

Biosolids Management in New York State

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**Department of
Environmental
Conservation**

DIVISION OF MATERIALS MANAGEMENT | 625 BROADWAY, ALBANY, NY 12233-7253

Preface

This report is an update to the Division of Materials Management 2011 edition of “Biosolids Management in New York State.” It provides the most current information available concerning biosolids management practices in New York State. Biosolids was previously called sewage sludge. 6 NYCRR Part 360 regulations define biosolids as:

the accumulated semi-solids or solids resulting from treatment of wastewaters from publicly or privately owned or operated sewage treatment plants. Biosolids does not include grit or screenings, or ash generated from the incineration of biosolids.

We would like to thank all chief operators and managers of the wastewater treatment facilities in New York State that responded to our survey questionnaires. The report could not be completed as comprehensively without their assistance.

Any comments, questions, or requests for specific data regarding this report may be sent to Molly Baker at molly.baker@dec.ny.gov.

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Findings Summary

In a 2015 survey of publicly-owned treatment works (POTWs), or wastewater treatment facilities that are owned by public entities, in New York State (NYS), the Department of Environmental Conservation's (DEC or Department) Division of Materials Management (DMM) identified 612 POTWs that generate biosolids (sewage sludge). A total of 580 facilities completed the survey (95% of those surveyed). These reporting facilities represent 99.7% of the total design flow rates in all NYS. The total design flow for all facilities is approximately 3,800 mgd (million gallons per day), while the reported actual flow rate is approximately 2,400 mgd. Over 70% of the surveyed facilities reported actual flow rates that were less than 1 mgd.

The POTWs reported generating a total of 374,110 dry tons of biosolids annually. As of 2015, landfilling continues to be the most popular biosolids management method with an estimated 68% of biosolids produced annually going to solid waste landfills. Beneficial use, through methods such as land application, composting, heat drying, and mine reclamation, comprises 16% of biosolids produced annually. Additionally, incineration is used to treat 16%, and other management methods (lagooning, stockpiling, etc.) are used for less than 1% of the total biosolids produced annually. All percentages were calculated on a dry weight basis. Figure 1 depicts biosolids management, by dry weight, in New York State. (Note that the total quantity managed, or processed, in 2015 does not match the total quantity generated. This is primarily due to POTWs stockpiling or lagooning material from previous years and managing them in the reporting year. The POTWs reported processing, or managing, a total of 377,663 dry tons of biosolids in 2015.)

Figure 1

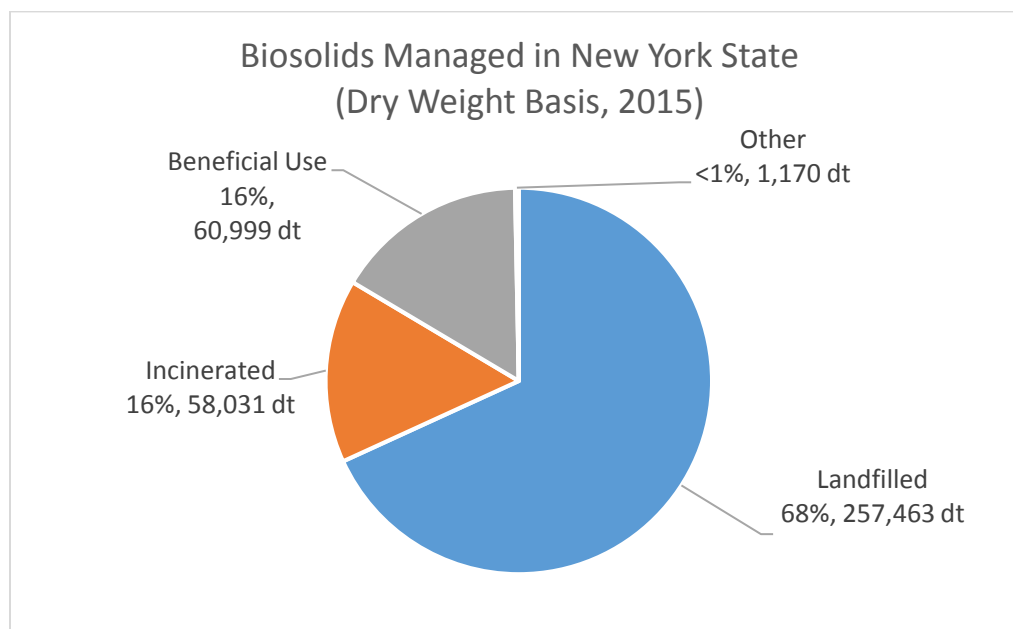
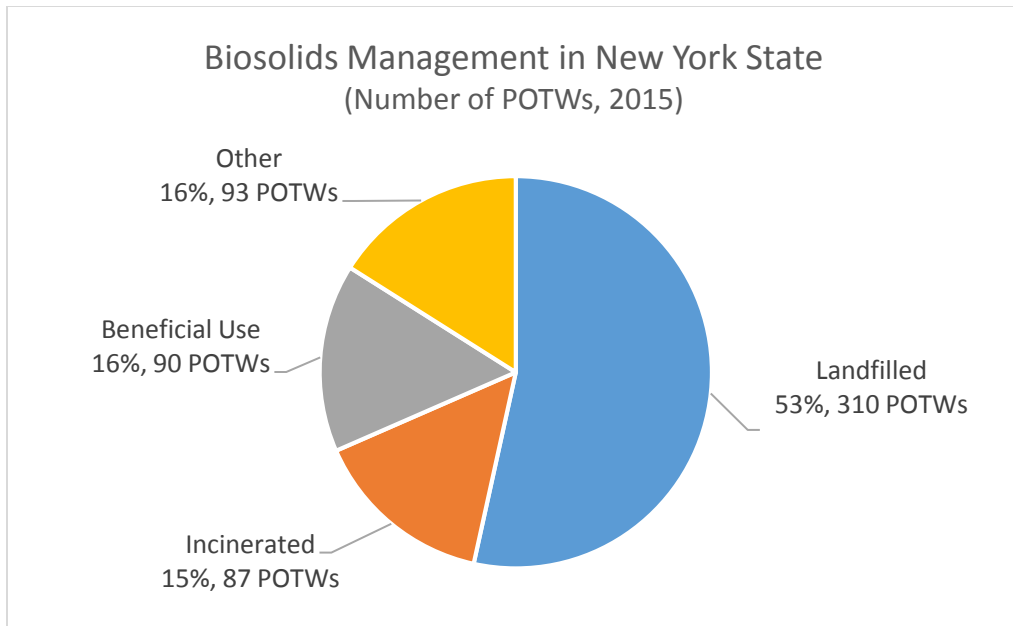


