

**APPENDIX D**  
**Version - FINAL - Part 1 of 2**  
**December 31, 2007**

**U.S. and State-by-State**  
**Biosolids Regulation**  
**Quality, Treatment, and**  
**End Use and Disposal Data**

This document is available at [www.nebiosolids.org](http://www.nebiosolids.org).

<b>U. S. TOTALS</b>	<b>Estimated population</b>	<b>Land area (sq. mi.) (www.quickfacts.census.gov)</b>	<b>Pop. Density (pop/sq.mi)</b>
<b>Dry U. S. Tons</b>	293,656,842	3,537,413	83
<b>Total Cropland in Farms (acres, USDA, 2002)</b>	<b>Number of Farms With That Total Cropland (USDA, 2002)</b>	<b>Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)</b>	<b>Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)</b>
434,164,946	1,751,450	0.017	0.6%

<b>Total Biosolids Used or Disposed in 2004*:</b>	<b>From State Survey</b>	<b>Adjusted Estimate***</b>
	7,171,222	<b>7,180,000</b>

<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24
	16824	8776

Total number of TWTDS sending to Separate Preparers in 2004: 2300  
 Number of Separate Preparers: 186  
 Number of operating sludge incinerators^: 90+  
 Fluidized bed: 28+  
 Multiple hearth: 42+

^ Incinerators were underreported; NACWA data notes 105+ multiple hearth alone.

**Biosolids Use and Disposal Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	4639	3,502,845	49%
Disposal	3166	3,247,666	45%
Other (long-term storage, etc.)	1149	420,712	6%
<b>Total</b>	<b>8776</b>	<b>7,171,222</b>	<b>100.00%</b>

**Beneficial Use**

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	3999	2,620,146	37%
Forestland	28	26,452	0%
Reclamation	94	96,900	1%
Class A EQ Distribution	449	759,347	11%
<b>Total</b>	<b>4461</b>	<b>3,502,845</b>	<b>49%</b>
Other (long-term storage, etc.)	1149	420,712	6%

**Disposal**

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	2600	2,023,508	28%
Surface Disposal	54	142,684	2%
Incineration	512	1,081,474	15%
	<b>3166</b>	<b>3,247,666</b>	<b>45%</b>

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	478	1,473,867	22%
Other Class A	12	57,659	1%
Class B	3898	2,273,039	34%
Other (no data, etc.)	5524	2,902,575	43%
<b>Total</b>	<b>9912</b>	<b>6,707,141</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Reported Estimates of Number of TWTDS Using...	Reported Estimates of Quantity of Biosolids Produced Using...	<b>NOTES:</b>
Aerobic Digestion	2200	85,000	<b>CAUTIONS IN USING THIS DATA: These are minimum estimates from incomplete data from states and other sources. Includes data from ~50% of states regarding numbers of TWTDS (column 1) and ~25% of states regarding quantities of biosolids (column 2). They serve only to provide a rough sense of the relative importance of various technologies.</b>
Digestion-anaer./other	1000	1,217,000	
Lime/Alkaline	900	285,000	
Composting	200	471,000	
Thermal (not incineration)	60	112,000	
Long-term (lagoons, reed beds, etc.)	500	97,000	
Other	20	5,400	
Belt Filter Press	650	415,000	
Plate & Frame Press	50	65,500	
Screw Press	10	3,400	
Centrifuge	150	880,000	
Vacuum Filter	20	4,200	
Drying beds	400	380,000	
Other	40	600	

\* The total biosolids "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in each state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

\*\*\*Totals do not include Puerto Rico and other territories. An estimated U. S. total, with territories included, is 7,210,000 dry U. S. tons.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Alabama**

### **REGULATION AND PERMITTING**

**[TWTDS = Treatment works treating domestic sewage]**

Delegated by EPA for biosolids? Alabama is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion and the solid waste program of Alabama's environmental agency along with Region 4 EPA and the state health department regulates biosolids management, disposal, and end use. The environmental agency permits wastewater treatment facilities and EPA oversees biosolids disposal and end use. Alabama relies solely on the 503 regulations, EPA region 4 regulates all biosolids end use and disposal.

Holder of liability Alabama does not allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Alabama does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. There is no good inventory for this data, so they do not know at how many sites this is taking place.

NPDES equivalent: There is a state equivalent to NPDES in Alabama (CHAPTER 335-6-6 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM). All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0. Alabama relies completely on the federal Part 503 regulations.

Biosolids regulations updated: Alabama has no state regulations. Part 503 sets all requirements and management practices.

Management practices: As of today, Alabama's biosolids regulations are not more restrictive than the federal Part 503 rule. Part 503 sets all requirements and management practices in Alabama. Alabama does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Alabama does not require formal nutrient management plans. Alabama does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Alabama does not require any additional oversight and certification to occur at biosolids land application sites.

In Alabama some biosolids management groups perform the following oversight and certification voluntarily:

- Independent inspections or monitoring at land application sites.

Acres applied: No data available.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data. The public can access these reports by mail or in person from EPA Region 4 office. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Alabama, use/disposal is being positively impacted by development of, or changes to, local (county, municipal) biosolids ordinances/regulations. These activities are likely to have the effect of



expanding beneficial use. Local ordinances are not an issue in Alabama; Jefferson County may have a local ordinance, but that would be the only one.

## **TRENDS**

The beneficial use of biosolids is increasing in Alabama. More facilities are reaching a threshold in the amount of waste that can be processed from outside sources, thus increasing the use of biosolids.

Most significant current pressures on biosolids recycling: No data provided.

## **SEPTAGE MANAGEMENT**

Grease is regulated by the department of agriculture and septage is overseen by the health department.

Septage regulations updated: October 19, 1994.

Number of full-time equivalent staff (FTEs) for septage program: 1

Septage haulers based in state (estimated): 316

Septage management: Septage can be land applied if it meets part 503. POTWs are not required to accept septage. However, 75-80 % TWTDS accept septage.

Percentage of each management practice:

- Land applied = 20 %
- Hauled to TWTDS = 77 %
- Disposed in lagoons = 1 %
- Composted = 2 %

Other concerns: Alabama considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the Code of Alabama 1975, sections 22-27-70 through 22-27-73 and updated as section 22-27-90 through 22-27-94; Grease Law. Alabama does not have a proactive program to collect FOG and keep it out of the general wastewater flow. All FOG programs are primarily reactive vs. proactive. Some municipalities and treatment facilities require separators or a certain quality of biological oxygen demand (BOD).

# Alabama

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
4,525,375	50,744	89	3,732,751	34,073	0.019	0.6%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate	Estimates from other sources: Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
61,243	62,000	96,868	47,000

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
278	52

Total number of TWTDS sending to Separate Preparers in 2004: 0  
 Number of Separate Preparers: probably 0  
 Number of operating sludge incinerators: 1  
 Fluidized bed: no data  
 Multiple hearth: no data  
 Percent of population served by on-site (e.g. septic systems): 30%

NOTES: All data in these tables are from EPA Region 4 and a compilation of data from the largest facilities for years 2002 - 2006, with each facility represented only once. This data represents 63% of the total flow reported in the 2004 Clean Watersheds Needs Survey, or an estimated ~56% of the sewered population. Smaller facilities (the large majority of the total 278 TWTDS in Alabama) are not included, but many of these do not produce solids every year (lagoons are cleaned out only every 15 - 20 years). Alabama's total annual solids use and disposal is therefore estimated to be about 70,000 dmt.

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	39	42,402	69%
Disposal	12	18,784	31%
Other	1	57	0%
Total	52	61,243	100.00%

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	30	29,372	48%
Forestland	0	-	0%
Reclamation	9	13,030	21%
Class A EQ Distribution	0	-	0%
Total	39	42,402	69%
Long-term storage	1	57	0%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	11	12,784	21%
Surface Disposal	0	-	0%
Incineration	1	6,000	10%
Total	12	18,784	31%

NOTES:  
The "Other" line includes 8,476 dry metric tons (14 TWTDS) that are land applied, but for which the Class A or Class B quality was not reported.

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	1	3,550	6%
Other Class A	0	-	0%
Class B	23	30,266	49%
Other (no data, etc.)	28	27,427	45%
<b>Total</b>	<b>52</b>	<b>61,243</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	no data	no data
Digestion-anaer./other	no data	no data
Lime/Alkaline	no data	no data
Composting	no data	no data
Thermal (not incineration)	no data	no data
Long-term (lagoons, reed beds, etc.)	no data	no data
Other	no data	no data
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
Vacuum Filter	no data	no data
Drying beds	no data	no data
Other	no data	no data

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **ALASKA**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Alaska is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The solid waste portion of Alaska's environmental agency regulates biosolids and utilizes solid waste permits to regulate end use and disposal and land application sites.

Holder of liability: Alaska does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. All land applicator or land owners hold some legal liability.

More than one Class B biosolids on one site? Alaska does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but this is not being done on any sites.

NPDES equivalent: ADEC Wastewater Discharge Program is the state equivalent to NPDES, however, Alaska is in the process of obtaining delegation for NPDES. All ADEC/NPDES permits include requirements for biosolids use or disposal. Permits are not specific, but do contain stipulation that sludge must be properly disposed.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.2

Biosolids regulations updated: August 2003.

Management practices: Alaska's biosolids regulations are not more restrictive than the federal Part 503 rule. Alaska does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Alaska does not require formal nutrient management plans. Alaska does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Alaska requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.

In Alaska, some biosolids management groups perform the following oversight and certification voluntarily:

- Other requirements or actions to control odors at land application sites.

Acres applied: In 2004, biosolids were applied to a total of 29 acres. In 2004, no new site permits/approvals were issued.

Reporting and Record-keeping: Sludge-only processing facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. There is no electronic database for biosolids, but it may become part of a new web-based database that is being developed for all solid waste facilities.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Alaska, development of, or changes to, state biosolids regulations is happening or is imminent and will likely have no significant affect on beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. There are no towns or counties in Alaska that have adopted more restrictive biosolids application ordinances.

## **TRENDS**

The beneficial use of biosolids is increasing in Alaska. Beneficial use appears to be increasing, based on the environmental agency receiving more inquiries and based on receipt of new applications in 2006.

Most significant current pressure on biosolids recycling: Agriculture is not a big business in Alaska, and may be declining.

## **SEPTAGE MANAGEMENT**

Septage – permitting of septic systems and septage management is in the water quality program.

## **ADDITIONAL NOTES**

See [http://www.dec.state.ak.us/eh/sw/SW\\_types/biosolids.html](http://www.dec.state.ak.us/eh/sw/SW_types/biosolids.html)

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Alaska

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	for land application permits 1 time/year	Paper	No	-
Part 503 metals	Yes	-	Up to 3 times/year depending on permit	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	No	-	-	-	-	-
Cumulative Pollutant Loading Rates	No	-	-	-	-	-
How biosolids achieve Class A or B	Yes	-	Up to 3 times/year depending on permit	Paper	No	-
How biosolids achieve Vector Attraction	Yes	-	Up to 3 times/year, depending on permit	Paper	No	-
Solids stabilization processes used	Yes	-	Up to 3 times/year, depending on permit	Paper	No	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	-	1 time/year	Paper	No	-

# Alaska

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
657,755	571,951	1	98,131	479	0.173	5.8%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24	Adjusted Estimate	Estimates from other sources:	
			Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
	16,921	17,000	16,039	no data

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
		172

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	1
Number of operating sludge incinerators:	2
Fluidized bed:	1
Multiple hearth:	1
Percent of population served by on-site (e.g. septic systems):	50%

NOTES: The data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and individual TWTDS; they are inclusive of Anchorage, Fairbanks, and Juneau, the three largest cities in the state. Other municipalities are 10,000 people or less and produce only small amounts of wastewater solids annually, if any.

UNITS: **Dry U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	1	9,497	56%
Disposal	3	7,424	44%
Other	0	-	0%
<b>Total</b>	<b>4</b>	<b>16,921</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	0	-	0%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	1	9,497	56%
<b>Total</b>	<b>1</b>	<b>9,497</b>	<b>56%</b>
Long-term storage	0	-	0%

NOTES:

Fairbanks' biosolids compost.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	1	10	0%
Surface Disposal	0	-	0%
Incineration	2	7,414	44%
	3	7,424	44%

NOTES:

This is Haines' composted biosolids used for landfill cover.

These biosolids are produced & incinerated at Anchorage (6,587 dry tons) & Juneau.



### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	1	9,497	56%	
Other Class A	1	10	0%	
Class B	0	-	0%	
Other (no data, etc.)	2	7,414	44%	
<b>Total</b>	<b>4</b>	<b>16,921</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...		NOTES: This table includes only partial data for the state.  A few small TWTDS lime stabilize prior to landfilling.  Smallest TWTDS have long-term lagoons that are rarely cleaned out.
Aerobic Digestion	no data	no data		
Digestion-anaer./other	no data	no data		
Lime/Alkaline	a few	no data		
Composting	2	9,507		
Thermal (not incineration)	0	-		
Long-term (lagoons, reed beds, etc.)	several	no data		
Other	no data	no data		
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		
Vacuum Filter	no data	no data		
Drying beds	no data	no data		
Other	no data	no data		

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **ARIZONA**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Arizona is delegated by the USEPA for Part 503.

State agency regulating biosolids: The water portion of the AZ Department of Environmental Quality regulates wastewater and biosolids land application sites and the solid waste management portion regulates biosolids composting and disposal.

Holder of liability: Data not provided.

More than one Class B biosolids on one site? Data not provided.

NPDES equivalent: Data not provided.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.2

Biosolids regulations updated: 2003.

Management practices: The AZ Department of Environmental Quality issues permits, administers compliance and enforcement, and oversees the activities of all biosolids disposal, use, and transportation within Arizona. Incineration of biosolids is prohibited in AZ.

Additional Management Actions: Data not provided.

Acres applied: Data not provided.

Reporting and Record-keeping: Data not provided.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Arizona, there are no known developing or imminent changes to state biosolids regulations.

### **TRENDS**

The beneficial use of biosolids is not increasing or decreasing in Arizona.

Most significant current pressure on biosolids recycling: No data provided.

### **SEPTAGE MANAGEMENT**

No data provided.

# Arizona

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,739,879	113,634	51	1,261,894	4,440	0.071	2.4%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24	Adjusted Estimate	Estimates from other sources:	
			Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
	90,000	90,000	95,698	50,000

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
		166
Total number of TWTDS sending to Separate Preparers in 2004:		0
Number of Separate Preparers:		2
Number of operating sludge incinerators:		0
Fluidized bed:		0
Multiple hearth:		0
Percent of population served by on-site (e.g. septic systems):		no data
	<b>UNITS:</b>	<b>Dry Metric Tons</b>

NOTES: Data in these tables are from EPA Region 9. Some medium and small TWTDS transfer their solids to larger TWTDS; for example, the largest municipality, Phoenix, treats solids received from several surrounding community TWTDS. Arizona biosolids management is impacted significantly by importation of wastewater solids from southern California - 95,000 dry metric tons in 2004, about 10,000 dmt of which was treated and then returned to California; these data are not included in the totals below (they are included in the California data). The two Arizona separate preparers processed mostly California biosolids.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	18	71,000	79%
Disposal	15	9,000	10%
Other	10	10,000	11%
<b>Total</b>	<b>43</b>	<b>90,000</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	16	70,000	78%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	2	1,000	1%
<b>Total</b>	<b>18</b>	<b>71,000</b>	<b>79%</b>
Long-term storage	10	10,000	11%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	10	6,000	7%
Surface Disposal	5	3,000	3%
Incineration	0	-	0%
	15	9,000	10%

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	4	1,000	1%
Other Class A	0	-	0%
Class B	24	80,000	99%
Other (no data, etc.)	15	9,000	0%
<b>Total</b>	<b>43</b>	<b>90,000</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	5	2,500	NOTES: Includes one ATAD system (which does not produce Class A).
Digestion-anaer./other	10	68,000	
Lime/Alkaline	0	-	
Composting	2	10,090	
Thermal (not incineration)	1	400	
Long-term (lagoons, reed beds, etc.)	many	-	
Other	0	-	
Belt Filter Press	0	-	Long-term drying and Alternative 4 to meet Class A standards were used by three TWTDS.
Plate & Frame Press	0	-	
Screw Press	0	-	
Centrifuge	0	-	
Vacuum Filter	0	-	
Drying beds	22+	-	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Arkansas**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Arkansas is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion and the solid waste portion of Arkansas's environmental agency, along with the department of Health and Human Services, regulate biosolids management, disposal, and end use. The solid waste division oversees composting. The water/wastewater division permits TWTDS over 5000 GPD (gallons per day). The Department of Health and Human Services permits TWTDS under 5000 GPD. Arkansas utilizes specific NPDES-type permits and solid waste permits to regulate end use and disposal of wastewater solids. Land application sites are issued separate site-specific permits.

Holder of liability: Arkansas does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Arkansas does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, as long as site permit limits are not exceeded.

NPDES equivalent: Arkansas is delegated for the NPDES program. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.5

Biosolids regulations updated: Arkansas does not have state biosolids regulations; it relies solely on the federal 40 CFR Part 503 regulations.

Management practices: Despite not having its own biosolids-specific regulations, Arkansas does require some additional management practices. For example, the state requires increased setbacks to surface waters, drinking water sources, property lines, and dwellings, as well as slope restrictions. In addition, phosphorus (P) can be a limit for determining the agronomic rate of biosolids applications in areas designated as having a nutrient surplus. Arkansas's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive than Part 503, and Arkansas does not require additional monitoring at Class B land application sites. Formal nutrient management plans are not required. Arkansas uses a P index for certain areas of the state to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Arkansas requires some independent inspections or monitoring at land application sites. In Arkansas, some biosolids management groups take additional voluntary actions to control odors at land application sites.

Acres applied: Biosolids were applied to a total of about 12,000 acres in 2006. The number of new site permits/approvals that were issued in 2004 was not reported.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports from the state website, by mail or in person from the state agency, and from POTW or TWTDS websites. The data and reports are compiled electronically with Excel.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Arkansas, no regulation or legislative activity is happening that would affect biosolids. As of today, local

units of government are allowed to adopt ordinances that are more restrictive than state law, but the number of towns and counties in Arkansas that have done so was not reported.

## **TRENDS**

Most significant current pressures on biosolids recycling:

1. Nutrient-surplus-designated areas are limiting beneficial land application operations.
2. Cost of producing EQ biosolids.

## **TESTING AND REPORTING**

No information was provided by the state regarding the requirements for testing and reporting, but, because Arkansas relies on Part 503, it is assumed that only Part 503 testing and reporting requirements are necessary in Arkansas.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Arkansas has adopted the federal Part 503 regulations, with some simplifications. The AR Department of Health and Human Services (DHHS) deals with septage, licensing septage haulers through the central state office. Trucks are licensed, and fees are based on the number of trucks. To be licensed, the hauler must have letters of permission to discharge at TWTDS and/or site plans for land application sites. Annual inspections of trucks, equipment, records, and land application sites are done by the regional state DHHS offices. In addition, county environmental health specialists are employees of the state DHHS and may be involved in overseeing septage management.

Number of full-time equivalent staff (FTEs) for septage program: 0.05 at the central state level, plus 0.05 FTE regional staff in each of the five state DHHS regions.

Septage haulers based in state: 181 licensed

Septage management: Septage can be land applied, but must be done so in accordance with the federal Part 503 rule; however, Arkansas has removed some of the treatment options in Part 503 and only allows 1) raising the pH (e.g. lime treatment) and surface application, 2) subsurface injection, or 3) land applying and tilling into the soil within six hours. TWTDS are not required to accept septage; however, many do, and most septage haulers dispose of septage at TWTDS (most haulers have two to ten TWTDS that have given them permission to discharge at them).

Percentage of each management practice:

Land applied: ~5%, on non-food crops, such as sod and hay.

Discharged at TWTDS: ~95%

Septage-only lagoons are not allowed in Arkansas.

Other concerns: Fats, oils, and grease (FOG) are a concern, and some wastewater treatment facilities are especially concerned about receiving loads of septage that include a lot of FOG (this has led to stricter record-keeping regarding the source of materials). FOG is not regulated by DHHS; the state Department of Environmental Quality oversees its management, and individual site-specific permits regulate the use and disposal of grease trap waste, but there is no special proactive program to keep it out of the general wastewater flow.

# Arkansas

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,750,000	52,068	53	9,576,047	36,908	0.006	0.2%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
52,178	53,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
57,543	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
350	41

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	2
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables were provided by EPA Region 6 and the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator - and the data are incomplete. The data represents the largest TWTDS in the state and at least 55% of the total daily flow, as reported in the 2004 CWNS data.

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	22	23,391	45%	All "land applied" biosolids reported in the EPA Region 6 database was assumed to be Class B biosolids applied to agricultural land. This 5,302 dmt is actually "disposed by other method," and its final use or disposal is not known.
Disposal	12	23,485	45%	
Other	7	5,302	10%	
Total	41	52,178	100.00%	

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	22	23,391	45%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	0	-	0%
Total	22	23,391	45%
Other	7	5,302	10%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	11	23,186	44%
Surface Disposal	1	299	1%
Incineration	0	-	0%
	12	23,485	45%

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	
Class A EQ	0	-	0%	All "land applied" biosolids reported in the EPA Region 6 database was assumed to be Class B biosolids.
Other Class A	0	-	0%	
Class B	22	23,391	45%	
Other (no data, etc.)	19	28,787	55%	
<b>Total</b>	<b>41</b>	<b>52,178</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	62	no data	
Digestion-anaer./other	15	no data	
Lime/Alkaline	9	no data	
Composting	0	no data	
Thermal (not incineration)	0	no data	
Long-term (lagoons, reed beds, etc.)	179	no data	
Other	0	no data	
Belt Filter Press	17	no data	
Plate & Frame Press	0	no data	
Screw Press	0	no data	
Centrifuge	0	no data	
Vacuum Filter	0	no data	
Drying beds	31	no data	
Other	0	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.



**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **California**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? California is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of California's environmental agency regulates biosolids and utilizes solid waste licenses / permits (for landfill disposal / alternative daily cover use) to regulate end use and disposal, along with a permit issued pursuant to the California Water Code. Land application sites are permitted by issuance of a general permit or a site specific permit, both issued pursuant to the California Water Code.

Holder of liability: California does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use; 10 – 20 land owners currently hold legal liability for biosolids end use.

More than one Class B biosolids on one site? California does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is being done on 10 – 20 sites.

NPDES equivalent: Waste Discharge Requirements pursuant to the California Water Code (CWC) non-chapter-15 regulatory program is the state equivalent to NPDES. All NPDES and State-issued permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.5 to 2

Biosolids regulations updated: July 2004.

Management practices: The management practices of California's biosolids regulations are more restrictive than the federal Part 503 rule. California rules include storage and transportation requirements, cultural resources preservation, minimum biosolids moisture content, and wind velocity at time of application. California's pathogen and/or vector attraction reduction limits are not more restrictive than Part 503. California has more restrictive pollutant (trace metals, etc.) limits. California requires additional monitoring at Class B land application sites; these requirements vary according to site-specific conditions. Often they involve quarterly monitoring for general minerals and nutrients and, less frequently, for metals. As required by site-specific conditions, nitrogen is the basis for the agronomic loading rate for land application, and California requires formal nutrient management plans. Phosphorus concentrations in biosolids generally do not control allowable biosolids application rates in California.

Additional Management Actions: California requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land applicators who manage or implement land application programs.
- Other requirements or actions to control odors at land application sites.

In California, some biosolids management programs voluntarily conduct independent inspections or monitoring at land application sites.

Acres applied: In 2004, biosolids were applied to a total of 70,000 – 80,000 acres. In 2004, less than 10 new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports in person from the state agency, from the EPA regional office, or – in some cases - from POTW or TWTDS web sites. The EPA Region 9 office maintains information on major facilities in the EPA Biosolids Data Management System (BDMS). The state may have some relevant data in the California Integrated Water Quality System.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In California, use/disposal is being negatively impacted by development of, or changes to, local (county, municipal) biosolids ordinances/regulations. These activities are likely to have the effect of reducing opportunities for beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. Approximately 30 counties in California have adopted more restrictive biosolids application ordinances, and this number is likely to remain the same or increase slowly.

## **TRENDS**

The beneficial use of biosolids is slowly increasing in California. While it may be more difficult to land apply biosolids in certain communities or areas, land application remains one of the more attractive options for biosolids reuse. Ordinances have forced generators to evaluate and improve their residuals handling processes. All of this has been beneficial to water quality. Unfortunately, air quality may have suffered, as generators are forced to haul biosolids further and, in some cases, into neighboring states (resulting in increased fuel use and resultant air impacts). Beneficial use *in-state* may not necessarily be increasing, but regionally (i.e., CA, AZ, and NV), it is increasing. The quality of biosolids continues to improve.

### Most significant current pressures on biosolids recycling:

1. Absence of resources needed to fully implement a regulatory program, which results in a backlog of permit requests and threatens to compromise enforcement and compliance efforts.
2. Restrictive local ordinances and subsequent pending legal decisions, which delay or prohibit authorizations to utilize biosolids.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Separate septage management regulations do not exist; however, septage is regulated pursuant to the California Water Code.

Number of full-time equivalent staff (FTEs) for septage program: 0 at the state level.

Septage haulers based in state (estimated): “Agencies reported 785 registered septage pumpers with 1,699 vehicles. This number does represent some duplication as the same hauler and vehicle may be registered in more than one jurisdiction” (California Wastewater Training and Research Center, California State University, Chico; 2002).

Septage management: Septage can be land applied if it meets part 503 and additional state requirements pursuant to the plans and policies of the California Water Boards (e.g., California Water Code, California Code of Regulations, Basin Plans, etc.). Statewide standards require that septage that is land applied must...

- “not allow public contact
- “meet and certify pathogen reduction and vector attraction reduction
- “follow prescribed best management practices

- “utilize site and crop specific nutrient application rates
- “assure domestic nature of the applied material, and
- “develop and maintain a record keeping system”

(California Wastewater Training and Research Center, California State University, Chico; 2002). POTWs are not required to accept septage; however, three-quarters of POTWs in California do.

Percentage of each management practice:

- Land applied = 2 %
- Hauled to TWTDS = 84 %
- Disposed of in lagoons = 11%
- Independent special treatment systems = 2 %

Total volume is estimated to be 230 million gallons/year of septage from approximately 1.2 million septic systems in the state; in addition, there is another 5 million gallons/year of grease waste. Note that an estimated 10% of new housing is relying on septic systems.

Other concerns: California considers fats, oils, and grease (FOG) to be a significant issue (FOGs play a significant part in the sanitary sewer overflow prevention program). The use and disposal of grease trap waste is also subject to the California Water Code. California has a proactive program to collect FOG and keep it out of the general wastewater flow. FOG is addressed via pretreatment programs, permits issued by local TWTDS, and the sanitary sewer overflow prevention program.

**ADDITIONAL RESOURCES**

- <http://www.ciwmb.ca.gov/Organics/Biosolids>
- An excellent, but becoming-outdated, picture of biosolids use and disposal in California is the California Association of Sanitation Agencies’ 1999 *Biosolids Management Practices Survey in the State of California*.
- Septage information from California Wastewater Training and Research Center, California State University, Chico; 2002. *Survey of Septage Treatment, Handling, and Disposal Practices in California*. Retrieved 2/14/07 from [http://www.waterboards.ca.gov/ab885/docs/septage\\_survey\\_rpt2002.pdf](http://www.waterboards.ca.gov/ab885/docs/septage_survey_rpt2002.pdf).

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: California

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	Yes	Yes	-	Yes	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)			-	-	If expected in collection system monitoring is required for all sewage sludge and those beneficially used
Nutrients (NPK)	Yes	Yes	Yes	Yes	-
Pathogen reduction (Class A or B)			-	-	Analytical work may not be required, but must be consistent w/503 Rule
Vector attraction reduction (VAR)			-	-	Analytical work may not be required, but must be consistent with 503 Rule

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	Often monthly/WDRs for site	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	Yes	-	-	Paper	No	-
Dioxins/furans	-	-	-	-	No	-
PCBs	Yes	-	-	Paper	No	-
Priority pollutants	-	-	-	-	No	-
Other organic compounds	Yes	-	-	Paper	No	-
Radioactive isotopes	-	-	-	-	No	-
Nutrients (N, P, K)	Yes	Yes	-	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	-	-	Paper	No	-
Solids stabilization processes used	-	-	-	-	No	-
Other biosolids treatments	-	-	-	-	No	-
End use/disposal practice	Yes	-	-	Paper	No	-

# California

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
35,842,038	155,959	230	10,994,161	61,810	0.065	2.2%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Used or Disposed in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)		
	715,500	<b>715,500</b>	858,962	700,000		
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24				
	633	87				
Total number of TWTDS sending to Separate Preparers in 2004:	69					
Number of Separate Preparers:	15					
Number of operating sludge incinerators:	2					
Fluidized bed:	0					
Multiple hearth:	2					
Percent of population served by on-site (e.g. septic systems):	10%					
<b>UNITS: Dry Metric Tons</b>						

NOTES: The data in these tables is from EPA Region 9, which tracks data for 270 major and minor TWTDS and separate preparers. Data for the many small facilities is not available.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	178	499,000	70%	
Disposal	73	206,500	29%	
Other	14	10,000	1%	
<b>Total</b>	<b>87</b>	<b>715,500</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Agricultural	98	499,000	70%	NOTES: The 409,000 dry metric tons in agriculture includes 226,400 going into compost operations (including 26,400 dmt produced in AZ, NV, and tribal lands), approximately 90,000 dmt of which was used in nurseries, horticulture, landscaping, etc. operations. The remaining 136,400 dmt of compost went to agricultural operations. Also includes 138,200 dmt of Class B biosolids land applied in CA (55,000 dmt), AZ (75,000 dmt), NV (1,100 dmt), and on tribal lands (7,100 dmt). 83 TWTDS can apply Class B biosolids, while 15 apply Class A FO on agricultural lands.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	11	part of above	0%	
<b>Total</b>	<b>0</b>	<b>499,000</b>	<b>70%</b>	
Long-term storage	14	10,000	1%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	65	163,000	23%	NOTES: Amounts landfilled are estimated by EPA Region 9, because those TWTDS disposing of biosolids do not have to file annual data. Includes 73,000 dmt of San Jose, Hayward, and other Class A biosolids that were used as alternative daily or final cover on landfills.
Surface Disposal	6	18,400	3%	
Incineration	2	25,100	4%	
	73	206,500	29%	
				Includes 5,000 dmt used in a cement kiln. Palo Alto incinerates its solids; some of the resulting ash is used as fertilizer.

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	0	433,800	61%
Other Class A	0	-	0%
Class B	0	198,200	28%
Other (no data, etc.)	0	83,500	12%
<b>Total</b>	<b>0</b>	<b>715,500</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	25	4,000
Digestion-anaer./other	160	650,000
Lime/Alkaline	4	44,000
Composting	0	226,400
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	6	-
Other	0	-
Belt Filter Press	205	160,000
Plate & Frame Press	4	12,000
Screw Press	2	3,000
Centrifuge	35	344,000
Vacuum Filter	0	-
Drying beds	80	305,038
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Colorado**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Colorado is planning to seek delegation from USEPA sometime in the future, when resources allow.

State agency regulating biosolids: The water/ wastewater program and the solid waste program of Colorado's environment agency regulate biosolids. The water/wastewater program regulates land application, while the solid waste program regulates surface disposal and disposal at MSW facilities. Colorado utilizes general NPDES-type permits to regulate end use and disposal. Land application sites are permitted by the state using separate, site-specific permits. EPA Region 8 issues biosolids general permits.

Holder of liability: Colorado does allow land appliers (who may not be the TWTDS generator) to become the holder of legal liability for biosolids end use. For example, there are two major land application companies in Colorado that are permitted by the state to land apply biosolids on specific sites (some such sites are actually owned by the land application company).

More than one Class B biosolids on one site? Colorado does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done, but the number of instances is not readily-available data.

NPDES equivalent: There is no state equivalent to NPDES in Colorado. EPA issues 503 NPDES permits.

Number of full-time equivalent staff (FTEs) for biosolids program: 1

Biosolids regulations updated: June 30, 2003

Management practices: The management practices of Colorado's biosolids regulations are more restrictive than the federal Part 503 rule. The state rules include setback requirements for surface waters and public and private wells, public access restrictions, slope restrictions, depth to groundwater, soil conditions, winter prohibition, and nutrient restrictions. Colorado's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are the same as Part 503. Colorado requires additional monitoring at Class B land application sites, with soil tests required prior to the initial application and on a once-per-application basis thereafter; testing is for pH, ammonium as N, nitrate as N, and total phosphorus. Also, Colorado requires testing of soil for all of the Part 503 metals prior to the initial application and once every five years thereafter. Nitrogen is the basis for the agronomic loading rate for land application, including soil N. Colorado does not require formal nutrient management plans, however the state does receive operation plans that contain nutrient information, and contractors use standard operating procedures that include some nutrient management information. Colorado uses tests of total P in the soil, tests of available P in the soil, and a P index to manage or control the application of phosphorus in biosolids. Also, in CO, groundwater is a "water of the state," so that creates additional restrictions: for some biosolids land application, 5 feet (the depth of the principal root zone) is required from the surface to groundwater.

Additional Management Actions: In Colorado, land application sites are inspected regularly by both state and, in some counties, trained county inspectors. Participating counties receive funding for these state-trained inspectors. For example, Weld County conducts 200 inspections



each year. The program land applying New York City biosolids to rangeland in eastern Colorado is inspected twice each week, and reports from inspections are emailed immediately to EPA Region 8 and the state.

Acres applied: In 2004, approximately 111,000 dry tons of biosolids (78,500 generated in state; 27,175 from NYC (Class B cake); and 5,500 from New England Fertilizer Company (Class A pellets)) were applied to an estimated total of 225,000 acres (this does not include Class A biosolids distributed for general public use). The number of new site permits/approvals that were issued in 2004 is not known. In 2006, there is a cumulative total of about 2000 sites permitted for biosolids land application in Colorado, but most are old and out-of-service and may have been converted to other land uses (e.g. development). Approximately 200 sites are actually used at least once during any three-year period (most of these are hundreds or thousands of acres in size).

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. Colorado provides access to this information by request (it is not yet available on the state website). Some data and reports are compiled electronically with BDMS (the Region 8 EPA-developed Biosolids Data Management System).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Colorado, some revisions to the state regulations were completed in early 2007; these changes are not expected to have any significant impacts on the use or disposal of sewage sludge in the state. The biggest change will be codification of a formula to calculate plant-available nitrogen (PAN); otherwise there will be some new administrative procedures for de-permitting (closing) sites.

Half a dozen counties in Colorado have ordinances that mimic state regulations (are not too different from Part 503). No municipalities have such ordinances (except, for example, Denver, which gives a rebate to homeowners who use any kind of compost – including biosolids - on their lawns), and it is not likely that county or local regulation will increase. However, the county involvement in inspections may increase, as the state is encouraging more counties to participate in their innovative program that provides counties training and funding to conduct inspections of biosolids land application sites and events.

## **TRENDS**

Beneficial use of biosolids in Colorado has been high for several years: 70% or greater of sewage sludge produced in the state. Colorado is also a significant importer of biosolids products, with 31,000 dry tons from New York City and 3,600 dry tons from New England Fertilizer Company in 2004; the amounts imported are increasing each year, resulting in an increase in the total tonnage of land applied biosolids increasing at an estimated 8% per year.

Most significant current pressures on biosolids recycling: none identified.

## **TESTING AND REPORTING**

Colorado mostly follows the federal Part 503 for its testing and reporting requirements. Biosolids applied to soils must be tested (and reports submitted), in accordance with the frequencies and other requirements of Part 503, for Part 503 metals and nutrients, and they must meet pathogen and vector attraction reduction requirements. Colorado requires composters and others that add amendments to biosolids to use final production quantities to calculate the frequency of testing.

Landfilled biosolids are required to undergo TCLP and paint-filter tests.

### **SEPTAGE MANAGEMENT**

Information on septage management in Colorado is difficult to obtain. State involvement is limited, and only some counties have formal regulatory programs. These county requirements were created in response to poor management of some septage land application programs. Such county regulations essentially mimic the requirements of the federal Part 503 rule, which is the only formal regulation that applies to land application of septage for most of the state.

#### **Additional information provided:**

<http://www.cdphe.state.co.us/wq/PermitsUnit/biosolids/>

# Colorado

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
4,601,821	103,717	44	11,530,700	22,240	0.009	0.3%
<b>Total Biosolids Generated in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	102,912	<b>103,000</b>	87,642		85,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			315	200		
Total number of TWTDS sending to Separate Preparers in 2004:			no data			
Number of Separate Preparers:			no data			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			25%			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: The data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and EPA Region 8.

Colorado produces 100 billion liters septage at 600,000 onsite systems (Siegrist, RL).

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	164	78,500	76%	
Disposal	35	14,109	14%	
Other	1	10,303	10%	
<b>Total</b>	<b>200</b>	<b>102,912</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	144	64,309	62%	These amounts of beneficially used biosolids do not include imported biosolids; for example, about 27,175 dry metric tons from New York City and 5,500 dmt from New England Fertilizer Co. were land applied in Colorado in 2004.
Forestland	6	3,647	4%	
Reclamation	6	6,273	6%	Colorado Springs typically surface disposes of 11,500 dry metric tons annually; in 2004, most went to storage in their facultative stabilization basins - this is what the 10,303 dmt in storage refers to.
Class A EQ Distribution	8	4,271	4%	
<b>Total</b>	<b>164</b>	<b>78,500</b>	<b>76%</b>	
Long-term storage	1	10,303	10%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	33	9,860	10%	Colorado Springs (4,164 dry metric tons) and Snowmass.
Surface Disposal	2	4,249	4%	
Incineration	0	-	0%	
	35	14,109	14%	

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: The quantities here are estimated from the use and disposal numbers in the table above; the amounts of Class A and Class B are based on a state coordinator estimate that 20% were Class A (5% ATAD systems, 10% composting, and 5% air drying with demonstration of Class A by testing).
Class A EQ	0	4,271	4%	
Other Class A	0	11,429	11%	
Class B	0	62,800	61%	
Other (no data, etc.)	0	24,412	24%	
<b>Total</b>	<b>0</b>	<b>102,912</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	109	16,507	
Digestion-anaer./other	33	67,341	
Lime/Alkaline	3	84	
Composting	22	10,588	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	6	-	
Other	0	-	
Belt Filter Press	20	7,894	
Plate & Frame Press	0	-	
Screw Press	0	-	
Centrifuge	29	53,707	
Vacuum Filter	1	-	
Drying beds	29	-	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Connecticut**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Connecticut is not planning to seek delegation from EPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion, along with the air division of Connecticut's environmental agency, regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal. The air division regulates emissions from incinerators, and water/wastewater regulates all other. There are no land application sites in Connecticut.

Holder of liability: Connecticut does not have any land application programs.

More than one Class B biosolids on one site? There are no land application sites in Connecticut.

NPDES equivalent: The surface water discharge permit and enforcement program is the state equivalent to NPDES. All surface water discharge permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.1

Biosolids regulations updated: Connecticut does not have any sewage sludge management regulations. Connecticut relies solely on the 503 regulations. Almost all of the wastewater solids produced in CT are incinerated.

Management practices: CT has no formal state biosolids regulations; no land application occurs, and there is only a little composting; the resulting compost is not generally accepted in CT and is sent out of state.

Additional Management Actions: Not applicable.

Acres applied: Not applicable.

Reporting and Record-keeping: Few, if any, TWTDS are required to report biosolids information and data, as almost all incinerate their wastewater solids.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Connecticut, no legislative or regulation activity is happening or imminent that will impact beneficial use. No towns or counties in Connecticut have adopted more restrictive biosolids application ordinances. Local ordinances are not a problem in Connecticut, because there is no land application.

