



## **An Evaluation of the Sustainability of Biosolids Use as Landfill Burial or Beneficial Cover Material**

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Legislation recently enacted in California has introduced uncertainty for Publicly Owned Treatment Works on the long-term viability of beneficial use of biosolids as cover material or for burial at municipal solid waste landfills. This paper summarizes the adopted legislation, current biosolids management practices in California, and examines several alternative approaches the wastewater sector may pursue in the interest of helping the state achieve its mandates in a pragmatic and cost effective manner.

### **Legislative/Policy Drivers**

Key pieces of legislation and their objectives include the following:

**AB 939 (1989)** – Required 50% diversion of solid waste from landfills by 2000 (allows diversion credit for biosolids and other organics used as Alternative Daily Cover (ADC) or Alternative Intermediate Cover (AIC)).

**AB 32 (2006)** - Requires reduction of statewide greenhouse gas (GHG) emissions to 1990 levels by 2020.

**AB 341 (2011)** – Sets a goal to recycle 75% of solid waste generated in the state by 2020 (does not provide any diversion credit for ADC above 50% which may be claimed under AB 939).

**SB 605 (2014)** – Requires development of a strategy for the reduction of short-lived climate pollutants (SLCPs), including methane, to support achieving statewide GHG reduction targets. The Reduction Strategy called for CalRecycle in collaboration with the Air Resources Board to develop regulations by 2018 (implementation will be via SB 1383 summarized below).

**AB 1594 (2014)** – Eliminates the diversion credit for green waste used as ADC at landfills by 2020. This appears to have an indirect unintended consequence for biosolids used as ADC since landfills generally need to mix biosolids with green waste to achieve a necessary workable moisture content. The consequence is that landfills are beginning to refuse to accept biosolids.

**AB 1826 (2014)** – Requires recycling of commercial and residential organic waste (does not include biosolids since they are not generated by residential or commercial complexes). This impacts entities producing 8 cubic yards of organic waste per week in April 2016; 4 cubic yards of organic waste per week in April 2017; and 4 cubic yards of municipal solid waste per week in April 2019.

**AB 876 (2015)** - Requires (by August 2017) a county or regional agency to track and annually report the amount of organic waste in cubic yards it will generate over the next

15 years, the additional organic waste recycling facility capacity that will be needed to process that waste, and identify new or expanded organic waste recycling facilities (such as POTW anaerobic digesters) capable of safely meeting that additional need.

**Healthy Soils Initiative (2015)** – Collaboration of state agencies and departments, led by CDFA, to promote the development of healthy soils on California’s farm and rangelands (e.g., through land application of biosolids) building adequate soil organic matter that can increase carbon sequestration and reduce overall GHG emissions, and ensure sustainable agriculture for future generations. Funding was provided in the most recent cap-and-trade fund allocation, as well as the Governor’s just released proposed budget for FY 2017-2018. Biosolids help achieve every objective of this initiative via their land application and resulting carbon sequestration, improved water holding capacity, and avoidance of fossil fuel based inorganic fertilizer.

**SB 32 (2016)** – Requires a 40% reduction in statewide GHG emissions below 1990 levels by 2030.

**SB 1383 (2016)** – Requires a regulation be developed by 2018 targeting specific reductions of SLCPs by 2030 and identifies programs that need to be developed and implemented in order to accomplish the SLCP reduction targets, including for example:

- Divert 50% of organic waste from landfills (based on 2014 levels) by 2020
- Divert 75% of organic waste from landfills (based on 2014 levels) by 2025
- Achieve a 40% reduction in methane emissions (based on 2013 levels) by 2020

### **Practical Impacts**

A central question is how the afore-mentioned legislation will or will not impact the management and use of biosolids as we move to the implementation stage. In particular, questions exist on the continued viability of either landfill burial of biosolids or the use of biosolids for ADC or AIC at landfills, which currently qualify for diversion credit under AB 939. Our understanding is that the regulatory agencies (CalRecycle, CARB, SWRCB, and CDFA) who generally possess jurisdictional authority over landfills and/or responsibility for the implementation and achievement of state mandates have not yet decided on their position with respect to biosolids.

Issues surrounding the continued viability of landfills, which we believe the regulatory agencies must consider as they implement a comprehensive approach for these objectives, include:

1. Biosolids are a non-discretionary product of wastewater treatment that will always be produced and need to be responsibly managed as an essential public

service. In 2015, California produced 733,000 dry U.S. tons or roughly 3 million wet tons of biosolids - 62% were land applied or publicly distributed for home use, while 20% were used as ADC at landfills and 9% were buried in landfills as disposal.

2. The wastewater sector is identified in the SLCP reduction strategy as part of the solution. Wastewater plants can utilize existing infrastructure in the form of anaerobic digestion to co-digest food waste and other organic waste thereby diverting it from landfills. Significant increases in renewable energy production result from co-digestion at much lower costs than building new infrastructure. The digestion process also greatly enhances volatile solids reduction of organic waste so the solids volumes can be reduced by as much as 90%.
3. Biosolids are used as ADC in much of the state for several reasons. Such use has been explicitly recognized as a beneficial use under AB 939 for 20 years. Many Bay Area agencies utilize this option in the winter months because area counties disallow the land application of biosolids during what is “normally” the rainy season. Other locations in the state utilize their biosolids as ADC based on long term management agreements with local landfills and have structured their technology accordingly. These include Monterey, San Diego, and Ventura Counties.
4. Any proposal to include biosolids as part of a diversion plan should comprehensively consider what alternatives exist. While the wastewater sector recognizes the inherent value of biosolids as a soil amendment or fertilizer and uses this management option for 62% of its produced biosolids, local jurisdictions have taken steps to limit this use. Many county ordinances restrict or limit land application either through more expensive and energy intense treatment technology because of the afore-mentioned rainy season (set by dates not by actual weather) or because of rural/urban conflicts. This is despite state and federal regulations that promote and value the benefits of land application, based on decades of scientific research. In fact, a recent court ruling in Kern County concluded that banning the land application of biosolids violated both the Integrated Waste Management Act and local police powers.
5. Since there are a limited number of viable options for the management of biosolids (land application, landfill as burial or ADC, and potential alternatives through innovative technology), it is imperative that the state view biosolids management holistically, and clearly articulate and actively support whatever options it ultimately deems viable. If diversion requirements for biosolids from landfills are advanced, then unwavering support for land application will be a necessity in working with local jurisdictions to remove legal barriers. Solutions must be sought for in-state management of biosolids. Currently 13% of California biosolids are transported long distances across state lines to Arizona and

Nevada. Care should be taken to ensure viable management options remain within California.

6. Furthermore, some landfill utilization must always be preserved for emergency situations. While the wastewater sector diligently treats its solids to comply with regulations, there are occasional treatment upsets or failures. If such a failure occurs and treatment to the level required for beneficial use cannot be achieved, then landfilling as an emergency option must be utilized to protect public health and the environment.
7. Wastewater treatment plants require long horizons to plan, fund, permit, construct, and operate new technology. Adequate time for such actions must be considered as any regulation is developed.

### **Next Steps**

Actively work with California Air Resource Board, CalRecycle, State Water Resource Control Board, and California Department of Food and Agriculture to mutually develop sustainable long term options for the beneficial use of biosolids.