Figure 2 depicts the number of POTWs utilizing each biosolids management method. In terms of the number of treatment plants in NYS, 310 POTWs are currently sending biosolids to landfills, representing 53% of the reporting facilities. Beneficial use methods are used by 90 POTWs, representing 16% of these facilities. Incineration is used by 87 POTWs, or 15% of these facilities. Other methods are used by 93 POTWs, representing 16% of these facilities.

Figure 2



With the introduction of the Ocean Dumping Ban Act, effective 1992, along with Department promotion of biosolids recycling, many POTWs utilized beneficial use methods for their biosolids management. In the 1990s, beneficial use was the most popular option, accounting for over 50% of the total biosolids managed on a dry weight basis. In 2010, two large beneficial use facilities closed, leaving many POTWs to switch to landfiling due to the low tipping fees in most of the state. This change caused a significant drop in the quantity of biosolids being recycled. Landfilling has remained the most popular option for biosolids management since then, now accounting for 68% of the total biosolids managed on a dry weight basis. Due somewhat to public perception of biosolids land use as well as the consistently low landfill tipping fees, it is probable that beneficial use will remain less popular than landfilling in the near future. However, many municipalities are evaluating beneficial use options for biosolids in long-term planning efforts to help them reach their own municipal recycling goals.

The Department is not currently delegated by the Environmental Protection Agency (EPA) to administer the federal regulatory program for biosolids management. Therefore, biosolids management is subject to both the federal criteria found in 40 CFR Part 503, *Standards for the Use or Disposal of Sewage Sludge*, and the State regulations found in 6 NYCRR Part 361 (Part 361). (Note: State regulations have been revised as of November 2017. Minor programmatic changes were made, but the rules organization and naming conventions have changed. Definitions and general solid waste management regulations remain in 6 NYCRR Part 360, while biosolids recycling criteria are now found in Part 361. Since March 2003, State regulations have included all federal requirements for biosolids management practices. By meeting State requirements, municipalities will meet federal requirements as well. The Department promotes the beneficial use of biosolids that meet the quality standards. However, the Department does not dictate a preferred management method. The decision to select one of many beneficial use or disposal options lies with local municipalities.

Biosolids Management Survey

Sources of Information

The data and information in this report have been compiled from many sources, including: a 2015 survey of all POTWs in NYS, monitoring and information required by State permits, and existing databases on wastewater treatment and biosolids management maintained by DEC's Division of Materials Management and Division of Water. Each source is described briefly below.

Biosolids Survey

The Department surveys all POTWs in NYS concerning their biosolids management practices on a periodic basis, typically every 5 years. The latest survey was completed by facilities reflecting the 2015 calendar year. The survey requested information concerning the wastewater treatment process, the quantity, treatment, and management of the biosolids generated, and other general topics. Facilities were also able to list questions and concerns surrounding biosolids management, as well as inform the Department of any upcoming changes in treatment processes. Due to the increase in interest statewide for reducing the amount of food scraps sent to landfills, the survey asked POTWs if they are considering adding this waste stream to their treatment systems in the future. A copy of the survey can be found in the Appendix.

The survey was mailed in early 2016, and responses were accepted through 2016. Multiple rounds of mailings, as well as phone calls and emails, reminded municipalities to respond. By January 2017, 580 surveys had been returned or responded to. This response rate accounts for over 95% of the total number of POTWs in the State that produce biosolids (612). Based on the facilities' design flow rates, the responses received represent 99.7% of the total design flows in the state. For those facilities that did not respond to the survey, existing Department records were used to determine biosolids management practices. In some cases, facilities that were no longer operating responded as such, and thus were not studied for this report.

Monitoring and General Information from State Permits

POTWs involved with the beneficial use of biosolids through land application, composting, and other means are required to obtain a Part 361 permit in New York State. (In 2015, the biosolids management regulations fell under Part 360. The transition period for these regulations is in effect as of the published date of this report.) The permit requires detailed information concerning the wastewater treatment facility, the amount of biosolids generated, biosolids quality, and how the biosolids are handled. The Division of Materials Management maintains databases for this type of information.

The Division of Water maintains a database on the name, location, and characteristics of the POTWs statewide. This information was used to develop the contact list for the survey. The Division of Water also maintains a database for Discharge Monitoring Reports (DMR). In previous years, the DMR data contained information reported by the POTWs regarding biosolids quality. Since the EPA implementation of the Federal e-Reporting Rule, the process has changed. All permittees required to report on biosolids are now directed to report to EPA electronically, rather than through the existing DMR structure. Therefore, the Division of Water no longer tracks this information separately from EPA.

