OPERATIONS PLAN
For
CENTRAL MAUI LANDFILL

Prepared for

County of Maui
Department of Environmental Management
Solid Waste Division
2200 Main Street, Suite 225
Wailuku, Hawaii 96793

Prepared by

A-Mehr, Inc.
23016 Mill Creek Drive
Laguna Hills, California 92653

September 2004
Revised November 2006
Revised July 2007
Revised February 2008
Revised October 2008
Revised October 2013
Revised January 2014
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This work was prepared by me or under my supervision

M. Ali Mehrazarin, P.E.
Principal Engineer

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1 INTRODUCTION

This Operations Plan (Plan) is submitted to the Hawaii Department of Health (HDOH) as a part of the Solid Waste Management Permit (SWMP) application package for the development and operation of the existing Central Maui Landfill (CML) including the Phase III liner area. This Plan describes the proper operation of the landfill and the associated Entrance Facility consisting of the residential recycling drop-off area (referred to as Station 1) and residential waste drop-off area (Station 2). As the entrance facility is an integral part of the overall CML facility, it should be noted that henceforth, the use of the term "CML" and "facility" in this document is intended to include and encompass entirety of the landfill facility and the entrance facility. The Plan also provides information on the historical development of the facility and future planned facility development after the Phase III area.

Because the SWMP is based on performance of the procedures stated in this Plan, CML operators and administrators must adhere to it. All managers, operators, and administrators must be familiar with facility operations, maintenance, monitoring, and reporting requirements. Proper operation and maintenance of the design features, environmental controls, and monitoring systems will achieve the required performance and projected capacity of the landfill. Continued operation depends on thorough and effective implementation of the Plan.

The Plan outlines the CML operations and presents information necessary for permitting of the Phase III area. An Operations Plan is required by Hawaii Administrative Rules, Title 11, Chapter 58.1 and the site's SWMP permit (Appendix B-1). Table 1 identifies each section of the permit and the section(s) of the Plan that addresses it.

The Plan will be amended throughout the life of the site based on design improvements, experience, or changed conditions. The County will modify the Plan as necessary, and submit changes to the HDOH. The affected sections of the Plan will be identified by the revision date.

This Plan must be kept in the CML Administration Building for reference by CML employees, supervisors, and managers, HDOH inspection personnel, and County of Maui Department of Environmental Management personnel. Additional documents maintained at the CML Administration Building provide design, operating, and general information for facility operators:

- CML Master Plan, February 2017
- CML Landfill Gas Master Plan, February 2007
- CML Closure Plan and Post-Closure Plan, February 2017
- Final Report of Construction Quality Assurance, Phases I & II Closure, May 2007
- Final Report of Construction Quality Assurance, Phase IV-B, April 2007
- Final Report of Construction Quality Assurance, Phase V-A, September 2009
- Final Report of Construction Quality Assurance, Phase V-B, November 2010
- Final Report of Construction Quality Assurance, Phase V-B Extension, December 2018
- CML Policies, Rules and Regulations, Section 15-3-6
- Final Environmental Impact Statement (contains location restrictions)
- Supervisor's Log Book (for daily logging)
- Safety Log Book
- Annual Groundwater Monitoring Summary
- Copy of RCRA Subtitle D and HAR Rules and Regulations
- Site Maps
- Operations Inspection Form (Daily, Weekly, Quarterly, and Annually)

- Random Inspections (completed)

OPERATION PLAN CHECKLIST
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2 GENERAL SITE DESCRIPTION

2.1 General

The CML is a municipal solid waste (MSW) disposal facility owned by County of Maui and operated by the Department of Environmental Management (DEM).

2.2 Permits and Regulatory Compliance

The CML operates subject to conditions and provisions of the Hawaii Administrative Rules Title II, Chapter 58.1, County of Maui Rules, Chapter 15-3, and Solid Waste Management Permit (SWMP) LF-0074-13. The SWMP is issued by HDOH for a period of 5 years. Appendix B-1 contains the current solid waste facility permit.

The land use entitlement under which the construction and operation of the CML is authorized is Special Use Permit (SUP) Docket No. SP97-390, issued by the State of Hawaii Land Use Commission (LUC). The permit was initially granted for 10 years, commencing July 21, 1997, with conditions, some of which restated requirements under the state solid waste regulation in force at the time. A first amendment to the SUP was granted by the LUC in 2002, which allowed the establishment of facilities to support landfill operations, including a new entrance, a recycling and service area for the public, a materials exchange center, a disposal and service area for the public, a scalehouse, a wastewater system, and a wash down area. In 2004, a second amendment to the SUP was granted by the LUC, which allowed a modification to the site plan for the new entrance facility, and an extension of time to initiate construction of the landfill expansion. A third amendment to the permit, granted in 2009, allowed for a 10 year time extension for the permit, as well as an expansion of the site boundaries by 41.2 acres. A copy of the SUP is contained in Appendix B-2.

The County of Maui Integrated Solid Waste Management Plan (ISWMP) defines the use of the CML as the designated disposal site for waste generated within the CML defined service area. The DEM implements and interprets the provisions of the ISWMP. Any issues concerning deliveries from outside the defined service area, types of waste accepted, or conditions of acceptance are to be referred to the DEM director or designee. Any exceptions to policy provisions will be made on a case-by-case basis by the Director or designee.

2.3 Location

The CML facility is located on the isthmus between West Maui and Haleakala, approximately 14,000 feet southeast of the Kahului Airport. The Tax Key Map identification for the site is TMK (2) 3-8-03: 19. Figure 1 is a vicinity map showing the site location.

2.4 Operating Hours

The facility is closed on Sundays and accepts waste and recyclables only during the following hours:

- Monday through Saturday from 6:00 a.m. to 3:00 p.m.
- County of Maui Holidays from 6:00 a.m. to 12:00 p.m.

These hours are posted on the entrance sign along with identification of County of Maui as the owner and operator of the facility and a list of unacceptable wastes.

Operations that include earthmoving and other heavy equipment to complete daily waste covering, stockpile or place cover material, excavate new landfill cells, maintain roads and grounds, or conduct other operations may be done during daylight hours (between sunrise and sunset).

Emergency operations are not limited by these time restrictions.

2.5 Site Size, Elevation and Limits

Figure 2 presents an overall site plan for CML, illustrating the planned Phase III area, the closed Phases I and II, the currently active Phases IV-A, IV-B, V-A, V-B, and V-B Extension, and the entrance facility. Also shown is the future Phase VI area that will be permitted and developed contingent upon County acquisition of the property. Collectively, the six phases illustrated represent the currently planned limits of refuse.

Phases I, II and III occupy land on the east side of Kalialinui Gulch. Phases I and II, approximately 42 acres in area, were operational for approximately 19 years and were filled with solid waste to an approved final elevation of approximately 360 feet above sea level, approximately 80 to 90 feet above surrounding terrain. The Phase I and II area was closed and capped during 2006-2007.

The Phase III footprint (subject to approval by HDOH) is planned and permitted for use as landfill. When developed for landfill operations, Phase III will provide of approximately 16.8 acres of lined area with a dedicated leachate collection sump, disposal capacity of approximately 3 million cubic yards, and projected site life of approximately 10 years. The final grades of Phase III blend into adjacent Phase I and II area, will have maximum elevation of approximately 390 above sea level, and rise approximately 150 feet above surrounding terrain.

Landfill Phases IV through V-B Extension, located in a depleted rock quarry on the west side of Kalialinui Gulch, have a disposal area footprint of 41 acres and are covered under the existing land use approval for expansion of CML (State of Hawaii Land Use Commission Docket No. SP97-390 (Third Amendment (Appendix B-2)).

Phase IV comprises approximately 29 acres, of which approximately 18 acres is constructed with liner and dedicated for waste disposal and 11 acres for the entrance facility (including the landfill administration building, the residential recycling drop-off area, and a residential waste drop-off area), located immediately to the west of the lined area. The Phase IV landfill was constructed in two phases. Phase IV-A consists of 10 acres lined for waste disposal, a leachate pump station and storage facilities, and perimeter storm water system and was placed in service in 2005. Phase IV-B is approximately 8 acres and contains its own leachate collection sump and perimeter storm water system, and was placed into service in 2007. Total refuse capacity of the Phase IV area is approximately 1.4 million cubic yards. Phase IV will be filled to a maximum elevation of approximately 360 feet above sea level, and rise approximately 100 to 120 feet above surrounding terrain.

The Phase V area, abutting the southeast end of the Phase IV cell, is an area of approximately 41 acres, disposal capacity of 3.9 million cubic yards, projected life of approximately 12 years, and is comprised of three development phases (V-A, V-B, and V-B Extension). Phase V-A was placed into service in 2009, V-B was placed into service at the end of 2010, and Phase V-B Extension was placed into service in April 2019. Phase V area will be filled to a maximum elevation of approximately 390 feet above sea level, and rise approximately 90 to 120 feet above

surrounding terrain.

Phase VI is planned as a future expansion area once the County acquires the underlying property. The Phase VI area abuts the southeast end of Phase V-B Extension. The Phase VI area, when developed, will be an area of approximately 16 acres, disposal capacity of 2.75 million cubic yards, and have a projected site life of 7 years. When completed, Phase VI will be filled to a maximum elevation of approximately 390 feet above sea level, and rise approximately 90 to 120 feet above surrounding terrain.

2.6 Types and Quantities of Waste

CML is permitted to accept solid wastes as defined in HAR 11-58.1-03. Sources generating solid waste received at the CML are residential, commercial, industrial, and construction and demolition (C&D) activities. A list of unacceptable waste types is included in Section 13.2.

Special Wastes, defined as solid wastes which because of their source or physical, chemical, or biological characteristics, require special consideration for proper processing and/or disposal, are accepted at CML under the terms of its permits and the Special Waste Acceptance and Hazardous Waste Exclusion Programs described in Section 13.

CML is permitted to accept no more than 1,200 tons of solid waste in one day. CML currently receives and disposes of, on average, 770 tons of solid waste each day.

2.7 Climate

The climate at the landfill is characterized by an average temperature range from 67°F to 84°F and annual precipitation of approximately 20 inches. The design rainfall event at the site for 24-hour, 25-year storm is 7.5 inches, and the 1-hour, 50-year storm is 2.5 inches.

Prevailing winds at CML are generally from the northeast. Winds average approximately 13 miles per hour throughout the year, and reach speeds of 25 miles per hour or more with some frequency (WRCC, 2004).

2.8 Surrounding Area

The CML is bordered by Pulehu Road to the west/southwest (with agricultural land immediately west/southwest of Pulehu Road), by agricultural land to the northwest and east, by the HC&D (formerly Ameron) rock processing plant and Maui Paving facility to the north, and by the depleted rock quarry to the south/southeast.

2.9 User Population

The CML accepts solid waste delivered directly by residents, businesses, commercial collection services, transfer station, and municipalities and agencies within the Island of Maui except for waste generated in Hana Landfill service area. The cities generating solid waste to be disposed of at CML are Wailuku, Kahului, Waiehu, Paia, Waikapu and Puunene from the central section of Maui (representing 54.6 percent of the total waste stream), Kihei and Wailea from the south section of Maui (16.6 percent of the total waste stream) and Lahaina, Honokowai, Kaanapali and Kapalua from the west section of Maui (20.5 percent of the total waste stream). The remaining waste inflow is received from Makawao, Pukalani and Kula and represents approximately 8.3 percent of the total waste stream. The majority of waste is delivered to the site by commercial vehicles with the remainder of the waste stream delivered by County collection trucks and private vehicles.

Based on 2010 census data for the Makawao, Wailuku, and Lahaina districts, the population served by CML is estimated at approximately 142,000 people (Maui County Data Book, 2014).

3 SITE ANALYSIS

This section addresses the criteria established in HAR 11-58.1-13 for siting municipal solid waste landfills.

3.1 Airport Safety

HAR 11-58.1-13(a) establishes the following criteria:

(1) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions that are located within ten thousand feet (3,048 meters) of any airport runway end used by turbojet aircraft or within five thousand feet (1,524 meters) of any airport runway end used by only piston-type aircraft must demonstrate that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft.

(2) Owners or operators proposing to site new MSWLF units and lateral expansions located within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft must notify the affected airport and the Federal Aviation Administration (FAA).

CML is approximately 14,000 feet from the runways at Kahului Airport, and is therefore outside the range within which a bird hazard demonstration is required. Airport administration and the FAA have been notified as required.

The United States Congress enacted Public Law 106-181, the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, on April 5, 2000. The new law included an amendment to 49 USC 44718, Structures Interfering with Air Commerce, which prohibits the construction or establishment of new solid waste landfills within six miles of a public airport served by regularly scheduled flights of aircraft designed for 60 passengers or less. The restriction specifically does not apply, however, "to the construction, establishment, expansion, or modification of, or to any other activity undertaken with respect to, a municipal solid waste landfill if the construction or establishment of the landfill was commenced on or before the date of the enactment" of the new law. Because CML has been in operation since 1987, it is not subject to the restrictions of 49 USC 44718.

3.2 Floodplains

HAR 11-58.1-13(b) places restrictions on facilities located within 100-year floodplains. CML is located approximately 3 miles from the nearest shoreline, at elevations higher than 200 feet above mean sea level. The site area is designated as "Zone C" on flood insurance maps, designated as areas outside the 500-year flood boundary. (Masa Fujioka & Associates, 1997a). Therefore, the site is not subject to restrictions associated with 100-year floodplain areas.

3.3 Wetlands

HAR 11-58.1-13(c) prohibits or restricts the development of landfills in wetlands. The CML site is former agricultural land that was more recently developed and mined as a rock quarry. There are no wetland areas located within the site. Vegetation and soils in the area are not indicative of wetlands. A significant portion of the area surrounding the site is recently cultivated agricultural fields. The vegetation in the Kalialinui Gulch consists mainly of common species that are not typical wetland plants. (Masa Fujioka & Associates, 1997a)

3.4 Fault Areas

HAR 11-58.1-13(d) prohibits or restricts the development of landfills within 200 feet of an active earthquake fault. No faults have been identified in the vicinity of CML, and regional mapping does not show mapped fracture or fault zones trending toward the landfill or in adjacent properties. (Masa Fujioka & Associates, 1997a)

3.5 Seismic Impact Zone

HAR 11-58.1-13(e) establishes the following criteria:

New MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the director that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

"Seismic impact zone" means an area with a ten per cent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a per cent of the earth's gravitational pull (g), will exceed 0.10g in two hundred fifty years.

"Lithified earth material" is defined in USEPA regulations Subtitle D, Section 258.14 as "all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments".

The United States Geological Survey (USGS) has classified the island of Maui in UBC Seismic Zone 2B, defined as having a 10% probability of exceeding a peak ground acceleration of 0.15 g in 50 years. According to USGS seismic hazard maps and data, the peak horizontal ground acceleration expected to occur with a probability of ten percent in 250 years is 0.36 g. Therefore, Maui is located within a seismic impact zone and a seismic impact study must be conducted to demonstrate the landfill is designed to withstand the maximum horizontal acceleration.

The landfill slopes and containment system designs have been analyzed to demonstrate they will resist the maximum horizontal acceleration anticipated at the site. Using the final grades, the stability of the final landfill slopes were evaluated using PCSTABL5M a computer-based analytical program that computes static and pseudo-static factors of safety for the selected critical slope cross-sections. Two analysis were conducted, one for each independent landfill structure on each side of the Kalialinui Gulch. One analysis addresses Phases I through III, and the other addresses Phases IV through VI. For each landfill structure, three critical slope cross-sections were selected and analyzed. Both sets of analyses found for all of the cross-sections the static factor of safety exceeds 1.5 and the pseudo-static factor of safety exceeds 1.0, the generally accepted critical value for static and pseudo-static slope stability. Also, there will be no permanent deformation of the liner systems during the design seismic event. Appendix C contains the referenced slope stability reports.

3.6 Unstable Areas

CML is not located in an unstable area. The CML site was previously used for rock quarrying, and the surrounding terrain is relatively level ground with no known earthquake faults in the vicinity. The site does not contain any geologic or geomorphologic features that could result in differential settling, landslides or other events that potentially occur in unstable areas.

3.7 Tidal Wave Zone

The University of Hawaii, in cooperation with the Hawaii Civil Defense System, has established tsunami evacuation maps for coastal areas of the Hawaiian Islands. These maps define the expected areas along the coastline that may be subject to inundation by tidal waves. The maps for Maui are posted on the County of Maui Emergency Management Agency web site. Maui Map 8, covering the coastal area from Waihu Point to Kanaha Beach Park (opposite Kahului Airport), demonstrates that the tsunami evacuation zone is limited to areas within less than one mile of the shoreline. CML is located more than three miles from the coastline, at an elevation of more than 200 feet above sea level. Therefore, it is well outside the area potentially impacted by tidal waves.

3.8 Consistency with Local Zoning Ordinances

The County of Maui Planning Commission held a public hearing on the proposed expansion of CML and recommended approval of a Third Amendment to the Special Use Permit No. SP97-390 on October 28, 2008. The Hawaii State Land Use Commission approved the Third Amendment to the Permit in 2009. Appendix B-2 contains a copy of the Special Use Permit (Third Amendment).

3.9 Buffer Zone to Public Areas

The certified Environmental Impact Statement (EIS), on which the Special Use Permit for the CML expansion was based, contains drawings showing the general location of waste fill areas. Drawings contained in the EIS shows the west boundary of Phases IV, V and VI located approximately 100 to 150 feet from Pulehu Road, and a notation that the limits of waste are to be set back 50 feet from the property line. The SWMP requires disposal activities to be a minimum of 150 feet from the Pulehu road property line and 80 feet from any agriculture area. All Phases, existing and planned, satisfy the above property offset requirements.

There is no residential zoned property located near the site.

CML shall take appropriate actions as necessary to rectify impacts from the site on nearby areas, including adjacent public roads or environmentally sensitive areas.

4 SITE UTILIZATION CONCEPT

4.1 Site Plan

Figure 2 presents the overall site development plan illustrating the entrance facility, existing and planned disposal areas, and associated facilities, which are discussed in further detail in the following sections.

4.2 Access

The CML entrance facilities and disposal area are accessed by an all-weather entrance road from Pulehu Road. The gate at the entrance is to be locked at all times when the site is unattended, and closed during hours the facility is not open to the public. Keys to the gate are limited to landfill employees. Distribution of additional keys must be authorized by appropriate County of Maui employees and emergency services.

A sign installed at the entrance is maintained in good condition and appearance. The sign identifies the CML by name, indicates the operating days and hours, waste materials not accepted, and the name, address and telephone number of the site operator (County of Maui Department of Environmental Management). It indicates that all people entering the facility must check in at the Administration Building.

4.3 Entrance Facility

The entrance facility roads has all-weather asphalt paving. It serves the private vehicles delivering loads directly to the residential recycling & self-haul waste receiving areas (Stations 1 and 2 respectively) and the transfer trucks, commercial route trucks, and other vehicles delivering waste to the active landfill area. The entrance facility incorporates drainage control and turnouts to the minor access roads. It is to be maintained in good repair to provide trucks and other vehicles easy transit. Dust control is to be practiced as needed. The gates to the entrance facility and operating area are to be closed and locked during non-open hours.

The entrance facility consists of the following:

- Paved access road
- Gated entrance
- Scale and scalehouse with radiation monitor
- Administration building, including offices, an employee break room, and locker rooms
- Bins for receipt of self-haul waste
- Bins for receipt of residential recyclable materials
- Non-Potable water storage tank for domestic and fire control purposes

The following areas host activities associated with the entrance facility waste transfer and recycling operation:

- Station 1 – Residential Recyclable Drop-Off Area
- Station 2 – Residential and Commercial Self-Haul Waste Drop-Off and Residential Special Waste Storage Area

The paved road between the site entrance and the truck scales has in excess of 600 feet of length for queuing and staging of vehicles, which is sufficient for at least 20 commercial collection

vehicles or 30 residential self-haul vehicles.

4.4 Utilities

Electrical: The primary source of power to the facility is provided by Maui Electric Company (MECO) and is three-phase 120/208 V. Also providing electrical power to the site, and offsetting power purchased from MECO, are three 10-kW wind turbines installed in the entrance facility area near the residential waste drop-off area (Station 1).

Water: Bottled water is provided for drinking purposes. Water for (non-potable) domestic use and fire control is delivered to the storage tank by tanker truck from existing off-site domestic supply sources. The production well, located to the north of entrance facility, is planned for integration into the site water supply system to act as the primary water supply source for domestic, fire control, and landfill operational uses.

Sanitary: Sewage disposal from facilities in the administration building is by on-site septic tank and leach field.

Communications: Telephone service is provided to the site by Hawaiian Telecom. 2-way radios are used for on-site communications between operations personnel.

4.5 Lined Landfill Cells

Phase IV-A consists of approximately 10 acres of lined area. The liner consists of the prepared natural soil base, a geosynthetic clay liner (GCL), and a 60-mil geosynthetic (HDPE) geomembrane. A gravel or geocomposite drainage layer with leachate collection pipes in a bed of gravel is installed above the geomembrane to collect leachate and convey it to the dedicated sump for removal from the cell. An operations layer of protective soil, with a minimum thickness of 36 inches on the floor and 24 inches on the slopes, is placed above the liner system to protect it from damage by the overlying waste or during landfill operations. Detailed operational procedures for operations over the liner system are discussed in Section 10.1.6.

Phase IV-B consists of approximately 8 acres of lined area. It is constructed with a prescriptive composite liner system consisting of two feet of low permeability soil with a maximum permeability of 1.0×10^{-7} cm/sec, overlain by an 80-mil HDPE geomembrane. The leachate collection system on the floor is a 12-inch thick layer of gravel with a central gravel-filled trench in which an 8-inch perforated pipe is laid to conduct leachate to a double-lined internal sump. A 16-ounce per square yard geotextile provides a leachate collection system for the sideslopes. The leachate collection pipe and sump are sized to serve as the leachate collection system for landfill Phase IV-B and Phases V-A and V-B. The operations layer in Phase IV-B is a 24-inch layer of soil. The Phase IV-B liner system is hydraulically separate from the Phase IV-A system.

Phase V is approximately 23 acres of lined area, of which approximately 12 acres was constructed in 2009 as Phase V-A, 6 acres in 2010 as Phase V-B, and 5 acres in 2019 as Phase V-B Extension. The liner and leachate collection systems in Phase V and V-B Extension are identical to those of Phase IV-B. The Phase V-A and V-B leachate collection trench and pipe is connected to the Phase IV-B system and drains to the Phase IV-B leachate collection and removal sump. The Phase V liner system is hydraulically separate from the Phase IV-A system. Phase V-B Extension is equipped with a dedicated leachate collection and removal sump which will also service the future Phase VI liner area. This sump is of similar design as the Phase IV-B sump.

The operations layer in all areas of Phase V and V-B Extension is a 24-inch layer of soil.

The Phase III area, totaling approximately 16.8 acres of liner, will be developed in 2 sub-phases: Phase III-A (approximately 8.5 acres of liner) and Phase III-B (approximately 8.3 acres of liner). Phase III-A will be constructed with a leachate collection and removal sump which be sized to service the entire Phase III footprint. The Phase III liner will tie into the north edge of Phase I and II waste footprint. The liner system, leachate collection system, and protective cover system for the Phase III area will be the same design as those used in Phases IV-B, V-A, V-B, and V-B Extension.

The liner system, leachate collection system, and protective cover system for the Future Phase VI area is the same as those used in Phases IV-B, V-A, V-B, and V-B Extension. Phase VI, approximately 16 acres of lined area, will be developed in two sub-phases, Phase VI-A (approximately 8.5 acres of liner), and Phase VI-B (approximately 7.5 acres of liner).

Figure 3 presents liner design grades for Phases III and VI, and includes as-built conditions in Phases IV-A, IV-B, V-A, V-B, and V-B Extension, and schematic grades of the refuse bottom in Phases I and II.

4.6 Landfill Development Sequence

Phases I and II were the initial landfill cells operated at CML. Phase I and II were operational for approximately 19 years and were closed and capped during 2006-2007. Phase IV-A was constructed in 1998-99, but remained unused until permit and regulatory issues were resolved in 2004. During 2004 various modifications were made to resolve these issues and allow disposal operations to begin. Among the modifications was the temporary division of the cell into three parts, each approximately 3 to 4 acres in size, made in order to minimize the area of active cell that does not have at least the first lift of waste in it, thereby minimizing the potential generation of water required to be treated as leachate. Operations began in Phase IV-A on November 2, 2005.

Phase IV-B was constructed between October 2006 and April 2007, with operations beginning in March 2007.