### **TRENDS**

The beneficial use of biosolids is not increasing in Connecticut. For decades, 95% or more of the solids in the state have been incinerated and this trend is expected to continue for the foreseeable future.

Most significant current pressures on biosolids recycling:

1. Traditional disposal by incineration is prevalent and it is hard to change that practice.
2. The state has not developed regulations that permit beneficial uses.

**TESTING AND REPORTING** is in accordance with Part 503.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Connecticut has no septage management regulations; the state relies on the 503 rule.

Number of full-time equivalent staff (FTEs) for septage program: data not reported

Septage haulers based in state (estimated): data not reported

Septage management: Septage can not be land applied. POTWs are not required to accept septage, but some do. Some septage is disposed at the state's incinerators.

Percentage of each management practice (estimated):

- Hauled to TWTDS = 70%.
- Incineration = 30%

Other concerns: Connecticut considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls mostly under local regulations. However, Connecticut has a proactive program to ensure that FOG is collected and kept out of the general wastewater flow. Connecticut's Department of Environmental Protection has a progressive program that provides towns with incentives and support to establish tough monitoring and enforcement of grease trap cleanouts and proper management of FOG.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Connecticut

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	X		
Other metals (boron, silver...)					
Dioxins/furans					
PCBs					
Priority pollutants					
Other organic compounds (e.g. PDBEs, pharmaceuticals)					
Radioactive isotopes (alpha, beta, Ra 224, etc.)					
Nutrients (NPK)	Yes	Yes	X		
Pathogen reduction (Class A or B)					
Vector attraction reduction (VAR)					

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed						
Part 503 metals	Yes	X				
Other metals						
Dioxins/furans						
PCBs						
Priority pollutants						
Other organic compounds						
Radioactive isotopes						
Nutrients (N, P, K)						
Cumulative Pollutant Loading Rates						
How biosolids achieve Class A or B						
How biosolids achieve Vector Attraction						
Solids stabilization processes used						
Other biosolids treatments						
End use/disposal practice						



# Connecticut

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
3,498,966	4,844	722	170,673	3,395	0.586	19.5%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)		
	118,000	<b>99,000</b>	79,603	84,000		
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24	NOTES: All reported quantities of wastewater solids in these tables are estimates developed by CT DEP by 1) multiplying (for each plant and for the state total) TWTDS permitted design flows by .71 (the estimated average proportion in the state of actual flows to design flows); 2) multiplying the result by 365 days to determine total actual flow per year; 3) multiplying the result by 200 (representing the solids generated per gallon) and multiplying again by 8.34 pounds/gallon to estimate pounds of dry solids produced; 4) dividing the result by 2000 pounds/tons to find the dry U. S. tons. The "Adjusted Estimate" is an average of this total and the total from the EPA biosolids generation factor method. The 4 separate preparers are four of the six wastewater solids incinerators that dispose of almost all wastewater solids in Connecticut.	
	94	89				
Total number of TWTDS sending to Separate Preparers in 2004:	96					
Number of Separate Preparers:	4					
Number of operating sludge incinerators:	6					
Fluidized bed:	3					
Multiple hearth:	3					
Percent of population served by on-site (e.g. septic systems):	no data					
	<b>UNITS: Dry U. S. Tons</b>					

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	2	2,000	2%	
Disposal	87	116,000	98%	
Other	0	-	0%	
<b>Total</b>	<b>89</b>	<b>118,000</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Agricultural	0	-	0%	
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	2	2,000	2%	Fairfield, Farmington, and sometimes Southbury composted biosolids; the resulting compost was exported to other states.
<b>Total</b>	<b>2</b>	<b>2,000</b>	<b>2%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	7	5,000	4%	Large incinerators at Hartford, Mattabasset District (Cromwell), Naugatuck, New Haven, Waterbury, and West Haven dispose of almost all CT's wastewater solids and have for decades (the last four are privately operated). All but New Haven and W. Haven accept solids from other TWTDS. Some CT solids are incinerated at Woonsocket, RI.
Surface Disposal	0	-	0%	
Incineration	80	111,000	94%	
<b>Total</b>	<b>87</b>	<b>116,000</b>	<b>98%</b>	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	2,000	2%
Other Class A	0	-	0%
Class B	0	-	0%
Other (no data, etc.)	109	116,000	98%
<b>Total</b>	<b>113</b>	<b>118,000</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Delaware**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Delaware is planning to seek delegation from USEPA sometime in the future, when resources allow.

State agency regulating biosolids: The water/wastewater portion of Delaware's environmental agency regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: Delaware does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There are 3 land applicators or land owners that hold legal liability.

More than one Class B biosolids on one site? Delaware does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Delaware essentially follows the NPDES permit system. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1

Biosolids regulations updated: October 1999.

Management practices: The management practices of Delaware's biosolids regulations are more restrictive than the federal Part 503 rule. Delaware continues to use the 40 CFR part 257 A "land treatment unit" concept. Delaware's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive than Part 503. Delaware requires additional monitoring at Class B land application sites, with site specific soil testing and groundwater testing. Nitrogen is the basis for the agronomic loading rate for land application. Delaware does require formal nutrient management plans. Delaware, as of January 1, 2007, uses site limitations, increased distance to surface water, total P in soil, available P in soil, a P index, and slope to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Delaware requires the following oversight and certification to occur at biosolids land application sites:

- Independent inspections or monitoring
- Certification of biosolids land applicators who manage or implement land application programs
- Other requirements or actions to control odors at land application sites
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing

In Delaware, biosolids management programs do not perform any additional oversight and certification voluntarily.

Acres applied: In 2004, biosolids were applied to a total of 4224 acres. In 2004, no new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by Freedom Of Information Act (FOIA) requests of the state agency. The data and

reports are compiled electronically with the EPA developed Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Delaware, phosphorus-based nutrient management plans will be enacted on January 1, 2007. This will likely reduce beneficial use for liquid Class B biosolids. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. There are ordinances for conditional zoning for liquid Class B land application. Three counties in Delaware have adopted more restrictive biosolids application ordinances. Overall, the number of more restrictive ordinances is remaining the same.

## **TRENDS**

The beneficial use of biosolids is not increasing in Delaware. Beneficial use is remaining about the same, with horticultural uses replacing lost agricultural uses.

Most significant current pressures on biosolids recycling:

1. Over-development and subsequent loss of agricultural land.
2. Competition for remaining agricultural land with manure generators.
3. P-based nutrient management.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1988.

Number of full-time equivalent staff (FTEs) for septage program: 1

Septage haulers based in state (estimated): 50

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: it must meet the same metals, pathogen, and vector requirements as Class B biosolids. POTWs are not required to accept septage. Approximately 7 POTWs accept septage.

Percentage of each management practice:

- Land applied = 20 %
- Hauled to TWTDS = 80 %

Other concerns: Delaware considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the land treatment regulations derived from 40 CFR part 257A. Delaware does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## **ADDITIONAL NOTES**

See <http://www.dnrec.delaware.gov/>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Delaware

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	Yes	Yes	-	Plant micronutrients: SAR	-
Dioxins/furans	No	-	-	-	-
PCBs	Yes	Yes	Yes	-	-
Priority pollutants	Yes	Yes	Yes	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	Yes	Yes	Yes	Also Nutrient Management	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Electronic	No	-
Part 503 metals	Yes	Yes	-	Electronic	No	-
Other metals	Yes	-	-	Electronic	No	-
Dioxins/furans	-	-	-	-	-	-
PCBs	Yes	Yes	-	Electronic	No	-
Priority pollutants	Yes	Yes	-	Electronic	No	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Electronic	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Electronic	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Electronic	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Electronic	No	-
Solids stabilization processes used	Yes	Yes	-	Electronic	No	-
Other biosolids treatments	Yes	Yes	-	Electronic	No	-
End use/disposal practice	Yes	Yes	-	Electronic	No	-

# Delaware

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~3 dry ton/ac)
830,069	1,953	425	457,201	1,826	0.046	2%
<b>Total Biosolids Generated in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	21,000	<b>21,000</b>	21,198		21,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			19	6		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			30%			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from National Biosolids Use & Disposal Survey completed by state biosolids coordinator.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	6	21,000	100%
Disposal	0	-	0%
Other	0	-	0%
<b>Total</b>	<b>6</b>	<b>21,000</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	3	8,500	40%
Forestland	1	1,000	5%
Reclamation	1	10,000	48%
Class A EQ Distribution	1	1,500	7%
<b>Total</b>	<b>6</b>	<b>21,000</b>	<b>100%</b>
Long-term storage	0	-	0%

### NOTES:

Applications of biosolids to agricultural lands include Class A (advanced lime treated) biosolids. The reclamation number is from Wilmington (biggest WWTF in DE), using biosolids mixed with coal ash for a vegetative layer on a landfill cap.

This represents one facility that produced compost.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	0	-	0%
Surface Disposal	0	-	0%
Incineration	0	-	0%
	0	-	0%

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: Includes compost and advanced lime treatment.
Class A EQ	6	21,000	100%	
Other Class A	0	-	0%	
Class B	0	-	0%	
Other (no data, etc.)	0	-	0%	
<b>Total</b>	<b>6</b>	<b>21,000</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	6	no data	
Digestion-anaer./other	0	no data	
Lime/Alkaline	1	no data	
Composting	1	no data	
Thermal (not incineration)	0	no data	
Long-term (lagoons, reed beds, etc.)	2	no data	
Other	0	no data	
Belt Filter Press	7	no data	
Plate & Frame Press	0	no data	
Screw Press	0	no data	
Centrifuge	0	no data	
Vacuum Filter	0	no data	
Drying beds	3	no data	
Other	0	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.



# District of Columbia

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
554,239	61	9,086	-	-	not applicable	not applicable

<b>Total Biosolids Used or Disposed in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	<b>Estimates from other sources:</b>	
	480,850	480,850	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
			76,220	no data

<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24
	1	3
Total number of TWTDS sending to Separate Preparers in 2004:	0	
Number of Separate Preparers:	0	
Number of operating sludge incinerators:	0	
Fluidized bed:	0	
Multiple hearth:	0	
Percent of population served by on-site (e.g. septic systems):	1%	

NOTES: Data in these tables are from the District of Columbia Water and Sewer Authority (DC WASA). Note that units are wet U. S. tons. With the average solids for 2004 estimated to be 22%, this equates to 105,800 dry U. S. tons of biosolids applied to farmlands, forestry, and marginal lands in need of topsoil (reclaimed lands) - mostly in Maryland and Virginia.

**UNITS: Wet U. S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	3	480,850	100%
Disposal	0	-	0%
Other	0	-	0%
<b>Total</b>	<b>3</b>	<b>480,850</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	1	440,420	92%
Forestland	1	36,161	8%
Reclamation	1	4,269	1%
Class A EQ Distribution	0	-	0%
<b>Total</b>	<b>3</b>	<b>480,850</b>	<b>100%</b>
Long-term storage	0	-	0%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	0	-	0%
Surface Disposal	0	-	0%
Incineration	0	-	0%
	0	-	0%

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	0	-	0%
Other Class A	0	-	0%
Class B	1	480,850	100%
Other (no data, etc.)	0	-	0%
<b>Total</b>	<b>1</b>	<b>480,850</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	0	-
Digestion-anaer./other	0	-
Lime/Alkaline	1	480,850
Composting	0	-
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	1	-
Other	0	-
Belt Filter Press	0	-
Plate & Frame Press	0	-
Screw Press	0	-
Centrifuge	1	480,850
Vacuum Filter	0	-
Drying beds	0	-
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Florida**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Florida is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water / wastewater portion of Florida's environmental agency, Florida Department of Environmental Protection (FL DEP), regulates biosolids and NPDES permits are used to regulate end use and disposal. The state does not issue separate permits for land application sites; rather, generators of biosolids include site details in their NPDES permit application and the sites are incorporated into that permit. An imminent revision to the FL DEP regulations will include a new "site registration" program.

Holder of liability: Florida mostly does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use, but there has been some partial transfer of liability to the land applicator in some cases.

More than one Class B biosolids on one site? Florida does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, and this is being done on approximately 230 sites.

NPDES equivalent: Florida has a wastewater facility permitting program that is the state equivalent to NPDES; these permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: Florida DEP has two budgeted FTE's dedicated to the biosolids program in its central office in Tallahassee. However, permit writers and inspectors in each of the six regional districts devote some time to biosolids, but this time is not tracked, although it is estimated to be equivalent to another 7.5 FTEs for a total of 9.5 FTEs statewide.

Biosolids regulations updated: March 1998. Florida DEP biosolids regulations are currently being updated; they should be complete by the end of 2007.

Management practices: The management practices of Florida's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include increased and additional setbacks especially to surface waters, buildings, water wells, and sinkholes; 12-month restricted public access to all Class B application sites; slope limitations; groundwater level limitations; signage requirements; and phosphorus restrictions in certain parts of the state. Florida's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Florida does not require additional monitoring at Class B land application sites, but additional requirements are in the proposed draft rule. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Phosphorus is currently the basis in four areas of the state, but both nitrogen and phosphorus are in the proposed rule. Florida does not require formal nutrient management plans (NMP); currently Florida has formal agricultural use plans that act like NMPs, but are not technically NRCS-approved NMPs. Formal NMPs are in the proposed draft rule. Florida uses tests of available P in soil to manage or control the application of phosphorus in biosolids in four areas of the state.

Additional Management Actions: Florida requires the following:

- Other requirements or actions to control odors at land application sites. There is a basic “no nuisance odors” provision in the rules, but it is difficult to enforce.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing. This is not yet required, but is being proposed in the draft rules.

In Florida, no biosolids management groups are known to perform any additional oversight and certification voluntarily. However, there are five biosolids management programs in the state that have joined the National Biosolids Partnership Environmental Management System program.

Acres applied: The number of acres to which biosolids were applied and the number of new permits in 2004 cannot be readily determined, as only paper records contain this information.

Reporting and Record-keeping: Both major and minor TWTDS, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency and the state web site. The data and reports are compiled electronically using the state’s Oracle database. Note that the information reported is limited and not in a form that is readily available or easily compiled.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Florida, use/disposal is being impacted by development of, or changes to, state biosolids regulations, and local (county, municipal) biosolids ordinances/regulations. These activities are likely to have the effect of reducing beneficial use. Another impact on biosolids use is the Governor’s initiative to improve Lake Okeechobee, St. Lucie Estuary, and Caloosahatchee Estuary. This initiative includes goals to eliminate all land-applied biosolids from those watersheds by 2011. However, since the initiative was unveiled, there have been no legislation or other necessary actions toward this goal. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law and 20 – 25 counties in Florida have adopted more restrictive biosolids application ordinances. Overall the number of more restrictive ordinances is increasing.

## **TRENDS**

The volume of beneficially used biosolids is increasing in Florida, because of population increases. However, the percentages of use and disposal methods are remaining fairly constant.

Most significant current pressures on biosolids recycling:

1. Truck traffic, odors, and other nuisance issues
2. Public perception / County ordinances
3. Development, growth, and loss of farms and remote areas
4. Nutrient issues, TMDLs - primarily phosphorus, but also nitrogen and fecal pathogens

## **SEPTAGE MANAGEMENT**

The Florida Department of Health (DOH) is the lead agency dealing with septage and onsite systems. However, when a septage hauler manages more than 20,000 gallons in a single day or more than 10,000 gallons as a daily average, then a FL DEP permit, similar to a NPDES permit, is required and regulatory responsibility lies with FL DEP.

Septage regulations updated: May 24, 2004.

Number of full-time equivalent staff (FTEs) for septage program: There are 67 County Health Departments, which are regional offices of DOH; in these offices there are 300 people who work on on-site system permitting, installation, maintenance, etc.; part of their responsibility is inspecting septage land application sites.

Septage haulers based in state (estimated): There are 454 DOH regulated septage haulers.

Septage management: Septage can be land applied if it meets Part 503 requirements and has been stabilized with lime for 2 hours. In addition, there are setbacks and field condition requirements that must be met that are more stringent than Part 503; these are found in the state on-site regulations. POTWs are not required to accept septage, but there are many that do.

Percentage of each management practice: 50% goes to wastewater treatment facilities (i.e. POTWs), 45% is land applied, 5% is landfilled after dewatering (usually from regional facilities that handle large volumes and are permitted by FL DEP). There are 119 DOH-regulated septage facilities that screen and lime-treat septage; most are located at land application sites; a few are regional facilities that take from several haulers, but most of them are single hauler systems. Most land-applied septage is put on pastureland and some on hay crops.

Other concerns: Florida does consider fats, oils, and grease (FOG) to be a significant issue. FOG becomes regulated when mixed with septage or biosolids, but separated FOG by itself is not regulated. It can be taken to POTWs or septage management facilities. Sometimes it is blended with septage and land applied. Many local wastewater treatment facilities keep FOG from causing issues at the facility by addressing it in pretreatment programs. Florida has few issues with illegal FOG disposal – it has not been a big problem, so there is no special state program for it.

#### **ADDITIONAL NOTES**

<http://www.dep.state.fl.us/water/wastewater/dom/reshome.htm>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Florida

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	EQ monthly	-
Other metals (boron, silver...)	-	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	EQ monthly	-
Pathogen reduction (Class A or B)	No	Yes	Yes	EQ monthly	-
Vector attraction reduction (VAR)	No	Yes	Yes	EQ monthly	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Partial	-	-	Both	No	*Yes for EQ which is done electronically
Part 503 metals	Yes	Yes	-	Both	No	*Yes for EQ
Other metals	No	-	-	-	-	Attached are the following
Dioxins/furans	No	-	-	-	-	report(s) or summary(ies) or
PCBs	No	-	-	-	-	they are available at the
Priority pollutants	No	-	-	-	-	following web address:
Other organic compounds	No	-	-	-	-	<a href="http://www.dep.state.fl.us/water/wastewater/dom/docs/2004AA.pdf">http://www.dep.state.fl.us/water/wastewater/dom/docs/2004AA.pdf</a>
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Both	-	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Both	-	-
How biosolids achieve Class A or B	Permit	-	-	Both	-	-
How biosolids achieve Vector Attraction	Permit	-	-	Both	-	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Permit	-	-	Both	-	-

# Florida

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
17,385,430	53,926	322	3,715,257	27,348	0.081	2.7%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Generated in 2004*:</b>	From State Survey Q24 300,000	<b>Adjusted Estimate</b> 300,000	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
			294,291		270,000	
<b>Total Number of TWTDS in 2004**:</b>	From CWNS 322	From Survey Q24 1220	NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and are estimated by knowledgeable staff of the Florida DEP, based on a late 1980s survey, with tracking of changes and updates since that time. The total number of TWTDS includes many small package plants. There are approximately 380 facilities that are greater than 0.5 MGD; these account for >90% of all sewage sludge produced in Florida. Miami, Florida's largest city, utilizes a diversity of biosolids management options: much goes to agricultural land application, some to compost, and some to landfills.			
Total number of TWTDS sending to Separate Preparers in 2004:	900					
Number of Separate Preparers:	34					
Number of operating sludge incinerators:	0					
Fluidized bed:	0					
Multiple hearth:	0					
Percent of population served by on-site (e.g. septic systems):	no data					
	<b>UNITS: Dry U.S. Tons</b>					

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	1220	249,000	83%	These percentages are estimates and include only sewage sludge and biosolids generated in Florida. An additional 80,000 - 100,000 dry U. S. tons of Class A pelletized biosolids are imported into Florida each year (e.g. from New England Fertilizer Co. (Boston), Ocean County NJ, New York Organic Fertilizer Co. (NY City), two Baltimore pelletizing facilities, a facility in GA, and Milwaukee WI (Milorganite)).
Disposal	0	51,000	17%	
Other	0	-	0%	
<b>Total</b>	<b>1220</b>	<b>300,000</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	1200	198,000	66%	FL DEP estimated in 1997 that half of the state's facilities run local land application programs. Almost all of these biosolids are surface applied to hay crops and pasture land, mostly in liquid form (although there are an increasing number of facilities that dewater biosolids because hauling distances to farms is increasing). Some biosolids applied to agricultural land is applied to citrus crops. Applications can occur any time of year, and usually no storage is needed. Farmers use the biosolids as a free nutrient supplement to increase crop yield. Many programs are managed by private companies, and applications of biosolids from different TWTDS to one site are common. Land application is preferred by most, because landfills that will take biosolids are few and far between, making the costs of hauling and disposing relatively high.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	20	51,000	17%	
<b>Total</b>	<b>1220</b>	<b>249,000</b>	<b>83%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	no data	51,000	17%	There are no operating wastewater solids incinerators in Florida.
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
	no data	51,000	17%	



### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: The quantity of Class A EQ biosolids reported here is final product mass, not wastewater solids input to the process. Approximately 20 facilities produce Class A EQ ("AA") via ATADs, RDP, N-Viro, BioSet, pelletizing (e.g. Tampa - some heat-dried pellets go to fertilizer blenders; much goes to agricultural land), heat drying, composting (e.g. Palm Beach County), etc. Most of these Class A EQ products are distributed in bulk to farmers.
Class A EQ	24	107,000	36%	
Other Class A	0	-	0%	
Class B	1176	163,000	54%	
Other (no data, etc.)	1200	30,000	10%	
<b>Total</b>	<b>2400</b>	<b>300,000</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES: This is estimated to be the most common stabilization practice in Florida. Only some cities (larger TWTDS) have anaerobic digestion. Maybe half of programs that land apply use lime treatment to meet Class B standards. Major composters are Miami, Palm Beach, Sarasota, Reedy Creek (Disneyworld). There are an estimated 5 pelletizers and 2 Dragon dryers.  There is no available data regarding dewatering technologies in use in Florida, but much of the Class B that is land applied is not dewatered. However, there is a trend toward more dewatering, as hauling distances are increasing for many facilities.
Aerobic Digestion	a majority	no data	
Digestion-anaer./other	several	no data	
Lime/Alkaline	600	no data	
Composting	4	no data	
Thermal (not incineration)	7	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Georgia**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Georgia is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The Watershed Protection and Land Protection branches of the Georgia Environmental Protection Division (EPD) regulate biosolids management, disposal, and end use, while the Georgia Department of Human Resources regulates the management and disposal of septage. Watershed Protection regulates sludge produced, treated, and disposed of by POTWs under NPDES or Land Application System (LAS) permits. The Land Protection Branch regulates biosolids treatment, disposal, and processing facilities operated by third party preparers under Solid Waste Handling Permits. The approval of sites for biosolids land application is also done under existing permits (NPDES, LAS, or Solid Waste).

Holder of liability: Georgia does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. At this time there are no land applicators or land owners that hold liability.

More than one Class B biosolids on one site? The Georgia regulations allow for biosolids from more than one TWTDS to be land applied on the same site in the same crop year, however Georgia's best management practices recommend that biosolids be segregated onto separate fields within sites or blended prior to land application.

NPDES equivalent: Georgia issues NPDES permits. A section of the permit authorizes a treatment plant to land apply biosolids and includes requirements for that practice (as described under Management Practices below).

Number of full-time equivalent staff (FTEs) for biosolids program: 2

Biosolids regulations updated: July 1996.

Management practices: The management practices of Georgia's biosolids regulations are more restrictive than the federal Part 503 rule. There are setback requirements / buffers restrictions of greater than 35 feet to state waters. Testing for soil pH is required annually; soil fertility testing is now being added to NPDES and LAS permits. Georgia's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive than Part 503. Georgia requires additional monitoring at one Class B land application site for nitrates in groundwater. Nitrogen is the basis for the agronomic loading rate for land application. Georgia does not require formal nutrient management plans. Georgia does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: In Georgia, some biosolids management groups perform the following oversight and certification voluntarily:

- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.
- Testing of some municipal sludge is done for priority pollutants under industrial pretreatment programs, but this is a recommendation not a requirement, so not all municipal facilities are doing this.

Acres applied: In 2004, four NPDES or LAS permits were amended to authorize the land application of biosolids onto approximately 300 acres of agricultural land. Information on the number of acres to which biosolids was applied is reported to the state, but is not tabulated.

Reporting and Record-keeping: All POTWs permitted in Georgia are required to report the amount of biosolids disposed as part of the Discharge Monitoring Report form. The data and reports are compiled electronically using Excel and Access. POTWs land applying biosolids must submit an annual report that includes biosolids quality data, disposal locations, and amounts. The public can access these reports from the EPD Watershed Protection Branch. EPA Region 4 office maintains annual reports for major facilities.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Georgia, there are no legislative or regulatory activities happening or imminent that will impact biosolids management. The establishment of a biosolids management workgroup to address regulatory issues, data tracking, and long-term management will likely expand beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. Some have attempted banning Class B biosolids in groundwater recharge areas. The number of towns and counties in Georgia that have adopted more restrictive biosolids application ordinances is unknown and it is unknown if the number of more restrictive ordinances is increasing or decreasing.

## **TRENDS**

The beneficial use of biosolids is not increasing in Georgia, because of public opposition and the low cost of available capacity at landfills.

Most significant current pressures on biosolids recycling:

1. Public opposition (odors and fears regarding pathogens and health)
2. Regulatory hurdles for large-scale / regional facilities
3. Complexity in tracking and reporting (land application)
4. Decrease in available farmland in the metro areas or other suitable areas for composting

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1994.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.2

Septage haulers based in state (estimated): 332

Septage management: Septage can be land applied if it meets part 503 and the following additional requirements: Maximum rate of 40,000 gallons annually per acre. POTWs are not required to accept septage. The number of POTWs that accept septage is unknown.

Percentage of each management practice: Not known.

Other concerns: Georgia considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under commercial waste rules 391-3-6-.24. Georgia has a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Georgia

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	yes for beneficial	All facilities report qty each month	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	No	-	-	-	-	-
Cumulative Pollutant Loading Rates	Yes	Yes	For facilities in existence pre 1993	-	-	-
How biosolids achieve Class A or B	Yes	-	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	No	-	Not required but usually provided	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

# Georgia

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
8,918,129	57,906	154	4,676,567	34,660	0.043	1.4%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Generated in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	200,000	<b>200,000</b>	155,500		175,000	
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24				
	350	462				
Total number of TWTDS sending to Separate Preparers in 2004:	12					
Number of Separate Preparers:	1					
Number of operating sludge incinerators:	4					
Fluidized bed:	0					
Multiple hearth:	4					
Percent of population served by on-site (e.g. septic systems):	no data					
<b>UNITS:</b>		<b>Dry U.S. Tons</b>				

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. The 663 TWTDS include city/county-owned (342) and private (108) facilities (excludes industrial wastewater treatment plants). 450 to 473 of these are mechanical plants (non pond systems) that generate sludge routinely. Approximately 205 TWTDS in Georgia are pond treatment systems; they are not included in the tracking of biosolids data, since they do not generate sludge routinely.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	57	49,224	25%
Disposal	404	150,051	75%
Other	1	725	0%
<b>Total</b>	<b>462</b>	<b>200,000</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	52	39,121	20%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	5	10,103	5%
<b>Total</b>	<b>57</b>	<b>49,224</b>	<b>25%</b>
Long-term storage	1	725	0%

### NOTES:

The only separate preparer is a compost facility, EARTH Products, that produces Class A compost that is sold in bags; 12 TWTDS send their sewage sludge to this compost facility. There are 3 TWTDS that make their own Class A compost and one TWTDS that has a pelletizing facility, the Class A pellets from which are land applied for agriculture (the quantity of these pellets is unknown and not included). Some of the land applied biosolids went to AL (1,679 dt). A separate preparer in SC took 57 dt.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	400	108,533	54%
Surface Disposal	0	-	0%
Incineration	4	41,518	21%
<b>Total</b>	<b>404</b>	<b>150,051</b>	<b>75%</b>

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	5	10,103	5%
Other Class A	0	-	0%
Class B	50	39,121	20%
Other (no data, etc.)	407	150,776	75%
<b>Total</b>	<b>462</b>	<b>200,000</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	NOTES: Georgia does not collect this data.
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Hawaii**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Hawaii is planning to seek delegation for Part 503 sometime in the future, when resources allow.

State agency regulating biosolids: The water/wastewater portion of Hawaii's environmental agency regulates biosolids and utilizes wastewater permits to regulate end use and disposal and land application sites.

Holder of liability: Hawaii does allow land applicers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use, but this is not being done.

More than one Class B biosolids on one site? Hawaii does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, and this is being done at one site.

NPDES equivalent: Hawaii has no state equivalent to NPDES. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.75

Biosolids regulations updated: December 2004

Management practices: The management practices of Hawaii's biosolids regulations are more restrictive than the federal Part 503 rule – they include additional setback requirements. Hawaii's pathogen and/or vector attraction reduction limits are also more restrictive. They have eliminated Option 3 for Class A, and have restricted Option 4. The pollutant (trace metals, etc.) limits are more restrictive. Hawaii does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Hawaii does require formal nutrient management plans. Hawaii does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Hawaii does not require any additional oversight and certification to occur at biosolids land application sites. In Hawaii, biosolids management groups do not perform any additional oversight and certification voluntarily.

Acres applied: No Class B land application occurred in 2004. Where Class A biosolids is not tracked.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Hawaii, no regulation or legislative activity is happening or imminent that would affect biosolids. No county has adopted any restrictive biosolids ordinances.

### **TRENDS**

The beneficial use of biosolids is increasing in Hawaii, due to the consent decree discussed below.

Most significant current pressures on biosolids recycling:



A consent decree between U. S. EPA and the City of Honolulu requires the City to reuse a certain amount of biosolids. In accordance with this, the City has constructed a pelletizer and has begun processing some of its solids at this facility.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: December 2004

Number of full-time equivalent staff (FTEs) for septage program: 0.25

Septage haulers based in state (estimated): 65

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage. It is not known how many actually do.

Percentage of each management practice:

- Hauled to TWTDS = 100 %

Other concerns: Hawaii considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the wastewater rules. Hawaii does not have a proactive program to collect FOG and keep it out of the general wastewater flow. Local counties have FOG ordinances. Hawaii registers FOG pumpers and requires recordkeeping and reporting.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Hawaii

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	-	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	Same frequency as 503 though not req'd by 503	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	No	-	-	-	-	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	No	-	-	-	-	-
Cumulative Pollutant Loading Rates	-	-	-	-	-	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

# Hawaii

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,262,124	6,422	197	211,120	4,755	0.095	3.2%

Total Biosolids Generated in 2004*:	From State Survey Q24		Adjusted Estimate		Estimates from other sources:	
	From State Survey Q24	Adjusted Estimate	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)		
	19,601	20,000	28,105	17,000		

Total Number of TWTDS in 2004**:	From CWNS		From Survey Q24	
	From CWNS	From Survey Q24		
	21	18		

Total number of TWTDS sending to Separate Preparers in 2004:	9
Number of Separate Preparers:	2
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	50%

NOTES: Data in these tables are from EPA Region 9. The data reported is for the largest facilities in Hawaii. The other (approx. 200) facilities are small plants, such as package plants, that mostly transport their solids to larger plants (thus, their solids are accounted for).

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	9	8,491	43%
Disposal	9	11,110	57%
Other	0	-	0%
Total	18	19,601	100.00%

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	0	-	0%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	9	8,491	43%
Total	9	8,491	43%
Long-term storage	0	-	0%

NOTES:

Two major compost facilities (Barbers Point and EKO Maui) provide composting of solids for at least 9 TWTDS. Reported here is the mass of solids entering the 2 major composting facilities; the total mass of final finished compost may be larger. The finished compost is used mostly for landscaping.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	9	11,110	57%
Surface Disposal	0	-	0%
Incineration	0	-	0%
	9	11,110	57%

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: These are the 2 major compost facilities (Barbers Point and EKO Maui).
Class A EQ	2	8,491	43%	
Other Class A	0	-	0%	
Class B	0	-	0%	
Other (no data, etc.)	9	11,110	57%	
<b>Total</b>	<b>11</b>	<b>19,601</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	2	8,491	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)			
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Idaho**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Idaho is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water / wastewater portion, along with the solid waste program, of Idaho's environmental agency regulates biosolids. Water / wastewater regulates beneficial use, and solid waste regulates landfilling. Idaho utilizes specific NPDES-type permits and other actions to regulate end use and disposal. Land application sites require an approved sludge management plan or site-by-site approvals.

Holder of liability: Idaho does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use; however, no data was provided regarding whether or not this is being done.

More than one Class B biosolids on one site? Idaho does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: No data provided.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.6

Biosolids regulations updated: January 1996.

Management practices: The management practices of Idaho's biosolids regulations are more restrictive than the federal Part 503 rule. The Idaho rules include setback requirements. Idaho's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Idaho does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Idaho does not require formal nutrient management plans. Idaho does not separately manage or control the application of phosphorus in biosolids.

Additional Management Actions: Idaho does not require any additional oversight and certification to occur at biosolids land application sites, and biosolids management groups are not known to perform any additional oversight and certification voluntarily.

Acres applied: No data provided.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data. The public can access these reports from the EPA regional office. The data and reports are not compiled electronically by the state.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Idaho, no regulatory or legislative activity is happening that would affect biosolids management. A growth in the state population is increasing sludge volumes, but it is also decreasing the available land for land application. This activity may reduce beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.

### **TRENDS**

The beneficial use of biosolids is increasing in Idaho. This increase is due to rapid growth in population.

Most significant current pressures on biosolids recycling: Population growth.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1991.

Number of full-time equivalent staff (FTEs) for septage program: 0.1

Septage haulers based in state (estimated): 86

Septage management: Septage can be land applied if it meets part 503. POTWs are not required to accept septage. However, several TWTDS accept septage.

Percentage of each management practice: No data provided.

Other concerns: It was not reported whether Idaho considers fats, oils, and grease (FOG) to be a significant issue. Grease trap waste is handled under solid waste regulations and goes to landfills.

## **ADDITIONAL NOTES**

Idaho has many TWTDS that rely on lagoons for treatment; these are cleaned out every 10 - 15 years. There are less than 25 mechanical plants in the state. These include the following (biosolids management practice appears in parentheses):

- Aberdeen
- Blackfoot (land applied Class B biosolids)
- Boise (dedicated farm for land application of Class B biosolids)
- Caldwell (land applied Class B biosolids), Cour d'Alene (Class A compost)
- Eagle (minimal treatment, then hauls to Boise)
- Hailey (land reclamation using Class B biosolids)
- Idaho Falls (land applied Class B biosolids)
- Ketchum (land reclamation using Class B biosolids)
- Lewiston (solids are treated by contracted composter)
- Meridian (land applied Class B biosolids)
- Mt. Home Air Force Base (developing alkaline drying treatment to produce Class A; land application)
- Nampa (land applied Class B biosolids)
- Pocatello
- Post Falls
- Preston
- Rexsburg (land applied Class B biosolids)
- Soda Springs (long-term storage, then land application or landfill)
- Twin Falls (land applied Class B biosolids)

# Idaho

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,395,140	82,747	17	6,152,611	18,366	0.004	0.1%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
23,209	23,300

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
27,727	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
186	27

Total number of TWTDS sending to Separate Preparers in 2004:	2
Number of Separate Preparers:	2
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from the Northwest Biosolids Management Association and EPA Region 10. The amounts of biosolids used or disposed by different means were known for ~15,000 dry U.S. tons of the total reported. For the remaining amount, it was assumed that all was treated to Class B standards and half was landfilled and half was land applied on agricultural land. In addition to these 27 TWTDS for which at least some data were available, there are many smaller TWTDS that produce relatively few solids each year; many of these probably store solids for several years, land apply Class B biosolids, and/or landfill solids.

UNITS: **Dry U. S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	18	19,139	82%
Disposal	9	4,070	18%
Other	0	-	0%
Total	27	23,209	100.00%

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	15	17,454	75%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	3	1,685	7%
Total	18	19,139	82%
Long-term storage	0	-	0%

### NOTES:

Includes 9 TWTDS and ~4,000 dry U. S. tons that is assumed to be Class B land applied, but for which there was no data.

This is compost created by 2 separate preparers (Coeur d'Green and EKO Compost) and the town of Grangeville.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	9	4,070	18%
Surface Disposal	0	-	0%
Incineration	0	-	0%
Total	9	4,070	18%

### NOTES:

These are estimates made with the assumption that 1/2 of the larger TWTDS for which there is no data sent solids to landfill and half of the solids for which there is no data went to landfill.



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	3	9,508	41%
Other Class A	0	-	0%
Class B	5	5,562	24%
Other (no data, etc.)	19	8,139	35%
<b>Total</b>	<b>27</b>	<b>23,209</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	2	-	NOTES: This data is incomplete; small facility data not available. Includes Coeur d'Alene, Lewiston, Meridian, Nampa, Pocatello, EKO Compost, Coeur d'Green, and Grangeville
Digestion-anaer./other	24	14,970	
Lime/Alkaline	1	-	
Composting	3	1,636	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	0	-	
Other	0	-	
Belt Filter Press	3+	3,915	Coeur d'Alene, Meridian
Plate & Frame Press	0	-	
Screw Press	0	-	
Centrifuge	2	8,715	
Vacuum Filter	0	-	
Drying beds	4+	2,083	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Illinois**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Illinois plans to become delegated for Part 503.

State agency regulating biosolids: The water / wastewater portion of Illinois' environmental agency regulates biosolids and utilizes state operating permits to regulate end use and disposal and land application sites.

Holder of liability: Illinois does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. Eleven permitted sludge haulers currently hold legal liability for biosolids end use.

More than one Class B biosolids on one site? Illinois does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done, but the number of sites on which it is done is unknown – it is common, especially in northeast Illinois.

NPDES equivalent: There is a state permit program for biosolids management. NPDES permits, which are separate from these state permits, have standard boiler-plate language for biosolids.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.5

Biosolids regulations updated: January 1984; a new rule-making has been proposed, but has been delayed in legal review and by concerns about how to manage the impacts on biosolids management of naturally occurring radium in groundwater (especially documented in northern Illinois). (Radium is a precursor of radon gas, which might become an issue in homes built on converted farmland; however, DEQ calculates that biosolids use is unlikely to create any risk by this scenario, but is awaiting concurrence from state radiation experts).

Management practices: The management practices of Illinois' biosolids regulations are more restrictive than the federal Part 503 rule. The Illinois rules include setback requirements for wells and surface water, restricts use of some soil types, and requires a soil pH of 6.5 for application. Illinois' pathogen and/or vector attraction reduction limits are not more restrictive than Part 503; however, Illinois has more restrictive pollutant (trace metals, etc.) limits, specifically for Cumulative Pollutant Loading Rates (CPLR) to soils (Cd = 10 mg/kg, Cu = 250 mg/kg, Pb = 1000 mg/kg, Ni = 100 mg/kg, and Zn = 500 mg/kg). Illinois does not require additional monitoring at Class B land application sites. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Illinois does not require formal nutrient management plans. Illinois uses testing based on available P in the soil to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Biosolids land applicators do not have to be certified in Illinois, and there is no requirement for independent monitoring or special odor control measures. However, odor complaints to DEQ lead to DEQ inspection; DEQ often then requires the land applicator to take follow-up actions like incorporation or lime treatment.

Acres applied: The number of acres in Illinois to which biosolids were applied in 2004 is not known.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports from POTW or TWTDS websites and

via Freedom of Information Act (FOIA) requests of IL EPA. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Illinois, development of, or changes to, state biosolids regulations is expected in the next year or two, but will likely have no significant affect on beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.

## **TRENDS**

It is likely that the number of TWTDS that apply biosolids to soils is decreasing, because there is a relatively new \$2,500 fee for biosolids land application permits; for small facilities, this makes landfilling the cheaper option. However, because only small plants are impacted by this fee, the quantity of biosolids being land applied has remained fairly stable from year to year. In general, wastewater treatment facilities seem to be continuing their existing practices for biosolids use and disposal, rather than using new or different methods.

