RUMFORD-MEXICO SEWERAGE DISTRICT
SUPERINTENDENT'S 2021 ANNUAL REPORT

December 1, 2021

To the Honorable Chairman of the Board and Trustee Members:

I am pleased to submit the annual report of the Rumford-Mexico Sewerage District for 2021.

PERSONNEL COMMITTEE:

Board: The Board accepted the resignation of Chairwoman Mary LaPointe on January 6, 2021 after 16 years of service. The Board thanks her for her service. The Vice Chairman, Leonard McKenna was elected to replace Mrs. LaPointe as the Chairman, and the Board moved to elect Peter Gautreau (Alternate Trustee) to fill her three-year term for the Town of Rumford. The Rumford members nominated Shawn Murphy to fill the position of the Alternate Trustee. Long term Trustee Phillip Libby of Mexico retired from the Board in July after 16 years of service and the Board thanks him for his service. The Town of Mexico appointed Fawn Palmer to a three-year term as a replacement for Phillip Libby.

Staff: The District's long term Office Manager and Plant Operator Sandra Fish retired December 31, 2020 after 37 years of service and the Board thanks her for her service. Meagan Levesque was hired March 10, 2021 to replace Sandra as the Office Manager. Samantha Hanson was hired September 13, 2021 as a temporary replacement for an employee on family leave in late fall 2021. Kevin Prevost and Robert Charity achieved Grade IIB Wastewater operator certificates during the year.

DISTRICT FINANCES:

The Board approved the operating budget for 2021 with a 21% increase over 2020 which was required to cover 100% of District operating costs expected for the fiscal year. The total raised from the three towns was $1.011 MM with the projected operating expense to approximate $1.088 MM. The District has been broadcasting a planned rate increase of 21% per year until 2024 to cover the costs of capital improvements and meet Federal and State Grant requirements.

The Dix Avenue pump station roof was remediated and replaced at a cost of $45K.

The Main Plant SKADA project costs increased by 1/3 the project scope due to supply chain issues.

The Board approved the replacement of the current loader, which was awarded to Milton-CAT for $115K. The District went out to bid for financing which was awarded to Androscoggin Bank. The existing 12-year-old loader experienced multiple mechanical issues in 2021 resulting in $30K of unplanned costs.

The District was awarded a $1 MM AWRP Grant from ME DEP and a $19.55 MM Loan/Grant from USDA RD toward the rebuilding project.

OPERATIONS:

The Treatment Plant experienced one permit violation in late 2021. Considering the plague of pump plugging from rags, excessive pump and valve failures, the loss of the key electrical components due to age the plant ran well. As of November 22, 2021, the Main Plants' effluent biochemical oxygen demand (BOD) removal efficiency for 2021 is 94.1% and the effluent total suspended solids (TSS) removal efficiency is 95.2%, which translates to an average of 90 pounds of BOD discharged per day and an average 81 pounds of TSS discharged per day as of November 22, 2021.

The Composting operation experienced one issue with Salmonella early in 2021 because of wet ash received from a vendor. Meetings with the vendor resolved the wet ash issue as well as additional training of staff. Metals and PFAS data are within Maine DEP land spreading guidelines. See attachment 1.

The Town of Rumford continues to address stormwater Inflow/Infiltration issues identified in a 2009 – 2010 Wright-Pierce Engineering Study mandated by ME DEP, but has yet to supply a report of progress to the District for 2020 and 2021.

Respectfully submitted,

Roland M. Arsenault, Superintendent

Attachment 1

The samples will be analyzed for the following parameters by the methods with the detection limits listed:

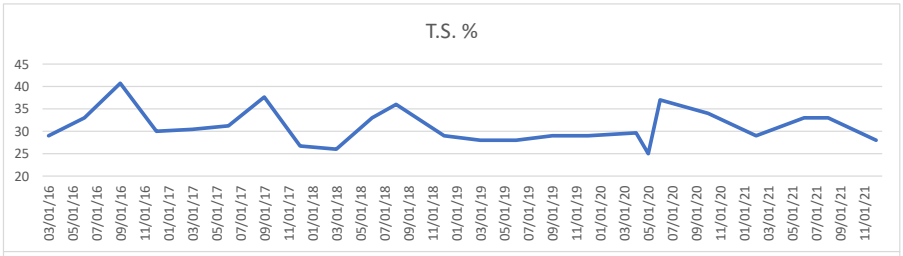
Parameter	Method	Detection Limit	Exceedance limit
Arsenic Total	EPA 6010	1 mg/Kg	7.9 mg/Kg
Cadmium Total	EPA 6010	1 mg/Kg	22 mg/Kg
Chromium Total	EPA 6010	1 mg/Kg	10000 mg/Kg
Copper Total	EPA 6010	1 mg/Kg	1700 mg/Kg
Mercury Total	EPA 7471	0.02 mg/Kg	27 mg/Kg
Molybdenum Total	EPA 6010	5 mg/Kg	456 mg/Kg
Nickel Total	EPA 6010	1 mg/Kg	530 mg/Kg
Lead Total	EPA 6010	1 mg/Kg	200 mg/Kg
Selenium Total	EPA 6010	5 mg/Kg	456 mg/Kg
Zinc Total	EPA 6010	1 mg/Kg	10000 mg/Kg
Salmonella 503 MPN	SMEWW	1.9 MPM/4g DW	3.0 MPM/4g DW
Stability	Solvita		<5.0
Total Solids	SME2540G		

The results of the salmonella, metals, and stability analysis will be reported to the DEP as part of the annual report filed by the end of February each year.

3. ***Perfluorinated Alkylated Substances (PFAS) Analysis:***
   Due to recent findings by US EPA, and ME DEP Memorandum dated March 22, 2019, the District will, upon approval of the District's revised Sampling and Analysis Plan, begin sampling and analysis for three PFAS substances in our compost immediately: PFOA (0.0025 mg/kg), PFOS (0.0052 mg/kg) and PFBS (1.9 mg/kg.) The initial sampling event was done in phases of two (2) to three (3) samples per week, but not to exceed seven (7) total sampling events to establish a base of data. The initial sampling round was completed in early 2019.

   Ongoing PFAS sampling and analytical requirements: MEDEP issued a letter dated February 25, 2020 requiring ongoing biannual PFAS testing of the District's finished compost pile(s), but also added ongoing representative sampling and analysis for PFAS once per year for all sludge inputs to the composting process.

