Standard Operating Procedure: Odor Control Measures, Identifying and Handling Odorous Loads, Standardized Cell Development, Odor Surveillance & Training of Landfill Staff

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Chiquita Canyon Landfill SOP

This Standard Operating Procedure (SOP) provides a framework for implementing various operational and other practices designed to mitigate odors that may be potentially emitted from the Chiquita Canyon Landfill. The following procedures should be implemented when feasible, and only when implementation of the procedure is safe. These procedures may be modified during implementation as needed to ensure staff safety and effectiveness of the procedure.

This SOP will apply during actual Unfavorable Wind Conditions, based on monitoring of Weather Underground and actual (real time) wind conditions as determined by Chiquita's onsite air monitoring system(s) and onsite observations, except for the daily cell geometry of the working face which will apply at all times. Unfavorable Wind Conditions are defined as winds that blow from the South between 0 and 5 miles per hour. Wind condition monitoring will be performed by trained landfill staff.

Odor Control Measures

Numerous odor control measures have been identified as useful for mitigating odors at the working face. These odor control measures include fans, odor neutralizer, and perimeter misting lines.

Fans

The landfill is currently permitted to use Tow & Blow® fans along with nine Orchard Rite® fans. (together all referred to as "fans"). Odor neutralizer may be dispersed using the fans when possible.

Once the location of the daily working face is established, trained landfill staff will visually evaluate the areas surrounding the working face to determine where the existing and anticipated topography will allow for optimum fan placement. When determining fan placement, trained landfill staff should consider the location of the working face and the actual wind speed and direction. During the visual evaluation, trained landfill staff should use the following criteria to identify the individual fan locations for the working face:

- The fans should always be placed on flat, stable surfaces to minimize the potential for the fans to tip over and to ensure that the fan blades are perpendicular to the ground level.
- The fans should be placed downwind of the working face with their primary directional flow blowing into and/or perpendicular to the wind and toward the working face.
- When operationally feasible and safe, Tow & Blow® fans should be placed no closer than 50 feet and no farther than 75 feet from the perimeters of the working face.
- When operationally feasible and safe, Orchard Rite® fans should be placed no closer than 150 feet and no farther than 350 feet from the perimeters of the working face.
- When operationally feasible and safe, Orchard Rite® fans should be oriented so that they blow directly into the on-site surface winds from a downwind location, and whenever feasible, at least one fan should blow crosswind (perpendicular) to the on-site surface airflow direction.
- When operationally feasible and safe, Orchard Rite® fans should be placed on the deck of the lower lift so their airflow is blowing up the working face. Additional Orchard Rite® and Tow & Blow® fans can be placed on the upper deck of the current lift with airflow directed across the working face. In either location, airflows should be directed into or perpendicular to the on-site surface airflow.

Horizontal spacing

The horizontal spacing in between the fan centerlines should be as follows:

- Spacing between Tow & Blow® fans should be between 25 and 35 feet
- Spacing between Orchard Rite® fans should be between 50 and 75 feet.
- Spacing between Tow & Blow® fans and Orchard Rite® fans when utilized together is to be approximately 50 feet.

Vertical spacing

The vertical spacing in between the fan centerlines should be as follows:

- Fans are allowed to be placed on the current and prior lifts.
- Fans are also allowed to be placed on slope benches so long as the vertical distance above the working face does not exceed 60 feet and the horizontal offsets from the working face adhere to the criteria defined above. When the minimum number of fans are placed as defined by the size of the working face, any additional fans can be placed on the western slope and ridge beyond the 60-foot vertical limit above the working face.

Number of fans

The total number of fans utilized at the working face will be dependent on the size of the working face, with approximately one fan for every 50 to 75 feet of distance along the downwind perimeter of the working face as conditions permit. It is important to note that this is an approximated guideline based on an ideal computational fluid dynamics model. There may not be precisely one fan every 50 to 75 feet. The actual spacing and placement of the fans will be dependent on the fan type, topography, and other operational considerations while adhering generally to the distances specified above.

Fans should be placed on the north and west sides of the working face when operationally feasible.

Once the fan locations are established, trained landfill staff will communicate the fan locations for the working face to landfill operations staff.

Once the fans have been placed, and prior to their operation, trained landfill staff should ensure that the fans are fueled, odor neutralizer tanks are filled, and the fans' odor neutralizer application systems are functional. If a functionality issue is detected, trained landfill staff should communicate with maintenance staff to troubleshoot and repair the faulty system. Once the fans are in operation, trained landfill staff will periodically evaluate the fans for functionality and will also be prepared to make slight placement adjustments as wind or operational conditions change.