Most significant current pressures on biosolids recycling:

1. Loss of land application sites due to urban sprawl
2. Naturally occurring radium in source water, and, therefore, biosolids
3. Potential legislative requirement to apply sludge at phosphorous rate rather than nitrogen rate

## **SEPTAGE MANAGEMENT**

In Illinois, septage is generally managed in accordance with the federal Part 503 regulations. Annual reporting regarding septage management activities is also required to the Illinois Department of Health's private sewage division.

Septage regulations updated: The Illinois regulations pertaining to septage management were last updated in 2003; these are in Section 905.170, which deals with septage (or private sewage) collection, storage, and disposal in accordance with Part 503. All septage pumpers/haulers are licensed by the state. Annual reporting to the state is required regarding the disposal methods for septage, where it is used or disposed, and the volumes, etc. The use or disposal options for septage are lagoons, incinerators, landfills, disposal at TWTDS, and land application to agricultural land.

Number of full-time equivalent staff (FTEs) for septage program: 1 (assisted by local health departments for complaints and enforcement)

Septage haulers based in state (estimated): 723 (February 2007 data)

Septage management: In Illinois, TWTDS are not required to accept septage, but many do – although the number that do is declining.

Percentage of each management practice: No data provided.

Other concerns: Illinois considers fats, oils, and grease (FOG) to be somewhat of an issue – and it is becoming more of an issue. FOG is considered a special waste by IL EPA; some is recycled.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Illinois

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	Annual to monthly based on design average flow	Frequency based on design average flow
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	-	-	-	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	Yes	-	Semi-annual	-
Nutrients (NPK)	No	Yes	-	Annual to monthly based on design average flow	Frequency flow
Pathogen reduction (Class A or B)	-	-	-	-	-
Vector attraction reduction (VAR)	-	-	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Semi-annually	Paper	-	-
Part 503 metals	Yes	-	Annually to monthly based on design average flow	Paper	-	-
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Annually to monthly based on design average flow	Paper	-	-
Cumulative Pollutant Loading Rates	-	-	-	-	-	-
How biosolids achieve Class A or B	-	-	-	-	-	-
How biosolids achieve Vector Attraction	-	-	-	-	-	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	-	Semi-annually	-	-	-

# Illinois

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
12,712,016	55,583	229	24,171,260	68,750	0.014	0.5%

Total Biosolids Generated in 2004*:	Adjusted Estimate		459,576	390,000
	From State Survey Q24	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		
	348,063	<b>348,000</b>		

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
		721

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	no data

### Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	459,576
Dry tons, reported to BioCycle Survey (Goldstein, 2000)	390,000

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. Some TWTDS use more than one use or disposal method for their biosolids. Chicago accounts for 59% of the sewage sludge produced in Illinois in a typical year.

**UNITS: Dry U. S. tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:  In 2004, a total of 407,665 U.S. dry tons of biosolids were actually used or disposed of in Illinois; this includes more than 52,000 U.S. dry tons produced and stored from 2003.
Beneficial Use	364	203,618	59%	
Disposal	77	124,877	36%	
Other	116	19,568	6%	
<b>Total</b>	<b>557</b>	<b>348,063</b>	<b>100.00%</b>	

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:  About 20 additional TWTDS sent about 6,774 tons of wastewater solids to larger TWTDS for treatment; these numbers are not included, to avoid double-counting these solids. Included is one small TWTDS that has a vermiculture operation.
Agricultural	348	178,968	51%	
Forestland	0	-	0%	
Reclamation	6	22,771	7%	
Class A EQ Distribution	10	1,879	1%	
<b>Total</b>	<b>364</b>	<b>203,618</b>	<b>59%</b>	
Long-term storage	116	19,568	6%	

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:  Three of these TWTDS produce 85,659 U.S. dry tons of sewage sludge that is used for landfill daily cover.
MSW landfill (incl dly cvr)	77	124,877	36%	
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
	77	124,877	36%	

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	10	1,879	1%	IL regulations do not differentiate Class A "EQ" from Class A biosolids.
Other Class A	0	-	0%	
Class B	454	354,484	99%	
Other (no data, etc.)	0	-	0%	
<b>Total</b>	<b>464</b>	<b>356,363</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	probably 400	no data	Chicago is building a heat-drying pelletizing plant.
Digestion-anaer./other	approximately 45	no data	
Lime/Alkaline	approximately 20	no data	
Composting	few to none	no data	
Thermal (not incineration)	none	no data	
Long-term (lagoons, reed beds, etc.)	49	no data	These lagoon storage systems are mostly small; however, Danville, for example, is fairly large and has huge lagoons that store solids for five years at a time before they are all handled in one large clean-out.
Other	0	no data	
Belt Filter Press	many	no data	Chicago uses centrifuges.
Plate & Frame Press	0	no data	
Screw Press	0	no data	
Centrifuge	1	no data	
Vacuum Filter	0	no data	
Drying beds	many	no data	
Other	0	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Indiana**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Indiana is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The solid waste program portion of Indiana's environmental agency regulates biosolids and utilizes a solid waste license/permit to regulate end use and disposal and land application sites. Each TWTDS that land applies biosolids must obtain a land application permit; all sites are approved under that permit either in a site-specific permit or a non-site-specific permit.

Holder of liability: Indiana does not allow land applicers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Indiana does allow *Class B* biosolids from more than one TWTDS to be land applied on the same site in the same crop year – this could happen on any of the 1,000+ permitted land application sites in Indiana; how often it happens is not known.

NPDES equivalent: Not applicable. The solid waste program oversees biosolids recycling to land through site-specific permitting.

Number of full-time equivalent staff (FTEs) for biosolids program: 3

Biosolids regulations updated: August, 2003.

Management practices: The management practices of Indiana's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include setback requirements and slope restrictions. Indiana's pathogen and/or vector attraction reduction limits are not more restrictive. Indiana has more restrictive pollutant (trace metals, etc.) limits. Indiana requires additional monitoring at Class B land application sites; soil pH must be at least 5.5. Nitrogen is the basis for the agronomic loading rate for land application, unless the metal concentrations are high, then application rates are based on metal annual loading rates. Indiana does not require formal nutrient management plans. Indiana does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Additional voluntary measures taken by biosolids management programs, if any, are not known.

Acres applied: In 2004, biosolids were applied to a total of 14,976 acres. The number of new site permits/approvals issued is not known exactly, but there were 100 combined renewals and new permits – mostly renewals – in 2004. In total, there are currently 1,596 permitted land application sites (1,309 are site-specific and 279 are non-site-specific); of that total, 507 actually received biosolids in 2004.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data - and only if they hold a land application or marketing and distribution permit. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically in Access.



Legislative, regulatory, or other activity impacting biosolids use/disposal: In Indiana, there are no reported legislative or regulatory activities happening or imminent impacting biosolids. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state regulations. It is unknown how many towns and counties in Indiana have adopted more restrictive biosolids management ordinances.

## **TRENDS**

The beneficial use of biosolids is increasing in Indiana. Regional biosolids centers are becoming more popular. Smaller facilities are disposing of their biosolids at these regional centers, which recycle the biosolids to soils. Most of these centers are handling Class B biosolids for agricultural use. By regulation, the centers must blend any biosolids material with at least one other biosolids and/or other organic residuals so that it becomes the regional center's generated product. In order to be shipped to one of these regional centers, a TWTDS biosolids must be Class B and meet Part 503 Table 1 pollutant standards.

Most significant current pressures on biosolids recycling:

1. Compaction on farm ground.
2. Increase in development of agricultural ground to new home construction or industrial activity.
3. Governmental regulation and oversight.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: July 2002.

Number of full-time equivalent staff (FTEs) for septage program: 1.5

Septage haulers based in state (estimated): 350

Septage management: Septage can be land applied if it meets part 503. POTWs are not required to accept septage, however, 175 do.

Percentage of each management practice:

- Land applied = 10%
- Hauled to TWTDS = 80%
- Sent to other septage-only treatment facility = 10%

Other concerns: Indiana considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Indiana does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Indiana

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	Based on amount generated as outlined in Part 503
Other metals (boron, silver...)		No	-	-	-
Dioxins/furans	-	No	-	-	-
PCBs	-	Yes	-	annually	-
Priority pollutants	-	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	No	-	-	-
Nutrients (NPK)	-	Yes	-	-	Monthly as land application occurs
Pathogen reduction (Class A or B)	-	Yes	Yes	-	-
Vector attraction reduction (VAR)	-	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING: Class A, B, VAR and CPLR collected as part of permit but not submitted to state	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Only those who hold a land app permit must submit a monthly report	Electronic	No	Some reports may be created upon request
Part 503 metals	Yes	Sampled at same	Monthly as land app occurs	Electronic	No	-
Other metals	No	-	-	-	No	-
Dioxins/furans	No	-	-	-	No	-
PCBs	Yes	-	-	Paper	No	-
Priority pollutants	No	-	-	-	No	-
Other organic compounds	No	-	-	-	No	-
Radioactiv e isotopes	No	-	-	-	No	-
Nutrients (N, P, K)	Yes	-	-	-	No	-
Cumulative Pollutant Loading Rates	No	-	-	-	No	-
How biosolids achieve Class A or B	No	-	-	-	No	-
How biosolids achieve Vector Attraction	No	-	-	-	No	-
Solids stabilization processes used	No	-	-	-	No	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	-	-	-	-	-

# Indiana

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
6,226,537	35,866	174	12,909,002	53,725	0.015	0.5%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Generated in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	196,963	<b>197,000</b>	212,866		60,000	
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24	NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and individual TWTDS. In Indiana, 848 wastewater treatment plants hold an NPDES permit. The land application program of the state's solid waste division only tracks those TWTDS that hold a land application or marketing and distribution permit. The numbers reported here are based on 300 currently permitted facilities, plus several larger TWTDS that dispose of solids. The rest (500+) TWTDS are not tracked by the solid waste department; their solids go to one of the following: a regional center, out of state, to another TWTDS, to disposal, or long-term storage.			
Total number of TWTDS sending to Separate Preparers in 2004:	411	193				
Number of Separate Preparers:		36				
Number of operating sludge incinerators:		7				
Fluidized bed:		1				
Multiple hearth:		0				
Percent of population served by on-site (e.g. septic systems):		1				
		no data				
	<b>UNITS:</b>	<b>Dry U.S. Tons</b>				

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	145	106,099	54%	
Disposal	48	90,864	46%	
Other	0	-	0%	
<b>Total</b>	<b>193</b>	<b>196,963</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	133	43,977	22%	Indiana has 300 treatment facilities permitted for applying biosolids and other organic by-products to soils; some are industrial facilities (not TWTDS) and some do not land apply every year.  Fort Wayne did a special reclamation project in 2004 that included use of an additional 30,000 or so U.S. dry tons; a normal year's production there is around 30,000 U. S. dry tons that go to Class A EQ distribution.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	12	62,122	32%	
<b>Total</b>	<b>145</b>	<b>106,099</b>	<b>54%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	46	39,041	20%	NOTES: Landfilling numbers are Muncie and Gary, as well as a little (973 U.S. dry tons) from Indianapolis. More small facilities may landfill, making for somewhat higher disposal totals.
Surface Disposal	0	-	0%	
Incineration	2	51,823	26%	Indianapolis, the state's largest city (13% of IN population, plus 41,000 businesses) has two WWTFs and a multiple hearth incinerator. In 2004, Indianapolis landfilled 973 U.S. dry tons when the incinerator was being serviced.
	48	90,864	46%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	11	61,197	31%
Other Class A	1	924	0%
Class B	135	45,753	23%
Other (no data, etc.)	0	90,864	46%
<b>Total</b>	<b>147</b>	<b>198,738</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	662	no data
Digestion-anaer./other	94	no data
Lime/Alkaline	19	no data
Composting	3	no data
Thermal (not incineration)	17	no data
Long-term (lagoons, reed beds, etc.)	4	no data
Other	0	no data
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
Vacuum Filter	no data	no data
Drying beds	no data	no data
Other	no data	no data

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Iowa**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Iowa is not planning to seek delegation for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Iowa's environmental agency regulates biosolids and utilizes general NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: Iowa does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Iowa does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Iowa issues state operation permits that work with NPDES permits to regulate biosolids use and disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.5

Biosolids regulations updated: August 1994.

Management practices: The management practices of Iowa's biosolids regulations are more restrictive than the federal Part 503 rule. However, Iowa's pathogen and/or vector attraction reduction limits are not more restrictive. Iowa's pollutant (trace metals, etc.) limits are more restrictive. Iowa does not require additional monitoring at Class B land application sites.

Nitrogen is the basis for the agronomic loading rate for land application. Iowa does not require formal nutrient management plans, because they consider the regulations to sufficiently manage nutrients. Iowa does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Iowa requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land applicators who manage or implement land application programs.

In Iowa, it is not known whether any biosolids management groups perform additional oversight or certification voluntarily.

Acres applied: Data on the number of acres in Iowa to which biosolids were applied in 2004 is not easily compiled and was not provided.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with the EPA Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Iowa, no regulation or legislative activity is happening that would affect biosolids management. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. One county in Iowa has adopted a more restrictive biosolids application ordinance. Overall, the number of more restrictive ordinances is remaining the same.

### **TRENDS**

The beneficial use of biosolids remains consistent in Iowa.

Most significant current pressures on biosolids recycling: None identified.

### **SEPTAGE MANAGEMENT**

Septage regulations updated: August 1994.

Number of full-time equivalent staff (FTEs) for septage program: 0.125

Septage haulers based in state (estimated): data not available

Septage management: Septage can be land applied in accordance with Part 503. POTWs are not required to accept septage. However, 10 TWTDS accept septage.

Percentage of each management practice:

- Land applied = 85 %
- Hauled to TWTDS = 10 %
- Disposed of in Lagoons = 5%

Other concerns: Iowa does not consider fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste is not regulated. Iowa does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Iowa

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	-	No	-	-	-
Dioxins/furans	-	No	-	-	-
PCBs	-	No	-	-	-
Priority pollutants	-	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	No	-	-	-
Nutrients (NPK)	-	Yes	Yes	-	-
Pathogen reduction (Class A or B)	-	Yes	Yes	-	-
Vector attraction reduction (VAR)	-	Yes	Yes	-	-



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	-	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	-	No	-
How biosolids achieve Class A or B	Yes	Yes	-	-	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	-	No	-
Solids stabilization processes used	Yes	Yes	-	-	No	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	-	No	-

# Iowa

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,952,904	55,869	53	27,153,291	84,755	0.002	0.1%
<b>Total Biosolids Generated in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	66,660	<b>67,000</b>	73,743		50,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			730	78		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			ND			
Number of operating sludge incinerators:			2			
Fluidized bed:			1			
Multiple hearth:			1			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry U.S. Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. These numbers are rough estimates from IA Dept. of Natural Resources. Only major utilities report to the state.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	76	50,200	75%	
Disposal	2	16,460	25%	
Other	0	-	0%	
<b>Total</b>	<b>78</b>	<b>66,660</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Agricultural	65	48,200	72%	NOTES: There are likely additional smaller facilities that land apply biosolids. Some land applied is likely Class A.  Davenport, which, each year, feeds ~2,000 U.S. dt of sewage sludge into its compost.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	11	2,000	3%	
<b>Total</b>	<b>76</b>	<b>50,200</b>	<b>75%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	0	-	0%	NOTES: Incineration is at Dubuque (3,832 U.S. dry tons burned in perhaps the oldest operating fluidized bed unit in the U.S. (1968)) and Cedar Rapids (12,628 U.S. dry tons incinerated in multiple hearth unit; they also land applied 3,538 dt lime-treated biosolids when incinerator was having maintenance done).
Surface Disposal	0	-	0%	
Incineration	2	16,460	25%	
	2	16,460	25%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	11	5,200	8%
Other Class A	0	-	0%
Class B	65	45,000	68%
Other (no data, etc.)	0	16,460	25%
<b>Total</b>	<b>76</b>	<b>66,660</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	25	no data
Digestion-anaer./other	44	no data
Lime/Alkaline	8	no data
Composting	1	no data
Thermal (not incineration)	0	no data
Long-term (lagoons, reed beds, etc.)	0	no data
Other	0	no data
Belt Filter Press	4	no data
Plate & Frame Press	0	no data
Screw Press	0	no data
Centrifuge	3	no data
Vacuum Filter	5	no data
Drying beds	25	no data
Other	0	no data

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Kansas**

### **GENERAL**

Kansas City and Johnson County are the largest TWTDS in Kansas; together, they service about 1/3 of the state's population. They landfill their biosolids. There is one compost facility, for the City of Olathe, and the city of Arkansas is the only other facility that creates a Class A biosolids product which is land applied. There are 140 Kansas facilities that create Class B biosolids and land apply them. There are approximately 150 TWTDS in Kansas with mechanical systems and 700 with lagoon systems. The lagoons don't have to be dredged for 25 – 35 years; it is unknown if any lagoon systems removed biosolids in 2004.

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Kansas is not planning to seek delegation for Part 503. Kansas is administering the day-to-day monitoring for compliance with the Part 503 program, but does not have primacy. The Kansas legislature will not allow the state to adopt rules more stringent than required under federal law.

State agency regulating biosolids: The water/ wastewater portion of Kansas's environmental agency regulates biosolids. Kansas relies solely on the federal Part 503 regulations and does not use permits to regulate biosolids end use and disposal or land application sites.

Holder of liability: Kansas does not allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Kansas does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Kansas water pollution control is the state equivalent to NPDES. Kansas water pollution control/NPDES permits do not always include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.25

Biosolids regulations updated: Kansas has no state regulations.

Management practices: Part 503 sets all requirements and management practices in Kansas. Kansas does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Kansas does not require formal nutrient management plans. Kansas does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Kansas does not require any additional oversight or certification to occur at biosolids land application sites and no biosolids management programs perform any additional oversight or certification voluntarily.

Acres applied: In 2004, biosolids were applied to an unknown number of acres (there is currently no tracking mechanism), and Kansas does not require permits for land application sites.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. These reports may be obtained from the state agency by mail or in person. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Kansas, no regulation or legislative activity is happening that would affect biosolids management. Although

local units of government are allowed to enact ordinances that are more restrictive than state law, no towns or counties do.

## **TRENDS**

The beneficial use of biosolids is not increasing in Kansas. There is an increasing use of landfills, in order to avoid the hassle of land application.

Most significant current pressures on biosolids recycling:

1. Public opposition.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Kansas has no state regulations; the state relies on the federal Part 503.

Number of full-time equivalent staff (FTEs) for septage program: 0. The septage program is delegated to the county health departments to administer. The state does not have the resources at the state level to oversee septage.

Septage haulers based in state (estimated): About 2 per county, which leads to a total of about 110 statewide.

Septage management: Septage can be land applied if it meets part 503. POTWs are not required to accept septage, and it is unknown how many do.

Percentage of each management practice (estimated):

- Land applied = 50 %
- Hauled to TWTDS = 50 %

Other concerns: Kansas considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the solid waste rules. Kansas does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Kansas

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	No	-	-	-	-	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

# Kansas

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,733,697	81,814	33	29,542,022	56,703	0.001	0.0%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
31,957	32,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
56,196	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
634	25

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	1
Fluidized bed:	no data
Multiple hearth:	no data
Percent of population served by on-site (e.g. septic systems):	40%

NOTES: Data in these tables are from the largest TWTDS in Kansas and accounts for an estimated 77% of the wastewater flow in the state. Additional information from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

**UNITS: Dry U. S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	10	12,886	40%
Disposal	15	19,071	60%
Other	0	-	0%
<b>Total</b>	<b>25</b>	<b>31,957</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	9	11,992	38%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	1	894	3%
<b>Total</b>	<b>10</b>	<b>12,886</b>	<b>40%</b>
Long-term storage	0	-	0%

### NOTES:

Class B land application by Arkansas, Lawrence, Topeka (3 TWTDS), and Wichita (4 TWTDS).

Olathe produces biosolids compost.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	14	11,417	36%
Surface Disposal	0	-	0%
Incineration	1	7,654	24%
<b>Total</b>	<b>15</b>	<b>19,071</b>	<b>60%</b>

### NOTES:

Johnson County (7 TWTDS) and Topeka sent solids to landfills.

In 2004, Kansas City incinerated most of its solids and sent some to landfill.



### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	1	894	4%
Other Class A	1	-	0%
Class B	140	11,992	0%
Other (no data, etc.)	15	19,071	96%
<b>Total</b>	<b>157</b>	<b>31,957</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	75	no data	NOTES: Incomplete data.
Digestion-anaer./other	25	no data	
Lime/Alkaline	2	no data	
Composting	1	no data	
Thermal (not incineration)	0	no data	
Long-term (lagoons, reed beds, etc.)	0	no data	
Other	0	no data	
Belt Filter Press	25	no data	
Plate & Frame Press	0	no data	
Screw Press	0	no data	
Centrifuge	1	no data	
Vacuum Filter	3	no data	
Drying beds	0	no data	
Other	0	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Kentucky**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Kentucky is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The solid waste portion of Kentucky's environmental agency regulates biosolids and utilizes solid waste permits to regulate end use and disposal.

Holder of liability: Kentucky does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. Currently there are approximately 18 landowners or land appliers that hold legal liability.

More than one Class B biosolids on one site? Kentucky does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year; however, this is not currently being done.

NPDES equivalent: KPDES is the state equivalent to NPDES. Not all KPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.6

Biosolids regulations updated: June 1992

Management practices: The management practices of Kentucky's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include setbacks, soil depths, depths to groundwater, and grazing requirements. Kentucky's pathogen and/or vector attraction reduction limits are not more restrictive. Kentucky has more restrictive pollutant (trace metals, etc.) limits. Kentucky requires additional monitoring at Class B land application sites, with annual soil monitoring for heavy metals (Cd, Cu, Ni, Pb, Zn). Nitrogen is the basis for the agronomic loading rate for land application. Kentucky does not require formal nutrient management plans. To manage or control the application of phosphorus in biosolids, Kentucky encourages Best Management Practices (BMPs) that rely on assessing total P or using a P index; the penalty for not following these BMPs is a potential loss of agricultural subsidies.

Additional Management Actions: Kentucky requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land appliers who manage or implement land application programs.
- Other requirements or actions to control odors at land application sites.

Acres applied in 2004: No data provided.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. This data is not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Kentucky, there are no legislative or regulatory activities happening or imminent impacting biosolids. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. Six counties in Kentucky have adopted more restrictive biosolids application ordinances. Overall, the number of more restrictive ordinances is remaining the same.

## **TRENDS**

The beneficial use of biosolids is increasing in Kentucky. For example, Louisville Metropolitan Sanitary District is now creating heat dried pelletized biosolids, and other municipalities are obtaining permits to land apply Class B biosolids.

Most significant current pressures on biosolids recycling:

1. State regulations.
2. Cheap landfill disposal costs.
3. Public acceptance (a distant third, usually not a problem).

## **SEPTAGE MANAGEMENT**

The Kentucky Department of Public Health regulates septage.

Septage regulations updated: August, 1996.

Number of full-time equivalent staff (FTEs) for septage program: No data provided.

Septage haulers based in state (estimated): No data provided.

Septage management: Septage can be land applied in Kentucky. POTWs are not required to accept septage, and the number of facilities that do is not known.

Percentage of each management practice: No data provided.

Other concerns: Kentucky does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Kentucky

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes (except minimum	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	Yes	-	-	*testing requirements for beneficial use may be waived by generator knowledge
Priority pollutants	No	-	-	-	*TCLP required for landfill disposal Frequency determined by landfill usually 1x every 3 years
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	-	-	-
Pathogen reduction (Class A or B)	No	Yes	-	-	-
Vector attraction reduction (VAR)	No	Yes	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	-	Paper	No	*reporting required if used, not required if disposed
Part 503 metals	Yes	-	-	-	-	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	-	-	-	-
Cumulative Pollutant Loading Rates	Yes	-	-	-	-	-
How biosolids achieve Class A or B	Yes	-	-	-	-	*Reporting required if by testing
How biosolids achieve Vector Attraction	Yes	-	-	-	-	*Reporting required if by method
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	-	-	-	-	-	*Reporting required only if beneficially reused

# Kentucky

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
4,141,835	39,728	104	8,412,354	80,927	0.010	0.3%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24		Adjusted Estimate	Estimates from other sources:	
	From State Survey Q24	Adjusted Estimate		Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
	85,484	85,500		68,235	65,000

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24	NOTES: Data in these tables are from EPA Region 4, individual largest TWTDS in the state, and the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. EPA Region 4 data was a compilation of years (2002-2006), with no individual TWTDS counted more than once. Data represents approximately 65% of the flow reported in the 2004 EPA CWNS data, including the largest flows from the largest population centers. Generally, smaller facilities do not produce solids that are used or disposed of every year, and/or they transport solids to larger facilities.
	245	29	
Total number of TWTDS sending to Separate Preparers in 2004:		6	
Number of Separate Preparers:		6	
Number of operating sludge incinerators:		0	
Fluidized bed:		0	
Multiple hearth:		0	
Percent of population served by on-site (e.g. septic systems):		no data	
		<b>UNITS: Dry Metric Tons</b>	

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	16	23,194	27%	
Disposal	15	61,480	72%	
Other	1	810	1%	"Other" are solids that are transported out of state or disposed by an unknown method.
<b>Total</b>	<b>32</b>	<b>85,484</b>	<b>100.00%</b>	

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	12	19,961	23%	
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	4	3,233	4%	Class A EQ distribution included Louisville heat-dried pellets, one compost, and two others.
<b>Total</b>	<b>16</b>	<b>23,194</b>	<b>27%</b>	
Other	1	810	1%	Managed by a private contractor; use or disposal unknown.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	13	61,263	72%	
Surface Disposal	2	217	0%	
Incineration	0	-	0%	
<b>Total</b>	<b>15</b>	<b>61,480</b>	<b>72%</b>	Louisville had recently installed a heat-drying facility and was making Class A fertilizer pellets, many of which were landfilled in 2004. In 2006, almost all Louisville pellets were beneficially used.

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	4	30,502	38%	Includes Louisville Class A pellets that were landfilled in 2004.
Other Class A	0	-	0%	
Class B	6	13,934	16%	
Other (no data, etc.)	21	41,047	46%	
<b>Total</b>	<b>31</b>	<b>85,483</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	0	-	Incomplete data
Digestion-anaer./other	0	-	
Lime/Alkaline	0	-	
Composting	1	1,738	Louisville
Thermal (not incineration)	1	26,417	
Long-term (lagoons, reed beds, etc.)	0	-	
Other	2	1,275	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Louisiana**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Louisiana is planning to seek delegation from USEPA sometime in the future, when resources allow.

State agency regulating biosolids: Louisiana is presently undergoing transition, in regulation of biosolids, from the solid waste portion to the water/ wastewater portion of Louisiana's environmental agency. The state utilizes sewage sludge (biosolids) use or disposal permits to regulate end use and disposal and land application sites.

Holder of liability: Louisiana does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There is one landowner that holds legal liability; that person was issued a permit, by the state, to land apply biosolids and is responsible for meeting all requirements of the permit, such as buffers, sampling and analysis, agronomic rate, management practices, and financial assurance (liability).

More than one Class B biosolids on one site? Louisiana does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. There are approximately 10 – 15 sites that are doing this.

NPDES equivalent: Louisiana is delegated by EPA to run the NPDES Water Permitting Program; the program is called the Louisiana Pollutant Discharge Elimination System (LPDES) Permitting Program. However, it is the state that permits biosolids management activities. EPA Region VI issued a General Permit for biosolids management in Louisiana in 1998, but it has never been reissued. Not all NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.5

Biosolids regulations updated: Louisiana's state sewage sludge management regulations are being updated, and some of the new requirements are already being enforced under an Emergency Rule that was signed in September, 2005. The rule revision is expected to formally begin in late 2006 and be completed in 2007.

Management practices: The management practices required by Louisiana's biosolids regulations are more restrictive than the federal Part 503 rule and include slope restrictions, water table restrictions, and buffer zones. Louisiana's pathogen and/or vector attraction reduction limits are more restrictive: laboratory certifications and pathogen testing (mostly fecal coliform) are required for all alternatives, regardless of whether or not EPA 40 CFR 503 requires such pathogen testing. In addition, any lab that conducts this sampling and analysis work must be certified by the state agency (LELAP). Louisiana's pollutant (trace metals, etc.) limits are not more restrictive than Part 503. In addition, Louisiana requires monitoring at Class B land application sites and has restrictions on applications based on annual water table levels (the proposed minimum depth to the high water table is 2 feet: anything less would prohibit land application at that time; the information for the annual high water table can be obtained by utilizing the NRCS Soil Surveys for each parish in the state or by installation of water table meters). Nitrogen is the basis for the agronomic loading rate for land application. Louisiana does require formal nutrient management plans. Louisiana does not manage or control the application of phosphorus in biosolids.



Additional Management Actions: Louisiana requires the following oversight and certification to occur at biosolids land application sites:

- In the proposed new regulations, there will be a requirement that generators, preparers, and land applicators of sewage sludge/biosolids will have to go through training and pass an exam to obtain certification. To maintain certification, a certain number of continuing education hours will be required on a biannual basis.
- The state requires additional buffer zones to control odors at land application sites.

In Louisiana, some biosolids management groups voluntarily perform the following:

- Additional steps to control odors at land application sites.

Acres applied: In 2004, Class B biosolids were applied to an estimated 2000 to 5000 acres in Louisiana. The number of new site permits/approvals that were issued in 2004 is not known.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. Some of the data and reports are compiled electronically and are part of the new Department of Environmental Quality's Electronic Document Management System (EDMS); see

<http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx>.

Legislative, regulatory, or other activity impacting biosolids use/disposal: The development of new state biosolids regulations is imminent and will likely have no significant affect on beneficial use. Louisiana has not had an issue of local units of government adopting ordinances that are more restrictive than state law.

## **TRENDS**

The beneficial use of biosolids is increasing in Louisiana. The cost associated with disposal in landfills is higher than associated costs with beneficial use. There has been a slight increase in the demand for biosolids from farmers.

Most significant current pressures on biosolids recycling:

1. Public perception – odor, disease.
2. Lack of public education.
3. Difficult to break away from traditional practices.
4. The need for more support from the EPA.

## **SEPTAGE MANAGEMENT**

In Louisiana, septage management is overseen through licensure of septage pumping and hauling companies by a program in the state's Office of Public Health. A license is granted to a company (no matter how many individual trucks the company has) after the trucks have been inspected and the company has provided documentation that it has permission to discharge septage at a receiving site (e.g. a permitted wastewater treatment facility).

Septage regulations updated: While the Office of Public Health licenses haulers, the Department of Environmental Quality (DEQ) is responsible for the end use or disposal of septage in Louisiana. DEQ is planning to establish new regulations in the next year or two that will require all domestic septage, as well as grease removed from food service facilities when the grease is mixed with sewage sludge, be regulated under the sewage sludge/biosolids management regulations.

There are approximately 110 licensed septage hauling companies based in Louisiana.

Septage management: Septage can be land applied if it meets the federal Part 503 and the same state requirements as those for land application of sewage sludge. POTWs are not required to accept septage, and the number of facilities that do is not known.

Estimated percentage of each management practice:

- Hauled to TWTDS = 30%
- Disposed of in lagoons = 65%
- Sent to other septage-only treatment facility = 5%

In the past, more septage haulers took septage to municipal wastewater treatment facilities; now these facilities are less interested in accepting septage due to concerns about meeting their effluent permit limits. There is at least one facility that is dedicated to receiving only septage. But today, most septage is being disposed in oxidation ditches/lagoons.

Other concerns: Louisiana considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the biosolids/sludge rules (if it is mixed with septage, sludge, or biosolids) *or* the solid waste regulations (if it is *not* mixed with septage, sludge, or biosolids). Louisiana does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Louisiana

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	State Developed Schedule	Dependent upon amount of biosolids produced
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	Yes	-	State requirement of 1/year	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	-	State Developed Schedule	Dependent upon amount of biosolids produced
Pathogen reduction (Class A or B)	-	Yes	-	State Developed Schedule	Dependent upon amount of biosolids produced
Vector attraction reduction (VAR)	-	Yes	-	State Developed Schedule	Dependent upon amount of biosolids produced

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	State developed schedule	Electronic	No	All submittals can be obtained by contacting the Department's Record Section at (225) 219-3168 or <a href="http://www.doe.louisiana.gov">http://www.doe.louisiana.gov</a>
Part 503 metals	Yes	-	State developed sched	Electronic	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	Yes	-	1/year	Electronic	No	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Utilized only for Agronomic Rate Determinations	Electronic	No	-
Cumulative Pollutant Loading Rates	Yes	-	State developed schedule	Electronic	No	-
How biosolids achieve Class A or B	Yes	-	Pathogen testing w/reporting by state developed schedule and monitoring of process (process monitoring records)	Electronic	No	-
How biosolids achieve Vector Attraction	Yes	-	Same as Class A or Class B	Electronic	No	-
Solids stabilization processes used	Yes	-	Monitoring of process (process monitoring records remain on site)	Electronic	No	-
Other biosolids treatments	Yes	-	-	Electronic	No	-
End use/disposal practice	Yes	-	Only as part of the permit application	Electronic	No	-

# Louisiana

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
4,506,685	43,561	103	5,071,537	20,368	0.011	0.4%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
57,235	57,500

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
112,482	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
353	73

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	2
Fluidized bed:	1
Multiple hearth:	1
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from EPA Region 6, with some information from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. The data on total biosolids used and disposed represents ~80% of wastewater flow, according to CWNS data.

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	20	9,818	17%	This is the total "Land Applied," according to EPA Region 4 data.
Disposal	34	42,936	75%	
Other	19	4,481	8%	
Total	73	57,235	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	16	4,909	9%	The total "Land Applied," according to EPA Region 4 data, was assumed to be half Class A general distribution and half Class B agricultural land application.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	4	4,909	9%	
Total	20	9,818	17%	
Long-term storage	19	4,481	8%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	31	29,577	52%	
Surface Disposal	1	59	0%	
Incineration	2	13,300	23%	
Total	34	42,936	75%	

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: The total "Land Applied," according to EPA Region 4 data, was assumed to be half Class A and half Class B. The quality of most of the state's solids is unknown, in large part because incinerated and landfilled biosolids are not regularly tested and may not have to meet Class A or Class B standards.
Class A EQ	4	4,909	9%	
Other Class A	0	-	0%	
Class B	12	4,909	9%	
Other (no data, etc.)	57	47,418	83%	
<b>Total</b>	<b>73</b>	<b>57,236</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

# National Biosolids Quality and End Use Survey

## Summary of state coordinator response for coordinator review

### Maine

#### REGULATION AND PERMITTING

Delegated by EPA for biosolids? Maine will not seek delegation for 40 CFR Part 503.

State agency regulating biosolids: The Solid Waste Division of the Maine Department of Environmental Protection regulates biosolids and utilizes solid waste licenses/permits to regulate end use and disposal. Land application sites are permitted as separate general permits and separate site specific permits.

Holder of liability: Maine does not allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Maine does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but this is not being done.

NPDES equivalent: MEPDES is the state program equivalent to the federal NPDES program.

Number of full-time equivalent staff (FTEs) for biosolids program: 6 (but they also spend time on septage).

Biosolids regulations updated: December 1999.

Management practices: The management practices of Maine's biosolids regulations are more restrictive than the federal Part 503 rule and include site permits, setbacks, soil testing, monitoring, nutrient management planning, and more for Class B land application programs. Maine's pathogen and/or vector attraction reduction limits are not more restrictive than Part 503. The pollutant (trace metals, etc.) limits are more restrictive and the testing requirements are far greater than Part 503. Maine requires additional monitoring at Class B land application sites, with nutrient testing annually. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Maine does require formal nutrient management plans. Maine uses time of year, site limitations, increased distance to surface water, total P in soil, and slope to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Maine requires the following oversight and certification to occur at biosolids land application sites: odors must be controlled to avoid any nuisance.

Acres applied: Maine DEP has not tabulated acreage on which Class B biosolids was utilized; acreage on which Class A sewage sludge is land-applied is not reported to DEP. In 2004, two new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the Maine Department of Environmental Protection. Some of the data and reports are compiled electronically using Excel.

Legislative, regulatory, or other activity impacting biosolids use/disposal: There is no legislative or regulatory activity concerning biosolids management happening or imminent in Maine. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law; however, there are several towns that have done so, but a legal challenge to one (Brunswick) in 2007 resulted in court annulment of the ordinance's restriction on use of

biosolids. The number of other local ordinances is remaining the same, although their legality may now be in question.

## **TRENDS**

The beneficial use of biosolids is not increasing in Maine. Beneficial use has remained relatively level over the past few years, although, during the past decade, there has been a steady shift from Class B land application to forms of Class A distribution and use (mostly compost).

### Most significant current pressures on biosolids recycling:

1. Public concerns about biosolids use on soils.
2. Stricter state regulations, including nutrient management and stockpiling requirements.

## **SEPTAGE MANAGEMENT**

### Septage regulations updated: 1996

Number of full-time equivalent staff (FTEs) for septage program: The six residuals utilization program staff are responsible for septage licensing, compliance, and enforcement in addition to their responsibilities of overseeing biosolids and other residuals (such as paper mill residuals).

Septage haulers based in state: There are 235 licensed septage haulers in Maine.

Septage management: Maine has Septage Management Regulations. Each site upon which septage is land applied must be individually licensed. Licenses are issued for a five-year term and are renewable. Septage storage facilities must also be licensed. Septage can be land applied if it meets Part 503 and all requirements of the state regulations. POTWs are not required to accept septage, but some do.

### Percentage of each management practice:

- Land applied = 25 %
- Hauled to TWTDS = 50 %
- Disposed of in lagoons = There are no septage-only lagoons in Maine and this is not allowed as a disposal practice.
- Composted = 25 %

Other concerns: Maine has some concerns about fats, oils, and grease (FOG), but does not regulate the use and disposal of brown grease and other forms of FOG through any special program – most is treated like septage, because it tends to be mixed with septage.



## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Maine

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	-	Depends on the amount of sewage sludge generated
Other metals (boron, silver...)	No	Yes	-	-	Depends on the amount of sewage sludge generated, facility inputs and design flow.
Dioxins/furans	No	Yes	-	-	Depends on the amount of sewage sludge generated, facility inputs and design flow.
PCBs	No	Yes	-	-	Depends on the amount of sewage sludge generated, facility inputs and design flow.
Priority pollutants	No	Yes	-	-	Depends on the amount of sewage sludge generated, facility inputs and design flow.
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	Yes	-	-	Depends on the amount of sewage sludge generated, facility inputs and design flow.
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	
Nutrients (NPK)	No	Yes	-	-	Depends on the amount of sewage sludge generated.
Pathogen reduction (Class A or B)	No	Yes	-	-	Depends on the amount of sewage sludge.
Vector attraction reduction (VAR)	No	Yes	-	-	Depends on the amount of sewage sludge generated.

