BEFORE THE HEARING BOARD OF THE

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

In The Matter Of SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, Petitioner, vs. CHIQUITA CANYON, LLC a Delaware Corporation, [Facility ID No. 119219] Respondent.	**Case No. 6177-4** **DECLARATION OF NEAL BOLTON, P.E.** Health and Safety Code § 41700, and District Rules 402, 431.1, 3002, 203, 1150 Hearing Date: April 24-25, 2024 Time: 9:30 am Place: Hearing Board South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

I, Neal Bolton, declare as follows:

1. I am of sufficient age and am competent to testify in this proceeding. I make this declaration based upon personal knowledge and am competent to testify to the facts set forth herein.

Background and Experience with Chiquita Canyon Landfill

2. As discussed in my prior declarations in this Case No. 6177-4, I serve on the Reaction Committee as the expert on landfill design and operational best management practices. I have owned and managed the landfill consulting company Blue Ridge Services Montana, Inc. since 1988 (then called Blue Ridge Services) ("Blue Ridge"). I am a registered civil engineer in California with more than 45 years' experience in heavy construction, landfill operations, and solid waste management. I began working with Chiquita Canyon, LLC ("Chiquita") in 2020, related to a series of notices of violation issued to Chiquita by the South Coast Air Quality Management District ("South Coast AQMD"). Since then, Blue Ridge has continued to work with Chiquita on various components of landfill operations, including odor mitigation and leachate management.

3. This declaration is made for the April 24 and 25, 2024 status and modification hearing on the Modified Stipulated Order for Abatement with the South Coast AQMD issued on March 21, 2024 in Case No. 6177-4.

Actions to Address Leachate Seeps and Leachate-Related Odors

4. On March 28, 2024, as required by **Condition 64**, Chiquita provided the South Coast AQMD with a copy of the Leachate Management Plan ("LMP") submitted to the U.S. Environmental Protection Agency in accordance with the Unilateral Administrative Order issued to Chiquita. The final LMP is attached hereto as **Exhibit A**. Blue Ridge assisted in preparing Section 2 of the LMP, which provides an overview of Chiquita's leachate collection system and details Chiquita's procedures for identifying, responding to, and managing leachate seeps as well as other releases.

5. Chiquita staff and additional consultants prepared the remainder of the Leachate Management Plan, which concerns the following topics: improvements to landfill systems (such as the leachate collection and dewatering systems), standard operating procedures for on-site leachate storage, waste characterization and profiling, leachate testing, off-site transportation and disposal for both hazardous and non-hazardous leachate, a summary of current treatment and disposal facilities, the preparation and shipment of waste, and permitting (including permit modifications).

Leachate Seep Identification and Management

6. Chiquita has implemented numerous actions to prevent or minimize potential environmental or health impacts of the increased leachate generation caused by the landfill reaction, including best management practices ("BMPs") to manage and mitigate leachate and odor, as required by the Modified Stipulated Order.

7. As required by **Condition 24**, Chiquita operates and maintains the Landfill to prevent standing leachate and the pooling and/or ponding of leachate exposed to the atmosphere. Compliance has been ongoing since January 18, 2024. If Chiquita staff witnesses pooling or ponding of leachate, Chiquita immediately: (i) vacuums such leachate into a sealed tanker truck or leachate tank (safety permitting), or (ii) promptly makes repairs to stop leachate from pooling or ponding.

8. To ensure prompt identification of leachate seeps, Chiquita conducts inspections twice per day as required under **Conditions 27(b) and 27(c)**. Since January 18, 2024, dedicated staff have conducted these inspections of the western slope, northern slope, and the stormwater channels daily, once before 10 a.m., and again after 1 p.m. During the inspections, Chiquita records any leachate seepage or pooling. Documentation includes the location of the seepage or pooling identified on a map, time discovered, estimated duration of presence of leachate at such locations, the estimated quantity of leachate, the characteristics of the leachate, the leachate saturation level of surrounding soils, and any containment systems or measures deployed. These logs are compiled and submitted to South Coast AQMD each Tuesday and are also included in Section (q) of the Condition 8 monthly reports submitted to South Coast AQMD. If applicable, Chiquita also reports any ongoing leachate seepage or pooling that occurred at the same location more than once within a calendar week.

Pressurized Leachate Releases

9. As required by **Condition 25**, when encountering pressurized leachate releases (PLRs) as a result of drilling/maintenance/other operations, to the maximum extent possible, Chiquita is prepared to promptly act to mitigate odors and the dispersion and exposure of leachate into the atmosphere. Since the January 2024 hearing, only one PLR has occurred, in relation to the drilling of Well CV-2447. Chiquita sealed the well and relieved pressure by applying as much vacuum as possible. Chiquita also removed leachate-saturated soil and added sufficient dry soil cover to the saturated soil, to mitigate potential odors.

10. On March 12, 2024, Blue Ridge, on behalf of Chiquita, submitted a report regarding the feasibility of temporary containment measures for the purposes of controlling possible PLRs when drilling additional holes for wells, liquid pumps, temperature devices, or other purposes. The report is attached hereto as **Exhibit B**.

11. The study, as required by **Condition 26**, first analyzed the feasibility of temporary tenting, enclosures, or partial enclosure systems, and concluded that there were no feasible containment measures. These types of structures are not sufficiently portable to meet the Landfill's well drilling schedule, without sacrificing stability. Furthermore, to contain the steam and landfill

gases (LFG) emitted during a PLR, any structure would have to be completely enclosed. If a PLR were to occur within the enclosure, it could increase pressure within the enclosure and lead to serious and significant threats to worker safety.

12. Ultimately, Blue Ridge recommended several drilling-related control measures. When drilling new wells, we recommended reducing the speed at which the bucket auger is raised and lowered into a well, and rotating the bucket auger while raising and lowering, when the bucket auger is submerged. When servicing or performing maintenance on the wells, we suggested using cactus wellheads, which would direct any liquids to a separate arm during a PLR, when removing or replacing a pump or temperature probe. We also suggested that Chiquita evaluate the installation of isolation chambers on new wells. Isolation chambers could potentially minimize the risk of a PLR when servicing wells.

13. Finally, we recommended that Chiquita utilize the data from its temperature monitoring wells to better understand the high temperatures. High temperatures are likely more susceptible to PLR events. With this knowledge, Chiquita may be able to employ drilling strategies, such as drilling from the outer edges of the Reaction Area, as defined by Condition 9(a) ("Reaction Area") of the Modified Stipulated Order, inward, which may relieve pressure and liquids through the Reaction Area.

Sampling and Monitoring

14. Since March 22, 2024, as required by **Condition 51,** South Coast AQMD has been allowed to conduct all inspections deemed necessary at the Landfill, including, without limitation, collecting samples. As of the date of this declaration, South Coast AQMD has not required collection of any samples.

15. As required by **Condition 51(a)**, Chiquita maintains at least two 5-gas monitors (calibrated, with sufficient battery, and ready for use) for regulatory personnel to use during its inspections. These monitors have been available at the Landfill for regulatory personnel use since March 22, 2024.

16. On March 5, 2024, as required by **Condition 37**, Chiquita collected liquid samples from wells with pumps located in the Reaction Area, as defined in the Modified Stipulated Order, including wells with the highest average temperatures to the extent feasible. The laboratory results from those samples, which were analyzed using U.S. EPA Method 624.1, were submitted to South Coast AQMD on March 15, 2024.

17. On a monthly basis, under **Condition 38**, Chiquita takes a representative monthly sample of liquids from the Reaction Area, as defined in the Modified Stipulated Order, and at least one representative monthly sample of leachate from the bottom tanks where liquids/leachate from the entire Landfill are collected. These samples are collected and analyzed per U.S. EPA Method 624.1 for the presence of VOCs and TACs. The results of these samples are posted on Chiquita's Odor Mitigation website (https://chiquitacanyon.com/reports/odor-mitigation/).

Geosynthetic Cover Installation and Repairs

18. Chiquita continues to make progress on the installation of the geosynthetic cover, as required by **Condition 31.** The Stipulated Order requires Chiquita to install the geosynthetic cover over the western portions of Module 2B/3/4 Phase 2, Module 2B/3, and Module 4. Chiquita submitted the completed design for the geosynthetic cover on September 12, 2023, providing greater definition to the cover location, including associated landfill gas extraction infrastructure.

19. Progress regarding the installation of the cover is reported regularly. The initial notification regarding the progress of procuring and installing the cover was made on October 31, 2023. Chiquita provides updates in Section (q) of the Condition 8 reports.

20. In addition to progress made on cover installation, Chiquita continues to ensure integrity of cover. As required by **Condition 30,** since September 7, 2023, Chiquita has conducted visual inspections of the landfill cover around the Reaction Area each operating day. Chiquita promptly repairs any identified issues to the cover, which may include adding and spreading soil, wetting the soil, and retracking the damaged area. Chiquita maintains a log of repairs made to the landfill cover demonstrating any damage to cover was addressed, including the date damage was identified, actions taken to repair the damage, and time at which repair was completed. These logs

are submitted to South Coast AQMD on a weekly basis pursuant to Condition 30, as well as on a monthly basis within Section (q) of the Condition 8 monthly report.

Additional Air Dispersion Modeling

21. As required by **Conditions 32 and 32(a),** on December 1, 2023, Chiquita submitted a report to South Coast AQMD reviewing air dispersion modeling, smoke release studies, and CFD modeling that have been previously completed for the landfill to assess odor and emissions transport into the nearby community. The study included an evaluation of the efficacy of odor control measures for purposes of minimizing odors in the surrounding community. The study was based on both the Landfill's current and projected closure in 2047, topography, and configuration. The study also identified transport trajectories and quantified odor gas concentrations within the surrounding community.

22. In the initial study, Blue Ridge recommended conducting additional air modeling that would incorporate complaint data received from South Coast AQMD, and the results of a subsequent flux chamber study. Therefore, Chiquita submitted a proposal for additional air modeling on January 15, 2024, as required by **Condition 32(b).** The proposal identified the primary proposed personnel/firms for conducting the study, qualifications of such personnel, and a timeline for completion of the study and submittal of final reports. Blue Ridge received initial comments on March 28, 2024 and is working to provide South Coast AQMD with an updated plan incorporating South Coast AQMD's comments.

Odor Mitigation Strategies

23. Since September 7, 2023, Chiquia continues to comply with **Condition 43** which requires Chiquita to implement the following conditions during Unfavorable Wind Conditions:

a. The use of orchard fans, and tow-and-blow fans as needed, placed and spaced around the working face;

b. The use of equipment including fans and misters equipped with odor neutralizer misting systems in various portions of CCL to neutralize any fresh trash odors;

c. The identification and appropriate handling of odorous loads at the scale and working face as new waste loads enter CCL;

d. Sequencing and promptly covering odorous loads; and

e. Regularly training staff on all aspects of landfill operations, employee safety, and odor control.

24. As reported in prior declarations, the Modified Stipulated Order requires Chiquita to conduct daily odor surveillance. If "Moderate Odor" is detected at three or more stops during Chiquita's surveillance, **Condition 1(f)** requires Chiquita to document such event and immediately report to the Landfill's operations staff. Designated employees receive notifications of these odor events. After a notification is received, the designated employees coordinate with the Chiquita's operations staff at the Landfill to identify the source of the odor and conduct any repairs or mitigation measures as appropriate (e.g., working face odor mitigation, leachate management, etc.).

25. Chiquita maintains written records of its odor surveillance, including any responsive actions taken, as required by **Condition 2**. Compliance with respect to **Conditions 1(f) and 2** has been ongoing since September 7, 2023.

26. Odor mitigation at the Landfill has also been assisted by Chiquita's installation of more than 1,000 feet of Semi- Permanent Vapor Odor Control in the Reaction Area. As required by **Condition 45**, Chiquita provided notification of such to SCAQMD on September 20, 2023.

27. Pursuant to **Conditions 46 and 47**, Chiquita operates and maintains a landfill perimeter odor control misting system on the western and northwest portions of the Landfill. The system is operated immediately and continuously upon receiving data from the MET station that the 1-hour averaged wind direction is blowing in western, northwestern, northern, or northeastern directions. The operation of this system continues until the wind direction data demonstrates the wind is no longer blowing in the specified directions. The system is also operated to neutralize and mitigate odors to the extent possible, as determined by the Reaction Committee. Compliance with respect to these conditions has been ongoing since September 7, 2023.

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Procedures During Excavation

28. **Condition 42** outlines the required procedure for performing excavations at the Landfill while Chiquita's Rule 1150 excavation plan is pending approval. Chiquita will follow all such requirements to minimize the potential for odors resulting from any such excavations. These measures include, for example:

a. **Condition 42(f):** Water down all working excavation areas, excavated material, and unpaved roadways until the surfaces are moist. The moist surfaces will be maintained for the duration of the excavation to minimize dust and emissions.

b. **Condition 42(k)**: Immediately relocate for burial onsite or immediately deposit into trucks/trailers for off-site transport, and completely cover with automated vinyl tarps, with such covers tied down, except for during active loading/unloading of refuse.

c. **Condition 42(m)**: Utilize rumble strips to minimize track-out from the excavation area.

d. **Condition 42(l)**: Ensure that during transport of excavated material, no material extends above the sides or rear of the tracker or trailer hauling the excavated material.

e. **Condition 42(o)**: Conduct daily inspections of any covered excavation area to ensure the integrity of the cover(s) is maintained and secured so that no portion of the soil is exposed to atmosphere. If there are cover issues, Chiquita will take corrective action to add and secure a new excavation cover. Chiquita will maintain an inspection log which records the time of the inspections and any corrective action performed.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct to my personal knowledge.

Executed on this 19th day of April, 2024, in Victor, Montana.

Neal Bolton
President
Blue Ridge Services, Inc.

BEFORE THE HEARING BOARD OF THE

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

In The Matter Of SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, Petitioner, vs. CHIQUITA CANYON, LLC a Delaware Corporation, [Facility ID No. 119219] Respondent.	**Case No. 6177-4** **EXHIBIT A TO DECLARATION OF NEAL BOLTON, P.E.: LEACHATE MANAGEMENT PLAN** Health and Safety Code § 41700, and District Rules 402, 431.1, 3002, 203, 1150 Hearing Date: April 24-25, 2024 Time: 9:30 am Place: Hearing Board South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Attachment B
Leachate Management Plan

Chiquita Canyon, LLC
UAO, EPA Docket No. RCRA 7003-09-2024-0001 and CERCLA 106-09-2024-05

LEACHATE MANAGEMENT PLAN
CHIQUITA CANYON LANDFILL
CASTAIC, CALIFORNIA

Prepared for:

CHIQUITA CANYON
A Waste Connections Company

Chiquita Canyon, LLC
29201 Henry Mayo Dr, Castaic, CA 91384

Prepared by:

MONTROSE
ENVIRONMENTAL

March 2024
Revision 0

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List of Acronyms and Abbreviations

BMP	Best Management Practices
CCL	Chiquita Canyon Landfill
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CONEX	Container Express
DTSC	Department of Toxic Substances Control
EC	Emergency Coordinator
ER	Emergency Response
EPA	Environmental Protection Agency
ERU	Emergency Response Unit
ETLF	Elevated Temperature Landfill
FOSC	Federal On-Scene Coordinator
GAC	Granulated Activated Carbon
GCCS	Gas Collection and Control System
HAZMAT	Hazardous Materials Management
HDPE	High-Density Polyethylene
HWCP	Hazardous Waste Contingency Plan
HWPM	Hazardous Waste Program Manager
IC	Incident Commander
LEA	Local Enforcement Agency
LCRS	Leachate Collection and Removal System
NRC	National Response Center
OES	Office of Emergency Services
PLR	Pressurized Leachate Releases
PPE	Personal Protective Equipment
RQ	Reportable Quantity
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District (SCAQMD
UAO	Unilateral Administrative Order
WSD	Waste Stream Determination

1.0 Introduction

1.1 Overview

Since May 2022, the Chiquita Canyon Landfill (CCL) operated by Chiquita Canyon, LLC has been experiencing a subsurface reaction in an inactive portion of the Landfill, also known as an Elevated Temperature Landfill (ETLF) event.

The reaction has escalated landfill gas condensate and leachate production and modified the chemical composition of these liquid waste streams. Weekly leachate production has increased from 100,000 gallons in January 2022 to over 1,000,000 gallons in December 2023. Based on recent analytical testing, some of the condensate and leachate may exhibit characteristics of ignitability and toxicity under the Code of Federal Regulations (CFR) (40 CFR 261.21 and 40 CFR 261.24, respectively) and California Code of Regulations (CCR) (22 CCR 66261.2122 and 22 CCR 66261.24, respectively).

This Leachate Management Plan (Plan) fulfills the requirements of Paragraph 22(c)(1) of the February 21, 2024 Unilateral Administrative Order (UAO) issued by the United States Environmental Protection Agency (EPA).

1.2 Purpose and Scope of the Leachate Management Plan

The Plan outlines comprehensive procedures and protocols for the effective management of leachate and hazardous waste streams at the Landfill. To this end, the Plan:

- describes the procedures for identifying leachate seeps and repairing or any necessary repairs or improvements to the leachate collection system;
- describes the process to characterize leachate, condensate, and all waste streams that are potentially hazardous;
- describes the process for collecting, storing, and removing leachate from the Landfill;
- provides the procedures for transporting waste streams to the appropriate waste receiving and disposal facilities; and
- describes the process for obtaining any required permit(s) from the appropriate local, state, or federal agency for onsite leachate management activities.

2.0 Leachate Collection System and Seep Identification

CCL has developed a proactive approach to identifying and controlling leachate seeps or leachate releases associated with Pressurized Leachate Releases (PLRs).

2.1 Overview of the Leachate Collection System

CCL's leachate collection and removal system (LCRS) consists of a series of pipes constructed over a composite liner, which incorporates a high-density polyethylene (HDPE) geomembrane and a low hydraulic conductivity layer. The liner system is designed to contain leachate accumulated in the landfill and direct it to the LCRS. The liner system also minimizes the potential for migration of landfill gas and increases the effectiveness of the landfill gas collection and control system (discussed further below). The leachate collection system as of March 2024 is set forth in **Appendix A.1**.

The landfill gas collection and control system (GCCS) prevents methane surface exceedances and minimizes fugitive emissions of landfill gas. Horizontal landfill gas collection trenches and/or vertical landfill gas extraction wells are connected to a central header system that conveys landfill gas to the flare facility, which actively controls and destroys landfill gas.

2.2 Seep Identification and Management

The following section discusses procedures for identifying, responding to, and mitigating leachate seeps, and planned improvements to the leachate system.

2.2.1 Procedures for Identification of Leachate Seeps

CCL performs inspections for leachate seeps twice per calendar day – once in the morning, before 10:00 a.m. PST, and once in the afternoon – the earliest at 1:00 p.m. PST. These inspections are recorded and submitted to South Coast Air Quality Management District (SCAQMD) on a weekly basis. CCL also measures and records the leachate temperature within the four 6-inch leachate pipes that feed into onsite frac tanks. These inspections also allow CCL to identify any necessary repairs to the leachate collection system.

CCL acts proactively to discover leachate seeps as early detection of leachate seeps is an important part of the mitigation process. Early indicators of leachate seeps include visible wet spots on the slopes that may appear as single wet spots, or a horizontal line of wet soil. Identification of these early indicators allows for the detection of leachate seeps before visible liquid leachate appears on the surface.

Detection of PLRs is generally less difficult. Workers who are drilling or servicing wells in or near the reaction area have been trained to recognize pre-indicators that a PLR may occur. These pre-indicators may include temperatures that exceed a pre-established threshold at the wellhead or in drilling spoils, wells located within the limits of the reaction area, or wells that have previously exhibited a PLR. Additional thresholds may be established based on future data or experience with the reaction area and/or PLRs.

In the event CCL detects a leachate seep or PLR, actions will be taken to prevent pooling, ponding, or other leachate exposure to the atmosphere, as discussed below.

2.2.2 Responding to Leachate Seeps or Other Releases

In the event of a leachate seep or other release, CCL is implementing the best management practices (BMPs) detailed in **Appendix A.2**. Immediately upon detection of a leachate seep or release, CCL conducts initial safety and environmental assessments and characterizes the incident (e.g., whether the incident involves a seep or PLR), to determine the scope of mitigative action required. If pooling or ponding of leachate is occurring, the leachate must be immediately collected and contained in a sealed tanker truck or leachate tank that minimize emissions, or repairs promptly performed to redirect leachate into the leachate collection system. Notification, if required based on the specific circumstances, is also provided to emergency response services and the appropriate regulatory agencies.

CCL management staff notifies the appropriate regulatory agencies, which may include the SCAQMD, Regional Water Quality Control Board (RWQCB), CalRecycle, and/or the Local Enforcement Agency (LEA). All notifications are made though appropriate levels of management.

2.3 Improvements to Landfill Systems

CCL is evaluating improvements or modifications to the leachate collection and/or de-watering system continually and as needed in view of the subsurface reaction.

Upgrades are planned for the existing leachate de-watering system (see **Appendix A.3**). The design plan includes installation of leachate collection force main piping (comprised of 8-inch, 6-inch, and 4-inch HDPE piping with associated tees and valves). The HDPE piping is rated to withstand temperatures based on current temperatures as measured during the regular leachate temperature monitoring described above. The proposed upgrades will also add piping to all existing and proposed vertical extraction wells. Furthermore, approximately 74 new cleanouts are planned for installation, which will allow for improved maintenance of the system. The upgraded de-watering system will allow for removal of excess liquid/leachate, thereby increasing the volume of leachate collected and helping to prevent seeps and discharges from occurring.

The above improvements are being made in conjunction with the installation of a geosynthetic cover on the western slope of the Landfill and a portion of the northwest top deck. The cover will mitigate any methane surface exceedances and fugitive LFG emissions in the shorter-term.

As part of longer-term mitigation measures, CCL is continuing to expand its landfill gas system, including the planned installation of seventy new vertical gas extraction wells and associated piping. Since these upgrades are expected to result in increased gas collection, CCL has also requested that the SCAQMD modify CCL's Title V air permit to include a new landfill gas blower and flare system.

A detailed workplan, dated March 13, 2024, outlining the above improvements to address the surface reaction is provided in **Appendix A.3**.

2.4 Standard Operating Procedures for On-Site Leachate Storage

At present, leachate and condensate is accumulated at eight distinct areas across the Landfill, as shown in Figure 1, below. Those areas include #1 Top Deck Manifold;[1] #2 East Perimeter; #3 Ameresco Condensate Tanks; #4 Leachate Collection Manifold; #6 North Perimeter; #8 Primary Canyon;[2] #7 Tank Farm (120+ frac tanks); and #9 Tank Farm (120+ frac tanks). In response to the subsurface reaction and significant increase in leachate production, CCL has also significantly increased the number of tanks onsite to allow for greater storage capacity at the Landfill, including the recent addition of tank groups at #7 Tank Farm and the addition of #9 Tank Farm.