The Phase V area is comprised of three development phases (V-A, V-B, and V-B Extension) totaling approximately 23 acres of lined area. Phase V-A was placed into service in 2009, Phase V-B was placed into service at the end of 2010, and Phase V-B Extension was placed into service in 2019. The collective areas of Phase IV-A, IV-B, V-A, V-B, and V-B Extensions are projected to provide operational capacity into late-2021, at the current rate of refuse intake.

The Phase III area is to be developed in two sub-phases: Phase III-A (approximately 8.5 acres of liner) and Phase III-B (approximately 8.3 acres of liner). Phase III-A will be developed first and is projected to provide disposal capacity through 2024. Phase III-B will be developed as Phase III-A approaches its capacity and will provide additional disposal capacity through 2030. Phase III is currently the location of a sludge and green waste composting operation, and a receiving and storage facility for fats, oils, and grease (FOG) which operates under a separate permit issued to Maui EKO Systems, Inc. (EKO), the 3rd party contractor responsible for its operation. Prior to commencement of the Phase III-A area construction, the County and EKO plan to reconfigure the composting operation into the 8.5 acres of the Phase III-B area. This reconfiguration will permit the removal of all composting-related operational activities from the Phase III-A area, permit

commencement of construction of Phase III-A, and enable on-going operation of the compost facility.

Phase VI area development will follow Phase III, contingent upon the County's acquisition of the property.

Figure 4 presents the planned final grading plan for the currently active areas of Phases IV through V-B Extension and the proposed Phase III area.

4.7 Leachate Management System

4.7.1 General

The leachate collection system is designed to collect water that has contacted waste and percolated through the refuse fill or run off the active area. The leachate collection system consists of drainage media placed above the liner system, and a system of perforated pipes leading to a collection sump from which the leachate is pumped. The collection system is designed and operated to maintain the hydraulic head above the lowest point of the liner system at a level not exceeding 12 inches, as required by State regulation and the site's solid waste management permit. Phase IV-A and Phase IV-B have separate leachate collection systems of significantly different designs, as described in the following sections.

4.7.2 Phase IV-A Leachate Collection System

The drainage media in most of Phase IV-A is a geocomposite material consisting of a geonet covered by geotextile. In the lowest area of the cell, generally between elevation 209 and 210, the 2004 retrofit project installed a 12-inch thick layer or gravel drainage rock to replace the geocomposite. A network of perforated pipes is installed above the liner to collect leachate from the drainage layer. In the majority area where the drainage layer is geocomposite, the pipes are laid directly on the geocomposite and then covered with gravel and geotextile, and in the lower area the pipes are placed above the liner within the gravel drainage layer.

The collection piping in Phase IV-A slopes to a low point in the cell, where the main header pipe penetrates the liner system through a prefabricated fitting. The header pipe, which is solid wall pipe outside the liner system, discharges to the leachate manhole outside the northeast corner of the cell. As initially constructed, leachate was accumulated within the concrete manhole, from which it was pumped by a pair of submersible pumps and a float-actuated automatic control system. In response to ongoing concerns of the Hawaii Department of Health regarding the integrity of the concrete manhole as a containment system, in mid-2007 a 500-gallon polyethylene tank was installed in the manhole and the existing pumping system replaced with a single submersible pump. The 12-inch pipe discharging to the manhole was modified to discharge to the bottom of the new tank, and the pump controls set to maintain a minimum of 20 inches of liquid in the tank to provide a hydraulic seal to minimize migration of landfill gas from the LCRS collection system into the manhole. Figure 6 illustrates the tank installation and the settings of controls for the pump. In 2016 epoxy coating was applied to the interior of the manhole to seal the secondary containment system. Additionally, an explosion proof pump was installed in the secondary containment system to pump rainwater from the bottom of the manhole to the HDPE tank.

By regulation, the leachate head over the liner (saturated depth of water in the drainage layer)

within the landfill cannot exceed 12 inches. The installation of the tank in the manhole ensures that this requirement will always be met. Based on the original as-built plans for Phase IV-A, the lowest elevation of the liner in the cell is 209 feet above sea level. Therefore, the leachate management system must ensure that the elevation of water in the drainage layer does not exceed 210 feet above sea level. The leachate header pipe leaves the cell at the low point (209 feet), and enters the manhole with an invert (bottom of pipe) elevation of 207.9 feet. As modified in 2007, the pipe discharges to the bottom of the tank at an elevation of approximately 201 feet, and the pump controls are set to maintain a maximum depth of 3.5 feet in the tank (elevation approximately 204.5 feet, with an alarm level set at elevation 206 feet to trigger visual and audible alarms. In the event of an uncorrected failure of the pumping system, leachate would overflow the tank into the concrete manhole at an elevation of approximately 207 feet.

Leachate is pumped from the manhole tank to above-ground storage tanks. The leachate storage tanks consist of eight (8) 4,000-gallon polyethylene tanks located within a concrete secondary containment structure near the pump station. Leachate enters the first two tanks, which are manifolded together. When both tanks are full, they overflow into the next two tanks, which in turn overflow into the subsequent tanks. Leachate collected in the storage tanks is either trucked to a local wastewater treatment facility, transferred to the landfill water truck for use at the active disposal face for litter control and compaction improvement, or reintroduced back into the waste in Phase IV-B or Phase V through the leachate reintroduction system.

Detailed procedures for operating and monitoring the leachate management system are contained in Section 8.

4.7.3 Phases IV-B, V-A, and V-B Leachate Collection System

The leachate collection drainage layer in Phase IV-B and Phases V-A and V-B is a 12-inch thick layer of gravel placed above a cushion geotextile above the geomembrane liner, and covered with a filter geotextile. The cell floor is graded with a minimum slope of 2 percent to drain to a central gravel-filled trench in which an 8-inch perforated HDPE pipe is placed. The cell floor and trench are sloped toward a collection sump at the northeast corner of the cell. The sump is totally within the lined area, with a bottom depth of four feet below the adjacent floor area. It is lined with four feet of low-permeability soil and two layers of 80-mil HDPE geomembrane, and filled with gravel to the level of the adjacent drainage layer on the floor. The Phase IV-B sump has an estimated temporary storage capacity of approximately 70,000 gallons, and currently also is the leachate withdrawal point for Phases V-A and V-B. A vertical riser pipe assembly is installed at the lowest elevation of the sump, from which leachate is withdrawn using an actively-controlled submersible pump. Similar to Phase IV-A, the Phase IV-B system is designed and operated to maintain a maximum 12-inch hydraulic head above the liner system. The lowest elevation of liner at the edge of the Phase IV-B sump is 211 feet; therefore, the compliance level is 212 feet above sea level. The sump must be monitored and pumped out in order to maintain leachate levels in the sump below elevation 212 feet. Procedures for operating and monitoring the leachate management system to meet this requirement are contained in Section 8.

The Phase IV-B sump is equipped with valve controls to automatically divert leachate to the leachate reintroduction system. The leachate reintroduction system includes pipes to deliver leachate from the Phase IV-B sump to geotextile lined, gravel filled horizontal infiltration trenches in Phase V-A and V-B, and infiltration galleries in Phase IV-B. Additionally, the leachate reintroduction system is equipped with a riser connected to the infiltration trenches by which leachate, transported from the leachate storage tanks via tanker trucks, can be manually gravity fed into the reintroduction system. The leachate reintroduction system will be expanded into

Phase V-B Extension and other future lined areas. Operating procedures for the leachate reintroduction system are also detailed in Section 8.

4.7.4 Phase V-B Extension Leachate Collection System

Similar to the leachate collection system constructed in Phase IV-B and Phase V-A and V-B, the leachate collection system for Phase V-B Extension consists of a 12-inch thick layer of gravel placed above a cushion geotextile, over a layer of 80 mil HDPE geomembrane, and covered with a filter geotextile. The liner grades for the Phase V-B Extension liner system drain to a dedicated LCRS sump located in the northeast corner of the Phase V-B Extension area.

The floor area of the liner is graded towards a central leachate collection trench at a 2% slope. The central northerly oriented LCRS trench, sloping at approximately 1%, collects leachate from the 12-inch thick gravel drainage media covering the liner system, and conveys it to the sump in perforated 8-inch diameter HDPE pipes. This arrangement generally follows contours of the former quarry bottom.

The leachate collection sump in Phase V-B Extension is equipped with a vertical riser pipe system similar to that of Phase IV-B, and has a storage capacity to accommodate leachate production from Phase V-B Extension and all of the future Phase VI. A vertical riser pipe assembly is installed at the lowest elevation of the sump, similar to the LCRS riser in the Phase IV-A sump, from which leachate is withdrawn using an actively-controlled submersible pump. This system is designed and operated to maintain a maximum 12-inch hydraulic head above the liner system. The lowest elevation of liner at the edge of the Phase V-B Extension sump is 227 feet; therefore, the compliance level is 228 feet above sea level. The sump must be monitored and pumped out in order to maintain leachate levels in the sump below elevation 228 feet. Procedures for operating and monitoring the leachate management system to meet this requirement are contained in Section 8. The leachate reintroduction system servicing Phases IV-B, V-A and V-B will be expanded into the Phase V-B Extension area as refuse fill operations progress.

4.7.5 Phase III Leachate Collection System

Similar to the leachate collection systems constructed in Phases IV-B, V-A, V-B and V-B Extension, the leachate collection system for Phase III will consist of a 12-inch thick layer of gravel placed above a cushion geotextile, over a layer of 80 mil HDPE geomembrane, and covered with a filter geotextile. The liner grades for the Phase III liner system will drain to a new dedicated LCRS sump located in the north end of the Phase III liner area.

The floor area of the Phase III liner will be graded towards a central leachate collection trench at a 2% slope. The central northerly oriented LCRS trench, sloping at approximately 1%, will collect leachate from the 12-inch thick gravel drainage media covering the liner system, and convey it to the sump in perforated 8-inch diameter HDPE pipes.

The leachate collection sump in Phase III will be equipped with a vertical riser pipe system similar to that of Phase IV-B and Phase V-B Extension, and will have a storage capacity to accommodate leachate production from Phase III. Additionally, Phase III will be developed with a leachate reintroduction system similar to the system currently servicing Phases IV-B, V-A and V-B.

4.7.6 Entrance Facilities Leachate Management

Station 2 roll-off bays drain into a central catch basin which is connected to a second catch basin

located next to the CML Leachate Tank farm. The catch basin system is designed to collect water that has the potential to have contacted waste and percolated from waste received at Station 2. All runoff from Station 2 is managed as leachate and is gravity fed to the second catch basin where it is then pumped into eight, four-thousand gallon HDPE above-ground storage tanks at the leachate tank farm. Methods of disposal of leachate is discussed in Section8.

4.8 Construction Procedures

All disposal cells at CML are constructed by qualified contractors working under a construction quality assurance (CQA) program directed by an experienced professional engineer. The following requirements must be met:

- Cell construction or significant modification to previously constructed cells will not occur prior to HDOH approval of final construction plans and specifications prepared and certified by a professional engineer, registered in the state of Hawaii, with at least 5 years' experience in designing landfills.
- A registered land surveyor will survey the prepared subgrade of the disposal area prior to placement of liner materials, to verify it is constructed according to approved plans.
- Geosynthetic liner materials will be installed under the supervision of the material manufacturer, or shall be installed by a contractor who has installed a minimum of 500,000 square feet of similar types of liners.
- An experienced CQA landfill inspector with at least five years of experience in landfill liner CQA, working at the direction of a professional engineer, will observe the liner installation.
- A complete report of the installation will be prepared by the CQA inspector and professional engineer, documenting the installation of liner systems including the observation and testing of welded seams.
- A professional engineer registered in Hawaii, with at least five years of experience in designing landfills, will review the inspections, test records and CQA report, and certify that the liner and leachate collection system have been constructed in accordance with the approved plans.
- No waste will be placed in a newly lined area until it has been certified by the engineer and approved by the Department of Health.

4.9 Storm Water Management Facilities

A storm water "Notice of General Permit Coverage" issued by HDOH governs the management and discharge of storm water from CML operations and specifies discharge conditions to be met (see Appendix B-3). An updated Storm Water Pollution Control Plan (SWPCP) was prepared in January 2019 for submittal with the County's application for renewed storm water discharge permits for Phases I, II, IV, V, and V-B Extension. A copy of the plan is contained in Appendix I.

Storm water facilities are designed using County of Maui Rules for the Design of Storm Drainage Facilities criteria to serve both active and closed landfill conditions. The active landfill area does not contribute to the storm water system. Rainwater that contacts waste in the working landfill area is collected and conveyed to the leachate management system. Soil berms are maintained between the active and inactive areas to direct the uncontaminated storm water away from the leachate collection system.

Storm water from the Phase IV, V, and V-B Extension areas is directed by shallow paved perimeter drainage channels to the sedimentation/infiltration basin, located to the north of Phase

IV-A and immediately south of Kalialinui Gulch, with a storage capacity of approximately 7.4 acre-feet. The basin was designed to retain the average flow of a 25-year, 24-hour storm (Masa Fujioka & Associates, 1997c).

Storm water from the closed Phases I and II landfill is collected in pipes and paved channels and directed to a retention basin constructed during the 2006-2007 closure project.

Both storm water basins primarily discharge the collected water by infiltration. When the basins reach full capacity, additional water will overflow from the spillways directly into the Kalialinui Gulch. As of August 2019, there has been no discharge to the Gulch from either basin.

The existing Phase III basin will be removed to make room for development of the Phase III disposal cell. Therefore, stormwater from the future Phase III disposal area will be collected in similar paved perimeter channels for final disposition in the Phase IV sedimentation basin.

4.10 Landfill Gas Collection and Control System

In conformance with state and federal requirements, the initial phases of the landfill gas collection and control system (GCCS) was installed at CML in 2008. The initial system included a network of vertical gas extraction wells in the closed Phases I and II area and an enclosed flare for LFG destruction. This system was later expanded into the Phase IV and Phase V area. Phases V-A, V-B, and V-B Extension were developed with horizontal gas collectors. Leachate collection system cleanouts in Phase IV-A were also connected to the system. The LFG collection system is planned for expansion into the Phase III, and other future phases of landfill development. Newly developed landfill cells will be constructed with horizontal collectors constructed above the leachate collection system drainage layer. These collectors will be supplemented by additional horizontal collectors installed at higher elevations within the refuse fill. Vertical gas extraction wells will be installed in refuse fill areas as needed to supplement the horizontal collectors and provide additional emissions control as necessary.

All collected LFG is combusted in the flare. The LFG flare system consists of a gas handling skid, condensate storage tank, and an enclosed flare with capability of incinerating gas condensate. In the future an energy recovery system utilizing LFG may be added to the system.

Figure 6 presents an overview of the existing and planned future expansions of the landfill gas collection system.

4.11 Monitoring Installations

Figure 7 shows the current and planned locations of monitoring points for groundwater, gas migration and surface water. Requirements and procedures for monitoring are addressed below.

4.11.1 Groundwater

The current groundwater monitoring well network for CML includes nine wells, MW-1 through MW-9 (Figure 7). Monitoring wells MW-1, MW-4, and MW-6 are located upgradient of the CML facility. Monitoring wells MW-2, MW-3, MW-5, MW-7, MW-8, and MW-9 currently comprise the facility's downgradient compliance monitoring well network. The current site groundwater monitoring wells range in depth from 245 to 327 feet and are screened within the underlying basal groundwater zone. The monitoring well network will be expanded as needed to provide sufficient

coverage for groundwater data collection, as additional areas of the site are developed or as the site-specific groundwater monitoring program is modified.

4.11.2 Landfill Gas

The present network of gas monitoring probes at CML consists of 12 perimeter probes of various ages. Though the landfill gas collection and control system installed in 2008 minimizes the chances of gas migration, regulatory agencies require quarterly perimeter gas monitoring to protect public health. The existing gas migration monitoring system has been expanded to maintain compliance with regulatory requirements. Monitoring systems are generally based on probes located at intervals of not more than 1,000 feet around the perimeter of the landfill.

Probe GP-1 monitors the future Phase III area, current location of the sludge and green waste composting operations. As result of the substantial offset from current limits of waste, this probe is not monitored for current landfill operations.

Probes GP-2, 3.1, 3.2, 4, 5, and 10 are multiple depth probes and provide monitoring for closed Phases I and II.

Probes GP-6R, 7, 8, and 9 are located at Phases IV-A and IV-B with 7 and 8 monitoring at single depths while the remainders being multiple depth probes.

Probes GP 9 and 11 provide monitoring for Phase V and V-B Extension and are also multiple depth probe types.

Probes GP-1, GP-2 and GP-10 are located within the limits of refuse of the future Phase III area and will be decommissioned and relocated prior to the initiation of construction of the Phase III liner. Relocated probes GP-1R, GP-2R, and GP-10R will be installed outside of the grading limits of the Phase III area.

Figure 7 illustrates the locations of the present gas monitoring probes, the relocated probes GP-1R, GP-2R, and GP-10R, and planned future gas monitoring probes.

The gas monitoring system will be modified and expanded as needed to monitor future disposal areas as they are constructed.

Gas monitoring probes, during the course of each quarterly monitoring event, are inspected to confirm they are in good working order. If any probe requires maintenance, the conditions are noted on the quarterly inspection sheet and provided to CML personnel assigned to perform maintenance. If a probe requires maintenance, documentation regarding the nature of the repairs and assessment of the probe functionality will be submitted to HDOH. If a probe requires replacement, the Landfill Gas Monitoring Plan (Appendix H) will be updated to reflect the replacement probe. An installation report for the new probe and a decommissioning report for the abandoned probe will be submitted to HDOH.

4.11.3 Surface Water

No special facilities are required for surface water monitoring. To date there has been no discharge from the Phase IV-A storm water basin which services the portions of the active facility located on the west side of Kalialinui Gulch (Phases IV, V, and V-B Extension) (monitoring point SW-1), or from the reconstructed basin servicing the closed Phases I and II (monitoring point SW-

2). Surface water runoff samples may be collected at the outfall or overflow of the sedimentation basin or as otherwise required by HDOH.

4.12 Point of Compliance Analysis

Appendix D presents a detailed analysis of the potential impact of CML Phase IV on groundwater downgradient of the landfill. The analysis, conducted in accordance with state requirements, demonstrates that design of the landfill ensures that the maximum contaminant levels (MCLs) for drinking water will not be exceeded in the uppermost aquifer at a relevant point of compliance that is no more than 150 meters from the waste management unit boundary.

5 AIR CRITERIA

5.1 Gas Emissions

In 2008, the initial phases of the gas collection system were installed in the closed Phases I and II area, and an enclosed gas flare was constructed next to Phase IV-A. Since that time, the landfill gas collection system has been expanded incrementally as the landfill phases have been developed. Gas collection systems have been installed in Phases IV-A, IV-B, V-A, V-B, and V-B Extension to date. The system will be expanded into the Phase III area and continue to be expanded as necessary to provide required gas collection and control, and limit gas emissions to the atmosphere. The permit issued by the HDOH, under regulations that mirror requirements of the United States Environmental Protection Agency (USEPA), specifies operating, monitoring and reporting requirements for the collection system and flare.

5.2 Open Burning

Open burning is not practiced or permitted at CML.

6 ACCESS CONTROL

CML has constructed access control facilities and implemented procedures to control public access and prevent unauthorized vehicular traffic and illegal dumping of waste. The site is fully fenced, with the only public access located at the site entrance gate at Pulehu Road. The gate is locked at all times when the landfill is closed. During operating hours, all recycling and disposal areas, including the residential recycling drop-off area (Station 1) and residential waste drop-off area (Station 2) located in the entrance facility, are supervised by landfill attendants to ensure that only acceptable materials are deposited.

Documentation of entries to the site are maintained in scale tickets issued to commercial customers, and sign-in sheets used to register all non-customer visitors to the site.

7 SURFACE WATER MANAGEMENT

7.1 General

A storm water "Notice of General Permit Coverage" issued by HDOH governs the management and discharge of stormwater from CML, which specifies discharge conditions to be met (Appendix B-3). The facility Storm Water Pollution Control Plan is reviewed at least once annually and is updated as necessary to reflect changes in the site storm water management system and overall site development. A copy of the current plan is contained in Appendix I.

The primary facilities for surface water management are described in Section 4.9. These facilities must be maintained, modified and supplemented as needed to achieve the surface water management requirements of the operating permit for CML, including:

a. Prevention of run-on and collection and control of run-off from a twenty-five year, 24-hour storm.
b. Prevention of soil erosion and exposure of waste due to soil erosion.
c. Prevention of a discharge of pollutants into waters of the United States, or violating any requirement of the Clean Water Act or statewide water quality management plan.
d. Compliance with all state and federal requirements related to water quality.

Facilities and operating procedures to meet these requirements are addressed below.

7.2 Run-on and Runoff Control

Storm water diversion berms have been constructed around the south side of Phase V-B Extension to prevent storm water run-on from the quarry area flowing into the lined landfill areas. CML operations and maintenance personnel are responsible for maintaining the integrity of these berms throughout the year. This includes inspecting the amount of standing water collecting in the former HC&D quarry area behind the berm, to ensure that it does not overtop or damage the berm. When necessary, a high-capacity portable pump is used to transfer water from behind the berm to the Phases IV and V perimeter drainage channels.

Run-on to the Phases IV, V, and V-B Extension areas from other sides of the landfill is prevented by the paved perimeter drainage channels, which intercept runoff from areas outside the landfill and convey it to the Phase IV-A storm water basin. Similarly, runoff from the Phases IV, V, and V-B Extension areas are collected in the same paved perimeter channel and also discharged to the Phase IV-A storm water basin. Sandbag check dams, diversion berms, silt fencing, and similar devices are installed and maintained as necessary during the rainy season to minimize erosion and sediment transport in unpaved areas of the site.

Run-off from portions of the southern slopes of Phase V/V-B Extension that are below the grade of the perimeter drainage channels, and cannot discharge to the perimeter channels, is managed in the Phase V-B Extension stormwater basin. The basin is located in the 80 foot wide zone between the south property boundary and the limits of refuse fill in the V-B Extension area. Operation and maintenance of this basin is discussed in Section 7.4.

Runoff from buildings and most paved areas of the entrance facility are collected in underground concrete pipes and conducted to the sedimentation/infiltration basin. Runoff from the residential recycling drop-off area (Station 2) is collected in a designated catch basin and drained by gravity to a sump located next to the leachate storage facility. Collected run-off is transferred by a float-

actuated pump from the sump to the leachate storage tanks, and managed along with landfill leachate.

With planned development of the Phase III-B area, the Phase I & II storm water basin will be removed and the Phases I, II, and III runoff will be managed in the Phase IV-A storm water basin. The Phase III area will be developed with a perimeter drainage channel which will receive runoff from the existing/closed Phase I & II area as well as the Phase III area. At the north end of the Phase III area the perimeter channels on the east and west side of Phase III will merge into a single channel which will project to the northwest and connect to the existing drainage system near the northeast corner of Phase IV-A where it will discharge into the existing stormwater Phase IV-A basin.

Rainfall on the landfill footprint must be managed to prevent any water that has contacted waste from being discharged to the surface water system. This requires CML personnel to ensure the landfill disposal cell is properly graded and temporary diversion berms are constructed and maintained to minimize the amount of surface water contacting waste. Berms upslope of the active working face prevent run-on from contacting refuse by diverting it to soil-covered areas. Diversion berms must also retain, within the active area, surface water that does contact waste, so it can infiltrate into the underlying layers of waste and be managed as leachate.

Special measures may be employed to minimize the amount of rainfall that must be treated as leachate during the initial stages of operating in a newly constructed disposal cell. Such measures may include earthen berms to prevent run-on from adjacent unlined areas, or installation of temporary rain flaps in the liner system to divide the new cell into two or more parts and prevent rainwater from areas of the lined area in which waste has not been placed from entering the LCRS system. Rain flaps are removed, as operations expand into each successive part of the lined area, under the observation of qualified third-party quality assurance personnel to document that the liner system is not damaged during the procedure.

The composting facility currently located in the Phase III area manages its storm water run-off separate and apart from the landfill areas. Storm water run-off from the composting area is directed to a dedicated storm water basin located on the north edge of the Phase III area. Process water from the composting operation is first retained within the immediate area of the active compost piles by use of berms constructed with finished compost. These berms are maintained as necessary. With the planned development of the Phase III-A area, the composting operation will be relocated to the Phase III-B area and the existing basin will be removed. A new basin, sized to service the relocated composting operation in the Phase III-B area, will be constructed.