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	-	Both	-	-
Part 503 metals	Yes	-	-	Both	-	-
Other metals	Yes	-	-	Paper	-	-
Dioxins/furans	Yes	-	-	Both	-	-
PCBs	Yes	-	-	Paper	-	-
Priority pollutants	Yes	-	-	Paper	-	-
Other organic compounds	Yes	-	-	Paper	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	-	Paper	-	-
Cumulative Pollutant Loading Rates	Yes	-	-	Paper	-	-
How biosolids achieve Class A or B	Yes	-	-	Paper	-	-
How biosolids achieve Vector Attraction	Yes	-	-	Paper	-	-
Solids stabilization processes used	Yes	-	-	Paper	-	-
Other biosolids treatments	Yes	-	-	Paper	-	-
End use/disposal practice	Yes	-	-	Both	-	-

# Maine

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,314,985	30,861	43	536,839	5,929	0.060	2.0%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	32,208	<b>32,200</b>	28,149		25,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			148	103		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			4			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry U.S. Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and individual TWTDS data provided by Maine DEP. In that data, 46 TWTDS reported zero wastewater solids production in 2004 (35 were lagoon systems that would not produce solids most years). Some TWTDS are counted more than once in the totals, below, because they used more than one method of use or disposal. Data received in cubic yards were converted to dry U. S. tons, assuming 1700 lbs/yard and 22% solids for dewatered wastewater solids.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	86	25,549	79%	Quantities are for wastewater solids coming from TWTDS, not quantities of final compost or N-Viro products, the mass of which will be significantly larger. 7 TWTDS stockpiled 490 dry U. S. tons in 2004.
Disposal	10	6,169	19%	
Other	7	490	2%	
Total	103	32,208	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	31	10,549	33%	Agricultural land application of Class B biosolids in Maine is diminishing (of the total, about 4145 dry U. S. tons is Class B land application), but agricultural use of Class A N-Viro biosolids (produced by Soil Preparation, Inc.) was increasing in 2004.
Forestland	0	-	0%	
Reclamation	0	-	0%	A plurality of TWTDS in Maine send wastewater solids to the New England Organics Hawk Ridge Compost Facility for composting. However, Class A EQ distribution also includes two cities sending 3,565 dry U.S. tons to compost in Quebec.
Class A EQ Distribution	55	15,000	47%	
Total	86	25,549	79%	
Long-term storage	7	490	2%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	10	6,169	19%	
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
	10	6,169	19%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	55	21,404	66%	Approximately 70% of the Class A EQ product (compost) is distributed to a variety of landscaping and horticultural uses and about 30% is treated by N-Viro process and land applied to farm fields. Landfilled and stockpiled solids comprise the amounts for which there is no data on
Other Class A	0	-	0%	
Class B	31	4,145	13%	
Other (no data, etc.)	20	6,659	21%	
<b>Total</b>	<b>106</b>	<b>32,208</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	one or two	no data	
Lime/Alkaline	many	no data	
Composting	many	no data	
Thermal (not incineration)	0	no data	
Long-term (lagoons, reed beds, etc.)	several	no data	
Other		no data	
Belt Filter Press	many	no data	
Plate & Frame Press	some	no data	
Screw Press	several	no data	
Centrifuge	few to none	no data	
Vacuum Filter		no data	
Drying beds		no data	
Other		no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Maryland**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Maryland is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The solid waste portion of Maryland's environmental agency regulates biosolids and utilizes solid waste licenses/ permits to regulate end use and disposal.

Land application sites are permitted using separate site-specific permits.

Holder of liability: Maryland does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There are five land applicators or land owners that hold such liability.

More than one Class B biosolids on one site? Maryland does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year; this is being done, but the number of sites involved is not known.

NPDES equivalent: NPDES is delegated to Maryland's environmental agency water management administration. Not all NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.1 FTE

Biosolids regulations updated: 2000

Management practices: The management practices of Maryland's biosolids regulations are more restrictive than the federal Part 503 rule. Maryland's pathogen and/or vector attraction reduction limits are not more restrictive. Maryland's pollutant (trace metals, etc.) limits are more restrictive. Maryland requires additional monitoring at Class B land application sites, with soil tests after each season of application and prior to a new nutrient management plan. The basis for the agronomic loading rate for land application is calculated from data, submitted by the farmer, regarding his or her three highest crop yields. Maryland does require formal nutrient management plans developed with the assistance of a certified nutrient management planner. Maryland uses time of year, site limitations, increased distance to surface water, total P in soil, available P in soil, P index, and slope to manage or control the application of phosphorus (P) in biosolids.

Additional Management Actions: Maryland requires the following oversight and certification to occur at biosolids land application sites:

- Independent inspections or monitoring at land application sites (which are conducted by the state environmental agency's solid waste program), and
- Other requirements or actions to control odors at land application sites.

In Maryland, it is not known if and when biosolids management groups perform any additional oversight and certification voluntarily.

Acres applied: In 2004, 56 new site permits/approvals were issued.

Reporting and Record-keeping: Both major (> or = 1 MGD) and minor facilities are required to report biosolids information and data. The public can access these reports by submitting a Freedom of Information Act (FOIA) request to the state agency. The data and reports are compiled electronically with Excel and Access, for tracking only, not reporting.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Maryland, use/disposal is being positively impacted by development of, or changes to, state biosolids regulations. These activities are likely to have the effect of expanding beneficial use. Changes to state statutes regarding biosolids management are happening in Maryland, but will likely have no significant affect on beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law; the number that have done so was not reported.

## **TRENDS**

The beneficial use of biosolids is increasing in Maryland.

Most significant current pressures on biosolids recycling:

1. Over-application rate leading to nutrient leaching
2. Odors
3. Contamination to the waters of the state and groundwater

**TESTING AND REPORTING** No data was provided on state testing and reporting requirements (if they are different from Part 503).

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Maryland doesn't have septage regulations. Septage management is overseen by counties.

Number of full-time equivalent staff (FTEs) for septage program: 0 / Not applicable.

Septage haulers based in state (estimated): No data provided.

Septage management: Septage can be land applied if it meets the requirements of Part 503.

Some POTWs are required to accept septage, and at least 12 do.

Percentage of each management practice: No data provided.

Other concerns: Maryland does not consider fats, oils, and grease (FOG) to be a significant issue, nor do they regulate the use and disposal of grease trap waste. Maryland does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

# Maryland

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (dry U.S. tons/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,561,332	9,773	569	1,487,218	10,188	0.075	2.5%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
619,201	619,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
91,477	151,000

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
161	217

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	3
Number of operating sludge incinerators:	1
Fluidized bed:	no data
Multiple hearth:	no data
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables were provided by the state biosolids coordinator and the national Biosolids Quality and End Use Survey. Maryland tracks solids use and disposal in WET U.S. TONS, and the data reported in these tables are in those units. When used with other data to create national totals, we assumed an average 18% solids, resulting in a state total biosolids used or disposed of 111,000 dry U.S. tons. Maryland reports 113 TWTDS that hauled solids to another TWTDS in 2004; these solids are accounted for here in the final production by the receiving TWTDS. Approximately 2,000 wet tons of out-of-state solids were hauled into Maryland for treatment. Another 73,337 wet tons of treated solids were imported from other states or DC and used or disposed in Maryland (this amount is not included in the data in these tables).

UNITS: **Wet U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	129	272,362	44%	Hauled out of state to unknown use or disposal.
Disposal	53	76,521	12%	
Other	35	270,318	44%	
<b>Total</b>	<b>217</b>	<b>619,201</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	99	167,089	27%	Includes Baltimore heat-dried biosolids pellets, which are shipped far and wide.
Forestland	0	-	0%	
Reclamation	20	43,871	7%	
Class A EQ Distribution	10	61,402	10%	
<b>Total</b>	<b>129</b>	<b>272,362</b>	<b>44%</b>	
Other	35	270,318	44%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	52	56,659	9%	Includes some Baltimore solids.
Surface Disposal	0	-	0%	
Incineration	1	19,862	3%	
<b>Total</b>	<b>53</b>	<b>76,521</b>	<b>12%</b>	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:  All data reported by Maryland as land application was assumed to be Class B biosolids.
Class A EQ	10	61,402	10%	
Other Class A	0	-	0%	
Class B	119	210,960	34%	
Other (no data, etc.)	88	346,840	56%	
<b>Total</b>	<b>217</b>	<b>619,202</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.



**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Massachusetts**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Massachusetts is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Massachusetts' Department of Environmental Protection (MA DEP) regulates biosolids. Site specific permits are used to regulate land application. There are very few land application programs in Massachusetts – and only one Class B program (Hamilton). Class A EQ biosolids from Greater Lawrence and Boston (Mass. Water Resources Authority) are land applied in bulk occasionally for reclamation at landfills or sand and gravel mine sites. Such land application sites must be permitted by MA DEP. Land applied Class A products and Class A biosolids for general distribution require an "Approval of Suitability" from MA DEP, which is awarded to biosolids that have submitted a sampling and analysis plan and the results from the sampling and testing specified by the plan. MA DEP recognizes three types of biosolids/residuals products: Types 1, 2, and 3. Type 1 is essentially equivalent to EPA's Class A EQ, and Type 2 is essentially the same as EPA's Class B.

Holder of liability: Data was not provided regarding whether MA allows land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Massachusetts does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but there is so little Class B land application that it does not happen.

NPDES equivalent: The MA DEP watershed permitting program is the state equivalent to NPDES. All watershed permitting program/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.3

Biosolids regulations updated: September 1992.

Management practices: Massachusetts's biosolids regulations are more restrictive than the federal Part 503 rule. Massachusetts has more restrictive pollutant (trace metals, etc.) limits. Massachusetts does require additional monitoring at Class B land application sites. There are annual testing requirements, and regulations allow for requiring groundwater and soil testing. Nitrogen is the basis for the agronomic loading rate for land application. Massachusetts does not require formal nutrient management plans. Massachusetts uses site-specific tests to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Massachusetts requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites: nuisance controls in MA DEP regulations require that biosolids be applied within 24 hours of delivery, as much as possible, to avoid odor and other potential issues.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

In Massachusetts some biosolids management groups perform the following oversight and certification voluntarily:

- Other requirements or actions to control odors at land application sites. These include setbacks.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing. This is dependent on the particular sampling and analysis plan provided to MA DEP by the biosolids manager.

Acres applied: In 2004, Class B biosolids were applied to a total of less than 30 acres. No new biosolids site permits were issued in 2004.

Reporting and Record-keeping: Only biosolids processors are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically using a database and Excel.

Legislative, regulatory, or other activity impacting biosolids use/disposal: Massachusetts does not have any regulatory or legislative activity occurring that will impact biosolids management. MA DEP has long placed minimal emphasis on, and provided limited funding toward, the biosolids/residuals program. Local units of government are allowed to adopt ordinances that are more restrictive than state regulations. A very few towns and cities in Massachusetts have adopted more restrictive biosolids application ordinances (e.g. Uxbridge). The number of such ordinances has not changed in recent years and does not seem likely to.

## **TRENDS**

The beneficial use of biosolids is increasing slowly in Massachusetts, due to increasing population and increased efficiencies and capacity at existing biosolids treatment facilities (e.g. the compost facility at Marlborough).

Most significant current pressures on biosolids recycling:

1. Public perception
2. Seasonal restrictions
3. Cost

## **SEPTAGE MANAGEMENT**

Septage regulations updated: April, 2006. Regulated through Title V.

Number of full-time equivalent staff (FTEs) for septage program: 0 – Septage management is handled by wastewater staff, when necessary. Most septage is discharged and treated at POTWs.

Septage haulers based in state (estimated): No data provided.

Septage management: Septage can not be land applied in Massachusetts. POTWs are not required to accept septage, but at least 80 do so.

Percentage of each management practice:

- Hauled to TWTDS = 100% (on average, each day, 1,547,000 gallons of septage are accepted by MA POTWs, as reported in a 2005-06 MA DEP study)

Other concerns: Massachusetts does not consider fats, oils, and grease (FOG) to be a significant issue, nor does it regulate the use and disposal of grease trap waste. Massachusetts does not have a proactive program to collect FOG and keep it out of the general wastewater flow. Grease is addressed through state plumbing codes (requirements include traps, regular inspections, pumping by an approved hauler, etc.). Some local POTWs do more than others to enforce keeping FOG out of sewers at the local level (e.g. Newburyport).

## **MORE INFORMATION**

<http://www.mass.gov/dep/water/wastewater/residual.htm>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Massachusetts

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes			< 1mgd, no industrial = 6 months < 1 mgd, inudstrial = 3 months
Other metals (boron, silver...)		Yes			1-5 mgd = 3 months > 5 mgd = 1 month
Dioxins/furans		Yes			
PCBs		Yes			
Priority pollutants		Yes			
Other organic compounds (e.g. PDBEs, pharmaceuticals)					
Radioactive isotopes (alpha, beta, Ra 224, etc.)					
Nutrients (NPK)		Yes			
Pathogen reduction (Class A or B)		Yes			
Vector attraction reduction (VAR)					

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	-	-	-	-	-	-
Part 503 metals	-	-	-	-	-	-
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	-	-	-	-	-	-
Cumulative Pollutant Loading Rates	-	-	-	-	-	-
How biosolids achieve Class A or B	-	-	-	-	-	-
How biosolids achieve Vector Attraction	-	-	-	-	-	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	-	-	-	-	-	-

# Massachusetts

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
6,407,382	7,840	817	207,734	4,898	0.818	27.3%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	153,235	<b>153,300</b>	160,764		269,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			128	128		
Total number of TWTDS sending to Separate Preparers in 2004:			21			
Number of Separate Preparers:			7			
Number of operating sludge incinerators:			5			
Fluidized bed:			1			
Multiple hearth:			4			
Percent of population served by on-site (e.g. septic systems):			40%			
<b>UNITS:</b>			<b>Dry U.S. tons</b>			

NOTES: Data in these tables are from the state biosolids coordinator and are for a typical recent year; they were collected by MA DEP in 2006. Separate preparers include compost facilities: Agresource (Ipswich), New England Organics (Unity, ME), Water Solutions, WeCare (Marlborough)... and N-Viro: Soil Preparation, Inc. (Plymouth, ME)... and Pelletizers: New England Fertilizer (Greater Boston MWRA, Greater Lawrence). Boston and environs, the largest city in the state, produces a Class A pelletized fertilizer that is use around the region and the country.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	17	53,513	35%	This is one facility that reports storage in a lagoon; there may be other small facilities doing this as well.
Disposal	110	99,146	65%	
Other	1	576	0%	
<b>Total</b>	<b>128</b>	<b>153,235</b>	<b>100%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	2	587	0%	In addition to the separate preparers listed in the note above and the products they produce, the Class A EQ distribution here includes utilities that compost their own biosolids, including as Billerica, Dartmouth, Mansfield, Pepperell, and Williamstown.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	15	52,926	35%	
<b>Total</b>	<b>17</b>	<b>53,513</b>	<b>35%</b>	
Long-term storage	1	576	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	21	41,588	27%	60% of the landfilled quantity is landfilled out of state.
Surface Disposal	0	-	0%	MA incinerators are located at the following TWTDS: Brockton, Fall River, Fitchburg, Lynn, and Upper Blackstone (Worcester area). Some MA TWTDS send solids to incinerators in RI and CT.
Incineration	89	57,558	38%	
	110	99,146	65%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	15	52,926	35%
Other Class A	0	-	0%
Class B	2	587	0%
Other (no data, etc.)	110	99,722	65%
<b>Total</b>	<b>127</b>	<b>153,235</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Michigan**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Michigan received delegation for Part 503 in 2006.

State agency regulating biosolids: The water/ wastewater portion of Michigan's environmental agency regulates biosolids and utilizes both specific and general NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: Michigan does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Michigan does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Michigan is delegated for NPDES.

Number of full-time equivalent staff (FTEs) for biosolids program: 5.5

Biosolids regulations updated: November 1999.

Management practices: The management practices of Michigan's biosolids regulations are more restrictive than the federal Part 503 rule and are detailed in the State's Part 24 Rules (available at the state DEQ website). Michigan's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Michigan does not require additional monitoring at Class B land application sites. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Michigan does not require formal nutrient management plans. Michigan uses testing based on available P in the soil to manage or control the application of phosphorus in biosolids.

Additional Management Actions: None described.

Acres applied: The state has not compiled information on how many acres biosolids were applied to in 2004 or how many new site permits/approvals were issued that year; however, this information is available on paper from the DEQ.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data to the State. The public can access these reports by mail or in person from the state agency. Some of the data submitted are compiled electronically in Michigan's NPDES Management System (NMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Michigan, there are no legislative or regulatory activities happening or imminent that will significantly impact biosolids management. As of today, local units of government are allowed – but only with DEQ's approval – to adopt ordinances that are more restrictive than state law. One town in Michigan has adopted a more restrictive biosolids application ordinance, and the number of such towns is not increasing.

### **TRENDS**

The beneficial use of biosolids is not increasing in Michigan. This is due to cheap landfill and disposal rates.

Most significant current pressures on biosolids recycling:

1. Inexpensive landfill tipping fees.

2. Competition for land from combined animal feeding operations (CAFOs).
3. The state requires a per-ton land application fee, and there is no fee for landfilling or incinerating.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1994 (Part 117, a law; there are no regulations)

Number of full-time equivalent staff (FTEs) for septage program: 3.5

Septage haulers based in state (estimated): 465

Septage management: Under Part 117, the state licenses septage businesses through a fee-based program; vehicles are licensed as well. On average, there are 203,000,000 gallons of pumped septage used or disposed of each year. There is a one-time fee for each new land application site permit. There are roughly 400 permitted septage land application sites in the state. Land applied septage must meet requirements of Part 503 and state law Part 117, which has more restrictive requirements than Part 503 – soil testing for N & P (total P is limiting factor – 300 pounds / acre limit), agronomic rate applications, ban on winter application when soil is frozen; septage must be screened; surface applied septage must be incorporated in 6 hours or must be direct injected. The state does not require POTWs to accept septage; 18 POTWs have DEQ authorization to accept septage (such authorization is required). Stand-alone septage storage facilities are permitted by the state (requires engineering plans, site plans, etc.). Three counties and two local municipalities have bans or restrictions on land application of septage; however, in general, counties have provided good septage treatment capacity.

Percentage of each management practice:

- Land applied: ~50%
- Hauled to TWTDS: ~50% (average price for disposal at POTWs is 7.5 cents/gallon)
- Septage only facilities: there are 5 stand-alone septage facilities that remove solids and return effluent to POTWs.

Other concerns: Michigan does consider fats, oils, and grease (FOG) to be a significant issue and regulates the use and disposal of grease trap waste. Most POTWs won't accept FOG. The septage law requires mixing FOG 1 to 3 with regular septage for land application or that FOG be taken to a POTW that is willing to receive it.

## **MORE INFORMATION**

[www.michigan.gov/deqseptage](http://www.michigan.gov/deqseptage)

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## **DIFFERENCES BETWEEN 40 CFR PART 503 AND MI BIOSOLIDS REGULATIONS**

### **GENERAL**

- ✓ Michigan rule only addresses that portion of 40 CFR Part 503 dealing with the land application of biosolids, not incineration or surface disposal.
- ✓ Michigan rule does not discriminate between Class 1 sludge management facilities, i.e. design flow > 1 mgd and serving >10,000 people and other land applying facilities.



- ✓ Michigan rule adds definitions to include: Act, distributor, biosolids, derivative, Detroit Consumer Index, generator, Department, exceptional quality, incorporation, injection, land application plan, land with low potential for public exposure, land with high potential for public exposure, listed land application site, local unit, pathogenic organisms, pH, residuals management program, retail, saturated or saturated zone, site, specific oxygen uptake rate (SOUR), surface water, total solids, unstabilized solids, vector attraction, volatile solids and revises the definition of agronomic rate to include “total nutrient management plan.”

#### MORE STRINGENT REQUIREMENTS

- ✓ Out-of-state biosolids applied to land in the state is subject to fee requirements and any cost recovery in the case of environmental contamination resulting from the land application of biosolids.

#### LOCAL ORDINANCES

- ✓ A local unit may enact, maintain, and enforce an ordinance that prohibits the land application of biosolids or a derivative if monitoring indicates a pollutant concentration in excess of the ceiling concentration limits until subsequent monitoring indicates that pollutant concentrations do not exceed the ceiling concentration limits.
- ✓ Except as otherwise provided, Michigan rule preempts a local ordinance, regulation, or resolution of a local unit that would duplicate, extend, revise, or conflict with existing law.
- ✓ Except as otherwise provided, a local unit shall not enact, maintain, or enforce an ordinance, regulation, or resolution that duplicates, extends, revises, or conflicts with existing state or federal laws.
- ✓ The department may contract with a local unit to act as its agent for the purpose of enforcing existing law.
- ✓ The department has the sole authority to assess fees.

#### PERMIT

- ✓ Michigan rule requires a generator or distributor to have a valid permit before land applying or distributing biosolids or a derivative in the state.
- ✓ Michigan rule requires the submittal of a residuals management program (RMP) to be approved by the department as a part of the permitting process. An updated land application site list including the location by latitude and longitude of each site shall be submitted as a part of the RMP. Modifications to the RMP may be made during the 5 year permit cycle according to an approved land application plan which outlines the criteria for adding land application sites to the list for individual facilities.

## FEES

- ✓ Michigan rule requires payment of fees for the land application of biosolids and annual reporting of the amount in dry tons applied to land. The total fee is comprised of a \$400.00 administrative fee plus a dollar amount per dry ton applied to land. Fees generated annually not to exceed \$650,000.
- ✓ By January 31 of each state fiscal year, each biosolids generator or biosolids distributor shall pay its biosolids land application fee.
- ✓ The permittee shall pay an additional amount equal to 0.75% of the payment due for each month or portion of a month that the payment remains past due. The failure by a person to pay a fee imposed by this rule in a timely manner is a violation of this part.

## EXCLUSIONS

- ✓ Michigan rule does not include requirements for the land application of septage or sludges generated in the treatment of industrial wastewater, including sludge generated during the treatment of industrial wastewater combined with domestic sewage.

## APPLICABILITY OF CERTAIN PROHIBITIONS AND MANAGEMENT PRACTICES TO EXCEPTIONAL QUALITY BIOSOLIDS

- ✓ In Michigan rule CPLR tracking requirements and generator notification requirements do not apply when bulk biosolids or a derivative meet criteria for exceptional quality.
- ✓ In Michigan rule restrictions on winter application and slope requirements do not apply when bulk biosolids or a derivative meet criteria for exceptional quality.
- ✓ In Michigan rule certain required prohibitions and management practices do not apply when non-bulk biosolids or derivatives are sold or given away in a bag or other container and meet criteria for exceptional quality.

## LAND OWNER CONSENT AND AGREEMENTS

- ✓ Michigan rule requires written consent from the property owner or farm operator to land apply biosolids.
- ✓ Michigan rule requires a written agreement between the generator and the farmer not to apply biosolids from other sources or septage to a listed land application site. Biosolids from other sources may be land applied to a site only after that site is relinquished in writing to another generating facility.

## MONITORING FREQUENCY

- ✓ Michigan rule requires that if the monitoring of biosolids or a derivative indicates a pollutant concentration in excess of Table 3-Pollutant Concentrations, then the monitoring frequency shall be increased to not less than twice that provided for in Table 7-Frequency of Monitoring.
- ✓ Michigan rule requires that a person that applies biosolids shall perform soil fertility tests on soils sampled from each application site before initial biosolids application. The person shall resample and test on a regular basis so that the last soil fertility test is not more than 2 years old at the time of the next biosolids application.

## PROHIBITIONS

- ✓ Michigan rule requires that a person shall not knowingly apply biosolids from more than 1 source or septage to the same land application site within the same crop year.

## NOTIFICATION

- ✓ Michigan rule requires written notification of land application activity not less than 10 days prior to the initial land application activity at a site to the following locations: District office of the Surface Water Quality Division, DEQ; County health department and the city, village or township clerk in the jurisdiction where land application sites are identified.
- ✓ Michigan rule requires that a generator or distributor shall promptly provide a copy of any record required to be created under these rules to the appropriate county health department and the city, village, or township clerk when biosolids are applied to land in that local unit. The copy shall be delivered free of charge.

## MANAGEMENT PRACTICES

- ✓ Michigan rule requires that for agricultural land, if the Bray P1 soil test level exceeds 300 pounds (P) per acre (150 ppm), or if the Mehlich 3 soil test level exceeds 340 pounds (P) per acre (170 ppm) in site soils, then the person shall not apply biosolids until the soil P test level decreases to less than 1 of these values.
- ✓ Michigan rule requires that for silvicultural land, such as forest land and tree farms, a person shall base the agronomic rate for silvicultural land on the quantity of plant-available nitrogen (PAN) that growing trees will take up annually. A person may reapply biosolids at rates that will provide PAN additions up to a maximum of 5 years, using the annual PAN additions listed in table 5 [R323.2410(10)] to calculate total PAN additions for 1 year up to a 5- year maximum for the particular tree species and age of the stand receiving biosolids. A person may reapply biosolids after the time interval selected for the previous application expires, as long as the trees are still growing.
- ✓ Michigan rule requires that for silvicultural land, if the Bray P1 soil test level exceeds 200 pounds (P) per acre (100 ppm) or the Mehlich 3 soil test level exceeds 220 pounds (P) per

acre (110ppm), then a person shall not apply biosolids until the soil P test level decreases to less than 1 of these values.

- ✓ Michigan rule requires that certain slope restrictions and isolation distances be observed when land applying biosolids, including depth to groundwater.
- ✓ Michigan rule requires that a person may subsurface inject bulk biosolids on frozen or snow-covered ground as long as there is substantial soil coverage of the applied biosolids.
- ✓ Michigan rule requires that a person shall not surface apply bulk biosolids, other than exceptional quality biosolids, on frozen or snow-covered ground, unless otherwise approved by the department.

#### RECORDKEEPING AND REPORTING

- ✓ Michigan rule requires that a generator or preparer of biosolids retain for 5 years, unless a longer period is specified: the annual average, annual minimum and annual maximum concentration of the required pollutants monitored in biosolids.
- ✓ Michigan rule requires that a generator or distributor that land-applied biosolids or a derivative to land within the state at any time during the previous state fiscal year shall report to the department the required information on or before October 30.
- ✓ Michigan rule requires that each biosolids generator and biosolids distributor shall annually report to the department for each state fiscal year, beginning with the 1997 state fiscal year, the number of dry tons of biosolids it generated or the number of dry tons of biosolids in derivatives it distributed that were applied to land in the state of Michigan in the state fiscal year.
- ✓ The report is due 30 days after the end of the state fiscal year. By December 15 of each state fiscal year, the department shall determine the generation fee on a per dry ton basis.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Michigan

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	Yes, Part 24 Rules	-
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	-	-	-	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	-	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Specified in Part 24 Rules	Both	Yes	<a href="http://www.michigan.gov/deq/1,1607,7-135-3313_3683_3720---.00.html">http://www.michigan.gov/deq/1,1607,7-135-3313_3683_3720---.00.html</a>
Part 503 metals	Yes	Yes	-	Both	No	
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Both	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Both	No	-

# Michigan

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
10,104,206	56,803	178	7,983,574	47,904	0.047	1.6%

Total Biosolids Generated in 2004*:	Estimates from other sources:	
	From State Survey Q24	Adjusted Estimate
	373,516	374,000
	From CWNS	From Survey Q24
	404	214
	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	
		290,354
	Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
		260,000

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
	404	214
Total number of TWTDS sending to Separate Preparers in 2004:	0	
Number of Separate Preparers:	0	
Number of operating sludge incinerators:	6	
Fluidized bed:	0	
Multiple hearth:	5	
Percent of population served by on-site (e.g. septic systems):	35%	
	<b>UNITS: Dry U.S. Tons</b>	

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. In Michigan, 201 facilities used or disposed of biosolids in 2004 (13 of them land applied and disposed, resulting in the 214 counted in these tables). The other 518 TWTDS are lagoon systems or small package plants (such as mobile home parks) that have their partially stabilized solids hauled to larger TWTDS). Two facilities land applied in WI; the quantity of biosolids involved is not known.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	174	88,312	24%
Disposal	40	285,204	76%
Other	0	-	0%
Total	214	373,516	100.00%

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	170	87,186	23%
Forestland	1	202	0%
Reclamation	3	924	0%
Class A EQ Distribution	0	-	0%
Total	174	88,312	24%
Long-term storage	0	-	0%

### NOTES:

Beneficial use in Michigan is almost all Class B land application to agricultural lands. Excanaba applied to forestland, and Marquette, Rogers City, and Portage Lake biosolids were used for mine reclamation in old copper mining areas.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	34	109,333	29%
Surface Disposal	0	-	0%
Incineration	6	175,871	47%
Total	40	285,204	76%

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	3	1,359	2%
Other Class A	0	-	0%
Class B	171	87,257	98%
Other (no data, etc.)	545	-	0%
<b>Total</b>	<b>719</b>	<b>88,616</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	1	312	
Digestion-anaer./other	0	-	
Lime/Alkaline	14	43,340	
Composting	1	200	
Thermal (not incineration)	1	312	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

**NOTES:**

Data in this table is from 2006; 2004 data was unavailable.

Of the alkaline stabilized solids, 610 dry tons were Class A and the rest were Class B.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.



**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Minnesota**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Minnesota is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Minnesota's environmental agency regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal. The mechanism for permitting land application involves an individual site approval under the NPDES type permit.

Holder of liability: Minnesota does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Minnesota does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but this is not actually being done.

NPDES equivalent: NPDES/SDS is the state equivalent to NPDES. All NPDES/SDS and NPDES permits do not include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.5

Biosolids regulations updated: April 1997.

Management practices: The management practices of Minnesota's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include setback requirements for surface water, tile inlets, sinkholes, wetlands, wells, and residences. There are also slope restrictions. Minnesota's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Minnesota requires additional monitoring at Class B land application sites, with soil tests for texture, organic matter content, pH, extractable P & K and soluble salts. Nitrogen is the basis for the agronomic loading rate for land application. Minnesota does not require formal nutrient management plans. For controlling application of phosphorus (P) in biosolids, Minnesota uses the Bray-1 soil test; if a soil tests over 200 ppm, the land applicator must consult USDA Natural Resource Conservation Service (NRCS) to determine what special erosion control measures are required.

Additional Management Actions: Facilities are required to have a Type IV land application certified operator. Certification of these operators is administered by the state.

Acres applied: In 2004, biosolids were applied to a total of 16,722 acres. The number of new site permits/approvals that were issued in 2004 is not tracked.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency or from the EPA regional office (for major facilities only). The data and reports are compiled electronically with Oracle.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Minnesota, there are no legislative or regulatory activities happening or imminent that will impact biosolids management. Local units of government outside of the state's seven county metropolitan area are allowed to adopt ordinances that are more restrictive than state law; this is not allowed within the seven county metropolitan area. Ten cities and towns and two counties in Minnesota have

adopted more restrictive biosolids application ordinances. Overall, the number of more restrictive ordinances is increasing.

## **TRENDS**

The beneficial use of biosolids is not increasing in Minnesota.

Most significant current pressures on biosolids recycling:

1. Competition for land due to huge livestock business.
2. Phosphorus issues.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Minnesota does not have septage regulations, just guidelines.

Number of full-time equivalent staff (FTEs) for septage program: 0.1 - mainly on enforcement of licensed septage pumpers/haulers. MN licenses and takes enforcement actions on pumpers/haulers, even though there are no state septage regulations; violations are usually due to not having a septage pumping/hauling license or due to egregious land application practices.

Septage haulers based in state (estimated): 424 licensed pumpers/haulers

Septage management: Septage can be land applied if it meets the requirements of Part 503.

POTWs are not required to accept septage, and the number that do is not known.

Percentage of each management practice (estimated): 75% land applied, 25% hauled to TWTDS. Less than 1% is disposed of in landfills.

Other concerns: Minnesota does not consider fats, oils, and grease (FOG) to be a significant issue at this time; does not regulate the use or disposal of brown grease (grease trap waste); and has no proactive program for keeping FOG out of the general wastewater flow.

Septage contact: Mark Westpetal (phone 651-296-9322, email mark.westpetal@state.mn.us).

## **ADDITIONAL INFORMATION**

<http://www.dnr.state.mn.us/index.html>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Minnesota

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	representative	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	Yes only	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	-	-	-
Pathogen reduction (Class A or B)	Test??	Not sure of	-	-	-
Vector attraction reduction (VAR)	Test??	-	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Both	Yes	X Some reports attached for your reference
Part 503 metals	Yes	-	-	Both	Yes	X
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	I don't think these	-	Both	Yes	X
Cumulative Pollutant Loading Rates	Yes	-	-	Both	Yes	-
How biosolids achieve Class A or B	Yes	Yes	-	Both	-	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Both	-	-
Solids stabilization processes used	Yes	Yes	-	Both	-	-
Other biosolids treatments	-	Yes	-	-	-	-
End use/disposal practice	Yes	-	-	Both	No	-

# Minnesota

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,096,546	79,610	64	22,729,158	73,458	0.007	0.2%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Generated in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	151,942	<b>152,000</b>	95,196		265,000	
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24				
	516	277				
Total number of TWTDS sending to Separate Preparers in 2004: 2						
Number of Separate Preparers: 0						
Number of operating sludge incinerators: 2						
Fluidized bed: 1 facility -3 beds						
Multiple hearth: 1 facility -2 incinerators						
Percent of population served by on-site (e.g. septic systems): 28%						
<b>UNITS: Dry U.S. Tons</b>						

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. 300+ TWTDS are not accounted for in these tables; they're small & don't remove solids annually.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	254	46,800	31%	
Disposal	7	105,082	69%	
Other	16	60	0%	
<b>Total</b>	<b>277</b>	<b>151,942</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	250	45,550	30%	
Forestland	0	-	0%	
Reclamation	4	1,250	1%	
Class A EQ Distribution	0	-	0%	
<b>Total</b>	<b>254</b>	<b>46,800</b>	<b>31%</b>	
Long-term storage	16	60	0%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	4	842	1%	
Surface Disposal	1	17,960	12%	
Incineration	2	86,280	57%	
	7	105,082	69%	

This includes 14 reed beds & 2 facilities that haul biosolids (60 dt) to WI for treatment.

This incineration results in 17,000 tons of remaining incinerator ash that is disposed of.

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	8	13,000	9%
Other Class A	0	-	0%
Class B	242	32,550	21%
Other (no data, etc.)	27	106,392	70%
<b>Total</b>	<b>277</b>	<b>151,942</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	29	no data
Digestion-anaer./other	53	no data
Lime/Alkaline	24	no data
Composting	0	no data
Thermal (not incineration)	3	no data
Long-term (lagoons, reed beds, etc.)	14	no data
Other	0	no data
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
Vacuum Filter	no data	no data
Drying beds	no data	no data
Other	no data	no data

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Mississippi**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Mississippi is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The solid waste portion of Mississippi's environmental agency regulates biosolids and utilizes solid waste permits to regulate end use and disposal and land application sites. This includes the oversight of parts of Part 503 for which they are not delegated, but still regulate (i.e. septage and incineration).

Holder of liability: Mississippi does not allow land appliers or landowners (who are not the TWTDS generator) to become the holder of liability for biosolids end use.

More than one Class B biosolids on one site? Mississippi does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is happening on 2 sites.

NPDES equivalent: Mississippi NPDES is the state equivalent to NPDES. Not all Mississippi NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.7

Biosolids regulations updated: April 2005

Management practices: The management practices of Mississippi's biosolids regulations are more restrictive than the federal Part 503 rule. These regulations include site restrictions for locating a land application site. Mississippi's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Mississippi requires additional monitoring at Class B land application sites, with annual soil monitoring at all land application sites; groundwater monitoring may also be required for double cropping. Nitrogen is the basis for the agronomic loading rate for land application. Mississippi does not require formal nutrient management plans. Mississippi uses increased distance to surface water to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Mississippi does not require any additional oversight or certification to occur at biosolids land application sites. In Mississippi, no biosolids management groups perform any additional oversight or certification voluntarily.

Acres applied: In 2004, biosolids were applied to a total of approximately 6,075 acres. In 2004, no new site permits/approvals were issued.

Reporting and Record-keeping: Sludge-only processing facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Mississippi, use/disposal is being positively impacted by development of, or changes to, state biosolids regulations regarding biosolids management. These activities are likely to have the effect of expanding beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, but none do.

## **TRENDS**

The beneficial use of biosolids is increasing in Mississippi. Beneficial use is increasing because it is a better and cheaper way to manage biosolids, and it also helps save costly space at MSW landfills.

### Most significant current pressures on biosolids recycling:

1. Lack of necessary resources to seek Part 503 delegation from USEPA.
2. Making further changes to the state regulations for biosolids management.
3. Generating an annual report on land application activities conducted in Mississippi.
4. Creating a biosolids website.
5. Public concern.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 2002

Number of full-time equivalent staff (FTEs) for septage program: 2

Septage haulers based in state (estimated): 63

Septage management: 50% of the state's population relies on septic systems. Septage can be land applied if it meets part 503. POTWs are not required to accept septage. The number POTWS that do is not known. Most major cities do.

Percentage of each management practice:

- Hauled to TWTDS = 100 %

Other concerns: Mississippi considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the solid waste rules. Mississippi has a proactive program to collect FOG and keep it out of the general wastewater flow. The state Health Department and /or local government entities conduct periodic inspections to ensure proper collection of FOG wastes. MDEQ regulates the disposal of FOG wastes through its solid waste program.



## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Mississippi

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	Depends on the amount of biosolids used
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	-	Yes	Yes	-	Depends on the amount of biosolids used
Pathogen reduction (Class A or B)	-	Yes	Yes	-	Depends on the amount of biosolids used
Vector attraction reduction (VAR)	-	Yes	Yes	-	Depends on the amount of biosolids used

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	semi-annual	Paper	No	-
Part 503 metals	Yes	-	semi-annual	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	semi-annual	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	-	annual	Paper	No	-
How biosolids achieve Class A or B	Yes	-	semi-annual	Paper	No	-
How biosolids achieve Vector Attraction	Yes	-	semi-annual	Paper	No	-
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	-	semi-annual	Paper	No	-

# Mississippi

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,900,768	46,906	62	5,822,786	29,021	0.010	0.3%
<b>Total Biosolids Used or Disposed in 2004*:</b>			Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)		
	From State Survey Q24 54,200	<b>Adjusted Estimate</b> 61,000	60,847	no data		
<b>Total Number of TWTDS in 2004**:</b>			From CWNS 317	From Survey Q24 24		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			4			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry U.S. Tons</b>			

NOTES: Data in these tables are INCOMPLETE and include information for three TWTDS and one private contractor managing solids for some TWTDSs, according to the state biosolids coordinator.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	24	54,200	100%	This is land applied biosolids, most likely all Class B.
Disposal		no data		
Other		no data		
Total				

### INCOMPLETE DATA

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Missouri**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Missouri is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Missouri's environmental agency (the Department of Natural Resources) regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: Missouri does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use, but the number that do so is not known.

More than one Class B biosolids on one site? Missouri does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but it was not reported whether this is being done at any sites.

NPDES equivalent: Missouri is delegated for NPDES. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.01

Biosolids regulations updated: They were created in 1982.

Management practices: As of today, Missouri's biosolids regulations are generally not more restrictive than the federal Part 503 rule, although the state requires state operating permits for all persons who operate, use, or maintain facilities for the storage, treatment, or disposal of sewage sludge and/or biosolids, as well as construction permits for those who build such facilities. Otherwise, the federal Part 503 regulations determine all requirements and management practices in Missouri. Missouri does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Missouri does not require formal nutrient management plans. The state uses a test of available phosphorus (P) in soil to manage or control the application of P in biosolids.

Additional Management Actions: Missouri does not require any additional oversight or certification to occur at biosolids land application sites, but some biosolids management groups perform the following oversight and certification voluntarily:

- Certification of biosolids land applicators who manage or implement land application programs, and
- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing.

Acres applied: How much biosolids were applied to land in Missouri in 2004 was not reported.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency and from the EPA regional office. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Missouri, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids

management. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, but the number that have done so was not reported.

## **TRENDS**

The beneficial use of biosolids is increasing in Missouri, because more is being produced.  
Most significant current pressure on biosolids recycling: Limited land base.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: This was not reported.

Number of full-time equivalent staff (FTEs) for septage program: 0.01

Septage haulers based in state (estimated): 50

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: it must be lime stabilized. POTWs are not required to accept septage. The number of TWTDS accepting septage is not known.