   - Prior to sampling, the Sampler shall ensure their clothing worn during sampling events is of sufficient age to have been washed/dried 6 or more times after purchase, made of synthetic or natural fibers (preferable cotton), and without fabric softener. (Fabric softener is prohibited by MEDEP.) The sampler shall wear polyurethane and or PVC boots during sampling the event(s.) The sampler must wash their hands and don nitrile laboratory gloves during sampling rounds.
     - PFAS contamination during sample collection can occur from several common sources, including food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will help to minimize this type of accidental contamination of the samples."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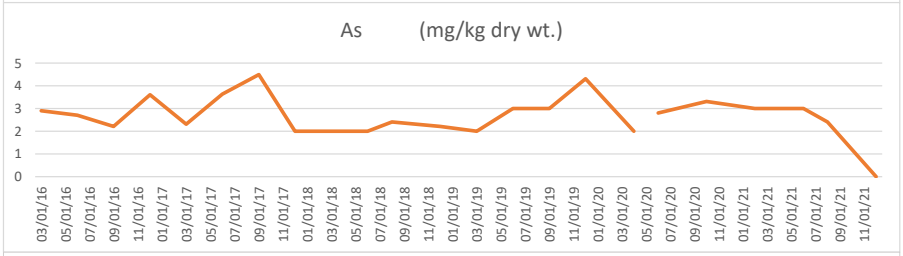
As (mg/kg dry wt.)
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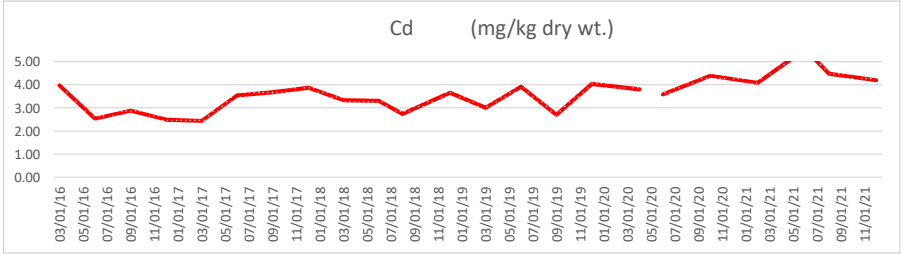
Cd (mg/kg dry wt.)
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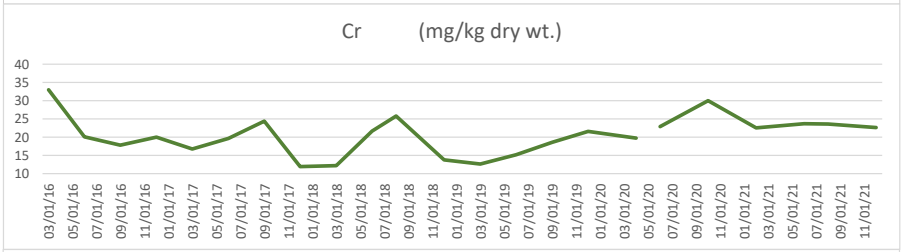
Cr (mg/kg dry wt.)
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35
30
25
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15
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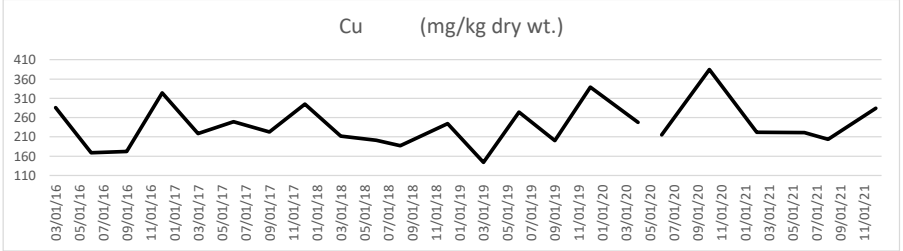
Cu (mg/kg dry wt.)