The response to the surface reaction involves utilization of all available offsite transportation options to remove leachate from the site, including (1) onsite treatment of leachate followed by offsite shipment to non-hazardous facilities; and (2) offsite transport to hazardous waste treatment and disposal facilities. Leachate and landfill gas condensate treatment, designed to chemically alter the liquids thereby attempting to achieve a non-hazardous waste classification. At present, leachate generated at #2 East Perimeter, #4 Leachate Collection Manifold, and #6 North Perimeter is transported to #7 Tank Farm or #9 Tank Farm, where the leachate is treated with TALON® Sulfide Elimination System (iron chelate) and hydrogen peroxide. The treatment solution is either slowly dosed through the force mains as the leachate moves from the collection piping into the tanks or dosed in individual tanks. CCL is also currently working to implement a granular activated carbon (GAC) system to supplement and/or replace the chemical treatment.

Leachate generated within the ETLF reaction area is also treated at #7 Tank Farm, extracted through two groupings of collection wells: Group A and Group B. The Group A and Group B wells are piped into a network of individual and interconnected (manifolded) frac tanks. Frac tanks containing treated landfill liquids is staged at #7 or #9 Tank Farms for off-site transport and disposal.

As described below, the #3 Ameresco Condensate Tanks are currently only accumulating small volumes of knock-out condensate from landfill flaring operations.

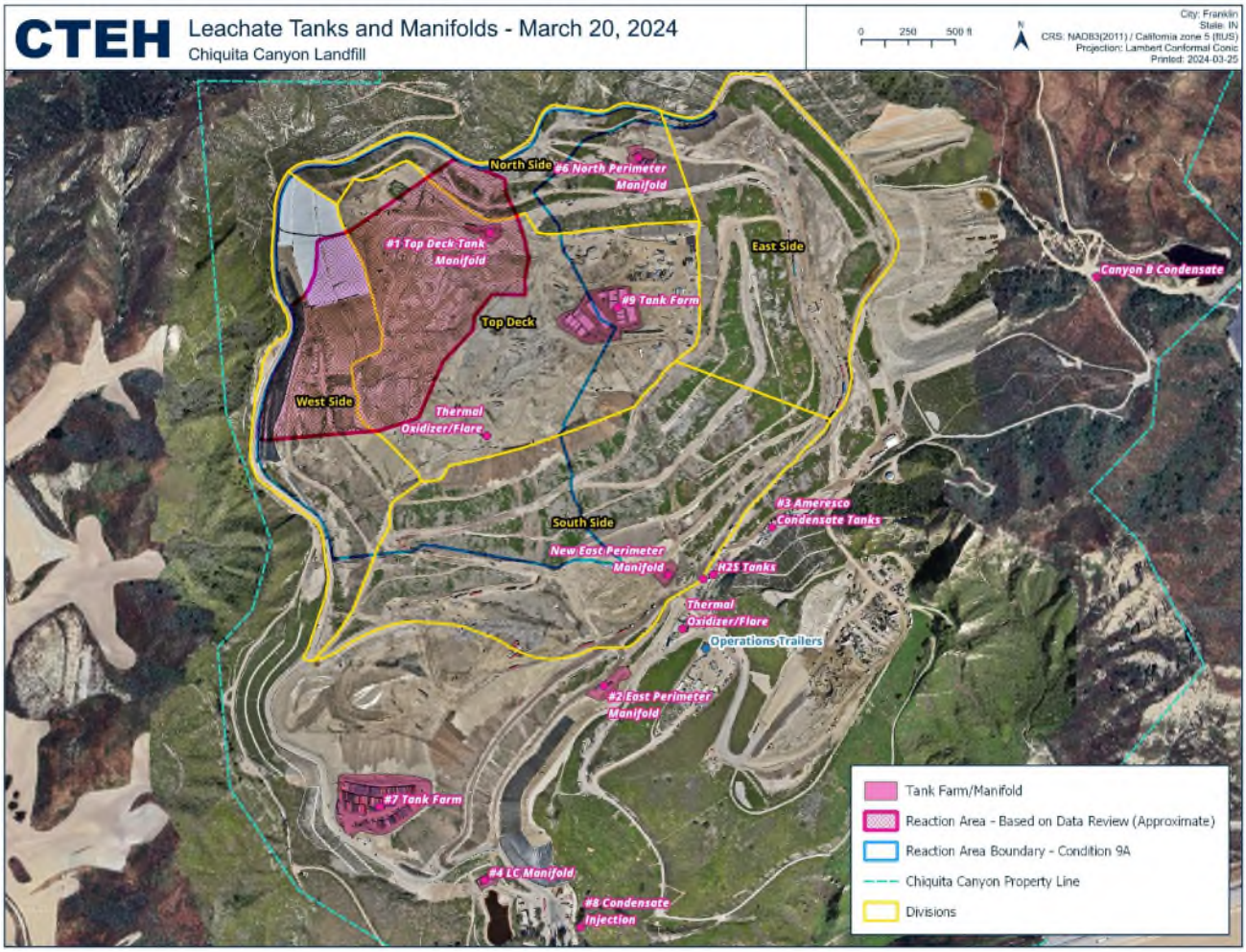
All frac tank lids and hatches are kept closed and inspected on a daily frequency. Inspection records are managed electronically and corrective actions are tracked. Tanks located in #7 and #9 Tank Farms are connected under vacuum, meaning any potential emissions from the tanks are pulled into the landfill gas collection flare system to capture emissions. As of the date of this submittal, there are roughly 100 frac tanks storing leachate that are under vacuum, and eventually all tanks will be under vacuum. The number of tanks can and will vary as needed due to operational demand, cleanings, or repairs.

[1] #1 Top Deck Manifold has been disconnected from the landfill gas collection system since approximately January 2024.

[2] #8 Primary Canyon accumulates landfill gas condensate that is unaffected by the reaction area. However, since a waste determination will also be made for #8 Primary Canyon in accordance with Section 4.0 of this Plan and the Sampling and Analysis Plan and associated Quality Assurance Project Plan, discussed below, #8 Primary Canyon is also discussed herein.

CCL is maintaining documentation to identify tanks in each tank group and their locations. That document is not a static document and is updated and revised as needed. A copy of that document (version March 19, 2024) is appended hereto as **Appendix A.4** for illustrative purposes only.

Figure 1. Leachate and Condensate Accumulation Areas



3.0 Waste Characterization

3.1 Waste Streams

Waste streams related to the ETLF event requiring characterization and potential offsite disposal include leachate, condensate, tank bottoms, spent carbon media, personal protective equipment (PPE), and spill debris, as described below.

- Leachate: As previously noted, leachate is the liquid generated from water percolating through a solid waste disposal site. Because landfill gas condensate and leachate currently both flow into the landfill gas system due to the subsurface reaction and increased liquid levels, there is no way to separate the two types of liquids. Thus, for purposes of this response, landfill leachate and landfill gas condensate will generally be addressed and referred to collectively as leachate unless otherwise specifically noted.
- Condensate: For purposes of this Leachate Management Plan, condensate generally refers to knock-out condensate produced in connection with landfill flaring operations and not, for the reasons discussed above, landfill gas condensate.[3]
- Tank Bottoms: The residual materials deposited (settled) at the bottom of storage tanks.
- Spent Carbon Media: Activated carbon that has reached its sorption capacity.
- Personal Protective Equipment (PPE): Equipment or materials used in waste characterization and management, including, nitrile gloves, respirator cartridges, bailers, and miscellaneous sampling equipment.
- Spill Debris: Materials used in spill response, mainly absorbents (e.g., Oil Dri® and absorbent pillows).

3.2 Waste Characterization and Profiling

3.2.1 Objectives

A Sampling and Analysis Plan (SAP) has been developed to provide a mechanism for collecting waste characterization data in support of the decision-making process regarding the management and disposal

[3] A separate condensate waste stream was also previously produced by the Ameresco facility, a waste-to-energy facility at the Landfill and operated by Ameresco Chiquita Energy LLC. That condensate was accumulated in the #3 Ameresco Condensate Tanks (in addition to a small volume of knock-out condensate from landfill flaring operations). Ameresco ceased operations at its facility on January 31, 2024, and the #3 area tanks no longer received any additional Ameresco condensate. Condensate accumulated in the #3 tanks was shipped offsite to the Aragonite Incineration Facility in Tooele County, Utah, as hazardous or potentially hazardous waste in March 2024. Since then, the tanks in the # 3 tank area have been cleaned out and are only accumulating knock-out flare condensate.

of waste materials. CCL is using knowledge of the waste itself from historical acceptance at the Landfill and/or the process to select the analytical parameters. The waste stream determinations are made at the point of generation, before any dilution, mixing, or other alteration of the waste occurs. The analytical and waste characterization will determine the appropriate management and final disposition of the waste.

The objectives of the waste sampling prescribed by the SAP are as follows.

1. Characterize the various liquid and solid waste streams for the purpose of waste profiling and disposal. Each waste stream determination (WSD) will follow the RCRA regulations at 40 CFR 262.11 and California Hazardous Waste Determination rules found in 22 CCR Section 66262.11 for waste determinations. CCL will recharacterize a particular waste stream when the process or operation that produces the waste changes or the waste is sent to a different hazardous waste treatment and disposal facility for the first time or requires annual recertification at the disposal facility.
2. Verify the efficacy of liquid waste (i.e., leachate and condensate) treatment (discussed in Section 3.3). Treatment is deemed effective when the results from waste sampling fall below the regulatory thresholds for hazardous waste and meet the disposal criteria of the various receiving facilities. Liquids following treatment that are deemed hazardous due to their chemical properties (i.e., exhibit toxicity characteristic) are subject to further treatment. Wastes that do not exhibit toxicity characteristic but classify as ignitable based on pH and flash point are profiled as hazardous waste and disposed of accordingly.

A Chiquita Canyon ETLF Response Action Quality Assurance Project Plan (QAPP), dated March 27, 2024, has also been developed to serve as a framework ensuring the quality and integrity of data collected through implementation of the SAP. The QAPP defines data quality objectives and outlines criteria for data quality, including precision, accuracy, representativeness, comparability, and completeness. Collectively, the SAP and the QAPP set forth the process and parameters to characterize the various waste streams described above and are being submitted to EPA concurrently with this Plan.

3.2.2 Analytical Testing Regimen

As set forth in the SAP and QAPP, a comprehensive waste characterization approach (i.e., the analytical testing regimen) was developed based on: (1) the nature of the Landfill waste matrix and corresponding characteristic chemical composition of the leachate and gas stream; (2) the effects of ETLF; (3) the criteria for identifying and listing hazardous waste promulgated under 40 CFR 261.20 – 261.24 and 22 CCR 66261.21 – 66261.24; and (4) the disposal criteria (requirements) of the receiving facilities.

A subset of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals customary to municipal solid waste leachate and indicators of ETLFs are included in 40 CFR 261.24 and 22 CCR 66261.24 as part of the toxicity characteristic determination. The receiving facilities require testing for these parameters to ensure compliance with regulatory requirements for toxicity. Additionally, the receiving facilities require testing for flashpoint and pH to evaluate waste for characteristics of ignitibility (40 CFR 261.21 and 22 CCR 66261.21) and corrosivity (40 CFR 261.22 and 22 CCR 66261.22), respectively. Based on this information, waste characterization will involve testing of VOCs by Method 8260, SVOCs by Method 8270, mercury by Method 7470, the remaining California Title 22 metals by Method 6010, flashpoint by Method 1010; and pH by Method 9040B, as specified in the SAP and QAPP.

3.2.3 Frequency of Testing

Liquid waste streams are initially sampled at a daily frequency and solid waste streams are sampled periodically as needed, such as during a tank cleaning or GAC filter replacement. The scope of the analytical testing program and frequency of sampling may be reduced over time with consent from the receiving facilities, or increased/reduced in response to changing conditions related to the ETLF. Waste determinations will be performed for various waste streams in accordance with the SAP and QAPP, and may be reevaluated for each waste stream or point of generation as appropriate and on a case-by-case basis.

4.0 Off-Site Transport and Disposal of Waste

This section describes the operating procedures to transport waste streams to appropriate locations for offsite disposal. A summary of current offsite treatment and disposal facilities is provided below in Section 5.1.3.

CCL is meticulously tracking the management of liquid waste from the point of generation through off-site transport and disposal, ensuring the various waste streams are not commingled.

4.1.1 Off-Site Transport and Disposal - Non-Hazardous Waste Facilities

Pending any waste determinations for leachate in accordance with the SAP and QAPP, leachate is not sent offsite to non-hazardous treatment and disposal facilities listed below until sampling results confirm that the leachate is below the applicable regulatory thresholds for relevant constituents, including constituents for waste characterization (i.e., benzene) and constituents requested to be sampled by offsite disposal facilities. CCL is actively assessing the use of additional non-hazardous facilities in the future.

After treatment, is complete and pending waste determinations for leachate, CCL conducts post-treatment confirmatory sampling of each tank (or multiple tanks if manifolded and treated together).[4] Once laboratory reports and results are received, CCL evaluates results against the applicable regulatory thresholds. If the sampling results indicate constituents in leachate are below regulatory levels, CCL provides those sampling results to the non-hazardous offsite facility for confirmation that the waste can be accepted at the facility. Once the facility receives the analytical reports and provides its approval to accept the leachate, CCL directs available trucks for loading to the particular tanks that have been approved for offsite transport and instructs the drivers as to where to transport the leachate from those tanks. CCL has dedicated personnel (including overnight staff) to coordinate the loading and shipment process.[5]

For tanks other than those discussed above or in instances where post-treatment sampling shows that target constituents (e.g., benzene) are not treated to levels below their respective regulatory thresholds, the tank is generally re-dosed with the treatment solution and post-treatment confirmatory sampling is then again performed for that tank. CCL then follows the same procedures discussed above following receipt of the laboratory report, including evaluation of the results against the applicable regulatory thresholds, provision of the analytical reports to the offsite facilities, awaiting confirmation by the offsite facilities that the leachate can be accepted, and directing available trucks to the specific tanks that have been approved for offsite transport. It should be noted that CCL is currently evaluating and implementing

[4] Moving forward after waste determinations are made, confirmatory sampling and analysis will be performed at a reduced frequency and/or on a randomized basis.

[5] Currently, the majority of leachate is being treated onsite with the iron chelate and peroxide injection, apart from #4 LC Manifold, which at this time is producing the lowest volumes of leachate daily and has shown the lowest constituent levels overall. As a general matter, for tanks in which treatment is not taking place, CCL samples the tanks and then follows the procedures outlined herein following receipt of the initial laboratory report.

a granular activated carbon (GAC) treatment system within #7 Tank Farm and #9 Tank Farm. This treatment system is intended to expediate the overall onsite leachate treatment (and hence offsite shipment) process.

4.1.2 Off-Site Transport and Disposal – Hazardous Waste Facilities

For tanks that are shipped offsite as hazardous waste (e.g., leachate is not treated prior to offsite shipment), CCL has contracted with Clean Harbors, Inc. to transport landfill liquid that has been identified as hazardous or potentially hazardous to several of Clean Harbors' facilities to ensure proper disposal of those waste streams. Landfill liquid that has been identified for transport to a Clean Harbors facility is manifested on a hazardous waste manifest in accordance with 22 CCR 66262.20. A one-time Land Disposal Restriction (LDR) notification is also provided to each hazardous waste facility in accordance with 22 CCR 66268.7.

Pursuant to Paragraph 28.a of the UAO issued by EPA, hazardous substances, pollutants, and contaminants may only be shipped to an offsite facility in compliance with the "Off-Site Rule" under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at 42 U.S.C. § 9621(d)(3) and 40 CFR 300.440. CCL is deemed in compliance with the Off-Site Rule if it obtains a prior determination from EPA that a proposed receiving facility is acceptable under the criteria at 40 CFR 300.440.

In accordance with Paragraph 28.a of the UAO and the Off-Site Rule, on February 24, 2024 CCL obtained EPA's determination that the Clean Harbors Aragonite Incineration Facility in Tooele County, Utah is acceptable to receive offsite shipments of hazardous or potentially hazardous landfill liquid. CCL can ship approximately two truckloads of leachate (approximately 10,000 gallons total) offsite to the Aragonite facility each day, on an as-needed basis.

On February 27, 2024, EPA provided a determination of acceptability for the Clean Harbors Kimball Incineration Facility located in Kimball, Nebraska. CCL can ship approximately two truckloads of hazardous or potentially hazardous landfill liquid (approximately 10,000 gallons total) offsite to the Kimball facility each day, on an as-needed basis.

CCL also obtained EPA's determination of acceptability for the Clean Harbors Deer Park Incineration Facility in La Porte, Texas on February 29, 2024. CCL will be shipping landfill liquid via rail to the Deer Park facility. CCL has arranged for a local rail car to be available for bulk transportation to the Deer Park facility on an as-needed basis for up to three shipments of hazardous or potentially hazardous landfill liquid per week, consisting of one rail car tanker per shipment. Each rail car tanker has a capacity of approximately 20,000 gallons.

Pursuant to Paragraph 28.b of the UAO, CCL provided written notice to the appropriate Utah, Nebraska, and Texas environmental officials and to EPA of shipments of hazardous or potentially hazardous landfill liquid to the above facilities. Copies of the notice to Utah dated February 26, 2024, Nebraska dated February 27, 2024, and Texas dated February 29, 2024 are attached hereto, respectively, as **Appendices A.5, A.6, and A.7.**

CCL is actively assessing the use of additional facilities to manage hazardous or potentially hazardous leachate or condensate. CCL will also follow the same procedures as set forth in the UAO to obtain EPA's

determination of acceptability and provide notice to the relevant state environmental officials for any newly identified facilities.

Other waste streams described in Section 4.0, above, will be disposed of appropriately. Any spent carbon media or tank bottoms characterized as hazardous waste, or managed as hazardous in an over-abundance of caution pending any waste determination, shall only be disposed of at permitted hazardous waste facilities pre-approved by EPA in accordance with the UAO.

4.1.3 Summary of Current Treatment and Disposal Facilities

Non-Hazardous Facilities

(1) Avalon Industrial Wastewater Treatment Facility - 14700 S. Avalon Blvd., Gardena, California 90248
(2) Patriot Environmental Services Industrial Wastewater Treatment Facility - 314 W. Freedom Avenue, Orange, CA 92865

Hazardous Facilities

(1) Clean Harbors Aragonite Incineration Facility - 11600 North Aptus Road, Grantsville, UT 84029
(2) Clean Harbors Kimball Incineration Facility - 2247 South Highway 71, Kimball, Nebraska 69145
(3) Clean Harbors Deer Park - 2027 Independence Parkway South, La Porte, TX 77571

4.1.4 Waste Shipment Preparation

To initiate shipments of hazardous and non-hazardous waste, CCL personnel (or its contractors) must prepare and provide the following documentation:

- Provide a complete and accurate waste inventory for the waste to be transported offsite.
- Provide waste profile and corresponding analytical report for each type of waste transported offsite.
- If the waste profile has been previously provided, ensure it has been updated annually.

When a shipment is needed and the above-listed information has been provided to CCL Compliance Manager, a shipment will be initiated as follows:

- When authorized by the designated representative, CCL Compliance Manager will contact the disposal contractor and arrange for transportation of the waste offsite.
- The HW disposal contractor may choose to be onsite the day before the shipment to review paperwork and inspect containers.
- Compliance with pre-transportation requirements at 22 CCR 66262.30 - 66262.33 will be assessed.

All shipments of hazardous or potentially hazardous waste to permitted hazardous waste treatment and disposal facilities will be properly manifested on hazardous waste manifests in accordance with 22 CCR 66262.20 and the hazardous waste manifest requirements at 40 CFR 262.20.

4.2 U.S. Department of Transportation

Prior to transporting or offering hazardous waste for transportation offsite, each shipment is labeled in accordance with applicable DOT regulations (49 CFR 172 Subpart E) as follows:

- “HAZARDOUS WASTE-State and Federal Law Prohibit Improper Disposal. If found, contact the nearest police or public safety authority, the U.S. Environmental Protection Agency or the California Department of Toxic Substances Control.”
- DOT proper shipping name
- United Nations (UN) or North America (NA) number (49 CFR 172.101)
- Generator’s name and address
- Generator’s EPA ID number
- EPA/State waste code(s)
- Accumulation Start Date
- Manifest tracking number

Additionally, each hazardous waste shipment will be labeled in accordance with 49 CFR 172 Subpart D, as follows:

- Weight
- Sequence (e.g., 1 of 3)
- DOT shipping label

Each package of hazardous waste for shipment will be labeled according to the DOT hazard classification for that waste, as follows:

- Hazardous waste that meets the definition of more than one DOT hazard classification must be labeled in accordance with all DOT hazard classifications (e.g., Flammable, Toxic).

4.3 Land Disposal Restrictions

The Land Disposal Restrictions (LDRs) are a set of regulations at 40 CFR Part 268 and Title 22 of the California Code, Division 4.5, Article 18, that place certain restrictions on hazardous waste sent to land disposal. These regulations generally require treatment of hazardous wastes prior to land disposal.

The LDR requirements apply to all persons who generate hazardous wastes, as well as owners and operators of hazardous waste treatment, storage, and disposal (TSD) facilities. Depending on constituent concentrations in the waste, some wastes will require treatment to meet LDR treatment standards and some may meet them without further treatment. In addition, the Universal Treatment Standards must be met for Underlying Hazardous Constituents (“UHC”) that are identified. A UHC evaluation will also be performed for each waste stream identified herein.

When applicable, LDR Notification Forms must accompany the manifest as part of the shipping papers. As discussed above, a one-time LDR notification is provided to each hazardous waste facility CCL is shipping waste to in accordance with 22 CCR 66268.7, and signed by personnel designated by the CCL Compliance Manager.

All LDR paperwork and associated documentation will be retained by CCL as required under applicable regulations.

5.0 Permitting

As explained in a letter submitted to DTSC on CCL's behalf dated February 14, 2024, onsite storage and treatment is being conducted pursuant to the immediate response exemption. See 22 CCR 66264.1(g)(8)(A), 66265.1(e)(11)(A), and 662670.1(c)(3)(A). On February 16, 2024, CCL also submitted an emergency permit application to DTSC addressing onsite treatment. That emergency permit application is currently pending with DTSC. CCL is engaged in ongoing discussions with DTSC regarding appropriate next steps.

CCL is also working to modify its Title V permit to incorporate upgrades and modifications to landfill systems as described herein. Permit No. G43917, A/N 578102 sets forth requirements and conditions to operate CCL's Landfill Gas Collection System, which consists of vertical gas collection wells, a header connecting to the flare station, horizontal gas collection trenches, and soil vapor extraction wells. Permit No. G66132, A/N 613131 sets forth requirements and conditions to modify, construct, and operate CCL's Landfill Gas Condensate and Leachate Collection/Storage System. The permit includes authorization for five condensate tanks and four leachate tanks varying in capacity.

In October 2023, CCL previously applied to the SCAQMD to modify its Landfill Gas Condensate and Leachate Collection/Storage System permit to include additional clarifier and frac tanks to increase the landfill's liquid storage capacity. However, given the evolving situation at the Landfill and the need for additional tanks and other equipment to accommodate the increase in leachate production, CCL will be seeking further modification of its Title V permit. CCL will also be submitting an application to include treating hazardous liquid waste in its Landfill Gas Condensate and Leachate Treatment System.