7.3 Storm Water System Maintenance

The landfill storm water collection system, including all ditches, channels and the sedimentation basin, will be inspected annually during the month of August, and an annual surface water management plan will be prepared. The annual surface water management plan will include the following:

- Documentation of the inspection, together with a description of recommended maintenance, repairs and modifications to be made based on the observed conditions.

- Updated drawings of the landfill property based on current topography, showing current conditions and planned changes to the storm water management system.

The annual storm water plan will be completed by September 1, and all modifications recommended in it will be implemented by November 1 of each year. The Solid Waste Division Chief or a designee (staff engineer or consultant) shall prepare the annual plan and verify its implementation.

The following ongoing maintenance procedures needed to manage storm water and prevent surface water contamination are outlined in the site's SWPCP (Appendix I).

Runoff Controls at the Active Disposal Working Face

Among the most critical responsibilities of site operations for storm water control is to prevent run-on and run-off of surface water from the active working face. All precipitation incident on exposed refuse must be contained within the immediate area and be allowed to infiltrate into the refuse for subsequent management as leachate. This is accomplished primarily by construction and maintenance of temporary earthen berms and/or depressions around the active area during periods of rain. Berms up-slope of the active working face prevent run-on from contacting refuse, and divert it to soil-covered areas. A berm or a slight depression may be constructed down-slope from the active face to retain any runoff from the working face until it is absorbed into the refuse and cover soil. At the end of each working day, the cover soil is sloped to convey storm water to intermediate slopes or the existing drainage system. Additional temporary berms may be constructed during periods of heavy rainfall.

Installation and maintenance of diversion and retention berms are responsibilities of landfill operations supervisors. Planning and installation must occur prior to the first seasonal rains or at any time when rain is forecast. Berms must be maintained, relocated or reconstructed as the location of the active disposal working face changes.

Preventive and Scheduled Maintenance

Storm water management facilities must be maintained consistently to ensure their proper functioning. At a minimum the following measures should be implemented:

- Asphalt paved and concrete channels and all storm drain pipes and culverts will be inspected annually, and any significant accumulations of sediment will be removed prior to the onset of the winter rainy season;
- Grass and other vegetation growing in storm water basins will be cut and removed annually or as necessary during the dry season to maintain it at a height of 12 inches or less at the onset of the winter rainy season; and
- At not less than 5-year intervals, all sediment and vegetation will be removed from storm water basins in order to maintain their storage capacity at design levels.

Preventive maintenance of landfill equipment is important not only to ensure equipment availability for operations, but also to minimize the potential for leaks or spills of fuel or other fluids that could impact storm water quality.

Good Housekeeping

CML is required by state regulations and its solid waste management permit to keep the site clear of litter, and to control dust and mud, which also directly reduce potential impacts to storm water quality. Measures for these controls are specified in Section 14.8 and are implemented on a daily

basis, including:

- Placement and maintenance of litter screens to minimize the amount of litter leaving the active disposal area;
- Daily litter pickup throughout the site by County employees and contract laborers;
- Control of dust from unpaved areas by spraying water from the site water truck;
- Periodic sweeping or cleaning of paved roads and parking areas; and
- Operation of a truck wheel wash facility to minimize tracking of mud from the landfill area onto paved roads.
- Placement of equipment fluids on spill containment pallets within covered containers.

Sediment and Erosion Control

The following measures will be implemented to minimize soil erosion and sediment transport in surface water being managed at the site:

- Soil and vegetative cover in the closed Phase I and II landfill area will be inspected annually, with any eroded or bare areas being repaired and replanted;
- Landfill exterior sideslopes in the operational Phases IV and V, and in all future disposal areas that are substantially at final grades will be covered with compost or mulch, and/or vegetated to prevent erosion to the extent possible;
- Eroded areas will be repaired as needed prior to the onset of winter rains each year and between rain events as is practical;
- Unpaved landfill access roads will be surfaced with rock, asphalt or concrete rubble or other materials, to the extent possible and consistent with the availability of suitable materials; and
- Sandbag check dams, diversion berms, silt fencing and similar devices will be installed as necessary and maintained during the rainy season to minimize erosion and sediment transport in unpaved areas of the site.

7.4 Phase V-B Extension Storm Water Basin Operation and Maintenance

The Phase V-B Extension stormwater basin is located in the 80 foot wide buffer zone between the south property boundary and the limits of refuse in the V-B Extension area. The basin is constructed above the operations layer of the V-B Extension area liner system which projects south from the V-B Extension limits of refuse to within approximately 20 feet of the south property line. The basin is constructed with 3-feet high soil berms on all 4 sides. The basin bottom follows the slope of the underlying liner system of approximately 1% to the east with the low point of approximately 230.5 feet msl near the toe of the lined east slope. The overall dimensions are approximately 700 feet long by approximately 37 feet wide (at basin bottom). Within these basin dimensions, approximately the east half of the basin (approximately 380 feet in length), the portions with the lowest base elevation, is lined to collect and contain storm water run-off from the portions of the landfill slopes which cannot discharge to the perimeter discharge channels. The size and capacity of the lined are was calculated in accordance with the County of Maui Rules for the Design of Storm Drainage Facilities criteria.

Water collected within the basin will pumped to the perimeter drainage channel, located immediately to the east of the lined Phase V-B Extension slope, which drains to the Phase IV storm water basin. CML owns a variety of gas/diesel powered pumps which can be utilized to pump out water collected in the basin. During wet periods, CML will stage an appropriately sized

pump on the east basin berm, located immediately below the east lined slope, with a discharge hose extended from the pump to the perimeter drainage channel. CML will operate the pump as required to remove water as it is collected and to ensure the water depth in the basin does not exceed a depth of 3 feet at the low point. CML personnel will inspect the basin and the pump on a daily basis during periods with precipitation forecasted. During periods of rain, CML operations personnel will monitor the pump and the basin throughout the day to ensure the pump is operational, adequately fueled/maintained, and water depth is being maintained below 3 feet. CML personnel will deploy additional pumps as necessary. CML personnel will be tasked with monitoring the pump operation during periods of heavy or continuous rainfall.

CML operations personnel will inspect the basin liner regularly to ensure it is in good condition. After each storm event, when collected water has been removed, the basin will be inspected for liner condition and to assess quantities of sediment deposited. Sediment deposits will be removed regularly to ensure the basin design capacity is not impacted. If liner damage is observed, CML personnel will procure repair materials and services with local contractors with liner materials.

8 LEACHATE MANAGEMENT

By regulation, leachate must be withdrawn from the landfill to maintain a maximum of 12 inches of hydraulic head above any point on the liner system outside a leachate collection sump that is constructed with additional layers of lining material. The operational and management methods utilized to ensure compliance with the maximum head level requirement are described in Section 4.7.

The allowable disposal practices available for managing leachate are the following:

- Upon acceptance of leachate analytical test results, the County Wastewater Department may approve the discharge of leachate to one or more of its treatment plants. The Wastewater Department may decline to accept leachate pending receipt of test results. CML has established ready access to the County wastewater system as a backup disposal means. This is possible by creating a comprehensive data base of information on the chemical constituents of leachate, based on a regular program of sampling and testing of leachate, consisting of semi-annual samples. Separate samples are pulled from each leachate collection sump. This data should satisfy the Wastewater Department's needs for testing, without requiring the delay of sampling on every unscheduled occasion when the need for disposal at the treatment plant becomes necessary.

- Leachate may be reintroduced to Phase IV-A (only through spray application at the active disposal face), Phase IV-B, Phase V-A, Phase V-B, Phase V-B Extension, and all future landfill cells that will be equipped with liner systems approved for reintroduction of leachate as provided in state regulations and the solid waste management permit. To date the reintroduction of leachate has been accomplished by spreading at the active face, and also by injection into the in-refuse horizontal trenches and galleries of the leachate reintroduction system. Limits on the amount of leachate that may be processed through the leachate reintroduction system at any given time are described below.

<u>Leachate Reintroduction System Operation</u>

The leachate reintroduction system may only be operated during normal landfill operating hours. The reintroduction system is programmed to to route leachate to the leachate storage tanks at the end of each operating day.

<u>Automated Fill</u>

- Verify that the current date and time is correct at the tankfarm hmi/plc.
- Open the valve for the recirculation lateral to be used for the days operation and ensure that valves to all other laterals are closed.
- Enable recirculation at the tankfarm hmi, and select the lateral being used.
- The plc will automatically record the date, time of day, pump number, recirculation lateral, and quantities pumped
- Record field smell observations on level 1 – 10 (1=Normal, 10=Intolerable) and weather conditions.
- The reintroduction system limit is set at 8,000 gallons by default. However, laterals L1, L2, and L4 can each receive a maximum of 12,000 gallons per day (except for L3, which may only receive 8,000 gallons per day). **Do not exceed 12,000 gallons per day for laterals L1, L2, and L4, or 8,000 gallons per day for lateral L3.**

- At the sump, verify that a **minimum of 3 days** has passed since completing the previous recirculation. **The minimum time between fill events for each lateral is 3 days.**
- Periodically visually inspect side-slopes and top deck of areas near the active trenches for evidence of leachate breakout or seeps. If any seeps are observed discontinue all recirculation and **immediately berm around the seep to contain it above the liner**. Photo document the incident, note in the daily log, and notify the Site Supervisor as soon as possible.
- The Leachate Recirculation Log including pictures shall be updated daily, regardless whether or not leachate was reintroduced. The recirculation is programmed not to allow recirculation outside operating hours.

Manual Fill

- Verify that the current date and time is is correct on the tankfarm hmi/plc.
- Open valves from the transfer pump to the tanks requiring pumping
- Enable the truck transfer batch controller near the transfer pump, select manual recirculation and select the recirculation lateral & quantity of leachate to be batched. Note that the pump will automatically shut off the pump regardless of batch quantity inputted if there is not enough leachate in the tanks.
- The date, time of day, current riser number filling, and quantity of leachate reintroduced (**gravity fed**) from the truck (gallons) will automatically be recorded by the plc.
- Record the time of fill event (minutes).
- Record smell observations on level 1 – 10 (1=Normal, 10=Intolerable) and weather conditions.
- Risers connected to laterals L1 and L2 can receive a maximum of 12,000 gallons per day, the riser connected to lateral L3 may only receive 8,000 gallons per day. **Do not exceed 12,000 gallons per day for risers connected to laterals L1, and L2, or 8,000 gallons per day for the riser connected to lateral L3.**
- At riser, verify that a **minimum of 3 days** has passed since completing the previous fill. **The minimum time between fill events for each riser is 3 days.**
- The risers may only be filled during normal operating hours.
- Periodically visually inspect side-slopes and top deck of areas near the active trenches for evidence of leachate breakout or seeps. If any seeps are observed discontinue all recirculation and **immediately berm around the seep to contain it above the liner**. Photo document the incident, note in the daily log, and notify Sage as soon as possible.
- The Leachate Recirculation Log including pictures shall be updated daily, regardless whether or not leachate was reintroduced.

Similar detailed control procedures for leachate reintroduction from the Phase V-B Extension sump will be developed prior to implementation.

A sample copy of the Leachate Recirculation Log is included in Appendix M.

Operating and maintenance procedures for the other components of the leachate management system are listed below.

Daily Requirements:

- Measure and record the volume of liquid in the leachate storage tanks.

- If 10,000 gallons or more of leachate is present in the storage tanks, transfer leachate from

the tanks to the site water truck for spreading at the active disposal face, using the stationary electric pump at the tank facility installed for that purpose. The following quantities may be spread each day:

- When the active disposal area is above the Phase IV-A liner, transfer one-half load (2,000 gallons) per day from the tanks to the water truck and spread at the active face. This is the maximum amount permitted by HDOH in Phase IV-A.

- When the active disposal area equipped with a prescriptive liner, transfer up to four full loads (16,000 gallons) per day to the water truck for spreading at the active face. In order to avoid over-saturating the waste, the loads should be spread at least 1 ½ to 2 hours apart.

  The correct procedure for spreading leachate at the active face is as follows:

  1. Wait until incoming truck traffic is low then hold incoming traffic away from the working face until all customers and vehicles are at least 100 feet from the working face. Landfill compactors, dozers and spotters should withdraw upwind from the face.

  2. Slowly move the truck back and forth along the toe of the advancing waste slope while spraying leachate from the side spray nozzle on the side facing the active face. Operate the articulated spray nozzle to distribute the liquid as evenly as possible over the waste. It should take about 10 to 15 minutes to spread a full load of 4,000 gallons.

  3. When the load is empty, withdraw the water truck from the active face and compact the wetted refuse with the compactor and dozer. Resume normal waste placement and compaction operations, working newly deposited waste into the refuse that has been wetted.

- Transport leachate to the treatment facility whenever a full tanker truck load (typically 4,000 gallons) is present in the storage tanks after spreading leachate at the working face, or if more than 10,000 gallons is present in the leachate storage tanks. The County has contracted with the following commercial hauler, which has the capability of transporting 20,000 gallons per day, to pump the tanks and transport leachate:

  Valley Isle Pumping, Inc.
  291 L. Kula Road
  Pukalani, HI 96768
  (808) 878-8807

  The Wastewater Department should be contacted prior to disposal of leachate before calling Valley Isle to pump and haul leachate. Leachate storage tanks must not contain more than 10,000 gallons of leachate at the end of the working day. Maintain records of all leachate shipments by day, and volume.

- Inspect the leachate storage tanks, piping and secondary containment structure for any leakage. Remove any standing water from the containment, whether leachate or rainwater, and pump into the storage tanks or into a tank truck for removal from the site. Call immediately for repairs of any leakage or damage.

- Check the leachate level in the Phase V-B Extension sump, by using the electric liquid level sounding tape or equivalent device sump riser pipe and verify that leachate depth does not exceed 12 inches of hydraulic head above any point on the liner system outside the leachate collection sump. Upon completion of the first lift of refuse (select waste lift) over the base liner, County of Maui may petition the HDOH to reduce the frequency of the leachate monitoring in the Phase V-B Extension sump to twice weekly or weekly.

Weekly Requirements

- Visually inspect the Phase IV-A leachate manhole and the polyethylene tank installed in it. Look for any leachate spilled outside the tank, which would indicate a problem with the pump or control system, which caused the tank to overflow. Drop a liquid level sounding tape or equivalent device into the tank and verify that leachate depth in it is within the operating range of the pump control switches, as follows:

    - If the pump is not operating, the tank should have less than 5 feet of liquid in the bottom.

    - If leachate is present in the manhole outside the tank, remove it immediately by operating the wetwell pump in “hand”.

    - If there the wetwell pump is ever down, drop the spare submersible pump down between the tank and manhole wall, connected to a flexible hose and electric cable using the davit crane which can be mounted on the side of the manhole. Use a portable generator to power the pump, and transfer liquid to the water truck while keeping close watch on the flow. Cut off the pump as soon as the flow stops, in order to avoid burning out the pump motor. Some liquid may remain in the manhole bottom below the level of the pump intake.

- Check the small sump at the leachate tank area that receives surface water runoff from the public waste drop off area roll-off bins. Make sure the float is clear and that the pump is operating properly; maintain as needed.

- Check the leachate level in the Phase IV-B and Phase V-B Extension (after approval by HDOH of weekly monitoring frequency) sumps, by using the electric liquid level sounding tape or equivalent device sump riser pipe and verify that leachate depth in the sumps is within the operating range of the pump control switches, as follows:

    - If the Phase IV-B and V-B Extension sump pump is operating, the sump should have less than 40 inches of liquid in the bottom.

Quarterly Requirements

- Inspect the leachate pump and pump controls in the Phase IV-A manhole tank, the Phase IV-B sump, the Phase V-B Extension sump, and replace parts as recommended in the manufacturer's manuals.

- Check the high level alarms in the polyethylene tank in Phase IV-A leachate wet well, and Phase V-B Extension sump by activating them manually.

- Determine the condition of the power supply to all the pumps and correct any deterioration.

- Exercise the float-actuated pump in the small sump that transfers liquid from the public waste drop off area roll-off bins to the leachate tanks, by filling the sump with water. Correct any deficiencies.

- Inspect the leachate storage tanks, piping and secondary containment structure for any signs of damage or deterioration. Maintain or repair as needed.

- Review error logs at the tankfarm plc.

Special Requirements during Rainstorms

Leachate system monitoring and pumping activities will be increased during heavy rainstorms when one inch or more of rain is anticipated. All leachate sumps and tanks will be monitored for leachate levels after storm events. Increased monitoring is especially important during periods when the leachate collection system of a new disposal cell has not yet been fully covered with the first five-foot lift of select waste, which would allow rainfall on such an area to immediately enter the leachate collection system. Modeling of leachate generation using the EPA "HELP" Model computer program, as summarized in Appendix D, indicates that the 25-year storm on an open cell with little or no waste in it could produce substantially more drainage to the leachate collection system in a 24-hour period than the sump and 32,000 gallons of storage could contain. Once the first 5-foot layer is in place over the entire cell, the HELP Model predicts that no leachate will be generated, due to the moisture absorbing capacity of the solid waste and the ability of the cover soil to promote runoff of precipitation to the surface water management system.

While the occurrence of a major storm during a period when the cell has no waste in it is a low-probability event, contingency plans will be in place to handle more leachate than the storage tanks can hold for a short term. The following procedures will therefore be implemented during major rain events during the period before the entire floor of a new cell has been covered with at least five feet of waste:

- Liquid levels in storage tanks will be monitored several times during the working day, to observe the rate of leachate generation.

- Daily verify the float-actuated transfer pump in the sump that receives water from the public waste drop off area roll-off bins is working properly.

- If the leachate pumps appear to be operating continuously, the pumping and hauling contractor will immediately be called and put on notice that pumping services are needed.

9 EQUIPMENT AND PERSONNEL REQUIREMENTS

9.1 Personnel

9.1.1 Operating Personnel

At least two employees, one equipment operator and one landfill attendant must be at the working face at all times during operating hours to manage the landfill in a safe and efficient manner. On days when the incoming waste volume is expected to exceed 800 tons, at least two operators and two landfill attendants will be assigned to the working face during peak activity periods.

At least two employees must be at the entrance facility to monitor operations at the self-haul drop-off area (Station 2) and residential recycling drop-off area (Station 1) during operating hours to manage the incoming waste and recyclables in a safe and efficient manner.

The landfill Site Supervisor provides management oversight of the both the entrance facility and the landfill staff and activities, observing operations regularly throughout the operating day.

The following operating personnel are assigned to the overall landfill and entrance facility.

- One Solid Waste Superintendent
- Two Landfill Worksite Supervisor I
- Eight Equipment Operators
- Nine Landfill Attendants (spotters)
- Six Laborer
- Three Scale Attendants (cashiers)
- One Administrative Assistant II (office manager)

Scale attendants are responsible for weighing waste loads, collecting fees, recording the source accounts billed, initial screening for unacceptable materials, enforcing the covered and secured loads requirements, and directing customers to the correct location for unloading.

Landfill attendants are responsible for screening for unacceptable materials, directing customers to the correct unloading location, and maintaining the unloading area in workable condition at both the landfill active face and the entrance facility Stations 1 and 2.

Laborers are tasked and responsible for litter control and pickup in and around the entrance facility Stations 1 and 2, and throughout the active site. Labors also provide assistance to other landfill personnel as directed**.**

Equipment operators are responsible for operating equipment for landfilling and other site activities. General duties include compacting landfill waste, covering waste at the end of each day, stockpiling and borrowing soils for intermediate cover, performing general site earthwork, shuttling roll-offs from Station 2 to the landfill disposal area, and maintaining roads and drainage.

The scalehouse is to be staffed at all times during working hours. The landfill attendant or equipment operator is to be at the working face as needed to screen incoming loads from vehicles discharging at the active area. The equipment operators are to be present at the working face as needed to spread and compact waste as it is delivered. At no time should non-landfill individuals be allowed at the working face without an attendant or equipment operator present.

9.1.2 Supervision

The Solid Waste Division Chief has overall management responsibility for the facility. This person has authority to direct the landfill operations supervisors in the operation and maintenance of the landfill and entrance facility. The Solid Waste Division Chief or a designee (landfill operator certificate required) will be responsible for daily facility inspections. The Solid Waste Division Chief will be responsible for assuring the required records and reports are produced, and for maintaining the facility compliance with permit terms and conditions. He/she is responsible for the facility compliance with the SUP and all permit conditions and for continued compliance during construction and operations.

The Solid Waste Superintendent is responsible for ensuring that the facility is operated and maintained in compliance with all plans, permits, and regulations. The Solid Waste Superintendent will coordinate site operations related to entrance facility operations, landfilling, leachate management, landfill gas, and storm water management on a daily basis. This person will schedule crews and equipment time, direct waste fill operations, leachate management, and site and equipment maintenance programs. This person will be responsible for all environmental monitoring, reporting, and compliance of the Operations Plan at the facility. This person will be on site to fully supervise the operations

The Landfill Worksite Supervisor I is responsible for overall operations of the facility, compliance with environmental regulations, following County of Maui Department of Environmental Management policies, adherence to this Plan, and site development plans. The Landfill Operations Supervisor I will supervise the activities of the equipment operators, scale attendants, laborers, and landfill attendants. This person will oversee all safety training and safety issues.

9.1.3 Technical Support

The Solid Waste Division administrative staff includes technical personnel with responsibilities for environmental and engineering support at CML. A Civil Engineer VI, IV, and III based in the Wailuku office assist with contractual matters, environmental monitoring activities, and general technical assistance. An Environmental Compliance Specialist for the site is broadly responsible for field monitoring and reporting, permit compliance oversight, and other technical activities at the site.

9.1.4 Third Party Assistance

In conformance with permit conditions, the County has contracted with qualified third-party consultants as needed to advise CML operating personnel in proper means of safely and efficiently operating and maintaining the landfill in compliance with regulatory requirements. These consultants have provided guidance on operational procedures to protect the liner system, leachate management, monitoring programs and numerous other aspects of facility operations. The County will continue to retain outside assistance as needed in the future.

9.1.5 Training Requirements

Site personnel must receive the following minimum training as noted:

- In-house briefing on landfill design and operations. They will be given a copy of this Plan and a verbal walk-through of all of its sections (all site employees).
- Landfill operator's training and certification course offered by the Solid Waste Association of

North America (SWANA) (landfill operations supervisor and equipment operator).
- Hazardous waste exclusion program, conducted annually, for all landfill personnel.
- Storm water pollution control plan training will be mandatory for all landfill personnel.
- Leachate reintroduction system operations training will be mandatory for personnel operating system.
- Certified training in first aid and CPR (all site employees).

Records for all required training will be maintained in the CML Administration Building documenting dates of training, subject of training, instructor, and attendees.

9.2 Operating Equipment

9.2.1 Equipment Inventory and Usage

Primary operating equipment for the landfill and entrance facility as of September 2019 includes the following:

Equipment Type	Make, Model, County ID No.
Bulldozer	Caterpillar D-8R No. 74
	Komatsu D155AX-6 No. 113
	Caterpillar D-8T No. 32329
	Caterpillar D-5 No. 101
	Caterpillar D-6T No. 78A
Compactor	Caterpillar 826H No. 4
	Caterpillar 826K No. 6
	Al-Jon 525C4 No. 5
Wheel Loader	Case 921 No. 111
	Caterpillar 287DR No. 287D
Backhoe	Case 580-MT No. 53
Water Truck	Peterbilt 367 No.1506
	Caterpillar CT660S No. 1507
Service Truck	GMC C Series No.1392
Dump Truck	Dump Truck No.1146
Roll-off Truck	AutoCar WX64 No. 1214
	AutoCar WX64 No. 1217
	Peterbilt 329 No. 1458
	Peterbilt 320 No. 1459

At least one bulldozer, one compactor and a water truck shall be in operation at the landfill at all times. An additional dozer and compactor shall be located at the working face and operated as needed on any day when the incoming waste volume is expected to exceed 800 tons. At least one roll-off truck shall be operational at all times to service the entrance facility Station 2.

9.2.2 Maintenance Procedures

Consistent with manufacturer's recommendations, CML performs three categories of maintenance on facility operating equipment: daily servicing; periodic preventive maintenance; and scheduled major maintenance. Work performed during each type of maintenance is as

follows.

Daily Servicing: The operator checks fluids and adds any that are low, blows dust from radiators and air filters, and removes trash from tracks and wheels. The activity is documented in the equipment's daily operating log.

Periodic Preventive Maintenance is performed at nominal intervals of 250 operating hours. Work includes dropping the belly pan, replacing fluids at manufacturer's recommended intervals, performing a comprehensive inspection, and conducting minor repairs as needed. The work is performed by third party vendors. Equipment is out of service approximately two days during each 250-hour service.

