

# BIOSOLIDS Annual Report Details

## 1. Federal regulatory compliance

There were no regulatory violations for biosolids in 2022. The San Francisco Public Utilities Commission (SFPUC) met all federal requirements for biosolids including metals levels, pathogen reduction, and vector attraction reduction.

## 2. Biosolids production and distribution

Biosolids production increased slightly this year at both plants, however, overall production is still lower compared to years prior to 2020, due to a reduction in workers commuting to the city. Notable changes in management practices were the discontinuation of landfill use, new wet weather storage option, and new compost option.

A total of 57,646 wet tons of biosolids were produced at Southeast Treatment Plant (SEP) and Oceanside Treatment Plant (OSP) in 2021 (Figure 1). Both plants had a slight increase in 2022 (Figure 2).

SEP and OSP annual biosolids production		
Year	Wet tons	Dry metric tons
2016	69,236	14,724
2017	63,746	14,605
2018	68,805	16,254
2019	64,146	13,808
2020	51,622	10,796
2021	55,930	11,681
2022	57,646	11,480

Figure 1. Biosolids production at SEP and OSP. Dry metric tons are calculated by creating a monthly average from the weekly composite total solids sample taken at each plant and multiplying the monthly wet tonnage at a plant by the monthly total solids average.

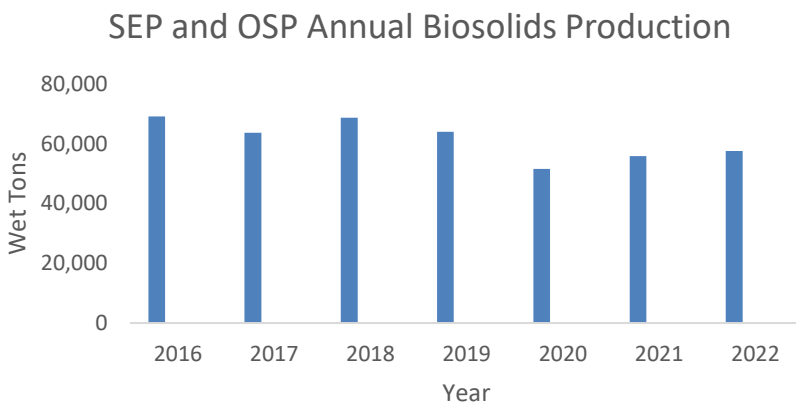


Figure 2. Annual biosolids production at SEP and OSP in wet tons.

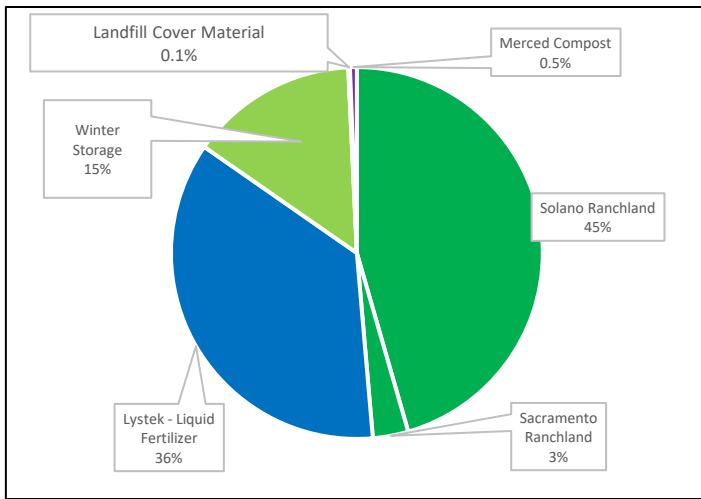


Figure 3. Distribution of biosolids in 2022.

Minimal biosolids were sent to Potrero Hills Landfill during the 2021-2022 and 2022-2023 wet weather seasons.

### 3. Status of goals set in 2022

There were four ongoing goals regarding the biosolids program in 2022. Biosolids mine reclamation, biosolids dewatering at OSP, evaluation of the financial benefit of avoided weekend hauling, and issuing an RFI for alternative Class A Biosolids management technologies.

**Goal 1.** *Assess potential for using biosolids to restore degraded lands.*

- An evaluation of potential mine reclamation partners and pilot project were completed. SFPUC will continue to pursue this goal in the future if and when an opportunity with a mine partner is identified.