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360
310
260
210
160
110
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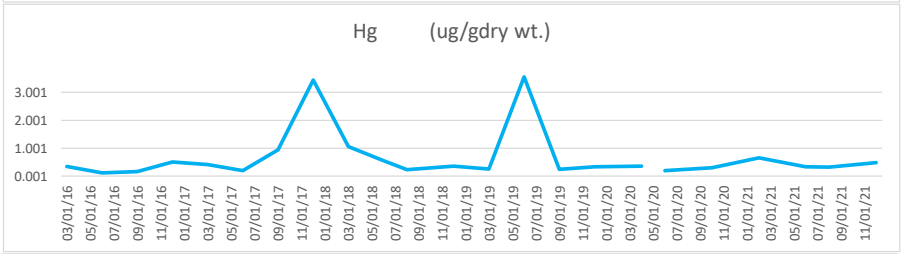
Hg (ug/gdry wt.)
3.001
2.001
1.001
0.001
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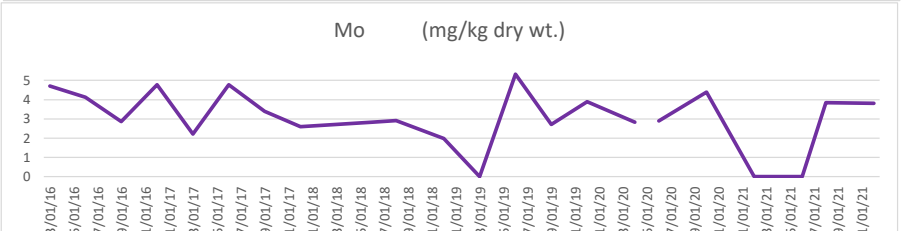
Mo (mg/kg dry wt.)
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4
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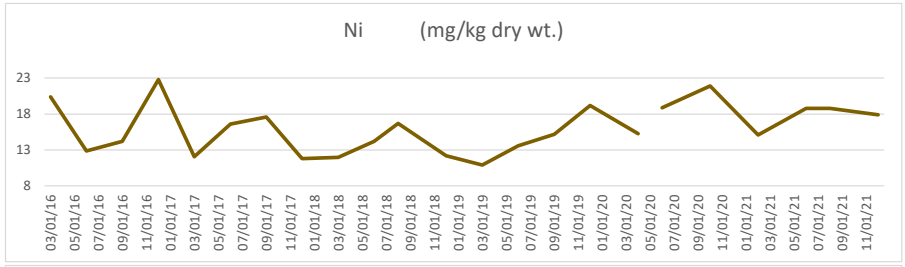
Ni (mg/kg dry wt.)
23
18
13
8
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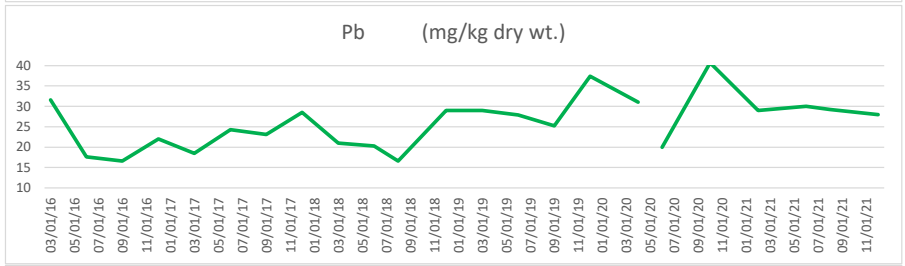
Pb (mg/kg dry wt.)
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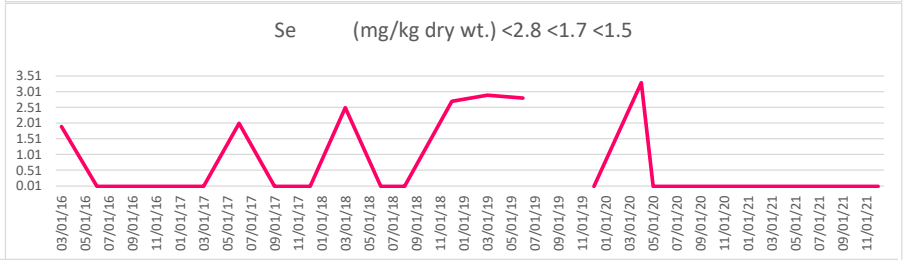
Se (mg/kg dry wt.) <2.8 <1.7 <1.5
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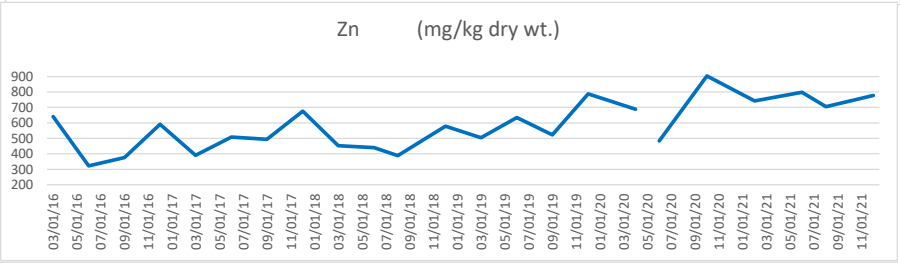
Zn (mg/kg dry wt.)
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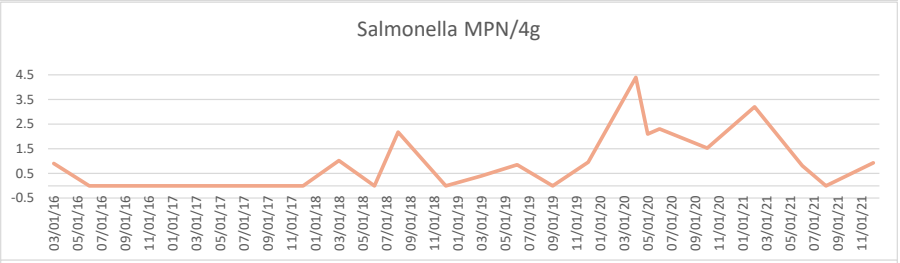
Salmonella MPN/4g
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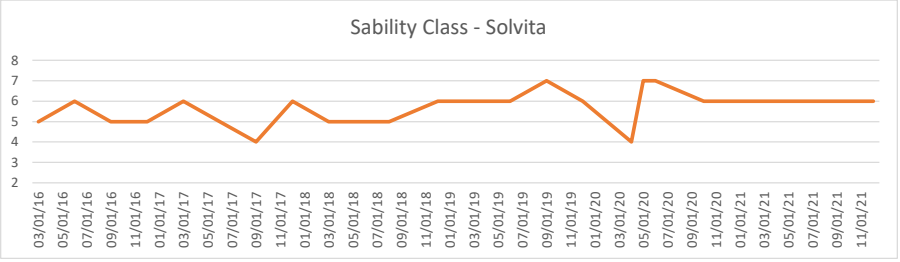
Sability Class - Solvita
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Estimation of Soil Pollutant Concentration Increase Based on Residual Pollutant Concentration (Chapter 419 Appendix A.2.C)

