

Metrogro Overview 2024

Commission Meeting
March 27th, 2025

Madison Metropolitan Sewerage District



Metrogro – What is it?

The District's Class B Biosolids product

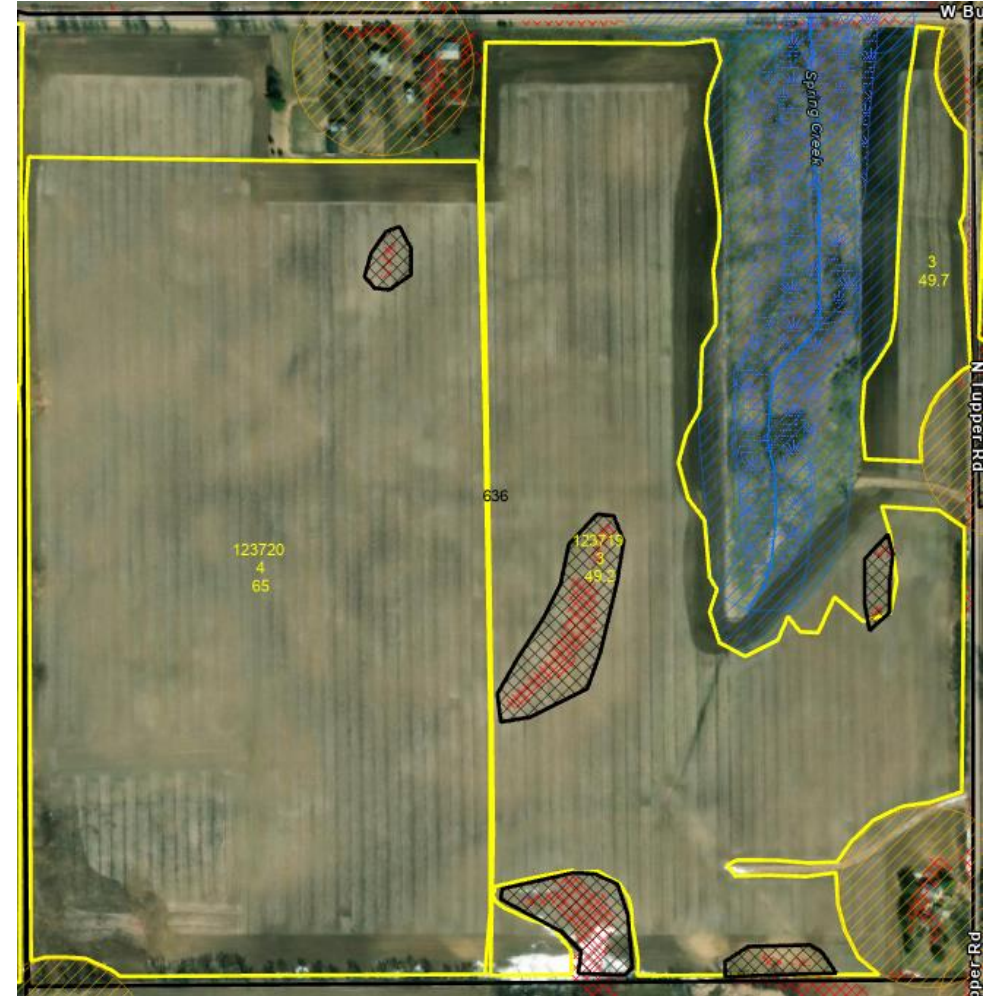
Biosolids are the nutrient-rich organic materials resulting from the treatment of sewage sludge

- Beneficial Resource
- Contains essential macro and micro nutrients
- Organic matter to increase soil health



Metrogro

- Class B Liquid Biosolids Land Application Program
 - Sub Surface Injection
 - Each field permitted
 - Application Setbacks
 - Houses, Wells, Wetland, Schools
- Regulated by WDNR, Administrative Code NR204
- Application Rates Determined by UW A2809



Biosolids: Class A vs Class B

Class B Biosolids

- Fcoli limit of 2,000,000 MPN/g TS
- Land application regulated by NR204
- Incorporated or Injected at time of application

Class A Biosolids

- Advanced treatment – Heat Drying, Thermophilic Digestion, Alkaline Treatment
- Fcoli limit of 1,000 MPN/g TS
- Reduced land application regulations
- Additional testing required