In October 2023, an application was also submitted to SCAQMD on behalf of CCL for a new landfill gas blower and flare system. Based on discussions with SCAQMD, CCL will be seeking to modify its flare system permits to reflect potential additional sources of emissions contributions to the landfill flares from the leachate storage tanks being placed under vacuum, as described in Section 2.4. CCL will also be seeking to permit its portable thermal oxidizer.

A permit modification application has also been submitted to the SCAQMD for the Landfill Gas Collection System permit to increase the number of permitted wells in the well field. CCL will also be seeking to modify this permit to include the tie-in of the landfill gas condensate and leachate treatment system vapor vent lines.

CCL and its consultant, SCS Engineers, continue to have bi-weekly virtual conferences with SCAQMD technical staff to discuss improvements to the leachate and/or landfill gas systems and identify any associated permit modifications that may be required.

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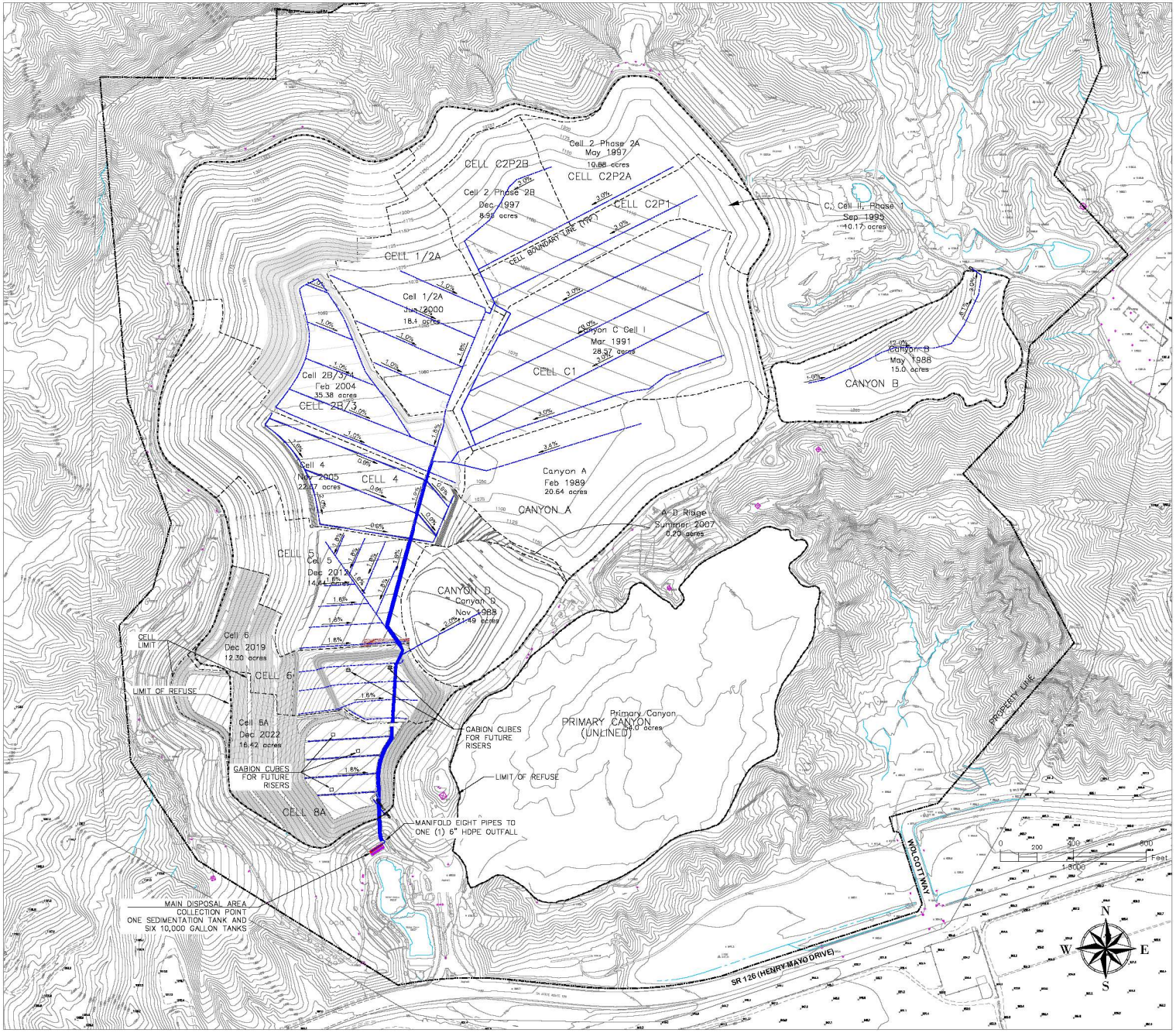
Appendix A.1



LEGEND

- LEACHATE COLLECTION PIPE – PERFORATED
- LEACHATE COLLECTION PIPE – SOLID
- LANDFILL CELL OR WMU SUB-AREA BOUNDARY
- LIMIT OF REFUSE (FILL BOUNDARY)
- PROPERTY LINE

NOTES

1. THIS DRAWING PREPARED BASED ON REVIEW OF AS-BUILT DOCUMENTS ON FILE AT THE LANDFILL OFFICES
2. ALL PIPES SHOWN ARE 6" HDPE UNLESS OTHERWISE INDICATED
3. ALL LEACHATE IS COLLECTED IN STORAGE TANKS AND DISPOSED OFFSITE AT APPROVED TREATMENT PLANT FACILITIES
4. LINER LIMIT IS COINCIDENT WITH LIMIT OF REFUSE EXCEPT AS SHOWN IN CELL 8A
5. CONTOURS SHOWN WITHIN LIMIT OF REFUSE ARE AS-BUILT LINER ELEVATIONS EXCEPT PRIMARY CANYON WHERE PRE-LANDFILL SURFACE TOPOGRAPHY IS SHOWN
6. BACKGROUND TOPO BY TETRATECH GEOMATIC TECHNOLOGIES DATED JANUARY 16, 2024 AND SURROUNDING AREA BY CARTWRIGHT AERIAL SURVEY DATED APRIL 9, 2011

REV. NO.	DATE	DESCRIPTION	APPROVED BY
REV1	XXXXXX	XXX	XXX

CHIQUITA CANYON LANDFILL
CASTAIC, CALIFORNIA

EXISTING LEACHATE COLLECTION SYSTEM
AS OF MARCH 2024

CHIQUITA CANYON LANDFILL
29201 HENRY MAYO DRIVE
CASTAIC, CA 91384

Geo-Logic ASSOCIATES
2777 E. GUASTI RD
ONTARIO, CA 91761
(909) 626-2282
www.geo-logic.com

Appendix A.2

Best Management Practices to Address Leachate Seeps

As described in more detail in the November 6, 2023 Report on Landfill Best Management Practices: Mitigating Landfill Reaction Odors, Blue Ridge Services Montana, Inc. has prepared the following list of best management practices (BMPs) for addressing leachate seeps.

1. Response Preparation

To maintain a proactive position, Chiquita should maintain soil stockpiles near areas where leachate seeps have previously occurred to facilitate a quick response if/when constructing containment soil berms or other short-term containment structures is necessary.

Similarly, heavy equipment capable of constructing berms or other immediate short-term containment structures should be available onsite daily. At least one vacuum truck, one wheel loader, and one excavator should also be available onsite daily and capable of providing immediate response if/when a leachate seep occurs.

2. Detection

Early detection of leachate seeps is an important part of the mitigation process. Indicators may include visible wet spots on the slopes that may appear as single wet spots or a horizontal line of wet soil. Leachate seeps often show these early indicators before visible liquid leachate appears on the surface. We understand that Chiquita is currently conducting inspections for leachate seeps twice each calendar day.

3. Immediate Response

Initial Safety, Environmental, and Characterization Assessments

Immediately following detection, Chiquita staff should conduct initial safety and environmental assessments and characterize the seepage. The initial safety assessment should determine what forms of personal protective equipment (if any) should be used to protect workers collecting and containing the seepage. The initial environmental assessment and characterization should be used to determine the scope of the mitigation effort necessary to collect and contain the seep, and to determine what level of notification (if any) is appropriate. For example, the initial assessment should be used to assess whether any leachate has entered the concrete-lined stormwater channel.

Notification

Landfill staff should notify Site Management and report the location and type of the leachate seep. As appropriate, Site Management should notify appropriate regulatory agencies, for example, if the seep extends off the landfill liner.

SHORT-TERM MITIGATION

Chiquita's actions to mitigate the seepage should be based on need, as explained in this section, and consider the above-listed assessments and characterizations. For most leachate seeps, Chiquita should implement the following actions:

1. For very minor seeps, where no liquid or leachate is visible (only wet soil), landfill staff should place additional soil on that portion of the slope.
2. For seeps where a very small quantity of liquid or leachate is present (less than 5 gallons), staff should use soil and/or processed organic material as an absorbent material. Successful control by these methods would be evident if leachate does not re-emerge.
3. For seeps where a small quantity of liquid or leachate is visible (less than approximately 50 gallons), landfill staff should contain leachate using, for example, soil berms or dams. This action should be considered an interim mitigation until resources can be assembled to begin expanded mitigation, as appropriate (See below).
4. If the quantity of leachate exceeds what can be controlled through these measures, landfill staff should undertake expanded mitigation efforts.
5. If saturated soil is removed, it should be placed into an articulated haul truck and transported to the active face. Loads should be tarped to minimize spillage and odors. Care should be taken to avoid spilling soil during the loading process. Any spilled soil should be removed and also transported to the active face.

Expanded mitigation efforts may include one or more of the following efforts, as appropriate:

1. Dig a small hole into the underlying waste to allow leachate to return into the waste mass. If possible, breach any visible layer of low permeability material.
2. Use onsite vacuum truck(s) to extract pooling or ponding leachate.
3. If leachate does not dissipate into the underlying waste, or if it continues to flow from the seep location, coordinate with Site Management as appropriate to apply additional mitigation efforts, which may include:
    a. Digging deeper into the underlying waste and installing a French Drain and perforated pipe to create a sump.
    b. Temporarily utilizing a vacuum truck(s) to pump from this sump until more permanent piping can be installed to direct leachate to an onsite storage tank.

Once a seep has been repaired, landfill staff should cover the area with sufficient clean soil to cover the seep, track-walk the freshly laid soil, and monitor the seep location to confirm that the repair was successful. Alternatively, the area may be covered with scrim or other geomembrane and continue to be monitored.

4. Intermediate Response

If leachate reaches one of the Landfill's concrete-lined stormwater channels, landfill staff should implement the following measures:

1. Place soil check dam(s) in the concrete-lined channel immediately downstream of the entry point to prevent leachate from flowing downstream and reaching the stormwater basin(s). Install multiple soil check dams as needed to contain the leachate. All leachate should be extracted with a vacuum truck and transported to the onsite storage tanks.
2. During wet weather when clean stormwater is flowing in the channel, place soil check dam(s) in the concrete-lined channel immediately downstream of the entry point to prevent leachate

mixed with stormwater from flowing downstream and reaching the stormwater basin(s). Install multiple soil check dams as needed to contain the mixed leachate and stormwater. All stormwater mixed with leachate should be extracted with a vacuum truck and transported to the onsite storage tanks.

5. Continued Monitoring

After a seep has been addressed, landfill staff should continue monitoring all slopes for indication of continuing or additional leachate seeps. Staff should pay particular attention to those areas where leachate seeps have occurred in the past, and where leachate seeps have recently been mitigated.

Appendix A.3

March 13, 2024
File No. 01204123.21-13

Baitong Chen, Air Quality Engineer, bchen@aqmd.gov
Nathaniel Dickel, Senior Air Quality Engineer, ndickel@aqmd.gov
Christina Ojeda, Air Quality Inspector, cojeda@aqmd.gov
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Subject: 2024 Workplan: Restoring Compliance and Addressing Subsurface Reactions at Chiquita Canyon Landfill
Chiquita Canyon Landfill – Castaic, California

Dear Mr. Chen:

In accordance with Condition No. 50 of the Modified Stipulated Order for Abatement (SOFA) pertaining to the Chiquita Canyon Landfill (CCL or Landfill) (Case No. 6177-4), Chiquita Canyon, LLC (Chiquita) submits the below workplan to address the subsurface reaction and return all aspects of CCL to good and compliant working order (Workplan). Condition No. 50 requires the following:

> *[Chiquita] shall provide a workplan which lists the actions that [Chiquita] plans to take in order to address the subsurface reaction and return all aspects of the CCL to good and compliant working order, including liquid/leachate seepage and discharges of pressurized leachate, methane surface exceedances, fugitive emissions of landfill gas, well temperature exceedances, and non-compliant composition of landfill gas. This workplan shall include a timeline of the proposed work, and shall include both short-term and long-term solutions for managing the subsurface planned to mitigate impacts to the surrounding communities and return the facility into compliance.*

1 INTRODUCTION

Chiquita operates a municipal solid waste (MSW) landfill/solid waste disposal facility located in Castaic, California under South Coast Air Quality Management District (SCAQMD) Facility ID No. 119219.

CCL is located at 29201 Henry Mayo Drive, Castaic, California, in northern Los Angeles County. It is a Class III non-hazardous MSW landfill and operates under Solid Waste Facilities Permit (SWFP) No. 19-AA-0052, issued by CalRecycle (formerly the California Integrated Waste Management Board [CIWMB]). CCL accepts nonhazardous solid waste, including MSW from various areas within Los Angeles County in accordance with Title 27 of the California Code of Regulations (27 CCR), Section 20005, et seq.

A discrete portion of the waste mass at the Landfill is experiencing elevated temperature landfill (ETLF) conditions. ETLF conditions can generally be characterized as when the typical waste decomposition processes and corresponding methanogenesis associated with anaerobic digestion of organic solid waste materials disposed in a landfill are impeded because of heat accumulation. As

a result, certain abiotic (non-biological) processes and chemical reactions within the buried wastes occur instead.

This Workplan presents the actions, responses, and corrective measures that Chiquita plans to implement (or continue implementing) to contain and manage the ETLF conditions at the Landfill and return all aspects of the Landfill to good and compliant working order. For purposes of this Workplan, the terms "ETLF conditions," "subsurface reaction," "landfill reaction," and "heating event" are synonymous. This Workplan focuses on the northwestern area of the Landfill, comprised of Cells 1/2A, 2B/3, 4, and Module 2B/3/4 P2 (of the Main Canyon), which are exhibiting ETLF conditions.

2 SOLUTIONS TO ADDRESS ELEVATION TEMPERATURE LANDFILL REACTION

As described in more detail in the December 8, 2023 Elevated Temperature Landfill Causation Investigation Report, previous experience at other ETLF landfills demonstrates that landfill reactions and any resulting odors have been mitigated by best management practices, including increased gas extraction and liquid removal (e.g., through expanding systems and providing adequate LFG control capacity and leachate disposal capacity). Another best management practice is to improve cover integrity, which reduces infiltration of precipitation and limits the amount of excess liquids available to sustain various chemical reactions.

Implementing these measures will help slow the reaction and mitigate impacts. However, no known method has been identified to quickly stop the reaction leading to elevated temperatures in a landfill. The landfill industry has embraced several approaches to "contain and manage" the reaction area as outlined below:

- Enhanced gas collection and control infrastructure to remove reaction gases, reduce landfill pressures, reduce malodorous emissions, and remove heat.

- Enhanced liquids removal to improve gas collection efficiency and remove heat through the installation of in-well dewatering pumps. Removing landfill liquids removes heat, as well as allows gas to be collected from greater depths in the landfill, the increase in temperature is often a necessary side-effect of pumping operations that remove heat from these portions of the waste mass.

- Enhanced interim or final cover installation to further enhance gas recovery and reduce surface emissions and resulting odors.

The mitigation measures Chiquita is implementing, as described in this Workplan, implement each of these best management practices for slowing and stopping the landfill reaction.

3 SUBSURFACE REACTION WORKPLAN

3.1 LIQUID/LEACHATE SEEPAGE AND DISCHARGES OF PRESSURIZED LEACHATE

Chiquita is taking several short- and long-term actions to address liquid/leachate seepage and discharges of pressurized leachate.

In the event a leachate seep occurs, Chiquita has implemented and will continue implementing the best management practices (BMPs) described by Blue Ridge Services in **Attachment B**. To address discharges of pressurized leachate, Chiquita will evaluate the report prepared by Blue Ridge Services and submitted to SCAQMD on March 12, 2024. This report is provided in **Attachment C**. By the next quarterly update to this Workplan, Chiquita will evaluate this report and develop and provide a plan for implementing Blue Ridge's recommendations.

To address the underlying causes of liquid/leachate seepage and discharges of pressurized leachate in the long-term, Chiquita designed upgrades to its existing liquid/leachate de-watering system (DWS) and submitted these dewatering guidelines and dewatering master plan to the SCAQMD on December 15, 2023. **Attachment A** presents the "Proposed Overall DWS Site Plan" Drawing, prepared by SCS and dated March 5, 2024. This DWS Site Plan includes upgrades to pipe sizing from the previous DWS submittal as Chiquita continues to evaluate the system and future needs. This drawing illustrates the installation plan design of DWS components such as liquid/leachate collection force main piping, dual wye cleanouts, air release valves (ARV) with receiving totes/drums and single cleanouts, and scaling strainers.

The proposed liquid/leachate collection force main piping will comprise 8-inch, 6-inch, and 4-inch high density polyethylene (HDPE) standard dimension ratio (SDR-11) piping with associated tees and valves. The HDPE piping is rated to withstand the temperatures currently being recorded from the regular leachate temperature monitoring. The proposed upgrades to the existing DWS will add piping to all existing and proposed vertical extraction wells. Additionally, dual wye cleanouts with receiving totes/drums, along with single cleanouts, will be strategically installed throughout the Landfill as needed. Approximately thirty-five (35) ARVs, six (6) 8-inch dual wye cleanouts, and thirty-nine (39) 6-inch cleanouts are planned for installation. These are constructed from HDPE and stainless steel suitable for the temperatures being recorded from the regular leachate temperature monitoring.

The objective of the proposed DWS upgrades is to improve the current system by replacing existing lines with larger sizes, additional cleanouts for improved maintenance, and to include redundancy. In order to collect more of the liquids present in the waste mass and help minimize liquid/leachate discharges from the Landfill, particularly diverting them away from the reactive area. By removing excess liquid/leachate, the upgraded DWS will increase the volume of leachate collected while reducing the future volume generated. This reduction in volume generated will improve liquid/leachate management, helping control the flow within the Landfill and preventing discharges from occurring. Removing liquids from the reaction area is the most efficient way to remove heat from the reaction, which will slow down the reaction and reduce long-term leachate generation.

The proposed upgrades to the existing DWS have begun being installed in conjunction with the installation of the geosynthetic cover and are being installed above the geomembrane cap as it is

installed. The installation will be ongoing and prioritized in the reaction area with anticipation that the DWS installations are complete in the reaction area by June 30, 2024, subject to weather conditions. The entire system upgrades are anticipated to be completed by the end of August 2024, subject to weather conditions. Monthly progress updates on these upgrades are incorporated into the monthly report submitted to the SCAQMD pursuant to Condition No.8(m).

3.2 METHANE SURFACE EXCEEDANCES AND FUGITIVE EMISSIONS OF LANDFILL GAS

To address methane surface exceedances and fugitive emissions of landfill gas (LFG), Chiquita has developed a plan to expand the existing gas collection and control system (GCCS) and install a geosynthetic cover over portions of the reaction area.

PROPOSED GCCS EXPANSION

To help prevent methane surface exceedances and minimize fugitive emissions of LFG in the long-term, Chiquita is continuing to expand its existing LFG system. **Attachment D** presents the "Proposed Overall GCCS Site Plan" Drawing, prepared by SCS and dated January 30, 2024. This drawing illustrates the plan for the design and installation of seventy (70) new vertical LFG extraction wells and associated LFG collection piping. This plan was previously submitted to SCAQMD on January 31, 2024. Chiquita will continue providing updates on this plan in the monthly Condition 8 reports.

The wells will be single completions, with design depths ranging between 137 and 300 feet, as depicted in **Attachment E**'s drawing titled "Proposed Well Schedule," also prepared by SCS and dated January 30, 2024. The well casings will be constructed using perforated and blank (solid) 8-inch diameter Chlorinated Poly Vinyl Chloride (CPVC) Schedule 80 and Carbon-Steel pipe. The actual material for each well will be chosen at the time of installation based on the temperatures encountered during drilling. CPVC is rated for temperatures up to 170 degrees and will be used in wells outside of reaction area limits. Carbon steel is rated for 1200 degrees and will be used for any wells within the reaction area or when temperatures encounter during drilling exceed 170 degrees. The final number, depth, and design of the vertical LFG extraction wells may be subject to change based on field and/or other conditions.

Improvements to the existing GCCS include the installation of new LFG header and lateral piping, associated tees, valves, and road crossings. The proposed LFG piping will include 36-inch, 24-inch, 20-inch, 18-inch, 8-inch, and 6-inch HDPE header and lateral piping, to connect all seventy (70) new vertical extraction wells to the proposed and existing GCCS. The HDPE header and lateral piping is rated for the temperatures recorded in the LFG conveyance lines.

As the proposed upgrades to the GCCS are implemented, increased gas collection from the associated LFG header and lateral piping is anticipated. Consequently, on October 30, 2023, SCS submitted a Permit to Construct and Title V Modification application to SCAQMD on behalf of the Landfill for a new LFG blower and flare system (BFS). The objective of the BFS is to achieve methane mitigation by actively controlling and destroying LFG, particularly produced from the reaction area, thereby reducing methane surface exceedances and fugitive emissions. The additional LFG flow from the proposed LFG headers and lateral updates is estimated to be 1,050 standard cubic feet per minute (scfm).

The proposed upgrades of the additional wells is ongoing and expected to be completed by May 30, 2024, subject to weather conditions, Chiquita continues to evaluate the need for additional wells beyond these initial 70. The materials for the proposed piping system upgrades have been ordered and begun arriving to the site. The installation of these upgrades will begin when the capping on the western slope of the reaction area is complete as the piping upgrades and proposed headers and laterals will be located above the geomembrane cap. These proposed upgrades to the piping system are expected to be completed by August 30,2024, subject to weather conditions. Monthly progress updates on these upgrades will continue to be incorporated into the monthly report submitted to SCAQMD pursuant to Condition No.8(m).

GEOSYNTHETIC COVER

To counter methane surface exceedances and fugitive LFG emissions in the shorter-term, a geosynthetic cover is being installed on the western slope and a portion of the northwest top deck. This is the cover required by Condition No. 31 of the Modified Stipulated Order, as expanded by the LEA. The design and implementation schedule for this geosynthetic cover is provided by TetraTech and SCS in **Attachment F**.

The geosynthetic cover is expected to be completed by the end of May 2024, subject to weather conditions. Monthly progress updates on the installation of this geosynthetic cover will continue to be incorporated into the monthly report submitted to SCAQMD pursuant to Condition No.8(o).

