ANNUAL REPORT to the
SOLANO COUNTY BOARD OF SUPERVISORS

BACWA
BAY AREA
CLEAN WATER
AGENCIES

LAND APPLICATION of BIOSOLIDS in SOLANO COUNTY

Photo Credit: Robin Scheswohl

Prepared by the BACWA Biosolids Committee
December 2022

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Introduction

With the 2022 application season recently completed, the Bay Area Clean Water Agencies (BACWA) Biosolids Committee is pleased to present its annual summary report on land application of biosolids in Solano County. BACWA wishes to express its sincere appreciation to the staff of the Environmental Health Services Division of the Department of Resource Management for the continuing support of the biosolids land application program. This program allows for the effective use of biosolids as an agricultural soil amendment in the County. We believe this partnership provides a valuable resource to Solano County agriculture and provides many Bay Area agencies with an opportunity to ensure their biosolids are put to their highest and best use by making a positive impact on the environment.

This report provides information on trends in the use of biosolids resources in California and the Bay Area, an update on regional biosolids programs, and specific information on projects from individual agencies currently applying biosolids in the County. It highlights each agency's compliance with the requirement in Solano County Code, Sec. 25-400[1] that "Class B biosolids may only be land applied provided that the generator of the Class B biosolids is individually or as part of a consortium having a portion of their biosolids produced as Class A Exceptional Quality biosolids, converting biosolids to energy, or otherwise diverting Class B biosolids away from land spreading or landfilling (as waste or as alternative daily cover)."

This report is intended as supplemental information to the report submitted by the County Department of Resource Management staff and by Synagro, contract haulers and appliers of biosolids. It has been prepared for the Solano County Board of Supervisors in response to the Board's request for an annual update on agency activities and progress towards compliance with the goals set forth in County Code, Chapter 25. The affected agencies have coordinated

[1] Source: *Solano County Code.* Available online at https://www.codepublishing.com/CA/SolanoCounty/#!/SolanoCounty2500.html#25-400. Accessed November 28, 2022.

the required reporting through BACWA to produce a single report for the Board.

We would like to acknowledge the assistance of your staff in working with BACWA member agencies throughout the year, particularly Edmond Strickland (Program Manager), Jeffrey Bell (Supervisor), Anthony Endow (Senior Inspector), Robert Liu (Civil Engineer) and Bob Swift (Inspector).

Municipal Agencies Applying Biosolids in Solano County

The use of biosolids as an amendment supplies valuable plant nutrients and carbon to soils, enhancing the productivity and financial resilience of local farms. Each agency that applies biosolids is required to meet strict standards and provides a report annually to the United States Environmental Protection Agency (USEPA) to demonstrate compliance. In 2022, the following Northern California agencies transported biosolids to agricultural land in Solano County under contract with Synagro:

- City of Calistoga
- Central Marin Sanitation Agency (San Rafael, Ross Valley, Larkspur, and Corte Madera)
- Delta Diablo (Antioch, Pittsburg, and Bay Point)
- Fort Bragg Municipal Improvement District No. 1
- City of Petaluma
- San Francisco Public Utilities Commission
    - Southeast Water Pollution Control Plant
    - Oceanside Water Pollution Control Plant
- Sonoma County Water Agency, Airport-Larkfield-Wikiup Sanitation Zone (ALWSZ)
- Union Sanitary District (Union City, Newark, and Fremont)
- Town of Windsor

A total of 7,874 dry tons were land applied on agricultural sites in Solano County in 2022. The portion from each agency is shown in **Figure 1**. The total quantity of biosolids applied to agricultural land in Solano County over the last decade is shown on the next page in **Figure 2.**

Trends in Biosolids Usage in California

Wastewater agencies in California are continuing to identify and evaluate new options for biosolids reuse and recycling, including emerging technologies as well as established practices such as composting and heat drying.