Odor Neutralizer

Trained landfill staff will direct the application of odor neutralizer. Odor neutralizer should be utilized according to the manufacturer's recommendations using fans and/or perimeter misting lines. Trained landfill staff will determine which fans and/or perimeter misting lines to use following the procedures outlined in this SOP. Odor neutralizer may be applied directly to exposed waste surfaces with a water truck during activities where daily cover soil and/or alternative daily cover materials are removed, such as removal of such materials at the beginning of an operating day, salvaging soil during new cell construction, and during landfill gas system work. Odor neutralizer may be applied at the tipper discharge area either with misting lines on fans or a dedicated high volume odor neutralizer application system.

Once the location of the daily working face is established, and prior to operation of the odor neutralizer application systems, trained landfill staff will ensure that the odor neutralizer tanks are filled and that the respective application systems are functional.

Once the odor neutralizer application systems are in operation, trained landfill staff will periodically evaluate the odor neutralizer application systems, ensuring that they are functioning as intended. If a functionality issue is detected, trained landfill staff will communicate with maintenance staff to troubleshoot and repair the apparent issue.

Perimeter Misting Lines

Once the location of the daily working face is established, trained landfill staff will determine which misting line segments will most effectively reduce potential airborne odors at the perimeter of the landfill. This will be accomplished by considering the location of the working face in relation to the misting line segments and actual wind speed and direction. Generally, misting line segments that are located along the wind flow path between the working face and Val Verde will be activated.

Prior to their operation, trained landfill staff will ensure that the misting line pumps are fueled, odor neutralizer tanks are filled, and the neutralizer application systems are functional. If a functionality issue is detected, trained landfill staff should communicate with maintenance staff to troubleshoot and repair the apparent issue.

Trained landfill staff should periodically survey the location of the working face in relation to the misting line segments and actual wind speed and direction in order to determine whether additional or alternative misting lines need to be activated. Trained landfill staff may activate additional misting line segments or deactivate ineffective misting line segments as wind speed, wind direction or operational conditions change.

Identifying and Handling Odorous Loads

Identifying Odorous Loads

How:

Trained landfill staff will evaluate inbound loads of waste to identify Odorous Loads. An "Odorous Load" is a load of waste that meets one (or both) of the following criteria:

1. Loads containing organic Materials Recovery Facility fines ("MRF fines"); or
2. Loads that have an odor intensity of 3 or higher (see Odor Score Table), as determined by trained landfill staff from the outside of the truck.

Odor Score	Level of Odor Detected
0	No Odor Detected
1	Very Light Odor Detected
2	Light Odor Detected
3	Moderate Odor
4	Strong Odor
5	Very Strong Odor

When trained landfill staff identifies an Odorous Load, the person making the identification will notify the operators at the working face that the load is an Odorous Load.

Where:

Odorous Load identification will generally occur at two different locations (described below). Radio communication among landfill staff will ensure that identified Odorous Loads are properly handled. The locations where Odorous Load identification will generally occur are:

At the Scale

The scale attendant serves an initial screening function. Where practical and safe, the scale attendant may evaluate an incoming load to determine whether the load is an Odorous Load. Time and circumstances permitting, the scale attendant will notify trained landfill staff of incoming loads suspected to be Odorous Loads.

At the Working Face or Deck Commander's Station

Where practical and safe, the Deck Commander or other trained landfill staff at the working face will inspect incoming loads identified as Odorous Loads based on odor intensity. Identified Odorous Loads should be communicated to working face operators to ensure appropriate handling.

Handling Odorous Loads

Timing & Acceptance

The Landfill will only accept loads containing organic MRF fines after 12 p.m.

Sequencing

Once loads that were already identified as Odorous Loads reach the working face, they will be directed by the Deck Commander. The Deck Commander should seek to ensure that numerous Odorous Loads are not deposited in quick succession.

Immediate Covering

Odorous Loads dumped at the working face will immediately be pushed onto the working face in a manner that minimizes the surface area of the load. Once the load is in place, it should be covered by non-odorous material as soon as reasonably possible. A stockpile of non-odorous waste will be maintained at the edge of the working face and pushed over Odorous Loads if no non-odorous or inert material loads are available to cover an Odorous Load.

Standardized Cell Development

Standardized and consistent daily cell construction is a component of the landfill's odor mitigation measures. The daily cell geometry of the working face can be modified to accommodate fluctuations in waste tonnage throughout the day.