Facility Name:	DEP License:	Location:
Rumford-Mexico Sewerage District	S-007595-CH-C-R	Mexico Maine

Type of Sample:
Finished Compost

SI = (RPc * LR *SL) / 2000

Where:

SI - Cumulative soil concentration increase in mg-pollutant/kg-soil

RPc - Pollutant concerntration in the residual in mg-pollutant/kg-residual

LR - Residual loading rate in metric tons-residual/hectare/yr (amount of residual applied in a year)

SL - Site Life, or the number of times the residual will be applied at the site in 100 years, in years

2000 - is the assumed dry mass of soil in metric tons/hectare (dry weight) in a plow layer 15 cm thick (based on a bulk density of 1.33 g/cm^3)

Chapter 418 Screening Concentration **PFBS** in mg/kg	1.9
Chapter 418 Screening Concentration **PFOA** in mg/kg	0.0025
Chapter 418 Screening Concentration **PFOS** in mg/kg	0.0052

Analytical Results	As reported in ng/g	Converted to mg/kg
PFBS	3.9	0.003900
PFOA	4.2	0.004200
PFOS	11.95	0.011950

Conversion Factors:

Dry tons / acre * 2.24 = Dry metric tons / hectare

Wet tons * (% solids * 0.01) = Dry tons

RMSD Finished Compost = 0.60 wet tons/yard or 1.67 yd3/ton

Loading- wet yd3/ton	wet yards
1.67	20.04

Convert Wet Tons to Dry Tons:

Wet Tons	% solids	Conversion Factor	Dry Tons
12	32.48	0.01	3.8976

Convert Dry Tons / Acre to Dry Metric Tons / Hectare:

Dry Tons / Acre	Conversion Factor	Dry Metric Tons / Hectare
3.8976	2.24	8.731

PFBS Increase in Soil (mg/kg)

PFBS concentration in residual (mg/kg)	0.0039
Loading Rate (dmt/ha)	8.73
Dry Mass of Soil (mt/ha)	2000

Number of Times Residual Applied at LR	PFBS increase in soil (mg/kg)
100	0.001702
75	0.001277
50	0.000851
25	0.000426
10	0.000170
1	0.000017

PFOA Increase in Soil (mg/kg)

PFOA concentration in residual (mg/kg)	0.0042
Loading Rate (dmt/ha)	8.73
Dry Mass of Soil (mt/ha)	2000

Number of Times Residual Applied at LR	PFOA increase in soil (mg/kg)
100	0.001833
75	0.001375
50	0.000917
25	0.000458
10	0.000183
1	0.000018

PFOS Increase in Soil (mg/kg)

PFOS concentration in residual (mg/kg)	0.01195
Loading Rate (dmt/ha)	8.73
Dry Mass of Soil (mt/ha)	2000

Number of Times Residual Applied at LR	PFOS increase in soil (mg/kg)
100	0.005217
75	0.003912
50	0.002608
25	0.001304
10	0.000522
1	0.000052

Soil Increases Using Vermont Background Levels[1]

Chapter 418 Screening Concentration **PFBS** in mg/kg	1.9
Chapter 418 Screening Concentration **PFOA** in mg/kg	0.0025
Chapter 418 Screening Concentration **PFOS** in mg/kg	0.0052
Chapter 418 Screening Concentration **PFHxA** in mg/kg	N/A
Analytical Results PFBS in mg/kg	0.0039
Analytical Results PFOA in mg/kg	0.0042
Analytical Results PFOS in mg/kg	0.01195
Soil Increase Per Year For PFBS in mg/kg	0.000017
Soil Increase Per Year For PFOA in mg/kg	0.000018
Soil Increase Per Year For PFOS in mg/kg	0.000052