Percentage of each management practice:

- Land applied = 40 %
- Hauled to TWTDS = 45 %
- Sent to septage only facility = 15 %

Other concerns: Missouri considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste is regulated through conditions in a general permit. Missouri has a proactive program, in pretreatment regulations, to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Missouri

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)			X		
Other metals (boron, silver...)			X		
Dioxins/furans					
PCBs					
Priority pollutants					
Other organic compounds (e.g. PDBEs, pharmaceuticals)					
Radioactive isotopes (alpha, beta, Ra 224, etc.)					
Nutrients (NPK)				X	
Pathogen reduction (Class A or B)					
Vector attraction reduction (VAR)					

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	X		Paper	No	
Part 503 metals						
Other metals						
Dioxins/furans						
PCBs						
Priority pollutants						
Other organic compounds						
Radioactive isotopes						
Nutrients (N, P, K)	Yes				No	
Cumulative Pollutant Loading Rates						
How biosolids achieve Class A or B						
How biosolids achieve Vector Attraction						
Solids stabilization processes used						
Other biosolids treatments						
End use/disposal practice						

# Missouri

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,759,532	68,885	84	18,884,920	89,662	0.009	0.3%
<b>Total Biosolids Used or Disposed in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	-	<b>170,000</b>	165,753		227,000	
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24				
	732	no data				
Total number of TWTDS sending to Separate Preparers in 2004:	no data		NOTES: Data in these tables are estimates from total wastewater flow, using the USEPA "Biosolids Generation Factor." The percentages of landfilled and land applied biosolids included here are best estimates for use only for the purposes of calculating national use and disposal estimates.			
Number of Separate Preparers:	no data					
Number of operating sludge incinerators:	no data					
Fluidized bed:						
Multiple hearth:						
Percent of population served by on-site (e.g. septic systems):	no data					
	<b>UNITS: Dry U. S. Tons</b>					

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	0	85,000	50%
Disposal	0	85,000	50%
Other	0	-	0%
Estimated Total	0	170,000	100.00%

### INCOMPLETE DATA

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.



**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Montana**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Montana is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion and the solid waste portion of Montana's environmental agency regulate biosolids management, disposal, and end use. The solid waste program regulates septage and composting, while the water/wastewater program regulates permitting and water discharge. Montana utilizes specific NPDES type permits, general NPDES permits, solid waste permits, and general EPA Region 8 permits to regulate end use and disposal and land application sites.

Holder of liability: Data was not provided regarding whether Montana allows land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Montana does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: MTPDES is the state equivalent to NPDES. All MTPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.05

Biosolids regulations updated: MT relies primarily on the Part 503 and the EPA Region 8 general permit.

Management practices: As of Today, Montana's state biosolids regulations are not more restrictive than the federal Part 503 regulations. Montana does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Montana does not require formal nutrient management plans. Montana uses tests of available P and a P index to manage or control the application of phosphorus in biosolids (this is required by an EPA Region 8 general permit).

Additional Management Actions: Montana does not require any additional oversight and certification to occur at biosolids land application sites. In Montana, no biosolids management groups perform any additional oversight and certification voluntarily.

Acres applied: Data not reported.

Reporting and Record-keeping: Montana does not require facilities to report biosolids information and data to the state. The public can access data from EPA Region 8, which compiles data in the EPA Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Montana, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.

### **TRENDS**

The beneficial use of biosolids is increasing in Montana. Composters are selling all they make and are looking for more sources of sewage sludge and other feedstocks.

Most significant current pressures on biosolids recycling: Neighbors.

### **TESTING AND REPORTING**

Montana has no state testing and reporting requirements; biosolids management activities in Montana must follow the testing and reporting requirements of the federal Part 503 rule.

### **SEPTAGE MANAGEMENT**

Septage regulations updated: May 25, 2001.

Number of full-time equivalent staff (FTEs) for septage program: 0.3

Septage haulers based in state (estimated): 142

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage; however, 28 do.

Percentage of each management practice:

- Land applied = 75 %
- Hauled to TWTDS = 25 %

Other concerns: Montana considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Montana does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Montana

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	-	-	-
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	-	-	-	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	-	-	-	-
Nutrients (NPK)	Yes	Yes	-	-	-
Pathogen reduction (Class A or B)	Yes	Yes	-	-	-
Vector attraction reduction (VAR)	Yes	Yes	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING: -	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	-	-	-	-	-	-
Part 503 metals	-	-	-	-	-	-
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	-	-	-	-	-	-
Cumulative Pollutant Loading Rates	-	-	-	-	-	-
How biosolids achieve Class A or B	-	-	-	-	-	-
How biosolids achieve Vector Attraction	-	-	-	-	-	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	-	-	-	-	-	-

# Montana

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
926,920	145,552	6	18,315,514	21,854	0.001	0.0%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	10,699	<b>11,000</b>	16,841		no data	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			211	26		
Total number of TWTDS sending to Separate Preparers in 2004:			3			
Number of Separate Preparers:			3			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	13	7,081	66%
Disposal	5	2,569	24%
Other	8	1,049	10%
<b>Total</b>	<b>26</b>	<b>10,699</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	8	3,555	33%
Rangeland	1	41	0%
Reclamation	1	2,231	21%
Class A EQ Distribution	3	1,254	12%
<b>Total</b>	<b>13</b>	<b>7,081</b>	<b>66%</b>
Long-term storage	8	1,049	10%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	4	2,551	24%
Surface Disposal	1	18	0%
Incineration	0	-	0%
	5	2,569	24%

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	
Class A EQ	3	1,254	12%	3 separate preparers that make biosolids compost.
Other Class A	0	-	0%	
Class B	10	5,827	54%	
Other (no data, etc.)	13	3,618	34%	
Total	26	10,699	100%	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	11	4,648	
Digestion-anaer./other	9	6,528	
Lime/Alkaline	0	-	
Composting	2	2,860	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	0	-	
Other	0	-	
Belt Filter Press	7	6,020	
Plate & Frame Press	0	-	
Screw Press	0	-	
Centrifuge	2	1,767	
Vacuum Filter	0	-	
Drying beds	9	804	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Nebraska**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Nebraska is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Nebraska's environmental agency, along with EPA Region 7, regulates biosolids. Nebraska utilizes site permits to regulate end use and disposal. Land application sites are not permitted, but there is a site review or approval required.

Holder of liability: Nebraska does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Nebraska does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but it is not actually being done.

NPDES equivalent: Nebraska is delegated for the NPDES program. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.01

Biosolids regulations updated: Nebraska does not have any biosolids regulations; the state relies on the federal Part 503 regulations.

Management practices: Nebraska mostly relies on the federal Part 503 rule, although the state requires some additional monitoring at Class B land application sites (only done at one site), and nitrogen, phosphorous, chlorides, and metals are all used to determine the agronomic loading rate for land application. Nebraska's pathogen and vector retraction reduction requirements and pollutant (heavy metal) limits are not more restrictive than Part 503. Nebraska does not require formal nutrient management plans. Nebraska controls the application of phosphorus (P) in biosolids through including P in agronomic loading rate calculations.

Additional Management Actions: Nebraska does not require any additional oversight or certification to occur at biosolids land application sites, and no biosolids management groups perform any additional oversight or certification voluntarily.

Acres applied in 2004: No data provided.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data to the state. The public can access these reports by mail or in person from the state agency; they are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Nebraska, there is no legislative, regulatory or other activity happening or imminent impacting biosolids beneficial use. No information was provided regarding whether or not local units of government are allowed to adopt ordinances that are more restrictive than state law. The number of towns and counties in Nebraska that have adopted more restrictive biosolids application ordinances is not known, but it is unlikely that any have.

Most significant current pressures on biosolids recycling: No data provided.

**SEPTAGE MANAGEMENT** - No septage management data was provided.

# Nebraska

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,747,704	76,872	23	22,520,874	43,722	0.002	0.1%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	33,902	<b>34,000</b>	40,571		no data	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			469	16		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry U.S. Tons</b>			

NOTES: Data in these tables are from individual contacts with the largest facilities in the state and the National Association of Clean Water Agencies Financial Survey.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	14	33,175	98%	Land application remains a steady practice in Nebraska, and there is plenty of demand from farmers due to rising commercial fertilizer prices. Fremont stored 500 dry U.S. tons in 2004; North Platte has large lagoons that are cleaned out only occasionally and used or disposed of no solids in 2004.
Disposal	1	227	1%	
Other	1	500	1%	
Total	16	33,902	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	13	32,850	97%	Omaha (the state's largest city), Lincoln, Fremont, Kearney, and Grand Island all land apply Class B biosolids.
Forestland	0	-	0%	
Reclamation	0	-	0%	Bellevue
Class A EQ Distribution	1	325	1%	
Total	14	33,175	98%	
Long-term storage	1	500	1%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	1	227	1%	
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
	1	227	1%	



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	3	948	3%
Other Class A	0	-	0%
Class B	11	32,226	95%
Other (no data, etc.)	2	727	2%
<b>Total</b>	<b>16</b>	<b>33,901</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Nevada**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Nevada is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/wastewater portion, along with the solid waste portion of Nevada's environmental agency, regulates biosolids. Wastewater regulates beneficial use, and solid waste regulates landfill disposal. Nevada mostly utilizes groundwater permits to regulate solids lagoons and storage ponds: many wastewater treatment facilities discharge to ponds; these are dredged every 10 years or so, and most goes to landfill. Otherwise, land application is regulated by Part 503 and Nevada has no additional regulations.

Holder of liability: Nevada does allow land appliers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. Four landowners and/or land appliers hold legal liability for biosolids end use.

More than one Class B biosolids on one site? Nevada does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is being done on 2 sites.

NPDES equivalent: Nevada has no state equivalent to NPDES. Nevada is not delegated for biosolids and pretreatment. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.2

Biosolids regulations updated: Nevada has few regulations at the state level.

Management practices: Nevada's biosolids regulations are generally not more restrictive than the federal Part 503 rule. However, Nevada requires additional monitoring at Class B land application sites, with annual monitoring of crop yield. Nitrogen is the basis for the agronomic loading rate for land application. Nevada does not require formal nutrient management plans. Nevada does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Nevada does not require any additional oversight or certification to occur at biosolids land application sites, and the extent of voluntary monitoring and oversight on the part of biosolids management programs is not known.

Acres applied: The number of acres to which biosolids were applied in 2004 is not known. The number of new site permits/approvals that were issued in 2004 is not known, but is likely to have been only a few at most.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency, from some POTW or TWTDS websites, or from the Region 9 EPA office. Nevada does not compile biosolids use and disposal data electronically, although EPA Region 9 does.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Nevada, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management. As of today, local units of government are allowed to adopt ordinances that are

more restrictive than state law. One county in Nevada has adopted a more restrictive biosolids application ordinance, but this number is not expected to grow.

## **TRENDS**

The beneficial use of biosolids is not increasing in Nevada because of lack of water and water conservation needs: beneficial use results in more competition for scarce water by encouraging agriculture (agriculture is discouraged, especially in the Las Vegas area). In addition, Nevada has large landfill capacity and low tipping fees.

Most significant current pressures on biosolids recycling:

1. Hauling costs.
2. Public perception.
3. Development of agricultural lands.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Nevada has no septage regulations.

Number of full-time equivalent staff (FTEs) for septage program: 0.2

Septage haulers based in state (estimated): 30 – 35; only 5% of Nevada's population relies on septic systems.

Septage management: Septage can be land applied if it meets part 503. POTWs are not required to accept septage.

Percentage of each management practice:

- 50% goes to land application (most in Reno/Carson City area). Septage is usually mixed 3 parts septage to 1 part grease waste to meet the land application requirement for grease waste.
- 50% is discharged at TWTDS

Other concerns: Nevada considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste is managed like septage and with septage. FOG can be land applied if properly blended with septage. The amount of grease being land applied will likely become less in the near future, because the Truckee Meadows POTW in Sparks is installing an acid-phase digester to further their generation of biogas that is used to generate electricity; this facility is expected to take in much of the currently-land-applied grease.

## **Nevada's biosolids management policy:**

“NDEP supports biosolids re-use in order to take advantage of this beneficial soil amendment and to keep material with high liquid content out of the State's landfills. Contact the NDEP Bureau of Water Pollution Control to apply for a biosolids reuse permit. Many disposal sites do accept these wastes, but they must be dried or otherwise solidified prior to disposal.” Retrieved February 6, 2007 from <http://ndep.nv.gov/bwm/special.htm>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Nevada

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	Yes	-	-
Dioxins/furans	No	No	Yes	-	-
PCBs	No	No	Yes	-	-
Priority pollutants	No	No	Yes	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	Yes	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	Yes	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING: -	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	-	Yes	-	Paper	No	-
Part 503 metals	-	Yes	-	Paper	No	-
Other metals	No	NA	-	-	-	-
Dioxins/furans	No	NA	-	-	-	-
PCBs	No	NA	-	-	-	-
Priority pollutants	No	NA	-	-	-	-
Other organic compounds	No	NA	-	-	-	-
Radioactive isotopes	No	NA	-	-	-	-
Nutrients (N, P, K)	-	Yes	-	Paper	No	-
Cumulative Pollutant Loading Rates	-	Yes	-	Paper	No	-
How biosolids achieve Class A or B	-	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	-	Yes	-	Paper	No	-
Solids stabilization processes used	-	Yes	-	Paper	No	-
Other biosolids treatments	-	Yes	-	Paper	No	-
End use/disposal practice	-	Yes	-	Paper	No	-

# Nevada

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,332,898	109,825	21	940,295	2,001	0.060	2.0%
<b>Total Biosolids Generated in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	56,478	<b>56,500</b>	28,071		38,500	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			57	11		
Total number of TWTDS sending to Separate Preparers in 2004:			2			
Number of Separate Preparers:			1			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			5%			
			<b>UNITS: Dry Metric Tons</b>			

NOTES: Data in these tables are from EPA Region 9 and individual TWTDS. Nevada's population is centralized: 80% of population lives in Clark County (Las Vegas, Henderson, etc.). The quantities in these tables represent the largest 11 TWTDS.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	4	10,552	19%
Disposal	7	45,926	81%
Other	0	-	0%
<b>Total</b>	<b>11</b>	<b>56,478</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	2	9,614	17%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	2	938	2%
<b>Total</b>	<b>4</b>	<b>10,552</b>	<b>19%</b>
Long-term storage	0	-	0%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	7	45,926	81%
Surface Disposal	0	-	0%
Incineration	0	-	0%
	<b>7</b>	<b>45,926</b>	<b>81%</b>

#### NOTES:

The Las Vegas area is served by 3 utilities (Clark County=100 MGD, Las Vegas=70 MGD, Henderson=20 MGD) and a total of 6 TWTDS. Together, they produced about 80% of the state's biosolids, all of which was used as landfill daily cover.

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	938	2%
Other Class A	0	-	0%
Class B	2	25,344	45%
Other (no data, etc.)	7	30,196	53%
<b>Total</b>	<b>11</b>	<b>56,478</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	0	-
Digestion-anaer./other	2	>30%
Lime/Alkaline	0	-
Composting	11	<1
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	20	<1
Other	0	-
Belt Filter Press	2	<1
Plate & Frame Press	0	-
Screw Press	1	<1
Centrifuge	2	>30%
Vacuum Filter	0	-
Drying beds	20	<1
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator and/or regional EPA and the largest individual TWTDS in the state; it is the sum of the "Beneficial Use" and "Disposal" data, below. The "Adjusted Estimate" is calculated from estimates of wastewater flow not accounted for in the "From State Survey Q24" total. The adjusted estimate is considered more accurate and is used only in national totals; for those states for which estimating was necessary, it is rounded to the nearest 1000 tons.

\*\* "Total Number of TWTDS in 2004" shows two totals. The first is the estimate of the total number of individual TWTDS, as reported by the state biosolids coordinator or other state agency source OR is the number reporting flow in the 2004 CWNS. The second total number or TWTDS, "From Survey Q24," is the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below; this total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **New Hampshire**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? New Hampshire is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/wastewater portion of New Hampshire's environmental agency regulates biosolids and utilizes New Hampshire Department of Environmental Services (DES) rules, which include issuance of Sludge Quality Certifications (SQC) and Site Permits to regulate end use and disposal. Land application sites are regulated under site-specific permits.

Holder of liability: New Hampshire does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. Currently 22 land owners hold legal liability for biosolids end use.

More than one Class B biosolids on one site? New Hampshire does allow *Class B* biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done at approximately 27 sites.

NPDES equivalent: There is no state equivalent to NPDES. All NPDES or equivalent state permits do not include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 2.5

Biosolids regulations updated: March 1999; minor updates to rules were adopted in early 2007.

Management practices: The management practices of New Hampshire's biosolids regulations are more restrictive than the federal Part 503 rule. These regulations include setback requirements and crop restrictions. New Hampshire's pathogen and/or vector attraction reduction limits are also more restrictive: meeting vector attraction reduction (VAR) by incorporation or injection is not allowed. New Hampshire has more restrictive pollutant (trace metals, etc.) limits. New Hampshire requires additional monitoring at Class B land application sites. Soil monitoring is required at all sites, and groundwater monitoring is required for reclamation at greater than agronomic rates. Nitrogen is the basis for the agronomic loading rate for land application. New Hampshire does require formal nutrient management plans. New Hampshire uses a P index to manage or control the application of phosphorus in biosolids.

Additional Management Actions: New Hampshire does not require certification of land applicators. The NH DES conducts random testing and inspections of land application sites and events every year. Some biosolids management groups take additional actions to control odors and re-test Class A biosolids for pathogens if they have been stored for three weeks or more after treatment.

Acres applied: In 2004, biosolids were applied to 1,517 acres. In 2004, one new site permit/approval was issued.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with Excel and Access.

Legislative, regulatory, or other activity impacting biosolids use/disposal: Changes are being made to New Hampshire DES biosolids regulations, and there is some interest in the legislature, where several biosolids and septage bills have been introduced each year for several years.



These activities are likely to have minimal effect on beneficial use. Development of farm lands is reducing available land for land application, which has the effect of reducing beneficial use over time. Municipalities are allowed to adopt ordinances that are more restrictive than state law. Over 40 towns in New Hampshire have adopted more restrictive biosolids application ordinances, and the overall the number of more restrictive ordinances is increasing slowly – but this is unlikely to significantly impact ongoing biosolids recycling programs.

## **TRENDS**

The beneficial use of biosolids has decreased somewhat in New Hampshire due to increased development and decreased public acceptance.

### Most significant current pressures on biosolids recycling:

1. Decreased public acceptance fomented by activists opposed to beneficial use, as well as negative media coverage.
2. Increased development pressure on farmland.
3. Lack of technical response by EPA to address perceived risks from land application.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: October, 2005.

Number of full-time equivalent staff (FTEs) for septage program: 2.5

Septage haulers based in state (estimated): 150

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: New Hampshire septage rules define 2 classes of septage. One meets Part 503 for land application at permitted sites (with increased buffer distances over federal law), and the other is “Exceptional Quality” (EQ) and is determined by testing for metals and volatile & semi-volatile organic chemicals. EQ septage is allowed for general distribution. POTWs are not required to accept septage; however, 46 do.

Percentage of each management practice:

- Land applied = 7%
- Hauled to TWTDS = 76% (including several out of state)
- Disposed of in lagoons = 10% (lagoon disposal is being phased out)
- Sent to other septage-only treatment facilities = 7%

Other concerns: 60% or more of the state’s residents are served by septic systems. 80% of new development in the past decade has been in areas not served by centralized sewer systems, so the percentage of the state population served by septic systems continues to rise. (This data is calculated by comparing the number of housing starts and the number of septic system permits granted by DES.)

FOG is being taken seriously in NH, because “EPA says this is the #1 cause of CSOs.”

However, the state has little data on FOG at this time and does not have a proactive program to collect FOG and keep it out of the general wastewater flow. In New Hampshire, the use and disposal of grease trap waste falls under the septage rules.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: New Hampshire

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	-	Initially -4 samples 60 days apart Then frequency according to amount generated
Other metals (boron, silver...)	-	Yes	-	4 samples 60 days apart to receive certification and then annually	-
Dioxins/furans	-	Yes	-	*same comment as other metals	-
PCBs	-	Yes	-	*same comment as other metals	-
Priority pollutants	-	Yes	-	*same comment as other metals	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	Yes	-	*same comment as other metals (see attached list)	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	No	-	-	-
Nutrients (NPK)	-	Yes	-	-	Initially -4 samples 60 days apart then frequency according to amount generated
Pathogen reduction (Class A or B)	-	Yes	Yes	-	-
Vector attraction reduction (VAR)	-	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Annually by the last business of January	Both	-	Please find attached annual legislative report
Part 503 metals	Yes	-	Annually by the last business of January	Both	-	and a sample annual report
Other metals	Yes	-	Annually by the last business of January	Both	-	(Franklin WWTF)
Dioxins/furans	Yes	-	Annually by the last business of January	Both	-	-
PCBs	Yes	-	Annually by the last business of January	Both	-	-
Priority pollutants	Yes	-	Annually by the last business of January	Both	-	-
Other organic compounds	Yes	-	Annually by the last business of January	Both	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Annually by the last business of January	Both	-	-
Cumulative Pollutant Loading Rates	Yes	-	Annually by the last business of January	Both	-	-
How biosolids achieve Class A or B	-	-	-	-	-	-
How biosolids achieve Vector Attraction	No	-	-	-	-	-
Solids stabilization processes used	No	-	Annually by the last business of January	Both	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	-	Annually by the last business of January	Both	-	-

# New Hampshire

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,299,169	8,968	145	129,388	2,505	0.209	7.0%
<b>Total Biosolids Generated in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	27,021	<b>27,000</b>	20,715		18,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			88	34		
Total number of TWTDS sending to Separate Preparers in 2004:			8			
Number of Separate Preparers:			4			
Number of operating sludge incinerators:			1			
Fluidized bed:			1			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			60%			
			<b>UNITS: Dry U. S. Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	17	18,509	68%	
Disposal	17	8,512	32%	
Other	0	-	0%	
<b>Total</b>	<b>34</b>	<b>27,021</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
Agricultural	5	3,908	14%	NOTES: Concord land applies Class A and B biosolids, and Nashua land applies Class B biosolids. Land applied biosolids go mostly to agricultural land as fertilizer for grass hay or feed corn. Some is used for reclamation of gravel pits and closed landfills. Much of this is compost produced by Claremont, Dover, Merrimack, Plymouth, etc.
Forestland	0	-	0%	
Reclamation	4	180	1%	
Class A EQ Distribution	8	14,421	53%	
<b>Total</b>	<b>17</b>	<b>18,509</b>	<b>68%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	16	4,032	15%	NOTES: Manchester, the state's largest city, operates the state's only incineration facility.
Surface Disposal	0	-	0%	
Incineration	1	4,480	17%	
<b>Total</b>	<b>17</b>	<b>8,512</b>	<b>32%</b>	

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	8	14,421	54%	For 41 facilities, there is no Class A/Class B or metals data, as these facilities landfill or incinerate their biosolids and do not treat or test for these parameters.
Other Class A	0	-	0%	
Class B	46	3,908	15%	
Other (no data, etc.)	0	8,512	32%	
Total	54	26,841	100%	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	0	-	Incomplete data.
Digestion-anaer./other	3	3,298	
Lime/Alkaline	4	5,785	
Composting	5	7,812	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.) Other	0 0	- -	
Belt Filter Press	12	7,850	
Plate & Frame Press	2	930	
Screw Press	0	-	
Centrifuge	0	-	
Vacuum Filter	0	-	
Drying beds	4	-	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **New Jersey**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? New Jersey is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion, the solid waste program, and the air quality program of New Jersey's environmental agency regulates biosolids. The Bureau of Pretreatment and Residuals in the Division of Water Quality (water/wastewater) oversees land application and general program administration. Solid waste oversees landfill permitting and approvals for landfill daily cover uses. The air quality program oversees permitting of incinerators. New Jersey utilizes specific NPDES type permits, general NPDES type permits, solid waste permits, and air permits to regulate end use and disposal and land application sites.

Holder of liability: New Jersey does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There are 2 landowners and/or land appliers that hold liability.

More than one Class B biosolids on one site? New Jersey does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year; however, the biosolids must be blended. This is being done at 2 sites.

NPDES equivalent: NJPDES is the state equivalent to NPDES. All NJPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: a good part of 11.33

Biosolids regulations updated: 1997

Management practices: The management practices of New Jersey's biosolids regulations are more restrictive than the federal Part 503 rule. These regulations include buffers based on site characteristics or as recommended in a site-specific Conservation Plan. New Jersey's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. New Jersey requires additional monitoring at Class B land application sites, with pH testing and Mehlich 3 soil fertility tests for K, Ca, Mg, and P. Nitrogen, lime equivalency, or P-based – whichever is most limiting – are the basis for the agronomic loading rate for land application. New Jersey does require formal nutrient management plans. New Jersey uses a limit based on soil tests for P and is moving to using a P index to manage or control the application of phosphorus in biosolids.

Additional Management Actions: New Jersey requires the following additional oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.

In New Jersey, no biosolids management groups are known to perform additional oversight and certification voluntarily.

Acres applied: In 2004, biosolids were applied to a total of about 92 acres. In 2004, 2 new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency or on the state website. The data and

reports are compiled electronically with Excel and Access (New Jersey has its own program, but the data can be downloaded into Excel or Access).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In New Jersey, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law. No towns or counties in New Jersey have adopted more restrictive biosolids application ordinances.

## **TRENDS**

The beneficial use of biosolids is not increasing in New Jersey. Two Class B and one Class A operations have shut down due to noncompliance in the last 5 years. In addition, another Class A composting operation has shut down due to cost. No new operations have taken their place; therefore there has been a general decrease in biosolids recycling.

Most significant current pressures on biosolids recycling:

1. Lack of available land and/or development pressures.
2. Biosolids recycling is already at a high level (66%), and that level will be hard to sustain.
3. Statutory and regulatory requirements.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1997.

Number of full-time equivalent staff (FTEs) for septage program: some part of 11.33

Septage haulers based in state (estimated): No data reported.

Septage management: Septage can be land applied if it meets Part 503. 26 TWTDS accept septage.

Percentage of each management practice:

- Hauled to TWTDS = 100 %

Other concerns: New Jersey considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Although not specifically mentioned in the rules, FOG is typically managed like septage, although fewer facilities accept it. New Jersey has a proactive program to collect FOG and keep it out of the general wastewater flow. Most sewer ordinances require removal of FOG before discharging wastewater to sewers. A few POTWs will accept FOG, but it has been a problem when too much is sent to one POTW. One POTW operates an incinerator and has been able to work FOG into the process to help lower fuel costs.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: New Jersey

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	For preparer permit	Wastewater flow	Permit issued to preparer requires testing in accordance with 503 plus permit issued to sludge generator requires testing based on flow: 5MGD or greater = monthly
Other metals (boron, silver...)	Yes	Yes	-	Wastewater Flow	Beryllium and Chromium based on above flow. Antimony, silver, Thallium and cyanide annual for 1.0 MGD or greater
Dioxins/furans	No	No	-	The Department conducted sampling for dioxins and furans. All treatment works which hold	Rule allows for case-by-case if determined necessary.
PCBs	Yes	Yes	-	The Department conducted sampling for 209 congeners. All treatment works which hold	Arochlors are tested annually for 1.0 MGD or greater. Rule allows for additional PCBs if determined necessary.
Priority pollutants	Yes	Yes	-	-	Annual pp scan is required for 1.0 MGD or greater
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	The Department sampled many treatment works for the presence of NORM. Data currently being reviewed and monitoring likely to be imposed on some.	Case-by-case. Currently none, but rules allow to impose on case-by case.
Nutrients (NPK)	Yes	Yes	For preparer permit	Wastewater flow	Based on wastewater flow above. Test for calcium, TKN, ammonia, nitrate, P & K
Pathogen reduction (Class A or B)	No	Yes	-	-	-
Vector attraction reduction (VAR)	No	Yes	-	-	-



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	For preparers	Wastewater flow	Both	Yes	1. Statewide summary 2. County by county summary
Part 503 metals	Yes	For preparers	Wastewater flow	Both	Yes	All data is entered in New Jersey Environmental Management System Data
Other metals	Yes	-	Wastewater flow	Both	Yes	Reports can be run as requested or on-line
Dioxins/furans	Yes	-	Case by case	-	Yes	Data from Department sampling available
PCBs	Yes	-	Wastewater flow for arochlors	Both	Yes	Plus, data from department sampling available
Priority pollutants	Yes	-	Wastewater flow	Both	Yes	Reports can be run as requested or on-line
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	Yes	-	Case by case	-	Yes	Data from Department sampling available
Nutrients (N, P, K)	Yes	For preparers	Wastewater flow	Both	Yes	Reports can be run as requested or on-line
Cumulative Pollutant Loading Rates	Yes	For preparers	-	-	-	Currently no preparer is over ceiling that land applied
How biosolids achieve Class A or B	Yes	For preparers	-	Both	Yes	Reports can be run as requested or on-line
How biosolids achieve Vector Attraction	Yes	For preparers,	-	Both	Yes	Reports can be run as requested or on-line
Solids stabilization processes used	Yes	-	-	Both	-	Information is submitted as part of application, as much information as possible gets entered in NJEMS. If it is in NJEMS as report can be written
Other biosolids treatments	Yes	-	-	Both	-	Information is submitted as part of application, as much information as possible gets entered in NJEMS. If it is in NJEMS a
End use/disposal practice	Yes	-	-	Both	-	See attached report

# New Jersey

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
8,685,166	7,417	1,171	547,668	8,342	0.433	14.4%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	236,960	<b>237,000</b>	250,460		232,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			156	391		
Total number of TWTDS sending to Separate Preparers in 2004:			327			
Number of Separate Preparers:			8			
Number of operating sludge incinerators:			9			
Fluidized bed:			5			
Multiple hearth:			4			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and compiled state agency data he provided.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:  These are solids stored in reed beds.
Beneficial Use	83	36,635	15%	
Disposal	299	199,981	84%	
Other	9	344	0%	
<b>Total</b>	<b>391</b>	<b>236,960</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Agricultural	17	5,952	3%	
Forestland	1	72	0%	
Reclamation	8	4,102	2%	
Class A EQ Distribution	57	26,510	11%	
<b>Total</b>	<b>83</b>	<b>36,635</b>	<b>15%</b>	
Long-term storage	9	344	0%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	142	133,151	56%	
Surface Disposal	0	-	0%	
Incineration	157	66,830	28%	
<b>Total</b>	<b>299</b>	<b>199,981</b>	<b>84%</b>	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	57	26,510	11%
Other Class A	0	-	0%
Class B	18	6,024	3%
Other (no data, etc.)	272	204,426	86%
<b>Total</b>	<b>347</b>	<b>236,960</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	36	179	
Digestion-anaer./other	16	1,592	
Lime/Alkaline	2	1,668	
Composting	5	15,481	
Thermal (not incineration)	1	9,999	
Long-term (lagoons, reed beds, etc.)	9	344	
Other	16	no data	
Belt Filter Press	36+	no data	
Plate & Frame Press	1	35,987	
Screw Press	0	no data	
Centrifuge	5+	no data	
Vacuum Filter	0	no data	
Drying beds	3	no data	
Other	0	no data	

NOTES:

1 documents production of 179 dmt of Class B biosolids.  
3 document production of 1,592 dmt of Class B biosolids

Reed beds.  
Unspecified forms of digestion.

There are likely more than the 36 reported.

There are likely more than the 5 reported.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

**New Mexico**

**REGULATION AND PERMITTING**

Delegated by EPA for biosolids? New Mexico is in the process of applying for delegation (although the process is on hold).

State agency regulating biosolids: The water/ wastewater portion of New Mexico's environmental agency, along with USEPA, regulates biosolids. General biosolids/sludge use and disposal requirements are written into each individual NPDES permit.

Holder of liability: New Mexico does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? New Mexico does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Because it does not have primacy, New Mexico does not have a state equivalent to NPDES. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0

Biosolids regulations updated: There are no separate biosolids/sludge management regulations in New Mexico.

Management practices: As of today, New Mexico's biosolids regulations (including management practices, pathogen and vector attraction reduction requirements, and pollutant limits) are not more restrictive than the federal Part 503 rule. New Mexico does not require additional monitoring of Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. New Mexico does not require formal nutrient management plans. New Mexico does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: New Mexico does not require any additional oversight or certification to occur at biosolids land application sites. It is not known if any biosolids management groups perform any additional oversight or certification voluntarily.

Acres applied: Information on the acreage to which biosolids are applied is kept at each TWTDS that applied biosolids; this information is not compiled by the state. In 2004, no new site permits/approvals were issued.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data (to EPA). The public can access these reports by mail or in person from the state agency or from the EPA regional office. The state agency does not compile this information in electronic format; it keeps paper copies on file.

Legislative, regulatory, or other activity impacting biosolids use/disposal: New Mexico is pursuing delegation for the biosolids program; the impact of this is hard to predict, but will likely be minimal. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law. No towns or counties in New Mexico have adopted more restrictive biosolids application ordinances.

**TRENDS**

The beneficial use of biosolids is not increasing in New Mexico, because landfilling is less expensive.

Most significant current pressures on biosolids recycling:

1. Cost.
2. Convincing the public to use biosolids (public education).
3. High groundwater levels.

**SEPTAGE MANAGEMENT**

Septage regulations updated: New Mexico has no formal regulatory structure for septage, but septage is included in the groundwater discharge rules. The regulations pertaining to septage permitting were written in 1977, and, although they haven't changed since, the way they permit and the way they handle violations have improved greatly over the years.

Number of full-time equivalent staff (FTEs) for septage program: 0

Septage haulers based in state (estimated): 144

Septage management: About 38% of the population of New Mexico is served by septic systems. Septage can be land applied if it meets the federal Part 503 rules. New Mexico requires permits in order to land apply, and each permit lists a specific Part 503 choice for treatment that best meets the land and climate of the site. POTWs are not required to accept septage; however, about 25 do accept it.

Percentage of each management practice (estimated):

- Land applied = 40 %
- Hauled to TWTDS = 40 %
- Lagoons = 20

Other concerns: New Mexico considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls within the groundwater rules and/or NPDES permitting. New Mexico does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: New Mexico

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	No	-	-	-	-
Dioxins/furans	No	-	-	-	-
PCBs	Yes	Yes	Yes	40 CFR 258	-
Priority pollutants	No	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	Yes	Yes	-	Ground Water regs	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	Yes	Yes	-	Paper	No	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Ground water regs	Paper	No	-
Cumulative Pollutant Loading Rates	No	-	-	-	-	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

# New Mexico

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,903,006	121,355	16	2,575,107	10,855	0.028	0.9%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
72,935	73,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
21,026	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
66	26

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	3
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	38%

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinators, with one significant change (surface disposal amount reduced). Most data corroborated by most USEPA Region 6 data. Additional information from Albuquerque wastewater reclamation facility. There are also 5 small Native American/Tribal TWTDS, numbers from which are not included in these tables. Note that the total includes the final Albuquerque compost, which is a much larger mass than the wastewater solids which went into making it. The Albuquerque estimate is that about 24% of the compost, on average over the year, is biosolids feedstock, meaning that the amount of solids going into the compost was ~9,000 dmt in 2004. This makes the total New Mexico solids generation more on the order of ~44,000 dmt.

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	10	65,880	90%	
Disposal	14	6,874	9%	
Other	2	182	0%	
Total	26	72,935	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	8	28,304	39%	
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	2	37,576	52%	Albuquerque compost (37,000+ dry metric tons), but also one heat-dried product.
Total	10	65,880	90%	
Long-term storage	2	182	0%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	8	4,447	6%	
Surface Disposal	6	2,427	3%	Some sources reported an additional ~37,000 dry metric tons of surface-disposed biosolids, but this was not included in these tables, as no likely source of this large mass was reported.
Incineration	0	-	0%	
Total	14	6,874	9%	



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	0	37,576	52%
Other Class A	9	20,023	27%
Class B	16	8,281	11%
Other (no data, etc.)	0	7,056	10%
<b>Total</b>	<b>25</b>	<b>72,936</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	11	2,536
Digestion-anaer./other	4	5,624
Lime/Alkaline	1	1,653
Composting	7	28,358
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	5	39,463
Other	0	-
Belt Filter Press	6	5,233
Plate & Frame Press	1	175
Screw Press	0	-
Centrifuge	2	66,247
Vacuum Filter	1	108
Drying beds	12	6,104
Other	0	-

NOTES:  
Data estimated by state biosolids coordinators.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **New York**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? New York is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The solid waste portion of New York's environmental agency regulates biosolids and utilizes solid waste permits to regulate end use and disposal and land application sites.

Holder of liability: New York does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There are 5 land applicators or land owners that hold liability.

More than one Class B biosolids on one site? New York does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done on 4 sites.

NPDES equivalent: SPDES is the state equivalent to NPDES. All SPDES/NPDES permits include general requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 4.5

Biosolids regulations updated: March 2003.

Management practices: The management practices of New York's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include setback requirements and higher testing frequency. New York's pathogen and/or vector attraction reduction limits are not more restrictive. New York has more restrictive pollutant (trace metals, etc.) limits. New York requires additional monitoring at Class B land application sites; annual soil tests for pH, As, Cd, Cr, Cu, Pb, Hg, Ni, Se, and Zn. Nitrogen is the basis for the agronomic loading rate for land application. New York does not require formal nutrient management plans. New York requires testing for total P to manage or control the application of phosphorus in biosolids.

Additional Management Actions: New York requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

In New York, some biosolids managers perform the following additional actions voluntarily:

- Independent inspectors or monitors at land application sites;
- Certification of biosolids land applicators who manage or implement biosolids land application programs;
- Numerical odor emissions limits at land application sites; and
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

Acres applied: In 2004, Class B biosolids were applied to a total of about 4,000 acres. In 2004, there were no new site permits/approvals issued.

Reporting and Record-keeping: Sludge-only processing facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency, which compiles them electronically in Excel and PDF formats.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In New York, there are no legislative or regulatory activities happening or imminent that will impact biosolids. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, unless protected by Right-to-Farm rules. The total number of towns and counties in New York that have adopted more restrictive biosolids application ordinances is unknown. It is not known if the number of more restrictive ordinances is increasing or decreasing.

## **TRENDS**

The beneficial use of biosolids is not currently increasing in New York. Landfilling becomes more attractive to some municipalities due to low tipping fees.

Most significant current pressures on biosolids recycling:

1. Landfill cost is relatively low.
2. Increased scrutiny by EPA.

According to a NY DEC summary of biosolids management practices in 2004, “Since...1998, the percentage of beneficial use has slightly decreased from 51% to 48%. The quantity of biosolids incinerated has also dropped from 31% to 25%. As a result, a significant increase in the quantity of biosolids landfilled has occurred since 1998, rising from 17% to 26%. The number of landfills that accept biosolids has increased....”

## **SEPTAGE MANAGEMENT**

Septage regulations updated: March 2003.

Number of full-time equivalent staff (FTEs) for septage program: 1.0

Septage haulers based in state (estimated): 615

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: soil tests for N,P, and K, and all septage must be limed (pH of 12 for 30 minutes). POTWs are not required to accept septage. However, 89 TWTDS accept septage.

Percentage of each management practice:

Percentages are not known, but a rough estimate is that 50% of septage is applied to land and 50% is disposed of at wastewater treatment facilities.

Other concerns: New York does not consider fats, oils, and grease (FOG) to be a significant issue. The use and disposal of grease trap waste falls under the solid waste rules. New York does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

A complete NY Department of Environmental Conservation report on biosolids use and disposal in New York in 2004 is available at [www.dec.state.ny.us/website/dshh/redrecy/bioreprt.pdf](http://www.dec.state.ny.us/website/dshh/redrecy/bioreprt.pdf).