3.4 WELL TEMPERATURE EXCEEDANCES AND NON-COMPLIANT COMPOSITION OF LANDFILL GAS

To address well temperature exceedances and the non-compliant composition of Chiquita's landfill gas, Chiquita will continue to implement the measures outlined in more detail in the March 8, 2024 submittal of additional information for HOV's request. Measures typically introduced to reduce LFG temperatures at the wellhead include adjustment of the wellhead control valve to reduce the applied vacuum, sealing of the soil/pipe interface at the well riser pipe penetration at the landfill surface, and checking for liquids accumulation in the well. All of these measures were attempted by LFG system operations personnel and proved insufficient to remediate the elevated temperatures prior to the recognition of ETLF conditions within the reaction area.

As a practical matter, obtaining higher operating values (HOVs) for wells exhibiting elevated temperatures due to abiotic chemical reactions versus subsurface oxidation is an absolute imperative to enable the Facility to achieve its goal of removing heat via gas extraction. There are no measures available to Chiquita to instantly cool the hot LFG originating from the reaction area. Throttling the wellhead to a closed position as a response to the New Source Performance Standards/Emissions Guidelines (NSPS/EG) temperature threshold is absolutely the wrong strategy as an ETLF remedial action because it prevents the beneficial removal of heat from the buried wastes.
As demonstrated at other landfills that have experienced widespread ETLF heating events during the past approximately 15 years, and as discussed in more detail in SCS's report titled "Elevated Temperature Landfill Causation Investigation Report," submitted to SCAQMD on December 8, 2023,

Chiquita and SCS are confident that implementation of the best management practices developed by the landfill industry to contain and manage the reaction, which is accomplished in part via extraction of LFG with temperature exceedances and non-compliance LFG composition. Extraction of elevated temperature LFG and LFG with non-compliant LFG composition will succeed in slowing the propagation of the reaction area, result in cooling of the buried wastes, enable methanogenesis to ultimately be re-initiated within a large section of the affected waste mass, and mitigate and abate the detrimental impacts, such as odors, being experienced by surrounding off-site communities.

5 CONCLUSION

This workplan presents a strategic approach to addressing the subsurface reaction and returning CCL to good and compliant working order. By implementing the short- and long-term measures described above and in the attachments, Chiquita aims to mitigate impacts on the surrounding communities and ensure the compliant operation of the Landfill. Through CCL's implementation of BMPs, upgrades and expansion to its existing DWS through new piping, expansion of its GCCS with additional vertical wells and LFG headers and laterals, and continued installation of the geosynthetic cover, Chiquita and SCS expect significant progress in managing persistent elevated temperatures, reducing methane surface exceedances and fugitive emissions, and preventing liquid/leachate discharges and non-compliant composition of landfill gas.

Please contact either of the undersigned if you have questions or require additional information.

Sincerely,

Bill Haley, PE
Project Director
SCS Engineers

Pat Sullivan, BCES, CCP
Senior Vice President
SCS Engineers

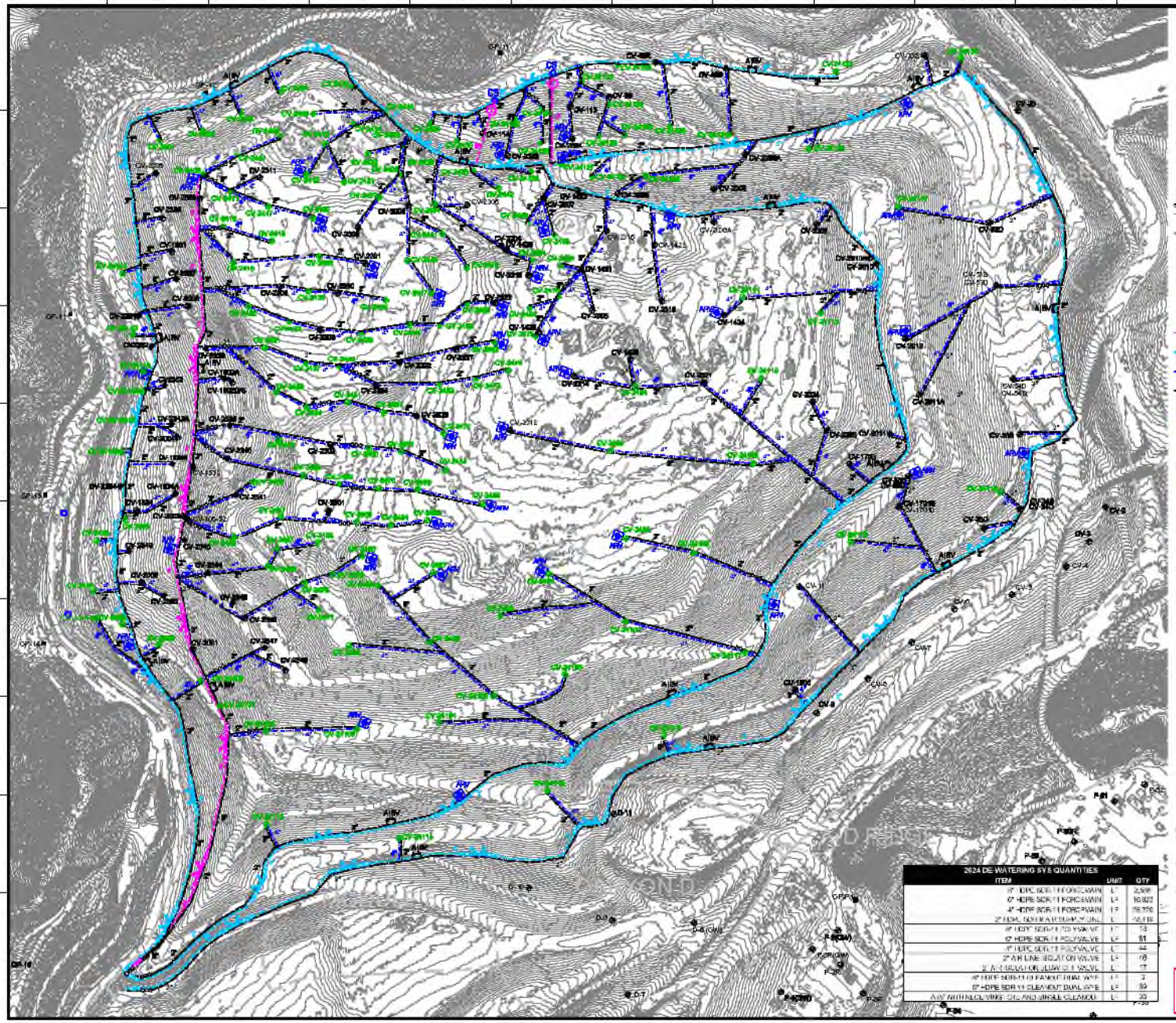
cc: Nathaniel Dickel, SCAQMD
Christina Ojeda, SCAQMD
Pablo Sanchez Soria, PhD, CIH, CTEH
Neal Bolton, PE, Blue Ridge Services, Inc.
Angie Perez, PhD, CIH, CTEH
Srividhya Viswanathan, PE, SCS Engineers
Patrick S. Sullivan, BCES, CCP, SCS Engineers

Enclosure:

Attachment A – Proposed Overall DWS Site Plan
Attachment B – Best Management Practices to Address Leachate Seeps
Attachment C – Pressurized Leachate Mitigation Study
Attachment D – Proposed Overall GCCS Site Plan
Attachment E – Proposed Well Schedule
Attachment F – Geosynthetic Cover Design and Implementation Schedule

Attachment A

Proposed Overall Dewatering System Site Plan



N

GRAPHIC SCALE

150 75 0 150 300 450

SCALE: 1"=150'

LEGEND

- EXISTING TOPOGRAPHIC CONTOUR
- EXISTING CELL LIMITS (APPROXIMATE)
- EXISTING VERTICAL WELLS
- EXISTING PERIMETER MIGRATION PROBE
- EXISTING CONDENSATE SUMP
- PROPOSED LFG EXTRACTION WELL - MASTER GCCS PLAN
- PROPOSED 6" MIN. HDPE SDR 11 FORCE MAIN
- PROPOSED 8" MIN. HDPE SDR 11 FORCE MAIN
- PROPOSED 4" MIN. HDPE SDR 11 FORCE MAIN
- PROPOSED 2" MIN. HDPE SDR 9 AIR LINE
- PROPOSED 6" CLEANOUT DUAL WYE
- PROPOSED 8" CLEANOUT DUAL WYE
- PROPOSED AIR RELEASE VALVE (ARV) WITH RECEIVING TOTE/DRUM AND SINGLE CLEANOUT
- PROPOSED 12"x6" SCALING STRAINER
- PROPOSED 8" FORCE MAIN ISOLATION PLUG VALVE
- PROPOSED 6" FORCE MAIN ISOLATION PLUG VALVE
- PROPOSED 4" FORCE MAIN ISOLATION PLUG VALVE
- PROPOSED 2" AIR LINE ISOLATION VALVE
- PROPOSED AIR ISOLATION BLOW-OFF VALVE

2024 DE-WATERING SYS QUANTITIES

ITEM	UNIT	QTY
8" HDPE SDR 11 FORCEMAIN	LF	2,399
6" HDPE SDR 11 FORCEMAIN	LF	10,922
4" HDPE SDR 11 FORCEMAIN	LF	76,776
2" HDPE SDR 9 AIR LINE	LF	78,119
8" HDPE SDR 11 PLUG VALVE	EA	13
6" HDPE SDR 11 PLUG VALVE	EA	61
4" HDPE SDR 11 PLUG VALVE	EA	44
2" AIR LINE ISOLATION VALVE	EA	78
2" AIR ISOLATION BLOW-OFF VALVE	EA	11
8" HDPE SDR 11 CLEANOUT DUAL WYE	EA	3
6" HDPE SDR 11 CLEANOUT DUAL WYE	EA	39
ARV WITH RECEIVING TOTE AND SINGLE CLEANOUT	EA	33

GENERAL DRAWING NOTES

1. EXISTING TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS PROVIDED BY PROPELLER AERIAL PHOTOGRAPHY DATED JANUARY 02, 2024.
2. NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.
3. THE LOCATION OF ANY EXISTING PIPING, VALVES, TIE-IN LOCATIONS AND OTHER FEATURES ARE APPROXIMATE AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY. ACTUAL FIELD CONDITIONS MAY VARY AND SUBJECT TO CHANGE BASED ON FUTURE FILL OPERATIONS, WASTE PLACEMENT, TOPOGRAPHIC FEATURES, AND OTHER SITE-SPECIFIC FACTORS.
4. 2024 DE-WATERING SYSTEM MASTER PLAN DESIGN MAY NEED TO CHANGE TO ACCOMMODATE ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. CONTRACTOR TO USE FITTINGS AND FIELD FIT AS NECESSARY.

DRAFT
NOT ISSUED FOR CONSTRUCTION

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
CLIENT:
CHIQUITA CANYON LANDFILL
CASTAIC, CALIFORNIA
PROJECT TITLE:
2024 LFG DE-WATERING SYSTEM EXPANSION ON MASTER PLAN DESIGN
CHIQUITA LANDFILL
CASTAIC, CALIFORNIA
SHEET TITLE:
PROPOSED OVERALL DRAINAGE PLAN
DATE:
09/06/2024
SCALE:
AS SHOWN
SHEET:
A

Attachment B

Best Management Practices

Best Management Practices to Address Leachate Seeps

As described in more detail in the November 6, 2023 Report on Landfill Best Management Practices: Mitigating Landfill Reaction Odors, Blue Ridge Services Montana, Inc. has prepared the following list of best management practices (BMPs) for addressing leachate seeps.

1. Response Preparation

To maintain a proactive position, Chiquita should maintain soil stockpiles near areas where leachate seeps have previously occurred to facilitate a quick response if/when constructing containment soil berms or other short-term containment structures is necessary.

Similarly, heavy equipment capable of constructing berms or other immediate short-term containment structures should be available onsite daily. At least one vacuum truck, one wheel loader, and one excavator should also be available onsite daily and capable of providing immediate response if/when a leachate seep occurs.

2. Detection

Early detection of leachate seeps is an important part of the mitigation process. Indicators may include visible wet spots on the slopes that may appear as single wet spots or a horizontal line of wet soil. Leachate seeps often show these early indicators before visible liquid leachate appears on the surface. We understand that Chiquita is currently conducting inspections for leachate seeps twice each calendar day.

3. Immediate Response

Initial Safety, Environmental, and Characterization Assessments

Immediately following detection, Chiquita staff should conduct initial safety and environmental assessments and characterize the seepage. The initial safety assessment should determine what forms of personal protective equipment (if any) should be used to protect workers collecting and containing the seepage. The initial environmental assessment and characterization should be used to determine the scope of the mitigation effort necessary to collect and contain the seep, and to determine what level of notification (if any) is appropriate. For example, the initial assessment should be used to assess whether any leachate has entered the concrete-lined stormwater channel.

Notification

Landfill staff should notify Site Management and report the location and type of the leachate seep. As appropriate, Site Management should notify appropriate regulatory agencies, for example, if the seep extends off the landfill liner.

SHORT-TERM MITIGATION

Chiquita's actions to mitigate the seepage should be based on need, as explained in this section, and consider the above-listed assessments and characterizations. For most leachate seeps, Chiquita should implement the following actions:

1. For very minor seeps, where no liquid or leachate is visible (only wet soil), landfill staff should place additional soil on that portion of the slope.
2. For seeps where a very small quantity of liquid or leachate is present (less than 5 gallons), staff should use soil and/or processed organic material as an absorbent material. Successful control by these methods would be evident if leachate does not re-emerge.
3. For seeps where a small quantity of liquid or leachate is visible (less than approximately 50 gallons), landfill staff should contain leachate using, for example, soil berms or dams. This action should be considered an interim mitigation until resources can be assembled to begin expanded mitigation, as appropriate (See below).
4. If the quantity of leachate exceeds what can be controlled through these measures, landfill staff should undertake expanded mitigation efforts.
5. If saturated soil is removed, it should be placed into an articulated haul truck and transported to the active face. Loads should be tarped to minimize spillage and odors. Care should be taken to avoid spilling soil during the loading process. Any spilled soil should be removed and also transported to the active face.

Expanded mitigation efforts may include one or more of the following efforts, as appropriate:

1. Dig a small hole into the underlying waste to allow leachate to return into the waste mass. If possible, breach any visible layer of low permeability material.
2. Use onsite vacuum truck(s) to extract pooling or ponding leachate.
3. If leachate does not dissipate into the underlying waste, or if it continues to flow from the seep location, coordinate with Site Management as appropriate to apply additional mitigation efforts, which may include:
    a. Digging deeper into the underlying waste and installing a French Drain and perforated pipe to create a sump.
    b. Temporarily utilizing a vacuum truck(s) to pump from this sump until more permanent piping can be installed to direct leachate to an onsite storage tank.

Once a seep has been repaired, landfill staff should cover the area with sufficient clean soil to cover the seep, track-walk the freshly laid soil, and monitor the seep location to confirm that the repair was successful. Alternatively, the area may be covered with scrim or other geomembrane and continue to be monitored.

4. Intermediate Response

If leachate reaches one of the Landfill's concrete-lined stormwater channels, landfill staff should implement the following measures:

1. Place soil check dam(s) in the concrete-lined channel immediately downstream of the entry point to prevent leachate from flowing downstream and reaching the stormwater basin(s). Install multiple soil check dams as needed to contain the leachate. All leachate should be extracted with a vacuum truck and transported to the onsite storage tanks.
2. During wet weather when clean stormwater is flowing in the channel, place soil check dam(s) in the concrete-lined channel immediately downstream of the entry point to prevent leachate

mixed with stormwater from flowing downstream and reaching the stormwater basin(s). Install multiple soil check dams as needed to contain the mixed leachate and stormwater. All stormwater mixed with leachate should be extracted with a vacuum truck and transported to the onsite storage tanks.

5. Continued Monitoring

After a seep has been addressed, landfill staff should continue monitoring all slopes for indication of continuing or additional leachate seeps. Staff should pay particular attention to those areas where leachate seeps have occurred in the past, and where leachate seeps have recently been mitigated.

Attachment C

Pressurized Leachate Mitigation Study

March 12, 2024

The Discharge of Pressurized Leachate Containment Feasibility Study

Prepared For:

March 12, 2024

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March 12, 2024

Steve Cassulo,

RE: Stipulated Order for Abatement, Case No. 6177-4, Condition No. 26 Report

In accordance with the Stipulated Order for Abatement issued on January 17, 2024 (Stipulated Order) by the South Coast Air Quality Management District in Case No. 6177-4, Blue Ridge Services Montana, Inc. has prepared this **THE DISCHARGE OF PRESSURIZED LEACHATE CONTAINMENT FEASIBILITY STUDY.**

The Stipulated Order requires the following under Condition No. 26:

> *Respondent shall investigate and report on the feasibility of temporary containment measures for the purposes of controlling leachate and possible discharges of pressurized leachate when drilling additional holes for wells, liquid pumps, temperature devices, or other purposes. This Discharge of Pressurized Leachate Containment Feasibility Study shall include an analysis on the feasibility of a temporary tenting, containment vessel(s)/ dome(s), other enclosure(s), or partial enclosure system designed to collect and contain the leachate flow while limiting the escape of odors produced from drilling/ discharges of pressurized leachate, to allow for additional well drilling in the Reaction Area. By no later than March 12, 2024, Respondent shall submit to South Coast AQMD [Baitong Chen, Air Quality Engineer, (bchen@aqmd.gov); Nathaniel Dickel, Senior Air Quality Engineer, (ndickel@aqmd.gov), and Christina Ojeda, Air Quality Inspector, (cojeda@aqmd.gov)], a report on the findings of this feasibility study.*

This report evaluates potential containment and mitigation measures for the prevention or control of pressurized leachate releases during well construction and/or maintenance.

Respectfully,

Neal Bolton

Neal Bolton, P.E.
President
Blue Ridge Services Montana, Inc.
neal@blueridgeservices.com

CONTENTS

ACRONYMS

Acronym	Meaning
BGS	Below Ground Surface
BOW	Bottom of Well
BRS	Blue Ridge Services Montana, Inc.
CCL	Chiquita Canyon Landfill
E&P	Exploration and Production
ETLF	Elevated Temperature Landfill
IC	Isolation Chamber
LEA	CalRecycle Local Enforcement Agency
LFG	Landfill Gas
PLR	Pressurized Leachate Release
PSI	Pounds Per Square Inch
SCAQMD	South Coast Air Quality Management District
SCBA	Self-contained Breathing Apparatus
SCS	SCS Engineers

BACKGROUND

A portion of the Chiquita Canyon Landfill (CCL or Landfill) is experiencing a reaction, also referred to as an Elevated Temperature Landfill (ETLF) event. The reaction is occurring in an area of CCL referred to as the South Coast Air Quality Management District (SCAQMD) Reaction Area (Reaction Area), defined initially in the Stipulated Order by the boundary of Cells 1/2A, 2B/3, 4, and Module 2B/3/4/P2. While most landfills generate some odors associated with uncollected (fugitive) landfill gas (LFG) and leachate seeps, the LFG and leachate seeps affiliated with an ETLF event can produce odors that possess unique characteristics, causing them to be more detectable. The ETLF event is also generating leachate and LFG at a higher rate. The increase in odor complaints in the vicinity of CCL are attributable to the LFG and leachate seeps caused by the landfill reaction.

In accordance with Condition No. 12 of the Stipulated Order, Chiquita Canyon, LLC (Chiquita) has formed a committee of subject matter experts, the Reaction Committee (formerly the Dimethyl Sulfide, or DMS Committee), to aid in the investigation, impact assessment, and remediation of the ongoing landfill reaction and resultant odors. The Reaction Committee is conducting investigations and studies into the cause of the landfill reaction, the impacts of air emissions, interim measures to limit odor transport, and corrective measures to reduce or abate the landfill reaction. The Reaction Committee also reviews data each month and determines whether to revise the current boundaries of the Reaction Area.

Neal Bolton, P.E., President of Blue Ridge Services Montana, Inc. (BRS), is a national expert in landfill operations and is serving as a member of the Reaction Committee to satisfy Condition No. 12(a)(i) of the Stipulated Order, which requires that the Reaction Committee include a subject matter expert in landfill design and operational best management practices. He has provided various consulting support to Chiquita since 2020, including as a member of the consulting team that solved the working face odor issue in 2022. Additionally, he has broad operational experience within the heavy construction and solid waste industry that spans more than 46 years. During that time, Mr. Bolton has provided operational support for more than 500 landfills throughout North America and abroad.

This report summarizes BRS's findings and recommendations pursuant to Stipulated Order Condition No. 26 issued on January 17, 2024. Condition No. 26 requires the evaluation of potential containment options for pressurized leachate release (PLR) events. We evaluated containment options and found nothing feasible.

Since we did not identify any feasible containment options, we looked further to focus on potential solutions to control or prevent these PLR events. We looked within the solid waste industry as well as the exploration and production (E&P) segments within the petroleum industry to evaluate options to control PLR events that occur during both the drilling of new wells and the servicing of existing wells. None of the techniques used in the oil and gas industry were readily applicable to drilling new LFG wells. However, when drilling new wells, slowing the speed at which the bucket auger is raised

or lowered in the well, as well as rotating the bucket auger while raising and lowering may reduce the hydraulic forces produced by surging and swabbing. When servicing existing wells, redirecting the flow of liquids through the use of cactus arm wellheads would minimize any release from the top of the well, and installing an isolation chamber on the wellhead may reduce PLR events. However, these options have not been field tested and may not completely eliminate the impacts of a PLR event. There are also potentially significant operational challenges that must be further evaluated to determine the feasibility of such a chamber at CCL.

There are also drilling methods that can help prevent PLRs, including drilling from the outer edges of the Reaction Area, inward, and in the areas with the highest temperatures, drilling at the upper limits of the reaction as opposed to drilling through the entire reaction. However, stopping the reaction is the ultimate solution. Drilling and servicing cannot be avoided altogether as expanding the LFG control and collection system is critical to mitigating the ongoing reaction.

PLR Containment Options

We began our investigation on the feasibility of various containment measures for PLRs with the list suggested in the Stipulated Order while considering practicality and safety concerns. These include temporary tenting, containment vessel(s)/dome(s), other enclosure(s), or partial enclosure system designed to collect and contain the leachate flow while limiting the escape of odors produced from drilling/discharges of pressurized leachate, to allow for additional well drilling in the Reaction Area. These measures are discussed here.

We evaluated the temporary tenting option by reviewing the types of systems that are currently available. While large clear-span tent-like structures (see Figure 1) are available, they have two initial structural problems. First, these structures are generally placed on level areas. If placed on a sloped area, a buttress or retaining wall must be constructed on the downhill side to provide a level perimeter base to ensure equal load distribution for forces of weight and wind.

Figure 1: Clear-Span Structure

Because these structures also require significant anchoring to keep them stable during windy conditions, several days of setup time are required. These structures are therefore not portable in the context of relocating them every day or two as the current drilling schedule would require.

There is also a limitation associated with height. To achieve the height required for the tower on a drill rig, the tent structure would have to be very tall. Consequently, it would also need to be very wide to resist lateral wind forces. This would be impractical for the same reasons. Finally, to contain the steam

and LFG that is emitted during a PLR, the tent would have to be fully enclosed. This full enclosure could create three potential problems with significant impacts on the health and safety of the workers involved.

