NATIONAL BIOSOLIDS DATA PROJECT

STATE BIOSOLIDS SURVEY

2018 data
conducted 2020-2021
biosolidsdata.org

Washington

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	**246 (CWNS), 370 (survey)**	**330**	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	25	8	----------
Total number of your state's WWTPs sending to those Separate Preparers:	95		----------
Number of operating sludge incinerators in your state (total):	5	5	----------
Fluidized bed:	5	4	----------
Multiple hearth:	0	1	----------
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	13	----------
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	67	----------
Number of WWTPs in your state with *sludge* lagoons:	data not requested for 2004	105	----------
Wastewater Flow Totals			
Total statewide average daily wastewater flow (MGD):	data not requested for 2004	no data	----------
Total statewide WWTP *design* capacity for wastewater flow (MGD):	data not requested for 2004	no data	----------
Total statewide average daily *dry weather* 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	no data	----------
Number of WWTPs involved in those complaints:	data not requested for 2004	no data	----------
Percent of population served by on-site systems (e.g. septic systems):	34%	34%	----------

Washington Dept. of Ecology has permits for 375 facilities, but not all are WWTPs. We permit septage management facilities, beneficial use facilities, some composters (some others are permitted locally), and some private facilities that operate like WWTPs but receive mostly septage for advanced stabilization. • There are 8 composters and one lime stabilization facility that are separate preparers accepting solids from other soruces. No data available on how many WRRFs send solids to these separate preparers; an estimate is "maybe 30." The 2004 data on separate preparers may have included septage facilities; the difference between 2004 and 2018 is mostly due to differences in counting, not in the numbers of actual facilities and operations. • The number of residents served by onsite (septic) systems is an estimate.

Biosolids Use and Disposal

UNITS:	**Dry U.S. Tons**	**Dry U.S. tons**	
BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total):			**105,900**

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)	125	84,606	143	81,874
Disposal & Alternative Dispositions	27	20,397	17	19,778
Other	218	5564	--	4,297
TOTAL	**370**	**110,567**	**160**	**105,949**

NOTE: Quantity of sewage sludge or biosolids used or disposed means the quantity that goes out the gate of the WWTPs. Use the units (the form of measurement) you chose above.

Other: The end use or disposal is unknown for the "Other" mass of solids shown here - 4,297 dry U.S. tons. They are lost in accounting between generators, transporters, and land appliers with different methods of calculating amounts. • Number of Entitites: These are best values based on a quick review of complex data. In WA, many facilities send biosolids they generate, to another facility for further treatment. We look at this in terms of production, but we do not identify as land appliers the facilities sending solids to another facility.

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)	80	66,975		51,861
Forestland (EQ, Class A, & Class B)	12	1,121		5,733
Reclamation (EQ, Class A, & Class B)	9	3,290		33
Class A EQ Distribution (bagged or bulk, public distribution, or unsure where it went)	24	13,220		24,247
Beneficial Use Subtotal	**125**	**84,606**	**143**	**81,874**
Long-term storage	218	5,564		
Number of *acres* to which biosolids were applied:		no data		18,000

WA Dept. of Ecology does not track long-term storage, which would be only what is held in lagoons. • Acres are estimated for Class B biosolidsonly and do not include acreage used for septage or EQ biosolids.

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)	18	4,688	12	3,389

Burial	data not requested for 2004	data not requested for 2004		3,389
Alternative daily (ADC), intermediate, or final cover	data not requested for 2004	data not requested for 2004		0
Surface Disposal	0	0		0
Incineration	9	15,709	5	16,389
Cement kiln or industrial furnace	data not requested for 2004	data not requested for 2004		0
Deep well injection	data not requested for 2004	data not requested for 2004		0
Gasification	data not requested for 2004	data not requested for 2004		0
Pyrolysis	data not requested for 2004	data not requested for 2004		0
Disposal & Alternative Dispositions Subtotal	**27**	**20,397**	**17**	**19,778**
TOTAL	**370**	**110,567**	**160**	**101,652**

The sewage sludge incineration facilities include Vancouver, Lynnwood, Edmonds, Bellingham, and Anacortes. Bellingham has 2 multiple hearth incinerators that were operating in 2018 but will be replaced with anaerobic digestion in the early 2020s, at a cost of possibly more than $100 million. Edmonds is looking at an alternative pyrolysis system; their incinerator is going to need major upgrades and cost is a driver. Their property is so small they have to stop traffic to clean the screens and they can't go with digesters or a system that has a larger footprint.

Biosolids Quality Summary

	Number of Entities (WWTPs & Sep. Preparers) Producing…	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Producing…	Quantity of Biosolids
Class A EQ	24	13,320		24,247
Other Class A	0	0		0
Class B	105	74,242		57,627
Other (no data, etc.)	241	23,005		24,075
TOTAL	**370**	**110,567**	**-**	**105,949**

NOTE: For "number of entities," the total may not match because some entities go to more than one use or disposal.

The mass of Class B - 57,627 dry U. S. tons - is estimated; it may include some bulk Class A EQ biosolids. • "Other" is estimated. Not included in the numbers at left are an estimated 2,785 dry tons of septage land applied.