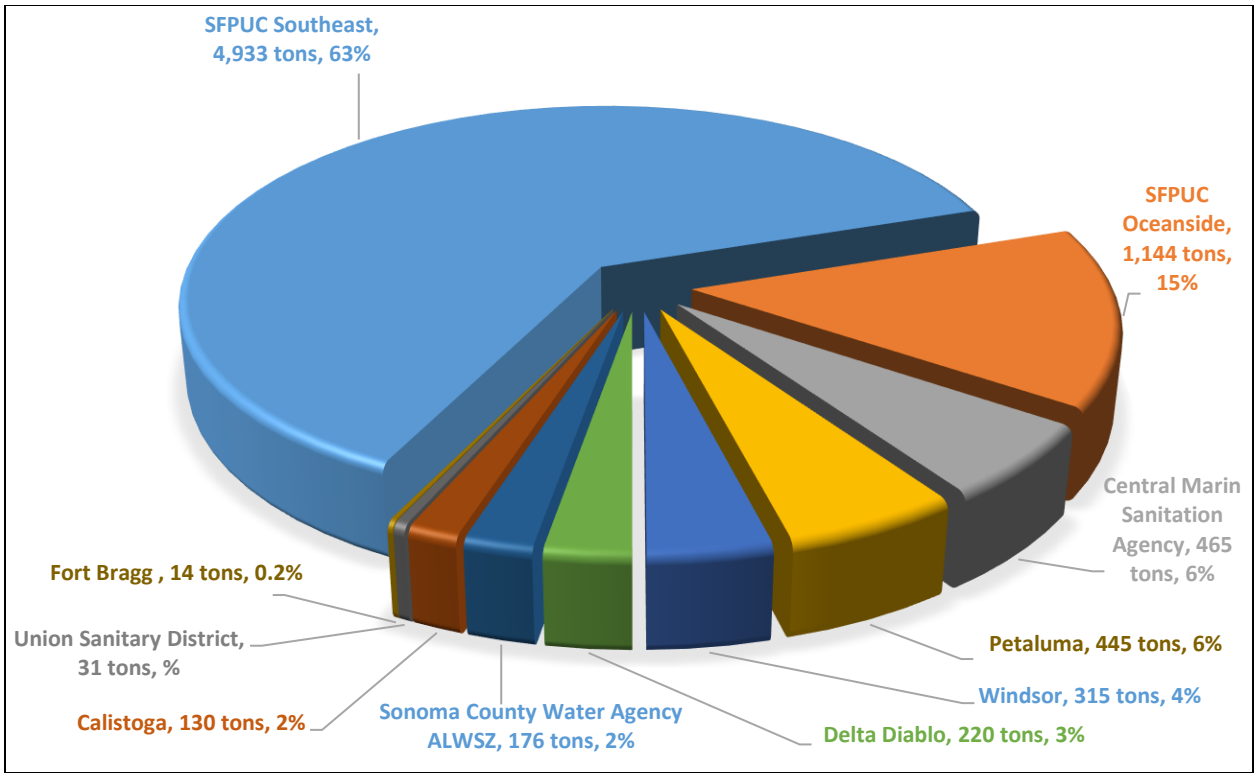

Figure 1. Biosolids (Dry Tons) Land Applied in Solano County by Each Agency, 2022
Data provided by Synagro

