Comments on the
California State Water Resources Control Board
Draft Concepts for a Proposed Statewide Order for Composting Facilities
Presented by the City of Bakersfield 9/23/2011

Background:
The City of Bakersfield owns and operates a regional recycling and compost facility, serving 600,000 residents and businesses in the city limits as well as adjacent unincorporated county areas. The facility is located on 97 acres of land, and is surrounded by thousands of acres of public land serving as waste water treatment facilities, including storage ponds and crop land irrigated by treated effluent. The compost facility has been in operation for nearly 20 years. Thus far, according to periodic groundwater monitoring reports for the surrounding waste water treatment facilities, there has been no indication of ground water impacts in the general region of the compost facility. This is attributable to proper management of the waste water facilities, ponds, and farms, as well as the dry nature of the compost facility which seldom, if ever, has water in its onsite catch basins.

Annual precipitation is 6". Area crop production requires significant irrigation, because the annual evaporation rate is 58". In comparison, the compost operation sparingly applies the equivalent of 38" of rainfall to the compost windrows (not the open ground between them) as process water to achieve decomposition. The majority of this water (applied at about 12 gallons per cubic foot of finished compost) is evaporated by the thermophilic process or transpired by microorganisms in the compost. A small portion of the water (typically 1.2 gallons per cubic foot) is retained in the finished compost, according to routine lab tests. Finished compost is dry and dusty, needing significant water to rehydrate once it is applied as a soil amendment. Effectively, the compost operation is a highly absorbent feature that readily retains water, rather than leaching it into the ground. Field observations show that the ground underneath windrows is dry when the windrows are harvested. To collaborate and perhaps quantify this, the facility is planning to measure the moisture flux from compost to ground, which may indeed be nonexistent or flow upward.

Comments:

1. **Economic Impact** - In the 8/31/11 workshop, SWRCB staff indicated that this General Order process will not be subject to socio-economic analysis. However, the capital cost of some requirements in the draft may result in tipping fee increases at compost facilities. Tipping fees are in turn paid for by homes and businesses, most often through refuse collection rates. Refuse collection rate increases are subject to refusal by property owners under Proposition 218. Therefore, this General Order process should carefully consider the economic impact. Failing to do so could trigger closure of compost facilities if the resulting refuse collection fee increases are denied. Compostable material would then be either land applied or landfilled, reducing the success of the State's recycling efforts. Water Board members should be made aware of the impact on refuse collection fees, which can have other ramifications.

2. **Source of Problem** - The August draft states a need for upgrading the Water Quality Protection Measures (WQPMs) due to analysis of liquids from compost facilities. SWRCB staff should review the source data with stakeholders, because a group of compost operators may be able to identify factors that cause undesirable conditions. This would enable the stakeholders to be of greater assistance to the staff. Factors could be:
    a. Differences in quality of the source of process water used. Salts or nitrates in source water could give higher readings in compost leachate.
    b. Differences in water supply economics or incentives may have an effect on compost leachate quantities. Composters that buy fresh water tend to use it sparingly, while composters receiving free water or those being paid to dispose of waste water may apply extra amounts to compost.
3. **Tiers and Rain** - The August draft uses a tier system to require greater protective measures for sites with greater risk of ground water impact. The main factors in setting a tier are the type of waste and the proximity to water supply wells or Hydrogeological Vulnerable Areas (HVAs). Another key factor to consider is the amount of local precipitation. This would be a location-based determination using readily available data, similar to the future HVA location limits that the SWRCB staff is working on.
4. **Regulatory Definitions** – Under Title 27 section 20164 definitions, compost facilities are *Waste Management Units* (WMUs). However, WMUs may be either disposal units or treatment units, as distinguished in the definition of *Land Treatment Units* (LTUs), at which waste does not remain after closure. Compost facilities not only have this distinguishing characteristic, but the nature of their operation is for material to be retained onsite for only enough time to finish *Treatment* (defined in section 20164 as becoming soil amendment) and then moved out. Under section 20250(b)(5), LTUs have different requirements than landfills and other waste units. LTUs are not required to comply with section 20250(b)(1 through 4) for low permeability layers, provided they demonstrate certain results. Thus, while construction of low permeability pads may be an appropriate option as a WQPM in certain situations, it should not be a basic requirement of the General Order.
5. **Practicality of Low Permeability Layers** – Low permeability layers (pads) should not be required as a WQPM in the General Order, due to practicality issues:
    a. Pads which depend on clay content in the soil (as required in section 20320(d)) are prone to desiccation and cracking, as identified in landfill cap studies by the U.S. EPA and Sandia Laboratories (see http://www.sandia.gov/caps/ALCD.htm).
    b. Unless a compost operator purposely applies extra unwanted water, compost facilities normally absorb water up from the soil they are on. This would cause desiccation and cracking described above.
    c. Low permeability soils may not be readily available in the area of certain compost facilities, making alternatives necessary.
    d. Native soil at compost facilities may already be performing the function of holding excess water from the rainy season and giving it back up to water demands, much like the evaporation and transpiration process for modern "alternative cover" landfill caps.

6. **Future Food Recycling** - The August draft assumes that food waste poses a greater leachate risk than green waste. Because food waste composting is a major CalRecycle goal, many existing green waste compost facilities will seek to add composting of food waste in the future. Therefore, the requirements need to allow reasonable transition. From the August meeting, there are two obstacles to this:
    a. In the August draft, a Tier 2 pad is not only twice as thick as a Tier 1 pad, but more importantly, the soil permeability is an order of magnitude less. Thus, soil in a 1' thick Tier 1 pad could not just have another 1' added to upgrade to a 2' thick Tier 2 pad. Instead, it would take complete replacement of the Tier 1 pad soil to upgrade.
    b. In the August meeting, staff said that pad requirements were intended to apply to the whole facility. If pads are actually used, the requirements should avoid overkill by recognizing that various parts of a facility may not need the same controls. For example, some facilities compost food waste in separate areas, and green waste in others. In light of the Calrecycle goal of increasing food recycling statewide, facilities may need to add internal "food zones" with different controls than existing green waste zones.

Suggestions for WQPMs:

1. Establish a "water balance" for combined precipitation and application water versus water consumed by compost, thereby preventing excess water from being lost as leachate.
2. Establish concentration limits for constituents of concern in process water sources.
3. Turn windrows within three hours of applying process water to evenly distribute moisture in material (consistent with air district rules), thereby preventing leachate.
4. Focus application of process water on top half of windrows (coordinates with air district rules), thereby preventing leachate.
5. Avoid wetting the ground around windrows with process water, thereby preventing leachate.
6. Determine whether the underlying soils have the capacity to hold excess water and yield it back upward for water demand, as is done for alternative landfill covers in arid climates.
7. Plant vegetation at holding ponds to consume runoff water and to create an upward gradient for ground water.
8. (just for fun) Quantify the actual constituents of concern in water at facilities statewide and utilize a Cap and Trade System...

End of Comments