Sampling and Analyses Conducted by the Department

The Department conducts a sampling and analysis program each year when funding is available. The number of POTWs and types of analyses sampled each year vary due to budget constraints and industry

trends. Recent years' budgets for sampling at POTWs have been sizably reduced. However, sampling is often conducted for topics of concern. Data obtained from 2015 sampling was not used in this report.

POTW Information

There are currently 612 POTWs in the State of New York that produce biosolids, located across 9 DEC regions. Contact information for regional offices, where a POTW can acquire information concerning permitting requirements for biosolids management practices, can be found at the following link: <http://www.dec.ny.gov/about/50230.html>.

The combined design flow capacity for all facilities is approximately 3,800 mgd (million gallons per day), while the reported combined actual flow through the POTWs is approximately 2,400 mgd. Over 70% of the surveyed facilities reported actual flow rates that were less than 1 mgd. All sludge quantities in survey responses were presented in or converted to dry tons (100% solids). The current total biosolids generation rate is approximately 374,110 dry tons per year (1,025 dry tons per day). The total reported biosolids processed, or managed, in 2015 is 377,663 dry tons.

Treatment and Dewatering Methods

Tables 1 and 2 show the biosolids treatment and dewatering methods currently used by POTWs in New York State. Aerobic digestion is the most popular method for biosolids treatment, used by 260 of the facilities, followed by anaerobic digestion, used by 136 of the facilities. More than 40% of the total number of POTWs are using aerobic digestion at the plant to treat wastewater. Over 20% are using anaerobic digestion.

For dewatering methods, the most common (if any is used) is by belt filter press, used by 167 facilities, followed by drying beds, used by 109 facilities. Over 35% of the total number of POTWs reported not using any dewatering methods at the plant (204 facilities). As shown in these two tables, there is a variety of methods used in NYS. (Note that some POTWs use multiple treatment and/or dewatering methods at their facility, and thus the total number of POTWs listed in the tables does not match the total number of POTWs generating biosolids.)

Table 1. Treatment Methods Employed by POTWs

Treatment Method	# of POTWs
<i>Aerobic Digestion</i>	260
<i>Anaerobic Digestion</i>	136
<i>None</i>	80
<i>Septic Tank</i>	58
<i>Lagoon</i>	26
<i>Reed Bed</i>	23
<i>Lime Stabilization</i>	16
<i>Imhoff Tank</i>	15
<i>Holding Tank</i>	8
<i>Sand Filters</i>	4
<i>Oxidation Basin</i>	3
<i>Rotating Biological Contactor</i>	2

Table 2. Dewatering Methods Employed by POTWs

Dewatering Method	# of POTWs
<i>None</i>	204
<i>Belt Filter Press</i>	167
<i>Drying Beds</i>	109
<i>Centrifuge/Rotary</i>	33
<i>Settling/Decanting</i>	28
<i>Plate & Frame</i>	25
<i>Gravity Thickener</i>	21
<i>Screw Press</i>	9
<i>Drying Polymers</i>	4
<i>Vacuum Filter</i>	1

Biosolids Management Practices

As of 2015, landfilling continues to be the most popular biosolids management method, with an estimated 68% by dry weight of biosolids processed annually going to solid waste landfills for disposal. Beneficial use, through methods such as land application, composting, heat drying, and mine reclamation, comprises 16% by dry weight of biosolids processed annually. Additionally, incineration is used to treat 16% by dry weight, and other management methods (lagooning, stockpiling, etc.) are used for less than 1% by dry weight of the total biosolids processed annually.

In terms of the number of treatment plants in NYS, landfilling is currently used by 310 POTWs, representing 53% of the reporting facilities. Beneficial use methods are used by 90 POTWs, representing 16% of these facilities. Incineration is used by 87 POTWs, or 15% of these facilities. Other methods are used by 93 POTWs, representing 16% of these facilities. This data is represented in Table 3.

Table 3. Biosolids Management in NYS (2015)

BIOSOLIDS MANAGEMENT METHOD	QUANTITY (DRY TONS)	% BY DRY WEIGHT	# OF POTWS	% OF POTWS
LANDFILLING*				
IN-STATE	230,303	61%	-	-
OUT-OF-STATE	27,160	7%	-	-
LANDFILLING TOTAL	257,463	68%	310	53%
BENEFICIAL USE				
LAND APPLICATION	12,888	3%	37	6%
COMPOSTING	45,012	12%	47	8%
HEAT DRYING/PELLETIZATION	897	<1%	3	<1%
MINE RECLAMATION**	2,202	<1%	3	<1%
BENEFICIAL USE TOTAL	60,999	16%	90	16%
INCINERATION	58,031	16%	87	15%
OTHER***	1,170	<1%	93	16%
TOTAL	377,663	100%	580	100%

*Many POTWs reported the disposal of biosolids at multiple landfills in 2015, often including facilities both in and out of NYS. Therefore, the quantification of the percent of POTWs utilizing each option is not used for the purposes of this report.

** All mine reclamation, for the purposes of the 2015 biosolids survey, was reported as managed at a facility outside of NYS.

****Other* may include on-site lagoons/septic tanks/reed beds, stockpiling on-site, and non-specified septic haulers.

Table 3 provides figures for the annual management of biosolids both on a dry weight basis and in terms of the number of participating POTWs. The following sections describe the beneficial use and disposal methods utilized by NYS facilities:

Landfilling

This disposal method has remained the most popular management method for biosolids residuals primarily due to its low cost in most areas of NYS. State solid waste regulations require facilities to follow certain criteria when disposing of biosolids and sludges at solid waste landfills. These regulations can be found in [6 NYCRR Part 363-7.1\(j\)](#). POTWs are required to dewater the material to 20% solids, exhibiting no free liquid. They also must stabilize the biosolids, by either digestion or with lime. If digestion or lime

stabilization are not possible for the POTW, the facility may satisfy other criteria minimizing the risk for odors and vector attraction.

