

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Land Management Administration • Resource Management Program

Summary of Sewage Sludge Plant Available Nitrogen (PAN) Calculations For CY- 2020

(Results of Sewage Sludge Analyses From 9/16/2017 to 9/15/2019 Used to calculate these rates)

Wastewater Treatment Plant	County	Sewage Sludge Type	Earliest Analysis	Latest Analysis	No. of Analyses	Organic Nitrogen	PAN K=1	PAN K=0.5	% P ₂ O ₅	% K ₂ O	% Solid Content	CCE
Annapolis	Anne Arundel											
Cake		LS	09/22/2017	05/21/2019	9	3.2352	23.02		3.2195	0.1565	26.96	39.26
Back River	Baltimore											
Cake		An Dig	10/01/2017	08/31/2019	23	4.7027	34.47		6.7718	0.2210	20.94	0.00
Ballenger Creek	Frederick											
Cake		LS	10/03/2017	08/06/2019	23	2.5251	15.78		2.4621	0.2290	30.94	26.21
Beltsville USDA - East	Prince George's											
Liquid		Ae Dig	04/30/2018	06/11/2019	4	3.2758	42.79	40.90	5.3071	0.4661	1.54	0.00
Bowie	Prince George's											
Cake		LS	10/11/2017	07/31/2019	14	4.2388	31.07		4.4459	0.2869	20.23	31.27
Broadneck	Anne Arundel											
Cake		LS	11/22/2017	05/06/2019	6	5.0563	35.01		3.6678	0.2558	17.54	25.33
Broadwater	Anne Arundel											
Cake		LS	02/09/2019	05/21/2019	2	2.4671	15.86		2.5877	0.1249	32.61	51.28
Cox Creek	Anne Arundel											
Cake		LS	09/20/2017	05/21/2019	10	4.1759	30.44		2.6358	0.4721	24.71	25.39

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K=1 (Volatilization Factor for incorporated liquid and dewatered sewage sludge applied in any manner), K=0.5 (Volatilization Factor for surface applied liquid sewage sludge), P₂O₅ (% Available Phosphate), K₂O (% Water Soluble Potash), CCE (% Calcium Carbonate Equivalent, it is the neutralizing power per weight of material of the lime stabilized sewage sludge relative to pure calcium carbonate CaCO₃). P₂O₅ = [(%TP)*2.29], while K₂O = [(%TK)*1.2], %TP (Percent Total Phosphorus), and %TK (Percent Total Potassium).

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Damascus	Montgomery											
Cake		LS	10/03/2017	07/09/2019	22	5.1439	32.51		5.9051	0.4378	20.13	47.77
Deep Creek Lake	Garrett											
Cake		Ae Dig	07/09/2018	10/03/2018	2	2.9776	28.26		2.2511	0.2550	22.30	0.00
Liquid		Ae Dig	02/21/2018	10/03/2018	4	3.3501	40.65	40.65	5.6220	0.6231	2.12	0.00
Dorsey Run Advanced	Anne Arundel											
Cake		LS	11/09/2017	07/26/2019	14	2.4292	17.93		2.2521	0.0955	31.90	51.39
Frederick	Frederick											
Cake		An Dig	11/02/2017	07/01/2019	11	5.3008	37.86		7.9567	0.1528	19.80	0.00
Freedom District	Carroll											
Cake		LS	11/21/2017	05/17/2019	14	3.4844	26.99		4.3052	0.2488	27.62	39.00
Grantsville	Garrett											
Liquid		Ae Dig	03/01/2018	05/14/2019	3	2.4360	25.63	23.09	2.2289	0.2548	2.37	0.00
Havre de Grace	Harford											
Cake		Ae Dig	03/06/2018	08/29/2018	3	3.6763	31.20		5.9540	0.3720	17.70	13.00
Leonardtown	St. Mary's											
Cake		Ae Dig	09/19/2017	03/12/2018	2	4.4935	34.09		5.2670	0.3000	16.10	7.50
Little Patuxent	Howard											
Cake		An Dig	04/24/2019	08/05/2019	2	5.8560	53.20		7.5341	0.2616	19.50	0.00
Cake		LS	09/21/2017	08/05/2019	21	4.1182	33.02		3.8107	0.3560	36.29	42.74