1. First, during all drilling operations, some LFG is released. This could create a dangerous, potentially toxic atmosphere within the tent – thus requiring special ventilation and filtering, and/or self-contained breathing apparatuses (SCBAs) for all workers. Under some interpretations, this could be considered a permit-required confined space under Cal/OSHA regulation.
2. Second, if a PLR event were to occur, it could significantly increase pressure within the tent. Depending on that pressure, the tent could burst, tear, or be dislodged from its base resulting in a collapse. These units are not intended to be any type of pressure vessel.
3. Third, by containing the LFG within an enclosed area, explosive gas (i.e., methane) would be concentrated inside the tent. This would create an extremely dangerous situation. Consider the level of explosion prevention controls that must be used inside a methane plant. Internal combustion engines (i.e., from the drill rig, wheel loader, etc.) would introduce a very serious risk of explosion.

For all these reasons, it is our opinion that the temporary tent concepts are impractical and unsafe, and would create many more problems than they could possibly solve – even if there was a way to address the engineering and structural challenges identified. The concept of erecting any type of structure above/around the drilling operation, including vessel(s)/dome(s), other enclosure(s), or partial enclosure system(s), is not feasible for these same reasons.

PLR CONTROL OPTIONS

Since we did not identify any feasible containment options, we expanded our evaluation to potential control options. We looked first for options available within the solid waste industry. We quickly determined the body of knowledge of PLRs within this industry is quite limited. PLRs are known to occur only in association with ETLFs and there are only a handful of ETLFs in North America.

We expanded our search to outside of the waste industry. We looked to the E&P segments within the petroleum industry. In this industry there is wide knowledge and experience dealing with what they refer to as "surface blowouts." In the E&P sector, surface blowouts are much more common and often involve pressures that are measured in the thousands of psi, as opposed to what CCL is dealing with at an estimated 50-70 psi.

As shown below in Figure 2, CCL has experienced PLR events both during well maintenance and when drilling new wells. Thus, we evaluated options used in the petroleum industry that could assist in controlling PLR events that occur in both scenarios. The additional options evaluated were based on modifying or enclosing only the well head and/or borehole, and/or changing drilling practices.

Figure 2: PLR Events

Control Options for Drilling New Wells

LFG wells are drilled with a 3-foot diameter bucket auger attached to a long drill stem. The drill rig is attached to the chassis of a large excavator. It is operated by a single operator. Additional ground support workers help monitor drilling activities, log drilling progress, monitor the condition and temperature of drill spoils, and clean and inspect the bucket as needed.

LFG wells may be drilled to a depth of up to 300 feet, a process that takes 1-3 days depending on depth, drilling conditions, and other factors.

The method of drilling required at landfills contributes to the difficulty of controlling a PLR – particularly a major PLR. This is because the waste industry's method for digging a gas well requires a large hammer grab at the end of a stem. This is lowered into the hole and grabs material from the bottom and brings it to the surface for deposit. This method is used due to the necessity of having a large hole (36" in diameter typically) that is then backfilled with gravel around a perforated casing and plugged with various materials near the top. The casing is only perforated below the plug depth. The plug consists of 2 feet of bentonite clay directly over the gravel, then a layer of soil within 5 feet of the ground surface, then an additional 2 feet of bentonite clay. The plug helps prevent oxygen (in air) from being drawn into the waste mass when the well is connected to the LFG collection. The LFG system induces a negative pressure (i.e., vacuum) on the perforated pipe to draw LFG from within the landfill. The overall well construction process is shown in Figure 3.

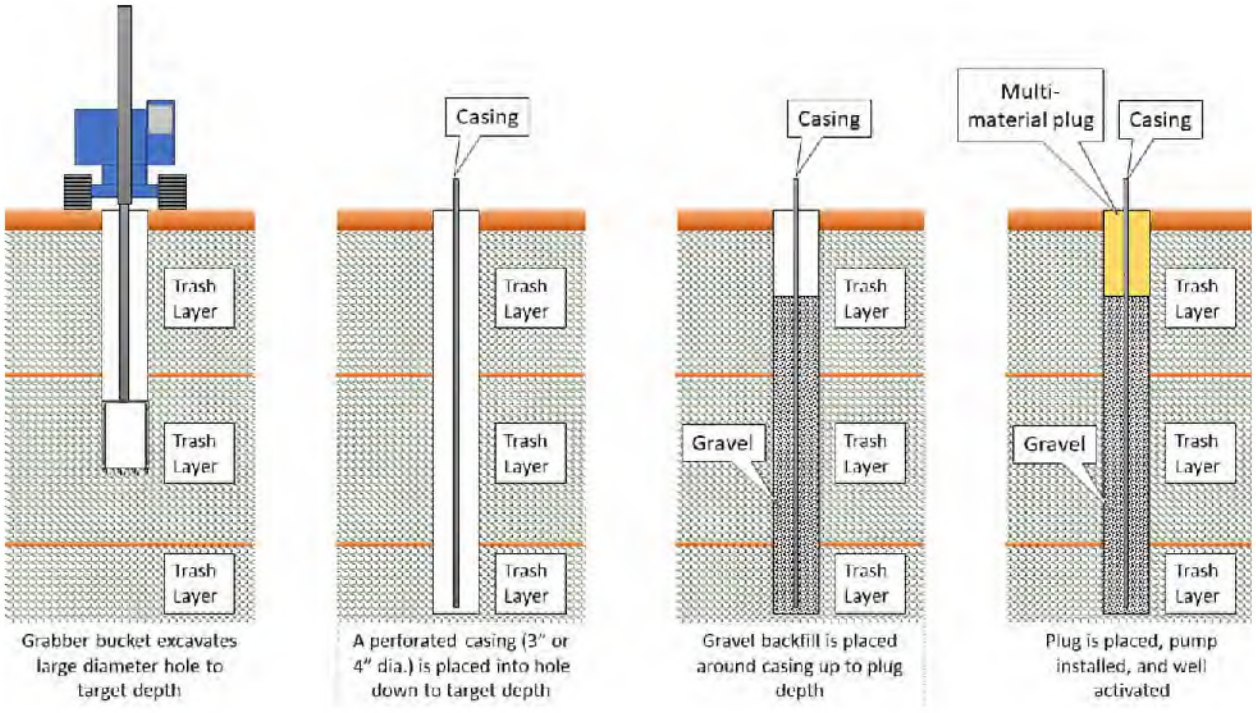


Figure 3: Well Construction

Five of the twelve PLR events at the Landfill occurred during the process of drilling new wells or while backfilling with gravel during the well construction process.

It should be noted that while drilling in or near the ETLF area, the static leachate level is often above the target well depth. Consequently, the bucket auger may penetrate the standing leachate (within the borehole). This may cause surging and/or swabbing.

Surging and swabbing occurs when an object that is approximately the same diameter as the well – in this case the bucket auger – is moved up or down within the well (see Figure 4). As the bucket auger is pushed downward through leachate, the underlying fluid may not be able to pass between the bucket auger and the sidewall of the well. Because this work is being performed in waste, within a landfill, the limited annular space between the bucket auger and the well sidewall tends to be "sealed" by the slurry of paper, plastic, soil, and other debris that is present in the leachate column during the up/down drilling process. Like a syringe, this can increase (surge) pressure downhole and may force leachate into the surrounding waste mass. Conversely, when the bucket auger is pulled upward through leachate (remember, the boreholes are often flooded), this "swabbing" reduces pressure downhole and may draw leachate and/or LFG from the surrounding waste mass. These two forces – surging and swabbing – can change the equilibrium that exists between the vapor pressure of hot leachate and the hydrostatic pressure of the overlying leachate column, thereby triggering a PLR.

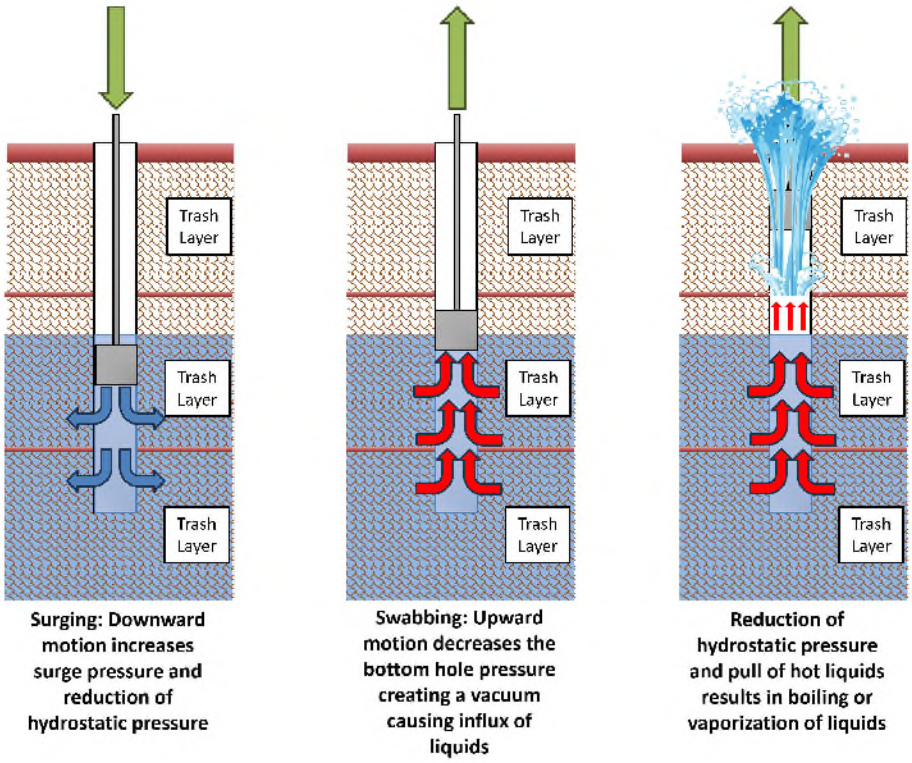


Figure 4: Surging and Swabbing

The hydraulic forces produced by surging and swabbing may be reduced by slowing the speed at which the bucket auger is raised or lowered in the well. Rotating the bucket auger while raising and lowering it may also reduce those forces by allowing more opportunity for pressure above and below the auger to equalize.

We also considered whether techniques used in the oil and gas industry could be applied to drilling LFG wells. We considered options including drilling small pilot holes, drilling adjacent small diameter wells, drilling small diameter test wells or relief wells, adding containment bells, or modifying the existing bucket augers. None of the oil and gas industry options were adaptable to the conditions at CCL as the conditions at a landfill are quite different than the conditions found in the oil and gas industry. With respect to drilling small diameter pilot holes or smaller diameter wells, such smaller diameter wells are not available when drilling in landfills. Drilling through trash poses many difficulties that are not experienced in the oil and gas industry. For example, attempts to use smaller diameter wells or drills can lead to plugged or unusable wells or poor well operation. Adding containment bells would multiply the duration of well installations by a factor of 5-10 times and would also be difficult to engineer due to concerns related to counteracting the estimated uplift force. Modifying existing bucket augers could disrupt the fragile equilibrium that exists in some wells.

Control Options for Servicing Wells

In all cases where a PLR occurred during well servicing, technicians completed removal of the pump to service it and shortly after that a minor PLR occurred. The well, originally at a state of equilibrium, was disrupted when the cap was removed, and the pump pulled out. This disturbance is the likely causation of the PLR.

CCL has already started using one technique to control PLRs that may occur during servicing. New wellheads at CCL have multiple pipes attached to the wellhead. These are referred to as "cactus" wellheads. When servicing wells with cactus wellheads, Chiquita hooks up one of the pipes to a liquid conveyance line or a vacuum truck. That way, if a PLR occurs when removing or replacing a pump or temperature probe, landfill liquids would be directed to the separate arm, minimizing any release from the top of the well. This is achieved with the use of a knife gate at the top of the well. After pump removal, the knife gate is shut, creating a barrier that would divert any liquids to the removal and conveyance line.

We also considered two additional control techniques that we identified as widely used in the oil and gas industry: installing an external pump or installing an isolation chamber.

We do not think that installation of an external pump is a viable option. The external pump, rather than the downhole pump, would eliminate the need to pull/replace pumps for servicing, but such pumps have limited depth of pull far below what is required at CCL.

Installation of an isolation chamber on new wells may reduce PLR events during servicing, but there are significant operational challenges that must be further evaluated to determine whether this is feasible at CCL. The isolation chamber would mount on top of a LFG well with all hoses, cables, and data transmission lines, passing through seals at the top of the chamber. When servicing is required, the equipment would be pulled up into the chamber. Once everything is within the isolation chamber a master valve at the bottom of the chamber would be closed, a bleed off valve to the chamber opened to remove any liquids, and then the chamber itself would be opened with a hammer lock flange and the item requiring servicing removed. Once servicing is complete, the entire system would then be re-attached, and the master valve remains opened, allowing the lowering of the tools back down the well. Parts to construct the isolation chamber appear to be readily available in Central California. The isolation chamber could potentially allow for the total isolation and control of wells during maintenance and would keep crews from physically contacting liquids or gas released. Yet, because this technique has not been used at landfills, more evaluation is needed. There are various constraints, and a PLR could be triggered during installation as pumps need to be pulled. One of the main operational constraints is the additional height on top of existing wells. The isolation chamber needs to be the length of the longest tool in the well, such as a pump. This could potentially add 4 to 5 feet to the top of a well that is already above the ground 3 to 6 feet due to settlement in the reaction area. Such a height addition could pose a safety risk for safely servicing a well.

We also considered one final option, which would include a catchment cone. The last option considered would only be effective for minor PLR events where liquids rise slowly and overtop the casing of the accessed well. This solution would involve a catchment cone that would allow for all of the liquids to be collected and routed to a containment vessel such as vac truck. This would need to

be fabricated and manually installed prior to each servicing event. It would not contain a major PLR event and thus is not an ideal solution for servicing.

PLR PREVENTION

While PLRs cannot be contained, there are some options that may assist with control, although none of the options provide certainty. Because expanding the LFG control and collection system is crucial to mitigating the ongoing reaction, drilling and servicing cannot be altogether avoided. However, there may be methods for preventing PLRs through various drilling strategies. These options must be carefully balanced, however, with the need to relieve pressure and expand the LFG system. Stopping the reaction is the ultimate solution for stopping PLR events.

In reviewing the most recent well temperature data collected when wells are serviced or drilled, it was evident that there was a correlation between the temperature and the PLR events (see Figure 5). Thus, we believe that temperature will be a good indicator of the most high-risk wells.

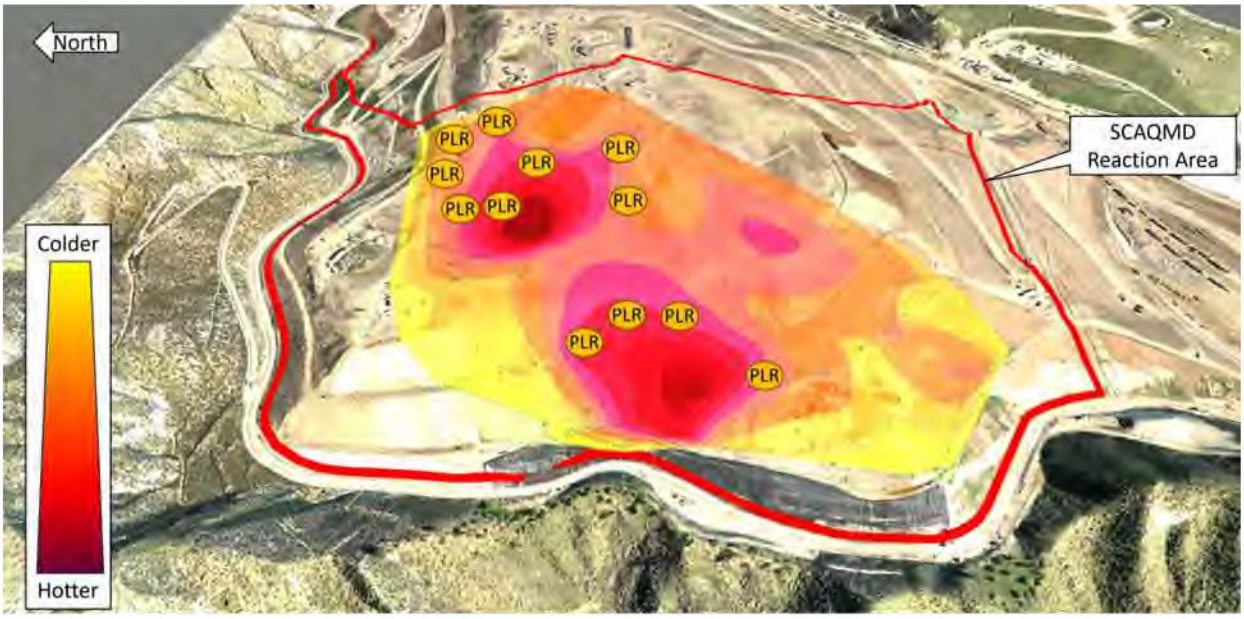


Figure 5: Bottom of Well Temperatures

Currently, CCL is installing over 20 temperature monitoring wells per CalRecycle Local Enforcement Agency (LEA) requirements. These new wells will provide real time data 24 hours a day at depth intervals of 15 feet. We agree with this requirement and approach to expanding the temperature monitoring data. This level of data will allow for better definition of the horizontal extents of zones approaching or exceeding the boiling point of the liquids, as well as better definition of the vertical extents of the hot zones.

With this data, we suggest that CCL continue to pursue two strategies that it has already begun to employ. First, CCL could drill from the outer edges of the Reaction Area, inward. This will relieve pressure and liquids throughout the Reaction Area without drilling directly into the worst areas that

are more susceptible to a PLR event. We also suggest that in the areas with the highest temperatures, CCL drill to the target depth or to the point where the driller observes signs of a potential PLR, or where sidewall conditions deteriorate to the point of potential collapse of the well. Currently drill operators are able to predict these events based on the feel of the drill as it works in the hole and whether they see signs of vapor from the hole. We understand that this technique has been used successfully at other landfills exhibiting ETLF symptoms. Temperature ranges in the Landfill could be a factor to consider, as well as real-time considerations like ending drilling when encountering a pressure change or sidewall conditions dictate. Though the wells will not be at target depth, they can be utilized to extract gas and liquids until such time that the temperature and pressure in that area are reduced. The well casing can then be removed and the well extended down to the intended depth.

This method of partial and perimeter well construction will allow continued well activation to facilitate the needed extraction of liquids and LFG while minimizing the risk of a PLR event from occurring. However, it is crucial to balance these strategies with the need to dewater and remove additional LFG in order to mitigate the reaction.

RECOMMENDATIONS

In summary, there are no feasible containment measures, including no feasible temporary tenting, containment vessel(s)/dome(s), other enclosure(s), or partial enclosure system, designed to collect and contain PLR events. Such measures are impractical for a variety of reasons, including that they would likely require a buttress or retaining wall and significant anchoring, and would need to be very tall and wide, and would introduce serious worker safety issues. Such measures would also require full enclosure, which creates various safety concerns of its own, like the release of LFG and leachate into the fully enclosed space.

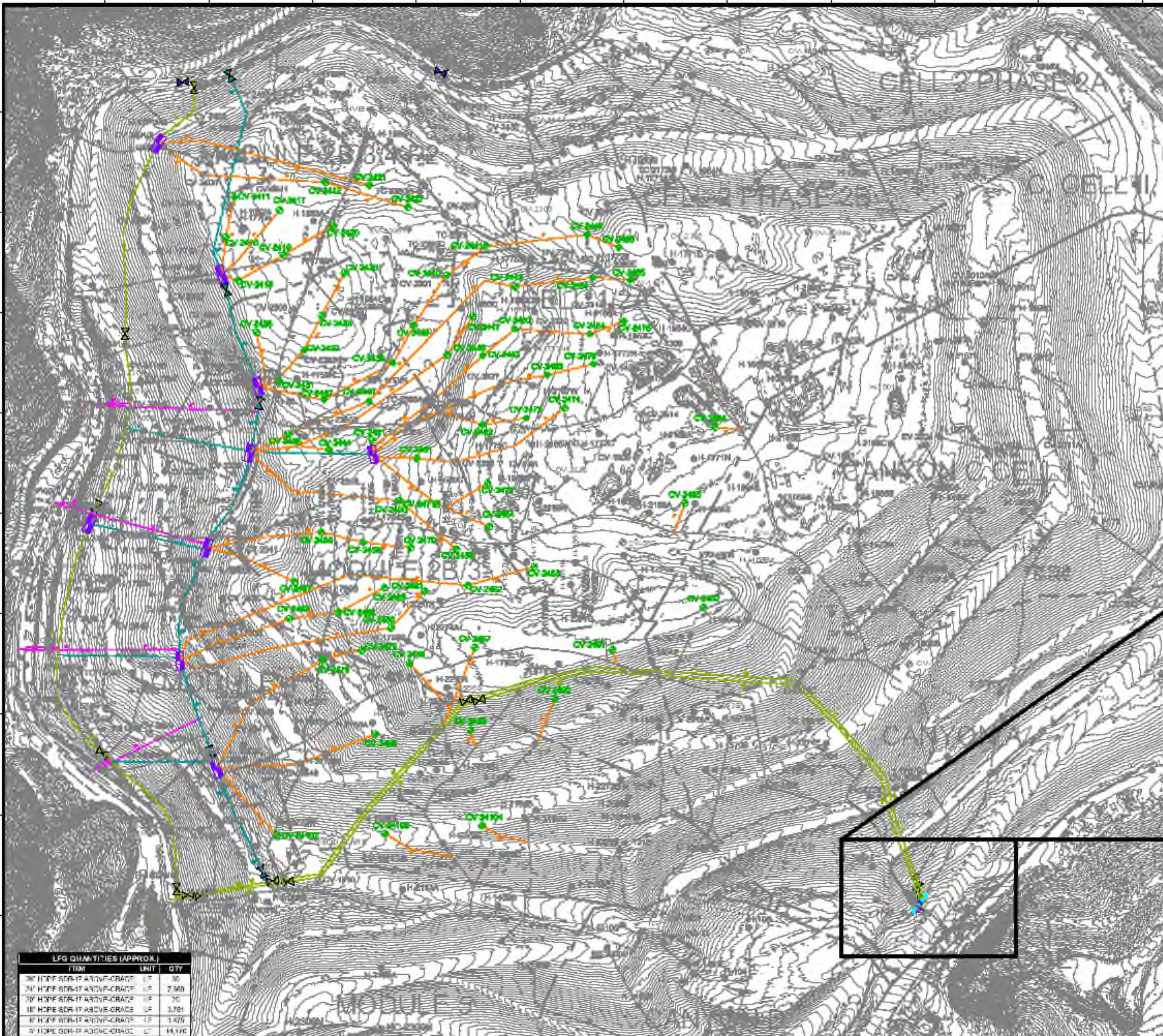
Instead, we looked at potential control measures. When drilling new wells, no specific control measures were identified. We suggest reducing the speed at which the bucket auger is raised and lowered into the well and rotating the bucket auger while raising and lowering when the bucket auger is submerged.