Approximately 68% of the total biosolids managed in the State are currently disposed of in landfills. From that material, about 89% is disposed of in-state. The other 11% of the biosolids sent to landfills are disposed of at facilities outside of NYS (primarily in surrounding states such as Connecticut, New Jersey, and Pennsylvania, but also in states as far south as Kentucky). Table 4 lists the landfills accepting biosolids in NYS, along with the quantity of biosolids that were accepted at these facilities in 2014. These facilities consist of one sludge monofill as well as 24 municipal solid waste landfills that accept primarily municipal solid waste. Very few active municipal solid waste landfills in NYS (there are 27 total) do not accept biosolids. Two of them are located in the northern-most areas of the State, where many of the POTWs are small (and commonly use long-term reed and sand beds which are not emptied very often) and where an active biosolids processing facility with a large capacity volume is located (see next section for more).

Table 4. Landfills Accepting Biosolids in 2014

DEC REGION	LANDFILL NAME	COUNTY	QUANTITY ACCEPTED IN 2014* (DRY TONS)
4	Albany City	Albany	3,058
4	Town of Colonie	Albany	10,136
4	Delaware County	Delaware	2,512
4	Rensselaer County SD#1 Monofill	Rensselaer	1,718
5	Fulton County	Fulton	20,846
6	Ava	Oneida	10,005
6	Development Authority of the North Country	Jefferson	3,270
7	Auburn	Cayuga	2,668
7	Bristol Hill	Oswego	3,777
7	Broome County	Broome	10,463
7	Chenango County	Chenango	366
7	Cortland County	Cortland	2,689
7	Madison County	Madison	2,649
8	Bath	Steuben	21,316
8	Chemung County	Chemung	5,417
8	High Acres	Monroe	35,073
8	Mill Seat	Monroe	40,608
8	Ontario County	Ontario	73,916
8	Seneca Meadows	Seneca	40,773
9	Allegany County	Allegany	799
9	Allied Waste Niagara Falls	Niagara	82,840
9	Chaffee	Erie	22,572
9	Chautauqua	Chautauqua	18,801
9	Hyland	Allegany	19,470
9	Modern	Niagara	18,711

*These quantities include all biosolids accepted at the facility, including waste sources outside of NYS.

Beneficial Use

Biosolids can be beneficially used, or recycled, to create a valuable soil amendment because of their high nutrient and organic contents. In NYS, 90 POTWs (16%) that generate biosolids are sending the material to be beneficially used. This accounts for 60,999 dry tons (16%) of the total biosolids processed in the state. There are many ways to recycle biosolids in NYS. POTWs reported utilizing multiple methods in 2015, including *composting, land application, heat drying or pelletizing, and mine reclamation*. Landfilling and incineration or waste-to-energy combustion facilities are not considered beneficial use options in NYS.

Composting is the aerobic decomposition of organics (i.e., biosolids) using controlled temperature, moisture, and oxygen levels, to produce a humus-like material that can be used as a soil amendment. The biosolids are typically dewatered and mixed with an amendment, such as woodchips, sawdust, or yard waste. The temperatures reached in the composting process are high enough to kill pathogenic organisms. Compost is most often used for landscaping, home gardens, municipal projects, and worksite erosion control. In NYS, 47 POTWs, or 52% of the facilities that beneficially use biosolids, compost their biosolids. This accounts for 45,012 dry tons annually, or 74% of the total biosolids beneficially used in NYS annually on a dry weight basis. This can be seen in Figures 3 and 4 on page 8.

Land application involves the placement of biosolids on or into the soil to benefit the crop grown and the soil present. It is commonly used on agricultural or forest lands in NYS. The biosolids can be applied as either a liquid or semi-solid (dewatered), similar to animal manure. The material is either directly injected into the ground, or spread on the ground and then incorporated into the soil. Biosolids are spread at an application rate beneficial to the crop being grown. In NYS, 37 POTWs, or 41% of the facilities that beneficially use biosolids, land apply their biosolids. This accounts for 12,888 dry tons annually, or 21% of the total biosolids beneficially used in NYS annually on a dry weight basis. This can be seen in Figures 3 and 4.

In some cases, biosolids can be used to reclaim lands on areas with low organic content, such as former mine sites. *Mine reclamation* is often chosen as a cost-effective way to establish vegetative cover on contaminated or mined land by increasing the soil's organic content and minimizing the movement of metals through erosion and leaching. Currently, there are no reclaimed mine sites in NYS that are utilizing biosolids land application. However, 3 POTWs, or 3.5% of the facilities that beneficially use biosolids, send their biosolids (typically to Pennsylvania) for reclaimed mined land. This accounts for 2,202 dry tons annually, or 4% of the total biosolids beneficially used in NYS annually on a dry weight basis. This can be seen in Figures 3 and 4.

Heat drying, or pelletization, is a treatment process in which almost all water is removed from biosolids by exposure to a heat source, resulting in a fertilizer product. Typically, the heat drying facility takes dewatered biosolids (20-30% solids) as an input and produces a product with greater than 90% solids. In NYS, 3 POTWs, or 3.5% of the facilities that beneficially use biosolids, heat dry, or pelletize, their biosolids. This accounts for 897 dry tons annually, or 1% of the total biosolids beneficially used in NYS annually on a dry weight basis. This can be seen in Figures 3 and 4.

In previous surveys, some POTWs were treating their biosolids by chemical stabilization, such as the N-Viro process, which involves the blending of dewatered biosolids with alkaline admixtures, such as quicklime, lime kiln dust, pulverized limestone, and/or coal ash. These added materials result in high heat

and pH values, destroying pathogens. Since the closing of NYS’s chemical stabilization facilities, POTWs have not continued processing their biosolids with this method.