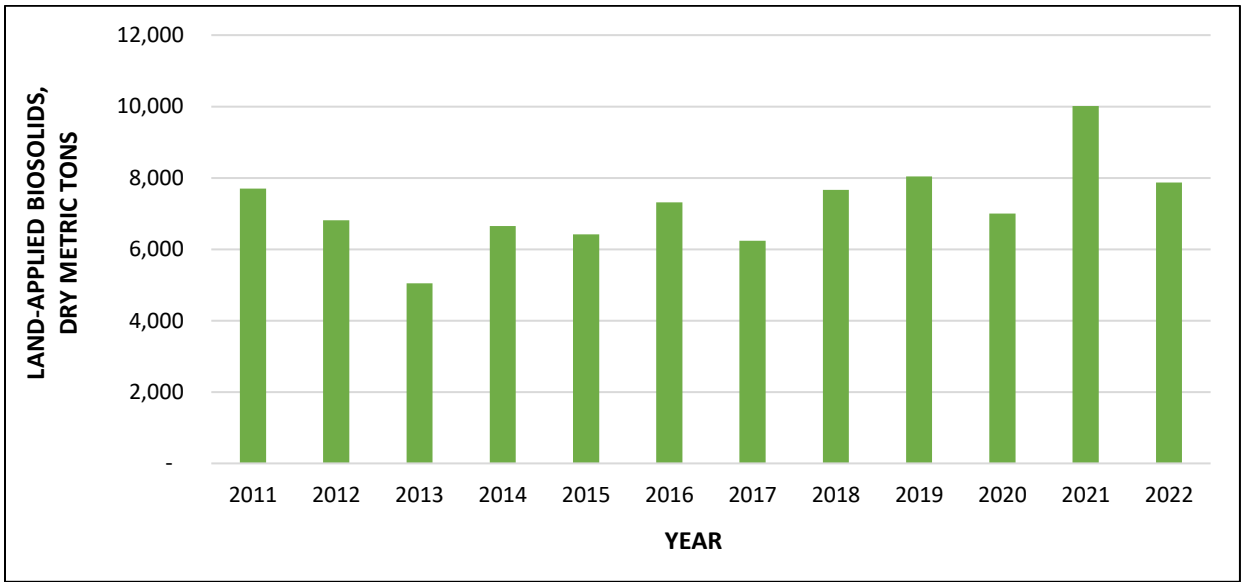

Figure 2. Biosolids (Dry Tons) Land Applied in Solano County, 2011-2022
Data provided by Synagro

Overall California Use Summary. The use of biosolids in California for calendar years 2009 through 2021 is summarized in **Figure 3**. Statewide data for 2022 are not yet available and will be included in the 2023 report. The number one use statewide continues to be land application for agriculture in the form of compost, Class B biosolids and Class A biosolids. The use of biosolids compost has increased steadily, growing from 20% of statewide biosolids use in 2011 to 29% in 2020. Land application of Class A and Class B biosolids has held steady, together accounting for 37% of all biosolids use in 2020. Biosolids have proven to be a safe, reliable, and nutrient-rich soil amendment that offers a more cost-effective alternative to chemical fertilizers, which are energy intensive and increasingly expensive to produce.

Landfill disposal and the beneficial use of biosolids at landfills are also common management practices for biosolids in California, accounting for 4% and 20% of statewide biosolids use, respectively. In recent years, a significant biosolids use has been backfilling of the H.M. Holloway gypsum mine in Kern County. In 2021, about 9% of all biosolids generated in California went to this purpose. This use is tracked as "landfill beneficial use" below in **Figure 3**.