The working face will be constructed using either the pancake cell method or the advancing face method. In the pancake cell method, waste is placed in thin horizontal lifts and compacted with the cell growing vertically (See N. Bolton, Handbook of Landfill Operations Section 7.6.3.3). As waste is placed and the cell grows vertically, progressive cover can be applied. Soil or tarps will be placed to cover the daily cell side slopes that are at target grades to ensure that exposed working face surface area is minimized. In the advancing face method, waste is placed in thin compacted lifts, and these lifts are placed on a shallow slope with the cell advancing horizontally (See N. Bolton, Handbook of Landfill Operations Section 7.6.3.4). Progressive cover may be placed on the top of the cell and side slopes that are at target grades throughout the day to ensure that the working face surface area is minimized.

Odor Surveillance

Odor Surveillance Procedures

Trained landfill staff will conduct community odor surveillance as needed when Unfavorable Wind Conditions exist. Trained landfill staff may conduct odor surveillance at the following Surveillance Locations:

Surveillance Locations
LA County Fire's Del Valle Regional Training Center
Intersection of Chiquito Canyon Road and Lincoln Avenue
Intersection of Lincoln Avenue and Jackson Street
Intersection of Lincoln Avenue and Harding Avenue
Intersection of Chiquito Canyon Road and San Martinez Road
Intersection of San Martinez Road and Morningside Drive
Intersection of Hunstock Street and Del Valle Road
Intersection of Del Valle Road and Hasley Canyon Road
Intersection of Franklin Parkway and driveway leading to the United States Postal Service
Intersection of Henry Mayo Drive and Wolcott Way

The trained landfill staff member conducting the odor surveillance should not have visited the working face or other areas where exposed trash exists at the Landfill prior to conducting odor surveillance that day to the extent staffing and circumstances permit. All landfill staff conducting odor surveillances will receive training.

Odor surveillance should generally be conducted by proceeding to each Surveillance Location as needed and assessing the type and strength of any odor(s) detected. Assessment of each parameter should be made while standing in ambient air, and landfill staff should avoid making such assessments from within a vehicle.

The trained landfill staff member conducting the odor surveillance may record odor surveillance results in an "Odor Surveillance Log." The entries for the Odor Surveillance Log may include information including: (1) the date and time; (2) the Surveillance Location; (3) the wind speed and direction; (4) a narrative description of any odor detected (including the type of odor, such as trash, landfill gas, chemical, odor neutralizer, as applicable); (5) current weather conditions; and (6) an assessment of the strength of any odor detected using the scale below:

0	No odor detected
1	Very light odor detected
2	Light odor detected
3	Moderate odor
4	Strong odor
5	Very strong odor

Response to Verified Odor Complaints

If three or more verified odor complaints (i.e., odor complaints that are determined by the South Coast Air Quality Management District ("AQMD") to have a source of odor that originated from the landfill) occur within a 24-hour period, and a South Coast AQMD employee promptly provides notice of such to the landfill, trained landfill staff will take the following actions:

- Conduct an investigation of the landfill operations at the time of the complaints, including reviewing the waste that came in at the time of the complaints and wind data;
- Adjust the odor control measures (e.g., fans) as needed;
- Increase use of progressive cover on the working face, as applicable; and/or
- If the verified odor complaints are from an area that is not covered by the Surveillance Locations, conduct an investigation of the community from which the complaints originated to determine whether any landfill-related odors can be detected, their odor strength, wind direction and speed, and any other relevant observations.

New Development

Trained landfill staff should monitor the surrounding community for new residential development that may potentially be impacted by odors originating from the landfill. If new residential development occurs, trained landfill staff will conduct an investigation of the new residential development to determine whether any landfill-related odors can be detected, their odor strength, wind direction and speed, and any other relevant observations. Based on the results of this investigation, the landfill will consider whether and what, if any, additional odor control measures should be implemented to prevent landfill odors in those areas.

Training of Landfill Staff

Training will be provided to pertinent landfill staff to ensure situational awareness of the overall odor mitigation system. Training sessions will cover the following topics:

1. How to monitor wind conditions;
2. How to utilize the various odor control measures, including:
    a. Fans;
    b. Odor neutralizer; and
    c. Perimeter misting lines;
3. How to identify Odorous Loads;

4. How to handle Odorous Loads;
5. Communication skills for interacting with drivers and relaying Odorous Load information to working face operations staff;
6. Safety procedures required when conducting the work described within this SOP;
7. How to construct the daily cell according to the above daily cell geometry;
8. How to conduct odor surveillance, including:
    a. Surveillance Locations;
    b. How to assess odor type and strength;
    c. How to collect wind data; and
    d. How to complete the Odor Surveillance Log;
9. How to respond to verified odor complaints; and
10. How to monitor for new residential development.