There are two other types of permitted beneficial use facilities operating in NYS. Ontario County (at the City of Geneva’s Marsh Creek POTW) permitted an Autothermal Thermophilic Aerobic Digestion facility (ATAD) in October 2017. ATAD a process implemented at the wastewater treatment facility that uses specified time and temperature parameters in an aerobic digester to produce a Class A biosolids product. No facilities were utilizing this process at the time of the survey (2015 calendar year). Additionally, Casella Organics operates a facility in Chateaugay, Franklin County, which uses alkaline stabilization technology to produce a Class A product suitable for land application.

Figure 3

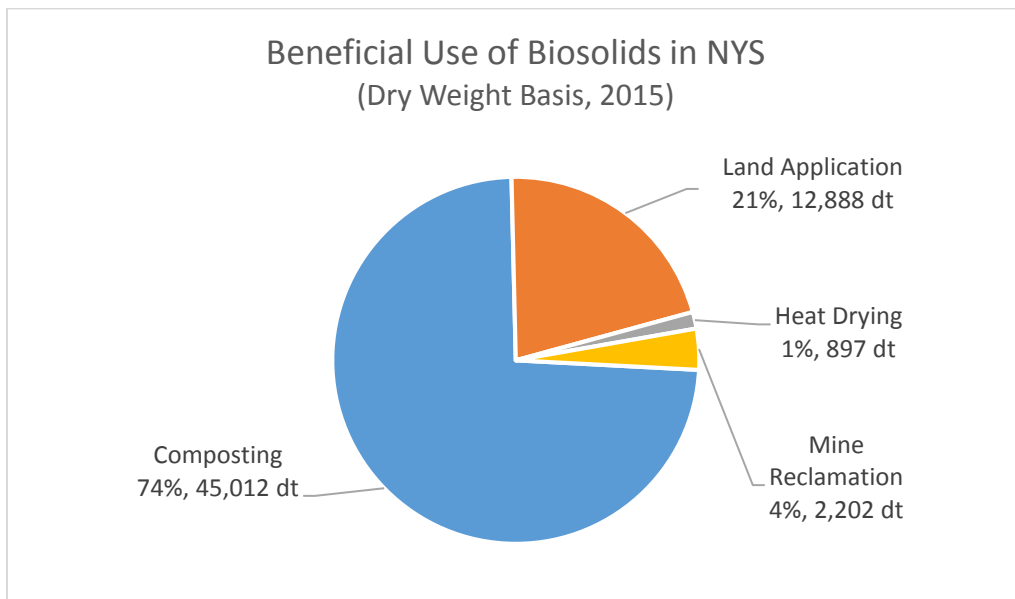
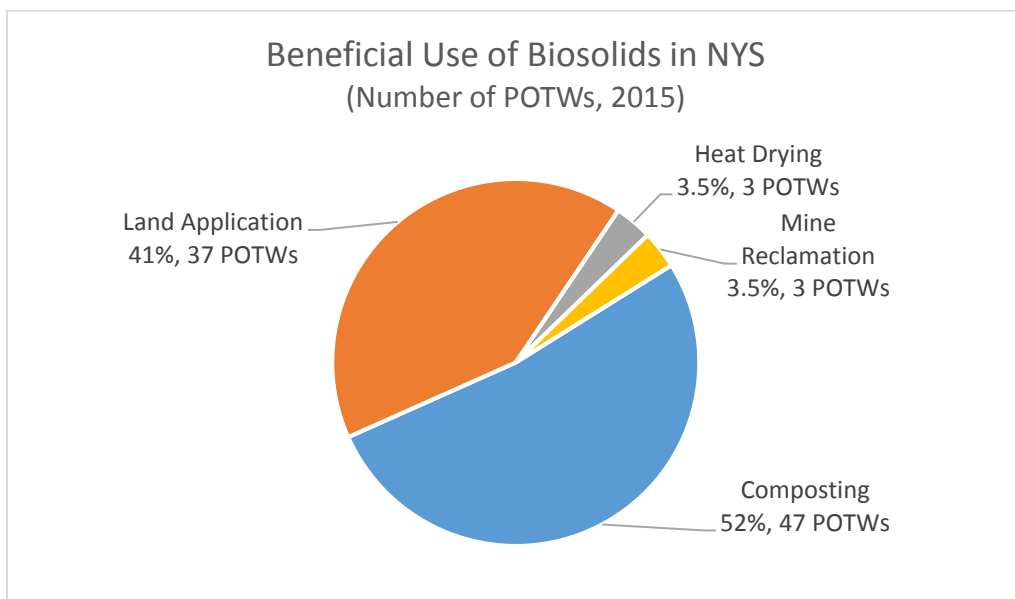


Figure 4



In NYS, all Class A biosolids management processes (e.g., composting, heat drying/pelletization) and direct land application of Class B biosolids must hold 6 NYCRR Part 361 solid waste management facility permits and must report to the Department annually. These regulations recently underwent a revision process and became effective as of November 2017. As of the survey date in 2015, the biosolids management regulations still fell under Part 360. In general, the regulations governing biosolids management practices were not changed. However, to complement federal (EPA) rules on land use after biosolids management, there are now no restrictions on food or feed crops when soil is amended with a Class A biosolids product. The transition period for these regulations is in effect as of the published date of this report. As facilities' permits expire, they will be required to renew or modify their permits in accordance with the new rules.

There are 53 solid waste management facilities permitted to beneficially use biosolids in NYS as of the published date of this report. This includes 28 biosolids composting, 22 direct land application, 2 heat drying, and 1 autothermal thermophilic aerobic digester (ATAD) facilities. One Part 361 (or Part 360) permit may service more than one POTW. These facilities are listed in Table 5.