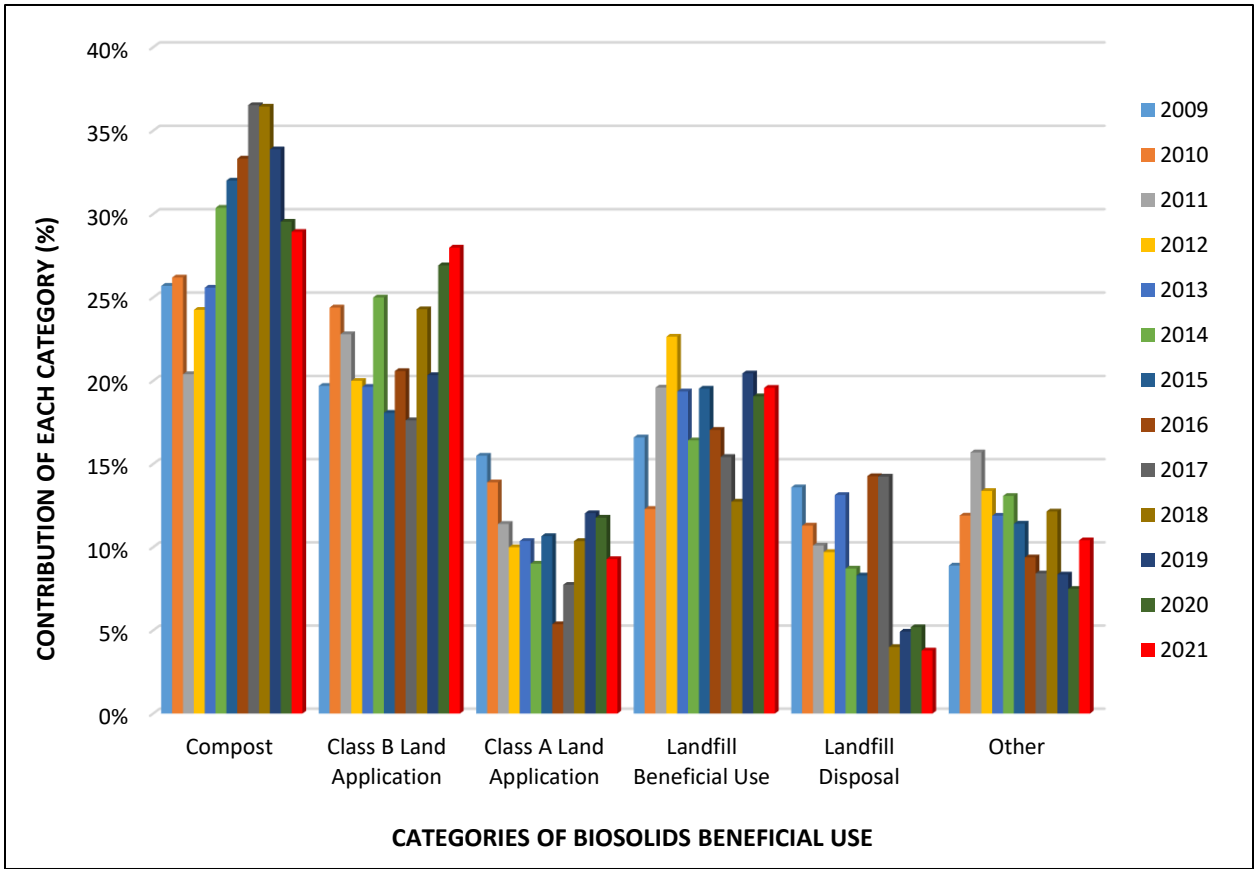

Figure 3. California Trends in Biosolids Uses, 2009-2021
Data provided by USEPA Region 9

Bay Area Trends. Looking solely at the nine county Bay Area, **Figure 4** (page 7) illustrates end uses of biosolids in 2021. The primary uses continue to be landfill beneficial use, land application, and incineration, which together account for 79% of biosolids end uses in the Bay Area. Compost (5%) and surface disposal levels (2%) also remained similar to past years.

In 2021, there was a significant drop in landfill disposal of biosolids. Landfill disposal fell to just 1% of the total biosolids generated. By contrast, from 2017-2020 this value ranged from 4%-10%. The change occurred due to a biosolids upgrade project at West County Wastewater District.

Tonnage for biosolids conveyed to the Lystek Organic Materials Recovery Center (OMRC) is categorized as Class A liquid fertilizer and has increased from representing 3.8% of Bay Area biosolids end uses in 2017 to 8% in 2021. The OMRC conducts further biosolids processing by utilizing LysteGro technology to create a Class A product. Lystek's hydrolysis process uses high speed shearing, low pressure steam and alkali in an enclosed reactor to transform organic residuals and biosolids into a liquid fertilizer. Lystek's fertilizer program in Solano County began in spring 2017. Thirteen Bay Area agencies and two industrial generators sent material to Lystek in 2022:

- Benicia, City of
- Blue Pacific Flavors of Fairfield
- Budweiser Brewery of Fairfield
- Central Marin Sanitation Agency
- Central Contra Costa Sanitary District
- Delta Diablo
- East Bay Municipal Utility District
- Fairfield-Suisun Sewer District
- Mt. View Sanitary District
- Palo Alto Regional Water Quality Control Plant
- Petaluma, City of
- San Francisco Public Utilities Commission
- Sanitary District No. 5 of Marin County
- Santa Rosa, City of
- Vallejo Flood & Wastewater District

LysteGro is used primarily in Solano County, and the product is registered as a fertilizer with the California Department of Food and Agriculture. As a Class A product, LysteGro can be used with no restrictions, and is not subject to the Solano County biosolids ordinance (Solano County Code, Sec. 25-400). Use of LysteGro is classified as "Class A Land Application" in **Figure 3.** LysteGro is also an approved commercial fertilizer for use in Colusa, Contra Costa, and Yolo Counties.

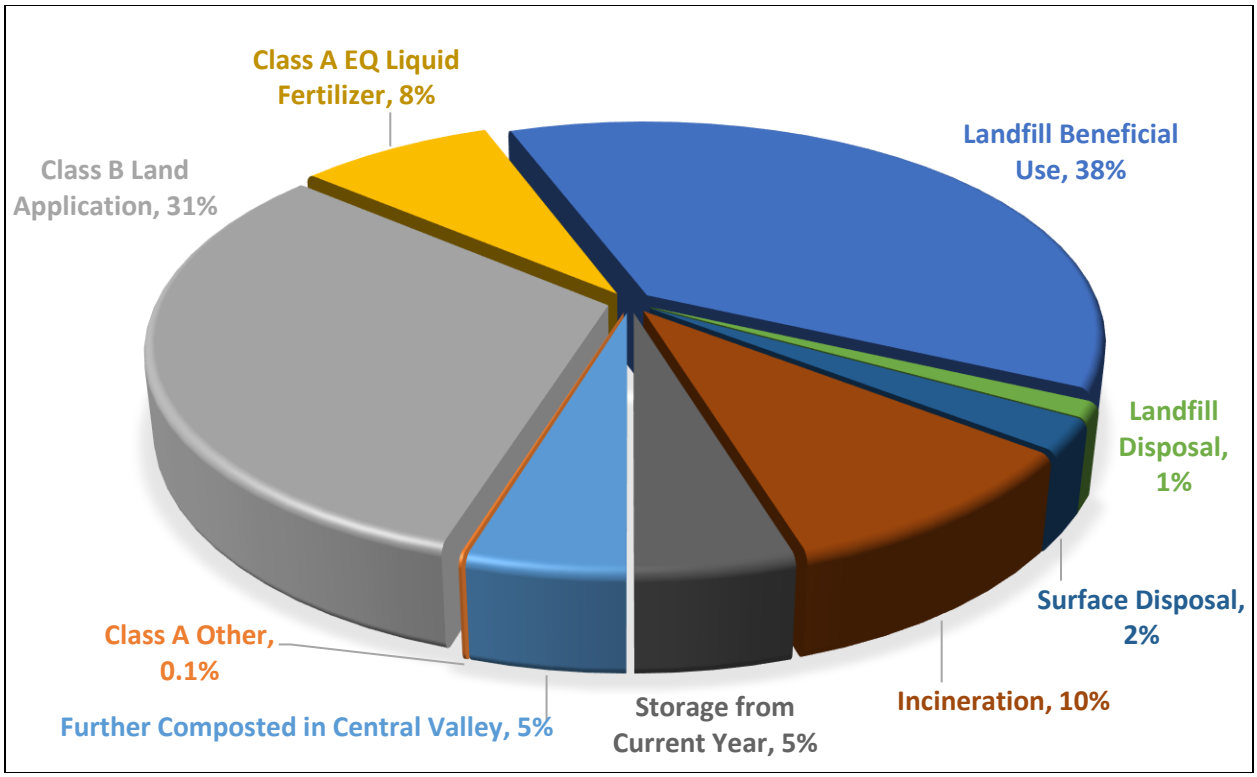

Figure 4. Bay Area Usage of Biosolids, 2021
Data Provided by USEPA Region 9

Counties where biosolids are land applied. Biosolids were predominantly applied to agricultural land in three Northern California counties in 2020 – Sacramento, Merced, and Solano – with Solano County ranking second. **Figure 5** illustrates the distribution of land-applied biosolids among counties in Northern California. Smaller amounts were also land applied in Sonoma, San Joaquin, Stanislaus, and Napa counties.