Scheduled Major Maintenance includes primarily undercarriage replacements (tracked equipment) and power train reconditioning.

10 LANDFILLING, COMPACTION AND COVERING

10.1 Landfilling Procedures

The landfill operations are designed to minimize leachate production (i.e., contact of storm water with waste), control storm water runoff, compact waste to its smallest practical volume, and cover it effectively. The equipment operator is to follow the landfill operations supervisor's filling instructions to accomplish these goals.

10.1.1 Daily Waste Placement

The daily active area will be kept at about 50 feet wide or less and ramped from top to bottom on a 2:1 to 3:1 (horizontal to vertical) slope. Refuse is placed in layers not more than 2 feet thick and compacted to construct a lift of waste that may vary from 10 to 15 feet thick. At the end of each working day a 6-inch layer of daily cover soil or an approved Alternative Daily Cover (ADC) is placed over the top and slope of the advancing lift.

Temporary access roads to the working face and dumping pads will generally be constructed over intermediate cover and maintained by the landfill crew. They will be constructed from on-site soils or reclaimed inert construction and demolition materials meeting the qualifications specified in Section 13.6.5, and, if needed, imported crushed rock.

During periods when rain is possible, the equipment operator will ensure that temporary perimeter berms around the active area will contain storm water that has come into contact with the waste. Active area grading will contain storm water that has contacted waste and force it to percolate into the waste where it will be collected in the drainage layer at the bottom of the landfill.

If the equipment operator notices anything unusual in the waste, the landfill operations supervisor will be notified, and the load will be inspected before burying.

10.1.2 Filling Operations

At the fill face, the Landfill Attendant is responsible for directing the truck to the desired dumping area. Dumping will not be allowed until the truck comes to a complete stop. No operation of landfill equipment will be conducted within 20 feet of vehicles discharging refuse at the active face. Operators or landfill attendants will coordinate with the scalehouse attendants to direct incoming loads. Operators and landfill attendants are responsible for monitoring customer activities at the active face to ensure safe operations, and prevent customers from attempting to scavenge waste materials. Scavenging is prohibited at the landfill.

Inert waste and C&D waste, not suitable for processing and recovery of recyclable materials, will be disposed at the active area of the landfill. During placement of the first lift of refuse in each cell, C&D waste will not be placed within the first 5-foot lift of select MSW. During placement of the first 5-foot lift of select MSW over a new liner system, inert waste and C&D waste materials will be managed either on top of the initial 5-foot lift or in another active area of the landfill.

10.1.3 Compaction

In general, waste will be advanced across a cell in 10 to 15-foot high lifts until final design grades are reached. Trucks will dump waste from the top or bottom of the lift and the dozer operator will spread it in layers not more than 2-foot-thick. The layer will be compacted by no fewer than three

to five passes of the landfill compactor over all portions of the lift before more waste is added. Compaction by a bulldozer is not effective. The length of the service life of the landfill depends heavily on the ability of equipment operators to achieve effective compaction of the waste.

Under normal circumstances, the compactors should work on a relatively flat working face, with a bulldozer pushing and spreading the waste from the tipping area as needed. Figure 8 illustrates schematically the preferred ways of pushing and compacting the refuse.

10.1.4 Lift Height

The goal of each day's operation is to construct a portion of an advancing lift across the floor of the cell or across the top deck of the previous lift. The height or thickness of the lift should be optimized to produce the smallest surface area possible that will require daily cover at the end of the working day. Minimizing the surface area will reduce the cost of importing and applying cover soil, and conserve airspace by reducing the amount volume occupied by soil in place of refuse.

Appendix E contains an analysis to derive the theoretical optimum thickness or height of a lift of refuse. It demonstrates that the optimum thickness depends on the anticipated average daily volume, with the best lift height increasing as the volume increases. This is due to the need to cover the advancing sideslopes, which increase in area as the height of the lift increases. Based on the analysis, the following lift heights are recommended for the range of daily volumes anticipated at CML, assuming a 50-foot wide lift:

Daily Volume (tons)	**Optimum Lift Height** (feet)
100	5
200	7.5
300	9
400	11
500	12
600	13
700	14
800	15

To the extent possible, lift heights should be within plus or minus one to two feet of the theoretical optimum. It should be understood that once the lift has been started, the height should be consistent across the entire surface of the area being filled, and not vary from day to day. It is important that the top deck of the landfill be maintained with the appropriate grade (minimum 3%) needed to promote runoff from the surface and minimize infiltration into the cover soil and underlying waste.

10.1.5 Alternative Thin Lift Fill Procedure and Sequencing

In addition to traditional landfilling operations covered above in Sections 10.1.1 through 10.1.4, the CML may also utilize thin lift operations, also referred to as "pancake lifts". This type of operation consists of spreading incoming refuse in thinner daily lift heights of 2 to 3 feet, over a larger operations area. Filling will occur in a three-day cycle, with the second and third days filling occurring above the first day's lift to achieve a 3-day lift of approximately 6 to 9 feet that is expanded laterally across the cell. Active area slopes will be 2:1 to 3:1 (horizontal to vertical), and the daily active area will be approximately 100 feet wide by 90 to 120 feet long. ADC will be

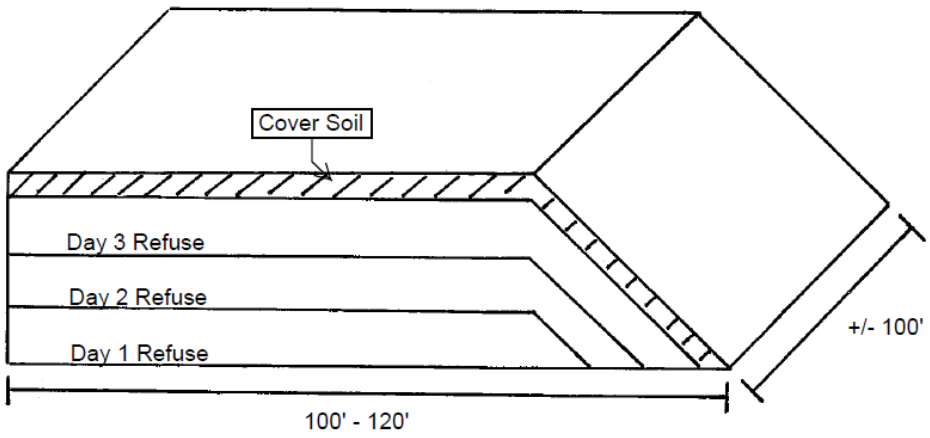
used at the end of the days 1 and 2 in accordance with ADC guidelines in Section 10.6. At the end of day 3, the 3-day cell will be covered with soil. ADC will not be used on days where rain is suspected, and in addition, ADC Tarps will not be used on days where sustained wind speed exceeds 30 miles per hour for longer than 2 minutes.

The benefits of flat lift operations are as follows:

- Thinner daily lifts and longer horizontal runs allow the landfill compactor to be used more efficiently, allowing it to make a greater number of passes than when operating on a slope.
- The thinner daily lift allows for more efficient action of the compactor's teeth.
- Better compaction improves the airspace utilization factor, resulting in longer landfill life.
- Operations over a larger area reduces equipment congestion allowing them to work more effectively.
- Spreading refuse in thinner lifts allows personnel to easily identify unacceptable and hazardous wastes.

Careful consideration will be taken in the deployment of litter screens, since the larger active area in flat lift operations may result in greater amounts of fugitive litter.

Equipment operators will spread the refuse approximately in 2-foot high lifts across the active lift and begin compaction. Wastes will be compacted with no fewer than three to five passes. After meeting the daily compacted refuse target height of 2 to 3 feet, the tipping area may be relocated to reduce the refuse pushing distances. Landfilling operations will continue until the 90-foot target length for the first day is achieved. Leachate, o when available, or water may be sprayed on the active area to facilitate litter control and increase compaction. Leachate application limitations are discussed in Section 8. Whenever possible, ADC shall be deployed mid-operation to cover refuse and prevent windblown trash and vectors. Care must be taken in deciding to deploy ADC early as to not impact operations. The day 1 length should be held to 90 feet for subsequent day 2 and 3 activities, which spreads waste over the previous days received refuse. At the end of Day 3 operations active area will be approximately 100 to 120 feet long by 100 feet wide. The following diagram shows the conceptual arrangement of the thin lift fill procedure.



10.1.6 Initial Lift Placement

To protect the landfill liner from damage, an operations layer of protective soil, with a minimum thickness of 36 inches on the floor and 24 inches on the slopes, is placed over the liner during construction. To further reduce the chances for liner damage, the first lift of waste in a new disposal cell will be a 5-foot thick of select waste containing no objects greater than 24 inches in any dimension. Residential route collection waste is suitable for this purpose, and will be used exclusively in placing the first lift across a new cell. In addition, the first lift will not be compacted as heavily as subsequent waste, in order to minimize potential disturbance to the protective soil layer above the liner.

Based on these considerations, the first lift of waste in each new cell area will be constructed generally as follows:

- During initial placement of the first lift in a new phase, the County will continue operations in a previous phase for all waste except the select residential loads, which will be diverted to the new lined area.

- An access road will be constructed to allow access to the new cell floor. At the point where trucks enter the cell, additional soil will be placed to ensure that a minimum of 3-foot layer of soil covers all liner components. The access road will terminate at a tipping pad where trucks can maneuver to dump their loads over the lined area.

- As loads are dumped at the initial tipping area, a bulldozer will push and spread the waste in approximately 2-foot layers out across the cell. Compaction will be by 2 to 3 passes of the dozer over each layer. Additional layers will be spread and compacted until the desired lift thickness of at least 5 feet is reached.

- At the end of each working day, cover soil will be delivered by truck and spread by the dozer in a 6-inch layer across the waste.

- When the surface of the lift is sufficiently large to allow truck circulation, the initial temporary tipping pad will be abandoned and trucks will discharge their loads at or near the face of the advancing lift.

- When the 5-foot thick lift of select waste is sufficiently large, commercial waste loads may be accepted and placed on top of the select waste to build a thicker initial lift. A compactor may be used to compact waste placed above the initial 5 feet of select waste.

- Care will be taken in each new cell to construct the first lift so that it will shed surface water from the cell.

Waste placement against lined side slopes will not be done until the landfill operations supervisor has verified that a minimum of 24 inches of protective cover soil is in place over the geosynthetic liner components on the side slopes.

The liner system is expensive and is the only barrier to keep leachate from percolating into the groundwater. It is critical to never operate on the liner system in a way that could damage the liner system. Any damage to the liner system must be reported immediately to the landfill operations supervisor. Damage to the liner or leachate collection system shall be repaired in a manner equivalent to the original engineering design and methods of construction.

10.1.7 Side Slope Grades

The landfill operations supervisor and equipment operator are responsible for correctly filling the landfill with proper grades on exterior side slopes. The maximum intermediate and final slopes should not exceed 2.5: 1 at the time of placement, so that they will settle back to 3:1 as the refuse settles for several years.

10.1.8 Maximum Elevation and Top Deck Grades

CML final grades are permitted to reach a maximum elevation of 390 feet above sea level. Top deck final grades will be sloped from 2% to 5% to ensure drainage. Figure 4 illustrates the final grades for the final planned development of the landfill. CML will install and maintain survey control markers in appropriate number and location to demonstrate compliance with final permitted grades.

10.1.9 Active Area Leachate Containment

The landfill operations supervisor and equipment operators must ensure that precipitation falling in the active area is contained as leachate. The landfill operations supervisor must follow the fill progression and sequencing plan within a cell and regulate the size of the active area. The landfill operations supervisor must also manage intermediate cover to control storm water.

As each lift is advanced, the top of the lift will form an intermediate surface, or deck; this will serve as an unloading pad for the trucks and as the foundation for the next lift. The top of the deck should be graded to create a 1 to 3-percent slope.

10.2 Cover Material Procurement and Stockpiling

Soil material for daily and intermediate cover will be imported, reclaimed from loads of C&D, or contaminated soil if they meet the requirements described in Section 13.6.2. In order to ensure adequate cover soil supplies at all times, the County will maintain a supply contract with one or more sources of suitable material. When possible, the contract will provide for soil to be delivered directly to the working face area on a daily basis, to minimize the need to double handle soil and reduce the cost of applying cover. However, CML should also maintain a working stockpile of cover soil at a convenient location where it can be accessed by site equipment (front-end loader and dump truck) to provide cover soil when the contractor may be unable to supply it. The stockpile should contain a minimum of one week's supply of soil. Stockpiles of cover material and rock/gravel combined shall be no greater than a 30-day capacity. Stockpiled material, when located on the landfill footprint, shall be placed on top of at least 12 inches of intermediate cover and shall have storm water controls. Stockpiles shall not exceed permit grades.

When crushed glass is available for use as a leveling layer before placement of soil cover, it will be stockpiled at a location as close to the active area as practical. No more than 1,000 cubic yards or 1,000 tons of crushed glass material should be stockpiled at any one time. The crushed glass stockpile will be sited at a location accessible by site equipment and will not interfere with surface water management, nor have any public impact.

10.3 Daily Cover - Soil and ADC

At the conclusion of each operational day, the active landfill face is required to be covered with

soil or approved ADC material. Use and application is specific for each cover material option, with each described in the following.

Daily Soil Cover

When soil cover is applied as daily cover, a minimum of 6 inches of soil coverage over refuse is required. A silty or clayey soil is preferable, as these soil types compact well, limit infiltration of storm water, limit air intrusion, and minimize landfill gas emissions. Crushed rock, no coarser than 2.5 inch minus with the fines left in (well graded), can be used as cover if soil is not available.

The amount of soil needed to achieve an effective thickness of 6 inches of daily cover will vary depending on several factors, including:

- Compaction of the waste. Well compacted waste will have fewer and smaller voids to be filled with soil.

- Soil characteristics. Sand tends to filter deep into the waste, whereas more silty or clayey soils tends to bridge the voids in the waste surface.

Regardless of the type of soil or degree of compaction, some soil will be lost into voids on the uneven waste surface. Therefore, a volume equivalent to more than 6 inches of soil will need to be placed to achieve an effective thickness of 6 inches of cover above the upper surface of the refuse.

Alternative Daily Cover (ADC)

In a further attempt to reduce the soil to waste ratio, CML is utilizing non-soil alternative daily cover (ADC) materials. The following sections describe the approved ADC materials and methods of use.

The following four types of materials are approved for use as ADC:

- Green waste mulch – clean green material that is unacceptable for use in the composting process. The material is ground and screened through a screen with resulting material that is generally less than 6 inches in the largest dimension.

- Compost rejects – composted sludge and green material that has completed the compost process, but is larger than the acceptable particle size for compost (larger than 3/8” screen). The material has passed the time and temperature requirements for compost as required in EPA Regulation 503 (15 days at over 55 degrees C).

- Polyethylene Tarps – Three (3) or more, 30 feet by 100 feet, 6.5 oz per square yard polyethylene tarps.

- C&D fines from the C&D operations at CML, screened to a maximum particle size of approximately two (2) inches. The material is composed primarily of soil, concrete and asphalt materials, with small amounts of construction materials such as wood, plastic and paper. The materials are laboratory tested to ensure they meet the Hawaii EALs for commercial use under the Criteria for Assignment of Soil Gross Contamination Action Levels for Surface Soils.

Use of these materials provide several important benefits to the landfill:

- Because of their fibrous nature, green waste mulch and compost will result in a more complete cover over the refuse than soil, which tends to filter down into the refuse, often resulting in a "salt and pepper" condition in which paper and plastic refuse can be seen protruding from the surface of the cover, and require additional application of cover soil.

- Organic materials, such as green waste mulch and compost, used as ADC will degrade in the landfill over time, resulting in more consolidation of the waste mass and use of less airspace for cover material and an increase in site life.

- ADC, derived from waste materials, is considered a beneficial use that is appropriately considered as diverted waste and credited toward the County of Maui's attainment of Hawaii's 50% recycling goal.

- Use of ADC will provide a cost savings for the County, in reduced quantities of soil purchased for daily cover.

Green Waste Mulch and Compost Rejects Application Method

Green waste mulch and compost rejects ADC will be applied only on advancing temporary slopes that will receive additional waste the following working day. The top deck of the daily advancing lift will be covered with soil. ADC material will be applied by dumping at the top or bottom of the slope and spreading with a bulldozer to achieve a minimum thickness of 6 inches and a maximum of 12 inches. After spreading, the ADC will be track-walked to compact the material to minimize voids in the cover. Green waste and compost rejects ADC shall not be used during periods of rain and will not be used on permanent or semi-permanent exterior landfill slopes, or on the top deck.

C&D Fines Application Method

When used as ADC, C&D fines will be delivered to separate daily stockpiles on the top deck and near the toe of the advancing slopes. At the end of each day, the material will be pushed by a dozer, spread, and track-walked to a minimum compacted thickness of six inches.

C&D fines ADC shall not be used during periods of rain and will not be used on permanent or semi-permanent exterior landfill slopes, or on the top deck.

Tarping Application Method

Tarp ADC applied to the active area of the cell are deployed by heavy equipment. Tarps will extend beyond the edge of exposed waste in all directions to ensure full coverage of waste. If multiple tarps are utilized, the tarps will be overlapped to ensure full coverage of waste. Tarp utilization will be limited to no more than 4 consecutive days or until the waste cell reaches 2,100 tons. Upon reaching this point, a minimum of 6 inches of earthen material shall be placed over the cell.

Tarping ADC will not be used during periods of rain, if wind speeds exceed 30 mph for a period longer than 2 minutes, and on permanent or semi-permanent exterior landfill slopes.

Cover Materials Optimization Strategies

The following strategies are recommended as a means of reducing daily cover soil use:

- Maximize compaction before application of cover material. In addition to constant attention to compactive effort by dozers and compactors, frequent application of water or leachate at the active face will help achieve a compact face with minimum voids for soil to filter into.

- When available, spread a thin layer of crushed glass, or C&D fines over the compacted waste to fill voids before placing soil. Use only Non-HI-5 separated glass for this use. Use compost, green waste mulch, or other approved alternative daily cover (ADC) materials to the maximum extent possible. Spreading and compacting a layer of mulch before applying soil cover will reduce the amount of soil required to cover the refuse. Advancing temporary refuse slopes may be covered overnight with ADC and no soil cover, provided additional refuse is placed against it on the following day. Application of ADC materials is described in further detail in Section 10.6 below.

- Supervisors with the assistance of an equipment operator should periodically check the thickness of daily cover soil. This can be done using a shovel, and would be appropriately done at random in the early morning to check the previous day's cover. If more than six inches of soil is found, operating staff should be shown the condition, and encouraged to use no more soil than is necessary.

- When available, use cohesive soils such as HC&D overburden materials or other waste soils for daily cover instead of more granular material. Such soils are more capable of bridging voids in the waste with less loss into the refuse.

- Always attempt to reclaim and reuse intermediate and daily cover when placing a new lift across the top deck of the landfill. A dozer can be used to reclaim the previous day's daily cover soil from temporary slopes where refuse will be placed. The reclaimed daily cover soil can be stockpiled adjacent to the working face. Because the reclaimed daily cover soil can be contaminated with refuse, this material is not always suitable as a replacement for clean daily cover soil. The reclaimed daily cover soil, when contaminated with refuse, will be used as a leveling layer prior to clean daily cover soil placement.

- Prior to placing the reclaimed daily cover soil, the day's working face should be prepared to receive the reclaimed daily cover soil. The landfill compactor leaves large divots on the surface of the refuse. These divots will absorb a significant quantity of daily cover soil. To reduce the size and quantity of these divots, run a bulldozer over the entire surface, as the cleats on the bulldozer will smooth the surface of the refuse. After the bulldozer has smoothed the entire surface of the refuse, then the bulldozer is used to spread reclaimed daily cover soil over the surface of the refuse. Once the reclaimed daily cover soil is deployed, the clean daily cover soil can be placed.

10.4 Daily Cover Verification and Reporting

By permit, CML is required to document and report to the HDOH that daily cover is properly applied on a daily basis. The verification program includes the following two components:

- Daily photographic documentation. The Landfill Worksite Supervisor will assign an

individual each day to take digital photographs of the active disposal face. One photograph is to be taken during the middle of the workday, and another at the end of the day following placement of daily cover. The photographs are to be e-mailed within 12 hours with cell location information to the designated person at the Department of Health. The photos are to be maintained on site and certified by the appropriate personnel.

- Daily cover records. Designated CML personnel will be responsible for obtaining and recording daily information on the volume of waste disposed, approximate dimensions of the day's working face, and the volume (in tons and cubic yards) of cover soil applied. This data will be kept in a computer database and summarized in the Annual Operating Report.

10.5 Intermediate Cover

Filled areas that will not receive additional waste fill for 30 days or more must receive at least 12 inches of intermediate soil cover. The soil will be obtained from stockpiles, including recovered clean soil that meet the criteria outlined in Section 13.6.6, or imported in accordance with a soil management plan prepared by the Solid Waste Superintendent with the concurrence of the Solid Waste Division Chief. The landfill operations supervisor will calculate the quantity of intermediate soil cover to be placed prior to placement of the soil and work with landfill operational personnel to monitor actual quantities used.

Equipment operators will use the front-loader to load the dump truck. The end dump will deposit the soil at or near the area to receive intermediate soil, as directed by the operator. The dozer operator will spread the soil to achieve a final thickness over refuse of no less than 12 inches.

When areas that have received intermediate cover are scheduled for additional waste filling, site personnel will use bulldozers to reclaim as much of the cover soil as possible before the next successive lift of waste is placed. The methodology of reclaiming daily cover soil as described in Section 10.3 would be applied for reclamation of intermediate cover soil.

In addition to receiving intermediate cover soil, areas of the landfill that have reached permitted final grades will be hydro-seeded or otherwise treated to establish a vegetative cover and minimize erosion. Additionally, best management practices for reducing erosion will be implemented. These include providing additional temporary storm water berms to reduce the amount of overland flow, surface roughening and contour-grading the soil before it is hydro seeded, mulching and matting, using silt fences along the toes of newly seeded slopes, and providing outlet protection such as riprap where flows are concentrated. Problem areas will be given special consideration and may require the use of straw bales or erosion control mats.

11 SLUDGE AND GREEN WASTE MANAGEMENT

11.1 Overview

The County of Maui generates an average of 70 to 80 tons per day (approximately 25,000 tons per year) of wastewater treatment sludge. This material is presently managed by Maui EKO Systems, Inc. at the composting facility located in Phase III area along with an average of 25 to 30 tons per day (approximately 18,000 tons per year) of green waste. The green waste is shredded and is mixed with sludge and composted. On a daily average, approximately 95 to 110 tons per day of the sludge and shredded green waste mulch mix is produced.

With the planned development of the Phase III-A area, the existing compost facility will be relocated to the Phase III-B area. As a result of the reduced operating area, EKO estimates the compost facility process capacity will be reduced by approximately 2/3 with the resulting need to landfill the quantity of mixed sludge and green waste that exceeds the remaining 1/3 processing capacity. Under these circumstances, approximately 35 tons per day of mixed green waste mulch and sludge would be composted and the remaining balance of 68 tons would be landfilled.

If in the event, EKO ceases operation of the composting facility, the County will either contract with an alternate compost facility operator immediately upon notice from EKO or take over the receipt, handling, processing, and mixing of the incoming sludge and green waste. If a successor compost facility operator is secured (either immediately after notice from EKO or at a later date), it would be expected that 1/3 of materials would be composted with the remaining balance continuing to be landfilled. If the County assumes responsibility for management of sludge and green waste, all sludge will be landfilled (either directly or mixed with green waste mulch) and green waste mulch generated in excess of that required for mixing with sludge would be beneficially utilized as ADC or as mulch on the interim landfill slopes.

The County is currently evaluating other locations to site the composting facility. Locations being considered will provide area adequate to develop operational capacity to process all of the on-island sludge and all of the available green waste materials. The County intends to complete the siting selection, permitting, and construction of the relocated facility no later than the commencement of Phase III-B construction currently projected for 2023.

11.2 Current Material Handling and Processing

Currently, EKO receives and processes all incoming sludge and green waste materials. The sludge is delivered to the sludge receiving pit located in the Phase III-B area. Green waste is received at the north end of the Phase III-B area where it is shredded in either a tub grinder or horizontal grinder to an average particle size of approximately 5 inches. The sludge and green waste mulch is mixed with a wheel loader at a ratio of approximately 3 to 4 parts green waste mulch to 1 part sludge. Mixing is conducted immediately east of the sludge receiving pit. All sludge received is mixed by the end of the day it is received. Mixed material is stockpiled adjacent to the mixing area for a maximum of 48 hours after mixing and then 100% of the mixed material transported to the active composting area.