Table 5. Permitted Biosolids Beneficial Use Facilities in NYS (2017)

DEC Region	Facility Name	County	Facility Type	QUANTITY ACCEPTED IN 2016 (dry tons)*
3	Kingston (C)/Aslan	Ulster	Heat Drying	None in 2016
3	Rockland County SWMA	Rockland	Composting	4,701
3	Tri-Municipal WWTF	Dutchess	Composting	134
4	Delaware County SWMF	Delaware	Composting	3,207
4	Rensselaer County Sewer District	Rensselaer	Heat Drying	1,190
5	Grasslands	Franklin	Bioset Process	11,119
5	Speculator	Hamilton	Land Application	None in 2016
5	Ticonderoga/Leerkes	Essex	Land Application	189
5	Washington County	Washington	Composting	456
6	Camden (V)	Oneida	Land Application	180
6	Heuvelton (V)	St. Lawrence	Land Application	49
6	Waste Stream Inc.	St. Lawrence	Land Application	182
6	Waterville	Oneida	Composting	16
6	Waterville (V)	Oneida	Land Application	3
7	Chenango (T)	Broome	Composting	143
7	Chittenango (V)/LBD Enterprises	Madison	Composting	84
7	Chittenango (V)/LBD Enterprises	Madison	Land Application	None in 2016
7	Endicott (V)	Broome	Composting	420
7	Ithaca Area WWTF	Tompkins	Land Application	None in 2016
7	Madison County Sewer District	Madison	Composting	48
7	Marcellus (V)	Onondaga	Composting	30
7	Owego (T)	Tioga	Land Application	134
7	Owego (V)	Tioga	Land Application	89
7	Sky High Farms/LBD Enterprises	Madison	Land Application	866
7	Tully (V)	Onondaga	Land Application	19
7	Weedsport	Cayuga	Composting	25
8	Albion (V)	Orleans	Land Application	113

8	Arkema Inc.	Livingston	Land Application	35
8	Bergen (V)	Genesee	Composting	N/A (new)
8	Clifton Springs (V)	Ontario	Composting	26
8	Dansville (V)	Livingston	Composting	72
8	Dundee (V)	Yates	Land Application	13
8	Hornell (C)	Steuben	Land Application	169
8	L&D Acquisition	Ontario	Land Application	None in 2016
8	Leo Dickson & Sons	Steuben	Composting	None in 2016
8	Leo Dickson & Sons	Steuben	Land Application	None in 2016
8	Manchester-Shortsville	Ontario	Composting	98
8	Marsh Creek Digester	Ontario	ATAD	N/A
8	Mt. Morris (V)	Livingston	Composting	23
8	Newark (V)	Wayne	Composting	< 1
8	Nunda	Livingston	Land Application	39
8	Ontario	Wayne	Composting	139
8	Penn Yan (V)	Yates	Composting	26
8	Sheesley's Sewer Service	Chemung	Land Application	7
8	Sodus (V)	Wayne	Composting	27
9	Arcade (V)	Wyoming	Composting	49
9	Attica (V)	Wyoming	Composting	132
9	Gowanda (V)	Erie	Composting	64
9	Little Valley (V)	Cattaraugus	Land Application	None in 2016
9	Lockport (C)	Niagara	Composting	629
9	Newfane	Niagara	Composting	223
9	Portville (V)	Cattaraugus	Composting	None in 2016
9	Salamanca	Cattaraugus	Land Application	84

*These quantities include all biosolids accepted at the facility, including waste sources outside of NYS.

Incineration

Incineration involves the high temperature combustion of biosolids without energy recovery. This method reduces the volume of sewage sludge by at least 70%. The resultant ash must be ultimately disposed, usually at a solid waste landfill. Due to high capital and operating costs, this method is generally a less popular biosolids management practice. There are 87 POTWs using incineration, which accounts for approximately 16% of the total biosolids processed annually, on a dry weight basis.

As of March 31, 2016, many incineration facilities became non-operational, as they would not be able to obtain regulatory compliance under the new Title V air permit provisions (based off EPA's 40 CFR Part 70 rules). As of the 2015 survey, 8 facilities were operational and accepting sewage sludge. Currently, only 5 facilities actively incinerate biosolids in NYS. These facilities are listed in Table 6 on page 11.

Similar to incineration, there is one waste-to-energy facility that POTWs reported sending biosolids to for processing in 2015. This facility, located in Hudson Falls, uses high temperature combustion of the biosolids like incineration and recovers energy from the process. Although energy is recovered, waste-to-energy facilities are not considered beneficial use, or recycling, in NYS.

Table 6. Incinerators Accepting Biosolids in NYS in 2015

DEC Region	Facility Name	County	Incinerator Type	Current Status
4	Albany North	Albany	Multiple Hearth	Active
4	Albany South	Albany	Multiple Hearth	Active
5	Glens Falls	Warren	Fluidized Bed	Closed 3/2016
5	Saratoga County SD#1	Saratoga	Fluidized Bed	Closed 3/2016
6	Oneida County	Oneida	Fluidized Bed	Active
6	Watertown	Jefferson	Fluidized Bed	Closed 3/2016
9	Bird Island	Erie	Multiple Hearth	Active
9	Southtowns	Erie	Fluidized Bed	Active

Other Methods

Other methods are used by 93 POTWs and account for < 1% of the total biosolids processed annually, on a dry weight basis. These methods are generally used by smaller treatment plants (often < 1 mgd design flows) and include:

- Treatment lagoons, reed beds, or sand beds – Biosolids are retained, and stabilize in place, for a long period of time. Biosolids are removed when needed, possibly once every 10 to 20 years.
- Stockpiling on-site – Storing dewatered biosolids on-site. Storage is limited to 12 months or less without a 6 NYCRR Part 360 permit for solid waste storage.
- Holding or temporary storage – Biosolids are temporarily stored in some type of holding tank until they can be processed or sent elsewhere for treatment.

