

State Water Resources Control Board's and Regional Water Quality Control Boards' Interim Recommendations for Disposal of Bird Carcasses During An Outbreak Of Exotic Newcastle Disease

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Purpose and Use of Guidance

This document provides guidance to California Department of Food and Agriculture (CDFA) and U.S. Department of Agriculture (USDA) personnel running an Incident Command Center (ICC) in an area where the California Governor has declared a State of Emergency in response to an outbreak of Exotic Newcastle Disease (END). The goal of this document is to present options for disposing of "END Waste" (the term, as used herein, includes bird carcasses and associated materials such as contaminated eggs, feathers, cages, soil, or manure) in a manner that is most likely to avoid the need for a regulatory action, after the emergency, by a Regional Water Quality Control Board (RWQCB). This document also contains suggestions which ICC personnel can share with affected poultry farmers/ranchers and with operators of classified landfills that may accept large quantities of END Waste during a declared outbreak emergency.

Waste Disposal: Normal Vs. Emergency Conditions

Under normal circumstances, the disposal waste to land (e.g., at a landfill) is an action subject to restrictions adopted by a RWQCB as individual or general Waste Discharge Requirements (WDRs). Alternatively, the RWQCB may adopt conditional waivers of individual or general WDRs for facilities where waste management practices meet specified conditions.

Under emergency conditions, there will not be time for a RWQCB to go through the deliberative process of adopting of new WDRs or conditional waivers, or of revising existing WDR or conditional waivers to include new disposal options/conditions. Water Code Sections 13269(c) and (d) allow a RWQCB, upon notification, to dispense with the formal process for emergency discharges needed to protect life and property. Nevertheless, ¶(c) requires that the RWQCB must be notified in advance of any emergency waste discharge not covered by WDRs. Furthermore, the RWQCB retains the right to adopt WDRs or to take enforcement action, after the fact, regarding any discharge that results in a threat to water quality. The goal of this document is to eliminate the need for such post-response regulation/enforcement.

The following discussion is from a generic perspective and addresses State Water Resource Control Board and RWQCB (collectively, **Water Boards**) concerns only, with the goal of pointing out waste-handling options that might be appropriate. The characteristics of a particular emergency may invalidate one or more of these options. Therefore, for any given END outbreak and disposal option, the Water Boards expect ICC personnel to combine all applicable State and local agency restrictions to determine if that disposal option is allowable and, if so, the restrictions under which ICC staff can implement it. Given the generic nature of these suggestions, it would be wise to invite local RWQCB staff (see contact list at the end of this document) to participate in ICC operations in case additional site-specific suggestions are needed to help eliminate the need for post-emergency regulatory or enforcement actions by the RWQCB.

Alternate Disposal Options, Concerns, and Mitigative Measures

Rendering, cremation, and disposal in an existing landfill are the primary and preferred methods utilized for disposing of END Waste. Composting, use of an emergency landfill, and incineration may also be acceptable alternative disposal options in those instances where the ICC deems it necessary and where the option meets applicable regulatory agency concerns. Following are the generic water quality concerns posed by each of these alternate disposal options together with some of the means to mitigate their possible adverse impacts on water quality. Implementing these appropriate mitigative measures and others that RWQCB personnel may suggest will help to eliminate regulatory action and/or enforcement that could become necessary after the END outbreak is contained and eliminated.

Rendering — The Water Boards have no concerns regarding rendering bird carcasses (to extract useable fat) as a disposal option implemented under ICC control. Note, however, that rendering addresses only the skin, meat, and bone components of END Waste, and that the feather waste component is separated from the bird carcass prior to rendering. Rendering plants with WDRs should ensure that they continue to comply with their requirements while handling the carcasses. This option, cremation, and biological incineration are the disposal options least likely to result in any water quality problems.

Cremation — Cremation is commonly used for the disposal of deceased small animals such as cats and dogs. In the initial stages of an END outbreak, pet crematories may have adequate capacity to address disposal needs. The Water Boards have no concerns regarding cremating END Waste as a disposal option implemented under ICC control. Open burning is a related, but potentially more problematic, disposal method (see below).

Biological Incineration — This is a method of thermal destruction of the END Waste, including its contained pathogens. Biological incinerators operate at extremely high temperatures (in excess of 2000°F in some cases), and convert volatile gases, vapors, and particulate matter to carbon dioxide, water, and ash. In a properly designed and operated incinerator, the combustible portion of the END Waste is burned, producing a residue free of pathogens. Adding a properly designed and operated afterburner produces a stack gas virtually free of odors and particulate matter emissions.