Metrogro Testing

- Daily Grab Samples
- Weekly Composite
 - Nutrients – TKN, NH₃, P, K, WEP, Total Solids
- Monthly Composite
 - Nutrients – Same as Above
 - Metals – Arsenic, Cadmium, Copper, Mercury, Molybdenum, Nickel, Lead, Selenium, Zinc, Chromium, Iron
- Fcoli
 - 7 Samples per Month
 - Geometric Mean of Samples



Metals Data

2024 Metals Average Results

Arsenic	4.7 ppm
Cadmium	.9 ppm
Copper	509 ppm
Mercury	.4 ppm
Molybdenum	20.7 ppm
Nickel	22.9 ppm
Lead	18.6 ppm
Selenium	6.5 ppm
Zinc	700 ppm
Chromium	41.8 ppm

Metal	PPM or mg/kg	High Quality Limit	% of HQ Limit	Ceiling Limit	% of Ceiling Limit	Cumulative Lifetime Loadings Limit #/Ac	Metals Loading #/Acre	% of Lifetime Loading Limit	# of Applications to Reach Lifetime Loading
Arsenic	4.8	41	11.71%	75	6.40%	36	0.0144	0.04%	2500
Cadmium	1	39	2.56%	85	1.18%	34	0.003	0.01%	11333
Copper	548	1500	36.53%	4300	12.74%	1339	1.644	0.12%	814
Mercury	0.4	17	2.35%	57	0.70%	15	0.0012	0.01%	12500
Molybdenum	22.7	NA	NA	75	30.27%	NA	0.0681	NA	NA
Nickel	27	420	6.43%	420	6.43%	375	0.081	0.02%	4630
Lead	20	300	6.67%	840	2.38%	268	0.06	0.02%	4467
Selenium	6.2	100	6.20%	100	6.20%	89	0.0186	0.02%	4785
Zinc	778	2800	27.79%	7500	10.37%	NA	2.334	NA	NA
Chromium	43.5	NA	NA	NA	NA	NA	0.1305	NA	NA

Metals Data is the Comp Monthly 5 Year Average

Metals Loading per Acre is based on 1.5 dry ton/ac per application (5 Year average)

Years to Reach Lifetime Loading is assumed 3 Year application rotation



FColi Data

- Class B Fcoli Geometric Mean Limit
 - 2,000,000 MPN/g TS
- Class A Fcoli Geometric Mean Limit
 - 1,000 MPN/g TS

2024 Fcoli Results

March	528 MPN/g TS
April	112 MPN/g TS
May	207 MPN/g TS
July	38 MPN/g TS
August	39 MPN/g TS
September	38 MPN/g TS
October	617 MPN/g TS
November	18,870 MPN/g TS

5 Year Fcoli Geometric Mean Data 2020-2024			
Analysis Start	Analysis End	Dry Value	Units
3/1/2020	4/30/2020	1053	MPN/g TS
5/1/2020	6/30/2020	359	MPN/g TS
7/1/2020	8/31/2020	36	MPN/g TS
9/1/2020	10/31/2020	1271	MPN/g TS
11/1/2020	12/31/2020	12957	MPN/g TS
3/1/2021	4/30/2021	333	MPN/g TS
7/1/2021	8/31/2021	37	MPN/g TS
9/1/2021	10/31/2021	45	MPN/g TS
11/1/2021	12/31/2021	32282	MPN/g TS
4/1/2022	4/30/2022	1389	MPN/g TS
5/1/2022	5/31/2022	589	MPN/g TS
7/1/2022	7/31/2022	38	MPN/g TS
8/1/2022	8/31/2022	37	MPN/g TS
9/1/2022	9/30/2022	153	MPN/g TS
10/1/2022	10/31/2022	13884	MPN/g TS
11/1/2022	11/30/2022	35667	MPN/g TS
4/1/2023	5/31/2023	327	MPN/g TS
5/1/2023	5/31/2023	531	MPN/g TS
7/1/2023	7/31/2023	54	MPN/g TS
8/1/2023	8/31/2023	37	MPN/g TS
9/1/2023	9/30/2023	37	MPN/g TS
10/1/2023	10/31/2023	538	MPN/g TS
11/1/2023	11/30/2023	55263	MPN/g TS
3/1/2024	3/31/2024	528	MPN/g TS
4/1/2024	5/31/2024	112	MPN/g TS
5/1/2024	5/31/2024	207	MPN/g TS
7/1/2024	7/31/2024	38	MPN/g TS
8/1/2024	8/31/2024	39	MPN/g TS
9/1/2024	9/30/2024	38	MPN/g TS
10/1/2024	10/31/2024	617	MPN/g TS
11/1/2024	11/30/2024	18870	MPN/g TS