**Goal 2.** *1) Continue to target less than 3 plug loss events per month. 2) Create an early warning system for plug loss. 3) Monitor dewatering performance and create an explanation whenever dewatering drops 10% below the performance target. 4) Develop a model which predicts dewatering performance and use this model to identify issues that can be addressed to improve dewatering.*

- As conditioned, undewatered biosolids are conveyed and pressed in the back end of the screw press, a mass of solids, called a plug, forms. Under normal operating conditions, this mass of solids occupies the entire cross-sectional area of the screw. The plug plays a role in the biosolids dewatering process, as it prevents more liquid material to be discharged directly into the hopper. As dewatered solids from the plug slowly falls into the hoppers, more solids accumulate in the back and the plug is continuously regenerated.
- Under certain conditions, the entire plug can be pushed out of the screw, creating what is called a loss of plug event. At this point, the conditioned sludge can no longer be dewatered until the plug is re-established.
- OSP process engineering created an early warning system for plug loss which communicates the likelihood of a plug loss occurring. Plug loss risk is communicated as the amount of time before a plug loss could occur. The time decreases to zero as the likelihood of a plug loss increases based on several different factors. With zero minutes to a plug loss, a plug loss will occur.
- OSP process engineering developed an alarm which uses the DCS on the biosolids hopper scales. When the weight of biosolids in the hoppers increases at a faster rate than normal, this indicates liquid is pouring into the hopper and an email and text alert is sent out to a number of individuals. Since this alarm was implemented in October 2020, plug loss incidents have been short in duration, there has been less impact, and increased awareness around the problem. The alarm has been optimized on PI and DCS.
- OSP met the goal of less than three plug loss incidents per month (Figure 4) in 10 out of 12 months. January and February of 2022 both had more than three plug losses. Because of the plug loss alarm, the impact of these incidents is less severe.

- The incidents where OSP were below 10% of the targeted %TS resulted from a number of issues including clogging of screw presses, polymer mixing ratio issues, plant-wide process shutdowns resulting in screw presses shut down, staffing, issues with controls, high headbox levels in screw press, and other operational issues.
- Goal 1 will be continued in 2023 and will include addition of real time %TS analyzers for finished biosolids on both screw presses, as well as %TS analyzers on the screw press feed lines to more accurately dose polymer. Plug losses will continue to be tracked and causes sought any time dewatering performance falls below 10% of the target. Once %TS analyzers are introduced, it will be possible to create a more robust predictive model, as currently there are only two data points per week to work off of.

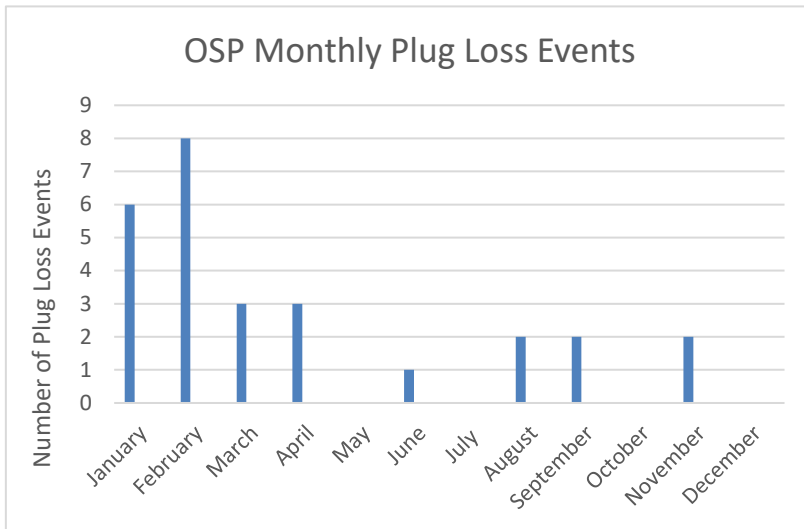


Figure 4. Plug Loss Events at Oceanside Treatment Plant.

**Goal 3. Evaluation of the financial benefit of avoiding weekend hauling.**

- In 2022, weekend hauling reduced by approximately 50%, which resulted in significant cost savings. It occurred primarily from OSP throughout the year.
- While weekend hauling has reduced, it may still occur due to operation needs. 667 wet tons of biosolids from SEP and 1,748 wet tons of biosolids from OSP were hauled on the weekends in 2022.
- This goal will continue in 2023 and will be tracked on a quarterly basis.

**Goal 4. Identify and procure additional offsite management options for Class A biosolids technologies**

- As of August 2022, an additional Class A management option, the Synagro compost facility in Merced County, has been added to the biosolids management portfolio.
- SFPUC partnered with the Bay Area Biosolids Coalition (BABC) to publish a RFI to gain information about new and emerging Class A biosolids management options.
- This goal will continue in 2023.

## 4. SEP Demonstration Garden

The SEP demonstration garden continues to grow flowers and vegetables. It was installed using a soil amendment made from biosolids from the OSP treatment plant. Below are the various plants in the garden.