When servicing wells, we suggest the use of cactus wellheads, which would direct any landfill liquids to a separate arm during a PLR occurring when removing or replacing a pump or temperature probe. We also suggest that CCL evaluate further the installation of isolation chambers on new wells, which could potentially be used to minimize the risk of a PLR during well servicing.

Finally, we suggest that CCL utilize the data from the over 20 temperature monitoring wells currently being installed to better understand the high temperature areas, which we believe are more susceptible to PLR events. Using this knowledge, Chiquita can employ drilling strategies, including drilling from the outer edges of the Reaction Area, inward, to relieve pressure and liquids throughout the Reaction Area, and to drill at the upper bounds of the reaction, instead of through the reaction to attempt to prevent PLRs while drilling.

Attachment D

Proposed Overall GCCS Site Plan



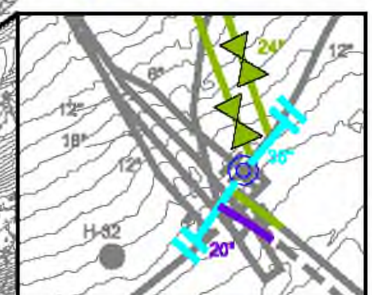
LFG QUANTITIES (APPROX.)

ITEM	UNIT	QTY
36" HDPE SDR-17 ABOVE-GRADE	LF	30
24" HDPE SDR-17 ABOVE-GRADE	LF	7,360
20" HDPE SDR-17 ABOVE-GRADE	LF	70
18" HDPE SDR-17 ABOVE-GRADE	LF	3,781
8" HDPE SDR-17 ABOVE-GRADE	LF	1,475
6" HDPE SDR-17 ABOVE-GRADE	LF	14,176

GRAPHIC SCALE
130 65 0 130 260 390
SCALE: 1"=130'

LEGEND

- EXISTING TOPOGRAPHIC CONTOUR
- EXISTING CELL LIMITS (APPROXIMATE)
- EXISTING LFG EXTRACTION WELL
- EXISTING HORIZONTAL WELLS
- EXISTING ABOVE-GRADE LFG COLLECTION HEADER/LATERAL
- EXISTING BELOW-GRADE LFG COLLECTION HEADER/LATERAL
- PROPOSED LFG EXTRACTION WELL
- PROPOSED MANIFOLD
- PROPOSED ABOVE GRADE 36" LFG HDPE PIPING
- PROPOSED ABOVE GRADE 24" LFG HDPE PIPING
- PROPOSED ABOVE GRADE 20" LFG HDPE PIPING
- PROPOSED ABOVE GRADE 18" LFG HDPE PIPING
- PROPOSED ABOVE GRADE 8" LFG HDPE PIPING
- PROPOSED ABOVE GRADE 6" LFG HDPE PIPING
- PROPOSED ISOLATION VALVE (DIA. VARIES BASED ON PIPE DIA. COLOR)
- PROPOSED BLIND FLANGE (DIA. VARIES BASED ON PIPE DIA. COLOR)
- PROPOSED CONDENSATE SUMP



GENERAL DRAWING NOTES:

1. EXISTING TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS PROVIDED BY PROPELLER. AERIAL PHOTOGRAPHY DATED JANUARY 15, 2024.
2. NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.
3. THE LOCATION OF ANY EXISTING PIPING, VALVES, TIE-IN LOCATIONS AND OTHER FEATURES ARE APPROXIMATE AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY. ACTUAL FIELD CONDITIONS MAY VARY AND SUBJECT TO CHANGE BASED ON FUTURE FILL OPERATIONS, WASTE PLACEMENT, TOPOGRAPHIC FEATURES, AND OTHER SITE-SPECIFIC FACTORS.

PRELIMINARY DESIGN
NOT ISSUED FOR CONSTRUCTION

NO.	REVISION	DATE

SHEET TITLE: PROPOSED OVERALL GCCS SITE PLAN

PROJECT TITLE: CHIQUITA LANDFILL CASTAIC, CALIFORNIA

CLIENT: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS

DATE: 01/2024
SCALE: AS SHOWN
SHEET: B

F:\Engineers\Waste Connections\Chiquita Canyon LF\2024 CCLF SCAQMD SAO\Workplan Submittal\Attachments\DWG\CCLF 2024 Attachments B and C_2024-03-05.dwg Mar 06, 2024 - 2:47pm By: SHGarm

Attachment E

Proposed Well Schedule

2024 LFG WELL DRILLING SCHEDULE
CHIQUITA CANYON LANDFILL, CASTAIC, CA

#	Well ID	Coordinates[4]		Elevations		Depth to Base (ft)	Clearance Above Base >=15 ft.	Bore Depth[5] (ft)	Bore Diam. (in)	Casing size and Material Type[5]	Perforated pipe (ft)	Solid Pipe[3] (ft)	Gravel Pack (ft)	Depth to Top of Gravel Pack (ft)	Depth to Bottom of shallow Gravel Pack (ft)	Shallow Soil Backfill(ft)	Centralizers
		Northing	Easting	Surface[1]	Base[2]												
1	CV-2411	1981758.730	6365629.668	1385	1225	160	23	137	36	8" CARBON STEEL	105	33	109	28	137	23	2
2	CV-2412	1981796.927	6365864.419	1391	1212	179	22	157	36	8" CARBON STEEL	125	33	129	28	157	23	3
3	CV-2416	1981655.349	6365607.103	1382	1195	187	20	167	36	8" CARBON STEEL	135	33	139	28	167	23	4
4	CV-2417	1981724.493	6365746.684	1387	1203	184	22	162	36	8" CARBON STEEL	130	33	134	28	162	23	4
5	CV-2418	1981542.434	6365639.759	1383	1147	236	24	212	36	8" CARBON STEEL	180	33	184	28	212	23	6
6	CV-2419	1981608.358	6365757.877	1387	1161	226	24	202	36	8" CARBON STEEL	170	33	174	28	202	23	6
7	CV-2420	1981684.455	6365884.354	1383	1168	215	28	187	36	8" CARBON STEEL	155	33	159	28	187	23	5
8	CV-2421	1981789.283	6365979.287	1388	1206	182	25	157	36	8" CARBON STEEL	125	33	129	28	157	23	3
9	CV-2425	1981407.656	6365686.569	1380	1110	270	26	244	36	8" CARBON STEEL	212	33	216	28	244	23	8
10	CV-2426	1981561.583	6365914.109	1385	1126	259	27	232	36	8" CARBON STEEL	200	33	204	28	232	23	7
11	CV-2427	1981731.550	6366078.935	1384	1193	191	29	162	36	8" CARBON STEEL	130	33	134	28	162	23	4
12	CV-2431	1981280.700	6365745.912	1372	1100	272	30	242	36	8" CARBON STEEL	210	33	214	28	242	23	8
13	CV-2432	1981360.401	6365809.530	1382	1078	304	32	272	36	8" CARBON STEEL	240	33	244	28	272	23	9
14	CV-2433	1981450.908	6365855.369	1387	1092	295	33	262	36	8" CARBON STEEL	230	33	234	28	262	23	9
15	CV-2436	1981144.242	6365770.669	1361	1100	261	24	237	36	8" CARBON STEEL	205	33	209	28	237	23	7
16	CV-2437	1981233.265	6365861.478	1371	1068	303	26	277	36	8" CARBON STEEL	245	33	249	28	277	23	9
17	CV-2438	1981328.093	6366040.691	1374	1067	307	30	277	36	8" CARBON STEEL	245	33	249	28	277	23	9
18	CV-2439	1981426.235	6366094.001	1374	1074	300	23	277	36	8" CARBON STEEL	245	33	249	28	277	23	9
19	CV-2440	1981556.729	6366180.006	1376	1125	251	24	227	36	8" CARBON STEEL	195	33	199	28	227	23	7
20	CV-2441	1981630.234	6366280.123	1381	1152	229	22	207	36	8" CARBON STEEL	175	33	179	28	207	23	6
21	CV-2444	1981103.358	6365874.702	1364	1072	292	25	267	36	8" CARBON STEEL	235	33	239	28	267	23	9
22	CV-2445	1981229.645	6365978.426	1371	1061	310	28	282	36	8" CARBON STEEL	250	33	254	28	282	23	10
23	CV-2446	1981350.110	6366180.731	1374	1070	304	27	277	36	8" CARBON STEEL	245	33	249	28	277	23	9
24	CV-2447	1981449.332	6366247.407	1382	1082	300	28	272	36	8" CARBON STEEL	240	33	244	28	272	23	9
25	CV-2448	1981526.446	6366356.092	1392	1106	286	24	262	36	8" CARBON STEEL	230	33	234	28	262	23	9
26	CV-2449	1981661.28	6366543.082	1399	1145	254	25	229	36	8" CARBON STEEL	197	33	201	28	229	23	7
27	CV-2451	1981128.434	6365985.988	1366	1058	308	21	287	36	8" CARBON STEEL	255	33	259	28	287	23	10
28	CV-2452	1981348.223	6366272.976	1394	1070	324	27	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
29	CV-2453	1981417.004	6366357.183	1393	1074	319	27	292	36	8" CARBON STEEL	260	33	264	28	292	23	10
30	CV-2454	1981543.840	6366544.536	1403	1099	304	28	276	36	8" CARBON STEEL	244	33	248	28	276	23	9
31	CV-2455	1981635.923	6366614.239	1405	1123	282	28	254	36	8" CARBON STEEL	222	33	226	28	254	23	8
32	CV-2457	1980761.537	6365797.686	1369	1052	317	30	287	36	8" CARBON STEEL	255	33	259	28	287	23	10
33	CV-2458	1980890.310	6365843.865	1373	1056	317	30	287	36	8" CARBON STEEL	255	33	259	28	287	23	10
34	CV-2459	1980877.690	6365956.554	1378	1054	324	30	294	36	8" CARBON STEEL	262	33	266	28	294	23	10
35	CV-2460	1980972.487	6366055.991	1382	1056	326	30	296	36	8" CARBON STEEL	264	33	268	28	296	23	10

Notes:
1 Surface elevations are from Vertex field survey, dated Janaury 09 and 10, 2024.
2 Base grades titled "CC_F liner limit with floor elevations 20230110" and obtained from Tetra Tech on October 2023.
3 Includes 3 of solid pipe stickup above grade.
4 The Horizontal Coordinates are based on California State Plane Zone 5.
5 If drill cutting temperatures are consistently greater than 150, contractor shall inform Site and Design Engineer for change in well casing materials.

PRELIMINARY DESIGN
NOT ISSUED FOR CONSTRUCTION

NO.	REVISION	DATE

SHEET TITLE: PROPOSED WELL SCHEDULE
PROJECT TITLE: CHIQUITA LANDFILL CASTAIC, CALIFORNIA
CLIENT: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS

DATE:
SCALE: AS SHOWN
SHEET: C

F:\Engineers\Waste Connections\Chiquita Canyon LF\2024 CCLF SCAQMD SAO\Workplan Submittal\Attachments\DWG\CCLF 2024 Attachments 9 and C_2024-03-06.dwg Mar 06, 2024 - 2:46pm By: 5160emn

2024 LFG WELL DRILLING SCHEDULE
CHIQUITA CANYON LANDFILL, CASTAIC, CA

#	Well ID	Coordinates[4]		Elevations		Depth to Base (ft)	Clearance Above Base >=15 ft.	Bore Depth[5] (ft)	Bore Diam. (in)	Casing size and Material Type[5]	Perforated pipe (ft)	Solid Pipe[3] (ft)	Gravel Pack (ft)	Depth to Top of Gravel Pack (ft)	Depth to Bottom of shallow Gravel Pack (ft)	Shallow Soil Backfill(ft)	Centralizers
		Northing	Easting	Surface[1]	Base[2]												
36	CV-2461	1981081.732	6366105.102	1386	1057	329	29	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
37	CV-2462	1981168.747	6366271.586	1397	1067	330	30	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
38	CV-2463	1981297.620	6366440.106	1405	1069	336	36	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
39	CV-2464	1981402.993	6366549.762	1411	1072	339	39	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
40	CV-2465	1981543.525	6366654.885	1406	1088	318	21	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
41	CV-2467	1980366.219	6365772.506	1364	1050	314	30	284	36	8" CARBON STEEL	252	33	256	28	284	23	10
42	CV-2468	1980583.016	6365891.962	1381	1050	331	31	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
43	CV-2469	1980746.648	6366017.913	1383	1051	332	32	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
44	CV-2470	1980850.207	6366086.850	1387	1053	334	34	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
45	CV-2471	1980963.070	6366153.709	1390	1055	335	35	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
46	CV-2472	1981017.371	6366285.625	1400	1064	336	36	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
47	CV-2473	1981186.022	6366385.567	1404	1067	337	40	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
48	CV-2474	1981212.037	6366485.113	1409	1067	342	42	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
49	CV-2475	1981325.530	6366559.186	1411	1068	343	46	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
50	CV-2476	1981437.371	6366639.248	1415	1073	342	47	295	36	8" CARBON STEEL	263	33	267	28	295	23	10
51	CV-2478	1980558.653	6365863.259	1364	1046	318	30	288	36	8" CARBON STEEL	256	33	260	28	288	23	10
52	CV-2479	1980584.519	6365958.936	1375	1048	327	30	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
53	CV-2480	1980642.744	6366034.803	1395	1049	346	46	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
54	CV-2481	1980737.324	6366122.356	1390	1050	340	43	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
55	CV-2482	1980743.654	6366198.146	1392	1051	341	41	300	36	8" CARBON STEEL	268	33	272	28	300	23	10
56	CV-2483	1980845.798	6366190.932	1392	1053	339	39	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
57	CV-2484	1980904.731	6366289.726	1397	1062	335	38	297	36	8" CARBON STEEL	265	33	269	28	297	23	10
58	CV-2485	1980362.094	6365982.434	1362	1044	318	30	288	36	8" CPVC	256	33	260	28	288	23	10
59	CV-2486	1980551.439	6366082.254	1396	1047	349	49	300	36	8" CARBON STEEL	268	33	272	28	300	23	11
60	CV-2487	1980592.117	6366252.775	1404	1047	357	57	300	36	8" CPVC	268	33	272	28	300	23	10
61	CV-2488	1980801.069	6366392.515	1398	1053	345	45	300	36	8" CPVC	268	33	272	28	300	23	10
62	CV-2489	1980384.612	6366256.979	1370	1043	327	30	297	36	8" CPVC	265	33	269	28	297	23	10
63	CV-2490	1980472.567	6366425.832	1387	1045	342	42	300	36	8" CPVC	268	33	272	28	300	23	11
64	CV-2491	1980585.765	6366616.580	1406	1047	359	59	300	36	8" CPVC	268	33	272	28	300	23	10
65	CV-2492	1980595.944	6366844.827	1408	1063	345	45	300	36	8" CPVC	268	33	272	28	300	23	10
66	CV-2493	1980965.601	6366784.537	1404	1056	348	48	300	36	8" CPVC	268	33	272	28	300	23	11
67	CV-2494	1981162.449	6366874.044	1408	1066	342	42	300	36	8" CPVC	268	33	272	28	300	23	10
68	CV-24102	1980105.202	6365739.572	1288	1100	188	26	162	36	8" CARBON STEEL	130	33	134	28	162	23	4
69	CV-24103	1980113.960	6366018.102	1296	1039	257	30	227	36	8" CPVC	195	33	199	28	227	23	7
70	CV-24104	1980130.409	6366268.164	1308	1038	270	30	240	36	8" CPVC	208	33	212	28	240	23	7
							Totals	**18619**					**16659**				**612**

Carbon Steel		CPVC	
Total Solid	1947	Total Solid	363
Total Perf	13580	Total Perf	2799
Total Pipe	15527	Total Pipe	3162

Notes:

1 Surface elevations are from Vertex field survey, dated Janaury 09 and 10, 2024.

2 Base grades titled "CC_LF liner limit with floor elevations 20230110" and obtained from Tetra Tech on October 2023.

[3] Includes 3 of solid pipe stickup above grade.

[4] The Horizontal Coordinates are based on California State Plane Zone 5.

[5] If drill cutting temperatures are consistently greater than 150, contractor shall inform Site and Design Engineer for change in well casing materials.

PRELIMINARY DESIGN
NOT ISSUED FOR CONSTRUCTION

SHEET TITLE: PROPOSED WELL SCHEDULE
PROJECT TITLE: CHIQUITA LANDFILL CASTAIC, CALIFORNIA
CLIENT: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA
SCS ENGINEERS ENVIRONMENTAL CONSULTANTS
DATE:
SCALE: AS SHOWN
SHEET: C

Attachment F

Geosynthetic Cover Design and Implementation Schedule

TETRA TECH

MEMORANDUM

To:	Steve Cassulo
From:	Julie Hauenstein P.E. – Tetra Tech
Date:	March 13, 2024
Subject:	Geosynthetic Cover Workplan to Address Condition 50 of the SCAQMD Modified Stipulated Order

1.0 INTRODUCTION

This memorandum summarizes the updated installation workplan for the geosynthetic cover portion of the workplan required by Condition 50 of the Modified Stipulated Order for Abatement with the South Coast Air Quality Management District in Case No. 6177-4. As required by the Modified Stipulated Order and in coordination with the Local Enforcement Agency (LEA), Chiquita Canyon, LLC (Chiquita) is in the process of installing a 30 mil High Density Polyethylene (HDPE) geomembrane cover in phases over portions of the reaction area to counter methane surface exceedances and fugitive LFG emissions in the shorter-term. Attachment 1 to this memorandum shows the approximate area over which the geosynthetic cover is and will continue to be installed.

2.0 GEOMEMBRANE COVER

2.1 UPDATED INSTALLATION WORK PLAN

An exposed geosynthetic cover comprised of 30 mil HDPE geomembrane is continuing to be installed in phases over portions of the reaction area. See Attachment 1 for approximate geosynthetic cover limits. Attachment 2 to this memorandum provides the technical data sheet for this geomembrane cover material. This cover material has a nominal thickness of 30 mils, is textured on both sides, and is white on one side and black on the other. The geomembrane is being installed with the white side up to reduce thermal expansion and contraction.

Chiquita is continuing to install the geomembrane in accordance with its initial plans to install the geomembrane over the west slope of the reaction area as outlined in the plans submitted to SCAQMD in September of 2023. Since the September submittal the planned cover area has been expanded, and the geomembrane cover will be installed over following portions of the Landfill in the following order: (1) the west slope of the reaction area; (2) the top deck of the reaction area; and (3) the north slope of the reaction area. Phase 1 corresponds with the September 2023 submittal; Phases 2 and 3 are an expansion of the original plan. Phases are necessary because of the various preparatory tasks required for cover installation. Chiquita has been sequencing the work so that the preparatory tasks are completed ahead of the cover installation crew and so that cover installation is continuous.

For each section of geosynthetic cover installed, Chiquita is completing the following tasks:

- Chiquita removes the green waste and vegetation that is growing on the area that will be covered and prepares the subgrade for geomembrane installation.
- The existing benches are regarded as necessary to maintain positive drainage.
- Surface landfill gas collectors are then installed in the area to prevent landfill gas from building up pressure under the geomembrane once it is installed.
- Portions of the existing gas collection and control system (GCCS) are taken off-line, and the laterals, headers, and vacuum lines are disconnected and temporarily relocated. The geomembrane is then installed, and the

Tetra Tech
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laterals, headers, and vacuum pipes are replaced above the geomembrane, reconnected, and brought back on-line. The GCCS laterals, headers, and vacuum pipes are installed over the geomembrane so that adjustments can be made to maintain positive drainage within the pipe network.

- Geomembrane pipe boots are installed around vertical landfill gas wells to provide a continuous seal of the geomembrane cover to control surface emissions.
- A sandbag ballast system is continuing to be placed on top of the geomembrane to prevent uplift of the cover.

2.2 MAINTENANCE

Any significant depressions in the landfill surface under the geomembrane will be repaired by cutting back the geomembrane, filling in the depression with clean soil, and then placing a patch of geomembrane material that extends beyond the cut location. A channel and/or pump capable of draining the lowest point of the depression will be constructed or installed if ponding is anticipated for a prolonged period or a change to surface drainage is required. The site engineer will be responsible for directing fill placement in the depression to facilitate drainage. Records of the depths and limits of fill placement will be maintained. Any repairs required to the geomembrane cover shall be done in accordance with original construction methods. The rope and sandbag ballast shall be repaired or replace as necessary to provide adequate ballast from wind uplift.

Elective penetration of the geomembrane cover system associated with installation or maintenance of GCCS components will be initiated in coordination with, and with the approval of, the site engineer. All earthwork and geosynthetic repairs will be completed in accordance with the procedures contained in the specifications and construction quality assurance (CQA) plan that will be prepared for the project. For well boring excavations, the annular space between the well casing and the boring wall will be backfilled with bentonite from a depth of approximately 5-feet below grade to 3-feet below grade, to achieve an adequate seal around the pipe. A geomembrane pipe boot will then be installed around the completed well and welded to the surrounding geomembrane.

Placing a geomembrane cover over an area of the Landfill with rapid settlement could result in delays in adjustments/expansion of the GCCS and repair of low spots due to restrictions in access, the need to mobilize a liner crew to make repairs, and an inability to work in wet conditions.

2.3 ANTICIPATED UPDATED INSTALLATION SCHEDULE

This section provides the anticipated, updated schedule for the installation of this geosynthetic cover. This timeline is subject to change based on weather conditions, material availability, site conditions, and other unanticipated events. Work should not be performed during rain events or when the ground is too saturated as it will disturb the intermediate cover and could result in exposure of waste. The size of the cover area may also be subject to change based on further monitoring of existing or proposed gas extraction wells. To date, approximately 4.7 acres of geosynthetic cover has been installed on the northly end of the west slope of the reaction area.

Week	Approximate Dates	Phasing
Week 1 – 3	March 11 – March 29	Phase 1 Geosynthetic Cover – West Slope*
Weeks 4 – 7	April 1 – April 26	Phase 2 Geosynthetic Cover – Top Deck
Weeks 8 – 11	April 29 – May 24	Phase 3 Geosynthetic Cover – North Slope
Week 12	May 27 – May 31	Finalize reporting

*The area of the Landfill currently covered by the scrim will be replaced by the 30 mil HDPE geomembrane once liquid levels in the area have dropped.