Nutrient Data

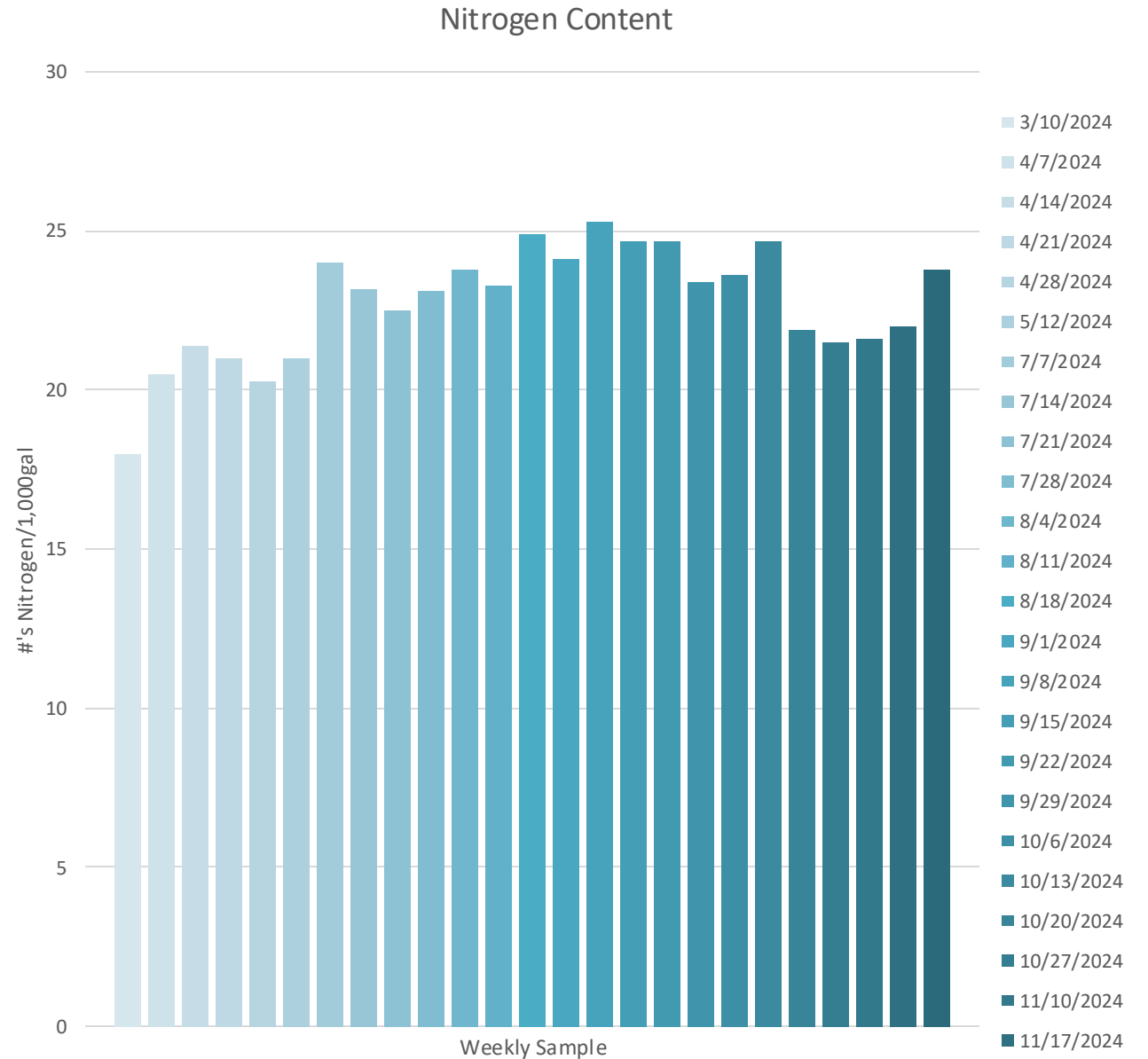
2024 Comp Weekly Nutrients

- 25 weekly samples analyzed (results %TS)
 - TKN – 9.19
 - Org N – 4.95
 - NH3 – 4.24
 - TP – 3.26
 - K – 2.4