Trends in Biosolids Management

Figure 5 depicts the change in biosolids management practices in New York State over the last 27 years. Since 1998, the trend shows a steady increase in the use of landfills for biosolids disposal. Landfilling has increased from 17% in 1998 to the current 68% of total biosolids processed on a dry weight basis. This is primarily due to relatively low tipping fees in the state and the limited infrastructure required to send biosolids to a landfill.

In 1988, the Ocean Dumping Ban Act was signed into law, which prohibited all municipal sewage sludge dumping into the ocean as of 1992. During this time, the Department promoted the beneficial use of biosolids to encourage an alternative to ocean dumping and disposal practices. Beneficial use became the most popular management method for 15 years, with over 50% of the total biosolids processed in the state being recycled in the mid-1990s. In 2010, two large beneficial use facilities (a heat drying facility and a chemical stabilization facility) closed and the biosolids were diverted to landfills. This change reduced beneficial use to 30% of total biosolids processed. The continued relatively low cost of landfilling continues to present an obstacle to beneficial use.

Since 1994, incineration has gradually decreased from 33% to the current 16% of total biosolids processed on a dry weight basis. High maintenance and operating costs are the main reasons that make this option less popular in the state. With the closing of multiple facilities in 2016 due to federal regulations changes, it is probable that this figure will drop further in future surveys.

Figure 5

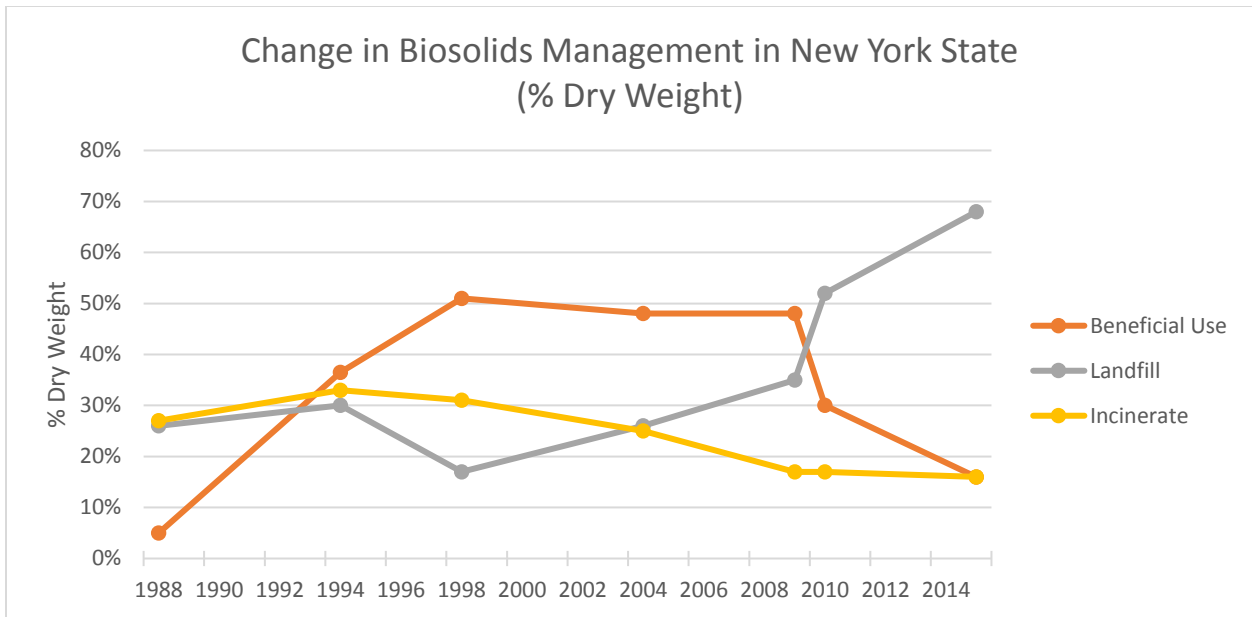
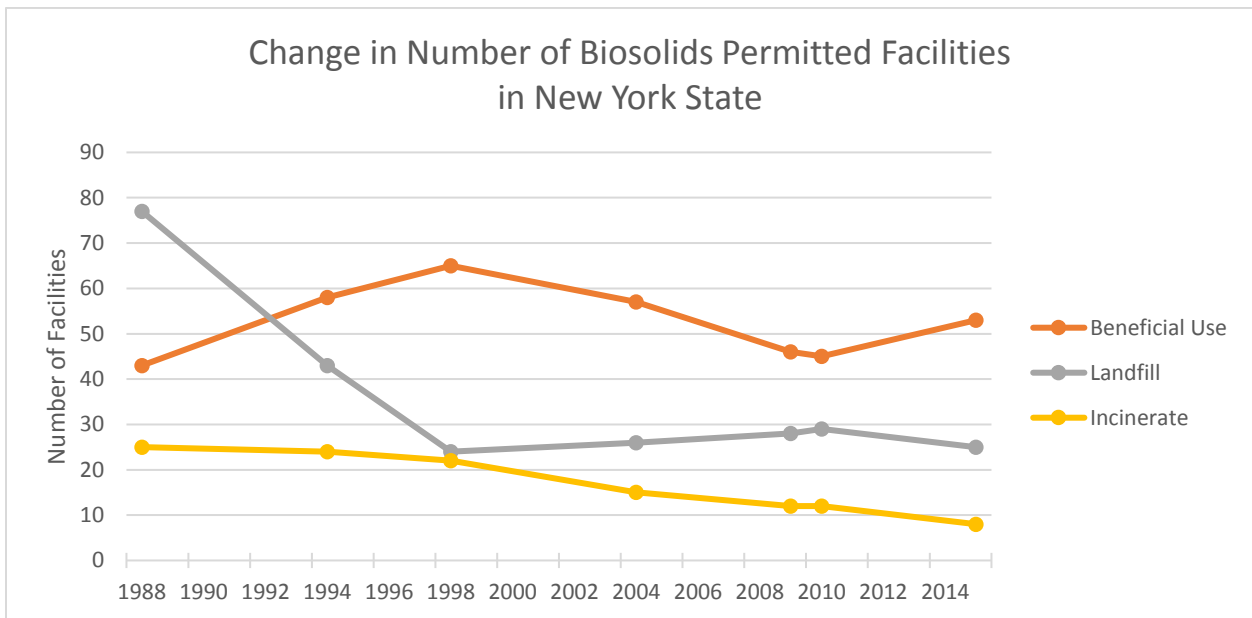