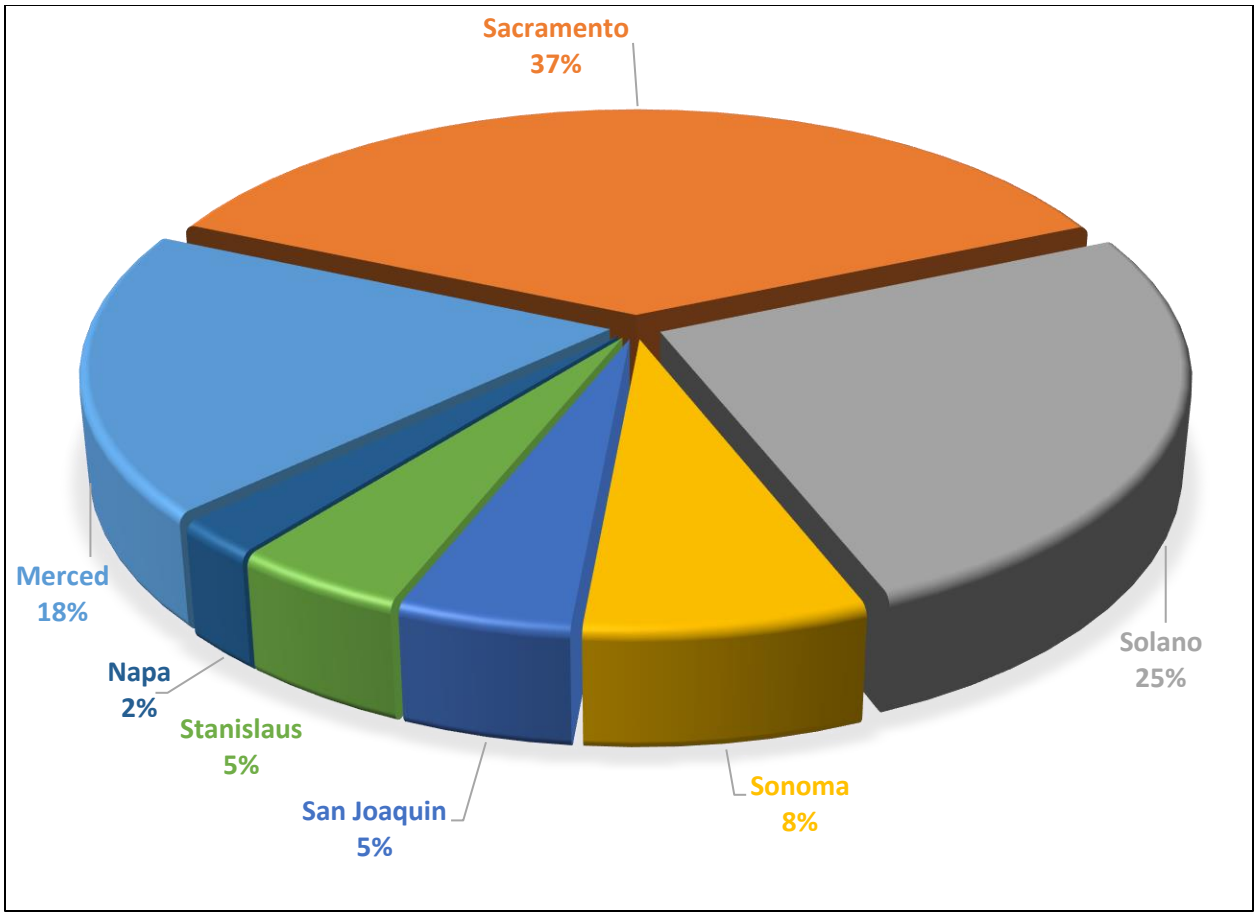

Figure 5. Distribution of Biosolids Land Application among Northern California Counties, 2021
Data provided by USEPA Region 9

Bay Area Regional Efforts

BACWA Biosolids Committee. The mission of the BACWA Biosolids Committee (The Committee) is to support the development and maintenance of cost-effective, sustainable biosolids management options for the approximately 150,000 dry metric tons of biosolids produced in the Bay Area annually. The Committee was formed to provide proactive support and information sharing to member agencies on regional biosolids issues, projects, and proposed regulations and legislation.

In 2021, the Committee completed the 2020 Biosolids Trends Survey Report, which is available at https://bacwa.org/wp-content/uploads/2021/12/BACWA-2021-Biosolids-Trends-Survey-Report.pdf.

Because of member agencies' level of engagement in the Bay Area Biosolids Coalition at the current time (see below), the Biosolids Committee was placed on hiatus in 2019. The email distribution list continues to be maintained so that the committee can meet again when there

is interest. For example, committee members convened in November 2022 to discuss implementation of the State's short-lived climate pollutant regulations (Senate Bill 1383). While meetings are on hiatus, the committee will continue to produce this Annual BACWA Report to Solano County, as well as the Biannual BACWA Biosolids Trends Survey.

Bay Area Biosolids Coalition. The members of the Bay Area Biosolids Coalition, originally formed in 2004, work together to advance research, expand land application and share new opportunities and information on biosolids. The Coalition is pursuing a multi-pronged approach that includes:

- Educating the public on biosolids management issues in California through public outreach efforts, including the creation of a public website and securing media coverage.
- Advancing the industry and legislative state of knowledge on biosolids as a valuable resource.
