

Tennessee

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	54 (survey), 245 CWNS	56	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	2	2	-----
Total number of your state's WWTPs sending to those Separate Preparers:	0	~4	-----
Number of operating sludge incinerators in your state (total):	0	0	-----
Fluidized bed:	0	0	-----
Multiple hearth:	0	0	-----
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	a few	-----
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	101	-----
Number of WWTPs in your state with <i>sludge</i> lagoons:	data not requested for 2004	several	-----
Wastewater Flow Totals			
Total statewide average daily wastewater flow (MGD):	data not requested for 2004	742	-----
Total statewide WWTP <i>design</i> capacity for wastewater flow (MGD):	data not requested for 2004	no data	-----
Total statewide average daily <i>dry weather</i> flow (MGD):	data not requested for 2004	no data	-----
Other Totals			
Number of documented odor & nuisance complaints received by state in 2018 related to biosolids transportation and use or disposal outside of the gates of the WWTP:	data not requested for 2004	several	-----
Number of WWTPs involved in those complaints:	data not requested for 2004	0	-----
Percent of population served by on-site systems (e.g. septic systems):	30%	30%	-----

Data presented here are from the U.S. EPA ECHO database and the NBDP survey of water resource recovery facilities (WRRFs). Data from 2018 were available for 50 WRRFs in ECHO; seven of those same facilities responded to the NBDP survey. These 50 WRRFs together treat approx. 73% of Tennessee average daily wastewater flow. Data were estimated for an additional six WRRFs, with input from a state expert, using flow data from Seiple et al. 2020 and an average of annual solids produced per million gallons of daily wastewater flow calculated from reported 2018 data (from ECHO and the NBDP survey). The 56 WRRFs represented here (6 with estimated data) treat ~82% of TN's daily wastewater flow, meeting NBDP's standard of representing at least 75% of a state's flow. The Clean Watershed Survey counted 256 WRRFs in TN. • The two separate preparers are composting operations: Sevier Solid Waste Inc. and South Eastern Compost. An estimated four WRRFs sent solids to them for treatment in 2018. • All of the larger WRRFs in TN have industrial pretreatment programs - 101 in all (<https://www.tn.gov/environment/permit-permits/water-permits/1/npdes-permits/1/npdes-pretreatment-program/dental-rule/tn-pretreatment-control-authorities.html>). • Wastewater solids lagoons are used by many smaller facilities, including Murfreesboro, Bartlett, and Smyrna. These lagoons are dredged and the solids treated and used or disposed every 5 - 30 years. • Statewide average daily wastewater flow is from Seiple et al. 2020. • Percent population served by onsite systems is the same as reported for 2004; 30%.

Biosolids Use and Disposal

UNITS:	Dry metric tons	Dry metric tons	
BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total): 110,000			
Summary			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids
Beneficial Use (applied to soils, not including ADC)	29	33,170	44 68,774
Disposal & Alternative Dispositions	23	132,515	21 40,858
Other	2	52,983	3 410
TOTAL	54	218,668	68 109,631
Beneficial Use			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids
Agricultural (EQ, Class A, & Class B)	21	14,835	38 57,601
Forestland (EQ, Class A, & Class B)	4	10,868	0 0
Reclamation (EQ, Class A, & Class B)	0	0	1 291
Class A EQ Distribution (bagged or bulk, public distribution, or unsure where it went)	4	7,467	5 10,881
Beneficial Use Subtotal	29	33,170	44 68,774
Long-term storage	2	52,983	3 410
Number of acres to which biosolids were applied:	16,000		no data
Disposal & Alternative Dispositions			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids
Landfill (total)	21	94,092	17 13,323

NOTE: Quantity of sewage sludge or biosolids used or disposed means the quantity that goes out the gate of the WWTPs. Quantities are in the units (the form of measurement) indicated above.

Other here is long-term storage and not counted in biosolids totals used or disposed (leaving the WRRF gates) in TN in 2018.

Solids from Nashville's two largest WRRFs, Central and Whites Creek, are pumped to city's Central Biosolids Facility for treatment to Class A EQ pelletized fertilizer that is sold by a third party and used in parks, landscaping, gardens, farms etc. One-half of Nashville's Class A EQ solids - 8,279 dmt - are counted in Class A EQ Distribution and one-half are counted in agricultural use. • Some of Chattanooga's biosolids go to a mine reclamation site in Copperville, TN (291 dmt in 2018). • Most of Gallatin's advanced alkaline stabilized biosolids are land applied in bulk by local farmers, but some are distributed in smaller amounts to local gardeners, landscapers, etc. • Sevier Solid Waste Inc.'s compost goes to a variety of destinations, including landfill final cover, reclamation sites, agriculture, municipal parks, and more - here, it's all included in Class A EQ Distribution. • See the narrative summary for additional details on solids use and disposal by TN WRRFs.