11.3 Planned Material Handling and Processing

11.3.1 Option 1 - Reduced Composting Operations in Phase III-B and Landfilling

Prior to the commencement of construction of the Phase III-A area, the compost operation will be relocated to the Phase III-B area and continue to be operated by EKO or other 3rd-party. After relocation, the green waste receiving and processing area will be located in approximately the same location as the present as will the sludge receiving pit and sludge mixing area. Green waste will continue to be processed through the grinders and be mixed with 100% of the incoming sludge. Approximately 1/3 of the mixed materials will be composted in the Phase III-B area and the remaining 2/3 will be transported via dump trucks, to the landfill for disposal. CML operations personnel have evaluated the mixed materials and expect it will handle similarly to other wastes currently landfilled.

11.3.2 Option 2 - Landfill Disposal

The landfill disposal option would be implemented if EKO and the County are unable to continue the composting operation in the reduced area of Phase III-B; thereby making landfill disposal necessary.

11.3.2.1 Mixed Sludge and Green Waste Disposal

In this option, the mixing of sludge and green waste mulch would continue, as previously described, and 100% of all mixed materials would be transported to the landfill for disposal. On a daily average, approximately 105 tons per day of mixed materials would be landfilled.

Any excess quantities of green waste mulch would be utilized as landfill ADC or as mulch on interim landfill slopes.

11.3.2.2 Sludge Direct Landfilling

In this option, the sludge would be landfilled directly without mixing with green waste mulch. Incoming sludge delivery trucks would be directed to discharge their loads at the active landfill face. On a daily average, approximately 70 to 80 tons per day of sludge will be landfilled.

Direct landfilling of sludge, due to its wet nature, may require modification of the landfilling methods applied at the active working face. The following is a discussion of the approach to reviewing the specific conditions present and methods that can be applied to address operational challenges.

Landfilling of sludge can present complications when placing and compacting these wetter materials with MSW. The traditional landfilling practice commonly referred to as the advancing face where incoming MSW is spread on a sloping face below the tipping area and compacted may not be a practical option when receiving sludge for co-disposal with MSW as placement of these wetter materials can prevent efficient operation of heavy equipment (dozers and compactors) on the slope. On a sloped working face with sludge applied, dozers and compactors may not be able to gain traction and may get stuck on the slope or slide to the bottom. Due to site-specific operational practices and the quantity of sludge as it relates to the quantity of MSW, the CML should assess the impact of sludge receipt to operations and determine if utilization of the advancing face operational method is still practical based on the specific quantities of sludge

and MSW received. If the quantity of sludge exceeds that which can be efficiently handled using the advancing face operational method, then an alternative placement method utilized commonly at landfills receiving relatively high volumes of sludge can be employed. This alternative method is commonly referred to as “horizontal landfilling” or “Pancake method”.

The horizontal landfilling method entails placement of successive layers of MSW in horizontal lifts across an area dimensioned to provide up to one week operational capacity until reaching the overall lift design height. By using the horizontal plane rather than a sloped face to spread, place, and compact waste the issue of heavy equipment impacted by loss of traction is eliminated. Additionally, by eliminating the sloped working face, the wear and tear on the heavy equipment is reduced and overall fuel consumption is also reduced.

The planning sequence of this operational method is generally as follows:

1. Determine disposal capacity required for one week of operation. Review recently completed disposal areas over a defined period of time to determine airspace consumed for this period. For the same time period, calculate total MSW tons landfilled. Calculate the average in-place density (tons/cubic yard). Using the average density, calculate the average airspace consumed per average week’s incoming disposal tonnage. This volume is the average weekly disposal capacity required.
2. Establish desired height of completed lift. CML currently utilizes a lift height of 15 feet.
3. Calculate average area and dimensions of the horizontal landfill active face. Take the one week disposal capacity volume and divide it by the desired lift height. This will provide an average area of the horizontal landfill active face. This area can be dimensioned into a square or a rectangle of desired dimensions. Typically, square or near square areas are the most efficient to utilize.
4. Locate the next active fill area and layout the horizontal active face by placing stakes or other markers at each corner.
5. If the new active fill area is located over an existing refuse lift, prior to initiating landfilling in the area, operations should reclaim the existing daily or intermediate cover. This entails scraping off the cover with a tracked dozer and placing it just beyond the outer edge of the active area limits. Cover should be removed until refuse from the prior lift is exposed. Effort should be made to minimize contaminating the reclaimed cover with refuse.

The operational sequence for the horizontal landfilling method is generally as follows:

1. For the first 2 days of the operational period of an active fill area, the incoming refuse trucks and sludge trucks can tip on the same deck as the active fill area as the waste and sludge will be pushed across the deck and placed and compacted in a uniform depth. If the active area is the first lift on a new deck or in a new cell the trucks will dump on the floor adjacent to the active area throughout its operational period.
2. When the active area is adjacent to an existing refuse lift, typically by Day 3, the refuse and sludge trucks will be relocated to tip off the top deck of the adjacent lift for ease of handling and moving the materials onto the horizontal area.
3. The goal of the horizontal landfilling method is to provide an area large enough to permit spreading of incoming sludge in relatively thin lifts (2 to 3 feet typically) over compacted refuse and then spread additional refuse over the sludge to bridge over the wetter sludge and permit efficient operation of the compactor with multiple passes (3 to 5) over the refuse without being subject to loss of traction and getting stuck. After an area is compacted, additional sludge is applied as previously described and the process repeats.
4. Typically, the material placement sequence as described in No. 3 above is repeated 4

times during each operational day.

5. As the elevation of the horizontal fill area increase, the exterior slopes of the newly forming lift will be cut and tracked by the dozer to maintain slopes of approximately 3:1. Diligently controlling the slope and maintaining the 3:1 grade will ensure the operational time for the area is one week as planned.
6. At the completion of each operational day, the exposed refuse slopes and the top of the horizontal fill area will be covered with daily cover or an approved ADC.

12 ENTRANCE AREA OPERATIONS

This section summarizes information regarding facilities and operating procedures for the residential recycling drop-off area (Station 1) and residential waste drop-off area (Station 2) located in the CML entrance area.

12.1 Access

Access to the public waste and public recycling drop off areas are via the main landfill entrance on Pulehu Road. The paved all-weather road between the site entrance and the truck scales has in excess of 600 feet of length for queuing and staging of vehicles, which is sufficient for at least 20 commercial collection vehicles or 30 self-haul customers.

Operating hours and access control for the entrance area is as described for the overall facility in Section 2.4, Section 4.2, and Section 6.

12.2 Waste Acceptance and Storage

The entrance transfer station is permitted to receive self-haul household and commercial waste as defined in HAR Section 11-58.1-03. In addition, the entrance facility accepts residential construction and demolition waste, and receives and temporarily stores special wastes and source separated recyclable materials from residential sources.

The following waste types are not allowed for disposal:

- Regulated hazardous waste
- Radioactive waste
- PCB waste
- Untreated medical waste/infectious waste
- Liquids in bulk containers (larger than normal household containers)
- Residential loads containing more than 50% green waste
- Scrap automobiles
- Whole motor vehicle items
- Compressed gas tanks
- Regulated asbestos containing material
- Commercial loads containing more than 25% green waste

In Fiscal Year 2016 (July 2015 through June 2016), approximately 60-tons of waste per day were transferred from Station 2 to the CML active landfill for disposal.

12.3 Station 1 – Residential Recyclable Drop-off Area

The residential recycling drop-off area is located near the site entrance. It accepts only the following source-separated materials:

- Corrugated cardboard
- Newspaper
- Glass Containers
- Plastic containers
- Bi-Metal Cans
- Aluminum cans

- Scrap Metal

These recyclable materials listed above are only accepted if free of fluids and/or contaminates (i.e. paints, oils, solvents, etc.). Leaded glass is not acceptable.

Station 1 is constructed with eight unloading positions for four (4) below-grade containers, 2 of which are used for corrugated cardboard and the other 2 for scrap metal. Three large containers are set above-grade for glass, plastics and newspaper, and one small container is provided for aluminum cans. The facility generally operates as an unattended convenience station for residents to drop off their source-separated recyclables. Landfill personnel located in the nearby administration building, or other operations personnel at the scalehouse or residential waste drop-off facility (Station 2) are available to advise customers on locations for recycling materials not accepted at CML.

The County contracts with a commercial collection company to service the facility and haul full bins to a licensed recycler for processing or transport to markets. Landfill and contractor personnel perform routine housekeeping duties to maintain the facility in a clean and orderly condition. Currently, the final disposition for recyclables and scrap metals is Maui Disposal and Hammerhead Metals respectively.

The maximum storage capacity for recyclable materials is as follows:

- Four 20-cubic yard roll-offs or compactors below grade
- Five 20-cubic yard toll-offs at grade

12.4 Station 2 – Residential and Commercial Waste Drop-off Area and Residential Special Waste Storage Area

Members of the general public who bring refuse to the site are directed to bypass the scales and unload their waste into roll-off bins set below grade located at Station 2. Five bins are provided, each of which is set below two designated stations into which customers back their vehicles for unloading. A landfill attendant inspects loads as they arrive and directs customers to a designated area, and prevents customers from trying to scavenge waste. Unacceptable loads containing greater than 50% green waste are diverted to the EKO green waste processing facility.

Only commercial customers utilizing non-hydraulic vehicles are allowed to dispose of waste at Station 2. These commercial customers are first directed to scalehouse for initial screening and weighing prior to offloading at Station 2. This is done as a safety precaution to prevent commercial customers from having to manually offload at the active landfill area. After unloading at Station 2 the customer may be directed back over the scale to weigh out or to exit the facility.

When the waste bins are full, the unloading stations are blocked off while the bins are pulled, weighed at the scalehouse, hauled to the adjacent landfill, emptied at the active face and returned to the unloading station.

The maximum storage capacity for collected household waste is as follows:

- Household Waste Limit: Eight 20-cubic yard roll-offs

A permanent wind barricade, directly upwind of Station 2, was constructed to mitigate the strong afternoon winds that blow directly across the waste bins toward the customers who are dumping material into the bins.

Storm water from the vehicle maneuvering area is collected in the site's general storm water system and drained to the sedimentation basin at the northeast corner of the Phase IV area. Runoff from the area where the roll-off bins are located is collected in a designated catch basin and drained by gravity to a sump located next to the leachate storage facility. It is transferred by a float-actuated pump from the sump to the leachate storage tanks, and managed along with landfill leachate.

12.5 Operational Issues

A landfill attendant is on duty at Station 2 during all operating hours. The attendant's duties include the following:

- Supervise the vehicle queue and direct customers to a specific unloading station.
- Inspect each load before and during unloading into the roll-off bins to prevent unacceptable materials from being discharged. Ensure no burning or smoldering materials are deposited in the bins.
- Direct customers with unacceptable loads or materials to an appropriate alternative location for disposal.
- Block off unloading bays when the roll-off bin is full, and communicate with roll-off truck drivers to minimize bay downtime during bin change-out.
- Pick up litter in the area as time allows.

Station 2 is most heavily used on weekends, when daily volumes of 60 to 80 tons are common, with the average load per vehicle of approximately 200 pounds. During peak weekend hours, the County may implement the following measures to alleviate the queue of self-haul vehicles waiting to unload:

- A second roll-off truck may be put on duty to reduce the amount of time unloading stations are out of service during bin change-out.
- Larger bins may be acquired for use in the facility, to increase the time between bin change-outs and increase the available time for each unloading position.
- The bypass lane, which normally is available for customers, may be used for queuing during peak hours.
- A second landfill attendant may be put on duty to improve traffic management and ensure effective supervision of customers.
- As a long-term improvement, a facility expansion may be considered.

12.6 Unloading Waste and Recyclables

The unloading of solid waste will be in one of 5 bays at Station 2 and 4 bays in Station 1.

The unloading of waste and recyclables in unauthorized areas is prohibited. Any material deposited in an unauthorized area will be removed immediately and managed properly. A landfill attendant will be present at Station 2 at all times during operating hours to monitor all incoming loads of waste, and will direct traffic to the appropriate unloading area.

Landfill attendants will monitor the incoming loads. These personnel will be familiar with the facility hazardous waste exclusion program (Section 13) and applicable rules and regulations governing the various types of waste that can or cannot be accepted into the facility. The personnel will also have a basic understanding of both industrial and hazardous waste and their transportation and management requirements. The facility is not required to accept any solid waste that may cause problems in maintaining full and continuous compliance with its permit and applicable regulations.

Personnel have the authority and responsibility to reject unacceptable waste, have unauthorized material removed by the transporter, and/or assess appropriate surcharges, or have the unauthorized material removed by on-site personnel and otherwise properly managed by the facility. Any prohibited waste not discovered until after unloading will be placed back in the offending transporter's vehicle, if possible, or otherwise returned promptly to the transporter or generator of the waste. The driver may be advised where the waste may be managed or disposed of legally and will be responsible for the proper handling of this rejected waste.

Facility personnel will keep vigilant watch for compliance with operating requirements. Signs with directional arrows and/or portable traffic barricades will help to restrict traffic to designated unloading locations. In addition, rules for waste receipt and prohibited waste will be prominently displayed on signs at the facility entrance.

12.7 Storage Requirements

All solid waste, special waste, and recyclables will be stored in such a manner that it does not constitute a fire, safety, or health hazard or provide food or harborage for animals and vectors, and shall be contained or bundled so as not to result in litter.

The Station 1 storage area for source separated residential recyclable materials is separate from the solid waste at Station 2. Roll-off bins, when filled, at Station 2 shall be switched with empty bins and the full bins transported to the landfill and discharged at the active face. Household and commercial waste will not be stored in roll-off bins for periods exceeding 24 hours, except for roll-off bins that are not full by the end of Saturday operations may be stored longer than 24 hours provided the bins are appropriately covered with a tarpaulin (or other cover system which minimizes water infiltration, odors, vectors, litter, and fire) and landfilled on the next operational day. Control of odors, vectors, and windblown waste from the storage areas will be maintained through implementation of good housekeeping practices and use of well-maintained storage bins.

Special wastes received will be segregated and stored in accordance with Section 13.5.4 in areas indicated in Figure 2.

13 SPECIAL WASTE ACCEPTANCE / HAZARDOUS WASTE EXCLUSION

This section describes procedures and programs implemented at CML to prevent the disposal of hazardous or other unacceptable wastes, and to manage special wastes in accordance with State regulations and the site's operating permit.

13.1 Waste Acceptance

Preventing unacceptable waste from entering the facility is critical. The principal objective is to eliminate the commingling of municipal solid wastes with wastes that are classified as hazardous waste as defined in 40 CFR 258.20 (a copy of Hazardous Waste Exclusion Program is provided in Appendix F). To ensure achieving this goal, a stringent waste inspection and acceptance program is used.

All commercial waste delivered for disposal will be weighed at the scale and recorded on individual scale ticket receipts. A receipt showing weight received will be produced for each load of waste delivered. One copy of the receipt is to be provided to the driver of the vehicle making the delivery and a second copy is retained for County records by the scalehouse attendant.

The County of Maui Department of Environmental Management requires waste loads to be secured and covered or the load may be rejected.

13.2 Unacceptable Wastes

The following waste types are not accepted for disposal at CML:

- Hazardous or PCB contaminated wastes
- Untreated infectious and pathological waste from hospitals, veterinary facilities, and other similar facilities
- Bulk Liquids
- Agricultural waste unless approved by landfill personnel
- Green waste (commercial loads containing greater than 25% and residential loads containing greater than 50%)
- White goods (accepted for recycling at the CML entrance facility)
- Vehicles
- Whole Tires
- Unflattened cardboard boxes
- Tree trunks, roots, telephone poles, piling, cables, wire fences, and similar types of materials
- Drums unless one end is completely open
- Compressed gas tanks
- Fats, oils and greases
- Automobile batteries
- Radioactive wastes
- Electronic wastes

13.3 Waste Screening

13.3.1 Commercial Waste

Commercial waste loads received at the facility are subject to the waste inspection program which

includes the set of waste acceptance criteria listed below. These criteria meet or exceed the state's requirements for solid waste handling. CML will not accept any commercial waste that does not comply with the control criteria. These criteria include at least the following six major components:

- Inquiry by scalehouse attendant
- Visual check of loads by scalehouse attendant
- Random waste inspections at unloading point
- Signed certification by deliverer for questioned materials
- Reference to list of unacceptable materials and recording previously rejected materials by source
- Radiation monitor installed at the weigh station

All generating sources of questionable solid wastes are advised of waste acceptance criteria and asked to pre-qualify their waste and employ management procedures that conform to operating requirements and permit conditions. Information is supplied to generators describing acceptable and restricted wastes.

Physical inspection of wastes occurs at two locations: (1) the generating source by commercial and municipal collection operators, and (2) the disposal facility. Operating personnel are trained to differentiate between conforming and nonconforming waste and to identify typical unacceptable wastes. If a waste appears to be nonconforming, the waste rejection procedures are implemented. All operations personnel are informed of the implications of accepting nonconforming wastes to CML and themselves.

If unacceptable wastes are identified, they are to be handled in accordance with regulatory requirements for that class of waste. The waste should either be returned to the source, or shipped to a proper disposal facility permitted to accept it. Personnel at the generating source may be notified about the unacceptable material and informed of the waste acceptance criteria. The County will notify the HDOH if a regulated hazardous waste or PCB waste is discovered at CML.

13.3.2 Residential/Self-Haul Loads

Residential/Self-Haul waste loads received at the entrance facility (Station 2) are subject to the waste inspection program which includes the set of waste acceptance criteria listed below. These criteria meet or exceed the state's requirements for solid waste handling. CML will not accept any waste that does not comply with the control criteria. These criteria include the following four major components:

- Inquiry by scalehouse attendant.
- Visual check of loads by scalehouse attendant.
- Random waste inspections at unloading point.
- Reference to list of unacceptable materials and recording previously rejected materials by source.

If a waste appears to be nonconforming, the waste rejection procedures are implemented. All operations personnel are informed of the implications of accepting nonconforming wastes to CML and themselves.

If unacceptable wastes are identified, they are to be handled in accordance with regulatory requirements for that class of waste. The waste should either be returned to the source, or shipped to a proper disposal facility permitted to accept it. The customer discharging the waste may be notified about the unacceptable material and informed of the waste acceptance criteria. The County will notify the DOH if a regulated hazardous waste or PCB waste is discovered at CML.

13.4 Hazardous Waste Exclusion Program

The County has implemented a Hazardous Waste Exclusion Program at CML. This program was developed to comply with 40 CFR 258.20 and involves waste acceptance procedures that prohibit the receipt of hazardous wastes. A copy of this program is included in Appendix F.

13.5 Special Waste Management Procedures

Special wastes are defined in HAR 11-58 as any solid waste which, because of its source or physical, chemical, or biological characteristics, require special consideration for its proper processing or disposal, or both.

This section describes the specific programs and procedures implemented at the landfill and the entrance facility to manage Special Wastes most frequently encountered at the site. Other Special Wastes, which may be proposed to be managed at the site will be reviewed and accepted or rejected in accordance with the applicable special waste regulations.

Processing of special wastes such as the removal of refrigerant from white goods is prohibited.

13.5.1 Landfill Special Waste Management Procedures

13.5.1.1 Infectious Waste

Only medical wastes that have been autoclaved or otherwise rendered non-infectious may be accepted for disposal at CML. Acceptable medical wastes will be handled in accordance with the following procedures:

- Generators of medical waste are notified that all medical waste to be received at the landfill must be placed in red bags or sharps containers marked "Medical Waste" and autoclaved.
- Waste haulers are notified of these requirements to ensure that their drivers know how to properly inspect waste prior to pick-up.
- Properly packaged and autoclaved medical wastes are disposed of at the working face with other wastes.
- Site personnel, when conducting random load checking, verify that the acceptance criteria have been complied with. However, under no circumstances are the red bags to be broken and spread out for inspection or handled by anything but landfill equipment.
- In the event of receipt, or suspected receipt, of untreated infectious waste, Landfill personnel will attempt to determine the source of the wastes that may not meet the acceptance criteria. Landfill personnel will interview the refuse truck driver, attempt to determine the origin of the waste, and address the issue with the hauler and the suspected generator to ensure there

is not a recurrence.

For purposes of this document and acceptance at the CML, the definition of unacceptable medical waste are those which are generated at a medical facility and have not been properly packaged in medical waste containers (typically red bags and sharps containers) and autoclaved, including the following: pathological and surgical wastes, medical clinic wastes, wastes from biological laboratories, syringes, needles, blades, tubing, I.V. bags, bottles, patient care items such as liners, personal and food services items from contaminated areas, chemicals, personal hygiene wastes, and animal carcasses used for medical purposes. These restrictions do not apply to household wastes that may contain incidental amounts of the listed items.

13.5.1.2 Asbestos Waste

Special procedures are implemented at CML to ensure that the requirements of 40 CFR 61.154 (National Emission Standards for Hazardous Air Pollutants) are met. After complying with all special waste acceptance procedures, asbestos waste transporters are allowed entry to the site at a pre-scheduled time. The scheduled time is to be established by the Supervisor in consultation with the scale attendants and County Worksite Supervisor.

All asbestos containing wastes are required to be contained in metal or plastic drums or barrels, or be double wrapped or double bagged in plastic with a minimum thickness of six mils. Asbestos loads are inspected at the scalehouse to verify they are double-wrapped or double-bagged as required, then directed to an area near the working face for disposal, where a trench or pit has been excavated in previously filled solid waste. The designated asbestos disposal area is posted with warning signs to identify and restrict access to the area to all except trained personnel.

A landfill attendant is always present at the disposal area when an asbestos load arrives, and, prior to discharge of the load, reviews/verifies the paperwork to ensure the load has been properly processed at the scalehouse. If the documentation is in order, the landfill attendant directs the customer to the disposal trench and oversees the unloading process. Most asbestos loads are discharged by self-unloading trucks, although occasional loads are unloaded by hand. If the landfill attendant observes significant tearing of the plastic wrapping of the asbestos waste, the customer is required to re-wrap and seal it before leaving the site.

Asbestos waste is not compacted or otherwise disturbed by equipment after being unloaded, in order to maintain the integrity of the double wrapping. It is covered on a daily basis with a minimum of 6 inches of soil. Cover soil, consisting of clean soil is delivered by truck and spread by a front-end loader or bulldozer. Equipment wheels or tracks are not operated in contact with the asbestos waste, but on a layer of soil placed or pushed over the waste before driving over it.

Documentation of the date, time, names of the waste generator and transporter, and location within the site where the waste was disposed is placed in the site's permanent operating record. Asbestos load locations are identified by a grid coordinate system, and including elevation within the fill.

Landfill personnel are given special training in asbestos handling and hazard management. Training topics include manifest requirements, unloading and covering procedures, use of personal protective equipment, safety measures, and emergency procedures. These and other topics are covered in annual refresher training sessions required of all personnel involved with asbestos disposal. Training records are maintained in the site's operating record.

In addition to the general emergency procedures described in Section 14.5 of this Operations Plan, the following contingencies unique to asbestos disposal are covered in training:

Asbestos material spills are to be treated generally as a hazardous material spill, as described in Section 14.5.5, with the following refinements:

- A manager or supervisor with asbestos experience is to direct all cleanup activities.
- After isolating the spill area with cones or flags, the material is inspected to determine the extent of damage to plastic wrapping or other containment, and whether the material appears to be friable or non-friable asbestos.
- If the material is non-friable, site personnel wearing gloves and respirator masks may repackage the material in plastic or in drums, and load it for transport to the disposal area.
- If the material is friable and the packaging is substantially damaged, the load must be covered by a plastic tarp and secured, and a licensed asbestos contractor called in to repackage the spilled material and deliver to the disposal area. Landfill personnel are not to participate in handling friable asbestos waste until it has been properly repackaged and placed in the disposal area.
- A full report of the incident, including a description of the cleanup activity, will be placed in the daily operating log.