Appendix A.4

Location	Location Name	Group	From Tank	Tank #	Tank Set Up
# 7	Tank Farm	A	2 & 3 (Clarifying Tanks)	8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 28, 29, 30, 31, 32, 33	Manifold
# 7	Tank Farm	A	Group A Individual Holding Tanks	44, 58, 59, 75, 76, 78, 79, 80, 81, 82, 85, 86, 90, 91, 92, 99, 101, 103, 104, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 122, 123, 124,	Isolated
# 7	Tank Farm	B	4 & 5 (Clarifying Tanks)	18	Individual
# 7	Tank Farm	B	Group B Isolated Manifold Treated	19, 20, 21, 22, 23, 24, 25, 26, 27,	Manifold
# 7	Tank Farm	B	Group B Isolated Treated	93, 94	Isolated
# 6	North Perimeter	D		64, 65, 66, 67	Manifold
# 1	Tank Farm 7	D	North Perimeter Holding Tanks	45, 46, 47, 51, 57, 60, 70, 95, 102, 121, 126	Individual
# 4	LC Manifold			1	Manifold
# 7	LC Manifold		LC Manifold Holding Tank Batched	36	Individual
# 7	LC Manifold		LC Manifold Holding Tank	55, 98, 128, 136, 147, 154, 181	Individual
# 8	Primary Canyon				Individual
# 7	Primary Canyon		Primary Canyon (#8) Holding Tank	88	Individual
# 7	Tank Farm 7		Leachate from Westside Scrim	36, 83, 84, 100, 107	Individual

Appendix A.5

CHIQUITA CANYON
A Waste Connections Company

Via E-Mail

Douglas J. Hansen
Division Director
Utah Division of Waste Management and Radiation Control
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Tyler Holybee
Project Coordinator
Enforcement and Compliance Assurance Division
Environmental Protection Agency, Region 9
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Holybee.Tyler@epa.gov

Re: **Chiquita Canyon Landfill**
Off-Site Shipments of Waste Material

Dear Mr. Hansen, Ms. Jacobson, and Mr. Holybee:

Chiquita Canyon, LLC ("Chiquita") is the operator of Chiquita Cayon Landfill ("Landfill"), a Class III non-hazardous municipal solid waste landfill ("Landfill") located in the northern portion of the County of Los Angeles. The Landfill is the subject of a Unilateral Administrative Order ("UAO") issued by the United States Environmental Protection Agency ("EPA") on February 21, 2024, in connection with leachate production and management following an unexpected and unusual underground reaction in an inactive portion of the Landfill (also known as an "Elevated Temperature Landfill" or "ETLF" event). A copy of the UAO is enclosed.

Recent sampling of leachate accumulated in certain tank farm areas at the Landfill has in some instances shown levels of volatile organic compounds ("VOCs"), including benzene, above

the applicable regulatory thresholds under the Resource Conservation and Recovery Act ("RCRA") regulations and California and Utah hazardous waste regulations.[1]

A tank farm is also located at the Landfill that accumulates condensate waste streams separate from landfill leachate, including condensate produced by a waste-to-energy facility located at the Landfill operated by Ameresco Chiquita Energy LLC ("Ameresco") and a very small amount of knock-out condensate from landfill flaring operations. Sampling of condensate from those tanks has also shown levels of VOCs (benzene and methyl ethyl ketone, also known as 2-Butanone), semi-volatile organic compounds (pyridine), metals (arsenic) above the regulatory thresholds. Certain samples of condensate have also shown low flashpoint potentially indicative of ignitability. As of January 31, 2024, Ameresco ceased operations at its facility, and the tanks are no longer accumulating any additional Ameresco condensate.

Chiquita is in the process of making waste determinations for the liquid waste streams but in the interim is managing leachate and condensate from tanks showing elevated constituent levels as potentially hazardous waste, and disposing of those liquids offsite at permitted hazardous waste treatment and disposal facilities. Chiquita has recently reached an agreement with Clean Harbors to transport condensate and some of the landfill leachate that has been identified as potentially hazardous to the Aragonite Incineration Facility located in Tooele County, Utah.[2]

Pursuant to Paragraph 28.a of the UAO and the "Off-Site Rule" under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), EPA has determined that the Aragonite Incineration Facility is an acceptable facility to receive these offsite shipments. It is our understanding that a Verification of Continued Acceptability was completed for the Aragonite facility on February 23, 2024, and is valid until April 24, 2024.

Accordingly, pursuant to Paragraph 28.b of the UAO, we are providing advance written notice to Utah and EPA of our intention to ship leachate and a limited amount of condensate to the Aragonite Incineration Facility. The information required for the notice is provided in the table below, including the anticipated schedule for shipments.

[1] Sampling of landfill leachate has sporadically shown flashpoint potentially indicative of the ignitability characteristic. Metals have also been detected in leachate above the applicable regulatory thresholds in only two sampling events to date (mercury in one instance and lead in the other).

[2] Chiquita has also reached an agreement with Clean Harbors to transport some of the leachate that has been identified as potentially hazardous to the Kimball Incineration Facility in Kimball, Nebraska and the Deer Park Incineration Facility in La Porte, Texas. Separate notice letters are being sent to the Nebraska Department of Environment and Energy and the Texas Commission on Environmental Quality in accordance with the UAO.

Table 1
Information for Notification of Off-Site Shipment

Name and location of the receiving facility	Clean Harbors Aragonite Incineration Facility 11600 North Aptus Road Grantsville, UT 84029 Utah/EPA ID Number: UTD981552177
Type of Waste Material to be shipped	Condensate (potentially hazardous waste that may exhibit the characteristics of toxicity, such as arsenic, benzene, methyl ethyl ketone, and pyridine [D004, D018, D035, and D038], and of ignitability [D001]). Landfill leachate (potentially hazardous waste that may exhibit the characteristic of toxicity, such as benzene [D018], and of ignitability [D001]).[3]
Quantity of Waste Material to be shipped	Chiquita is currently anticipating that up to 2 truckloads of liquid (approximately 10,000 gallons total) would be transported offsite to Aragonite each day. The limited amount of condensate wastes described herein will be transported offsite to Aragonite first, in two truckloads on February 26 and one truckload on February 27 (the second truckload on February 27 would consist of landfill leachate). Thereafter, the offsite shipments of 2 truckloads per day to Aragonite will consist of landfill leachate.
Schedule for the shipment	The first shipment of 2 truckloads to the Aragonite facility is anticipated to leave the Landfill on Monday, February 26, 2024, with 2 more truckloads per day through Friday March 1. The schedule for truck shipments beyond that time will vary depending on the amount of material that has been sampled and is ready to be moved offsite. The anticipated travel time from the Landfill to the Aragonite facility is one day.

[3] All of these waste codes may not be potentially applicable to all leachate waste streams, and only a subset of these codes may apply to leachate from a particular tank farm area.

Method of transportation	As discussed above, leachate will be transported by on-road trucks.

Please contact me if you have any questions concerning this notice.

Regards,

Steve J Cassulo

Steve Cassulo
District Manager
Chiquita Canyon, LLC

cc: Ken Habaradas, Los Angeles County Department of Public Health
Robert Ragland, Los Angeles County Department of Public Health
Liza Frias, Los Angeles County Department of Public Health
Nichole Quick, M.D., Los Angeles County Department of Public Health
Shikari Nakagawa-Ota, Los Angeles County Department of Public Health
Karen Gork, Los Angeles County LEA
Eric Morofuji, Los Angeles County LEA
Renee Jensen, LEA Counsel
Blaine McPhillips, Senior Deputy County Counsel
Emiko Thompson, Los Angeles County Public Works
Alex Garcia, Los Angeles County Department of Regional Planning
Ai-Viet Huynh, Los Angeles County Department of Regional Planning
Wes Mindermann, CalRecycle
Todd Thalhamer, CalRecycle
Janelle Heinzler, CalRecycle
Jeff Lindberg, California Air Recourses Board
Vanessa Aguila, California Air Resources Board
Jack Cheng, South Coast Air Quality Management District
Larry Israel, South Coast Air Quality Management District
Douglas Cross, Los Angeles Regional Water Quality Control Board
Thanne Berg, United States Environmental Protection Agency
Dylan Clark, Department of Toxic Substances Control
Los Angeles County Certified Unified Program Agency

Appendix A.6

Via E-Mail

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Mike Martin
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Tyler Holybee
Project Coordinator
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Environmental Protection Agency, Region 9
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San Francisco, CA 94105
Holybee.Tyler@epa.gov

Re: **Chiquita Canyon Landfill**
Off-Site Shipments of Waste Material

Dear Ms. Valentine, Mr. Martin, and Mr. Holybee:

Chiquita Canyon, LLC ("Chiquita") is the operator of Chiquita Cayon Landfill ("Landfill"), a Class III non-hazardous municipal solid waste landfill ("Landfill") located in the northern portion of the County of Los Angeles, California. The Landfill is the subject of a Unilateral Administrative Order ("UAO") issued by the United States Environmental Protection Agency ("EPA") on February 21, 2024, in connection with leachate production and management following an unexpected and unusual underground reaction in an inactive portion of the Landfill (also known as an "Elevated Temperature Landfill" or "ETLF" event). A copy of the UAO is enclosed.

Recent sampling of leachate accumulated in certain tank farm areas at the Landfill has in some instances shown levels of volatile organic compounds, including benzene, above the applicable regulatory thresholds under the Resource Conservation and Recovery Act ("RCRA") regulations and California and Nebraska hazardous waste regulations.[1]

Chiquita is in the process of making waste determinations for its leachate waste streams but in the interim is managing leachate from tanks showing elevated constituent levels as potentially hazardous waste, and disposing of a portion of that leachate offsite at permitted hazardous waste treatment and disposal facilities. Chiquita has recently reached an agreement with Clean Harbors to transport some of the landfill leachate that has been identified as potentially hazardous to the Kimball Incineration Facility located in Kimball, Nebraska.[2]

Pursuant to Paragraph 28.a of the UAO and the "Off-Site Rule" under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), EPA has determined that the Kimball Incineration Facility is an acceptable facility to receive these offsite shipments. A Verification of Acceptability was completed for the Kimball facility on February 27, 2024, and is valid until April 27, 2024.

Accordingly, pursuant to Paragraph 28.b of the UAO, we are providing written notice to Nebraska and EPA of offsite waste material shipments to the Kimball Incineration Facility. The information required for the notice is provided in the following table, including the anticipated schedule for the shipment.

[1] Sampling of landfill leachate has sporadically shown flashpoint potentially indicative of the ignitability characteristic. Metals have also been detected in leachate above the applicable regulatory thresholds in only two sampling events to date (mercury in one instance and lead in the other).

[2] Chiquita has also reached an agreement with Clean Harbors to transport some of the leachate that has been identified as potentially hazardous to the Aragonite Incineration Facility in Tooele County, Utah and the Deer Park Incineration Facility in La Porte, Texas. Separate notice letters are being sent to the Utah Division of Waste Management and Radiation Control and the Texas Commission on Environmental Quality in accordance with the UAO.

Table 1
Information for Notification of Off-Site Shipment

Name and location of the receiving facility	Clean Harbors Kimball Incineration Facility 2247 South Highway 71 Kimball, NE 69145 NE/EPA ID number: NED981723513
Type of Waste Material to be shipped	Landfill leachate (potentially hazardous waste that may exhibit the characteristic of toxicity, such as benzene [D018], and of ignitability [D001]).[3]
Quantity of Waste Material to be shipped	Chiquita is currently anticipating that up to 2 truckloads of leachate (approximately 10,000 gallons total) would be transported offsite to the Kimball facility each day.
Schedule for the shipment	The first shipments of 2 truckloads to the Kimball facility were filled on February 26, 2024, with 2 more truckloads per day through Friday March 1. The schedule for truck shipments beyond that time will vary depending on the amount of material that has been sampled and is ready to be moved offsite. The anticipated travel time from the Landfill to the Kimball facility is approximately two days.
Method of transportation	As discussed above, leachate will be transported by on-road trucks.

Please contact me if you have any questions concerning this notice.

Regards,

Steve J Cassulo

Steve Cassulo
District Manager
Chiquita Canyon, LLC

[3] All of these waste codes may not be potentially applicable to all leachate waste streams, and only a subset of these codes may apply to leachate from a particular tank farm area.

cc: Ken Habaradas, Los Angeles County Department of Public Health
Robert Ragland, Los Angeles County Department of Public Health
Liza Frias, Los Angeles County Department of Public Health
Nichole Quick, M.D., Los Angeles County Department of Public Health
Shikari Nakagawa-Ota, Los Angeles County Department of Public Health
Karen Gork, Los Angeles County LEA
Eric Morofuji, Los Angeles County LEA
Renee Jensen, LEA Counsel
Blaine McPhillips, Senior Deputy County Counsel
Emiko Thompson, Los Angeles County Public Works
Alex Garcia, Los Angeles County Department of Regional Planning
Ai-Viet Huynh, Los Angeles County Department of Regional Planning
Wes Mindermann, CalRecycle
Todd Thalhamer, CalRecycle
Janelle Heinzler, CalRecycle
Jeff Lindberg, California Air Recourses Board
Vanessa Aguila, California Air Resources Board
Jack Cheng, South Coast Air Quality Management District
Larry Israel, South Coast Air Quality Management District
Douglas Cross, Los Angeles Regional Water Quality Control Board
Thanne Berg, United States Environmental Protection Agency
Dylan Clark, Department of Toxic Substances Control
Los Angeles County Certified Unified Program Agency

Appendix A.7

CHIQUITA CANYON
A Waste Connections Company

Via E-Mail

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Tyler Holybee
Project Coordinator
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Environmental Protection Agency, Region 9
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San Francisco, CA 94105
Holybee.Tyler@epa.gov

Re: **Chiquita Canyon Landfill**
Off-Site Shipments of Waste Material

Dear Ms. Seaton, Mr. Shannon, and Mr. Holybee:

Chiquita Canyon, LLC ("Chiquita") is the operator of Chiquita Cayon Landfill ("Landfill"), a Class III non-hazardous municipal solid waste landfill ("Landfill") located in the northern portion of the County of Los Angeles, California. The Landfill is the subject of a Unilateral Administrative Order ("UAO") issued by the United States Environmental Protection Agency ("EPA") on February 21, 2024, in connection with leachate production and management following an unexpected and unusual underground reaction in an inactive portion of the Landfill (also known as an "Elevated Temperature Landfill" or "ETLF" event). A copy of the UAO is enclosed.

Recent sampling of leachate accumulated in certain tank farm areas at the Landfill has in some instances shown levels of volatile organic compounds, including benzene, above the applicable regulatory thresholds under the Resource Conservation and Recovery Act ("RCRA") regulations and California and Texas hazardous waste regulations.[1]

Chiquita is in the process of making waste determinations for its leachate waste streams but in the interim is managing leachate from tanks showing elevated constituent levels as potentially hazardous waste, and disposing of a portion of that leachate offsite at permitted hazardous waste treatment and disposal facilities. Chiquita has recently reached an agreement with Clean Harbors to transport some of the landfill leachate that has been identified as potentially hazardous to the Deer Park Incineration Facility located in La Porte, Texas.[2]

Pursuant to Paragraph 28.a of the UAO and the "Off-Site Rule" under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), EPA has determined that the Kimball Incineration Facility is an acceptable facility to receive these offsite shipments. A Determination of Acceptability was completed for the Deer Park facility on February 29, 2024.

Accordingly, pursuant to Paragraph 28.b of the UAO, we are providing written notice to Texas and EPA of our intention to ship leachate to the Deer Park Incineration Facility. The information required for the notice is provided in the following table.

[1] Sampling of landfill leachate has sporadically shown flashpoint potentially indicative of the ignitability characteristic. Metals have also been detected in leachate above the applicable regulatory thresholds in only two sampling events to date (mercury in one instance and lead in the other).

[2] Chiquita has also reached an agreement with Clean Harbors to transport some of the leachate that has been identified as potentially hazardous to the Aragonite Incineration Facility in Tooele County, Utah, and the Kimball Incineration Facility in Kimball, Nebraska. Separate notice letters have been sent to the Utah Division of Waste Management and Radiation Control and the Nebraska Department of Environment and Energy in accordance with the UAO.

Table 1
Information for Notification of Off-Site Shipment

Name and location of the receiving facility	Clean Harbors Deer Park Incineration Facility 2027 Independence Parkway South La Porte, Texas 77571 TX/EPA ID number: TXD055141378
Type of Waste Material to be shipped	Landfill leachate (potentially hazardous waste that may exhibit the characteristic of toxicity, such as benzene [D018], and of ignitability [D001]).[3]
Quantity of Waste Material to be shipped	At present, Chiquita anticipates that initial shipments via rail will involve one tanker per shipment (each tanker will have a capacity of approximately 20,000 gallons), with up to three anticipated shipments per week (approximately 60,000 total gallons per week). The quantities of leachate to be shipped may increase in the future depending on need and to the extent the Deer Park facility has available capacity. The quantities of leachate shipped to the Deer Park facility per week may also vary depending on the amount of leachate that is sampled and ready to be moved offsite. The quantities will also depend on various logistical factors such as the availability of rail tankers, the availability of trucks to haul leachate to the rail tankers at the railyard, the amount of time it will take to fill each tanker, and the available capacity at the receiving facility.
Schedule for the shipment	Loading of the first rail tanker for shipment began on February 27, 2024. It is currently anticipated that there will be up to 3 shipments per week. The typical estimated travel time from the railyard in California to the transload facility in Texas is 11 calendar days. As discussed above, the schedule for rail shipments may vary depending on the amount of leachate that is sampled and ready to be moved offsite. It

[3] All of these waste codes may not be potentially applicable to all leachate waste streams, and only a subset of these codes may apply to leachate from a particular tank farm area.

	will also depend on various logistical factors, including those noted above.
Method of transportation	Leachate will be transported to the transload facility in Texas via rail.[4]

Please contact me if you have any questions concerning this notice.

Regards,

Steve Cassulo
District Manager
Chiquita Canyon, LLC

cc: Ken Habaradas, Los Angeles County Department of Public Health
Robert Ragland, Los Angeles County Department of Public Health
Liza Frias, Los Angeles County Department of Public Health
Nichole Quick, M.D., Los Angeles County Department of Public Health
Shikari Nakagawa-Ota, Los Angeles County Department of Public Health
Karen Gork, Los Angeles County LEA
Eric Morofuji, Los Angeles County LEA
Renee Jensen, LEA Counsel
Blaine McPhillips, Senior Deputy County Counsel
Emiko Thompson, Los Angeles County Public Works
Alex Garcia, Los Angeles County Department of Regional Planning
Ai-Viet Huynh, Los Angeles County Department of Regional Planning
Wes Mindermann, CalRecycle
Todd Thalhamer, CalRecycle
Janelle Heinzler, CalRecycle
Jeff Lindberg, California Air Recourses Board
Vanessa Aguila, California Air Resources Board
Jack Cheng, South Coast Air Quality Management District
Larry Israel, South Coast Air Quality Management District
Douglas Cross, Los Angeles Regional Water Quality Control Board

[4] The leachate will either be piped directly from the tankers to the Deer Park Incineration Facility or trucked a short (approximately 2-mile) distance to the facility.

Thanne Berg, United States Environmental Protection Agency
Laura Friedli, United States Environmental Protection Agency
Rick Sakow, United States Environmental Protection Agency
Jennifer MacArthur, United States Environmental Protection Agency
Dylan Clark, Department of Toxic Substances Control
Los Angeles County Certified Unified Program Agency

BEFORE THE HEARING BOARD OF THE

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

In The Matter Of SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, Petitioner, vs. CHIQUITA CANYON, LLC a Delaware Corporation, [Facility ID No. 119219] Respondent.	**Case No. 6177-4** **EXHIBIT B TO DECLARATION OF NEAL BOLTON, P.E.: THE DISCHARGE OF PRESSURIZED LEACHATE CONTAINMENT FEASIBILITY STUDY** Health and Safety Code § 41700, and District Rules 402, 431.1, 3002, 203, 1150 Hearing Date: April 24-25, 2024 Time: 9:30 am Place: Hearing Board South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

March 12, 2024

The Discharge of Pressurized Leachate Containment Feasibility Study

Prepared For:

March 12, 2024

Blue Ridge Services Montana, Inc.
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March 12, 2024

Steve Cassulo,

RE: Stipulated Order for Abatement, Case No. 6177-4, Condition No. 26 Report

In accordance with the Stipulated Order for Abatement issued on January 17, 2024 (Stipulated Order) by the South Coast Air Quality Management District in Case No. 6177-4, Blue Ridge Services Montana, Inc. has prepared this **THE DISCHARGE OF PRESSURIZED LEACHATE CONTAINMENT FEASIBILITY STUDY.**

The Stipulated Order requires the following under Condition No. 26:

> *Respondent shall investigate and report on the feasibility of temporary containment measures for the purposes of controlling leachate and possible discharges of pressurized leachate when drilling additional holes for wells, liquid pumps, temperature devices, or other purposes. This Discharge of Pressurized Leachate Containment Feasibility Study shall include an analysis on the feasibility of a temporary tenting, containment vessel(s)/dome(s), other enclosure(s), or partial enclosure system designed to collect and contain the leachate flow while limiting the escape of odors produced from drilling/discharges of pressurized leachate, to allow for additional well drilling in the Reaction Area. By no later than March 12, 2024, Respondent shall submit to South Coast AQMD [Baitong Chen, Air Quality Engineer, (bchen@aqmd.gov); Nathaniel Dickel, Senior Air Quality Engineer, (ndickel@aqmd.gov), and Christina Ojeda, Air Quality Inspector, (cojeda@aqmd.gov)], a report on the findings of this feasibility study.*

This report evaluates potential containment and mitigation measures for the prevention or control of pressurized leachate releases during well construction and/or maintenance.

Respectfully,

Neal Bolton, P.E.
President
Blue Ridge Services Montana, Inc.
neal@blueridgeservices.com

CONTENTS

ACRONYMS

Acronym	Meaning
BGS	Below Ground Surface
BOW	Bottom of Well
BRS	Blue Ridge Services Montana, Inc.
CCL	Chiquita Canyon Landfill
E&P	Exploration and Production
ETLF	Elevated Temperature Landfill
IC	Isolation Chamber
LEA	CalRecycle Local Enforcement Agency
LFG	Landfill Gas
PLR	Pressurized Leachate Release
PSI	Pounds Per Square Inch
SCAQMD	South Coast Air Quality Management District
SCBA	Self-contained Breathing Apparatus
SCS	SCS Engineers

BACKGROUND

A portion of the Chiquita Canyon Landfill (CCL or Landfill) is experiencing a reaction, also referred to as an Elevated Temperature Landfill (ETLF) event. The reaction is occurring in an area of CCL referred to as the South Coast Air Quality Management District (SCAQMD) Reaction Area (Reaction Area), defined initially in the Stipulated Order by the boundary of Cells 1/2A, 2B/3, 4, and Module 2B/3/4/P2. While most landfills generate some odors associated with uncollected (fugitive) landfill gas (LFG) and leachate seeps, the LFG and leachate seeps affiliated with an ETLF event can produce odors that possess unique characteristics, causing them to be more detectable. The ETLF event is also generating leachate and LFG at a higher rate. The increase in odor complaints in the vicinity of CCL are attributable to the LFG and leachate seeps caused by the landfill reaction.

In accordance with Condition No. 12 of the Stipulated Order, Chiquita Canyon, LLC (Chiquita) has formed a committee of subject matter experts, the Reaction Committee (formerly the Dimethyl Sulfide, or DMS Committee), to aid in the investigation, impact assessment, and remediation of the ongoing landfill reaction and resultant odors. The Reaction Committee is conducting investigations and studies into the cause of the landfill reaction, the impacts of air emissions, interim measures to limit odor transport, and corrective measures to reduce or abate the landfill reaction. The Reaction Committee also reviews data each month and determines whether to revise the current boundaries of the Reaction Area.