Burial	data not requested for 2004	data not requested for 2004	17	13,323
Alternative daily (ADC), intermediate, or final cover	data not requested for 2004	data not requested for 2004	0	0
Surface Disposal	2	38,423	2	27,117
Incineration	0	0	0	0
Cement kiln or industrial furnace	data not requested for 2004	data not requested for 2004	0	0
Deep well injection	data not requested for 2004	data not requested for 2004	0	0
Gasification	data not requested for 2004	data not requested for 2004	2	417
Pyrolysis	data not requested for 2004	data not requested for 2004	0	0
Disposal & Alternative Dispositions Subtotal	23	132,515	21	40,858
TOTAL	54	218,668	68	109,631

In 2018, Gallatin's WRRF experienced equipment failure that led to biosolids being landfilled rather than land applied for several months (~520 dmt). • Surface disposal happens in Memphis, where the second and third largest WRRFs in the state share a surface disposal site. • The two gasification sites are at Covington (NE of Memphis) and Lebanon (east of Nashville).

Biosolids Quality Summary

	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	NOTE: For "number of entities," the total may not match because some entities go to more than one use or disposal.
Class A EQ	5	16,556	12	17,723	
Other Class A	0	0	9	9,642	
Class B	17	54,353	34	67,870	
Other (no data, etc.)	31	147,755	8	14,396	"Other" here includes solids that were landfilled, their quality not tracked, or solids for which data were estimated and quality is unknown.
TOTAL	53	218,664	63	109,631	

Biosolids Treatment Practices

	Estimated Number of WWTPs or Separate Preparers Using...	Estimated Quantity of Biosolids Produced Using...	Estimated Number of WWTPs or Separate Preparers Using...	Estimated Quantity of Biosolids Produced Using...
Stabilization				
Aerobic Digestion (total)	10	no data	7	
Class A (ATAD/Other)	data not requested for 2004	data not requested for 2004	1	
Class B	data not requested for 2004	data not requested for 2004	6	
Anaerobic digestion (AD) (total)	1	no data	25	
Class A (e.g. thermophilic)	data not requested for 2004	data not requested for 2004		
Class B (mesophilic)	data not requested for 2004	data not requested for 2004		
WWTPs co-digesting (FOG, food, glycol, etc.)	data not requested for 2004	data not requested for 2004		N/A
Biogas used (heating, electricity, fuel, etc./scf/year)	data not requested for 2004	data not requested for 2004		N/A
Lime/Alkaline (total)	2	no data	9	
Class A lime/alkaline	data not requested for 2004	data not requested for 2004	8	
Class B lime/alkaline	data not requested for 2004	data not requested for 2004	1	
Composting	0	no data	4	2,093
Thermal (e.g. heat drying, not incineration/gasification/pyrolysis)	2	no data	4	
Gasification	data not requested for 2004	data not requested for 2004	2	417
Pyrolysis	data not requested for 2004	data not requested for 2004	0	0
Hydrolysis (thermal, chemical, etc.)	data not requested for 2004	data not requested for 2004	0	N/A
Long-term (lagoons, reed beds, etc.)	6	no data	several	N/A
Oxidation ditch / extended aeration	data not requested for 2004	data not requested for 2004	a few	N/A
Other stabilization technology	4	no data		
Dewatering				
Belt Filter Press	3	no data		
Plate & Frame Press	1	no data		
Screw Press	0	no data		
Centrifuge	1	no data		
Vacuum Filter	0	no data		
Drying beds (open-air)	2	no data	2	
Solar drying (e.g. in greenhouse)	data not requested for 2004	data not requested for 2004		
Other dewatering technology	1	no data		
Thickening				
Gravity thickener	data not requested for 2004	data not requested for 2004		
Gravity belt thickener (GBT)	data not requested for 2004	data not requested for 2004		
Centrifuge	data not requested for 2004	data not requested for 2004		
Dissolved air flotation (DAF)	data not requested for 2004	data not requested for 2004		
Other thickening technology	data not requested for 2004	data not requested for 2004		
Other				
Biosolids sold in bags (explain at right what size bags)	data not requested for 2004	data not requested for 2004	2	

Data on treatment practices are partial. • Some heat-dried EQ biosolids from Nashville and Athens are sold in bags. • The two gasification sites are at Covington (NE of Memphis) and Lebanon (east of Nashville).