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: New York

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	See attachments, tables 1-9	-
Other metals (boron, silver...)	No	Yes	-	See attachments, tables 1-9	-
Dioxins/furans	No	No	-	See attachments, tables 1-9	-
PCBs	No	No	-	See attachments, tables 1-9	-
Priority pollutants	No	Yes	-	See attachments, tables 1-9	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	See attachments, tables 1-9	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	See attachments, tables 1-9	-
Nutrients (NPK)	No	Yes	-	See attachments, tables 1-9	-
Pathogen reduction (Class A or B)	No	Yes	-	See attachments, tables 1-9	-
Vector attraction reduction (VAR)	No	Yes	-	See attachments, tables 1-9	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING: Only for POTW's that land apply or use beneficial use options	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Both	Yes	See attached draft of 2004 report "biosolids management practices in NYS"
Part 503 metals	Yes	Yes	-	Paper	-	
Other metals	Yes	-	Cr	Paper	-	
Dioxins/furans	No	-	-	-	-	
PCBs	No	-	-	-	-	
Priority pollutants	Yes	-	-	Paper	-	
Other organic compounds	No	-	-	-	-	
Radioactiv e isotopes	No	-	-	-	-	
Nutrients (N, P, K)	Yes	-	-	Paper	-	
Cumulative Pollutant Loading Rates	Yes	-	-	Paper	-	
How biosolids achieve Class A or B	Yes	Yes	-	Paper	-	
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	-	
Solids stabilization processes used	Yes	Yes	-	Paper	-	
Other biosolids treatments	Yes	Yes	-	Paper	-	
End use/disposal practice	Yes	-	-	Paper	-	

# New York

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
19,280,727	47,213	408	4,841,367	33,351	0.073	2.4%
<b>Estimates from other sources:</b>						
<b>Total Biosolids Generated in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)		
	353,260	<b>353,300</b>	569,813	360,000		
<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24				
	588	584				
Total number of TWTDS sending to Separate Preparers in 2004:	0					
Number of Separate Preparers:	32					
Number of operating sludge incinerators:	15					
Fluidized bed:	8					
Multiple hearth:	7					
Percent of population served by on-site (e.g. septic systems):	20%					
<b>UNITS:</b>		<b>Dry U.S. Tons</b>				

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. Some TWTDS use more than one form of use or disposal; in this count for New York, a TWTDS is assigned to one category or another based on what happens to the majority of its sewage sludge.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	147	169,198	48%	This 1% is sewage sludge in long-term storage or for which there is lack of data.
Disposal	373	182,005	52%	
Other	64	2,057	1%	
<b>Total</b>	<b>584</b>	<b>353,260</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	72	65,464	19%	About 77% of biosolids beneficially used were shipped out of state. New York also had 7,600 dry U.S. tons of heat-dried pellets and biosolids compost come into the state.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	75	103,734	29%	
<b>Total</b>	<b>147</b>	<b>169,198</b>	<b>48%</b>	
Long-term storage	64	2,057	1%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	292	92,103	26%	27 landfills accepted biosolids in 2004, up from 24 in 1998.
Surface Disposal	1	1,382	0%	
Incineration	80	88,520	25%	All ash from incineration of biosolids was landfilled.
<b>Total</b>	<b>373</b>	<b>182,005</b>	<b>52%</b>	

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: There were 27 composting facilities and 25 land application facilities in 2004, both down from 30 in 1998.
Class A EQ	88	135,071	38%	
Other Class A	0	-	0%	
Class B	59	34,127	10%	
Other (no data, etc.)	437	184,062	52%	
<b>Total</b>	<b>584</b>	<b>353,260</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES: This table includes the number of treatment systems. Some TWTDS use two different treatment systems in sequences, such as aerobic digestion followed by composting. Thus, the total count of TWTDS in this table is larger than the total number of TWTDS in the state. Some quantities are also double counted.  These use wet air oxidation.
Aerobic Digestion	215	36,131	
Digestion-anaer./other	145	216,254	
Lime/Alkaline	22	40,489	
Composting	60	41,208	
Thermal (not incineration)	15	62,526	
Long-term (lagoons, reed beds, etc.)			
Other	28	1,595	
Other	2	3,457	
Belt Filter Press	146	123,332	
Plate & Frame Press	23	10,362	
Screw Press	0	-	
Centrifuge	25	134,081	
Vacuum Filter	5	3,863	
Drying beds	112	5,937	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **North Carolina**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? North Carolina is planning to seek delegation from USEPA sometime in the future, when resources allow.

State agency regulating biosolids: The water/ wastewater portion of North Carolina's environmental agency regulates biosolids and utilizes individual state permits to regulate end use and disposal and land application sites.

Holder of liability: North Carolina does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? North Carolina does allow *Class B* biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done; it started recently. Haulers have to list the totals for each field and how much biosolids comes from each source; for example, small package plants combine to land apply on one field. One new project is going to use a tank and mix small amounts together before land application.

NPDES equivalent: NPDES permits do not always include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: approximately 4

Biosolids regulations updated: 1993.

Management practices: The management practices of North Carolina's biosolids regulations have been more restrictive than the federal Part 503 rule. The setback requirements are more extensive and more restrictive than 503 requirements. However, North Carolina's pathogen and vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. North Carolina requires additional monitoring at Class B land application sites, with annual soil tests required at all sites and groundwater monitoring at dedicated sites. Nitrogen is the basis for the agronomic loading rate for land application. North Carolina does not require formal nutrient management plans. North Carolina does not currently manage or control the application of phosphorus in biosolids.

In September, 2006, new regulations (NCA 15-2T) were passed that govern biosolids/residuals land application; these regulations are essentially the same as Part 503, but they still include setbacks, buffer zones, management practices, monitoring and reporting. Currently, industrial wastewater solids are included in the tracking of biosolids in North Carolina. The new rules require that even industries (animal processors, enzyme manufacturing) will have to meet vector and pathogen requirements, just like municipal biosolids. There are 5 or 6 surface disposal units for biosolids in the state – the environmental agency is working to phase out their use. Most of the biosolids land applied is liquid (Class A and B).

Additional Management Actions: North Carolina requires the following oversight and certification to occur at biosolids land application sites:



- Certification of biosolids land applicators who manage or implement land application programs.

It was not reported if biosolids management groups in North Carolina perform any additional monitoring, inspection, certification, or other actions voluntarily.

Acres applied: The number of acres to which biosolids were applied in North Carolina in 2004 was not reported. In 2004, 27 new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with BIMS (Basinwide Information Management System), which includes NPDES, wetlands, and other information for each river basin; biosolids information is just being added in, starting in 2004.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In North Carolina, development of, or changes to, state biosolids regulations is happening or is imminent and will likely have no significant effect on beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.

## **TRENDS**

No significant changes to biosolids management in North Carolina has occurred over the past few years, and none are expected in the near future.

Most significant current pressures on biosolids recycling:

1. Public health concerns, including a need for more documentation that the Class B pathogen and vector requirements are protective.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1995.

Number of full-time equivalent staff (FTEs) for septage program: 5

Septage haulers based in state (estimated): 500. Permits from the Division of Waste Management are required for hauling septage.

Septage management: Septage can be land applied if it meets part 503; a state permit is required. Training is being provided by the state. POTWs are not required to accept septage, but most larger municipal TWTDS do (often only from within their county).

Percentage of each management practice:

- Land applied = 60% (90% of grease trap waste), with Class B lime treatment.
- Hauled to TWTDS = 40% (this involves a cost for tipping fees; some counties have banned land application of septage).
- A few facilities compost septage, and a couple dewater, add lime, and then land apply the treated solids.

Other concerns: North Carolina considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. North Carolina does not have a proactive program to collect FOG and keep it out of the general wastewater flow. Individual towns and counties adopt their own proactive programs, but there is not one on the state level. County health departments inspect restaurants and grease traps – and are pretty rigorous – one inspection per quarter is required of restaurants.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: North Carolina

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	-	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	-	Paper	-	-
Cumulative Pollutant Loading Rates	Yes	-	-	Paper	-	-
How biosolids achieve Class A or B	Yes	-	-	Paper	-	-
How biosolids achieve Vector Attraction	Yes	-	-	Paper	-	-
Solids stabilization processes used	Yes	-	-	Paper	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	-	-	Paper	-	-

# North Carolina

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
8,540,468	48,710	175	5,472,128	45,268	0.022	0.7%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
122,384	123,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
132,964	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
457	55

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	1
Number of operating sludge incinerators:	4
Fluidized bed:	ND
Multiple hearth:	ND
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from EPA Region 4. They are a compilation of data from various TWTDS over several years (2002-2006), with no individual TWTDS counted twice. Additional data were obtained directly from individual TWTDS. Data compiled here represents approximately 55% of the total wastewater flow in the state, according to the EPA CWNS flow data for 2004.

**UNITS: Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	34	60,787	50%
Disposal	21	61,597	50%
Other	0	-	0%
<b>Total</b>	<b>55</b>	<b>122,384</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	33	60,567	49%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	1	220	0%
<b>Total</b>	<b>34</b>	<b>60,787</b>	<b>50%</b>
Long-term storage	0	-	0%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	17	29,952	24%
Surface Disposal	0	-	0%
Incineration	4	31,645	26%
<b>Total</b>	<b>21</b>	<b>61,597</b>	<b>50%</b>

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	7	21,114	17%	In the "Other" line are 7 TWTDS and 5,049 dmt that were beneficially used, but their Class A or B quality was not reported.
Other Class A	0	-	0%	
Class B	23	47,604	39%	
Other (no data, etc.)	26	53,667	44%	
<b>Total</b>	<b>56</b>	<b>122,385</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	some	no data	Incomplete data.
Digestion-anaer./other	many	no data	There are more anaerobic systems than aerobic ones in NC.
Lime/Alkaline	many	no data	A lot of smaller systems, and a few larger ones, use this method.
Composting	several	no data	1 private & 1 county preparer take from several TWTDS; other TWTDS compost own
Thermal (not incineration)	a few	no data	3 or 4; make Class A to sell or give away
Long-term (lagoons, reed beds, etc.)		no data	
Other		no data	
Belt Filter Press	most	no data	
Plate & Frame Press	a few	no data	The number of TWTDS using this technology is diminishing.
Screw Press		no data	
Centrifuge	several	no data	Used by several larger TWTDS.
Vacuum Filter	no longer many	no data	
Drying beds	a few	no data	Used by a few small TWTDS.
Other		no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **North Dakota**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? North Dakota is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of North Dakota's environmental agency regulates biosolids. The state's permitting system, if any, was not reported.

Holder of liability: No response provided.

More than one Class B biosolids on one site? No response provided.

NPDES equivalent: No response provided.

Number of full-time equivalent staff (FTEs) for biosolids program: No response provided.

Biosolids regulations updated: No response provided.

Management practices: The management practices of North Dakota's biosolids regulations are not more restrictive than the federal Part 503 rule. North Dakota does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application in North Dakota. North Dakota does require formal nutrient management plans. North Dakota does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: North Dakota does not require any additional oversight or certification to occur at biosolids land application sites. In North Dakota, no biosolids management groups perform any additional oversight or certification voluntarily.

Acres applied: No response provided.

Reporting and Record-keeping: EPA Region 8 compiles North Dakota information reported to EPA using the EPA Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In North Dakota, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management.

### **TRENDS**

No response was provided regarding trends in North Dakota.

Most significant current pressures on biosolids recycling: No response provided.

**TESTING AND REPORTING** No response provided.

### **SEPTAGE MANAGEMENT**

Septage regulations updated: 1979

Number of full-time equivalent staff (FTEs) for septage program: 0.2

Septage haulers based in state (estimated): 106

Septage management: Septage can be land applied if it meets Part 503 and additional state requirements. POTWs are not required to accept septage; the number of TWTDS that do accept septage was not reported.

Percentage of each management practice (estimated):

- Land applied = 80 %
- Hauled to TWTDS = 10 %
- Disposed of in Lagoons = 10 %

Other concerns: North Dakota considers fats, oils, and grease (FOG) to be a significant issue. North Dakota does not regulate the use and disposal of grease trap waste. North Dakota does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

# North Dakota

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
636,308	68,975	9	26,506,477	28,502	0.000	0.0%
<b>Total Biosolids Used or Disposed in 2005*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	7,797	<b>8,000</b>	11,435		4,810	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			284	3		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from EPA Region 8, and they include the largest (major) TWTDS in North Dakota. Data used is from 2005, which is considered representative of 2004.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	2	1,400	18%
Disposal	1	6,397	82%
Other	0	-	0%
<b>Total</b>	<b>3</b>	<b>7,797</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	2	1,400	18%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	0	-	0%
<b>Total</b>	<b>2</b>	<b>1,400</b>	<b>18%</b>
Long-term storage	0	-	0%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	1	6,397	82%
Surface Disposal	0	-	0%
Incineration	0	-	0%
	1	6,397	82%



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	0	-	0%
Other Class A	0	-	0%
Class B	3	7,797	100%
Other (no data, etc.)	0	-	0%
<b>Total</b>	<b>3</b>	<b>7,797</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	0	-
Digestion-anaer./other	3	7,797
Lime/Alkaline	0	-
Composting	0	-
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	1	-
Other	0	-
<b>Belt Filter Press</b>	<b>1</b>	<b>6,397</b>
Plate & Frame Press	0	-
Screw Press	0	-
Centrifuge	0	-
Vacuum Filter	0	-
Drying beds	2	6,397
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Ohio**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Ohio is delegated for the land application, landfill, and surface disposal portions of Part 503.

State agency regulating biosolids: The water/ wastewater portion of Ohio's environmental agency regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: Ohio does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Ohio does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Ohio is delegated for the NPDES program. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 2

Biosolids regulations updated: April 2002.

Management practices: The management practices of Ohio's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include additional and increased setbacks, Source Water Assessment and Protection (SWAP) area restrictions, and Class B signage requirements. Ohio's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Ohio requires additional monitoring at Class B land application sites, with soil, pH, and phosphorus monitored within past two years of land application. Nitrogen is the basis for the agronomic loading rate for land application. Ohio does not require formal nutrient management plans. Ohio uses test of available P in soil, along with a P index, to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Ohio requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

In Ohio, no biosolids management groups are known to perform any additional oversight or certification voluntarily.

Acres applied in 2004: Data not provided.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with Access and SWIMware (Surface Water Information Management System).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Ohio, use/disposal is being negatively impacted by development of, or changes to, state biosolids regulations and changes to state statute(s) regarding biosolids management. These activities are likely to have the effect of reducing beneficial use. An increase in landfill fees in Ohio will likely have an effect on beneficial reuse of biosolids. As of today, local units of government are allowed to

adopt ordinances that are more restrictive than state law. Although ordinances are allowed, this has not been an issue, and Ohio EPA does not believe there are any.

## **TRENDS**

The beneficial use of biosolids is not increasing in Ohio. Urban sprawl (loss of farmland) is the main reason why beneficial use is not increasing. It results in large hauling fees to reach less developed areas, more nuisance complaints, and tighter restrictions for frozen and snow covered ground land application.

Most significant current pressures on biosolids recycling:

1. Many POTWs find that it is cheaper to landfill than to land apply their sludge.
2. Neighbors who have issues with the odor or perceived threats to water.
3. Large factory farms have given nutrient application a “bad name” in Ohio.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: January, 2007.

Number of full-time equivalent staff (FTEs) for septage program: .01

Septage haulers based in state (estimated): 500

Septage management: The Ohio health department estimates that 20% -25% of the population relies on septic systems. Septage can be land applied if it meets Part 503. POTWs are not required to accept septage and the number that do was not reported.

Percentage of each management practice:

- Land applied = 40 %
- Hauled to TWTDS = 60 %

Other concerns: Although Ohio has the authority to regulate the disposal of grease trap waste, there are no specific rules pertaining to grease trap waste. According to Ohio EPA, Ohio does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Ohio

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	X		In accordance with testing schedule required by Part 503 based on tons of solids produced per calendar year.
Other metals (boron, silver...)	No	No			
Dioxins/furans	No	Yes			Annually for POTWs > 1 MGD and once per NPDES permit term for POTWs 0.1 to 1 MGD.
PCBs	No	Yes			Annually for POTWs > 1 MGD and once per NPDES permit term for POTWs 0.1 to 1 MGD.
Priority pollutants	No	No			
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No			
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No			
Nutrients (NPK)	No	Yes			
Pathogen reduction (Class A or B)	No	Yes			
Vector attraction reduction (VAR)	No	Yes			

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Annual report	Also NPDES permit at each permit specific frequency	Both		
Part 503 metals	Yes	Annual report	Also NPDES permit at each permit specific frequency	Both		
Other metals	No					
Dioxins/furans	Yes			Both		Annually for POTWs > 1 MGD and once per NPDES permit term for POTWs 0.1 to 1 MGD
PCBs	Yes			Both		Annually for POTWs > 1 MGD and once per NPDES permit term for POTWs 0.1 to 1 MGD
Priority pollutants	No					
Other organic compounds	No					
Radioactive isotopes	No					
Nutrients (N, P, K)	Yes	N only		Both		
Cumulative Pollutant Loading Rates	Yes	Annual report		Paper		
How biosolids achieve Class A or B	Yes	Annual report		Both		
How biosolids achieve Vector Attraction	Yes	Annual report		Both		
Solids stabilization processes used	No					
Other biosolids treatments	No					
End use/disposal practice	Yes					

# Ohio

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
11,450,143	40,948	280	11,424,499	69,620	0.028	0.9%

<b>Total Biosolids Used or Disposed in 2004*:</b>	From State Survey Q24	<b>Adjusted Estimate</b>	From Survey Q24	From CWNS
	323,695	<b>325,000</b>	216	780

<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24
	780	216

Total number of TWTDS sending to Separate Preparers in 2004: 0  
 Number of Separate Preparers: no data  
 Number of operating sludge incinerators: no data  
 Fluidized bed: no data  
 Multiple hearth: no data  
 Percent of population served by on-site (e.g. septic systems): 20 - 25%

**Estimates from other sources:**  
 Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004) 381,802  
 Dry tons, reported to BioCycle Survey (Goldstein, 2000) 400,000

NOTES: Data in these tables are from USEPA Region 5, National Association of Clean Water Agencies Financial Survey data, and the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

**UNITS: Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	118	158,056	49%	Mostly biosolids reported to USEPA Region 5 for which no information on method of use or disposal was provided.
Disposal	71	138,292	43%	
Other	27	27,347	8%	
<b>Total</b>	<b>216</b>	<b>323,695</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	116	120,480	37%	Includes some Class A and much Class B biosolids.
Forestland	0	-	0%	
Reclamation	0	-	0%	Includes Columbus compost.
Class A EQ Distribution	2	37,576	12%	
<b>Total</b>	<b>118</b>	<b>158,056</b>	<b>49%</b>	
Other	27	27,347	8%	See note next to "Other" above.
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	63	56,941	18%	
Surface Disposal	6	2,803	1%	
Incineration	2	78,548	24%	
	71	138,292	43%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	37,576	12%
Other Class A	no data	20,023	6%
Class B	116	100,457	31%
Other (no data, etc.)	90	165,639	51%
<b>Total</b>	<b>208</b>	<b>323,695</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	11	2,536	NOTES: Incomplete data
Digestion-anaer./other	4	5,624	
Lime/Alkaline	1	1,653	
Composting	7	28,358	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	5	39,463	
Other	0	-	
Belt Filter Press	6	5,233	
Plate & Frame Press	1	175	
Screw Press	0	-	
Centrifuge	2	66,247	
Vacuum Filter	1	108	
Drying beds	12	6,104	
Other	0	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Oklahoma**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Oklahoma is delegated for the full rule 40 CFR Part 503 (as of November 19, 1996).

State agency regulating biosolids: The water/ wastewater portion of Oklahoma's environmental agency, the Oklahoma Department of Environmental Quality (DEQ), regulates biosolids and utilizes specific NPDES type permits to regulate biosolids end use, land fill disposal, and land application.

Holder of liability: Oklahoma does not allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Oklahoma does not generally allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. However, a land applicator who owns or operates more than one source facility or surface impoundment may utilize the same land application site for the application of biosolids from the multiple facilities or impoundments with prior written approval from DEQ.

NPDES equivalent: OPDES is the state equivalent to NPDES. All OPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1

Biosolids regulations updated: June 2005.

Management practices: The management practices of Oklahoma's biosolids regulations are more restrictive than the federal Part 503 rule. There is no surface disposal allowed in Oklahoma (see Title 252, Department Of Environmental Quality, Chapter 606, Oklahoma Pollutant Discharge Elimination System Standards Subchapter 9). Oklahoma's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Oklahoma does not require additional monitoring at Class B land application sites. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Oklahoma does not require formal nutrient management plans, however, annual biosolids land application rates cannot exceed nitrogen and phosphorus rates for the crop grown and cannot be applied in rates that result in phytotoxicity.

Additional Management Actions: Oklahoma does not require additional oversight and certification to occur at biosolids land application sites. There was no report of biosolids managers performing any additional oversight or certification voluntarily.

Acres applied in 2004: No data provided. In 2004, 5 new site permits/approvals were issued.

Reporting and Record-keeping: Only major facilities are required to report biosolids information and data (sludge DMR). All facilities must keep biosolids records. Biosolids permits and records are stored at DEQ in the central records section and are open to the public. An electronic biosolids database was being developed in 2006 to store biosolids information.

Legislative, regulatory, or other activity impacting biosolids use/disposal: No new restrictions at this time.

### **TRENDS**

Beneficial use has not changed much in the past few years.



Most significant current pressures on biosolids recycling:

1. Phosphorus levels.
2. Odor.
3. Scenic river watersheds.
4. More facilities are producing Class A compost.

**SEPTAGE MANAGEMENT**

Septage regulations updated: 2001.

Number of full-time equivalent staff (FTEs) for septage program: 1

Septage haulers based in state (estimated): 147

Septage management: Septage can be land applied if it meets Part 503 requirements - domestic septage must maintain a pH of 12 for 30 minutes. POTWs are not required to accept septage, but many do.

Percentage of each management practice:

- Land applied = 5%
- Hauled to TWTDS = 95%

Other concerns: The use and disposal of grease trap waste falls under the industrial waste rules, which serve to help keep FOG out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Oklahoma

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	No	-	-	-	-
Dioxins/furans	No	-	-	-	-
PCBs	No	Yes	-	Every year.	-
Priority pollutants	No	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	TCLP performed every 5 years
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	Yes	Yes	-	-	-
Pathogen reduction (Class A or B)	Yes	Yes	-	-	-
Vector attraction reduction (VAR)	Yes	Yes	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Electronic	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	Paper	No	-
Dioxins/furans	-	-	-	-	No	-
PCBs	Yes	-	-	Paper	No	-
Priority pollutants	No	-	-	-	No	-
Other organic compounds	No	-	-	Paper	No	-
Radioactive isotopes	No	-	-	Paper	No	-
Nutrients (N, P, K)	-	-	-	-	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	Yes	Yes	-	Paper	No	-
Other biosolids treatments	Yes	Yes	-	Paper	No	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

# Oklahoma

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
3,523,546	68,667	51	14,843,357	61,779	0.004	0.1%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	52,753	<b>53,000</b>	73,204		70,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			493	59		
Total number of TWTDS sending to Separate Preparers in 2004:			no data			
Number of Separate Preparers:			no data			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			30%			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: All biosolids use and disposal data in these tables was provided by EPA Region 6. This is for major facilities only, and only for those that reported to EPA Region 6 in 2004. These account for 77% of flow (compared to CWNS data for 2004) and 53% of the state population.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	35	40,043	76%	
Disposal	24	12,710	24%	
Other	0	-	0%	
<b>Total</b>	<b>59</b>	<b>52,753</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Agricultural	33	36,282	69%	NOTES:  Both are Class A compost operations.
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	2	3,761	7%	
<b>Total</b>	<b>35</b>	<b>40,043</b>	<b>76%</b>	
Long-term storage	0	-	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	24	12,710	24%	
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
<b>Total</b>	<b>24</b>	<b>12,710</b>	<b>24%</b>	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	3,761	7%
Other Class A	0	-	0%
Class B	33	36,282	69%
Other (no data, etc.)	24	12,710	24%
<b>Total</b>	<b>59</b>	<b>52,753</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	2	-	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

NOTES:

Class A compost operations.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Oregon**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Oregon is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Oregon's environmental agency regulates biosolids and utilizes specific NPDES and state Water Pollution Control Facility permits issued to TWTDS to regulate end use and disposal, as well as site specific authorization letters to regulate land application sites.

Holder of liability: Oregon does allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use; however, there are no cases at present time.

More than one Class B biosolids on one site? Oregon does not allow *Class B* biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Oregon is delegated for NPDES. All permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 2

Biosolids regulations updated: July 1995.

Management practices: Oregon's state biosolids regulations are somewhat more restrictive than Part 503, because of somewhat more restrictive management practices. However, pathogen and vector attraction reduction requirements and pollutant limits are not more restrictive than Part 503. Oregon requires additional monitoring at Class B land application sites, with soil tests at land application sites, such as for carryover NO<sub>3</sub>-N, and for groundwater on a case-by-case basis (depending on the depth to groundwater). Nitrogen is the basis for the agronomic loading rate for land application. Oregon does not require formal nutrient management plans. Oregon does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Oregon does not require any additional oversight actions; however, there is a recommendation (in policy) that Class A biosolids be tested for presence of pathogens if three weeks or more have elapsed since processing; some biosolids management programs voluntarily do this.

Acres applied in 2004: Data not provided.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports in person from the state agency. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: Urban sprawl and some public concern about biosolids are occurring in Oregon. These activities have no significant affect on beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.

## **TRENDS**

The beneficial use of biosolids is not increasing in Oregon. Oregon has, for many years, implemented a viable land application program. Production of biosolids may be slightly increasing, but overall beneficial use has not changed in the last few years.

Most significant current pressures on biosolids recycling:

1. Urban Sprawl – availability, near cities, of land for land application.
2. Concerns with PPCP's, emerging pollutants, etc.
3. Perceived health risks with land application.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: July 1995.

Number of full-time equivalent staff (FTEs) for septage program: 0.5

Septage haulers based in state (estimated): 157

Septage management: Septage can be land applied, but must be screened and alkaline stabilized. POTWs are not required to accept septage. The number of TWTDS accepting septage is 54.

Percentage of each management practice: Data on management practices are required to be reported, but it is not easy to summarize, as data is not available electronically.

Other concerns: Oregon considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Oregon has a proactive program to collect FOG and keep it out of the general wastewater flow. There are educational efforts through the Oregon Association of Clean Water Agencies.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Oregon

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	Yes	Yes	-	-	-
Dioxins/furans	No	-	-	-	-
PCBs	No	-	-	-	-
Priority pollutants	No	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	Yes	Yes	-	Same as other mon. reqs. for 503	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	Yes	Yes	-	Paper	No	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Same as rep.reqs. for 503	Paper	No	-
Cumulative Pollutant Loading Rates	-	-	-	-	-	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	-	Permit reqs by rule	Paper	No	-

# Oregon

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
3,591,363	95,996	37	5,417,387	30,305	0.011	0.4%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
60,677	61,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
80,759	50,000

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
213	42

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	29%

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. There are 200+ small TWTDS in Oregon that produce minimal biosolids and may not remove any from lagoons or other storage for many years.

**UNITS: Dry U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	38	57,103	94%
Disposal	4	3,574	6%
Other	0	-	0%
<b>Total</b>	<b>42</b>	<b>60,677</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	35	55,000	91%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	3	2,103	3%
<b>Total</b>	<b>38</b>	<b>57,103</b>	<b>94%</b>
Long-term storage	0	-	0%

### NOTES:

Likely more than 35 TWTDS in Oregon land applied biosolids to agricultural lands in 2004. The data in this table, from a 2005 Oregon Association of Clean Water Agencies survey, included 36 TWTDS and accounted for 87% of the estimated total ~60,000 dry U.S. tons of biosolids generated in the state. The three Class A biosolids products were produced by Grants Pass, McMinnville, and Newburg.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	4	3,574	6%
Surface Disposal	0	-	0%
Incineration	0	-	0%
<b>Total</b>	<b>4</b>	<b>3,574</b>	<b>6%</b>

### NOTES:

Dallas and Florence biosolids were landfilled; Medford and Klamath Falls biosolids were used as daily cover.

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	3	2,103	3%
Other Class A	0	-	0%
Class B	35	55,000	91%
Other (no data, etc.)	0	3,574	6%
<b>Total</b>	<b>38</b>	<b>60,677</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	1	698	NOTES: McMinnville has an ATAD process.
Digestion-anaer./other	0	-	
Lime/Alkaline	0	-	Grants Pass and Newburg
Composting	2	1,405	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	no data	-	The 2005 ACWA survey found that 43,180 dry U.S. tons of biosolids were dewatered by belt filter press or centrifuge.
Other	no data	-	
Belt Filter Press	no data	approximately 21,590	
Plate & Frame Press	no data	-	
Screw Press	no data	-	
Centrifuge	no data	approximately 21,590	
Vacuum Filter	no data	-	
Drying beds	no data	7,064	
Other	no data	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Pennsylvania**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Pennsylvania is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Pennsylvania's environmental agency permits and oversees the biosolids treatment, final product quality, and land application of biosolids. The solid waste program permits biosolids processing activities that occur outside the wastewater treatment plant. The biosolids regulations are written under the solid waste program. Land application is permitted under a general permit issued separate from NPDES permits. In most cases, no site permit is issued. Biosolids land application sites are "registered" under the facility that utilizes them.

Holder of liability: Pennsylvania does not allow land appliers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Pennsylvania does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is actually being done, but the number of sites on which it happens was not reported.

NPDES equivalent: Pennsylvania is delegated for NPDES. All permits do not include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 8

Biosolids regulations updated: January 1997.

Management practices: The management practices of Pennsylvania's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include: soil analyses for regulated pollutants and pH; farm conservation plan or erosion and sedimentation control plan; setback requirements for surface water, homes, public and private wells, depth to groundwater, and property lines; and slope restrictions. Pennsylvania's pathogen and/or vector attraction reduction limits are not more restrictive than the federal requirements. Pennsylvania has more restrictive pollutant (trace metals, etc.) limits. Pennsylvania does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Pennsylvania does not require formal nutrient management plans. Pennsylvania does not manage or control the application of phosphorus in biosolids, although use of a P index is recommended.

Additional Management Actions: Pennsylvania requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land appliers who manage or implement land application programs. Pennsylvania requires all land appliers take the biosolids 101 training course.
- Other requirements or actions to control odors at land application sites. General Permits contain language that allows DEP to take action should a facility have persistent and documented public nuisance problems.
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing. There is no regulation, but it is often required as part of the facility's sampling plan.

In Pennsylvania some biosolids management groups perform the following oversight and certification voluntarily:

- Independent inspections or monitoring at land application sites.
- Certification of biosolids land applicators who manage or implement land application programs.
- Other requirements or actions to control odors at land application sites (land applicators or facilities try and address odor problems if they arise).
- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

Acres applied in 2004: Data not provided.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are not compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Pennsylvania, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law. Though many municipalities adopt ordinances, they cannot be more restrictive than state law; the state solid waste management act preempts local regulation. However, the number of more restrictive ordinances in Pennsylvania is increasing slowly. At least one town has had its overly restrictive ordinance overturned by a court challenge. There is ongoing controversy about this in some parts of the state.

## **TRENDS**

The beneficial use of biosolids is not increasing in Pennsylvania. Tonnages being reported to EPA Region 3 for land application have been slowly declining over the past seven years. The pressures noted below are the likely cause. However, the number of facilities permitted in PA for beneficial use has not changed significantly.

Most significant current pressures on biosolids recycling:

1. Odor.
2. Public health concerns.
3. Lack of current research on new chemicals entering biosolids and their potential health effects.
4. Desire to increase local involvement / local regulation

## **SEPTAGE MANAGEMENT**

Septage regulations updated: January, 1997.

Number of full-time equivalent staff (FTEs) for septage program: ~2 (regional biosolids coordinators also deal with the septage program)

Septage haulers based in state (estimated): 537 registered, although there are more that are unregistered, even though the state requires registration

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirement: all septage must be treated prior to land application. The typical treatment is lime stabilization (30 minutes at pH 12). POTWs are not required to accept septage;

however, at least 19 TWTDS do (10 in southwest region and 9 in south-central region; the other four regions of the state did not report).

Percentage of each management practice:

- Land applied: in north-central region: 5,572,668 gallons; in southwest region: 1,773,560 gallons; in south-central region: 17.8 million gallons
- Hauled to TWTDS, disposed of in lagoons, sent to other septage-only treatment facility, and composted – data is not compiled and available

Other concerns: Pennsylvania considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the residual waste rules.

**PA Biosolids Management Practices Compared to the Federal Part 503 Biosolids Rule**

The following requirements are for biosolids that **do not** meet the PA Exceptional Quality Biosolids Standards (Class A pathogen reduction, high quality Table 3 metals, and VAR treatment option).

<b>Pennsylvania Requirements</b>	<b>Federal Requirements</b>
Background soil analyses for regulated pollutants and pH	No requirement
Implemented farm conservation plan or E&S control plan	No requirement
<i>Biosolids cannot be land applied within:</i>	
100 feet (30.5 meters) of a perennial stream	33 feet (10 meters) from waters of US
33 feet (10 meters) of an intermittent stream	33 feet (10 meters) from waters of the US
100 (30.5 meters) feet from edge of sinkhole	No requirement
300 feet (91 meters) of an occupied dwelling	No requirement
300 feet (91 meters) of a water source	No requirement
100 (30.5 meters) feet of an exceptional value wetland	33 (10 meters) feet
11 inches (28 centimeters) of a seasonal high water table	No requirement
3.3 feet (1 meter) of the regional groundwater table	No requirement
<i>Biosolids may not be applied on:</i>	
Agricultural land with slopes greater than 25%	No requirement
Land reclamation sites with slopes greater than 35%	No requirement
Sites where the soil pH is less than 6.0 unless soil pH is adjusted to 6.0 using biosolids or other amendment.	No requirement

<i>Notification Requirements</i>	
Notify all adjacent landowners 30 days prior to 1 <sup>st</sup> time site is used for biosolids	No requirement
Notify DEP and County Conservation District 30 day prior to 1 <sup>st</sup> time site is used for biosolids	No requirement
Signed landowner consent form	No requirement

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Pennsylvania

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	And/or State regulation, permit condition or sampling plan	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	Yes	Yes	Yes	And/or state regulation, permit condition or sampling plan	-
Priority pollutants	No	No	-	Voluntary can use priority pollutants for hazardous waste determination in lieu of TCLP	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	-	Sampling plan, normally on same frequency as 503	-
Pathogen reduction (Class A or B)	No	Yes	Yes	Written into facility's sampling plan, may sample more frequently	-
Vector attraction reduction (VAR)	No	Yes	Yes	Written into facility's sampling plan, may sample more frequently	-



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Annual report	Paper	No	-
Part 503 metals	Yes	-	Annual report	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	Yes	-	Annual report	Paper	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Annual report	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	-	Annual report	Paper	No	-
How biosolids achieve Class A or B	Yes	-	Annual report	Paper	No	-
How biosolids achieve Vector Attraction	Yes	-	Annual report	Paper	No	-
Solids stabilization processes used	?	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	-	Annual report	Paper	No	-

# Pennsylvania

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
12,394,471	44,816	277	5,120,685	52,365	0.059	2.0%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	304,000	<b>304,000</b>	329,549		307,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			856	640		
Total number of TWTDS sending to Separate Preparers in 2004:			no data			
Number of Separate Preparers:			no data			
Number of operating sludge incinerators:			8			
Fluidized bed:			no data			
Multiple hearth:			no data			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry U.S. Tons</b>			

NOTES: Data in these tables are from Elliott et al. (2005, and personal communications) and the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. Elliott et al. directly contacted the largest 55 TWTDS (which represent ~74% of total wastewater flow in the state), as well as estimating from CWNS data. EPA Region 3, which tracks major facilities (> 1 MGD), totaled 275,155 dry U.S. tons in 2004. Its calculations for the volumes and percentages of various methods of use and disposal corroborate the Elliott et al. data presented here. An estimated 30% of <1 MGD facilities transport solids to another TWTDS for handling & disposal, according to Elliott et al.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	159	116,736	38%	
Disposal	481	187,264	62%	
Other	0	-	0%	
Total	640	304,000	100.00%	
<b>Beneficial Use</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	134	106,736	35%	Most beneficially used Class A & B biosolids go to agricultural and reclamation uses.
Forestland	0	-	0%	
Reclamation	15	7,000	2%	
Class A EQ Distribution	10	3,000	1%	
Total	159	116,736	38%	
Long-term storage	0	-	0%	
<b>Disposal</b>				
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	473	141,056	46%	Incinerators are: Pittsburgh, Erie, Chester, Wyoming Valley, Upper Moreland, Tyrone, Norristown, Hatfield. EPA Region 3 data indicate there are at least 12 TWTDS that incinerate biosolids.
Surface Disposal	0	-	0%	
Incineration	8	46,208	15%	
Total	481	187,264	62%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	16	25,000	8%	According to Elliott (personal communications), about 1/3 of facilities producing Class A biosolids do so by each of the following methods: composting, advanced lime treatment, and heat drying. In addition, there is one vermicompost operation (the only one in the U. S.).
Other Class A	0	-	0%	
Class B	143	91,736	30%	
Other (no data, etc.)	481	187,264	62%	
Total	640	304,000	100%	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	57	8,736	Data in this table are for only 3 of 6 regions (north-central, south-central, southwest), but include the most populated regions in the state.
Digestion-anaer./other	11	4,904	
Lime/Alkaline	28	23,672	
Composting	4	2,039	
Thermal (not incineration)	4	6,037	
Long-term (lagoons, reed beds, etc.)	1	61	
Other	2	-	
Belt Filter Press	36	28,310	
Plate & Frame Press	2	849	
Screw Press	0	-	
Centrifuge	8	9,587	
Vacuum Filter	0	-	
Drying beds	4	12	
Other	1	-	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Rhode Island**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Rhode Island is not planning to seek delegation from the USEPA for part 503.

State agency regulating biosolids: The water/ wastewater portion of Rhode Island's environmental agency regulates biosolids and uses specific NPDES type permits to regulate biosolids use and disposal. Class B biosolids are not currently applied to land in Rhode Island, but to do so would require a site permit. There are two facilities that make Class A biosolids for general use; all others send their solids to incinerators or landfills in and out of state.

Holder of liability: Rhode Island does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Class B land application is not occurring in Rhode Island at this time.

NPDES equivalent: RIPDES. Not all RIPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.5

Biosolids regulations updated: April 1997.

Management practices: The management practices of Rhode Island's biosolids regulations are more restrictive than the federal Part 503 rule. Rhode Island's pathogen and/or vector attraction reduction limits are not more restrictive than Part 503. Rhode Island's pollutant (trace metals, etc.) limits are more restrictive: the state high quality limit for copper is 840 (compared to EPA's 1500) mg/kg and the state has a standard and high quality limit of 75 mg./kg for molybdenum. Rhode Island would not require additional monitoring at Class B land application sites, if Class B land application was occurring. Nitrogen is the basis for the agronomic loading rate for land application. Rhode Island does require formal nutrient management plans. Rhode Island does not specifically manage or control the application of phosphorus in biosolids (although nutrient management includes addressing P).

Additional Management Actions: Rhode Island requires the following oversight and certification to occur at biosolids land application sites: Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

Acres applied: Class B land application is not occurring in Rhode Island and there were no site permits issued in 2004; the uses of Class A products are not tracked.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. Because little biosolids are treated by any method other than incineration, data is not comprehensively compiled electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Rhode Island, there are no legislative or regulatory activities imminent that would affect biosolids management trends. There has been no issue of local units of government adopting ordinances that are more restrictive than state law, and it is assumed that none have done so.

