

STATE WATER RESOURCES CONTROL BOARD

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State of California

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State Water Resources Control Board

Tam M. Dudoc, Chair

Panel Topic: “*Key Environmental Challenges - programs and strategies to enhance biomass utilization in California by reducing environmental impacts and constraints.*”

Presenter: John Menke, State Water Board, Division of Water Quality

My focus: Water Board regulations, policies, incentives, and issues affecting management of the state's biomass resources.

Background Information on the Water Boards:

The State Water Board and nine Regional Water Boards (see map) protect water quality by regulating the disposal of wastes from industrial, municipal, and agricultural sources. Such wastes may be generated in the production, harvesting, or processing of biomass and by the operation of facilities that utilize biomass.

The State Water Board (State Board) serves as liaison with other state and federal agencies on water quality issues and coordinates with the Regional Boards to achieve consistency in regulatory programs. The State Board reviews and comments on proposed regulations and may participate in the development of regulations. The State Board has a Division of Water Rights that addresses water supply issues. Water supply issues may be associated with operation of industrial facilities including biomass utilization facilities.

The State Board also administers grant funds from sources such as Proposition 50 and makes funds available for the development and implementation of waste management improvements. Some of the funds may indirectly support the development and implementation of biomass utilization projects.

Regional Water Boards (Regional Boards) regulate waste discharge activities in their region. When an activity involves the discharge of wastes with the potential to affect water quality, the discharger must submit a Report of Waste Discharge (**ROWD**) to the appropriate Regional Board along with a fee based on the proposed discharge. The Regional Water Board will review the ROWD and revise, issue, or waive Waste Discharge Requirements (**WDRs**) for the discharge. If the WDRs is the first discretionary permit issued for a discharge, the Regional Board may become lead agency for the California Environmental Quality Act (**CEQA**).

The State Board and Regional Boards also have permitting programs for discharge of stormwater runoff resulting from construction activities (Construction General Permit) and routine stormwater discharges from municipal and industrial sites. Agricultural stormwater discharges are addressed under a waiver program.

Examples of Wastes

- I. Manure from a dairy:
 - A. Manure is collected and disposed at a landfill:
 - 1. Disposal activity - the manure is a waste
 - 2. The landfill is regulated, not the waste producer (same situation with a discharge of wastewater to a municipal wastewater treatment plant)

- B. Manure is collected and applied to land for crop fertilization:
 1. Reuse activity - manure is a by-product (from dairy operation)
 2. Application to land is regulated because a waste may be generated:
 - a. Amount of nutrients in applied manure may exceed crop needs
 - b. Excess nutrients may percolate to groundwater
 - c. Salts in manure may also move to groundwater
 - C. Manure is collected hydraulically and stored in an impoundment prior to cropland application:
 1. Common practice that is allowed by current WDRs
 2. Reuse activity - liquid manure is a by-product (fertilizer material)
 3. Storage activity may produce a waste (seepage from the impoundment)
 - D. Storage impoundment is covered to capture methane for power production (i.e., impoundment is a methane digester):
 1. Reuse activity for liquid manure
 2. Digester produces organic soil amendment (a by-product)
 3. Digester also produces an effluent:
 - a. May be disposed as a wastes as is done in Southern California
 - b. May be used as a liquid fertilizer (a by-product)
 - c. As a result of digestion, the effluent may contain more soluble nutrients than the influent
 - E. Municipal or industrial wastes proposed to be added to the digester to increase methane production:
 1. Not allowed by current WDRs
 2. Requires that a new ROWD be filed
 3. May affect the by-products and wastes that are produced
- II. Biomass from a forest:
- A. Timber harvest plans are reviewed by Regional Water Board and other agencies:
 1. Harvesting activities may produce wastes (e.g., wastes from road construction)
 2. Transportation activities may produce wastes (e.g., stormwater runoff transports sediment to a stream)
 - B. Residuals may be left on the ground:
 1. May be considered a waste disposal activity - waste discharged to land
 2. May be reuse of a by-product - residuals reduce soil erosion
 - C. Residuals may be removed and used for energy production:
 1. Residuals are a by-product
 2. Storage piles are subject to regulation if there is stormwater runoff
 - D. Wastes from the energy production facility (e.g., stormwater runoff and ash) are subject to regulation.