Mismanaged asbestos deliveries are incidents where undocumented loads of asbestos might be accepted for disposal, or loads containing asbestos waste are mistakenly accepted as general solid waste and are directed to the general disposal area. Landfill attendants and equipment operators are trained to recognize such loads and prevent their disposal as general solid waste. Appropriate responses to mismanaged asbestos loads include the following:

- If a load shows up at the working face without proper asbestos paperwork (a manifest approved by the scale attendant), the landfill attendant is to deny it access to the dumping area, and direct the driver to return to the scalehouse.
- If landfill attendants or equipment operators at the disposal area are not aware that an asbestos load is expected, and identify an asbestos-containing load before it is dumped, they will summon a supervisor to check the driver's paperwork. If the documentation is in order the supervisor will determine whether to reject the load entirely, or to prepare a disposal trench and allow it to be unloaded. If the load does not have appropriate paperwork, the driver will be directed back to the scalehouse.
- If asbestos waste is identified during or after the time a load is dumped outside the designated asbestos area, it will be treated as an asbestos material spill. The area will be cordoned off by cones or flags and regular disposal operations will be relocated away from the area.

13.5.1.3 Radioactive Waste

As provided by State and Federal law, CML does not accept radioactive waste of any type. Radioactive materials generated by medical facilities and other sources are managed under

regulations of the HDOH pursuant to Chapter 40 of Hawaii Administrative Rules, Title 11.

In order to prevent inadvertent acceptance of radioactive waste, the weigh station is equipped with a radiation detector. Should the radiation detector be activated, the scale attendant will notify the Solid Waste Superintendent. A portable radiation monitor will then be used to confirm radioactive loads and rule out the possibility of false positives.

Upon confirmation that contents of the vehicle caused the alarm, the vehicle would then be escorted to an isolated area. Driver and CML employees would be warned to stay away and the appropriate radiation management agencies shall be notified. Should the vehicle be privately owned, the company shall also be notified.

The radiation management agency will then isolate the radioactive refuse and determine the appropriate course of action in compliance with HDOH regulations. Additional information can be found in Appendix K Radiation Monitoring Plan.

13.5.1.4 Liquid Waste

The CML is prohibited from accepting bulk or non-containerized liquid wastes or semi-solid wastes containing less than 50 percent solids. Small quantities of liquid waste generated by households, other than septic waste, can be accepted.

Customers proposing to dispose full loads of unusually wet wastes to the landfill may be required to submit test results demonstrating that the waste contains at least 50% solids as determined by the paint filter test, before the waste is accepted for disposal.

Dewatered sewage sludge will be directed to the composting facility located in the CML Phase III area, where it will be mixed and composted with green waste.

13.5.1.5 Dead Animals and Offal

Dead animals, or offal from the slaughter of animals, will be handled in accordance with the following acceptance and disposal procedures:

- The scale attendant will notify the appropriate site personnel of the waste and direct the customer to an area isolated from the main unloading area.

- A trench will be cut to facilitate disposal and the carcass or offal will be buried immediately. The carcass will be covered with a minimum of two feet of soil or solid waste, and compacted before the end of the work day.

- Customers wishing to bring in extremely large carcasses, such as a whale, must notify the County in advance by telephone so provisions can be made to excavate a sufficiently sized trench.

13.5.1.6 C&D Waste

The criteria by which C&D waste is accepted and handled at the CML is summarized below:

All C&D customers are subject to CML prequalification procedures. Customers are required to

execute a disposal agreement and submit a Request for Clearance Number Form to CML, generally 7 days in advance of the date when the customer proposes to begin transporting waste to the CML. Following the inspection, CML issues a clearance number, which is referenced for each load from the job site.

Waste generators are responsible for determining and reporting to CML that wastes proposed for management are not regulated hazardous waste. CML requires testing for several categories of C&D waste, including debris containing lead paint, sand blast sand and soil. These materials must be tested using the Toxicity Characteristic Leaching Procedure (TCLP) and meet the following maximum criteria:

Lead Paint Debris	Lead	5.0 mg/L
Sand Blast Sand and Soil	Arsenic	5.0 mg/L
	Barium	100.0
	Cadmium	1.0
	Chromium	5.0
	Lead	5.0
	Mercury	0.2
	Selenium	1.0
	Silver	5.0

Fiberglass or steel waste storage tanks proposed for disposal must be certified clean by a qualified environmental contractor.

Customers are required to submit test results and certifications for these materials before CML issues a Clearance Number authorizing acceptance of the waste for disposal.

When waste transporters arrive at the CML scalehouse, if the scale attendant has any doubt or concern regarding the acceptability of the material, site supervision is summoned to the scalehouse to inspect the load and determine its acceptability.

A minimum of two loads of C&D waste is selected each week for a random inspection according to procedures detailed in Section 13.3. If unacceptable waste is found, the material is reloaded in the customer's vehicle and removed from the site. Records are maintained of unacceptable wastes observed during inspections.

C&D waste loads will be delivered to the active working face for municipal solid waste (MSW) and unloaded as directed by landfill staff. Any unacceptable materials identified by spotters or equipment operators will be removed from the load and managed according to operating procedures for MSW. The loads will then be spread, compacted and covered together with MSW.

CML personnel at the designated processing areas will further inspect source-segregated loads of concrete, asphalt, rock soil, wood and other waste materials accepted for recycling or reclamation, by observing the material as it is dumped to identify any unacceptable materials. C&D waste acceptance forms are included in Appendix L.

13.5.1.7 Contaminated Soil

Generators must submit a Soil Profile Sheet (Appendix L) describing the source of the material

and containing analytical test results for specified contaminants.

Additional testing may be requested on a case-by-case basis. Soils containing TSCA- regulated polychlorinated biphenyls (PCBs) are not accepted. After additional testing, soils may or may not be considered hazardous waste.

Depending on the type and amount of contaminants as determined by the soil profile and test results, the County determines the disposition of each soil material as follows:

- Soils classified as regulated hazardous waste or TSCA regulated waste are not accepted;
- Soils that must be disposed in the landfill;
- Soils that may be used on-site for daily cover; and
- Soils that may be used on-site for structural fill, intermediate and final cover.

CML operates two or more soil storage stockpiles at a time. A bulldozer is used to push soil unloaded by customer vehicles into one of the stockpiles, which are located in a designated area.

Soils meeting the criteria listed in Table 1 and maximum aggregate size of 2 1/2-inch minus will be placed in the soils storage areas, where they will be held for subsequent use either as daily cover, structural fill, intermediate, and final cover materials.

Table 1: Acceptance Criteria for Soils Used On-Site

TPH gasoline	2,000 mg/kg
TPH diesel (C12–C24)	5,000 mg/kg
TPH oil (C24–C30)	5,000 mg/kg
Bioaccessible arsenic	95 mg/kg
Toxicity Equivalent (TEQ) dioxins	1,800 mg/kg
Technical chlordane	65 mg/kg
All other chemicals	Tier 1 State of Hawaii commercial/Industrial Environmental Action Levels (EALs)

Soils that must be disposed in the landfill are soils not meeting the criteria in Table 1 and maximum aggregate size of 2 1/2-inch minus and exceeds the Hawaii commercial/Industrial EALs.

Soils that may be used on-site for daily cover are soils meeting the criteria listed in Table 1 and maximum aggregate size of 2 1/2-inch minus. These soils will be placed in the soils storage area, where they will be held for subsequent use as daily cover material.

Soils that may be used on-site for structural fill, intermediate and final cover are clean soils with no petroleum products contamination that also meet the Hawaii residential EALs (these soils are classified as uncontaminated).

13.5.1.8 Clean Inert Materials

CML may use rock, dirt, concrete and asphalt for construction of on-site roads and wet-weather pads. Source-separated clean loads of these materials will be diverted to the designated stockpile areas for future use.

13.5.1.9 Scrap Metal

Subject to the availability of equipment and labor, large metal assemblies may be separated from mixed loads after dumping at the working face, and stored in bins for later transport to a scrap metal recycler.

13.5.1.10 Wood

Source-separated loads of clean untreated wood materials (pallets, dimension lumber, etc.) may be directed to the composting facility if the operator is willing to accept the loads for processing into compost bulking agent material.

13.5.2 Entrance Facility Special Waste Acceptance Procedures

Station 2 may also accept and store special wastes including used motor oil, scrap tires, white goods, and lead acid batteries from residents using non-commercial vehicles. Commercial customers are prohibited from disposing of special waste at Station 2. The Station 2 attendant and other facility personnel reserve the right to refuse service to customers. Customers attempting to dispose of excessive quantities of special waste, or utilize services frequently will be questioned by the Station 2 attendant and may be denied disposal.

13.5.2.1 Used Motor Oil

Used motor oil (UMO) is collected, stored and transported in accordance with HAR Section 11-279. UMO is contained in 55-gallon drums on spill pallets, enclosed in a locked shipping container providing overhead cover adjacent to Station 2. Upon confirmation that UMO is from a residential source, the Station 2 attendant will unlock the container and allow the customer to dispose of UMO. The County is currently contracted with Unitek to recycle received UMO.

Up to eight 55-gallon drums of UMO may be stored at CML.

13.5.2.2 Used Tires

Only tires free of oil, grease, gasoline and diesel, and other contaminates are accepted in accordance with HRS Section 342 I. Tires are stored in a roll-off container located at Station 2 or next to the landfill gas processing facility. Tires should be stored no longer than 2-weeks to minimize the accumulation of water and associated vectors. The facility may increase the storage time of tires to accommodate a full 20-cubic yard roll-off provided that the roll-off is covered to prevent the accumulation of water and poses no danger to human health or the environment. Whenever possible, the tire storage roll-off shall maintain 30-foot clear buffer for fire protection and emergency access. The County is currently contracted with Unitek for recycling of old tires.

Up to one 20-cubic yard roll-off container of tires may be stored at CML.

13.5.2.3 White Goods

White goods that enter the facility shall be unloaded properly and stored in an upright position. The facility is not allowed to process (i.e. remove refrigerant, oils, lubricants, etc.) from white goods. Care shall be taken by operations personnel when handling white goods so as to not cause the release of refrigerants during storage or transport. The County is currently contracted

with Hammerhead Metals for recycling of white goods.

Up to 25-pieces of white goods are allowed to be received and stored at Station 2 or the area next to the landfill gas processing facility. Processing of special wastes such as the removal of refrigerant from white goods is prohibited.

13.5.2.4 Lead Acid Batteries

Lead acid batteries are stored in a locked leak proof shipping container located at Station 2. Customers disposing of batteries will be screened to confirm they are residential, and upon confirmation, unlock the container and store the battery. Batteries may be stored for up to one month at no greater than the floor space of one 20-cubic yard container. Battery collection, disposal and recycling requirements shall be in accordance with HRS 342I. Cracked or leaking batteries must be managed as hazardous waste in accordance with applicable requirements.

14 OPERATIONAL CONTROLS

14.1 Disease Vector Control

Vectors are animals or insects capable of distributing pathogenic materials from the facility to human receptors outside of the facility. The term primarily refers to rodents and insects, and less commonly to birds, dogs, deer, or other wildlife species. The measures described are applicable both at the active area of the fill and the public waste drop-off area. The fencing around the facility is intended to discourage entry by people and larger animals. The gates are closed and locked at the end of each operating day.

CML will control vectors by conducting inspections on a monthly basis and implementing appropriate controls in response to observed concentrations of vectors, as follows.

14.1.1 Rodent Control

Control of rodents is accomplished by eliminating food supplies and shelter or harborage. Adequate compaction, complete covering of wastes, and maintaining a clean facility without shelter for rodents is a priority assignment of landfill personnel. Traps or bait stations will be set in areas where rats or mice have been observed.

14.1.2 Insect Control

Flies are controlled by compacting waste soon after it is placed. Complete covering of exposed waste at the end of the operating period and cleaning the containers at the entrance facility public waste drop-off area is also required. Chemical controls may be used with for control of peak seasonal insect populations.

Mosquitoes are prevented by managing surface water to avoid stagnant puddles remaining for any period of time following rain events. The drainage system, including storm water basins and channels should be inspected periodically to ensure that mosquitoes are not breeding in these facilities. If so, standing water is pumped to the on-site drainage control facilities.

14.1.3 Other

In the event feral dogs or cats are seen consistently using the site, the Maui Humane Society or other agency will be contacted for assistance with trapping and removing the animals.

14.2 Explosive Gases Control

The County operates and maintains the landfill gas collection and control system (GCCS) consisting of vertical gas wells, horizontal gas collectors, collection piping, and landfill gas flare. County personnel are responsible for operating the landfill in a manner compatible with safe operation of the GCCS. Equipment operators are trained to avoid damaging collection piping or wellheads, and must report any apparent problems observed with the system. The County retains third-party consultants and contractors to provide technical and operational assistance, on an as-needed basis, to the County employees responsible for operation and maintenance of the GCCS.

14.3 Odor Control

14.3.1 Landfill Odor Control

Landfilling operations should not result in off-site odors. Operational measures to be taken to reduce the chances of odors are as follows:

- Waste materials will not be stockpiled. Waste materials will be expeditiously spread and compacted as they are received throughout the operational day. As the wastes begin to biologically decompose, they can generate odors. The least amount of disturbance of the waste after placement and compaction reduces odors.

- Enhance mixing of waste materials. Odors are less of a problem if different waste types are mixed together. This does not mean that the mixing needs to produce a totally homogeneous fill, but that large fill zones of a single type of decomposable waste should be broken up during landfilling, as practical.

- Unusually odorous loads should be covered immediately by soil or other waste. This measure may include using a bulldozer to excavate a pit in the active face area for the load to be dumped in, then covering it.

- Regularly monitor and adjust as necessary the operation of the landfill gas collection system. Inspect the landfill cover on a regular basis and repair areas of erosion, thin cover, and surface cracks to minimize potential for gas emissions.

- If persistent odors are noted on a daily basis, an investigation should be conducted to determine the source of the odor and take measures to eliminate the source.

14.3.2 Entrance Facility Odor Control

The entrance facility is open air providing adequate ventilation for odor control and employee safety. The County will prevent nuisance odors from leaving the boundary of the facility. If nuisance odors are found to be passing the facility boundary, the facility operator may suspend operations until the nuisance is abated or immediately take action to abate the nuisance.

14.4 Litter Control

14.4.1 Landfill Litter Control

Control of wind-blown litter is an operational challenge for the landfill in maintaining compliance with environmental regulations. Effective litter control depends on effective management in three general stages:

- Performing landfill operations in a manner that minimizes the release of litter from the active disposal face;

- Deploying portable and permanent litter fences in the most effective manner possible; and

- Collecting litter on a timely and efficient manner.

The following sections address each of these three stages of the litter control program at CML.

14.4.1.1 Operational Procedures to Minimize Litter

Landfill operations can be conducted in a manner that minimizes the amount of paper and plastic that leaves the working face. Two general kinds of operational decisions can affect litter generation: location of the working face, and immediate litter control at the working face.

Working Face Location

Prevailing winds at CML are generally from the northeast. CML is able to use this fact by conducting operations to the extent possible in the lee of previously placed lifts of refuse, by conducting fill operations as following:

- Construct each lift by starting at the north end of the cell and advancing toward the south.
- To the maximum extent possible, organize the tipping operation at the lower deck and push the waste toward the upper deck for compacting.
- Once the first lift across the entire cell is placed (to provide a liquid-absorbing layer to minimize leachate generation), concentrate on constructing multiple lifts across the northern half of the cell. This will provide a more sheltered area in the south half of the cell for operations during forecast windy periods.
- Once an upper lift has been established in the north half of the cell, move operations on a daily basis based on anticipated wind conditions. On days when predominantly calm or low wind speeds are expected, schedule operations on the upper lift, and on days when high wind speeds are forecast, operate on the lower lift. The landfill operations supervisor should make this decision on a daily basis, while recognizing that forecasts are imprecise, and once operations begin at one location in the morning, it is impractical to move them during the day.

To the extent possible, in the future CML will try to maintain sufficient available lined disposal area for development of a windy season working face that is shielded from the wind by previously placed fill to higher elevations. During winter months (November-March) when wind speeds are generally below the annual average, operations would be conducted at higher elevations; while summer month operations would be carried out at lower elevations in the lee of the previously placed fill. Implementation of this procedure will require maintaining a substantial reserve of capacity and constructing new disposal cells earlier than would otherwise be needed.

Immediate Litter Control at the Working Face

Special attention must be paid to litter control during periods of high winds. Unloading trucks at the base of the lift, spraying loads with water or leachate as unloading occurs, and compaction immediately after unloading, can reduce scattering. Liberal application of water and leachate is among the most effective strategies for prevention of litter.

14.4.1.2 Litter Fence Deployment

CML will deploy a three-tier system of fences to intercept and trap wind-blown litter that leaves

the working face: portable fences that are deployed on a daily basis; intermediate semi-permanent fencing outside the refuse limits; and property line fencing.

Portable Litter Fences

Skid-mounted fencing will be deployed on a daily basis immediately downwind of the active face to intercept fugitive materials as close as possible to the point of generation. The Landfill Worksite Supervisor or a designee is responsible for determining where to set fences and implementing their deployment during the morning hours on a daily basis. Landfill cell designs in Phases V and VI will provide space between the westerly limits of waste and the perimeter drainage road for placement of portable litter fencing.

Intermediate Semi-Permanent Fencing

Net fencing with metal poles will be deployed along the west side of the Phase IV, V-A, V-B, and Phase V-B Extension once in operation, as close to the cell area as possible, such as along the perimeter road/drainage channel. This fencing, which is typically 6 to 8 feet high, must be maintained regularly to repair netting and straighten poles that tend to blow over in high winds. Daily removal of litter from these fences is critical to minimize wind load on them.

Property Line Fencing

The CML has installed a 30-foot tall litter fence constructed along the Pulehu Road property line. This tall fence effectively eliminates the release of litter beyond the property limits.

14.4.1.3 Litter Collection

Litter must be collected daily from the litter fences, throughout the landfill property, and from off-site areas where it has blown. Primary elements of the litter collection program are the following:

- Removal of litter from fences. The site's trailer-mounted litter vacuum will be used by site personnel to remove litter from all three tiers of litter fences on a daily basis. Laborers will supplement the litter-vac unit with manual collection as needed.

- Collection of loose litter. CML laborer employees, or a third-party contract litter crew personnel that manually pick up scattered litter from all areas of the site on a daily basis.

- Collection of off-site litter. The third-party contract litter crew also collects litter along Pulehu Road before the onset of heavy traffic. If significant volumes of litter are observed in the adjacent fields on the west side of Pulehu Road, the County will request authorization from the property owner for the third-party contract litter crew or County personnel to enter the fields to collect litter on a periodic basis.

14.4.2 Entrance Facility Litter Control

Windblown material and litter will be controlled through several methods, including proper unloading procedures, the orientation of the facility to the prevailing wind direction, landscaping, and adequate staffing. Personnel and contractors will police the facility, including fences, access roads, and the entrance gate, every operating day to pick up and return windblown material and litter to the facility and perform such other litter control measures, as necessary.

14.5 Emergency Operating Procedures

14.5.1 General

Possible emergency conditions at the CML may require special response by the operators to maintain facility operations and protect public health. This section describes possible emergencies and response procedures for each. A thorough review of emergency plans and procedures should be conducted on an annual basis.

When the operator is notified of an emergency situation, the response to the situation should include the following steps:

- Make a preliminary assessment of the situation and its potential impact upon human lives, public health, and facility operation.
- Respond to the emergency by providing first aid, clearing access to the site, and securing the emergency site.
- Notify the appropriate emergency response organization, the facilities director, and utility companies as soon as possible.
- Take corrective actions to restore facility safety and return to normal operation.

The operator shall assess, monitor, and maintain/repair the landfill after emergencies that may affect the integrity of the landfill, including, but not limited to, the liner system, leachate collection and control system, surface water management system, and any other affected portions of the landfill. If the acceptance and disposal of waste ceases, the permittees shall submit a written evaluation of whether waste acceptance can resume. The evaluation shall be prepared by a professional engineer registered in the State of Hawaii and/or the landfill manager, as appropriate, certifying that the landfill and its associated environmental controls are functional, equivalent or better than required, and that operation of the landfill will not cause a violation of environmental regulations. The evaluation shall also include a description of any findings and corrective actions. The facility may resume acceptance and disposal of waste upon submission of this evaluation to the HDOH. The HDOH may require additional assessment, monitoring, and corrective actions, as necessary to address the event.

The following sections describe specific procedures to respond to specific categories of emergency. Preventive measures are also described, where applicable.

14.5.2 Fire Protection

All personnel working on site are to be aware that the first step taken in the event of a fire or explosion is to call and notify the Maui Fire Department (911) immediately. An initial report should provide information on injury, and the probable nature, extent, and potential for control of fire by on-site personnel. An initial call must be made as soon as fire or explosion is detected, even if no other information is available.

After notification of the Fire Department, on-site personnel should take the following steps:

- Administer any first aid required and notify emergency response team and clear the area of personnel and customers.

- Inform the Solid Waste Superintendent.
- The Solid Waste Superintendent shall assess the fire to determine if the fire is manageable.
- If the fire is not manageable, no action shall be taken unless directed by emergency services.
- As deemed appropriate, the Solid Waste Superintendent will order the evacuation of personnel and customers from the area around the fire.
- If the fire is manageable, pick up the burning material with the dozer or compactor, and move to non-flammable areas.
- Cover the material with soil.
- Do not add water to a fire that appears to be of a chemical origin.
- Avoid inhaling fumes, smoke, or vapors even if no hazardous material appears to be involved. Do not assume that gases or vapors are harmless because they lack odor.
- Provide directions to outside support organizations upon arrival.
- Keep all personnel up-wind and clear of the incident.

All efforts are to be focused on the safety of human lives and controlling the fire to prevent spreading.

14.5.2.1 Landfill Fire Protection

14.5.2.1.1 Surface Fires

If a fire is manageable and discovered in the waste, the burning material should be pushed away from the active area using the bulldozer and isolated on the soil-covered deck if possible, and then extinguished using water or covering with soil. If it cannot be immediately moved, the burning should be controlled by covering it with soil and applying water using the site water truck. When the initial fire is controlled, all smoldering material should be excavated to the deck, spread and fully extinguished before replacing in the landfill. Fire near the liner will require exposure of the liner to determine the extent of damage, if any, after the fire has been extinguished.

Potential explosion sources are fuel tanks and landfill gas accumulations, both of which will be monitored. Leaks and spillage from fuel tanks will be prevented at all times.

Fire protection for landfill equipment will be provided by frequent removal of debris from undercarriages and engine compartments, by repairing oil and fuel leaks, and by providing a portable fire extinguisher in the cab of each vehicle. All site buildings are equipped with fire extinguishers.

Any incoming load that is burning, as evidenced by smoke or flames, will be unloaded away from the active working face and extinguished. If the hot load is inadvertently unloaded at the working face, the hot materials will be excavated, removed from the active fill area, and extinguished.

Open burning of waste materials is strictly prohibited throughout the facility.

14.5.2.1.2 Subsurface Fires

Subsurface landfill fires may be caused by several mechanisms in municipal solid waste landfills, including:

- By outside air intruding into the base of landfill slopes from convection currents or wind.

- By "hot" loads being disposed in the landfill.

- By an active landfill gas system drawing air into the landfill by overdrawing on a well.

A buildup of heat, the presence of oxygen, and a fuel source cause subsurface fires. To prevent a fire at least one of these elements must be eliminated. As fuel cannot be removed from a landfill, then oxygen must be prevented from infiltrating into the landfill and any source of heat removed.

To prevent air intrusion, soil cover is regularly placed over the landfill. The soil can be clay, silt, sand, rock, or a combination of these materials. If crushed rock is used, the maximum size shall be 2.5-inch minus. The cover shall be tracked-walked to create a dense surface that is minimizes air intrusion into the refuse. The minimum soil thickness is six inches.

On areas that are not to receive waste for six months or more, the County will place intermediate cover of one foot of soil over the waste. No refuse is to show through the one-foot soil layer.

"Hot" loads of ash or other materials could create a subsurface fire. The operator and spotter will routinely look for evidence of hot loads. Any hot loads identified will be managed in a manner consistent with the procedures for above ground fires outlined in Section 14.5.2.

If a subsurface fire does occur, there are several options the County will need to consider for implementation. These options include the following:

- Excavation
- Smothering
- Injection

Excavation would require digging out the area that is on fire. Care will be required to ensure no flare-ups occur. Spraying the refuse with water and fire foam as excavated is recommended. Spread the refuse excavated in one- or two-foot lifts and thoroughly wet and compact. Excavation is recommended for shallow underground fires less than 10 feet, or if it is suspected that the bottom liner has been impacted. Contractors can be hired with successful experience in excavation of burning refuse if the project is outside the abilities of the County.