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Marlay-Taylor Water Reclamation Facility St. Mary's Cake		An Dig	11/14/2017	04/04/2019	6	4.5105	28.93		5.7403	0.1912	19.73	0.00
Maryland City Water Reclamation Facility Anne Arundel Cake		LS	11/22/2017	05/21/2019	5	4.6273	30.74		2.8075	0.3660	23.10	42.20
Maryland Correctional Institution (MCI) Washington Cake		LS	10/11/2017	07/03/2019	13	3.8090	27.41		3.9652	0.2850	22.38	38.96
Mattawoman Charles Cake		LS	11/08/2017	07/16/2019	11	3.1147	21.34		3.6224	0.2013	26.33	18.42
Mount Airy Carroll Cake		LS	11/09/2017	05/07/2019	7	3.7202	27.23		3.1897	0.3933	26.00	44.89
Mount Saint Mary's University Frederick Liquid		Ae Dig	02/12/2018	02/04/2019	2	3.1710	35.01	35.01	5.3472	0.8508	0.90	0.00
Ocean City Worcester Cake		LS	09/22/2017	10/17/2018	14	2.5858	17.97		2.3991	0.1900	41.32	50.21
Parkway Prince George's Cake		LS	11/15/2017	07/09/2019	12	3.2436	20.74		2.6348	0.1241	29.73	39.06
Patuxent Anne Arundel Cake		LS	09/21/2017	05/23/2019	9	5.4225	35.09		3.9083	0.3869	19.60	29.11
Piscataway Prince George's Cake		LS	10/03/2017	07/16/2019	40	2.9328	18.11		3.0699	0.0395	24.72	43.76

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QA 1-Kent Island	Queen Anne's											
Cake		Ae Dig	11/06/2017	02/26/2019	6	4.8736	35.20		6.7135	0.4802	18.00	0.00
Rock Hall	Kent											
Liquid		Ae Dig	04/24/2018	04/24/2018	1	2.3580	26.79	25.79	7.9692	0.2112	11.60	0.00
Seneca Creek	Montgomery											
Cake		LS	09/19/2017	07/16/2019	45	5.5316	37.62		5.4171	0.4116	24.19	36.66
Sharptown	Wicomico											
Liquid		Ae Dig	04/24/2018	04/24/2018	1	0.0635	0.48	0.43	0.0424	0.3911	1.60	14.80
Sod Run	Harford											
Cake		An Dig	10/03/2017	08/05/2019	21	4.4206	32.14		7.8449	0.1559	17.52	0.00
Liquid		An Dig	01/02/2018	01/02/2018	1	3.8230	30.83	23.06	8.1524	0.2448	14.90	0.00
Taneytown	Carroll											
Cake		Ae Dig	03/01/2018	03/19/2019	2	1.9007	27.39		7.6830	0.3510	22.11	0.00
Thurmont	Frederick											
Cake		Ae Dig	08/27/2018	08/27/2018	1	4.4972	41.24		5.7708	0.2292	15.99	5.67
Liquid		Ae Dig	01/31/2018	01/31/2018	1	7.4407	54.43	49.93	8.8623	1.0824	11.01	0.00
Upper Potomac River Commission/Westernport	Allegany											
Cake		Ae Dig	04/04/2018	03/13/2019	3	0.5402	4.19		0.3064	0.0477	19.60	0.00
Valley Forge Sewage Authority	Outside of Maryland											
Cake		LS	10/24/2017	12/11/2018	15	4.2375	28.24		1.6442	0.1544	30.46	25.57

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Wicomico Shores	St. Mary's											
Cake		Ae Dig	04/03/2018	04/11/2019	2	1.8410	18.61		4.1449	0.1944	32.55	0.00

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