## **TRENDS**

The beneficial use of biosolids is not increasing in Rhode Island. There are currently no new Class A EQ processing facilities planned.

### Most significant current pressures on biosolids recycling:

1. Availability of regional incineration facilities, which allows for easy, traditional disposal.
2. Public perception of beneficial uses of biosolids.
3. Improper use of EQ biosolids by the public.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Rhode Island does not have septage regulations. The Department of Environmental Management's Office of Waste Management (solid waste) regulates the licensing of septage haulers under its hazardous waste regulations.

Number of full-time equivalent staff (FTEs) for septage program: 0

Septage haulers based in state (estimated): approximately 60

Septage management: Septage cannot be land applied in Rhode Island. POTWs are not required to accept septage; however, 14 TWTDS do.

Percentage of each management practice: 100% is hauled to TWTDS

Other concerns: Rhode Island considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the solid/hazardous waste rules. Rhode Island does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

# Rhode Island

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,079,916	1,044	1,034	23,506	688	1.170	39.0%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24 27,433	<b>Adjusted Estimate</b> 27,500	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
			26,904		28,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS 20	From Survey Q24 22		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			2			
Fluidized bed:			1			
Multiple hearth:			1			
Percent of population served by on-site (e.g. septic systems):						
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	2	2,001	7%
Disposal	20	25,432	93%
Other	0	-	0%
<b>Total</b>	<b>22</b>	<b>27,433</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	0	-	0%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	2	2,001	7%
<b>Total</b>	<b>2</b>	<b>2,001</b>	<b>7%</b>
Long-term storage	0	-	0%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	4	1,016	4%
Surface Disposal	0	-	0%
Incineration	16	24,416	89%
<b>Total</b>	<b>20</b>	<b>25,432</b>	<b>93%</b>

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	2,001	7%
Other Class A	0	-	0%
Class B	0	-	0%
Other (no data, etc.)	20	25,432	93%
<b>Total</b>	<b>22</b>	<b>27,433</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	0	-
Digestion-anaer./other	0	-
Lime/Alkaline	4	781
Composting	2	2,001
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	0	-
Other	0	-
<b>Belt Filter Press</b>	<b>6</b>	<b>10,920</b>
Plate & Frame Press	0	-
Screw Press	0	-
Centrifuge	3	10,073
Vacuum Filter	0	-
Drying beds	0	-
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **South Carolina**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? South Carolina is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The water/ wastewater portion of South Carolina's environmental agency regulates biosolids and utilizes a sludge supplement to a NPDES permit to regulate end use and disposal and land application sites.

Holder of liability: South Carolina does not allow land applicators or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? South Carolina does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: South Carolina is delegated for NPDES. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1

Biosolids regulations updated: December 2003.

Management practices: The management practices of South Carolina's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include soil sampling requirements, odor control requirements, and buffer zone requirements. South Carolina's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. South Carolina requires additional monitoring at Class B land application sites, with soil tests required for nitrates, ammonia, pH, phosphorus, potassium, calcium, and magnesium. Nitrogen is the basis for the agronomic loading rate for land application. South Carolina does not require formal nutrient management plans. South Carolina does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: South Carolina requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.

In South Carolina, it is not known if biosolids management groups perform any oversight and certification voluntarily.

Acres applied in 2004: Data not available.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. South Carolina does not compile their data electronically.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In South Carolina, development of, or changes to, state biosolids statutes is happening or is imminent, but will likely have no significant effect on beneficial use. An increase in public concern regarding biosolids will likely reduce beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law.



## **TRENDS**

The beneficial use of biosolids is increasing in South Carolina, because farmers consider biosolids as free fertilizer.

### Most significant current pressures on biosolids recycling:

1. Negative reaction from uniformed general public (re. biosolids land application in general).
2. Negative reaction from uniformed general public (re biosolids land application in SC from sources outside of the state).
3. Odor concerns during land application.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: December 2003

Number of full-time equivalent staff (FTEs) for septage program: 0.1

Septage haulers based in state (estimated): 240

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage, but most will accept it from with their surrounding areas.

### Percentage of each management practice:

- Land applied = 10 %
- Hauled to TWTDS = 90 %

Other concerns: South Carolina considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the solid waste rules. South Carolina has a proactive program to collect FOG and keep it out of the general wastewater flow. South Carolina requires that FOG be disposed of at landfills.

## **ADDITIONAL RESOURCES**

<http://www.scdhec.gov/environment/water/sludgepage.htm>

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: South Carolina

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	-
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	Yes	Yes	Yes	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	-	-	-	-
Nutrients (NPK)	Yes	Yes	Yes	-	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	Yes	Yes	-	Paper	No	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	Yes	Yes	-	Paper	No	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	Yes	Yes	-	Paper	No	-
End use/disposal practice	Yes	Yes	-	Paper	No	-

## South Carolina

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
4,197,892	30,109	139	2,270,084	19,450	0.022	0.7%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	37,364	<b>49,000</b>	95,176		no data	

<b>Total Number of TWTDS in 2004**:</b>	From CWNS	From Survey Q24
	173	32

Total number of TWTDS sending to Separate Preparers in 2004:	no data
Number of Separate Preparers:	6
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from USEPA Region 4 and is incomplete. They are from a compilation of years (2002-2006), with no facility counted more than once, and include data from all of the state's largest TWTDS. The data compiled accounts for ~46% of centralized wastewater flow in the state. The Adjusted Estimate is calculated by extrapolating upward to account for ~70% of flow.

**UNITS: Dry Metric Tons**

### Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	15	14,063	38%
Disposal	17	23,301	62%
Other	0	-	0%
<b>Total</b>	<b>32</b>	<b>37,364</b>	<b>100.00%</b>

#### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	14	14,035	38%
Forestland	1	28	0%
Reclamation	0	-	0%
Class A EQ Distribution	0	-	0%
<b>Total</b>	<b>15</b>	<b>14,063</b>	<b>38%</b>
Long-term storage	0	-	0%

#### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	15	20,419	55%
Surface Disposal	1	4	0%
Incineration	1	2,878	8%
	17	23,301	62%

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES: Data collected shows 8 TWTDS that send 7,153 dry metric tons to beneficial uses, but it is unclear if they are class A or B, so they are listed here in the row "Other."
Class A EQ	2	2,813	8%	
Other Class A	0	-	0%	
Class B	5	4,096	11%	
Other (no data, etc.)	25	30,454	82%	
<b>Total</b>	<b>32</b>	<b>37,363</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **South Dakota**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? South Dakota is delegated for the full Rule 40 CFR Part 503.

State agency regulating biosolids: The water/ wastewater portion of South Dakota's Department of Environment and Natural Resources regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal and land application sites.

Holder of liability: South Dakota does not allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? South Dakota does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent South Dakota is delegated to implement the NPDES program. All Surface Water Discharge permits issued by the state contain a paragraph addressing biosolids use or disposal, which includes a statement that prohibits the removal or disposal of biosolids without prior state approval. The state issues individual Biosolids Management permits to all facilities that routinely produce and dispose of biosolids.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.5

Biosolids regulations updated: October 2001.

Management practices: South Dakota's biosolids regulations are somewhat more restrictive than the federal Part 503 rule, because of a few more restrictive management practices. However, South Dakota's requirements for pathogen and vector attraction reduction and its limits on pollutants are not more restrictive. South Dakota requires additional monitoring at Class B land application sites. There is deep soil sampling required if the site is over a shallow aquifer. There is also additional plant testing and groundwater monitoring at old surface disposal sites. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. South Dakota does not require formal nutrient management plans. South Dakota manages or controls the application of phosphorus (P) in biosolids with a permit requirement that prohibits land application if the amount of P is over a certain limit.

Additional Management Actions: SD requires all facilities that generate and land apply biosolids to be covered under a permit. All permittees perform routine self-monitoring at biosolids land application sites and during land application; this includes maintaining an inspection notebook detailing land application activities. There are no known additional management and oversight activities performed voluntarily by those managing biosolids.

Acres to which biosolids were applied in 2004 is not known. South Dakota currently only permits the POTWs, not land application sites (however, POTWs must maintain biosolids management plans, including tracking acreage to verify biosolids are applied at the agronomic rate – but this information is not regularly reported to the state).

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with the EPA Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In South Dakota, there are no legislative or regulatory activities happening or imminent impacting biosolids. South Dakota has not had an issue of local units of government adopting ordinances that are more restrictive than state law.

## **TRENDS**

The beneficial use of biosolids is increasing in South Dakota. The state received delegation of the biosolids program in 2002. Before then, when EPA was implementing the program in the state, they had approximately 18 facilities permitted. There are several minor facilities in the state that generated and land applied biosolids that were not permitted by EPA and were not counted. In addition, the city of Milbank will be switching from a surface disposal site to land application (the state is requiring this change based on ground water concerns at the surface disposal site). Rapid City switched to a Class A composting process, which composts municipal solid waste with biosolids; because the final material is derived from biosolids, it all counts as biosolids now (including the solid waste portion).

Most significant current pressure on biosolids recycling: Odor complaints.

## **SEPTAGE MANAGEMENT**

There is currently no formal septage regulatory program at the state level; DENR involvement is compliance-based.

Septage regulations updated: there are none

Number of full-time equivalent staff (FTEs) for septage program: 0

Septage haulers based in state (estimated): not known

Septage management: Septage can be land applied in accordance with the federal Part 503 regulations. POTWs are not required to accept septage, however, 2 or 3 do.

Percentage of each management practice: not known

Other concerns: South Dakota does not have any special program addressing fats, oils, and grease (FOG).

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: South Dakota

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	-	-	-	-	-
Dioxins/furans	-	-	-	-	-
PCBs	-	-	-	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	-	-	-	-
Nutrients (NPK)	-	Yes	Yes	-	-
Pathogen reduction (Class A or B)	-	Yes	Yes	-	-
Vector attraction reduction (VAR)	-	Yes	Yes	-	-



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Both	Yes	BDMS Summary Attached
Part 503 metals	Yes	Yes	-	Both	-	-
Other metals	-	-	-	-	-	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Paper	-	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	-	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	-	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	-	-
Solids stabilization processes used	-	-	-	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Both	-	-

# South Dakota

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
770,621	75,884	10	20,318,036	28,110	0.000	0.0%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24		Adjusted Estimate	Estimates from other sources:	
	From State Survey Q24	Adjusted Estimate		Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
	9,419	9,500		12,466	20,000

Total Number of TWTDS in 2004**:	From CWNS		From Survey Q24	
	From CWNS	Adjusted Estimate	From Survey Q24	Adjusted Estimate
	18	30		
Total number of TWTDS sending to Separate Preparers in 2004:		0		
Number of Separate Preparers:		0		
Number of operating sludge incinerators:		0		
Fluidized bed:		0		
Multiple hearth:		0		
Percent of population served by on-site (e.g. septic systems):		25%		

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. Some TWTDS utilize more than one method of use and disposal, which results in an overcounting of the total number of TWTDS.

UNITS: Dry Metric Tons

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	18	5,832	62%
Disposal	7	1,259	13%
Other	5	2,328	25%
Total	30	9,419	100.00%

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	16	5,169	55%
Forestland	0	-	0%
Reclamation	1	156	2%
Class A EQ Distribution	1	507	5%
Total	18	5,832	62%
Long-term storage	5	2,328	25%

NOTES:

Some facilities store some biosolids prior to use. For example, Brookings and Sioux Falls have anaerobic digestion followed by air-drying in lagoons. Sioux Falls stores some biosolids in this way, but also land applies some immediately post-digestion.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	5	614	7%
Surface Disposal	2	645	7%
Incineration	0	-	0%
	7	1,259	13%

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	1	507	5%
Other Class A	0	-	0%
Class B	17	5,325	57%
Other (no data, etc.)	0	3,587	38%
<b>Total</b>	<b>18</b>	<b>9,419</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	7	649
Digestion-anaer./other	11	2,987
Lime/Alkaline	0	-
Composting	1	507
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	4	239
Other	0	-
Belt Filter Press	2	233
Plate & Frame Press	0	-
Screw Press	0	-
Centrifuge	3	665
Vacuum Filter	0	-
Drying beds	9	239
Other	0	-

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Tennessee**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Tennessee is not planning to seek delegation from the USEPA for Part 503.

State agency regulating biosolids: The water/ wastewater portion of Tennessee's environmental agency regulates biosolids and utilizes general NPDES type permits to regulate end use and disposal. The state does not require any formal site permits, but a site approval letter is required; this letter requires compliance with state guidelines and may include special, site-specific provisions.

Holder of liability: Tennessee does not allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Tennessee does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Tennessee was delegated for NPDES primacy in 1977. All municipal NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 3

Biosolids regulations updated: June 2001

Management practices: The management practices of Tennessee's biosolids regulations are more restrictive than the federal Part 503 rule. These rules include additional buffers/ setbacks. Tennessee's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Tennessee does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Tennessee does not require formal nutrient management plans, but agronomic rates are reviewed and audited. Tennessee does not manage or control the application of phosphorus in biosolids.

Additional Management Actions: Tennessee does not require any additional oversight or certification to occur at biosolids land application sites. In Tennessee, some biosolids management groups perform the following oversight and certification voluntarily:

- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing.

Acres applied: In 2004, biosolids were applied to a total of about 16,000 acres. In 2004, 150 new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency or from the EPA regional office. The data and reports are compiled electronically with Access.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Tennessee, use/disposal is being impacted by development of, or changes to, state biosolids regulations and changes to state statute(s) regarding biosolids management. These activities are likely to have the effect of reducing beneficial use. Development of, or changes to local (county, municipal) biosolids ordinances/regulations are happening, but will likely have no significant affect on

beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, but none have done so.

## **TRENDS**

The beneficial use of biosolids is decreasing in Tennessee. Landfill tipping fees are relatively low, so more and more generators are opting for landfill disposal over land application.

### Most significant current pressures on biosolids recycling:

1. Public perception (human waste – NIMBY).
2. Odor – damage to property value and quality of life
3. TMDLs
4. Poor terrain (karst) – concerns about direct connection to groundwater

## **SEPTAGE MANAGEMENT**

Septage regulations updated: January 2006 (they are updated every year)

Number of full-time equivalent staff (FTEs) for septage program: There are 100 – 120 FTE working on septic systems and septage, but almost all are addressing installation and design of septic systems. Septage is mostly dealt with at the county level, and most is taken to POTW's. There are less than 10 septage land application sites, and the FTE working on the septage end is maybe 1 FTE.

Septage haulers based in state (estimated): 60

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage, but most, if not all, do.

### Percentage of each management practice:

- Land applied = 5%
- Hauled to TWTDS = 95%

Other concerns: Tennessee considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Tennessee has a proactive program to collect FOG and keep it out of the general wastewater flow. All commercial establishments that might generate grease are required to have grease traps.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Tennessee

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	We will be asking for PCB testing & TCLP in new rules - end 2006, 1st of 2007
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	-	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	No	-
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	Yes	-	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	Yes	-	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Paper	No	-
How biosolids achieve Vector Attraction	Yes	Yes	-	Paper	No	-
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	-	-	Paper	No	-

# Tennessee

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,893,298	41,217	143	6,992,992	74,086	0.031	1.0%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
218,668	219,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
152,812	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
245	54

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	2
Number of operating sludge incinerators:	0
Fluidized bed:	0
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	30%

NOTES: Data in these tables are from USEPA Region 4 years 2002-2006, the largest facilities in the state, and additional information from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator, with no facility counted twice. The compiled data represent ~72% of the centralized wastewater flow in the state and is considered fairly comprehensive. Note that many small facilities haul their solids to larger facilities for treatment, use, and/or disposal.

**UNITS: Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	29	33,170	15%	Memphis (~250 tons/day), Nashville (~150 tpd), Chattanooga (~120 tpd), and Knoxville (~100 tpd) account for ~80% of the total solids produced in the state, according to the state biosolids coordinator.
Disposal	23	132,515	61%	
Other	2	52,983	24%	
Total	54	218,668	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Agricultural	21	14,835	7%	
Rangeland	4	10,868	5%	
Reclamation	0	-	0%	
Class A EQ Distribution	4	7,467	3%	
Total	29	33,170	15%	
Long-term storage	2	52,983	24%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	21	94,092	43%	
Surface Disposal	2	38,423	18%	
Incineration	0	-	0%	
	23	132,515	61%	



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	5	16,556	8%	8 TWTDS send 671 dry metric tons to beneficial uses, but it is unclear if they are Class A or B, so they are included here on the row "Other."
Other Class A	0	-	0%	
Class B	17	54,353	25%	
Other (no data, etc.)	31	147,755	68%	
<b>Total</b>	<b>53</b>	<b>218,664</b>	<b>100%</b>	

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...		NOTES: Data is incomplete. The majority of TWTDS in Tennessee use this treatment.
Aerobic Digestion	10	no data		Sludge-mate screen boxes.
Digestion-anaer./other	1	no data		
Lime/Alkaline	2	no data		
Composting	0	no data		
Thermal (not incineration)	2	no data		
Long-term (lagoons, reed beds, etc.)	6	no data		
Other	4	no data		
Belt Filter Press	3	no data		
Plate & Frame Press	1	no data		
Screw Press	0	no data		
Centrifuge	1	no data	Knoxville	
Vacuum Filter	0	no data		
Drying beds	2	no data		
Other	1	no data		

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Texas**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Texas has received delegation for the full Part 503 rule.

State agency regulating biosolids: The water/ wastewater portion of Texas's environmental agency regulates biosolids and utilizes specific NPDES type permits to regulate disposal. The agency grants site-specific permits with site-specific requirements for each separate land application site.

Holder of liability: Texas does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. This is happening in about 60 situations.

More than one Class B biosolids on one site? Texas does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year; this is actually being done at about 35 sites.

NPDES equivalent: TPDES is the state equivalent to NPDES. All TPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 3 (there are 5 FTEs who work 60% on biosolids and 40% on septage). In the wastewater area, there are another 12 FTEs who work in permitting of municipal TWTDS, the generators of biosolids.

Biosolids regulations updated: October 20, 2005.

Management practices: The management practices of Texas's biosolids regulations are more restrictive than the federal Part 503 rule. Texas rules include reporting requirements, nutrient management plan requirements, posting a sign at the site, hauling sludge in covered containers, and insurance requirements. Also, sites located in counties that border the Gulf of Mexico and contain wells within 500 feet are prohibited from applying biosolids. Texas's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Texas requires additional monitoring at Class B land application sites. These additional requirements are site-specific, based on groundwater and soil conditions. Nitrogen is the basis for the agronomic loading rate for land application. Texas does require formal nutrient management plans. Texas uses site limitations, total P in soil, and available P in soil to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Texas requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites.
- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing. This data is collected, maintained, and held at the WWTP only. The state requires that they do it and have the information available if requested (the state does not routinely see this data).

It is unknown whether or not biosolids management groups perform additional oversight voluntarily.

Acres applied: In 2004, biosolids were applied to a total of 23,112 acres. There were 8 new site permits/approvals issued in 2004.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency or from the state website. The data and reports are compiled electronically with Paradox 10, a specific program designed for the agency (it's a large data base that only the department uses). The agency has another database that the public can get information from, at a cost.

Legislative, regulatory, or other activity impacting biosolids use/disposal: There is no known legislative or regulatory activity happening or imminent related to biosolids in Texas. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, but none have done so (although there is one county along the coast that is concerned about biosolids use and is protesting it).

## **TRENDS**

The beneficial use of biosolids is not increasing in Texas, because of the adoption of stricter state regulations and higher fees for beneficial use that make landfilling easier for many facilities.

Most significant current pressures on biosolids recycling:

1. Public comment opportunity has increased.
2. Application fees (these fees are based on the amount of biosolids proposed to be land applied at the site).
3. Nutrient Management Plan information required prior to approval.
4. Amount of time it takes to issue a permit.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 1995.

Number of full-time equivalent staff (FTEs) for septage program: 2 (there are 5 FTEs who work 40% on septage)

Septage haulers based in state (estimated): 683

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage, and the number that do is unknown; however, it is believed that all, or almost all, septage goes to landfills or land application.

Percentage of each management practice (estimated):

70 % landfill

30 % land application

Other concerns: Texas considers fats, oils, and grease (FOG) to be a significant issue. Texas does not regulate the use or disposal of grease trap waste. Texas has a proactive program to collect FOG and keep it out of the general wastewater flow. Texas encourages FOG to be directly placed in landfills. They do not allow FOG to be land applied.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Texas

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	Yes	Yes	-	Based on the provisions of the municipal permit	-
Dioxins/furans	No	No	-	-	-
PCBs	Yes	Yes	-	Based on the provisions of the municipal permit	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes	Yes	-	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	For Class B sludge, quarterly reports are required along with the annual reports	Both	No	-
Part 503 metals	Yes	-	-	Both	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	No	-	Quarterly Report	Electronic	No	-
Cumulative Pollutant Loading Rates	Yes	-	Quarterly Report	Electronic	No	-
How biosolids achieve Class A or B	Yes	-	Quarterly Report	Both	No	-
How biosolids achieve Vector Attraction	Yes	-	-	Paper	No	-
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	-	-	-	-	-	-

# Texas

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
22,471,549	261,797	86	38,657,710	160,352	0.017	0.6%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
642,578	643,000

### Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
457,576	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
1380	1067

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	4
Number of operating sludge incinerators:	no data
Fluidized bed:	no data
Multiple hearth:	no data
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from USEPA Region 6, with assistance from Lynne Moss, CDM. They include gaps, and for a large proportion (~150,000 dmt), the method of use or disposal was not reported. There are several separate preparers in Texas: Synagro, Oscar Renda (Ft. Worth), Garden-Ville (San Antonio compost), and New Earth (San Antonio compost). In the recent past, Texas had higher rates of beneficial use of biosolids, but stricter legislation, regulations, and fees regarding land application of Class B biosolids have resulted in more going to landfill in the past few years: 250 land application authorizations in 2002 dropped to 75 in 2006.

UNITS: **Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Beneficial Use	132	158,861	25%	
Disposal	424	329,149	51%	
No data on use or disposal	511	154,568	24%	
<b>Total</b>	<b>1067</b>	<b>642,578</b>	<b>100.00%</b>	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
Agricultural	98	24,304	4%	
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	34	134,557	21%	
<b>Total</b>	<b>132</b>	<b>158,861</b>	<b>25%</b>	
No data on use or disposal	511	154,568	24%	Includes composting at San Antonio and heat dried pellets at Houston and Waco.
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	406	288,244	45%	NOTES:
Surface Disposal	14	40,311	6%	Dallas/Ft. Worth
Incineration	4	594	0%	
	424	329,149	51%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	34	134,557	21%
Other Class A	0	-	0%
Class B	98	24,304	4%
Other (no data, etc.)	935	483,717	75%
<b>Total</b>	<b>1067</b>	<b>642,578</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Utah**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Utah is delegated for the full rule 40 CFR Part 503; any changes to the federal rule will be adopted by Utah.

State agency regulating biosolids: The water/ wastewater portion of Utah's environmental agency regulates biosolids and utilizes specific NPDES-type permits to regulate end use and disposal and land application sites.

Holder of liability: Utah does allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Utah does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: Utah's state equivalent of NPDES is the Utah Pollutant Discharge Elimination System (UPDES). These permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1

Biosolids regulations updated: October 2001; this is also when Utah became delegated for Part 503.

Management practices: As of today, Utah's biosolids regulations are not more restrictive than the federal Part 503 rule. Utah is delegated for the Federal Part 503 rule. Utah does not require additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Utah does not require formal nutrient management plans. Utah uses tests of total P in soil and available P in soil to control the application of phosphorus in biosolids.

Additional Management Actions: Utah does not require any additional oversight or certification to occur at biosolids land application sites, and biosolids management groups generally do not perform any additional oversight and certification voluntarily.

Acres applied: The number of acres to which biosolids were applied in 2004, and the number of new site permits, are not tracked.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data to the state. The public can access these reports by mail or in person from the state agency or the EPA Region 8 office. The data and reports are compiled electronically using EPA's Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Utah, there are no legislative or regulatory activities happening or imminent that would impact biosolids management. Utah has not had an issue of local units of government wanting to adopt ordinances that are more restrictive than state and federal laws and regulations.

### **TRENDS**

The rate of beneficial use of biosolids is staying about the same in Utah; furthering the already high rate of beneficial use is difficult because of some odorous biosolids.

Most significant current pressures on biosolids recycling:

1. Odor



2. Cost
3. Space

## **SEPTAGE MANAGEMENT**

Until recently, septage management has been overseen by local health departments; this may be changing and the state may become more involved soon, perhaps regulating septage pumpers/haulers and septage management by general permits.

Septage regulations updated: about 20 years ago

Number of full-time equivalent staff (FTEs) for septage program: 0.5 (same person as biosolids program)

Septage haulers based in state (estimated): 100

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage, however, 25 TWTDS do.

Percentage of each management practice: In Utah, some septage is land applied and the rest is hauled to TWTDS.

Other concerns: Utah does not consider fats, oils, and grease (FOG) to be a significant issue at this time. The use and disposal of grease trap waste is regulated under the septage and biosolids program. FOG is adequately addressed through pretreatment programs, which are created and enforced by individual TWTDS.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Utah

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	-	-	-
Other metals (boron, silver...)	No	-	-	-	-
Dioxins/furans	No	-	-	-	-
PCBs	No	-	-	-	-
Priority pollutants	No	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	-	Yes	-	-	-
Pathogen reduction (Class A or B)	-	Yes	-	-	-
Vector attraction reduction (VAR)	-	Yes	-	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	X	-	Both	Yes	-
Part 503 metals	Yes	X	-	-	-	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	-	-	-	-
Cumulative Pollutant Loading Rates	No	-	-	-	-	-
How biosolids achieve Class A or B	Yes	-	-	-	-	-
How biosolids achieve Vector Attraction	Yes	-	-	-	-	-
Solids stabilization processes used	Yes	-	-	-	-	-
Other biosolids treatments	Yes	-	-	-	-	-
End use/disposal practice	Yes	-	-	-	-	-

# Utah

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop./sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
2,420,708	82,143	29	2,067,437	12,652	0.026	0.9%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	52,940	<b>53,000</b>	62,860		49,000	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			106	49		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			no data			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator, using data for 2003, which was the most complete and representative data available.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	28	44,527	84%	The numbers of TWTDS for each practice includes facilities that use more than one method of end use and disposal. There are approximately 30 individual larger TWTDS's data represented here.
Disposal	9	1,859	4%	
Other	12	6,554	12%	
Total	49	52,940	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	9	14,396	27%	Salt Lake City, the largest generator of biosolids in Utah (serving 179,900 people), used about 2/3 of its biosolids for mine reclamation in 2003; the other 1/3 was stored and its ultimate use was probably also for mine reclamation.
Forestland	0	-	0%	
Reclamation	5	11,040	21%	
Class A EQ Distribution	14	19,091	36%	
Total	28	44,527	84%	
Long-term storage	12	6,554	12%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
MSW landfill (incl dly cvr)	9	1,859	4%	Nine facilities landfilled at least some biosolids in 2003, but only three relied on landfilling for most of their biosolids.
Surface Disposal	0	-	0%	
Incineration	0	-	0%	
Total	9	1,859	4%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	16	19,091	36%
Other Class A	0	-	0%
Class B	5	25,436	48%
Other (no data, etc.)	2	8,413	16%
<b>Total</b>	<b>23</b>	<b>52,940</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	0	-	
Digestion-anaer./other	14	17,200	
Lime/Alkaline	1	579	
Composting	18	24,385	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	14	6,554	
Other	0		
Belt Filter Press	13	no data	
Plate & Frame Press	0	no data	
Screw Press	3	no data	
Centrifuge	3	no data	
Vacuum Filter	1	no data	
Drying beds	7	no data	
Other	0	no data	

NOTES:  
Incomplete data.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Vermont**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Vermont has applied for delegation for Part 503. EPA has not taken any action on the application in several years.

State agency regulating biosolids: The water/ wastewater and solid waste portions of Vermont's environmental agency regulate biosolids. The biosolids and septage management program are physically located in the Wastewater Management Division. However, because, under Vermont statute, sludge and septage are defined as solid wastes, the program is not under the authority that USEPA has delegated to the state to administer the NPDES program; rather, the management of sludge and septage is regulated under the Vermont Solid Waste Management Rules. Vermont utilizes solid waste permits to regulate end use and disposal and land application sites.

Holder of liability: Vermont does allow land applicers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use, but there are no cases of this happening.

More than one Class B biosolids on one site? Vermont does allow *Class B* biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but it is not actually being done.

NPDES equivalent: Vermont's NPDES program is delegated, but NPDES permits do not include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 2.75

Biosolids regulations updated: February 1989.

Management practices: The management practices of Vermont's biosolids regulations are more restrictive than the federal Part 503 rule. The Vermont rules establish different/additional minimum isolation distances and prohibited areas under §6-502 and §6-503 of the Solid Waste Rules. Vermont's pathogen and/or vector attraction reduction limits are more restrictive than the federal Part 503 rule. The state of Vermont does not allow the use of the enteric virus, viable helminth ova, and the non-process based alternatives for meeting the pathogen reduction standards that are allowed under 40 CFR Part 503. This is a policy, rather than a rule-based prohibition. Vermont has more restrictive pollutant (trace metals, etc.) limits. Vermont requires additional monitoring at Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Vermont does not require formal nutrient management plans. Vermont does manage or control the application of phosphorus in biosolids: the state has established a policy-based maximum application rate of 5.0 dry tons/acre for any biosolids that contain phosphorus-removal sludge.

Additional Management Actions: Vermont requires the following oversight and certification to occur at biosolids land application sites:

- Other requirements or actions to control odors at land application sites. These include setbacks.
- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing.

In Vermont some biosolids management programs perform the following oversight and certification voluntarily:

- Other requirements or actions to control odors at land application sites. These include setbacks.

Acres applied: In 2004, biosolids were applied to a total of 423 acres. In 2004, no new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with Clarion and Top Speed.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Vermont, legislative or regulatory activity is happening by development of, or changes to, state biosolids regulations. These activities are likely to have no effect on beneficial use. There is also some minor, generally unorganized, local opposition for biosolids management, but will likely have no significant effect. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law. Vermont municipalities may restrict land application through their zoning ordinances. Solid Waste Management Districts may impose more stringent siting criteria than is established in the Vermont rules. As of today, no municipality or district has enacted any such restrictions.

## **TRENDS**

The beneficial use of biosolids is not increasing in Vermont; it remains steady.

Most significant current pressures on biosolids recycling:

1. Odors.
2. Increasing development/population density in rural areas.
3. Cost.

## **TESTING AND REPORTING**

Vermont requires all sewage sludge to be tested for Part 503 metals, chromium, and PCBs. However, tests for organic compounds are only required as part of the TCLP analysis that must be done once every five years. For those biosolids that are used as fertilizers and soil amendments, testing for nutrients, pathogen reduction, and vector attraction reduction is required.

The frequency of testing required in Vermont varies depending on flow and sludge management strategy. Most TWTDS in Vermont are tested once per year, except for the larger ones that land apply biosolids twice per year; they must test twice per year. Currently, the only Vermont TWTDS that fall into the quarterly testing category per Part 503 are PFRP facilities that are required to test each batch that is released for public distribution.

Vermont requires TWTDS and biosolids preparers to report all of the following to the State Department of Environmental Conservation (DEC): amounts of biosolids used or disposed, levels of Part 503 metals, other metals, PCBs, other organic compounds, nutrients, how biosolids achieve stabilization and vector attraction reduction and by what method(s), and the final end use or disposal practice. DEC keeps records of these reported data in paper and electronic formats and can produce computer-driven reports, as needed.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: February 1989.

Number of full-time equivalent staff (FTEs) for septage program: 0.25

Septage haulers based in state (estimated): 35

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: pH  $\geq$  12 for a minimum of two hours, for pathogen reduction. 27 POTWs currently accept septage. POTWs must accept septage if they have accepted certain funds for facility upgrade/refurbishment projects. Otherwise, POTWs are not required to accept septage.

Percentage of each management practice:

- Land applied = 15.6%
- Hauled to TWTDS = 81.5%
- Disposed of in lagoons = 0.5%
- Dewatered, then landfilled = 2.4%

Other concerns: Vermont considers fats, oils, and grease (FOG) to be a significant issue, but does not regulate use and disposal of grease trap waste. Vermont does not have a proactive program to collect FOG and keep it out of the general wastewater flow, although such a program is currently being developed by the Chittenden Solid Waste District under a state grant.



## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Vermont

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	No	See attachment A - note 12	-
Other metals (boron, silver...)	No	Yes	No	See attachment A - note 13	-
Dioxins/furans	No	No	No	See attachment A - note 12	-
PCBs	Yes	Yes	No	See attachment A - note 12	-
Priority pollutants	No	No	No	See attachment A - note 12	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	Yes	Yes	No	See attachment A - note 13	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	No	See attachment A - note 12	-
Nutrients (NPK)	No	Yes	No	See attachment A - note 12	-
Pathogen reduction (Class A or B)	No	Yes	No	See attachment A - note 12	-
Vector attraction reduction (VAR)	No	Yes	No	See attachment A - note 12	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	-	Quarterly	Both	Yes	2004 report attachment D
Part 503 metals	Yes	-	Quarterly	Both	Yes	2004 report attachment E
Other metals	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Dioxins/furans	No	-	Quarterly	-	-	Reports can be generated if needed
PCBs	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Priority pollutants	No	-	Quarterly	-	-	Reports can be generated if needed
Other organic compounds	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Radioactive isotopes	No	-	Quarterly	-	-	Reports can be generated if needed
Nutrients (N, P, K)	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Cumulative Pollutant Loading Rates	No	-	Quarterly	-	-	Reports can be generated if needed
How biosolids achieve Class A or B	Yes	-	Quarterly	Both	No	Reports can be generated if needed
How biosolids achieve Vector Attraction	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Solids stabilization processes used	Yes	-	Quarterly	Both	No	Reports can be generated if needed
Other biosolids treatments	No	-	Quarterly	-	-	Reports can be generated if needed
End use/disposal practice	Yes	-	Quarterly	Both	Yes	2004 Report attachment D

# Vermont

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
621,233	9,249	67	567,509	5,103	0.016	0.5%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24	Adjusted Estimate	Estimates from other sources:	
			Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
	8,973	9,000	9,345	7,000

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
		87
Total number of TWTDS sending to Separate Preparers in 2004:	23	
Number of Separate Preparers:	0	
Number of operating sludge incinerators:	0	
Fluidized bed:	0	
Multiple hearth:	0	
Percent of population served by on-site (e.g. septic systems):	53%	

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

**UNITS: Dry U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	21	6,316	70%
Disposal	38	2,657	30%
Other	0	-	0%
<b>Total</b>	<b>59</b>	<b>8,973</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	12	813	9%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	9	5,503	61%
<b>Total</b>	<b>21</b>	<b>6,316</b>	<b>70%</b>
Long-term storage	0	-	0%

NOTES:  
The majority of biosolids in Vermont are composted to Class A standards; most of this is from Chittenden County, the Burlington area, where many TWTDS cooperatively send wastewater solids to Québec for composting.

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	21	2,323	26%
Surface Disposal	0	-	0%
Incineration	17	334	4%
<b>Total</b>	<b>38</b>	<b>2,657</b>	<b>30%</b>

NOTES:  
The incinerator used most commonly is at Glens Falls, NY.

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Class A EQ	9	5,503	61%	The Class A material is compost, most of it created in Québec by private contractor.
Other Class A	0	-	0%	
Class B	12	813	9%	
Other (no data, etc.)	38	2,657	30%	
<b>Total</b>	<b>59</b>	<b>8,973</b>	<b>100%</b>	

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	NOTES:
Aerobic Digestion	4	101	Of the 2 ATAD systems in VT, one is off-line due to odor and process problems, the other is operating but, because of legal actions, has not been certified by the State as producing Class A, although it should meet the standard.
Digestion-anaer./other	3	339	
Lime/Alkaline	8	797	
Composting	4	591	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	0	-	Air drying
Other	1	11	
Belt Filter Press	17	6,056	2 rotary drums, 1 gravity box
Plate & Frame Press	0	-	
Screw Press	0	-	
Centrifuge	3	367	
Vacuum Filter	0	-	
Drying beds	6	155	
Other	3	55	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Virginia**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Virginia is not planning to seek delegation from the USEPA for Part 503. In Virginia, the Department of Environmental Quality (DEQ), Water Quality Division, authorizes the land application of sewage sludge when it is conducted by the generator, under a VPDES permit. About 5% of the biosolids land applied in Virginia is regulated in this way. The same Division also authorizes land application of industrial sludge by the generator or a contractor under a non-discharge (Virginia Pollution Abatement) permit. In 2006, the Virginia Department of Health (VDH), Office of Environmental Health Services, authorized further treatment, land application, or distribution for beneficial use of biosolids by contractors under a Biosolids Use operating permit. This accounted for about 95% of the biosolids land applied in Virginia. Composting and landfilling of sewage sludge must be permitted by the DEQ, Solid Waste Division, and incineration of sewage sludge must be permitted by the DEQ, Air Division. Virginia utilizes specific NPDES type permits, solid waste permits, and air permits to regulate end use and disposal and land application sites. In 2007, legislation was adopted that gives most responsibility for biosolids regulation to the DEQ, beginning early in 2008.

Holder of liability: Virginia does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. In 2006, Biosolids Use Operating permits, issued by VDH, transferred a portion of the liability for biosolids end use to the permittee, usually a land application contractor.

More than one Class B biosolids on one site? Virginia does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, and this is being done at over 200 sites.

NPDES equivalent: Virginia is delegated for NPDES, and all permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 4

Biosolids regulations updated: 2003.

Management practices: The management practices of Virginia's biosolids regulations have been more restrictive than the federal Part 503 rule. These rules include infrequent vs. frequent land application restrictions; slope restrictions; time of year restrictions; buffers to property lines, wells, homes, rock outcrops, and sinkholes; nutrient management plan requirements; allowances for local county monitoring; and allowances for additional setbacks for individuals with "health problems." Virginia's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive than the Part 503 rule. Virginia requires additional monitoring at Class B land application sites and groundwater monitoring is required at sites that receive biosolids on a frequent basis at 100% of the crop needs for nitrogen. Nitrogen and phosphorus are the basis for the agronomic loading rate for land application. Virginia does require formal nutrient management plans. To manage or control the application of phosphorus in biosolids, Virginia uses site limitations, tests of available P in soil, a P index, slope, and the assumption that available P equals total P in biosolids for nutrient management plans prepared in accordance with regulations. In early 2008 or after, some of these regulations may change.

Additional Management Actions: Virginia requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land applicators who manage or implement land application programs may soon be required.
- Other requirements or actions to control odors at land application sites, on a case-by-case basis.

In Virginia some biosolids management groups perform the following oversight and certification voluntarily:

- Independent inspections or monitoring at land application sites, including some local monitors, if established by local ordinance.
- Certification of biosolids land applicators who manage or implement land application programs.

Acres applied: In 2004, biosolids were applied to a total 50,488 acres – out of a total of 381,731 permitted acres (according to information provided by VDH). In 2004, 63 new site permits/approvals were issued.

Reporting and Record-keeping: As of 2006, major TWTDS, along with sludge-only processing facilities, are required to report biosolids information and data. In accordance with VPDEQ Permit Regulation, reporting is also required for POTWs that serve a population of 10,000 or greater and Class I Sludge management facilities. A Class I sludge management facility is any POTW required to have an approved pretreatment program and any other treatment works of domestic sewage whose sludge use or disposal practices have the potential to adversely affect public health and the environment as identified by the DEQ regional administrator and the agency director. The public can access biosolids management reports by mail or in person from the state agencies involved or from the EPA regional office. The data and reports are compiled electronically with Oracle AS Discover – MS Internet Explorer (at DEQ) and Excel and Access (at VDH).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Virginia, legislative and regulatory activity is occurring, with a shift in responsibility for biosolids regulation to the DEQ in early 2008. These activities are likely to somewhat reduce beneficial use. In addition, changes to 4 VAC 5-15, the Nutrient Management Training and Certification Regulations that limit biosolids land application based on phosphorus content (and assuming all phosphorus in biosolids is available), will result in a reduction of beneficial use. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law, although a few local counties and towns have been challenging this and adopting restrictive ordinances in recent years (to date, legal actions have annulled such ordinances).