So long as any produced ash (or other solid waste) is properly managed and there are no temporary END Waste piles created during the process, this disposal option does not pose a threat to water quality, so the RWQCB is not likely to have a problem with it. The negative side is that: it is expensive; large biological incinerators are scarce in California; and fixed-facility incinerators, used for the disposal of animal carcasses, do not fall under the exemption for open burning. Therefore, it is essential to coordinate such disposal with local Air District personnel.

In-Vessel Composting — In-vessel composting of END Waste is another option. The California Integrated Waste Management Board (**CIWMB**) has a prohibition against composting mammals¹, but birds are not mammals, so that restriction does not apply. If the in-vessel composting involves no discharge of waste to land, it should pose little or no concern for water quality impacts if done under appropriate ICC controls and restrictions. Coordinate with your RWQCB contact regarding any in-vessel composting options the ICC is considering.

Municipal Landfill Disposal — Under normal circumstances, the volume of animal carcasses going to municipal landfills is relatively small and such disposal is generally allowed under permits

¹ See California Code of Regulations, Title 14, §§17852(i) & 17867(a)(1).

and WDRs issued for municipal landfills. If a large quantity of END Waste is proposed for disposal at a landfill, ICC personnel and the landfill operator should consult with RWQCB staff. Transportation of END waste to the landfill must be under the control and direction of ICC personnel.

In the United Kingdom (UK), the disposal of large quantities of animal carcasses at landfills, in response to outbreaks affecting bovines, resulted in the production of large amounts of viscous organic-rich fluids that drained into and clogged the landfills' fluid collection systems. Therefore, experience shows that large quantities of this waste may require special consideration and handling at landfills to ensure proper disposal.

The primary water quality suggestion is that the discharge of the bird carcass and raw egg components of END Waste be done in a manner that is consistent with the moisture holding capacity of the solid wastes underlying the carcass layer in the landfill. The following options, in addition to any others suggested by local RWQCB staff, should help avoid the fluid-production-related problems that the disposal of END Waste at an existing landfill could create:

- Limit the thickness of each END Waste layer to no more than two feet;
- Cover each layer of END Waste with an even thicker layer of soil or other absorbent waste;
- If the portion of the landfill receiving the END Waste is composite-lined, deposit no more than two layers (with a thicker layer of other waste or soil in-between) in any given area;
- If the portion of the landfill receiving the END Waste is not composite-lined, deposit no more than one layer in any given area;
- Discharge END Waste only to portions of the landfill underlain by a considerable thickness of other waste;
- For END Waste containing a significant proportion of raw eggs, reduce the moisture content, prior to discharge, by mixing the waste with an absorbent material (e.g., soil, saw dust, etc.).
- Temporary storage — If the END Waste is not discharged to the landfill immediately upon delivery:
 - Implement a plan that assures that any storm water runoff (in the event of a rainfall event) from END Waste piled at the landfill prior to discharge will be handled with landfill leachate rather than as storm water runoff;
 - Implement a plan to prevent wild birds from coming in contact with the END Waste (e.g., provide a temporary covering of soil);
 - Always discharge this temporary stockpile to the landfill prior to the end of the working day; and
- Cover END Waste with soil or other waste immediately after it is discharged to the landfill.

Open Burning — The ICC should coordinate with the local Air District regarding this option. Although burning destroys most pathogens, it is difficult to achieve sufficient combustion without the addition of an accelerant, such as diesel oil. Water quality concerns/mitigations regarding this disposal option include: **1)** the application of effective best management practices (BMPs) to mitigate effects from storm water runoff and runoff for any temporary waste piles created prior to burning the wastes; and **2)** excavation and treatment of the underlying soil, afterwards, to eliminate

excess fuel hydrocarbons. Soil treatment options would be similar to those used for the cleanup of soil resulting from an underground fuel tank leak. Your RWQCB contact can help identify suitable options.

Section 41801(f) of the Health and Safety Code allows open burning for the purpose of disease abatement and prevention. Open burning is typically conducted in pyres and trenches. Addition of accelerants such as diesel fuel and use of auxiliary fuels such as wood or straw is necessary to achieve combustion temperatures sufficient for complete burning of END Waste. The efficiency and effectiveness of open burning can be significantly enhanced by using a mechanical device called an air curtain destructor that forcefully projects a high volume curtain of air into a pit or trench while open burning is conducted. The use of an air curtain destructor should not increase the potential for water quality impacts.

Disposal at an Emergency Landfill — For the purpose of this document, an “emergency landfill” is a new landfill created under ICC control for the disposal of END Waste. From a water quality protection standpoint, this is by far the least desirable disposal option and should only be used when the preceding disposal options are infeasible.