- Investigating viable, year-long (weather resilient) alternatives to land application that look beyond "biosolids to energy" and seek to responsibly recycle back value-added products of biosolids to the environment.
- Serving as a technology incubator - particularly for pre-commercial technologies.
- Supporting land application in the Bay Area by seeking to create more capacity for biosolids in the Bay Area marketplace.

The Coalition has established the following goals in support of achieving the above-mentioned objectives, for which associated strategies and key outcomes have been defined that will be pursued over the next one to two years:

- Communicate the value of biosolids for the purposes of increasing understanding, support, and market demand for biosolids.
- Advance independent scientific research on the safety and efficacy of biosolids to inform science-based regulations, guidelines and best management practices.
- Support and expand biosolids land application in the Bay Area.
- Support the development of diverse, cost-effective, and reliable all-weather biosolids projects for the San Francisco Bay Area.

Current Coalition members include the following public agencies:

Central Marin Sanitation Agency
City of Millbrae
City of Petaluma
City of San José
City of Santa Rosa
Delta Diablo
Dublin San Ramon Services District
East Bay Municipal Utility District
Ironhouse Sanitary District
North San Mateo County Sanitation District
San Francisco Public Utilities Commission
Union Sanitary District
Vallejo Flood & Wastewater District
West County Wastewater District

Individual Agency Programs. Individual BACWA agencies are responsible for their own biosolids management programs and each develops its own plan in addition to participating in regional programs. Below are program descriptions from all agencies which sent biosolids to Solano County for agricultural use via land application. All agencies described below produce biosolids according to 40 CFR regulations.

All agencies that land applied Class B biosolids in Solano County in 2022 converted a portion of their biosolids to Class A, either through their own means or at a 3rd party conversion facility (e.g., compost facility or Lystek OMRC).