This data is entered into SnapPlus to determine nutrient analysis

Average N-P-K Analysis

2024	22.7 - 24.8 - 2.4
2023	22.7 – 25.5 – 2.2
2022	23.3 – 25.1 – 2.2



Gallons Hauled

Gallons Hauled

2024 – 40,118,400 gal = 8,475 Dry Tn

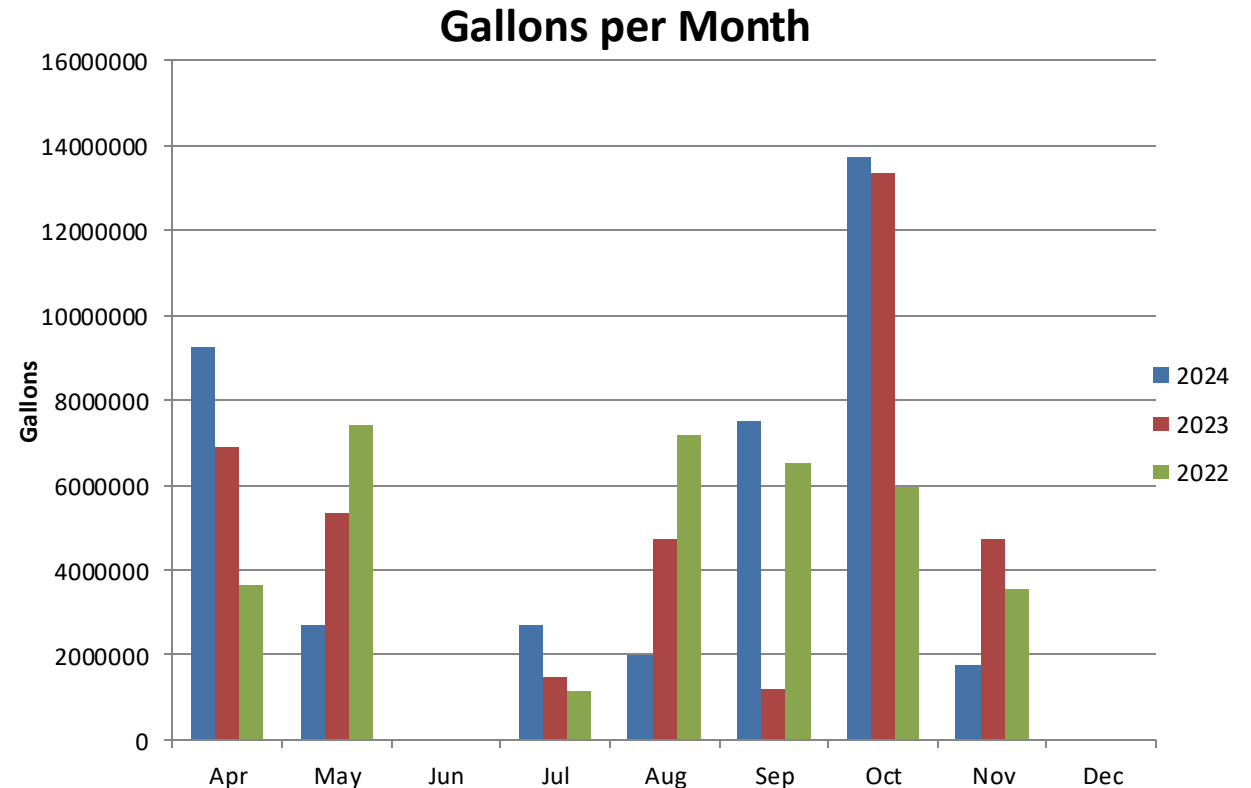
2023 – 37,734,000 gal = 7,971 Dry Tn

2022 – 35,486,000 gal = 7,496 Dry Tn

Most gallons hauled in one day

- 1,192,000 spring of 2024

Total loads hauled 2024 – 7,500



Acres Applied

Acres Applied

2024 - 6,985

2023 - 6,192

2022 - 4,923

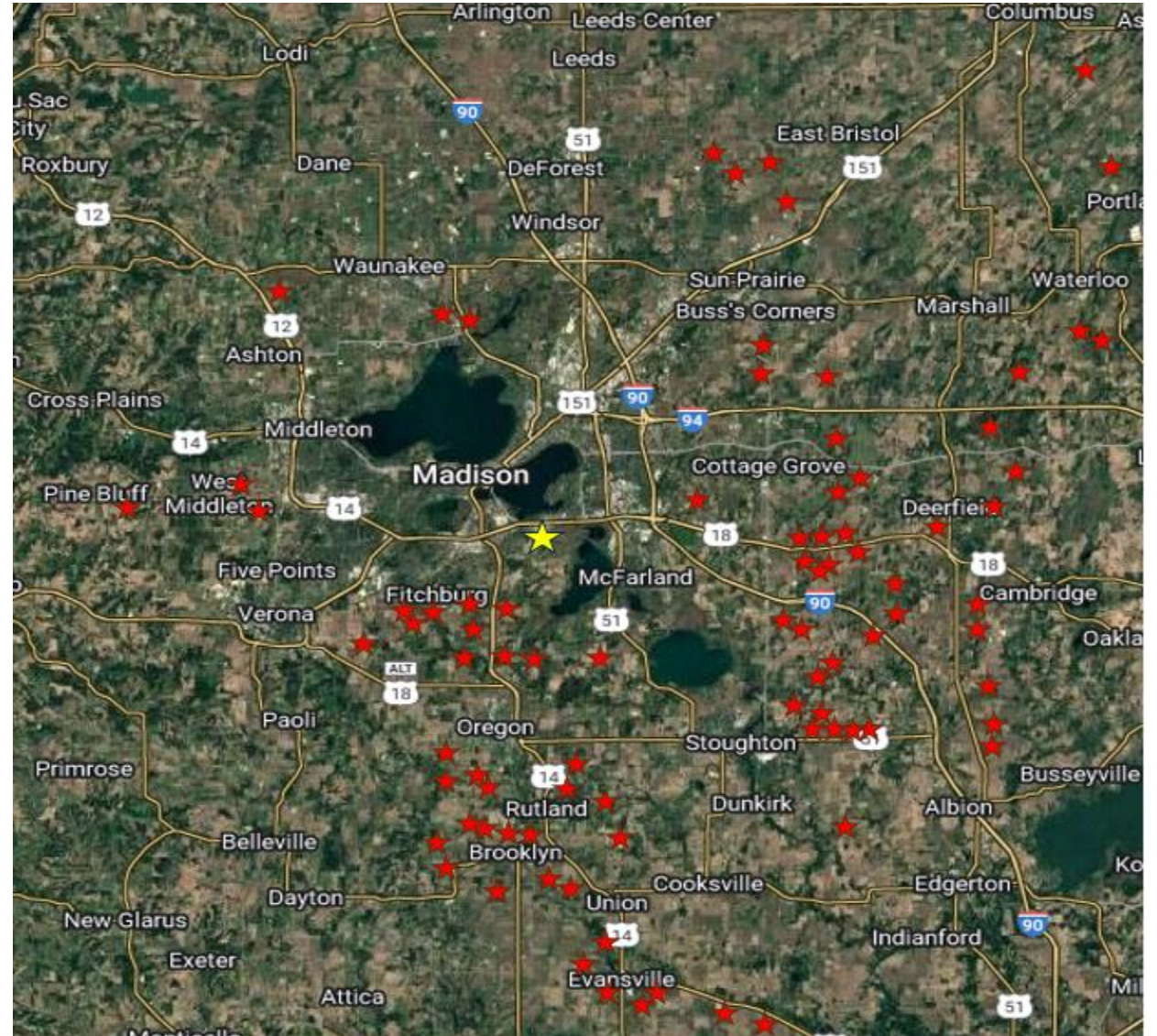
76% of acres applied with LDI

Average gallons per acre = 5,740

Average dry tons per acre = 1.2

Farms = 111

Fields = 150



New Equipment

- 5th Oxbo Applicator w/ Low Disturbance Bar
 - Increased efficiency while loading 6600/4000
 - Decreased dependency on nurse tanks
 - Modern Technology
- 19th Trailer
 - Increased efficiency 5600/5000
 - Assists with speed for longer hauls



Tillage vs. Low Disturbance Injection



Tillage



LDI



Old vs. New



Upcoming/Current Projects

- Yahara WINS Partnership
 - Explore potential Phosphorus savings with implemented practices
- Biosolids Facility Plan
 - Identify potential new biosolids products
- Metrogro Database Project



Questions?

Madison Metropolitan
Sewerage District

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