Smothering is spreading soil over the underground fire area and keeping the area wet. The smothering technique is used to prevent oxygen from infiltrating into the underground fire area. This technique would be suitable for a closed portion of the landfill or if there is no chance the underground fire could reach the bottom liner system. The smothering technique is of limited use at CML, injection of water, foam, or gases (typically, carbon dioxide) is a suitable technique to extinguish a limited underground fire. Injection consists of drilling and installing perforated steel pipe. The perforated piping is then connected to the reservoir of foam, water, or gas selected to extinguish the underground fire. The injection technique is recommended if the underground fire appears too hot for excavation, or is above the liner system and is too deep for inexpensive excavation. If it is suspected that the bottom liner has been impacted, then excavation to uncover the liner system is required.

14.5.2.2 Entrance Facility Fire Protection

Entrance Facility Station 2 is equipped with Type ABC fire extinguishers at locations

recommended by the local fire department. Each fire extinguisher will be fully charged and ready for use at all times. Each extinguisher will be inspected on an annual basis and recharged as necessary. A qualified service company will perform these inspections, and all extinguishers will display a current inspection tag. Inspection and recharging will be performed following each use. The receiving gatehouse, and all waste management equipment and vehicles will be equipped with fully charged fire extinguishers.

14.5.3 Severe Storms

The following measures will be taken to protect against excessive erosion, flooding and wind damage before and during severe storms.

Prior to a forecasted storm, the operator shall inspect all surface water management systems and verify that they are in working order. Diversion berms will be constructed around the current disposal area as needed to prevent run-on from entering, and runoff from exiting the waste fill area.

In the event of forecasted high winds, the operator shall secure objects which may become airborne and implement litter controls specified in Section 14.4 as practicable. The operator will exercise caution while conducting operations in high wind conditions as such conditions can result in downed trees and power lines, flying debris, building damage, and overturned equipment/vehicles.

CML staff will carefully monitor the condition of access roads and vehicle maneuvering areas on the top deck during periods when rainfall occurs or is expected. At any time when rainfall is sufficiently heavy to create excessively muddy conditions in normally used areas of the landfill, disposal operations will be diverted to the wet weather tipping pad described in Section 17 below. Extraordinary maintenance of roads will be conducted as needed to ensure safe operating conditions during rainy periods.

In addition to adjusting disposal operations, CML staff must also increase the level of monitoring and maintenance of leachate and storm water management systems during rainstorms. Special attention must be given to the following:

- If rain occurs while a new disposal area is still divided into two or more parts by temporary rain flaps, the unused parts should be inspected daily during the event to make sure water is not overtopping the rain flap berm into the active cell area. If it threatens to overtop the berm, portable pumps must be used to pump excess water from the cell.

- Other elements of the storm water management system should be inspected at least daily during periods of rain, and maintained to ensure they are functioning as intended.

- The leachate manhole, sump and storage tanks should be inspected at least daily to ensure that leachate is removed from the cell as it is generated, and that ample capacity is maintained in the storage tanks.

Hurricanes

Hurricane season occurs from June through November in Hawaii. The National Weather Service provides the following two types of hurricane warnings:

- Hurricane Watch – hurricane conditions threaten within 24-26 hours; and
- Hurricane Warning - hurricane conditions are expected within 24 hours or less

In the event of a disaster such as a hurricane, the primary function of a landfill is to provide disposal capacity for debris and other solid waste collected during cleanup. Demands on the facility are highest immediately following the disaster through the early phase of recovery. It is essential that the facility properly prepare prior to such an event to ensure that the facility is able to provide services.

In the event of a Hurricane Watch, the operator shall pump down leachate sumps, wet well, and tank farm to maximize available storage capacity. The operator will assess available fuel on hand and determine if topping off fuel storage tanks is appropriate. The operator will assess the landfill active disposal area location and available cover soil stockpiles and stockpile additional cover material as appropriate. Given the potential for interruptions of electrical power, the operator will assess available auxiliary power and lighting equipment and procure additional equipment as appropriate. The surface water management system will be inspected, and diversion berms constructed in accordance with wet weather operations specified in Section 14.5.4 above.

In the event of a Hurricane Warning, the operator should shut down all electrical breakers and landfill gas lines to prevent damage and fires. The landfill facilities shall be secured (boarding up windows if possible) and actions taken to preserve operating records and data. The operator will verify an adequate supply of batteries, first aid supplies, and drinking water is on hand. Vehicles, equipment, and generators should be fueled and secured.

Following a hurricane event, the operator shall conduct a visual inspection of the site to identify damage to the facility such as slope failures, downed power lines/loose electrical wiring, gas and water leaks, fires, tank leaks or spills, or other conditions that pose a risk to human health or the environment.

14.5.4 Earthquakes and Tsunamis

Earthquakes

In the event of an earthquake, landfill operations shall be halted and heavy equipment and other moving vehicles stopped. Indoor office staff shall remain indoors and seek shelter under desks and doorways, or against interior walls. Staff located outdoors shall move to open areas away from structures that may pose a hazard of falling or collapse such as utility poles or buildings.

Following an earthquake, when conditions allow, the operator shall perform a visual inspection of the site for damage to the following:

- Slopes;
- Power lines;
- Water system lines;
- Drainage channels;
- Above ground landfill gas piping and wellheads;
- Landfill flare system;
- Buildings (for cracks, roof and/or foundation damage);
- Leachate collection and recovery system; and
- Other conditions that threaten human health of the environment.

If the site is evacuated, leave a message communicating the location of the re-grouping/evacuation point where personnel can be found. Remain calm and be prepared for aftershocks.

The landfill superintendent will be responsible for coordinating the landfill evacuation and/or emergency response personnel as required. The superintendent will also be responsible for conducting a head count at the evacuation point and to notify the Solid Waste Division Chief of the emergency

Following the emergency, landfill operations and the ECS shall conduct a comprehensive inspection of the landfill for damage resulting from the earthquake. In the event of an earthquake equal to or greater than 0.36g (horizontal acceleration), the operator shall inspect exposed liner systems to identify and assess any damage that may have occurred. An inspection report, including proposed corrective actions, shall be filed with the Department within 30-days of the event.

Tsunamis

CML is not located within an area delineated as a tsunami evacuation zone. However, in the event of a tsunami, guidelines set forth in Section 14.5.1 shall be followed and/or as directed by the Solid Waste Division Chief.

14.5.5 Hazardous Waste Spill

CML has a low potential for spills of hazardous materials, but incidents are possible in the event vehicle accidents or malfunctions that could cause spills of coolant, fuel or lubricants.

Storage and entrance facility areas are designed to control and contain spills.

Actions to be taken in the event of a spill are described below.

The first step in responding to an oil or substance release incident is to keep the material separated from water to minimize migration and the resulting potential increase in human and environmental exposure. Every effort should be made to prevent spills and emphasize substance containment at the source rather than resort to separation of the material from expanded portions of the environment or downstream waters.

Discovery of a Release

The person discovering a release of material from a container, tank, or operating equipment should initiate the following actions immediately.

- Extinguish any sources of ignition. Until the material is identified as nonflammable and noncombustible, all potential sources of ignition in the area should be removed. Vehicles should be turned off. If the ignition source is stationary, attempt to move spilled material away from the ignition source. Avoid sparks and movement creating static electricity.

- Attempt to stop the release at its source. **Assure that no danger to human health exists first**. Simple procedures (turning valves, plugging leaks, etc.) may be attempted by the discoverer if there is no health or safety hazard and there is a reasonable certainty of the

origin of the leak. No site personnel shall come into contact with unknown or hazardous substances illegally brought into the facility.

- Initiate spill notification and reporting procedures. Report the incident immediately to a Superintendent. If there is an immediate threat to human life (e.g. a fire in progress or fumes overcoming workers), an immediate alarm should be sounded to evacuate the area, and the fire department should be called. Request the assistance of the fire department's hazardous materials response team if an uncontrollable spill has occurred and/or if the spill has migrated beyond the site boundaries.

Containment of a Release

- Attempt to stop the release at the source. If the source of the release has not been found; if special protective equipment is necessary to approach the release area; or if assistance is required to stop the release, the fire department should be called to halt the discharge at its source. Facility personnel should be available to guide the fire department's efforts.

- Contain the material released into the environment. Following proper safety procedures, the spill should be contained by absorbent materials and dikes using shovels and brooms. Consult applicable material safety data sheets for material compatibility, safety, and environmental precautions.

- Obtain outside contractors to contain and clean up the spill, if necessary.

Spill Cleanup

- Recover or clean up the material spilled - As much material as possible should be recovered and reused where appropriate. Material that cannot be reused must be declared waste. Liquids absorbed by solid materials shall be shoveled into open top, 55-gallon drums; or if the size of the spill warrants, into a roll-off container(s). When drums are filled after a cleanup, the drum lids shall be secured and the drums shall be appropriately labeled (or re-labeled) identifying the substance(s), the date of the spill/cleanup, and the facility name and location. Combining non-compatible materials can cause potentially dangerous chemical and/or physical reactions or may severely limit disposal options. Compatibility information can be found on material safety data sheets.

- Diesel fuel, coolant, lubricants or other fluids must be absorbed in solid material and shoveled into open top, 55-gallon drums. When drums are filled after a cleanup, the drum lids shall be secured and the drums shall be appropriately labeled (or re-labeled) identifying the substance(s), the date of the spill/cleanup, and the facility name and location. Combining non-compatible materials can cause potentially dangerous chemical and/or physical reactions or may severely limit disposal options. Compatibility information can be found on material safety data sheets. These materials must be managed in accordance with CML's Special Waste Screening Program (Section 13).

- Cleanup of the spill area - Surfaces that are contaminated by the release shall be cleaned by the use of an appropriate substance or water. Cleanup water must be minimized, contained and properly disposed. Occasionally, porous materials (such as wood, soil, or oil-dry) may be contaminated; such materials will require special handling for disposal.

- Decontaminate tools and equipment used in cleanup - Even if dedicated to cleanup efforts, tools and equipment that have been used must be decontaminated before replacing them in the spill control kit.

- Arrange for proper disposal of any waste materials. - The waste material from the cleanup must be characterized, transported and disposed according to State and Federal Regulations.

14.5.6 Leachate Spill

Leachate spills would be associated primarily with overflow of the leachate pump station, the leachate storage tanks, secondary containment, transmission piping or a tanker truck. The Hawaii Department of Health should be promptly notified if there are any leachate spills at the landfill. The cause of the spill will be determined, and immediate corrective measures undertaken.

In general, once leachate has spilled, it is very difficult to collect and recover. Since it is mostly water, it will tend to infiltrate the soil. If spilled leachate pools on the ground, every attempt will be made to collect the free liquid. After collecting free liquid, soil containing leachate will be removed from the area, placed over a lined portion of the fill, and used for daily or intermediate cover.

The landfill operations supervisor will inspect the spill area, conduct the cleanup with clean soil, and return the area to its previous state as soon as possible.

14.5.7 Solid Waste Spill

The landfill operations supervisor will take steps to encourage that vehicles hauling waste to the facility are enclosed or provided with a tarpaulin, net, or other means to effectively secure the load in order to prevent the escape of any part of the load by blowing or spilling. The operator will take actions such as posting signs, reporting offenders to proper law enforcement officers, adding surcharges, or similar measures.

The landfill operations supervisor will address solid waste spills on site. The landfill operations supervisor is responsible for seeing that the waste is immediately contained and picked up. The responsible transporter will respond to off-site spills, or the Solid Waste Division Chief will coordinate a response by the Department of Environmental Management.

In general, the solid waste can be cleaned up with standard equipment (e.g., front-end loader). Once the situation is under control, the impacted areas will be identified, inspected to determine if there is any residual contamination. Impacted soils will be removed, and restoration will be completed on a timely basis.

14.6 Operations During Inclement Weather

Wet-weather operations planning must take into account the type of material being used for daily cover. Operations are most straightforward when rock materials or, crusher waste is being used as daily or intermediate cover. These materials are firm and drain well, and operations can be conducted as when the weather is dry.

If the County uses silt or clay cover soils as daily cover then a wet-weather tipping area should be prepared in advance of the rainy season. The pad should preferably be located in an area sheltered from northeast winds. It should be sufficiently large to provide access, turning and

backing movements for the expected peak number of waste delivery trucks, and be situated where waste tipped from the pad will be pushed no farther than 100 feet during the time the pad is in use.

The wet weather deck should be used only on days when weather conditions make the use of normal access roads and tipping areas unsafe or inefficient. The pad will be relocated as necessary throughout the year to maintain reasonable push distances for the refuse.

The wet weather deck should be constructed using a 6 to 12-inch thickness of crushed rock, or concrete or asphalt rubble. If possible, the County should make arrangements during the year to receive and stockpile for this purpose rock, concrete and asphalt rubble that might otherwise be disposed of.

14.7 Materials Storage Procedures

No solid waste or recyclable materials are to be stored outside the paved areas of the entrance facility. Customers are directed by attendants at the public waste drop-off area and scalehouse to the appropriate locations for depositing recyclables. Drums waiting to be crushed and recycled are stored on containment pallets and covered with waterproof tarpaulin.

14.8 Mud and Dust Control

Dust levels will be monitored during dry periods. Frequent watering of haul roads and the active disposal unloading area is the most effective control measure. Revegetation on intermediate cover surfaces and those at final grades, and on other disturbed areas outside the lined landfill area, will help control dust on a long-term basis.

Earthmoving projects will be halted and rescheduled if strong winds cause excessive visible dust to leave the landfill property.

During the rainy season, measures will be taken to minimize the tracking of mud onto public roads. Such measures begin with ensuring that on-site roads are properly maintained with rock and gravel, including access roads to a wet-weather tipping pad used during rainy periods. When necessary, CML will require customers returning from the active face to use the wheel washing system installed along the exit road before they leave the site.

14.9 Safety Procedures

Facility safety issues are the responsibility of the landfill operations Superintendent. Health and safety must be protected for all users of the facility and for all employees working at the site.

All operating personnel are required to wear high-visibility safety vests, hearing protection (where applicable), and steel-toed boots on site. While working, they should also have gloves and half-mask respirators (with dust and organic vapor cartridges) available for use as needed.

Directional signs will be posted to direct the public from the scales to the proper unloading location. Signs prohibiting public scavenging from the refuse will be posted and the equipment operators will police the active face area.

Implementing the following will enhance worker safety:

- Identify waste types at the scalehouse and minimize exposure to any waste that may present a health hazard.

- Train site personnel in safe operating procedures to be used in conjunction with the operating provisions contained herein.

- Maintain on-site first-aid equipment and supplies. Emergency contacts and phone numbers are provided in Appendix G.

Equipment will not be operated near unloading vehicles when personnel are outside the vehicles. Loose waste material will be kept clear of the unloading area to prevent people from contacting wastes. Operating equipment will be kept clear of vehicles entering or leaving the unloading areas.

Only commercial haulers and County refuse collection vehicles are allowed access to the landfill. Residential customers are restricted to the entrance facility public waste drop-off area , where they unload under the supervision of CML personnel.

15 ENVIRONMENTAL MONITORING

15.1 Leachate Monitoring

Leachate levels in the Phase IV-A manhole, Phase IV-B sump, and Phase V-B Extension sump (after HDOH approval of reduced monitoring frequency) will be checked weekly to ensure leachate is being removed from the liner system. Liquid levels in the leachate leak detection systems in the leachate manhole will be monitored quarterly.

The Phase V-B Extension sump shall be monitored every operational day until the select waste layer is complete. Upon completion of select waste layer, the sump monitoring frequency may be reduced to twice per week or as otherwise approved by HDOH. Leachate levels in the temporary storage tanks will be recorded daily. These same initial monitoring practices will also apply to the Phase III sump.

All leachate sumps and tanks will be monitored for leachate levels after storm events.

Leachate quality will be tested on a semi-annual basis at each sump at the time of a regularly scheduled groundwater monitoring event. One sample will be collected from the leachate storage tanks and tested for the same monitoring parameters as groundwater.

15.2 Landfill Gas Monitoring

Gas monitoring in the gas probes and facility structures will be conducted quarterly. Gas migration monitoring procedures are presented in Appendix H. Upon completion of monitoring activities, the recorded results are placed in the operating record.

If gas concentrations exceed the regulatory limits, CML shall:

- Take all necessary safety precaution;
- Immediately notify HDOH;
- Within 3 days, submit to HDOH and place in the operating record the monitoring data and a description of safety precautions taken;
- Within 60 days, prepare and implement a remediation plan, notify HDOH of implementation and provide copy of plan, place a copy in the operating record;
- Within 30 days, notify HDOH remediation plan has been completed, submit a report documenting monitoring and remediation work to HDOH, and provide HDOH with plans to prevent recurrences.

15.3 Surface Water Monitoring

Regulations require sampling to be conducted during a “representative storm”, defined as one in which at least 0.1 inches of rainfall accumulates and follows at least 72 hours after a previous storm with greater than 0.1 inch of rain. In response to this requirement, surface water sampling will be conducted during the first event in which a discharge occurs from a storm water basin each year, unless the discharge occurs during the first rain event of the winter rainy season. If the first rain event of the year results in a discharge from a basin, the next discharge event will be sampled. Because all basins are designed to retain storm water and discharge only by overflow, no sampling may occur in dry years, while from one to all basins may have flow and require sampling in wetter years. Samples will be collected from the outfall or point of discharge from the basin. Surface Water monitoring procedures are presented in Appendix I.

15.4 Groundwater Monitoring

Monitoring groundwater elevations and quality will be in accordance with the most recent update to landfill's sampling and analysis plan (CH2M, 2018). All groundwater sample collection, handling, management, and analysis shall be conducted in accordance with EPA SW-836. Laboratory analysis of groundwater samples will be conducted by an independent third-party laboratory with the appropriate credentials.

Monitoring well MW-5, located as shown in Figure 7, is the point of compliance downgradient monitoring well for Phase IV, Phase V, and Phase V-B Extension. Locations of wells for future development of the monitoring network are shown on Figure 7.

15.5 Monitoring System Access and Maintenance

Access to monitoring systems is maintained by use of site access roads and benches.

Maintenance of monitoring wells consists of protecting the locations from disturbance by equipment by clearly marking the locations, ensuring that casings and surface seals are undisturbed, and that security caps are locked.

15.6 Fill Development and Capacity Utilization

The volume of airspace use will be tracked annually using an aerial topographic survey of the site. Survey data will be used to calculate the quantity of airspace consumed, airspace remaining, and effective in-place density. The air space remaining in each phase will provide a method to determine when a new expansion phase is necessary.

The County has established a refuse density goal of 1,500 pounds per cubic yard. To calculate density, the tonnage of refuse that was weighed at the scale between survey dates will be added up. This tonnage does not include the weight of daily cover soil; only refuse material that has been weighed at the scale. The tonnage will be divided by the airspace consumed to calculate in-place density of refuse.

Tracking airspace and density will provide a tool that will allow County management to make decisions on capital expenditures, closure/post-closure funding, cover soil usage, and compaction efficiency.

16 RECORD KEEPING

CML will maintain an operating record in a designated area in the Administration Building, including the categories of records and documents listed below. Where required, the timeframes for records retention are noted below. Records associated with any unresolved enforcement action, as determined by the HDOH, will be retained indefinitely.

16.1 Daily Operating (Scalehouse) Records

Each load of refuse delivered to the site is documented in terms of the customer identity, type of waste, source of waste, and weight. On high volume days, entrance facility Station 2 roll-offs are assessed a unit weight in order to better service the community and reduce wait times at the scales. Records of each load are maintained on a daily basis and are accumulated for monthly and annual reports. Scalehouse records of disposal transactions, including waste manifest forms, are transmitted to the Maui County Finance Department, where they are archived and maintained for a minimum of five years.

16.2 Daily Log

Any unusual occurrence at the site is documented in a daily log record maintained at the site. Operations personnel are trained to report and document incidents of unacceptable waste being identified in incoming loads, accidents, severe weather conditions, fires or other unusual events. Daily logs are maintained on site for a minimum of three years.

16.3 Records Related to Hazardous Waste Exclusion

CML maintains records of the date, content and names of employees attending annual training events related to the hazardous waste exclusion program. Any reports or other detail related to waste load inspections or incidents of unacceptable waste discovered at the landfill or entrance facility, in addition to information in the daily log, are placed in the hazardous waste exclusion files of the operating record.

16.4 Environmental Monitoring Records

CML shall place in the operating record all data and records associated with environmental monitoring activities, including all calibration and maintenance records and all original recordings of monitoring instrumentation. The period of retention shall be for the life of the facility, through closure and postclosure periods. Records of monitoring information shall include:

- The dates, exact place, and time of sampling or measurements;
- The person responsible for performing the sampling or measurements;
- The dates analyses were performed;
- The person responsible for performing analyses;
- Analytical techniques or methods used; and
- Results of such analysis.

16.5 Climatic Data

CML will collect and maintain a data base of climatic data suitable for evaluating potential leachate generation at the site. Data will be obtained on a daily basis and will include information on rainfall, temperature, solar radiation, evaporation, wind speed, wind direction and humidity.

16.6 Closure and Post-Closure Plans and Data

The operating record includes copies of the current closure plan and post-closure plan, plus records related to any actual closure or partial closure activity. Such records include engineering plans, construction inspection reports and certifications related to closure activities. Additionally, records pertaining to financial assurance for closure and post-closure will be maintained, including cost estimates and documentation of financial assurance mechanisms.

16.7 Location Restrictions Demonstration

CML will maintain a copy of its solid waste permit application documents containing analyses of the site location in relation to siting criteria listed in HAR 11-58.1-13, including airport safety, floodplains, wetlands, fault areas, seismic impact zone, unstable areas, tidal wave zone and local zoning ordinance consistency.

16.8 Access Control Documentation

Daily sign-in sheets for public visitors and other records documenting how CML controls access to the site and prevents unauthorized dumping will be maintained.

16.9 Liquids Restrictions Documentation

CML does not accept liquid wastes for disposal. Records will be maintained of liquid waste loads rejected during the special waste screening process or in load checks. This information may be incorporated in records of the hazardous waste exclusion program.

16.10 Leachate Management Records

CML is required by permit to maintain in the operating record current copies of all leachate pumping agreements with third party contractors engaged to pump and transport leachate to the treatment plant. Records will be maintained of daily inspections of the leachate pumping and storage systems, and of all leachate loads transported to the treatment facility by County or third-party tanker trucks. Additionally, leachate reintroduction system daily logs will be maintained.

16.11 Training Records

Copies of employee training program agendas and attendance sheets will be maintained. Applicable training programs include those related to hazardous waste exclusion, safety, environmental compliance, emergency procedures and other elements of facility operation.

16.12 Vector Control Records

Periodic inspection reports will be maintained that include observations of insects, rodents, birds or other potential disease vectors at the site. In addition, records will be maintained of special inspections or abatement activities by pest control contractors providing services to the facility.

16.13 Litter Control Records

A daily record will be kept of litter control activities, and maintained in the operating record. The log will contain information on the wind conditions each day, the number of litter control personnel on site, and the volume or weight of litter collected.

16.14 Asbestos Disposal Records

CML is required by permit to maintain a record of each load of asbestos waste disposed at the site. Information to be recorded includes the type of waste, source and location, preferably by GPS or survey coordinates, of its disposal location in the landfill. Asbestos disposal records may be incorporated in the records of the hazardous waste exclusion or special waste screening programs.

16.15 Emergency Condition Reports

Any emergency incident or condition at CML is required to be documented in an incident report that will be maintained in the operating record. Emergency conditions that would be documented in the record would include fires, hazardous material spills, injury accidents, natural disasters such as floods or violent storms, and any other event that threatened the safety or security of personnel and facilities.

16.16 Adequate Storage Procedures

CML is required by permit to maintain records documenting secure storage and handling of any green waste, tires or white goods brought to the site. Documentation must show that these materials, which are prohibited from disposal, were stored, managed and removed from the site in accordance with applicable regulations. Records should include documentation of any removal and management of CFCs or other fluids from white goods prior to removal from the site to recycling facilities.

16.17 Inspection Reports

Inspections will be conducted on a routine basis to verify implementation of the Operating Plan and identify needs for special maintenance or repairs. Inspection reports will be maintained as part of the site's operating record.

16.18 C&D Waste Acceptance and Disposal Logs

CML will maintain records documenting accepted loads of C&D waste including; Declaration of Non-Hazardous Commercial Construction and Demolition Waste Forms, Soil Profile Sheets, and other material certifications as required. C&D waste acceptance records will be maintained as

part of the site’s operating record.

17 REPORTING

This section describes the reports that CML is obligated to submit to the HDOH, including special reports and regularly scheduled reports.