City of Calistoga. At the City's Dunaweal Wastewater Treatment Facility, solids are processed by the treatment methods of thickening and application to drying beds. The material is picked up and land applied to various fields in Solano County by Synagro, and a portion of this material is diverted to produce Class A Biosolids at Synagro's Central Valley Compost site.

Central Marin Sanitation Agency. The Central Marin Sanitation Agency (CMSA) has a contract with Synagro for land application of its biosolids during the dry weather season in Solano County. CMSA also has contracts in place for sending the biosolids to Redwood Landfill for landfill beneficial use and to Lystek International for further processing to produce Class A (EQ) liquid fertilizer. CMSA is a member of the Bay Area Biosolids Coalition.

Delta Diablo. Diablo produces Class B biosolids and contracts with Synagro for biosolids management. Over 95% of the biosolids are land applied in either Solano, Sacramento, or Merced Counties. The remaining biosolids are either sent to Synagro's Central Valley Compost facility or to the Lystek facility at Fairfield Suisun Sewer District for further processing to Class A standards (2 truckloads per month). Delta Diablo is an active participant in the Bay Area Biosolids Coalition and continues to explore additional and alternative biosolids management options.

Fort Bragg Municipal Improvement District No. 1. The Fort Bragg Municipal Improvement District No. 1 Wastewater Treatment facility produces Class B biosolids and contracts with Synagro for biosolids management. Synagro transported a portion of the facility's biosolids to their Central Valley Compost site to be further processed into Class A Biosolids.

City of Petaluma. The City of Petaluma's Ellis Creek Water Recycling Facility produces Class B biosolids. Biosolids are no longer permitted for use as alternative daily cover at Potrero Hills Landfill and are now considered a solid waste. Biosolids produced at Ellis Creek are hauled to the landfill, applied to agricultural land in Solano County, or transferred to the Lystek OMRC for production of and subsequent reuse as Class A biosolids. The City of Petaluma is a member of the Bay Area Biosolids Coalition.

San Francisco Public Utilities Commission (Southeast and Oceanside Facilities). The San Francisco Public Utilities Commission (SFPUC) produces Class B biosolids at its two facilities. In addition to sending biosolids to Solano county for use as a fertilizer, the SFPUC also contracts

with Synagro to use Class B biosolids as a fertilizer in Sacramento County and to produce compost in Merced County and contracts with Lystek to produce a Class A EQ liquid fertilizer. The SFPUC's biosolids are now used as either a fertilizer or compost and are no longer used for alternative daily cover in landfills. The SFPUC is an active participant in the Bay Area Biosolids Coalition.

Sonoma County Water Agency. The Sonoma County Water Agency's (SCWA's) Airport-Larkfield-Wikiup Sanitation Zone treatment plant uses a pond treatment system without routine biosolids removal. Accumulated biosolids are periodically removed from the treatment ponds. In 2022, SCWA contracted with Synagro for a project to remove, dewater, transport, and use the accumulated biosolids. Class B Biosolids were land applied in Solano County and Sacramento County in 2022. A portion of SCWA biosolids were diverted to produce Class A Biosolids at Synagro's Central Valley Compost site.

Town of Windsor. The Town of Windsor Water Reclamation Facility contracts with Synagro to land apply biosolids to farmland in Solano and Sacramento Counties. As part of the Synagro contract, Synagro diverts a portion of its biosolids to its Merced County facility for composting. The Town of Windsor continues to investigate feasible and cost-effective Class A biosolids treatment and process options.

Union Sanitary District. Union Sanitary District (USD) beneficially used most of its biosolids in 2022 and met all USEPA regulations for the 29th consecutive year. USD continues to contract with Synagro for its biosolids management, with nearly 75 percent of USD's biosolids land applied to farmland in Sacramento, Merced and Solano Counties. Approximately 25 percent of biosolids production was delivered to Synagro's Liberty Composting Facility in Kern County for producing Class A compost.