Mean Concentration of Select PFAS (all samples) Table 5.1

Analyte	Concnetration in ng/kg	Concentration in mg/kg
PFBS	230	0.00023
PFOA	520	0.00052
PFOS	1100	0.0011
PFHxA	520	0.00052

Mean Concentration of Select PFAS (outlier removed) Table 5.2

Analyte	Concnetration in ng/kg	Concentration in mg/kg
PFBS	210	0.00021
PFOA	500	0.0005
PFOS	970	0.00097
PFHxA	400	0.0004

Proposed UTLs for Select PFAS Table 7

Analyte	Concnetration in ng/kg	Concentration in mg/kg
PFBS	590	0.00059
PFOA	1600	0.0016
PFOS	3400	0.0034
PFHxA	870	0.00087

PFBS Concentration In Soil Using Mean Background

PFBS soil increase per year (mg/kg)	1.70247E-05
% background increase from 1 application	**7.40**

Number of Years Residual Applied	PFBS Conc in Soil (mg/kg)
1	0.000247025
2	0.000264049
3	0.000281074
4	0.000298099
5	0.000315124

PFBS Concentration In Soil Using Mean Background (outlier removed)

PFBS soil increase per year (mg/kg)	1.70247E-05
% background increase from 1 application	**8.11**

Number of Years Residual Applied	PFBS Conc in Soil (mg/kg)
1	0.000227025
2	0.000244049
3	0.000261074
4	0.000278099
5	0.000295124

PFBS Concentration In Soil Using Proposed UTL

PFBS soil increase per year (mg/kg)	1.70247E-05
% background increase from 1 application	**2.89**

Number of Years Residual Applied	PFBS Conc in Soil (mg/kg)
1	0.000607025
2	0.000624049
3	0.000641074
4	0.000658099
5	0.000675124

PFOA Concentration In Soil Using Mean Background

PFOA soil increase per year (mg/kg)	1.83343E-05
% background increase from 1 application	**3.53**

Number of Years Residual Applied	PFOA Conc in Soil After Application (mg/kg)
1	0.000538334
2	0.000556669
3	0.000575003
4	0.000593337
5	0.000611672

PFOA Concentration In Soil Using Mean Background (outlier removed)

PFOA soil increase per year (mg/kg)	1.83343E-05
% background increase from 1 application	**3.67**

Number of Years Residual Applied	PFOA Conc in Soil After Application (mg/kg)
1	0.000518334
2	0.000536669
3	0.000555003
4	0.000573337
5	0.000591672

PFOA Concentration In Soil Using Proposed UTL

PFOA soil increase per year (mg/kg)	1.83343E-05
% background increase from 1 application	**1.15**

Number of Years Residual Applied	PFOA Conc in Soil After Application (mg/kg)
1	0.001618334
2	0.001636669
3	0.001655003
4	0.001673337
5	0.001691672

PFOS Concentration In Soil Using Mean Background

PFOS soil increase per year (mg/kg)	5.21655E-05
% background increase from 1 application	**4.74**

Number of Years Residual Applied	PFOS Conc in Soil After Application (mg/kg)
1	0.001152165
2	0.001204331
3	0.001256496
4	0.001308662
5	0.001360827

PFOS Concentration In Soil Using Mean Background (outlier removed)

PFOS soil increase per year (mg/kg)	5.21655E-05
% background increase from 1 application	**5.38**

Number of Years Residual Applied	PFOS Conc in Soil After Application (mg/kg)
1	0.001022165
2	0.001074331
3	0.001126496
4	0.001178662
5	0.001230827