## **TRENDS**

The beneficial use of biosolids is increasing in Virginia, due to population growth and the resultant increase in production of wastewater solids. However, some public concerns and pressures may counteract this.

Most significant current pressures on biosolids recycling:

1. Claims of illness associated with biosolids land application activities.
2. Overly conservative P-based nutrient management plans.
3. Poor public perception resulting from biosolids odors.

## **SEPTAGE MANAGEMENT**

Septage is being generated at an increasing rate in Virginia as pressure increases on landowners to have their septic tanks pumped every five years to reduce nutrient loading to Chesapeake Bay and other surface waters. The proper management of septage is becoming an increasing issue and there is a need for more solutions other than hauling to TWTDS that are facing increasingly stiff effluent nutrient limits and cannot afford to take in much nutrient-rich septage.

Septage regulations updated: Virginia has no formal state septage regulations. Septage that is land applied must be managed like biosolids in accordance with state regulations and Part 503. Short-term treatment in the hauling truck is discouraged and most land-applied septage is treated over a long term in lagoons, then tested and treated prior to land application.

Number of full-time equivalent staff (FTEs) for septage program: 0.05 at the state level, but there are county employees too who do permitting and enforcement of septage hauling vehicles and haulers.

Septage haulers based in state (estimated): This is not known: there are 99 counties that each conduct permitting and enforcement of septage hauling operations.

Septage management: TWTDS are not required to accept septage, and most don't, because of the high nutrient load in septage. VDH recommends that TWTDS take in no more than 3% of daily flow in the form of septage.

Percentage of each management practice:

- Land applied = some
- Hauled to TWTDS = most
- Placed in lagoons = some
- There is at least one developing septage-only treatment facility, but there is a need for more.

Other concerns: Virginia counties are responsible for septage hauling permits; they also oversee the management of fats, oils, and grease (FOG). Much FOG is managed by placement in lagoons, just as some septage is managed. Some high grade FOG is recycled.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Virginia

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	-	VDH requires that for facilities over 1 MGD that land apply biosolids, to test when they land apply biosolids (typically > once/year)
Other metals (boron, silver...)	Yes	Yes	-	Chromium and Molybdenus is monitored at a frequency similar to other metals in accordance with Part 503	-
Dioxins/furans	-	-	-	-	-
PCBs	-	-	-	-	-
Priority pollutants	-	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	-	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	-	-	-	-	-
Nutrients (NPK)	Yes	Yes	Yes	-	VDH requires that for facilities over 1 MGD that land apply biosolids, to test when they land apply biosolids (typically > once/year)
Pathogen reduction (Class A or B)	Yes	Yes	Yes	-	VDH requires that for facilities over 1 MGD that land apply biosolids, to test when they land apply biosolids (typically > once/year)
Vector attraction reduction (VAR)	Yes	Yes	Yes	-	VDH requires that for facilities over 1 MGD that land apply biosolids, to test when they land apply biosolids (typically > once/year)



**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Paper	Yes	See four attachments provided by VDH Contact Charles Swanson for more information.
Part 503 metals	Yes	Yes	-	Paper	No	-
Other metals	Yes	-	Mo according to the same frequency specified in Part 503	Paper	No	-
Dioxins/furans	-	-	-	-	-	-
PCBs	-	-	-	-	-	-
Priority pollutants	-	-	-	-	-	-
Other organic compounds	-	-	-	-	-	-
Radioactive isotopes	-	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	Monthly reports	Paper	No	-
Cumulative Pollutant Loading Rates	Yes	-	Monthly reports	Paper	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Both	No	Data is available electronically at DEQ but only for TWTDS that land apply the biosolids they generate
How biosolids achieve Vector Attraction	Yes	Yes	-	Both	No	Data is available electronically at DEQ but only for TWTDS that land apply the biosolids they generate
Solids stabilization processes used	Yes	-	Monthly reports	Both	No	Data is available electronically at DEQ but only for TWTDS that land apply the biosolids they
Other biosolids treatments	Yes	-	At the time of VPDES permit issuance/reissuance	Paper	No	-
End use/disposal practice	Yes	-	At the time of VPDES permit issuance/reissuance	Paper	No	-

# Virginia

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
7,481,332	39,594	189	4,194,158	41,047	0.038	1.3%

Total Biosolids Used or Disposed in 2004*:	From State Survey Q24	Adjusted Estimate	From Survey Q24
		159,995	160,000

Estimates from other sources:  
Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)      Dry tons, reported to BioCycle Survey (Goldstein, 2000)

Total Number of TWTDS in 2004**:	From CWNS	From Survey Q24
	225	261

Total number of TWTDS sending to Separate Preparers in 2004:	614
Number of Separate Preparers:	0
Number of operating sludge incinerators:	6
Fluidized bed:	0
Multiple hearth:	6
Percent of population served by on-site (e.g. septic systems):	no data

UNITS: **Dry Metric Tons**

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator, supplemented with data from Virginia regions that she provided, as well as contact with individual TWTDS. Two counties did not provide complete data. Note that approximately 300 TWTDS haul their solids to other facilities for treatment and use or disposal. Also, some TWTDS use more than one use or disposal method and are, therefore, counted twice in the numbers of TWTDS.

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Beneficial Use	69	49,085	31%	The Virginia Department of Health, which regulated land application of biosolids in 2004, reported a total of 223,739 dry metric tons of biosolids were applied in the state that year. As in other years, much of this total comes from out of state, such as Washington, DC.
Disposal	137	96,140	60%	
Other	55	14,770	9%	
Total	261	159,995	100.00%	
<b>Beneficial Use</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	NOTES:
Agricultural	63	44,250	28%	Many of these facilities only remove biosolids from lagoons every 15 - 20 years (and not in 2004).
Forestland	0	-	0%	
Reclamation	0	-	0%	
Class A EQ Distribution	6	4,835	3%	
Total	69	49,085	31%	
Long-term storage	55	14,770	9%	
<b>Disposal</b>				
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)	
MSW landfill (incl dly cvr)	125	32,024	20%	
Surface Disposal	0	-	0%	
Incineration	12	64,116	40%	
	137	96,140	60%	

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	6	4,835	3%
Other Class A	0	-	0%
Class B	64	44,411	28%
Other (no data, etc.)	147	110,748	69%
Total	217	159,994	100%

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	no data	no data	
Digestion-anaer./other	no data	no data	
Lime/Alkaline	no data	no data	
Composting	no data	no data	
Thermal (not incineration)	no data	no data	
Long-term (lagoons, reed beds, etc.)	no data	no data	
Other	no data	no data	
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	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Washington**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Washington is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The solid waste portion of Washington's environmental agency regulates biosolids; however, some local health departments have received delegation to administer portions of the program. Washington utilizes solid waste permits to regulate end use and disposal and land application sites through a general permit and site-specific approval.

Holder of liability: Washington does allow land appliers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. There are 5 cases where this is happening.

More than one Class B biosolids on one site? Washington does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year. This is not actually being done.

NPDES equivalent: Washington deals with biosolids through the solid waste program. Not all NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 5

Biosolids regulations updated: February 1998, however, state regulation is currently being revised, with an expected completion date of June 30, 2007.

Management practices: The management practices of Washington's biosolids regulations are essentially the same as Part 503. Washington's pathogen and/or vector attraction reduction limits are not more restrictive. Washington has more restrictive pollutant (trace metals, etc.) limits. The state has a standard and high quality molybdenum limit of 75 mg/kg. In addition, if biosolids subject to the CPLR have ever been applied to a site, and biosolids subject to the CPLR are proposed for application, and the amount of pollutants applied previously can be determined, the amount applied must be included in CPLR calculations. Managing biosolids with APLR is not an option in Washington, as only EQ biosolids may be sold or given away in a bag or other container. While the state regulation does not require additional monitoring at Class B land application sites, site-specific approvals typically include additional monitoring requirements. Commonly required are tests for fecal coliform and nitrate-N in drinking waters and residual plant-available N in soils. Frequency of testing is site-specific, but annual testing is most common. Nitrogen is the basis for the agronomic loading rate for land application. Washington does not require formal nutrient management plans. Washington does not manage or control the application of phosphorus in biosolids at this time.

Additional Management Actions: Washington requires the following oversight to occur at biosolids land application sites:

- Sampling and testing of Class A biosolids for the presence of pathogens if three weeks or more have elapsed since processing. This is required if the generator still has control of the biosolids.

In Washington, some biosolids management groups perform the following oversight voluntarily:

- Independent inspections or monitoring at land application sites.

- Actions to control odors at land application sites.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with Excel and the EPA Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Washington, development of, or changes to state biosolids regulations, is happening or is imminent and will likely have no significant affect on beneficial use. As of today, local units of government are allowed to adopt ordinances that are more restrictive than state law, but may not prohibit beneficial use. One county in Washington has adopted more restrictive biosolids application ordinances, but the total number of restrictive ordinances is remaining the same.

## **TRENDS**

The beneficial use of biosolids is increasing in Washington. The percent of beneficial use has remained fairly constant for several years. However, the mass of biosolids beneficially used has increased over the past few years due to lagoon clean-outs.

Most significant current pressures on biosolids recycling:

1. Public perception of risks.
2. Increased transportation costs.
3. Low disposal costs in some counties.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: February 1998. The state regulations are currently being updated, with an expected completion date of June 30, 2007. Septage management requirements are more restrictive, in that alkaline-stabilized and non-alkaline-stabilized septage must meet the same site access and crop harvesting restrictions.

Number of full-time equivalent staff (FTEs) for septage program: 1.1

Septage haulers based in state (estimated): This number is unknown, because the haulers are permitted by local health departments unless they land apply or treat septage.

Septage management: Septage can be land applied if it meets Part 503. POTWs are not required to accept septage. It is unknown how many TWTDS accept septage.

Percentage of each management practice: This information is not available, as we do not track the amount hauled to TWTDS, and TWTDS are not required to report volumes received. Only septage operations that land apply or treat septage are required to report.

Other concerns: Washington does not consider fats, oils, and grease (FOG) to be a significant issue. The use and disposal of grease trap waste falls under the...

- septage rules, if it is less than 25% of the total volume, and
- solid waste rules, if it is greater than 25% in the septage mixture.

Washington does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Washington

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	No	Yes	Yes	-	-
Other metals (boron, silver...)	No	No	-	-	-
Dioxins/furans	No	No	-	-	-
PCBs	No	No	-	-	-
Priority pollutants	No	No	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	No	-	-	-
Nutrients (NPK)	No	Yes for N; No	-	-	-
Pathogen reduction (Class A or B)	No	Yes	Yes	-	-
Vector attraction reduction (VAR)	No	Yes	Yes	-	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	Electronic	Yes	1) Biosolids production & Management in WA via Annual Reports
Part 503 metals	Yes	Yes	-	Electronic	No	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes for	-	-	Electronic	No	-
Cumulative Pollutant Loading Rates	Yes if	Yes	-	-	No	-
How biosolids achieve Class A or B	Yes	Yes	-	Electronic	Yes	1) Pathogen Reduction Method for WA Facilities via 2003 Annual Reports
How biosolids achieve Vector Attraction	Yes	Yes	-	Electronic	Yes	1) Pathogen and VAR Methods for WA Facilities via 2004 Annual Reports
Solids stabilization processes used	No	-	-	-	-	-
Other biosolids treatments	No	-	-	-	-	-
End use/disposal practice	Yes	Yes	-	Electronic	Yes	1) Biosolids Production & Management in WA via 2002 Annual Reports

# Washington

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
6,207,046	66,544	93	8,038,469	28,184	0.014	0.5%

## Total Biosolids Used or Disposed in 2004\*\*:

From State Survey Q24	Adjusted Estimate	Estimates from other sources: Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
110,567	<b>110,600</b>	172,629	75,000

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
246	370

Total number of TWTDS sending to Separate Preparers in 2004:	95
Number of Separate Preparers:	25
Number of operating sludge incinerators:	5
Fluidized bed:	5
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	34%

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator.

**UNITS: Dry U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	125	84,606	77%
Disposal	27	20,397	18%
Other	218	5,564	5%
<b>Total</b>	<b>370</b>	<b>110,567</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	80	66,975	61%
Forestland	12	1,121	1%
Reclamation	9	3,290	3%
Class A EQ Distribution	24	13,220	12%
<b>Total</b>	<b>125</b>	<b>84,606</b>	<b>77%</b>
Long-term storage	218	5,564	5%
<b>Disposal</b>			
	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	18	4,688	4%
Surface Disposal	0	-	0%
Incineration	9	15,709	14%
	27	20,397	18%



**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	24	13,320	12%
Other Class A	0	-	0%
Class B	105	74,242	67%
Other (no data, etc.)	241	23,005	21%
<b>Total</b>	<b>370</b>	<b>110,567</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	33	1,800
Digestion-anaer./other	30	51,651
Lime/Alkaline	24	5,214
Composting	21	7,776
Thermal (not incineration)	3	2,469
Long-term (lagoons, reed beds, etc.)	no data	no data
Other	no data	no data
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
Vacuum Filter	no data	no data
Drying beds	no data	no data
Other	no data	no data

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **West Virginia**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? West Virginia is planning to seek delegation from USEPA sometime in the future when resources allow.

State agency regulating biosolids: The WV DEP Division of Water & Waste Management regulates biosolids and utilizes general NPDES type permits to regulate end use and disposal and land application sites. Individual NPDES permits are issued for plants > .05 MGD. A General Permit is issued for < .05 MGD. Site-specific land application information is incorporated into individual permits for land application. Almost all < .05 MGD plants are pumped out and either disposed of at POTW, land applied by a septage hauler, or landfilled.

Holder of liability: West Virginia does allow land appliers or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use. To date, there are no cases where the biosolids producer has turned over legal liability to the landowner.

More than one Class B biosolids on one site? West Virginia does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: West Virginia is delegated for NPDES. All NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 1.4

Biosolids regulations updated: June 2000

Management practices: The management practices of West Virginia's biosolids regulations are more restrictive than the federal Part 503 rule. These management practices include site restrictions; setbacks from surface waters, drinking water supplies, and dwellings; slope restrictions; pH restrictions; and soil permeability requirements. West Virginia's pathogen and/or vector attraction reduction limits are not more restrictive. West Virginia has more restrictive pollutant (trace metals, etc.) limits. West Virginia requires additional monitoring at Class B land application sites, with annual soil testing for nutrients and metals every 5 year permit cycle or when at 50% site lifetime loading rate. Nitrogen is the basis for the agronomic loading rate for land application. West Virginia does not require formal nutrient management plans. West Virginia does not manage or control the application of phosphorus in biosolids.

Additional Management Actions West Virginia requires the following oversight and certification to occur at biosolids land application sites:

- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing.

In West Virginia, no biosolids management groups are known to perform any additional oversight or certification voluntarily.

Acres applied in 2004: Data not collected or provided.

Reporting and Record-keeping: Both major and minor facilities are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with the state's proprietary ERIS system for NPDES – they are slowly getting more biosolids information into this system.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In West Virginia, there are no legislative or regulatory activities happening or imminent that are likely to impact biosolids management. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law. There are no towns or counties that have more restrictive biosolids ordinances.

## **TRENDS**

The beneficial use of biosolids is not increasing in West Virginia. The overall percentage (landfill vs. land app.) remains relatively constant. Tonnage increases slightly over time due to expansions of collection systems and plants upgrading size and technology.

Most significant current pressures on biosolids recycling:

1. Nuisance type complaints –odors, etc.
2. Phosphorus issues.
3. Funding.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: 2000.

Number of full-time equivalent staff (FTEs) for septage program: 0.6

Septage haulers based in state (estimated): 125

Septage management: Approximately 60% of the population of West Virginia relies on septic systems. Septage can be land applied if it meets Part 503 and the following additional requirements: annual soil samples, and must hold pH at or above 12 for 2 hours. POTWs are not required to accept septage. However, ~10 TWTDS accept septage.

Percentage of each management practice:

- Land applied = 50 %
- Hauled to TWTDS = 50 %

Other concerns: West Virginia considers fats, oils, and grease (FOG) to be a significant issue. West Virginia does not regulate the use and disposal of grease trap waste. West Virginia does not have a proactive program to collect FOG and keep it out of the general wastewater flow.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: West Virginia

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	x		quarterly for majors, every six months for minors
Other metals (boron, silver...)					
Dioxins/furans					
PCBs					
Priority pollutants					
Other organic compounds (e.g. PDBEs, pharmaceuticals)					
Radioactive isotopes (alpha, beta, Ra 224, etc.)					
Nutrients (NPK)		Yes			initially for land application, and every permit cycle
Pathogen reduction (Class A or B)		Yes	x		monthly PR and VAR reporting requirements
Vector attraction reduction (VAR)		Yes	x		monthly PR and VAR reporting requirements

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes		monthly	Paper	No	
Part 503 metals	Yes	x		Paper	No	
Other metals						
Dioxins/furans						
PCBs						
Priority pollutants						
Other organic compounds						
Radioactive isotopes						
Nutrients (N, P, K)						
Cumulative Pollutant Loading Rates						
How biosolids achieve Class A or B						
How biosolids achieve Vector Attraction	Yes	x	monthly	Paper	No	
Solids stabilization processes used						
Other biosolids treatments						
End use/disposal practice	Yes		monthly		No	

# West Virginia

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
1,812,548	24,077	75	1,173,032	17,821	0.025	0.8%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	<b>Adjusted Estimate</b>
28,315	29,000

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
39,898	no data

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
217	131

Total number of TWTDS sending to Separate Preparers in 2004:	0
Number of Separate Preparers:	0
Number of operating sludge incinerators:	1
Fluidized bed:	1
Multiple hearth:	0
Percent of population served by on-site (e.g. septic systems):	no data

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator and are estimates. As elsewhere, West Virginia has scores of small, package plants and lagoons that often haul solids to larger facilities or store in lagoons, not using or disposing of solids every year.

**UNITS: Dry U.S. Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	76	13,400	47%
Disposal	55	14,915	53%
Other	0	-	0%
<b>Total</b>	<b>131</b>	<b>28,315</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	75	10,100	36%
Forestland	0	-	0%
Reclamation	1?	1,000	4%
Class A EQ Distribution	1	2,300	8%
<b>Total</b>	<b>76</b>	<b>13,400</b>	<b>47%</b>
Long-term storage	0	-	0%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	53	10,765	38%
Surface Disposal	1	750	3%
Incineration	1	3,400	12%
<b>Total</b>	<b>55</b>	<b>14,915</b>	<b>53%</b>

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	2,400	8%
Other Class A	0	-	0%
Class B	74	12,400	42%
Other (no data, etc.)	55	14,915	50%
<b>Total</b>	<b>131</b>	<b>29,715</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	4	260	
Digestion-anaer./other	7	3,000	
Lime/Alkaline	49	4,485	
Composting	2	2,400	
Thermal (not incineration)	0	-	
Long-term (lagoons, reed beds, etc.)	36	no data	
Other	no data	no data	
Belt Filter Press	no data	no data	
Plate & Frame Press	no data	no data	
Screw Press	no data	no data	
Centrifuge	2	no data	
Vacuum Filter	no data	no data	
Drying beds	no data	no data	
Other	no data	no data	

NOTES:  
Incomplete data in this table.

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Wisconsin**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Wisconsin is delegated for the land application, landfill, and surface disposal portions of Part 503.

State agency regulating biosolids: The water/ wastewater portion of Wisconsin's environmental agency regulates biosolids and utilizes specific NPDES type permits to regulate end use and disposal and land application sites. This includes the oversight of parts of 503, for which the state is not delegated, but still regulate (ie, septage and incineration).

Holder of liability: Wisconsin does not allow land applicators or landowners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Wisconsin does not allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year.

NPDES equivalent: WPDES is the state equivalent to NPDES. All WPDES/NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 12

Biosolids regulations updated: January 1996.

Management practices: The management practices of Wisconsin's biosolids regulations are more restrictive than the federal Part 503 rule. The state rules include setback requirements for surface water, homes, public and private wells, businesses, recreation areas, and schools; slope restrictions; depth to groundwater and bedrock; soil permeability; winter prohibition; and property lines. Wisconsin's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive. Wisconsin does, however, regulate radium 226 in land applied biosolids when it is naturally present in a community water supply system. Wisconsin requires additional monitoring at Class B land application sites, with soil tests required every 4 years. Nitrogen is the basis for the agronomic loading rate for land application. Wisconsin does not require formal nutrient management plans, because they consider the regulations to sufficiently manage nutrients. Wisconsin uses time of year, site limitations, increased distance to surface water, and slope to manage or control the application of phosphorus in biosolids.

Additional Management Actions: Wisconsin requires the following oversight and certification to occur at biosolids land application sites:

- Certification of biosolids land applicators who manage or implement land application programs.
- Other requirements or actions to control odors at land application sites. These include setbacks.
- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing.

In Wisconsin some biosolids management programs perform the following oversight and certification voluntarily:

- Independent inspections or monitoring at land application sites.



- Certification of biosolids land applicators who manage or implement land application programs.
- Sampling and testing of Class A biosolids for the presence of pathogens, if three weeks or more have elapsed since processing.

Acres applied: In 2004, biosolids were applied to a total of 37,199 acres. In 2004, 888 new site permits/approvals were issued.

Reporting and Record-keeping: Both major and minor facilities, along with sludge-only processing facilities, are required to report biosolids information and data. The public can access these reports by mail or in person from the state agency. The data and reports are compiled electronically with Excel and Access.

Legislative, regulatory, or other activity impacting biosolids use/disposal: In Wisconsin, use/disposal is being impacted by development of, or changes to, state biosolids regulations, local (county, municipal) biosolids ordinances/regulations, and changes to state statute(s) regarding biosolids management. These activities are likely to have the effect of expanding beneficial use. Another impact on biosolids use is that phosphorus-based nutrient management planning may be expanding with changes to NRCS 590, State Agriculture rules, and the development of P indices. This may or may not reduce beneficial use. Exemptions for biosolids are in these rules, but farmers may still be reluctant to accept biosolids if they also land apply manure. As of today, local units of government are not allowed to adopt ordinances that are more restrictive than state law. Several towns and counties in Wisconsin have adopted more restrictive biosolids application ordinances, but the total number is unknown. Overall the number of more restrictive ordinances is decreasing, and all will be rescinded or modified in the near future.

## **TRENDS**

The beneficial use of biosolids is increasing in Wisconsin. Beneficial use remains fairly constant at about 98% of TWTDS. Some who have landfilled will be shifting to land application. Limiting local ordinances will make it easier and more cost effective to land apply, in that shorter distances may be involved; however, no facility has stopped land application due to ordinances.

Most significant current pressures on biosolids recycling:

1. The concern that the EPA will not be proactive in promoting biosolids beneficial recycling and retaining strong technical support and research on emerging issues.
2. Phosphorus issues, as mentioned above.
3. Availability of contract storage for biosolids and co-mingled waste. Since Wisconsin requires 180 days of storage, some facilities are utilizing private contractors to store and manage their biosolids. Such a facility is issued a WPDES permit and considered a generator. However, dairy waste and other industrial wastewater may also be mixed in storage, and odors and uncertainty over the mixture have created public opposition in some cases.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: January, 1997, with a slight modification in 1999.

Number of full-time equivalent staff (FTEs) for septage program: 2.1

Septage haulers based in state (estimated): 495

Septage management: Septage can be land applied if it meets Part 503 and the following additional requirements: site approvals and requirements are identical to biosolids land application, except no soil test is required. Wisconsin generally limits application to 39,000 gallons/acre/crop/year (100 lbs N), with winter prohibitions and restrictions. POTWs are not required to accept septage. However, 193 TWTDS accept septage (122 take it from septic tanks, and 15 take it from grease traps).

Percentage of each management practice:

- Land applied = 30 % (252,517,200 gal.)
- Hauled to TWTDS = 70 % (583,126,496 gal.) The amount hauled to TWTDS can be further broken down to 63.4 % (529,414,886 gal.) from holding tanks, 6.3% (52,376,252 gal.) from septic tanks, and 0.2% (1,335,358 gal.) from grease traps.

Other concerns: Wisconsin considers fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste falls under the septage rules. Wisconsin has a proactive program to collect FOG and keep it out of the general wastewater flow. Wisconsin encourages having FOG fed directly into anaerobic digesters and allows land application of grease trap waste at one-third the rate of septage.

## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Wisconsin

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes		Per part 503. Lagoons and other systems that do not remove biosolids in permit terms (5 years) must analyze for metals once in that time
Other metals (boron, silver...)	No	No		Yes	Per priority pollutant scan below (not required for metals not listed as PP)
Dioxins/furans				Yes	See PPS below
PCBs				Yes	Once in permit term (5 years)
Priority pollutants				Yes	Once in permit term if design flow greater than 40 MG. Once every two permit terms if between 5 and 40 MGD
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	No			
Radioactive isotopes (alpha, beta, Ra 224, etc.)	Yes	Yes		Yes	If radioactivity is greater than 2 pCi/L in water supply then biosolids must be tested for RA 226, generally at same frequency as metals. Cumulative soil limits are applied.
Nutrients (NPK)	No	Yes		Yes	Generally must be analyzed just prior to land application.
Pathogen reduction (Class A or B)	No	Yes	Yes		If testing is required for non 503
Vector attraction reduction (VAR)	No	Yes	Yes		If testing is required for non-503

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes		By January 31 of following year	Electronic	Yes	
Part 503 metals	Yes		(1) By January 31 following year of analysis	Electronic	Yes	
Other metals	Yes		(1)	Electronic	No	All electronically stored data is extractable from data base but reports are not generally
Dioxins/furans	Yes		(1)	Electronic	No	
PCBs	Yes		(1)	Electronic	No	
Priority pollutants	Yes		(1)	Electronic	No	
Other organic compounds	No					
Radioactive isotopes	Yes		(1)	Electronic	Yes	
Nutrients (N, P, K)	Yes		(1)	Electronic		
Cumulative Pollutant Loading Rates	Yes		If permittee exceeds HQ limit, they must retain these records. We keep records for everyone	Electronic	Yes	
How biosolids achieve Class A or B	Yes		(1)	Electronic	Yes	
How biosolids achieve Vector Attraction	Yes		(1)	Electronic	Yes	
Solids stabilization processes used	Yes		With permit application or when a change	Electronic	Yes	
Other biosolids treatments	Yes		With permit application or when a change			
End use/disposal practice	Yes		(1)	Electronic	Yes	

# Wisconsin

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
5,503,533	54,310	101	10,728,655	69,883	0.015	0.5%

## Total Biosolids Used or Disposed in 2004\*:

From State Survey Q24	Adjusted Estimate
163,107	163,100

## Estimates from other sources:

Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)	Dry tons, reported to BioCycle Survey (Goldstein, 2000)
137,327	37,000

## Total Number of TWTDS in 2004\*\*:

From CWNS	From Survey Q24
597	404

Total number of TWTDS sending to Separate Preparers in 2004:	89
Number of Separate Preparers:	5
Number of operating sludge incinerators:	2
Fluidized bed:	0
Multiple hearth:	2
Percent of population served by on-site (e.g. septic systems):	36%

NOTES: Data in these tables are from the national Biosolids Quality and End Use Survey completed by the state biosolids coordinator. Approximately 30 TWTDS send wastewater solids to the five separate preparers; the remainder send their biosolids to other facilities for the required 180-day storage prior to land application.

**UNITS: Dry Metric Tons**

## Biosolids Use and Disposal Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	388	134,372	82%
Disposal	16	28,735	18%
Other	0	-	0%
<b>Total</b>	<b>404</b>	<b>163,107</b>	<b>100.00%</b>

### Beneficial Use

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	386	91,846	56%
Forestland	0	-	0%
Reclamation	0	-	0%
Class A EQ Distribution	2	42,526	26%
<b>Total</b>	<b>388</b>	<b>134,372</b>	<b>82%</b>
Long-term storage	0	-	0%

### Disposal

	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	10	12,153	7%
Surface Disposal	0	-	0%
Incineration	6	16,582	10%
<b>Total</b>	<b>16</b>	<b>28,735</b>	<b>18%</b>

## NOTES:

There are two incinerators, and one receives solids from 4 other TWTDS.

### Biosolids Quality Summary (2004 data)

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	9	47,227	29%
Other Class A	0	-	0%
Class B	294	87,145	53%
Other (no data, etc.)	0	28,735	18%
<b>Total</b>	<b>303</b>	<b>163,107</b>	<b>100%</b>

### Summary of Current Biosolids Treatment Practices

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...	
Aerobic Digestion	209	no data	NOTES:  Includes pasteurization (PFRP Equivalent)
Digestion-anaer./other	109	no data	
Lime/Alkaline	7	no data	
Composting	0	no data	
Thermal (not incineration)	1	no data	
Long-term (lagoons, reed beds, etc.) Other	10 0	no data no data	
Belt Filter Press	38	no data	Gravity belt thickener
Plate & Frame Press	2	no data	
Screw Press	0	no data	
Centrifuge	8	no data	
Vacuum Filter	1	no data	
Drying beds	20	no data	
Other	29	no data	

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.

**National Biosolids Quality and End Use Survey, May 2006**  
**SUMMARY OF STATE COORDINATOR RESPONSES**

## **Wyoming**

### **REGULATION AND PERMITTING**

Delegated by EPA for biosolids? Wyoming is not planning to seek delegation for Part 503.

State agency regulating biosolids: The water quality division of Wyoming's environmental agency (Wyoming Department of Environmental Quality) is notified of biosolids management activities, but formal permitting, oversight, and enforcement are mostly conducted by U.S. EPA Region 8, which has in place a general permit for biosolids land application, surface disposal, and landfilling that essentially follows the requirements of Part 503. In years past, a few small biosolids land application projects have been permitted and overseen by the state.

Holder of liability: Wyoming does not allow land appliers or land owners (who are not the TWTDS generator) to become the holder of legal liability for biosolids end use.

More than one Class B biosolids on one site? Wyoming does allow Class B biosolids from more than one TWTDS to be land applied on the same site in the same crop year, but this is not being done.

NPDES equivalent: Wyoming works with USEPA on the NPDES program. NPDES permits include requirements for biosolids use or disposal.

Number of full-time equivalent staff (FTEs) for biosolids program: 0.05

Biosolids regulations updated: Wyoming has no formal state-level biosolids regulations.

Management practices: In Wyoming, biosolids are managed in accordance with the federal Part 503 rule. Wyoming's pathogen and/or vector attraction reduction limits and pollutant (trace metals, etc.) limits are not more restrictive than Part 503. Wyoming does not require additional monitoring of Class B land application sites. Nitrogen is the basis for the agronomic loading rate for land application. Wyoming does not require formal nutrient management plans. Wyoming has no special provisions for management of phosphorus in biosolids.

Additional Management Actions: Wyoming does not require any additional oversight and certification to occur at biosolids land application sites, and none are known to be done by those managing biosolids.

Acres applied: The number of acres to which biosolids were applied in 2004 is not known.

Wyoming does not require site permits for land application (it falls under the U.S. EPA General Permit).

Reporting and Record-keeping: Major facilities, along with sludge-only processing facilities, are required to report biosolids information and data to USEPA Region 8, with copies sent to Wyoming DEQ. The public can access these reports from U.S. EPA Region 8. Wyoming biosolids data is compiled electronically by U.S. EPA Region 8, using the U.S. EPA's Biosolids Data Management System (BDMS).

Legislative, regulatory, or other activity impacting biosolids use/disposal: There is no such activity impacting the management of biosolids in Wyoming. No towns or counties in Wyoming have adopted more restrictive biosolids application ordinances, although there is nothing to keep them from doing so.

## **TRENDS**

The beneficial use of biosolids remains steady in Wyoming. Composting of biosolids is becoming more common, especially in larger municipalities. Water reuse is also growing in popularity.

Most significant current pressures on biosolids recycling: Lack of population generating biosolids.

## **SEPTAGE MANAGEMENT**

Septage regulations updated: Wyoming has no formal state septage regulations; the federal Part 503 must be followed.

Number of full-time equivalent staff (FTEs) for septage program: 0

Septage haulers based in state (estimated): No data provided.

Septage management: Septage can be land applied if it meets Part 503 and it is kept adequate distances away from surface and ground waters. POTWs are not required to accept septage, but some do.

Percentage of each management practice: Only a small amount of septage is land applied, and mostly on rural ranches. The remainder is hauled to TWTDS.

Other concerns: Wyoming does not consider fats, oils, and grease (FOG) to be a significant issue, and the use and disposal of grease trap waste is in accordance with Part 503 and other federal regulations. Wyoming does not have a proactive program to collect FOG and keep it out of the general wastewater flow.



## BIOSOLIDS TESTING & REPORTING REQUIREMENTS - 2006

State: Wyoming

**Current testing requirements, 2006:** for each of the following constituents in biosolids, indicate if testing is required by your state:

TESTING	...for all sewage sludge or biosolids	...for biosolids being beneficially used as fertilizers and soil amendments	FREQUENCY OF TESTING...		IF frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	Other...Please specify:	
Part 503 metals (As, Cu, Hg, etc.)	Yes	Yes	Yes	And EPR R8 General Permit	-
Other metals (boron, silver...)	No	-	-	-	-
Dioxins/furans	No	-	-	-	-
PCBs	No	-	-	-	-
Priority pollutants	No	-	-	-	-
Other organic compounds (e.g. PDBEs, pharmaceuticals)	No	-	-	-	-
Radioactive isotopes (alpha, beta, Ra 224, etc.)	No	-	-	-	-
Nutrients (NPK)	Yes	Yes	-	And EPR R8 General Permit	-
Pathogen reduction (Class A or B)	Yes	Yes	Yes	And EPR R8 General Permit	-
Vector attraction reduction (VAR)	Yes	Yes	Yes	And EPR R8 General Permit	-

**Current reporting requirements, 2006:** for each of the following, indicate what TWTDS and/or biosolids preparers must report to the state:

REPORTING:	Reporting required?	Frequency of reporting		How is the data stored by the state?	Is data compiled by the state in reports or summaries?	
	Yes/No	In accordance with Part 503 requirements	Other... please specify	Paper/Electronic	Yes/No	
The amounts of biosolids/sewage sludge used or disposed	Yes	Yes	-	-	-	-
Part 503 metals	Yes	Yes	-	-	-	-
Other metals	No	-	-	-	-	-
Dioxins/furans	No	-	-	-	-	-
PCBs	No	-	-	-	-	-
Priority pollutants	No	-	-	-	-	-
Other organic compounds	No	-	-	-	-	-
Radioactive isotopes	No	-	-	-	-	-
Nutrients (N, P, K)	Yes	-	And EPR R8 General Permit	-	-	-
Cumulative Pollutant Loading Rates	No	-	-	-	-	-
How biosolids achieve Class A or B	Yes	Yes	And EPR R8 General Permit	-	-	-
How biosolids achieve Vector Attraction	Yes	Yes	And EPR R8 General Permit	-	-	-
Solids stabilization processes used	Yes	Yes	And EPR R8 General Permit	-	-	-
Other biosolids treatments	-	-	-	-	-	-
End use/disposal practice	Yes	Yes	And EPR R8 General Permit	-	-	-

# Wyoming

Estimated population	Land area (sq. mi.) (www.quickfacts.census.gov)	Pop. Density (pop/sq.mi)	Total Cropland in Farms (acres, USDA, 2002)	Number of Farms With That Total Cropland (USDA, 2002)	Application rate if all state biosolids (adj. estimate) were applied to cropland (units/ac)	Percentage of acres needed if all state biosolids were applied to cropland at typical rate (~ 3 dry ton/ac)
505,887	97,100	5	2,989,804	7,017	0.008	0.3%
<b>Total Biosolids Used or Disposed in 2004*:</b>			<b>Estimates from other sources:</b>			
	From State Survey Q24	<b>Adjusted Estimate</b>	Dry U. S. tons, from EPA Biosolids Generation Factor x Flow (EPA CWNS, 2004)		Dry tons, reported to BioCycle Survey (Goldstein, 2000)	
	24,224	<b>24,000</b>	9,784		3,600	
<b>Total Number of TWTDS in 2004**:</b>			From CWNS	From Survey Q24		
			123	21		
Total number of TWTDS sending to Separate Preparers in 2004:			0			
Number of Separate Preparers:			0			
Number of operating sludge incinerators:			0			
Fluidized bed:			0			
Multiple hearth:			0			
Percent of population served by on-site (e.g. septic systems):			30%			
<b>UNITS:</b>			<b>Dry Metric Tons</b>			

NOTES: Data in these tables were provided by EPA Region 8 and includes all of the major TWTDS in the state.

## Biosolids Use and Disposal Summary (2004 data)

To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Beneficial Use	10	13,792	57%
Disposal	5	698	3%
Other	6	9,734	40%
<b>Total</b>	<b>21</b>	<b>24,224</b>	<b>100.00%</b>
<b>Beneficial Use</b>			
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
Agricultural	7	12,890	53%
Forestland	0	-	0%
Reclamation	1	37	0%
Class A EQ Distribution	2	865	4%
<b>Total</b>	<b>10</b>	<b>13,792</b>	<b>57%</b>
Long-term storage	6	9,734	40%
<b>Disposal</b>			
To...	Number of Entities (TWTDS & Sep. Preparers) Going To...	Quantity of Biosolids	Percentage (quantity)
MSW landfill (incl dly cvr)	3	308	1%
Surface Disposal	2	390	2%
Incineration	0	-	0%
<b>Total</b>	<b>5</b>	<b>698</b>	<b>3%</b>

**Biosolids Quality Summary (2004 data)**

	Number of Entities (TWTDS & Sep. Preparers) Producing...	Quantity of Biosolids	Percentage (quantity)
Class A EQ	2	920	100%
Other Class A	0	-	0%
Class B	0	-	0%
Other (no data, etc.)	0	-	0%
<b>Total</b>	<b>2</b>	<b>920</b>	<b>100%</b>

**Summary of Current Biosolids Treatment Practices**

	Estimated Number of TWTDS Using...	Estimated Quantity of Biosolids Produced Using...
Aerobic Digestion	4	1,218
Digestion-anaer./other	5	5,226
Lime/Alkaline	0	-
Composting	1	481
Thermal (not incineration)	0	-
Long-term (lagoons, reed beds, etc.)	0	-
Other	1	439
<b>Belt Filter Press</b>	<b>3</b>	<b>1,015</b>
Plate & Frame Press	0	-
Screw Press	0	-
Centrifuge	0	-
Vacuum Filter	0	-
Drying beds	9	6,551
Other	1	439

\* "Total biosolids generated in 2004" and all other amounts reported in these tables are in the units noted (dry U.S. tons, dry metric tons, or wet U.S. tons). The total "From State Survey Q24" was reported by the state biosolids coordinator, the regional USEPA office, and/or the largest individual TWTDS in the state. The "Adjusted Estimate" is an appropriately rounded figure to indicate some level of uncertainty; it is used in national totals.

\*\* "Total Number of TWTDS in 2004" shows two totals: the number of individual TWTDS reporting flow in the 2004 CWNS data, and, "From Survey Q24," the sum of TWTDS shown in the "Beneficial Use" and "Disposal" tables, below. The second total can be higher than the number of individual TWTDS that actually used or disposed of solids in 2004, because many facilities send solids to two or more use or disposal options in a given year. TWTDS = Treatment Works Treating Domestic Sewage. CWNS = Clean Watershed Needs Survey, 2004 data.