In the UK, bovine carcasses disposed in on-site burial trenches during foot and mouth disease and “mad cow” disease outbreaks often had to be exhumed because these emergency landfills either threatened ground water quality or produced ground water contamination. Significant effort was necessary to collect, treat, and dispose of body fluids produced during decomposition. Therefore, UK emergency response personnel regard on-site burial the least preferred disposal option. In an emergency where landfill disposal is the best option but transporting the END Waste to a Class II or Class III landfill is not feasible, ICC personnel may consider creating an emergency landfill either on-site or nearby. If so, coordinate closely with RWQCB staff.

The following precautions, in addition to any others suggested by RWQCB personnel, can help avoid threats to water quality:

1. Place the emergency landfill at least 500 feet from any surface water bodies;
2. Keep the base of the excavation at least 10 feet above the historical high ground water level.
Note: 1) Except in favorable terrain, this precaution will, in most instances, make it necessary to be considerably more than 100 feet away from any standing water body. 2) Be aware that mottled soil (soil that exhibits multi-color curvilinear banding) indicates that that portion of the soil is subject to alternating wet and dry cycles, making it unsuitable for use as an emergency landfill site;
3. Avoid highly permeable soils — such as gravels, sands, or loamy sands — and facilities that may be characterized by such soils (e.g., old gravel quarries);
4. Minimize liquid production by:
 - * Limiting the thickness of each layer of END Waste to no more than 2 feet;
 - * Sprinkling a covering of lime over the carcasses sufficient to help limit liquid production; and
 - * Covering each limed layer with a thicker layer of soil (e.g., 3 feet) prior to starting another layer of END Waste;
5. The top of the uppermost layer of END Waste should remain three feet or more below the original soil surface elevation, with all remaining soil shaped into a mound that: 1) overlaps this

last layer by several feet on each edge; **2**) is at least 3 feet thick over all portions of the uppermost layer of END Waste; and **3**) is sloped to provide good surface drainage.

6. The most practical approach may be to:

- * Excavate the area to a depth of 10 feet, using a bulldozer;
- * Build the first “lift” by dumping a load of END Waste, use a backhoe or hydraulic excavator to spread it out locally (contiguous to prior loads) to the right thickness;
- * Spread the lime over the END Waste, then cover with enough soil to occlude the waste from view;
- * Dump the next load of END Waste adjacent, proceeding through the above steps until the entire lift of End Waste is in place;
- * With one “lift” of End Waste completed, spread and lightly-compact (sufficient for truck access) the covering soil for that layer and then proceed to construct the final lift of END Waste; and
- * Use all remaining soil to create the mounded area over, and overlapping the edge of, the disposal area. The “fluffing effect” of excavating the soil, in combination with the space taken up by the END Waste, will assure that you have plenty of soil for making this “final cover.”

Note: Using this approach, a one-acre area excavated to a depth of 10 feet and constructed with two layers of chickens, as described above, should accommodate over 1500 tons of END Waste (including a half-million chicken carcasses plus associated wastes) and will end up as a mound at least four feet above the surrounding land, with the top of the uppermost END Waste layer three feet below the original ground surface level;

7. Discharge only END Waste, cover soil, and lime or other liquid-abatement materials to the emergency landfill;

8. For END Waste containing a significant proportion of raw eggs, reduce the moisture content, prior to discharge, by mixing the waste with an absorbent material (e.g., soil, saw dust, etc.).

9. Implement best management practices (**BMPs**), including:

- * Installing runoff control features on the upgradient side of the landfill to divert off-site storm water from the emergency landfill;
- * Providing a runoff collection and conveyance ditch system;
- * Grading the final cover to eliminate ponding;
- * Providing some sort of erosion control for the final cover. *Note: Common options include installing a straw mulch cover or a vegetative cover;*
- * Provide signage that clearly identifies the area as an emergency landfill for agricultural wastes. The information on the sign should warn against trespass and should include the reason for the emergency landfill (e.g., Exotic Newcastle disease outbreak), the types of waste buried at the site (e.g., carcasses, egg wastes, manure, etc.), and the name and phone number of the current land-owner; and