17.1 Incident Reports

By permit, the County must submit an Incident Report to the HDOH whenever there is an incident that could threaten human health or the environment. Such incidents would include a fire, explosion, or release of a regulated hazardous or toxic material. Such incidents must be reported by phone or fax within 8 hours, if possible, but no longer than 24 hours after discovery of the occurrence.

For any spill of 25 gallons or more of diesel fuel, other petroleum products or any hazardous material, also notify the HDOH, Hazard Evaluation & Emergency Response Office at (808) 586-4249 during normal business hours, or (808) 247-2191 after normal business hours, as well as Local Emergency Planning Committee (LEPC) representative at (808) 270-7911. A written report must be submitted by mail within three days and include:

- Name, address, and telephone number of the owner and operator;
- Name, address, and telephone number of the facility at which the incident occurred;
- Name and quantity of material(s) involved;
- The extent of injuries, if any;
- Date, time and type of incident (i.e. fire, explosion, release, etc.);
- An assessment of actual or potential hazards to human health or the environment, where applicable; and
- Estimated quantity and disposition of recovered and unrecovered material that resulted from the incident.

Reports are filed using the Special Occurrences Report Form contained in Appendix K.

17.2 Non-Compliance Reports

CML must submit to HDOH a written Incident Report of any occasion on which the landfill is unable to comply with any condition or limitation of the site's solid waste permit. Verbal notification of such occasions must be given to HDOH within 24 hours of the occurrence, and the written Incident Report must be filed within three days of the occurrence. Each Incident Report must contain the following information, at a minimum:

- A description of the occurrence and its cause;
- The actual or anticipated time the period of non-compliance will continue; and
- Steps taken or being taken to reduce, eliminate and prevent recurrence of the non-compliance.

Reports are filed using the Special Occurrences Report Form contained in Appendix K.

17.3 Annual Operating Report

The annual operating report is due by July 30 of each year, and will contain the following information for the year ending June 30:

a) Types of solid waste received (MSW, green waste, industrial/commercial, tires, wood, metals, metal containers of 20-gallons or larger capacity, asbestos, and other special wastes).

b) Quantities of solid wastes received, by type.

c) The average daily disposal rate on a yearly basis.

d) Quantities of semi-solid and liquid waste received (if any) and how it was handled or disposed.

e) Quantities of leachate generated and how it was handled or disposed.

f) Quantities of filled airspace for the present year, past filled airspace and remaining airspace.

g) An annual topographic survey and an isopach drawing showing the vertical and horizontal dimensions of the landfilled area and difference between existing and permitted final grades.

h) An annual sequencing plan, including a drawing, identifying areas planned for filling in the coming year and areas to be used for wet weather operations. The square footage or acreage of cells and wet weather operating areas will be computed and shown on the plan. Final fill areas, intermediate fill areas and future unused fill areas will be identified for the projected year.

i) Final fill areas, intermediate fill areas, and future unused fill areas shall be identified for the projected year.

j) A soil-balance report of the past year and coming projected year reported separately. The soil daily cover and intermediate cover including erosion replacement soil shall be reported separately. The source and type of soil shall also be recorded separately for daily cover and intermediate cover. The soil-balance report for the past year shall be based on records of actual use in daily, weekly and monthly basis. Records shall be maintained at the facility for review.

k) After closure of any portion of the landfill, a summary of post-closure care and maintenance activities conducted at the closed landfill phases.

l) A copy of the detailed written estimates and documentation of financial assurance.

m) If the remaining disposal capacity for the facility is less than 10 years, the Annual Operating Report shall include an updated timeline to acquire property, submit design and solid waste application, and start and completion of construction of planned future expansions.

17.4 Annual Surface Water Management Plan

The annual surface water management plan is described in Section 7.3. It will be submitted to HDOH annually by September 1 and will contain, at a minimum:

a) Report of an annual inspection of surface water management features and facilities, together with a description of required maintenance and changes.

b) Updated drawings showing current topography and surface water drainage paths and conveyances, and modifications planned during the next year.

c) Engineering calculations documenting the capability of the surface water management system to manage a 25-year, 24-hour storm as required under HAR 11-58.1-15(g).

d) Any Storm Water Pollution Control Plan (SWPCP) or Spill Prevention and Countermeasure (SPCC) plan prepared pursuant to federal requirements under the Clean Water Act.

17.5 Environmental Monitoring Reports

Reports of groundwater, leachate, surface water and gas migration monitoring data will be submitted to HDOH within 45 days after completion of monitoring events. Reports of these monitoring activities are kept on file at the landfill and made available to regulatory agencies for inspection or submittal upon request.

HDOH will be notified in writing within seven days if any of the monitoring systems indicate non-compliance with the performance standards specified in HAR 11-58.1.

18 REFERENCES

County of Maui, 1996. Final Environmental Impact Statement for the Expansion of Central Maui Sanitary Landfill Project. April 1996.

CH2M, Inc. 2018. Groundwater and Leachate Monitoring Plan, Central Maui Landfill, Puunene, Maui. Revised March 2019.

Masa Fujioka & Associates, 1997a. Hydrogeological Characterization Report, Central Maui Sanitary Landfill, Puunene, Maui, Hawaii. January 31, 1997.

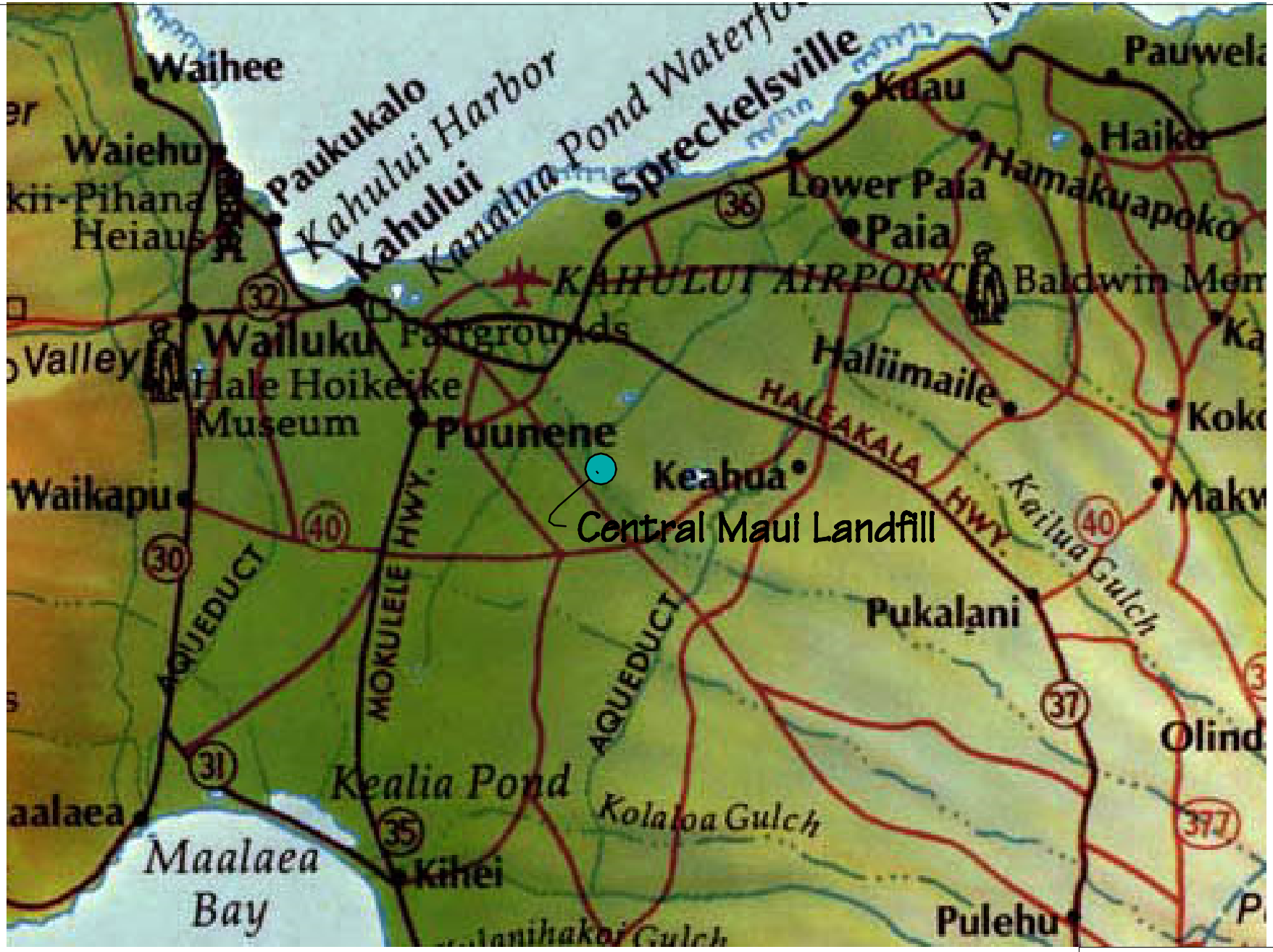
Masa Fujioka & Associates, 1997b. Final Water Quality Standard and Control Limits for the Central Maui Class III Landfill operated by the County of Maui. January 27, 1997.

Masa Fujioka & Associates, 1997c. Basis of Design Report, Central Maui Landfill Phase IV Waste Cell. 1997.

County of Maui Office of Economic Development (2014). Maui County Data Book 2014.

Western Regional Climate Center (http://www.wrcc.dri.edu). January 8, 2004.

Figures



Vicinity Map

A-MEHR, INC
23016 Mill Creek Drive, Laguna Hills, CA 92653
(949) 206-0157 (949) 206-0157 FAX

Central Maui Landfill
Operations Plan
Vicinity Map

FILE
DRAFT
RM
CHECK
DATE
10/19/16
FIGURE
1

GRAPHIC SCALE 1"=300'

0 300 600 900

N

Legend:

- 340 — Existing Contour Lines
- Existing Structures
- Existing Roads / Drainage
- Property Boundary, Current
- Phase VI Property Line
- Existing CML Easement
- Existing Fence Line
- Asphalt Paved and Curbed Drainage Road
- Above-Ground Pipe
- Below-Ground Pipe
- GP-5 — Existing/Proposed Landfill Gas Monitoring Probes
- MW-6 — Existing Groundwater Monitoring Well

Existing Phase III Stormwater Basin
HC&D Aggregate Process and Storage Area
GP-10R
GP-2R
MW-2
GP-2 to be relocated
Landfill Gas Process Area
Proposed Phase III-A
GP-5.1
Phase IV Stormwater Basin
MW - 9
GP-10 to be relocated
MW-4
GP-5.2
GP-1R
Existing Composting Operation
Proposed Phase III-B
Phase I & II Closed Landfill
GP-1 to be relocated
Equipment Wash Pad
MW-5
GP-4
MW-1
Existing Phase I and II Stormwater Basin
Leachate Storage Facility
GP-7
MW-3
GP-8
Paved Perimeter Channel
Kailalinui Gulch
Phase IV-A
GP-6
Kailalinui Gulch
MW-7
Pipe from Waste Bin Area to Leachate Storage Facility
Phase IV-B
Phase V-A
Phase V-B
Phase V-B Extension
Future Phase VI-A
Future Phase VI-B
Depleted Quarry
GP-6R
Residential Waste Drop-Off Area (Station 2)
MW- 8
MW-6
Production Well
GP-9
GP-11
GP-12 (Proposed)
Administration Building
Entrance Facilities
Recyclable Materials Drop-Off Area (Station 1)
Paved Perimeter Channel
Pulehu Road

A-Mehr, Inc.

Central Maui Landfill

Operations Plan

Site Plan

4/17/2019 Topography

FILENAME: GPTmap3-8-19

DRAWN: TM

CHECKED:

DATE: 8/14/19

FIGURE: 2

GRAPHIC SCALE 1"=300'

0 300 600 900

N

Legend:

- 340 — Existing Contour Lines
- Existing and Proposed Roads/ Drainage Channel
- Property Lines, Current
- Phase VI Property Line
- Existing CML Easement
- Existing and Proposed Waste Limits Phase I, II, III, IV, V and VI
- 235 — Phase I, II, IV, and V Liner / Bottom of Waste Grades
- 250 — Proposed Liner Grades
- GP-5 — Existing/Proposed Landfill Gas Monitoring Probes
- MW-6 — Existing Groundwater Monitoring Well

Proposed PH III-A

Proposed PH III-B

Manhole 4 Leachate Sump

Closed Landfill Phase I & II

Kalilinui Gulch

Phase IV Stormwater Basin

Kalilinui Gulch

Leachate Storage Tanks

Phase IV-A Sump

Phase IV-B Leachate Manhole

Phase IV-A

Phase IV-B Sump

Phase IV-B

Phase VA

Phase VB

Phase V-B Extension

Phase V-B Extension Sump

Future Phase VI-A Liner Grades

Future Phase VI-B Liner Grades

Proposed Phase VI Stormwater Basin

Public Waste Dropoff Area (Station 2)

Scalehouse

Production Well

Administration Building

Entrance Facilities

Landfill Main Entrance

Public Recycling Area (Station 1)

Pulehu Road

A-Mehr, Inc.	
Central Maui Landfill	
Operations Plan	
Existing and Expansion Liner Grades	
4/17/2019 Topography	5
PLEMARI	
DRAWN	KM
CHECKED	
DATE	5/14/19
FIGURE	

GRAPHIC SCALE 1"=300'

0 300 600 900

N

Legend:

- 340 — Existing Contour Lines
- Existing Roads/Drainage Channel
- Proposed Roads/Drainage Channel
- Property Lines
- Phase VI Property Line
- Existing and Proposed Waste Limits Phase I, II, III, IV, V and VI
- Design Final Grades

Property Lines

Proposed Phase III-A

Proposed Phase III-B

Kalilimui Gulch

Phase IV-A Sedimentation/ Infiltration Basin

Leachate Storage Tanks

Phase IV-A

Phase IV-B

Storm water Collection Basin

Public Waste Drop-off Area (Station 2)

Scalehouse

Administration Building

Phase VA

Phase VB

Phase VI Expansion

Closed Landfill Phase I & II

Future Phase VI-A

Future Phase VI-B

Planned Sedbasin

Entrance Facilities

Main Entrance

Public Recycling Area (Station 1)

Pulehu Road

A-Mehr, Inc.

Central Maui Landfill

Operations Plan

Final Grades

4/17/2019 Topography

FILENAME: CFinal0419.DWG

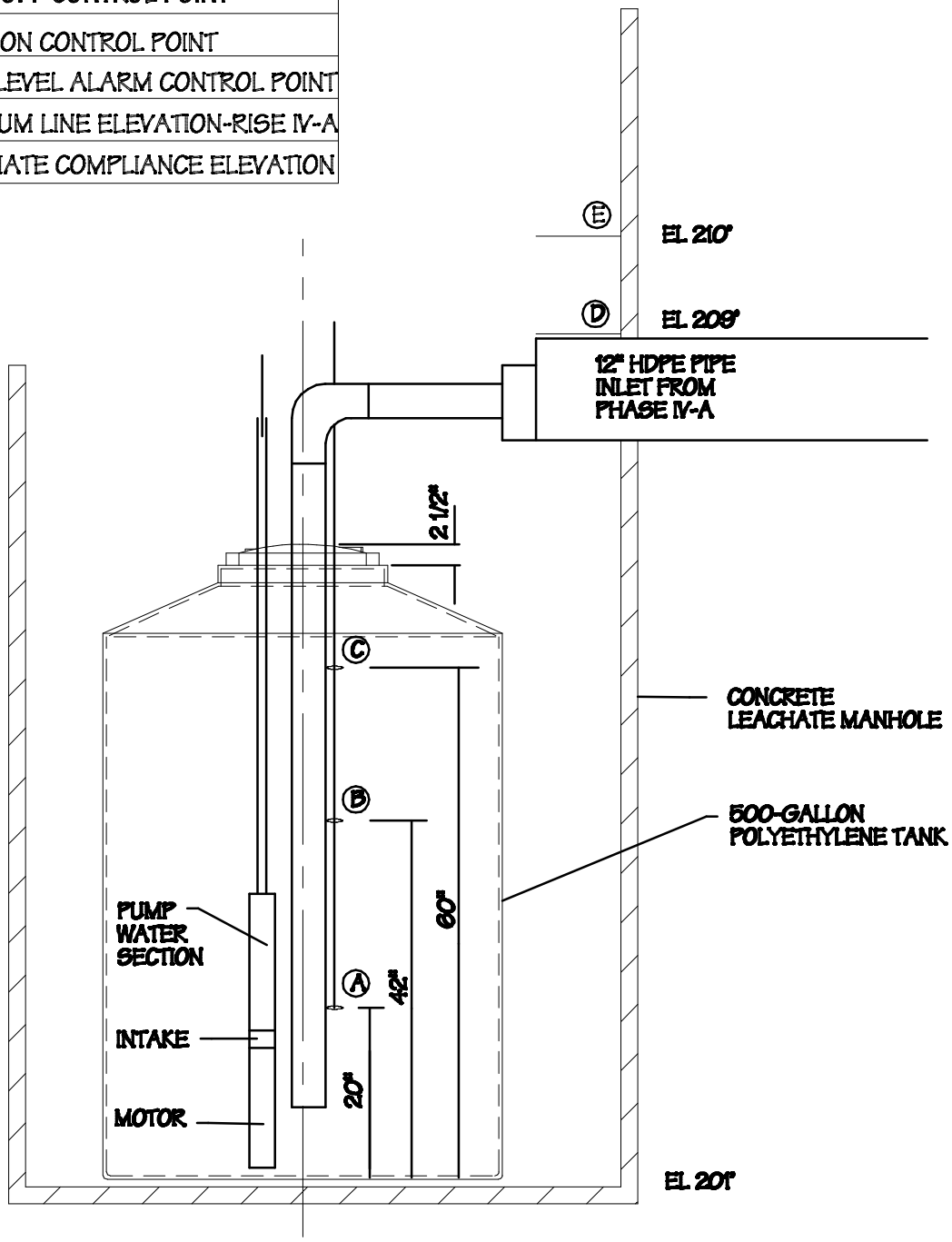
DRAWN: RM

CHECKED:

DATE: 5/14/19

FIGURE: 4

MARK	ELEV.	CONTROL
A	202.7	PUMP OFF CONTROL POINT
B	204.5	PUMP ON CONTROL POINT
C	206.0	HIGH LEVEL ALARM CONTROL POINT
D	209.0	MINIMUM LINE ELEVATION-RISE IV-A
E	210.0	LEACHATE COMPLIANCE ELEVATION



LEACHATE MANHOLE CONVERSION CONTROL ELEVATIONS

A-Mehr, Inc.

Central Maui Landfill
Operations Plan
Phase IV-A Leachate Manhole Conversion

FILENAME
DRAWN
GM
CHECKED
DATE
10/19/16
FIGURE
5

Phase IV-A Sedimentation/ Infiltration Basin

LFG Facility

Kalilinui Gulch

Leachate Storage Tanks

Public Waste Dropoff Area (Station 2)

Administration Building

Scalehouse

Entrance Facilities

Main Entrance

Public Recycling Area (Station 1)

Pulehu Road

Phase IV-A

Phase IV-B

Phase V-A

Phase V-B

Phase V-B Extension

Proposed Phase III

Future Phase VI-A

Future Phase VI-B

Closed Landfill Phase I & II

N

GRAPHIC SCALE 1"=400'

0 400 800 1200

Note:

(1) Existing Topography Based on Aerial Survey Dated 4/17/19

Legend

- Vertical Extraction Well
- Existing Horizontal Gas Collector (On Floor of Disposal Cell)
- Landfill Gas Pipeline
- Future Horizontal Gas Collector
- Future Extraction Well
- Phase III Limit
- Phase IV Limit
- Phase V Limit
- Phase VI Limit
- Phase VI Property Line

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Central Maui Landfill

Operations Plan

Landfill Gas Collection and Control System

FILENAME CFTm2019-03

DRAWN KM

CHECKED

DATE 9/14/19

FIGURE 6

Notes

(1) Existing Topography Based on Aerial Survey Dated 4/17/19

Legend:

- MW-1 — Existing Groundwater Monitoring Well
- GP-1 — Gas Monitoring Probe
- GP-12 — Proposed Gas Monitoring Probe
- 340 — Existing Contour Lines
- Property Lines, Current
- Existing CML Easement
- Existing waste Limits Phase I, II, IV, V and VI
- Proposed Phase III waste Limit
- Phase VI Property Line

Phase IV Stormwater Basin
Kalihiwai Gulch
MW-6
MW-7
GP-10R
Leachate Storage Tanks
MW-5
Public Waste Dropoff Area (Station 2)
Production Well
GP-8R
Administration Building
Entrance Facilities
Landfill Main Entrance
Active Phase IV-A
GP-9
Active Phase IV-B
Scalehouse
Planned Phase III
GP-1 to be Relocated
GP-10 to be Relocated
GP-2 to be Relocated
GP-10R
MW-8
GP-8I
Closed Landfill Phase I & II
Active Phase V
Public Recycling Area (Station 1)
GP-9
Pulehu Road
Active Phase V-B Extension
Kalihiwai Gulch
GP-11
Future Phase VI-A
Future Phase VI-B
GP-12 (Proposed)
GP-7
MW-4
GP-8S
MW-3
MW-2

N

GRAPHIC SCALE 1"=400'

0 400 800 1200

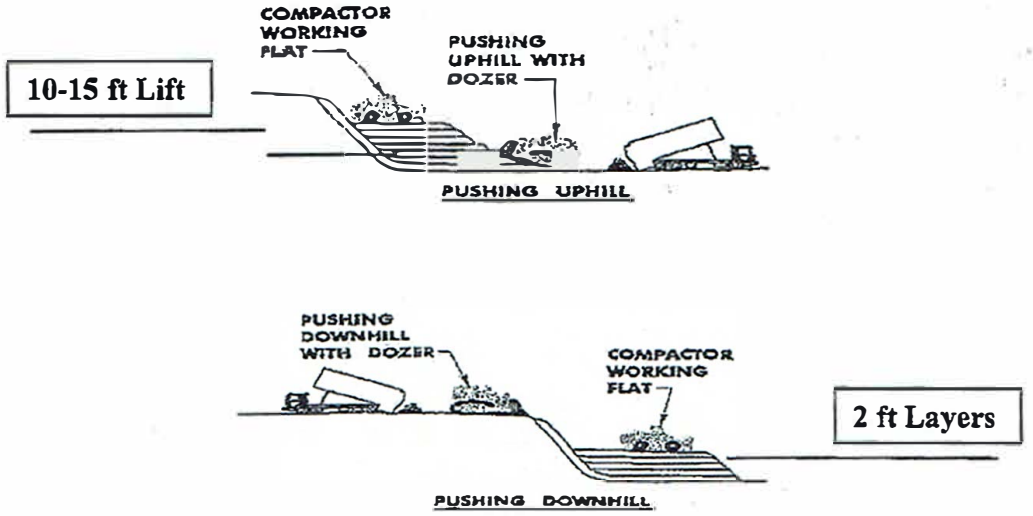
A-Mehr, Inc.

Central Maui Landfill

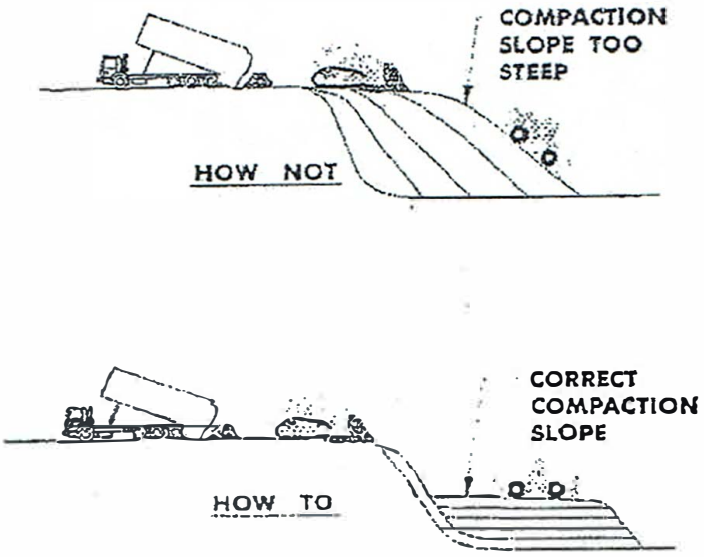
Operations Plan

Groundwater and Gas Monitoring Networks

PLAN NAME	GP Network 6-6-19
DRAWN	KM
CHECKED	
DATE	6/14/19
FIGURE	7



Alternate Methods of Constructing Lift



Proper Compaction Methods

Figure 8

Waste Placement and Compaction Methods