NATIONAL BIOSOLIDS DATA PROJECT

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MISSISSIPPI

BIOSOLIDS MANAGEMENT 2018 - STATE SUMMARY

This summary, a dashboard of state statistics, & further data are at www.biosolidsdata.org

Biosolids Summary Points

- Mississippi is the poorest state in the Union, and its wastewater infrastructure is underfunded and in need of upgrading. Data on the use and disposal of MS wastewater solids are incomplete. The MS Department of Environmental Quality (MS DEQ) compiles data annually regarding land-applied biosolids. However, the amounts of solids sent to landfills are not tracked or are incomplete. 2018 data provided to U.S. EPA's electronic reporting system by water resource recovery facilities (WRRFs) and available in the EPA ECHO database include only a few hundred dry metric tons (dmt) of landfilled biosolids.

- NBDP estimates that about half – perhaps ~11,000 dmt – of Mississippi's wastewater solids are disposed of in landfills, and, in 2018, that included the solids from many small WRRFs (including the MS Band of the Choctaw WRRF, who reported to U.S. EPA) and likely some lagoon systems that were dredged that year. As noted below, a considerable amount of MS wastewater is treated in Memphis, TN, which disposes of its solids at a monofill. Those solids are counted in the TN data, not here.

- There is no incineration of MS wastewater solids.

- Land application of Class B biosolids on agricultural lands accounts for almost all of the beneficial use of biosolids in Mississippi. Jackson, the largest city (population ~164,000) land applied 4,093 dry metric tons of Class B biosolids in 2018 (and landfilled 283 dmt). The county utility authorities of Harrison (which includes Gulfport and Biloxi, the 2nd and 4th largest cities, respectively), Hancock, Pearl River, and Jackson County all land applied Class B biosolids. Jackson County (which is not near Jackson but is in southeast MS) operates four WRRFs and a land application facility at its West Jackson County WRRF, where the biosolids help grow Bermuda grass for hay sold for livestock feed. Meridian, the 8th largest city in MS (population ~35,000) land applied on area farms aerobically-digested, belt-filter-press-dewatered Class B biosolids in 2018. Natchez and Clinton are the two WRRFs that made Class A biosolids that were locally distributed as soil amendments under "beneficial use determinations" (BUDs) provided by MS DEQ. Clinton's solids are dried using the Parkson greenhouse solar drying system, which involves a robotic "mole" turning the solids to speed the drying process. Much of the biosolids – 9,189 dmt according to MS DEQ data – was land applied by contracted biosolids management companies Denali Water and Terra Renewal and the Breaux Landfarm. MS State University Extension provides a biosolids land application summary, published in 2021: https://extension.msstate.edu/publications/biosolid-applications-mississippi-soils.

- Many Mississippi WRRFs – especially smaller ones – rely on lagoons for wastewater and solids treatment because they are simpler and less expensive than mechanical treatment plants. Solids are dredged from lagoons every 5 – 30 years. Hattiesburg is an example of a larger city (the state's 5th largest, at ~46,000 people) that relies on lagoons; it has two: North and South. The South Lagoon was dredged in 2013, at a projected cost of $6 million, producing 11,000 dry U.S. tons of solids that were likely mostly land applied. Over the years since then, Hattiesburg has been wrestling with how to better meet permit requirements and reduce malodors around the South Lagoon in particular, under orders from U.S. EPA. For a while, a liquid land application program was being considered, but that plan was expensive and was dropped. For 2018, NBDP assumed Hattiesburg did not use or dispose of any solids (no dredging that year). Most recently, as of 2022, Hattiesburg and three other large MS cities (Jackson, Meridian, and Greenville), whose infrastructure have decayed because of lack of funding, are under U.S. EPA consent decrees for WRRF improvements. The Meridian South Wastewater Treatment Plant has ~4,500 dry tons of solids accumulated in equalization basins that have not been dredged in many years. Oxford, the 9th largest city in MS (population ~29,000), also relies on occasional lagoon cleanouts that create a large tonnage of solids in one year, with none in the intervening years. Data on the collection of solids in lagoons and when they are dredged and used or disposed are not compiled, confounding the estimated 2018 solids management data for MS.

- Many of the state's WRRFs are owned and operated by county utility authorities that have multiple WRRFs to manage. For example, Jackson County, in the southeastern corner of the state, operates seven WRRFs. It is notable that Southaven (the 3rd largest city, population ~58,000); Olive Branch (the 6th largest city, population ~34,000); and Horn Lake (the 10th largest, population ~27,000) are essentially suburbs of Memphis, Tennessee and send wastewater to Memphis. However, Memphis is planning to end treatment of Horn Lake wastewater as of 2023, leaving another MS community with a huge wastewater treatment challenge.

- The Waste Division of the MS DEQ oversees biosolids use and disposal. Some data for this report are from the Division's annual report for 2018, which confirms the recycling to soil of 12,854 dry metric tons (dmt) of biosolids that year. The state's biosolids coordinator notes that "We are seeing less and less disposal of wastewater residuals (biosolids and industrial sludges) via landfill due to increased resulting odor and structural issues...." They also identified pressures on biosolids management in the NBDP state survey:
    - COST – rising costs generally
    - MANAGEMENT ISSUES – the hassle of biosolids recycling/land application
    - PUBLIC INVOLVEMENT – concerns of neighbors, environmental groups, and others
    - NUISANCE ISSUES – odors, truck traffic, dust, etc.

- In 2017, the University published research on the effectiveness of biosolids agricultural land application in MS: "Our data demonstrate the efficacy of using biosolids as an alternative nutrient source to conventional and slow-release fertilizers.... Their increased adoption into horticultural and other agricultural settings will reduce our reliance on synthetic fertilizer sources, reduce greenhouse gas emissions, and improve the sustainability of municipal and agricultural ecosystems" (Broderick and Evans, 2017, Hort Tech).

Links

Jackson County:
https://jcua-ms.us/about-us

Hattiesburg:
https://www.hattiesburgamerican.com/story/news/local/2020/08/26/hattiesburg-sued-wastewater-violations/5634506002/
https://www.wdam.com/story/21762194/hattiesburg-rotten-odor-expected-to-improve-within-a-few-weeks/

Federal Investments in MS wastewater infrastructure:
https://mississippitoday.org/2022/03/17/new-federal-investments-alone-wont-fix-mississippis-aging-sewer-systems/

Broderick and Evans, 2017:
https://journals.ashs.org/downloadpdf/journals/horttech/27/6/article-p794.pdf