SVCS P&T LEGAL SVCS											
VETERANS' SVCS ADVERTISING											
VETERANS' SVCS COMMUNICATIONS											
VETERANS' SVCS POSTAGE	$100.00				$100.00			100.00	11.77	8.82	18.99

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
VETERANS' SVCS COMM - LANDLINE											
VETERANS' SVCS COMM - LANDLINE											
VETERANS' SVCS WIRELESS COMMUNICATI											
VETERANS' SVCS PRINTING & MAILING											
VETERANS' SVCS LEGAL NOTICES											
VETERANS' SVCS RECREATION	$500.00				$500.00			500.00			
VETERANS' SVCS OTHR PURCH OF SVCS											
VETERANS' SVCS ENERGY SUPPLIES											
VETERANS' SVCS OFFICE SUPPLIES	$100.00				$100.00			100.00			
VETERANS' SVCS BUILD & EQUIP SUPPLI											
VETERANS' SVCS CUSTODIAL SUPPLIES											
VETERANS' SVCS GRNDSKPG SUPPLIES											
VETERANS' SVCS VEHICLE SUPPLIES											
VETERANS' SVCS GASOLINE/DIESEL											
VETERANS' SVCS FOOD & SVC SUPPLIES										500.00	500.00
VETERANS' SVCS MEDICAL SUPPLIES											
VETERANS' SVCS EDUCATIONAL SUPPLIES											
VETERANS' SVCS PUBLIC WORKS SUPPLIE											
VETERANS' SVCS OTHR SUPPLIE & EQUIP	$4,000.00				$4,000.00			4,000.00	3,138.19	3,673.69	3,760.00
VETERANS' SVCS GOVERNMENTAL CHGS	$82,500.00	-$290	-0.4%		$82,500.00	-$290	-0.4%	82,790.00	71,384.00	70,575.00	71,210.00
VETERANS' SVCS CONF IN-STATE											
VETERANS' SVCS MILEAGE	$100.00				$100.00			100.00			
VETERANS' SVCS CONF OUT-OF-STATE											
VETERANS' SVCS DUES & MEMBERSHIPS	$60.00				$60.00			60.00			

Expenses	$392,885.00	$3,611	0.9%	$47,155.00	$440,040.00	$50,766	13.0%	389,274.00	326,153.27	282,046.03	254,799.57
Health and Human Services	FY2021 DSR2 Request	BASE $ Change from FY2020	BASE % Change	FY2021 DSR4 Request	FY2021 Total Request	Total $ Change from FY2020	Total % Change	FY2020 Budgeted	FY2019 Expenditures	FY2018 Expenditures	FY2017 Expenditures
VETERANS' SVCS VETERANS' BENEFITS	$48,000.00	-$389	-0.8%		$48,000.00	-$389	-0.8%	48,389.00	25,000.00	28,500.00	15,000.00
VETERANS' SVCS OTHER EXPENSES											

January 23, 2020

Mr. Timothy Muir McDonald
Director, Department of Health & Human Services
Rosemary Recreation Complex
178 Rosemary Street
Needham, MA 02494

Dear Mr. McDonald,

The Needham Board of Health (the Board) takes seriously its responsibility to protect the public's health and its charge to safeguard the health and wellness of its community. In order to effectively discharge those responsibilities, the Board is empowered by the Massachusetts General Laws and imbued with the authority to make reasonable health regulations[1] and to "examine all nuisances, sources of filth and causes of sickness".[2]

To inform its actions in defense of the public's health, the Needham Board of Health requires that its Public Health Division research best practices, and review the best available data about all issues which might affect the health of Needham and its residents. The Board further charges that you and Ms. Tara Gurge, acting as our agents, and the Public Health Division as a whole, endeavor to educate, inform, and empower the community, elected officials, Town Departments, and community partners about sound public health practices and about the potential impact of actions, initiatives, and policy choices on the public's health.

Thank you for your attention.

Sincerely,
The Needham Board of Health

Kathleen Ward Brown, ScD Edward Cosgrove, PhD Stephen Epstein, MD, MPP

Christina S. Mathews, MPH Robert Partridge, MD, MPH

[1] M.G.L. ch. 111, s. 31, available at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section31
[2] M.G.L. ch. 111, s. 122, available at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section122

January 23, 2020

Ms. Theodora Eaton, Needham Town Clerk
Needham Town Hall
1471 Highland Avenue
Needham, MA 02492

Dear Ms. Eaton,

The Needham Board of Health (the Board) is charged by the General Court of Massachusetts to protect the public's health and to safeguard the health and wellness of its community. In order to effectively discharge those responsibilities, the Board is empowered by the Massachusetts Generals Laws and imbued with the authority to make reasonable health regulations[1] and to "examine all nuisances, sources of filth and causes of sickness"[2] and to act for the destruction, removal, or prevention of the same.

To provide the most appropriate and timely response to all of the nuisances, sources of filth, and causes of sickness which may arise in Needham and to effectively enforce adopted Board of Health regulations, the Board designates, under the provisions of Mass. General Law Chapter 111, Section 30[3] Director of Health & Human Services Timothy Muir McDonald as its agent and empowers him to act in its stead in accordance with the terms established in M.G.L. Chapter 111. Further, the Needham Board of Health designates Assistant Public Health Director as its deputy agent and empower her to act in its stead when Mr. McDonald is unavailable.

The designations occurred via the unanimous vote of the Board of Health at its public meeting on this day.

Sincerely,
The Needham Board of Health

Kathleen Ward Brown, ScD Edward Cosgrove, PhD Stephen Epstein, MD, MPP

Christina S. Mathews, MPH Robert Partridge, MD, MPH

[1] M.G.L. ch. 111, s. 31, available at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section31
[2] M.G.L. ch. 111, s. 122, available at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section122
[3] M.G.L. ch. 111, s. 122, available at: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter111/Section30

178 Rosemary Street, Needham, MA 02494
781-455-7940 (tel); 781-455-7922 (fax)
E-mail: healthdepartment@needhamma.gov
Web: www.needhamma.gov/health

Board of Health
TOWN OF NEEDHAM
AGENDA FACT SHEET

Prevent. Promote. Protect.

MEETING DATE: 1/23/2020

Agenda Item	Policy Discussion re: Residential Parcels and Distance from Points of Sale for Intoxicating Substances
Presenter(s)	Chair Edward Cosgrove Vice Chair Kathleen Ward Brown Tara Gurge, Assistant Public Health Director

1.	**BRIEF DESCRIPTION OF TOPIC TO BE DISCUSSED**
2.	**VOTE REQUIRED BY BOARD OF HEALTH**
No vote is required, nor is one expected.	
3.	**BACK UP INFORMATION ATTACHED** A map of the Mixed Use-128 Zoning Area is attached. It includes concentric distance circles from 29 and 37 Franklin Street, the current location of Sira Naturals, Needham's registered medical marijuana dispensary. This will be a continued discussion from last month.

29-37 Franklin Street & Possible Buffer Zones