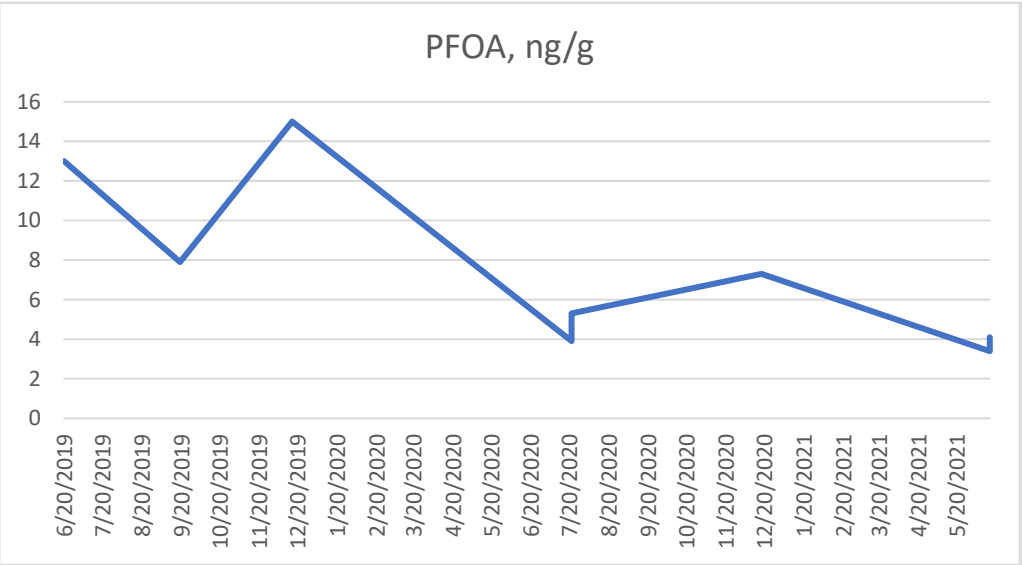
PFOS Concentration In Soil Using Proposed UTL

PFOS soil increase per year (mg/kg)	5.21655E-05
% background increase from 1 application	**1.53**

Number of Years Residual Applied	PFOS Conc in Soil After Application (mg/kg)
1	0.003452165
2	0.003504331
3	0.003556496
4	0.003608662
5	0.003660827

[1]Zhu, W., Roakes, H., Zemba, S., Badireddy, A., *PFAS Background in Vermont Shallow Soils* (February 8, 2019)

		Limits, ng/g	2.5	1900	5.2				
Sampler	DATE	Sample ID	Parameter PFOA, ng/g	Parameter PFBS, ng/g	Parameter PFOS, ng/g	Moisture %	Parameter PFOA, mg/kg	Parameter PFBS, mg/kg	Parameter PFOS, mg/kg
RV	6/20/2019	Finished C.S	13	7	9.3	69.6	0.013	0.007	0.0093
RV	9/19/2019	Finished C.S	7.9	4.4	3.7	71	0.0079	0.0044	0.0037
RV/KP	12/16/2019	Finished C.S	15	9.7	17	69.1	0.015	0.0097	0.017
RA/KP	7/22/2020	Belt Press Sludge	3.9	U	7.5	86.1	0.0039	U	0.0075
RA/KP	7/22/2020	Finished C.S	5.3	4	3.4	64.6	0.0053	0.004	0.0034
RA/KP	12/18/2020	Finished C.S	7.3	3.9	5.9	70.6	0.0073	0.0039	0.0059
KP/RC	6/15/2021	Finished C.S	3.4	3.3	14	64.5	0.0034	0.0033	0.014
KP/RC	6/15/2021	Belt Press Sludge	4.1	U	5.0	86.6	0.0041		0.005