- * Install a “deer fence” around the completed emergency landfill sufficient to deter access and digging by carnivores, given that exposing the END Waste while the END agent is still active could result in water quality impacts as well as the further spread of the disease via avian scavengers’ consumption of the END Waste;
10. Establish the duration of time that the area must remain undisturbed, considering the time needed to eliminate the viability of the infectious agent; and
11. The ICC will, no doubt, establish documentation as to the location and construction of the emergency landfill, together with any long-term restrictions applicable to the landowner. In addition to the landowner, please provide a copy of any such document to your RWQCB contact. The following are components that the ICC may choose to include in the documentation:
- * A short description of the emergency conditions that made an emergency landfill necessary;
 - * The identity, address, and phone number of the land owner;
 - * Photographs taken to show the emergency landfill’s location, practices used for placement of wastes and soil layers, and the unit’s appearance after installation of the final cover;
 - * A map, based upon surveying or Geographical Information System (**GIS**) data, showing the landfill’s perimeter in relation to local topographic, biological, and cultural features (e.g., roads, large trees, stream channels, etc);
 - * A simple cross-section, coupled with a narrative description of the landfill’s construction (depth, layers and their thickness, and final cover);
 - * A description of the measures taken (such as those listed above and any others you have utilized) to prevent migration of waste constituents from the emergency landfill;
 - * The date after which the land owner can remove the deer fence and resume use of the land; and
 - * Any necessary restrictions the ICC deems appropriate regarding such use (e.g., allow only shallow tilling and nonirrigated rangeland use for the first five years).

Failure to contact the RWQCB prior to disposal at a landfill, which during an END outbreak should only be created under the direction of ICC personnel, would constitute a violation of the Water Code. Furthermore, whether or not notified beforehand, the RWQCB can adopt WDRs or a Cleanup And Abatement Order after the END outbreak is contained. Informal coordination between ICC and RWQCB personnel regarding the siting and design of any emergency landfill can all but eliminate the likelihood of such problems.

RWQCB CONTACT LIST

There are nine RWQCBs in California, based upon major watershed boundaries, but two RWQCBs have satellite offices. If you have any doubt about which of the twelve RWQCB offices is responsible for your area of outbreak concern, a quick way to resolve the issue is to look in the State Government pages, at the beginning of the White Pages of your local phone book, under the title **Water Quality Control Board**. This will be followed by the office’s regional designation — e.g., **Central Valley Region**. Once you know the regional designation and, in some cases, the city in which the office is located, you can either call the general number listed there or your direct contact,

as listed below. Your RWQCB contact will be able to tell you if your area of outbreak concern includes any areas addressed by another RWQCB:

RWQCB Region 1 — North Coast Region: Terri Kinney [707-576-2668, KinnT@rb1.swrcb.ca.gov] or William Winchester [707-576-2682, WincB@rb1.swrcb.ca.gov]

RWQCB Region 2 — San Francisco Bay Region: Terry Seward [510-622-2416, TS@rb2.swrcb.ca.gov], or Curtis Scott [510-622-2414, or CTS@rb2.swrcb.ca.gov]

RWQCB Region 3 — Central Coast Region: Michael LeBrun [805-542-4645, Mlebrun@rb3.swrcb.ca.gov]

RWQCB Region 4 — Los Angeles Region: Rod Nelson [213-620-6119, RNELSON@rb4.swrcb.ca.gov]

RWQCB Region 5 — Central Valley Region, Redding Office: Karen Clementsen [530-224-4852, CLEMENK@rb5r.swrcb.ca.gov], or Dale Stultz [530-224-4786, StultzD@rb5r.swrcb.ca.gov]

RWQCB Region 5 — Central Valley Region, Sacramento Office: Steve Rosenbaum [916-255-3131, RosenbS@rb5s.swrcb.ca.gov], Victor Izzo [916-255-3126, IzzoV@rb5s.swrcb.ca.gov], or Jack Del Conte [916-255-3083, DelconJ@rb5s.swrcb.ca.gov]

RWQCB Region 5 — Central Valley Region, Fresno Office: Shelton Gray [559-445-5508, GrayS@rb5f.swrcb.ca.gov]

RWQCB Region 6 — Lahontan Region, South Lake Tahoe Office: George Cella [530-542-5426, GCella@rb6s.swrcb.ca.gov]

RWQCB Region 6 — Lahontan Region, Victorville Office: Joe Koutsky [760-241-7391, jkoutsky@rb6v.swrcb.ca.gov]

RWQCB Region 7 — Colorado River Basin Region: Liann Chavez [760-776-8945, chavl@rb7.swrcb.ca.gov], or Michele Ochs [760-776-8962, ochsm@rb7.swrcb.ca.gov]

RWQCB Region 8 — Santa Ana Region: Dixie Lass [909-782-3295, dlass@rb8.swrcb.ca.gov], or Thea Tryon [909-248-0376, TTryon@rb8.swrcb.ca.gov]

RWQCB Region 9 — San Diego Region: John Odermatt [858-637-5595, oderj@rb9.swrcb.ca.gov], or Carol Tamaki [858-467-2982, tamac@rb9.swrcb.ca.gov]