Water Board Involvement in Biomass Utilization

Examples of waste management issues that the Water Boards may need to address relative to new or expanding plants that utilize biomass are:

- Current waste discharges stop
- Current waste discharge practices are altered
- New wastes are produced and discharged to land or waters of the state.

Any of the situations listed above require that a ROWD be submitted to the appropriate Regional Water Board.

The Water Boards are not directly involved in the promotion of projects to increase the utilization of biomass for energy production or other purposes. Nor are Water Boards involved in the development or procurement of energy resources. However, as appropriate and within resource constraints, Water Board staff will take the following actions relative to development and utilization of biomass resources:

- Participate in efforts to establish standards, regulations, and permitting programs that promote the increased use of biomass consistent with our mandate to protect water quality
- Participate in identification of stakeholders, development of implementation strategies and action plans, and preparation of related recommendations related to biomass utilization
- Participate in workshops to identify and address barriers to increased use of manure, food processing wastes, and other organic wastes for power generation and bio-fuel production
- Support development of biomass-related research centers, evaluate funding opportunities for technology demonstrations, and assist in evaluating bio-energy and bio-product research and demonstration projects
- Participate in efforts to consolidate permitting, develop policies, improve industry-regulator communications, and structure fees to encourage increased recycling, recovery, and conversion of biomass wastes
- Review biomass to energy action plans developed by state or federal agencies to identify activities that may require ROWDs or WDRs
- Identify and address water quality benefits and impacts related to proposed harvesting and utilization of wildland (forest and chaparral) biomass
- Review proposals for the utilization of green wastes from agriculture, forest, and urban areas
- Review proposals for the use of biomass in the reclamation of impaired or contaminated lands

Water quality and water resource benefits of bio-energy

The following potential water quality and water resource benefits of bio-energy (as compared with conventional energy production and use) are based on input provided by Tom MacDonald of the California Energy Commission:

- I. Reduced water-quality impacts from spills and leaks of bio-fuels as compared with petroleum fuels:
 - A. Fewer cleanup problems with ethanol and biodiesel
 - B. Lower remediation costs
 - C. Supporting information:
 - 1. Extensive impacts from MTBE in gasoline have been documented
 - 2. Lack of impacts from March 2004 sinking of the ethanol tanker Bow Mariner off Norfolk, VA
 - 3. Abundance of information on the web indicating that releases of biodiesel pose less environmental risks than releases of diesel
 - D. Use of 100% biodiesel may be preferable to the current practice of 10-20% biodiesel blends.

- II. Reduced impacts through improved wildland (forest and chaparral) management:
 - A. Hydrologic benefits of reducing forest fire severity by removal of biomass
 - B. Lower impacts on water quality
 - C. Lower costs for restoration
 - D. Biomass removed can be used for energy production to offset removal costs.

- III. Reduced impacts through alternative management of agricultural, industrial, and municipal wastes:
 - A. Recycling waste materials reduces impacts from waste disposal by diverting material from:
 - 1. Municipal wastewater treatment
 - 2. Landfills
 - 3. Discharge to land for disposal or treatment
 - B. Bio-energy production may be primary goal or side-benefit:
 - 1. Companies produce ethanol from food industry waste
 - 2. Methane is produced in anaerobic digesters
 - C. Bio-energy production may create valuable by-products:
 - 1. Animal feeds
 - 2. Compost
 - D. Bio-energy production may be combined with additional waste treatment:
 - 1. May be viable even if no excess energy for sale because disposal costs are reduced or eliminated
 - 2. Additional level of treatment may reduce potential water quality impacts:
 - a. Quantities of wastes decrease
 - b. More environmentally-protective disposal practices become viable
 - c. Example: Methane digesters for wastes with salts and organics may be treated so that salts are concentrated and exported

- IV. Crop cultivation for energy production:
 - A. Production of crops of energy production may:
 - 1. Improve agricultural water utilization
 - 2. Reduce water quality impacts from agriculture
 - 3. Reference: United Nations publication "Bioenergy Primer: Modernised Biomass Energy for Sustainable Development"
(<http://www.undp.org/energy/publications/2000/2000b.htm>)