

BIOSOLIDS:

Returning Carbon and Nutrients Back to Soil



SFPUC process engineer, Alex Miot, holding biosolids produced at the Oceanside Treatment Plant

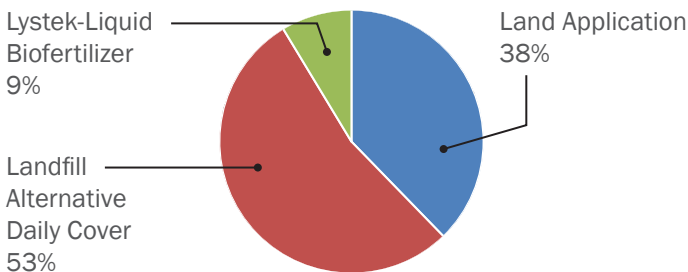
What are Biosolids?

Biosolids are the nutrient-rich soil-like product of the wastewater treatment process that can be used as a synthetic fertilizer-replacement and soil amendment. Decades of research and use by farmers across North America demonstrate that biosolids are an effective way to convert waste to resources by improving soils and enhancing crop growth, and by returning valuable carbon and nutrients back to the land.

Where do San Francisco's Biosolids Go?

We use 100% of the biosolids produced at our wastewater treatment plants to protect public health and improve the environment.

2017 Beneficial Distribution from Southeast and Oceanside Treatment Plants (63,743 wet tons)



Biosolids production and use must meet strict federal (USEPA), state, regional, and county health department requirements, in addition to local ordinances and permits.

Environmental and Commercial Benefits of Biosolids

- **Improved soil quality:** biosolids are a carbon-based soil amendment that help soils:
 - hold onto moisture better, with less need for irrigation
 - be less compacted and have better structure, which is better for plants and water infiltration
 - support soil microorganisms, which are critical for nutrient cycling in the soil, and
 - resist erosion from water and wind, preserving topsoil for generations to come
- **Slow release nutrients:** biosolids are high in nitrogen, phosphorus and other nutrients needed for plant growth. As soil microorganisms break down the organic matter in the biosolids, these nutrients are slowly released over the course of the growing season. This means that the nutrients are slowly provided to plants to help them grow, and remain in the soil where they can be taken up by crops gradually over time.
- **Higher crop yields and lower fertilizer use:** studies where biosolids have been used to replace synthetic fertilizer show that crop yields are as good or better than when synthetic fertilizer is used.
- **Greenhouse Gas Benefits:** biosolids increase the amount of carbon that soils store, reversing the effects of high-tillage agriculture. This helps keep carbon in the soil and out of the atmosphere where it can contribute to climate change.
- **Alternative Daily Cover:** landfills across the country must cover all waste at the end of each day with "daily cover" to keep the environment and people safe. Fill dirt or soil is typically used for this, but biosolids can also be beneficially used as daily cover instead.

Looking to the Future

- **The Sewer System Improvement Program (SSIP)** is a 20-year, multi-billion dollar citywide investment to upgrade our aging sewer infrastructure ensure a reliable and seismically safe sewer system now and for generations to come. Under SSIP, we are looking at new biosolids digester facilities at the Southeast Treatment Plant, future alternatives for biosolids use, and generating Class A biosolids. Be a part of SSIP at sfwater.org/SSIP.
- The San Francisco Public Utilities Commission (SFPUC) is **working with University of California researchers** to better understand how much additional carbon is stored in soils from using biosolids as a soil amendment. This research will help inform how we can best use biosolids to sequester carbon and help address climate change.



Solano County ranch where SFPUC biosolids are used as a soil amendment

You Can Help: Only Flush the Three P's

Wastewater treatment plants and sewer pipes are designed to only collect and treat the 3 Ps: **Pee, Poop** and toilet **Paper**. Anything else that goes down the drain could clog pipes or impact the quality of our biosolids and treated water. Help keep trash out of the pipes and make sure to never flush unused medications or wet wipes down the toilet. Learn more about what you can do prevent pollution at pollutionprevention.sfwater.org.

Take a Free Treatment Plant Tour

Do you want to see how the treatment process works? Take a tour of one of our wastewater treatment plants. To sign-up, go to sfwater.org/tour.



Oceanside Treatment Plant Tour

Contact Us

For more information about Biosolids or our other SFPUC projects and programs, contact us at (415) 554-3289 or info@sfwater.org.

Useful Links

- National Biosolids Partnership
wef.org/biosolids
- U.S. EPA
epa.gov/biosolids
- California State Water Resources Control Board
waterboards.ca.gov/water_issues/programs/biosolids



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