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)	33	1,800		
Class A (ATAD/Other)	data not requested for 2004	data not requested for 2004		
Class B	data not requested for 2004	data not requested for 2004		
Anaerobic digestion (AD) (total)	30	51,651		
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, electicity, fuel, etc.;scf/year)	data not requested for 2004	data not requested for 2004		N/A
Lime/Alkaline (total)	24	5,214		
Class A lime/alkaline	data not requested for 2004	data not requested for 2004		
Class B lime/alkaline	data not requested for 2004	data not requested for 2004		
Composting	21	7,776		
Thermal (e.g. heat drying, not incineration/gasificatn/pyrol)	3	2,469		
Gasification	data not requested for 2004	data not requested for 2004		
Pyrolysis	data not requested for 2004	data not requested for 2004		
Hydrolysis (thermal, chemical, etc.)	data not requested for 2004	data not requested for 2004		N/A
Long-term (lagoons, reed beds, etc.)	no data	no data		N/A
Oxidation ditch / extended aeration	data not requested for 2004	data not requested for 2004		N/A
Other stabilization technology	no data	no data		
Dewatering				
Belt Filter Press	no data	no data		
Plate & Frame Press	no data	no data		
Screw Press	no data	no data		
Centrifuge	no data	no data		
Vaccuum Filter	no data	no data		
Drying beds (open-air)	no data	no data		
Solar drying (e.g. in greenhouse)	data not requested for 2004	data not requested for 2004		
Other dewatering technology	no data	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		

Data not available.

State Pollutant (trace metal, etc.) Concentration Limits in Biosolids Applied to Land, 2018

Enter numbers only where state limits differed in 2018 from U.S. EPA limits.

	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
EPA Table 1 (mg/kg)	75	85		4300	840	57	75	420	100	7500
EPA Table 3 (mg/kg) & CPLR (kg/ha)	41	39		1500	300	17		420	36 (CPLR = 100)	2800
State ceiling limit (higher limit) (mg/kg)										
State high quality (lower number) limit (mg/kg)										
State CPLR (kg/ha)										
State APLR (kg/ha/365days)	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4	We did away with Table 4

TESTING

For each of the following constituents, indicate if testing is required by your state, as of 2018.	Is testing required for *all* sewage sludge or biosolids?	Or is testing required only for biosolids being beneficially used as fertilizers and soil amendments?	Frequency of testing (indicate how often testing must be done for each parameter):		If frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	In accordance with other frequency required by state (if applicable, please specify)	
Part 503 metals (As, Cu, Hg, etc.)	no	yes	yes		
Other metals (boron, silver…)	no	no	not applicable (N/A)		
Dioxins/furans	no	no	not applicable (N/A)		
PCBs	no	no	not applicable (N/A)		
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf))	no	no	not applicable (N/A)	If pretreatment program in place	
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	no	not applicable (N/A)		
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	no	not applicable (N/A)		
Nutrients (NPK)	no	yes	yes		
Pathogen reduction (Class A or B)	no	yes	yes		
Vector attraction reduction (VAR)	no	yes	yes		
PFAS (as of 2018)	no	no	not applicable (N/A)		
Microplastics (as of 2018)	no	no	not applicable (N/A)		
TCLP (toxicity characteristic leaching procedure)	no	no	not applicable (N/A)		
Paint Filter Liquids Test	no	no	not applicable (N/A)		

REPORTING

For each of the following, indicate what WWTPs and/or biosolids preparers must report to the state:	Is reporting to the state required for these parameters?	Frequency of reporting (indicate how often testing must be done for each parameter):		How are these data stored by the state?	Are data compiled by the state in reports or summaries? Is so, please attach.
		In accordance with Part 503 requirements	In accordance with other frequency required (if applicable, please specify)		
The amounts of biosolids/ sewage sludge used or disposed	yes	yes		paper	yes
Part 503 metals (As, Cu, Hg, etc.)	yes	yes		paper	no
Other metals (boron, silver…)	no	not applicable (N/A)		not applicable (N/A)	no
Dioxins/furans	no	not applicable (N/A)		not applicable (N/A)	no
PCBs	no	not applicable (N/A)		not applicable (N/A)	no
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	no	not applicable (N/A)		not applicable (N/A)	no
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	not applicable (N/A)		not applicable (N/A)	no
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	not applicable (N/A)		not applicable (N/A)	no
Nutrients (NPK)	yes	yes		paper	no
Cumulative Pollutant Loading Rates (CPLR)	yes	yes		not applicable (N/A)	no
How biosolids achieve Class A or Class B	yes	yes		electronic	yes
How biosolids achieve vector attraction reduction (VAR)	yes	yes		electronic	yes
Solids stabilization process(es) used	yes	yes		paper	yes
Other biosolids treatments	yes	yes		paper	no
End use or disposal practice	yes	yes		electronic	yes
PFAS (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	no
Microplastics (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	no
TCLP (toxicity characteristic leaching procedure)	no	not applicable (N/A)		not applicable (N/A)	no
Paint Filter Liquids Test	no	not applicable (N/A)		not applicable (N/A)	no

Our reports require facilities to identify pollutant values in excess of limists, but the actual concentrations are provided only on the lab reports. We don't summarize those.

See attached summary / data for 2018