

BIOSOLIDS Annual Report Details

1. Federal regulatory compliance

There were no regulatory violations for biosolids in 2023. 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 include increase in composting and conversion to liquid fertilizer (Lystek) options.

A total of 58,128 wet tons of biosolids were produced at Southeast Treatment Plant (SEP) and Oceanside Treatment Plant (OSP) in 2023 (Figure 1). Both plants had a slight increase in 2023 (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 |
| 2023 | 58,128 | 12,805 |

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.

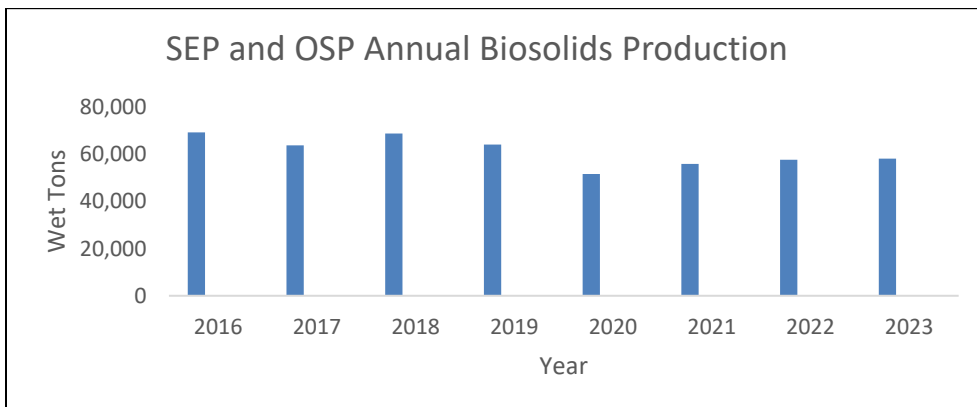


Figure 2. Annual biosolids production at SEP and OSP in wet tons.

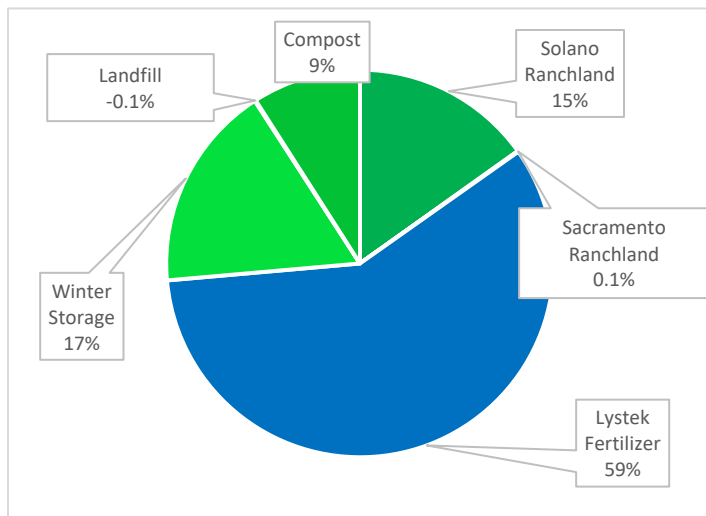


Figure 3. Distribution of biosolids in 2023.

3. Status of goals set in 2023

There were three ongoing goals regarding the biosolids program in 2023. 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. 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 15% 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. 5) Install real time %TS analyzers for finished biosolids on both screw presses and install real time %TS analyzers on screw press feed lines to more accurately dose polymer.

- As liquid 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. If the plug is lost, liquid can spill into the hoppers creating biosolids that are dangerously wet for truck drivers to haul. Several biosolids spills have occurred in the past because of plug loss events.
- A plug loss alarm interlock has been implemented which shuts down both screw presses in the event of a plug loss. A plug loss early warning alarm also exists on DCS. The plug loss early warning status essentially predicts dewatering performance with increasing likelihood of a plug loss equating to worse dewatering performance. The early warning alarm and experience from operators has shown that the key factors affecting dewatering performance are 1) Accurate polymer dosing to create good floc in the floc tank, 2) regular cleaning of screw press screens, and 3) running the screw press at a flow which allows the screw press motor to keep up with the level of liquids in the headbox.
- Installing real time %TS analyzers on both screw press feed lines is part of the scope of JOC-5208 and this work should be completed in 6 months to a year. Installing real time %TS analyzers on the dewatered cake is not yet on a JOC.
- 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, lack of staffing to manage the solids handling (one incident), issues with controls, high headbox levels in screw press, and other operational issues. See Appendix A for additional details.
- Goal 1. will be continued in 2024. The implementation of an early warning system and a dewatering performance prediction system will be removed as a goal as this has been completed. Plug losses will continue to be tracked and causes sought any time dewatering performance falls below 10% of the target. Installation of real time %TS analyzers on the system will continue to be advanced.

Goal 2. Evaluation of the financial benefit of avoiding weekend hauling.

- During the dry weather season, weekday loads are land applied by Synagro in Solano County, composted by Synagro in Merced County and managed by Lystek to create a Class A liquid fertilizer. Weekend options are typically higher costs due to higher hauling and management costs. Avoiding hauling on weekends during the dry weather season represents significant cost savings while avoiding hauling during the wet weather season represents modest cost savings.
- In 2023, weekend hauling reduced by more than 50%, compared to 2021. 483 wet tons of biosolids from SEP and 1,081 wet tons of biosolids from OSP were hauled on the weekends.
- SFPUC saw a savings of \$432,000 in calendar year 2023 from avoiding weekend hauling.
- Avoiding weekend hauling has become the protocol unless operational needs arise. A quarterly summary will continue to be distributed to management.

Goal 3. Identify and procure additional offsite management options for Class A biosolids technologies.

- An RFI was published in 2023 through the Bay Area Biosolids Coalition on behalf of WWE to gain an understanding of new and emerging biosolids management options that WWE could potentially utilize to diversify management options. As mentioned in section 4., the RFI responses showed that there were not any new technologies or options to diversify management that would be ready in the near term.
- As of 2022, WWE did add a compost option and this accounted for 9% of biosolids distribution in 2023.
- This goal will not continue in 2023 and instead efforts will be put towards developing a contract for the management of the Biosolids Digester Facility Project biosolids through publication of an RFI and RFP in 2024.

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.