Neal Bolton, P.E., President of Blue Ridge Services Montana, Inc. (BRS), is a national expert in landfill operations and is serving as a member of the Reaction Committee to satisfy Condition No. 12(a)(i) of the Stipulated Order, which requires that the Reaction Committee include a subject matter expert in landfill design and operational best management practices. He has provided various consulting support to Chiquita since 2020, including as a member of the consulting team that solved the working face odor issue in 2022. Additionally, he has broad operational experience within the heavy construction and solid waste industry that spans more than 46 years. During that time, Mr. Bolton has provided operational support for more than 500 landfills throughout North America and abroad.

This report summarizes BRS's findings and recommendations pursuant to Stipulated Order Condition No. 26 issued on January 17, 2024. Condition No. 26 requires the evaluation of potential containment options for pressurized leachate release (PLR) events. We evaluated containment options and found nothing feasible.

Since we did not identify any feasible containment options, we looked further to focus on potential solutions to control or prevent these PLR events. We looked within the solid waste industry as well as the exploration and production (E&P) segments within the petroleum industry to evaluate options to control PLR events that occur during both the drilling of new wells and the servicing of existing wells. None of the techniques used in the oil and gas industry were readily applicable to drilling new LFG wells. However, when drilling new wells, slowing the speed at which the bucket auger is raised

or lowered in the well, as well as rotating the bucket auger while raising and lowering may reduce the hydraulic forces produced by surging and swabbing. When servicing existing wells, redirecting the flow of liquids through the use of cactus arm wellheads would minimize any release from the top of the well, and installing an isolation chamber on the wellhead may reduce PLR events. However, these options have not been field tested and may not completely eliminate the impacts of a PLR event. There are also potentially significant operational challenges that must be further evaluated to determine the feasibility of such a chamber at CCL.

There are also drilling methods that can help prevent PLRs, including drilling from the outer edges of the Reaction Area, inward, and in the areas with the highest temperatures, drilling at the upper limits of the reaction as opposed to drilling through the entire reaction. However, stopping the reaction is the ultimate solution. Drilling and servicing cannot be avoided altogether as expanding the LFG control and collection system is critical to mitigating the ongoing reaction.

PLR Containment Options

We began our investigation on the feasibility of various containment measures for PLRs with the list suggested in the Stipulated Order while considering practicality and safety concerns. These include temporary tenting, containment vessel(s)/dome(s), other enclosure(s), or partial enclosure system designed to collect and contain the leachate flow while limiting the escape of odors produced from drilling/discharges of pressurized leachate, to allow for additional well drilling in the Reaction Area. These measures are discussed here.

We evaluated the temporary tenting option by reviewing the types of systems that are currently available. While large clear-span tent-like structures (see Figure 1) are available, they have two initial structural problems. First, these structures are generally placed on level areas. If placed on a sloped area, a buttress or retaining wall must be constructed on the downhill side to provide a level perimeter base to ensure equal load distribution for forces of weight and wind.

Figure 1: Clear-Span Structure

Because these structures also require significant anchoring to keep them stable during windy conditions, several days of setup time are required. These structures are therefore not portable in the context of relocating them every day or two as the current drilling schedule would require.

There is also a limitation associated with height. To achieve the height required for the tower on a drill rig, the tent structure would have to be very tall. Consequently, it would also need to be very wide to resist lateral wind forces. This would be impractical for the same reasons. Finally, to contain the steam

and LFG that is emitted during a PLR, the tent would have to be fully enclosed. This full enclosure could create three potential problems with significant impacts on the health and safety of the workers involved.

1. First, during all drilling operations, some LFG is released. This could create a dangerous, potentially toxic atmosphere within the tent – thus requiring special ventilation and filtering, and/or self-contained breathing apparatuses (SCBAs) for all workers. Under some interpretations, this could be considered a permit-required confined space under Cal/OSHA regulation.
2. Second, if a PLR event were to occur, it could significantly increase pressure within the tent. Depending on that pressure, the tent could burst, tear, or be dislodged from its base resulting in a collapse. These units are not intended to be any type of pressure vessel.
3. Third, by containing the LFG within an enclosed area, explosive gas (i.e., methane) would be concentrated inside the tent. This would create an extremely dangerous situation. Consider the level of explosion prevention controls that must be used inside a methane plant. Internal combustion engines (i.e., from the drill rig, wheel loader, etc.) would introduce a very serious risk of explosion.

For all these reasons, it is our opinion that the temporary tent concepts are impractical and unsafe, and would create many more problems than they could possibly solve – even if there was a way to address the engineering and structural challenges identified. The concept of erecting any type of structure above/around the drilling operation, including vessel(s)/dome(s), other enclosure(s), or partial enclosure system(s), is not feasible for these same reasons.

PLR CONTROL OPTIONS

Since we did not identify any feasible containment options, we expanded our evaluation to potential control options. We looked first for options available within the solid waste industry. We quickly determined the body of knowledge of PLRs within this industry is quite limited. PLRs are known to occur only in association with ETLFs and there are only a handful of ETLFs in North America.

We expanded our search to outside of the waste industry. We looked to the E&P segments within the petroleum industry. In this industry there is wide knowledge and experience dealing with what they refer to as "surface blowouts." In the E&P sector, surface blowouts are much more common and often involve pressures that are measured in the thousands of psi, as opposed to what CCL is dealing with at an estimated 50-70 psi.

As shown below in Figure 2, CCL has experienced PLR events both during well maintenance and when drilling new wells. Thus, we evaluated options used in the petroleum industry that could assist in controlling PLR events that occur in both scenarios. The additional options evaluated were based on modifying or enclosing only the well head and/or borehole, and/or changing drilling practices.

Figure 2: PLR Events

Control Options for Drilling New Wells

LFG wells are drilled with a 3-foot diameter bucket auger attached to a long drill stem. The drill rig is attached to the chassis of a large excavator. It is operated by a single operator. Additional ground support workers help monitor drilling activities, log drilling progress, monitor the condition and temperature of drill spoils, and clean and inspect the bucket as needed.

LFG wells may be drilled to a depth of up to 300 feet, a process that takes 1-3 days depending on depth, drilling conditions, and other factors.

The method of drilling required at landfills contributes to the difficulty of controlling a PLR – particularly a major PLR. This is because the waste industry's method for digging a gas well requires a large hammer grab at the end of a stem. This is lowered into the hole and grabs material from the bottom and brings it to the surface for deposit. This method is used due to the necessity of having a large hole (36" in diameter typically) that is then backfilled with gravel around a perforated casing and plugged with various materials near the top. The casing is only perforated below the plug depth. The plug consists of 2 feet of bentonite clay directly over the gravel, then a layer of soil within 5 feet of the ground surface, then an additional 2 feet of bentonite clay. The plug helps prevent oxygen (in air) from being drawn into the waste mass when the well is connected to the LFG collection. The LFG system induces a negative pressure (i.e., vacuum) on the perforated pipe to draw LFG from within the landfill. The overall well construction process is shown in Figure 3.

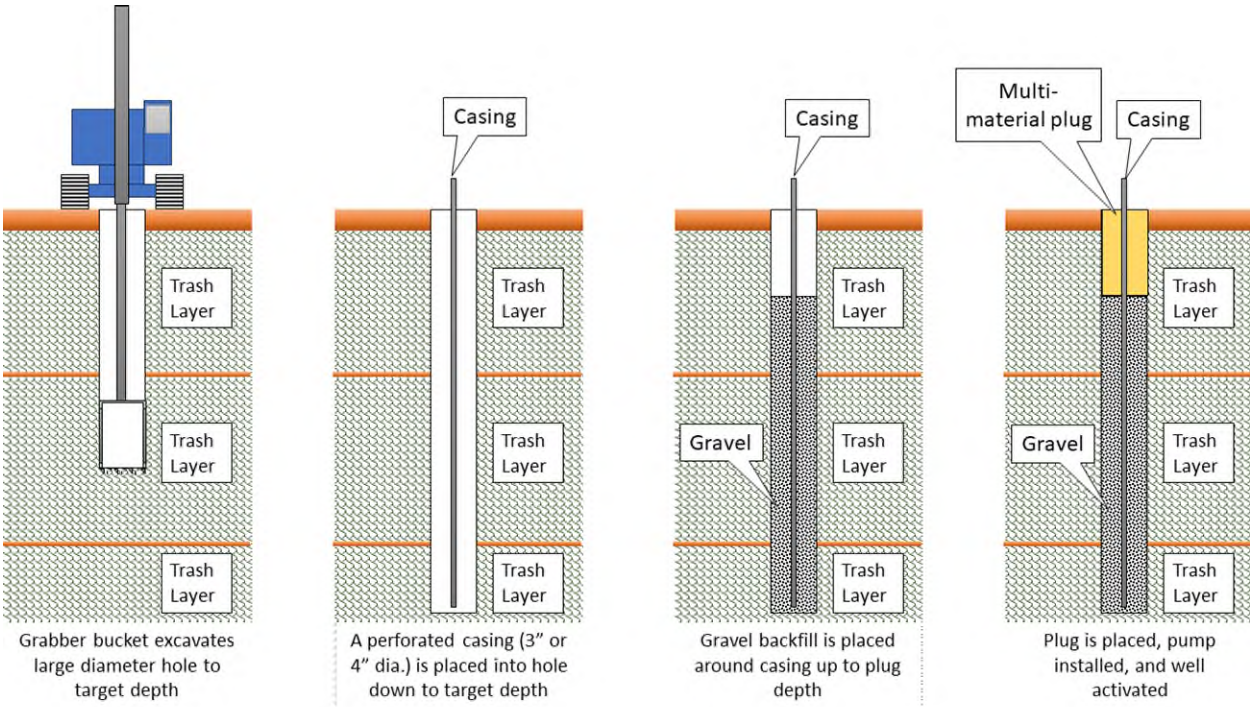

Figure 3: Well Construction

Five of the twelve PLR events at the Landfill occurred during the process of drilling new wells or while backfilling with gravel during the well construction process.

It should be noted that while drilling in or near the ETLF area, the static leachate level is often above the target well depth. Consequently, the bucket auger may penetrate the standing leachate (within the borehole). This may cause surging and/or swabbing.

Surging and swabbing occurs when an object that is approximately the same diameter as the well – in this case the bucket auger – is moved up or down within the well (see Figure 4). As the bucket auger is pushed downward through leachate, the underlying fluid may not be able to pass between the bucket auger and the sidewall of the well. Because this work is being performed in waste, within a landfill, the limited annular space between the bucket auger and the well sidewall tends to be "sealed" by the slurry of paper, plastic, soil, and other debris that is present in the leachate column during the up/down drilling process. Like a syringe, this can increase (surge) pressure downhole and may force leachate into the surrounding waste mass. Conversely, when the bucket auger is pulled upward through leachate (remember, the boreholes are often flooded), this "swabbing" reduces pressure downhole and may draw leachate and/or LFG from the surrounding waste mass. These two forces – surging and swabbing – can change the equilibrium that exists between the vapor pressure of hot leachate and the hydrostatic pressure of the overlying leachate column, thereby triggering a PLR.

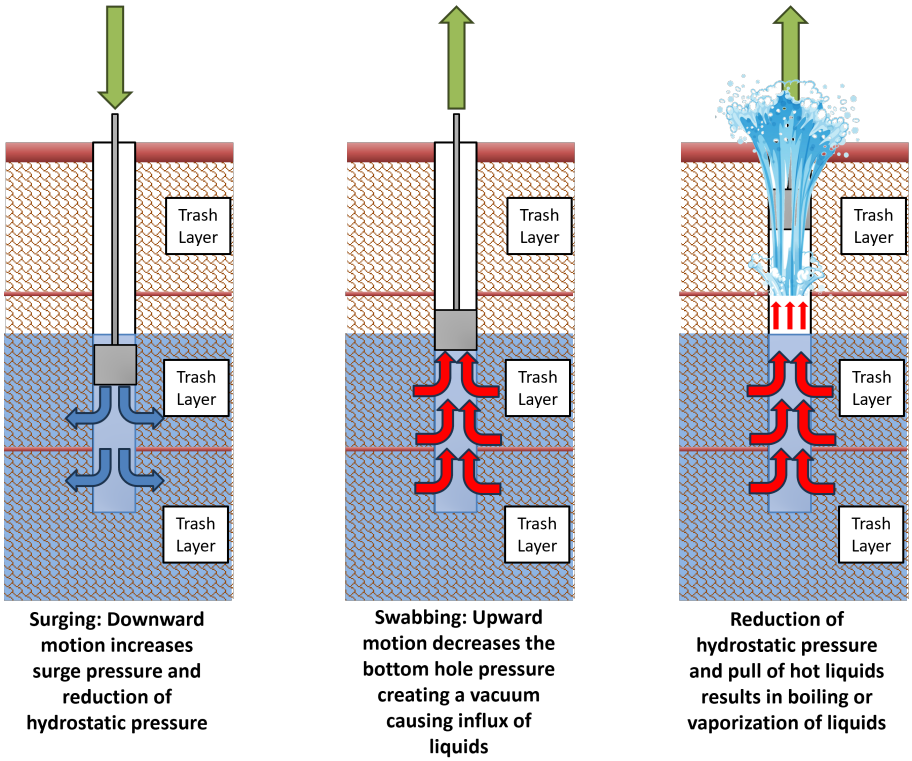

Figure 4: Surging and Swabbing

The hydraulic forces produced by surging and swabbing may be reduced by slowing the speed at which the bucket auger is raised or lowered in the well. Rotating the bucket auger while raising and lowering it may also reduce those forces by allowing more opportunity for pressure above and below the auger to equalize.

We also considered whether techniques used in the oil and gas industry could be applied to drilling LFG wells. We considered options including drilling small pilot holes, drilling adjacent small diameter wells, drilling small diameter test wells or relief wells, adding containment bells, or modifying the existing bucket augers. None of the oil and gas industry options were adaptable to the conditions at CCL as the conditions at a landfill are quite different than the conditions found in the oil and gas industry. With respect to drilling small diameter pilot holes or smaller diameter wells, such smaller diameter wells are not available when drilling in landfills. Drilling through trash poses many difficulties that are not experienced in the oil and gas industry. For example, attempts to use smaller diameter wells or drills can lead to plugged or unusable wells or poor well operation. Adding containment bells would multiply the duration of well installations by a factor of 5-10 times and would also be difficult to engineer due to concerns related to counteracting the estimated uplift force. Modifying existing bucket augers could disrupt the fragile equilibrium that exists in some wells.

Control Options for Servicing Wells

In all cases where a PLR occurred during well servicing, technicians completed removal of the pump to service it and shortly after that a minor PLR occurred. The well, originally at a state of equilibrium, was disrupted when the cap was removed, and the pump pulled out. This disturbance is the likely causation of the PLR.

CCL has already started using one technique to control PLRs that may occur during servicing. New wellheads at CCL have multiple pipes attached to the wellhead. These are referred to as "cactus" wellheads. When servicing wells with cactus wellheads, Chiquita hooks up one of the pipes to a liquid conveyance line or a vacuum truck. That way, if a PLR occurs when removing or replacing a pump or temperature probe, landfill liquids would be directed to the separate arm, minimizing any release from the top of the well. This is achieved with the use of a knife gate at the top of the well. After pump removal, the knife gate is shut, creating a barrier that would divert any liquids to the removal and conveyance line.

We also considered two additional control techniques that we identified as widely used in the oil and gas industry: installing an external pump or installing an isolation chamber.

We do not think that installation of an external pump is a viable option. The external pump, rather than the downhole pump, would eliminate the need to pull/replace pumps for servicing, but such pumps have limited depth of pull far below what is required at CCL.

Installation of an isolation chamber on new wells may reduce PLR events during servicing, but there are significant operational challenges that must be further evaluated to determine whether this is feasible at CCL. The isolation chamber would mount on top of a LFG well with all hoses, cables, and data transmission lines, passing through seals at the top of the chamber. When servicing is required, the equipment would be pulled up into the chamber. Once everything is within the isolation chamber a master valve at the bottom of the chamber would be closed, a bleed off valve to the chamber opened to remove any liquids, and then the chamber itself would be opened with a hammer lock flange and the item requiring servicing removed. Once servicing is complete, the entire system would then be re-attached, and the master valve remains opened, allowing the lowering of the tools back down the well. Parts to construct the isolation chamber appear to be readily available in Central California. The isolation chamber could potentially allow for the total isolation and control of wells during maintenance and would keep crews from physically contacting liquids or gas released. Yet, because this technique has not been used at landfills, more evaluation is needed. There are various constraints, and a PLR could be triggered during installation as pumps need to be pulled. One of the main operational constraints is the additional height on top of existing wells. The isolation chamber needs to be the length of the longest tool in the well, such as a pump. This could potentially add 4 to 5 feet to the top of a well that is already above the ground 3 to 6 feet due to settlement in the reaction area. Such a height addition could pose a safety risk for safely servicing a well.

We also considered one final option, which would include a catchment cone. The last option considered would only be effective for minor PLR events where liquids rise slowly and overtop the casing of the accessed well. This solution would involve a catchment cone that would allow for all of the liquids to be collected and routed to a containment vessel such as vac truck. This would need to

be fabricated and manually installed prior to each servicing event. It would not contain a major PLR event and thus is not an ideal solution for servicing.

PLR PREVENTION

While PLRs cannot be contained, there are some options that may assist with control, although none of the options provide certainty. Because expanding the LFG control and collection system is crucial to mitigating the ongoing reaction, drilling and servicing cannot be altogether avoided. However, there may be methods for preventing PLRs through various drilling strategies. These options must be carefully balanced, however, with the need to relieve pressure and expand the LFG system. Stopping the reaction is the ultimate solution for stopping PLR events.

In reviewing the most recent well temperature data collected when wells are serviced or drilled, it was evident that there was a correlation between the temperature and the PLR events (see Figure 5). Thus, we believe that temperature will be a good indicator of the most high-risk wells.

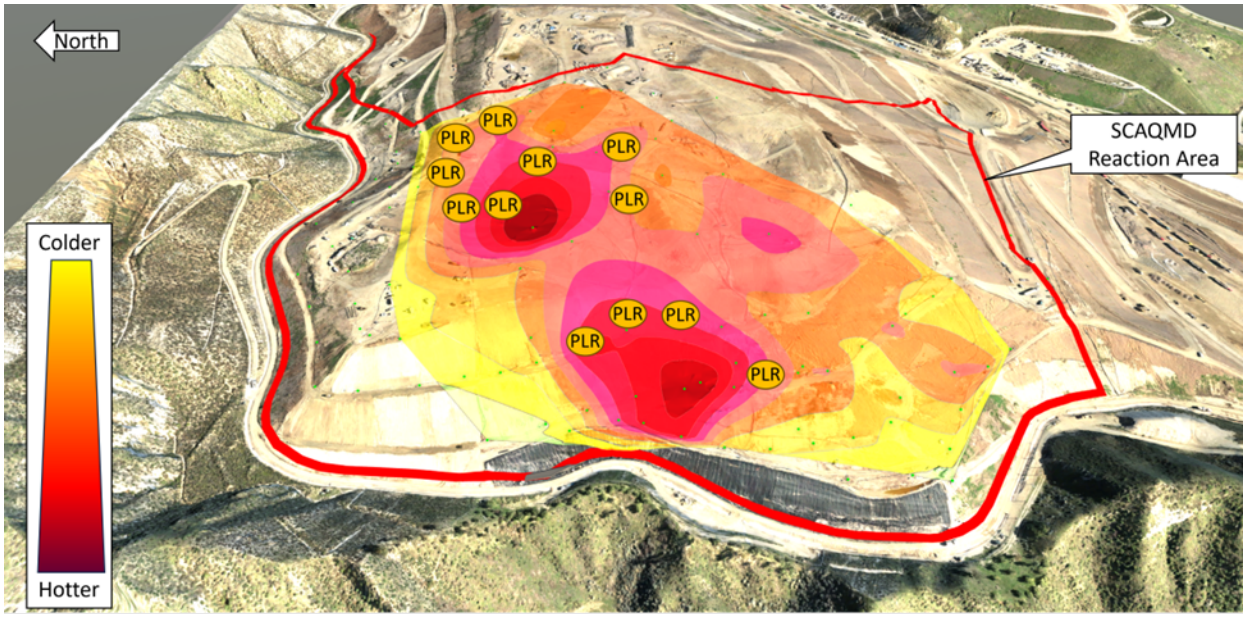

Figure 5: Bottom of Well Temperatures

Currently, CCL is installing over 20 temperature monitoring wells per CalRecycle Local Enforcement Agency (LEA) requirements. These new wells will provide real time data 24 hours a day at depth intervals of 15 feet. We agree with this requirement and approach to expanding the temperature monitoring data. This level of data will allow for better definition of the horizontal extents of zones approaching or exceeding the boiling point of the liquids, as well as better definition of the vertical extents of the hot zones.

With this data, we suggest that CCL continue to pursue two strategies that it has already begun to employ. First, CCL could drill from the outer edges of the Reaction Area, inward. This will relieve pressure and liquids throughout the Reaction Area without drilling directly into the worst areas that

are more susceptible to a PLR event. We also suggest that in the areas with the highest temperatures, CCL drill to the target depth or to the point where the driller observes signs of a potential PLR, or where sidewall conditions deteriorate to the point of potential collapse of the well. Currently drill operators are able to predict these events based on the feel of the drill as it works in the hole and whether they see signs of vapor from the hole. We understand that this technique has been used successfully at other landfills exhibiting ETLF symptoms. Temperature ranges in the Landfill could be a factor to consider, as well as real-time considerations like ending drilling when encountering a pressure change or sidewall conditions dictate. Though the wells will not be at target depth, they can be utilized to extract gas and liquids until such time that the temperature and pressure in that area are reduced. The well casing can then be removed and the well extended down to the intended depth.

This method of partial and perimeter well construction will allow continued well activation to facilitate the needed extraction of liquids and LFG while minimizing the risk of a PLR event from occurring. However, it is crucial to balance these strategies with the need to dewater and remove additional LFG in order to mitigate the reaction.

RECOMMENDATIONS

In summary, there are no feasible containment measures, including no feasible temporary tenting, containment vessel(s)/dome(s), other enclosure(s), or partial enclosure system, designed to collect and contain PLR events. Such measures are impractical for a variety of reasons, including that they would likely require a buttress or retaining wall and significant anchoring, and would need to be very tall and wide, and would introduce serious worker safety issues. Such measures would also require full enclosure, which creates various safety concerns of its own, like the release of LFG and leachate into the fully enclosed space.

Instead, we looked at potential control measures. When drilling new wells, no specific control measures were identified. We suggest reducing the speed at which the bucket auger is raised and lowered into the well and rotating the bucket auger while raising and lowering when the bucket auger is submerged.

When servicing wells, we suggest the use of cactus wellheads, which would direct any landfill liquids to a separate arm during a PLR occurring when removing or replacing a pump or temperature probe. We also suggest that CCL evaluate further the installation of isolation chambers on new wells, which could potentially be used to minimize the risk of a PLR during well servicing.

Finally, we suggest that CCL utilize the data from the over 20 temperature monitoring wells currently being installed to better understand the high temperature areas, which we believe are more susceptible to PLR events. Using this knowledge, Chiquita can employ drilling strategies, including drilling from the outer edges of the Reaction Area, inward, to relieve pressure and liquids throughout the Reaction Area, and to drill at the upper bounds of the reaction, instead of through the reaction to attempt to prevent PLRs while drilling.