PFOA, ng/g
16
14
12
10
8
6
4
2
0
6/20/2019
7/20/2019
8/20/2019
9/20/2019
10/20/2019
11/20/2019
12/20/2019
1/20/2020
2/20/2020
3/20/2020
4/20/2020
5/20/2020
6/20/2020
7/20/2020
8/20/2020
9/20/2020
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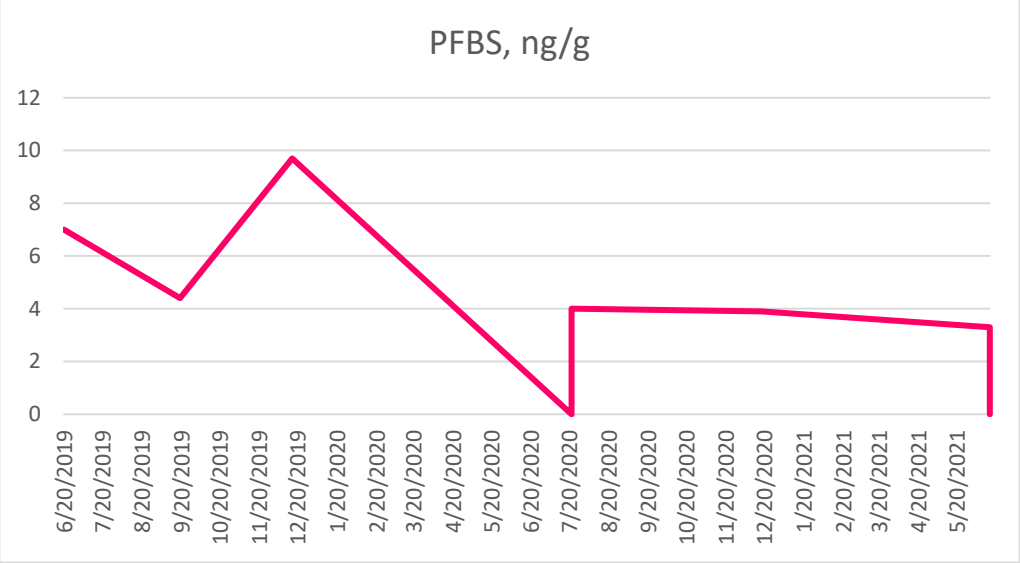
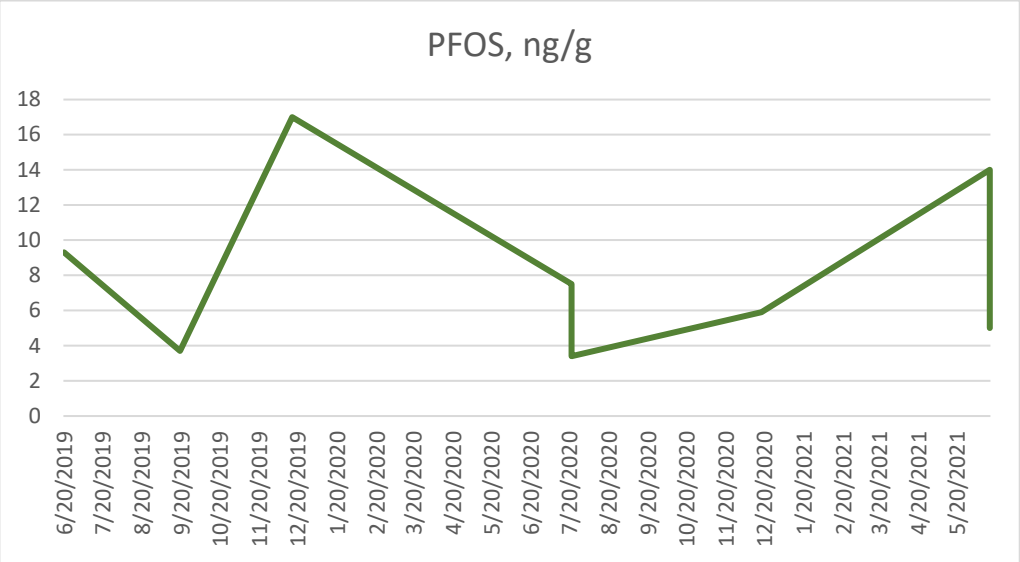
4/20/2021
5/20/2021


PFBS, ng/g
12
10
8
6
4
2
0
6/20/2019
7/20/2019
8/20/2019
9/20/2019
10/20/2019
11/20/2019
12/20/2019
1/20/2020
2/20/2020
3/20/2020
4/20/2020
5/20/2020
6/20/2020
7/20/2020
8/20/2020
9/20/2020
10/20/2020
11/20/2020
12/20/2020
1/20/2021
2/20/2021
3/20/2021
4/20/2021
5/20/2021


PFOS, ng/g
18
16
14
12
10
8
6
4
2
0
6/20/2019
7/20/2019
8/20/2019
9/20/2019
10/20/2019
11/20/2019
12/20/2019
1/20/2020
2/20/2020
3/20/2020
4/20/2020
5/20/2020
6/20/2020
7/20/2020
8/20/2020
9/20/2020
10/20/2020
11/20/2020
12/20/2020
1/20/2021
2/20/2021
3/20/2021
4/20/2021
5/20/2021