Figure 6 illustrates the change in the number of permitted facilities that handle biosolids over the last 27 years. The number of landfills accepting sewage sludge sharply dropped from 1989 to 1998 due to the Department’s enforcement actions to close landfills that did not meet revised regulatory standards (most notably double liner requirements). However, most active municipal solid waste landfills (24 out of the 27 total) accept sewage sludge currently. The total number of permitted beneficial use facilities had dropped from 65 facilities in the mid-1990s to less than 50 facilities in 2010, but it has since increased to the current number of 53 permitted facilities in NYS.

Figure 6



APPENDIX

2015 Biosolids Management Survey



2015 BIOSOLIDS (SEWAGE SLUDGE) MANAGEMENT SURVEY

Facility Name: _____

SPDES No: NY-_____

This survey has been developed as a data collection tool for the update of the *Biosolids Management in New York State* report, last published in 2011. If you have any questions, please contact Molly Baker at (518) 402-8706, or by email: molly.baker@dec.ny.gov. This form may be scanned and emailed, or mailed in to the address at the right. Thank you!

Molly Baker
NYS Dept. of Environmental Conservation
625 Broadway, 9th Floor
Albany, NY 12233-7253

DESIGN FLOW: _____ mgd

2015 AVERAGE ACTUAL FLOW: _____ mgd

DO YOU SEND BIOSOLIDS (LIQUID SLUDGE) TREATED AT THE FACILITY TO ANOTHER WASTEWATER TREATMENT PLANT FOR MANAGEMENT OR PROCESSING?

- No, biosolids are managed by this facility Yes, biosolids are sent to: (facility name)
- _____

BIOSOLIDS TREATMENT: (Check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Aerobic Digestion | <input type="checkbox"/> Septic Tank |
| <input type="checkbox"/> Anaerobic Digestion* | <input type="checkbox"/> Imhoff Tank |
| <input type="checkbox"/> Lime Stabilization | <input type="checkbox"/> Lagoon |
| <input type="checkbox"/> None | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Reed Bed | <input type="checkbox"/> Other (specify): _____ |

*Do you accept food waste/food processing waste directly into the AD?

- No Yes: Type: _____ Amount: _____

*Are you interested in accepting food waste/food processing waste, etc. into your AD?

- No Yes; Please explain: _____

BIOSOLIDS DEWATERING:

- | | | |
|---|--|--|
| <input type="checkbox"/> Belt Filter Press | <input type="checkbox"/> Drying Beds | <input type="checkbox"/> Plate & Frame Press |
| <input type="checkbox"/> Centrifuge | <input type="checkbox"/> Vacuum Filter | <input type="checkbox"/> None |
| <input type="checkbox"/> Other (specify): _____ | | |

DOES YOUR FACILITY ACCEPT SEPTAGE?

- No Yes; Quantity: _____ gallons/year

DOES YOUR FACILITY ACCEPT BIOSOLIDS (OR LIQUID SLUDGE) FROM OTHER WASTEWATER TREATMENT PLANTS?

- No
- Yes List treatment plants: _____
- _____

TOTAL BIOSOLIDS QUANTITY FOR 2015: (Fill in at least one)

- a) _____ dry tons/year
- b) _____ cubic yards/year at _____ percent solids
- c) _____ wet tons/year at _____ percent solids
- d) _____ gallons/year at _____ percent solids

Does the above figure include biosolids received from other wastewater treatment plants?

- No
- Yes

CURRENT BIOSOLIDS END USE/DESTINATION:

a) METHOD(s):	b) QUANTITY:	c) NAME & LOCATION:
<input type="checkbox"/> Landfilling	_____	_____
<input type="checkbox"/> Land application	_____	_____
<input type="checkbox"/> Composting	_____	_____
<input type="checkbox"/> Chemical stabilization (N-Viro)	_____	_____
<input type="checkbox"/> Heat Drying or Pelletization	_____	_____
<input type="checkbox"/> Incineration	_____	_____
<input type="checkbox"/> Long-term lagooning	_____	_____
<input type="checkbox"/> Storing in tanks on-site	_____	_____
<input type="checkbox"/> Stockpiling on-site	_____	_____
<input type="checkbox"/> Hauling to another facility	_____	_____
<input type="checkbox"/> Other (specify): _____	_____	_____

PLANS TO CHANGE BIOSOLIDS MANAGEMENT AT YOUR FACILITY IN THE NEAR FUTURE?

- No
- Yes; please explain below:

ANY COMMENTS/CONCERNS ABOUT BIOSOLIDS MANAGEMENT?

Survey Responder:

Name: _____
Phone: _____
E-mail: _____
Date: _____

Chief Operator:

Name: _____
Phone: _____
E-mail: _____