

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2016-XXXX  
FOR  
RECOLOGY HAY ROAD  
RECOLOGY HAY ROAD, DBA JEPSON PRAIRIE ORGANICS  
RECOLOGY HAY ROAD LANDFILL  
CLASS II, III LANDFILLS, CLASS II WASTE PILE,  
CLASS II LAND TREATMENT UNIT, AND COMPOSTING FACILITY  
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE  
MAINTENANCE, AND CORRECTIVE ACTION  
SOLANO COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27); Waste Discharge Requirements (WDRs) Order R5-2016-XXXX; *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27*, dated December 2015 (MSW Landfill SPRRs); and *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Industrial Facilities Regulated by Title 27*, dated April 2016 (Industrial SPRRs). Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

**A. MONITORING**

The Discharger shall monitor all classified units (i.e., landfill, waste pile, and land treatment units) and the compost ponds at the site in accordance with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone. Monitoring shall also be in accordance with the Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section H of the WDRs. All monitoring shall be conducted in accordance with the most recently approved Sample Collection and Analysis Plan which includes quality assurance/quality control standards. The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

All compliance monitoring points established for detection and/or corrective action monitoring shall constitute the monitoring points for the Water Quality Protection Standard. All groundwater monitoring wells listed in Tables A.1.a.i and A.1.b.i, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) listed in the corresponding tables and Appendix 1 of this MRP.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower

than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis Plan.

While this MRP assigns monitoring points to background, detection, and corrective action monitoring programs, it is acknowledged that these designations may change over time.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>	<u>Reference Map</u> <sup>1</sup>
A.1	Groundwater Monitoring	Attachment D
A.2	Unsaturated Zone Monitoring	Attachments E & F
A.3	Leachate Monitoring, Seep Monitoring, and LCRS Testing	Attachment E
A.4	Leak Detection Monitoring	
A.5	Surface Water Monitoring	Attachment G
A.6	Solid & Semi-Solid Waste Monitoring	n/a
A.7	Landfill Facility Monitoring	
A.8	Additional Corrective Action Monitoring (e.g., LFG Extraction, LFG Condensate, Nitrate-N Remediation)	Attachments D, F & I
A.9	Composting Pond Monitoring	Attachment H
A.10	Compost Facility Monitoring	n/a

1. See reference map for monitoring locations.

### 1. Groundwater Monitoring

The Discharger shall operate and maintain groundwater detection and corrective action monitoring systems that comply with the applicable provisions of Title 27, sections 20415 through 20430. These groundwater monitoring systems shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

Groundwater monitoring shall be conducted consistent with this MRP and the revised Water Quality Protection Standard (WQPS) Report. Detection monitoring for naturally occurring inorganic constituents at the site shall be conducted in the eastern site area using an interwell monitoring approach, and in the western site area using an intrawell monitoring approach if it is supported by the revised, approved, WQPS Report.

Background and downgradient wells for interwell detection monitoring shall be identified by tracing groundwater gradient (natural or pump) flow streamlines (i.e., flow lines perpendicular to the gradient contours) through each unit, as applicable.<sup>1</sup> This

1. Background wells shall be found by following the flow streams upgradient from the unit (or units, if contiguous), and down gradient wells shall be found by following the same flow streams down gradient from the unit(s). The monitoring system may be further refined by identifying the flow streams passing through the

MRP therefore distinguishes between units on the western half of the site (i.e., LFs-1, 2 & 3), where the groundwater gradient and flow direction are controlled by borrow pit de-watering, and units on the eastern half of the site (i.e., LF-4, WP-9.1 & LTU), where the natural groundwater gradient prevails.

Historical releases from the units at the site have generally been limited to landfill gas, nitrate-N in groundwater, and VOC-impacted pan lysimeter liquid. This MRP therefore places all units at the site in concurrent detection and corrective action monitoring. Also, units and/or modules that are contiguous with each other relative to the groundwater flow direction (e.g., LF-1; and LF-2 and LF-3) have generally been placed in contiguous monitoring in accordance with Title 27, section 20415(e)(3).

The Discharger shall revise the groundwater monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill module is constructed or for corrective action monitoring.

- a. Landfills 1, 2, and 3
  - i. Monitoring Points
    - (1) Landfill 1

Table A.1.a.i(1)				
Intrawell Monitoring Points – LF-1				
<u>Unit</u>	<u>Program</u>	<u>Module</u>	<u>Well<sup>1</sup></u>	<u>Well Location</u>
LF-1	Background	DM-1B	G-7	Upgradient
		DM-1A	G-6	
	P-1			
	4BR			
	Detection & Corrective Action	DM-1B	G-8	Downgradient
		DM-1A	MW-4	
		DMs-1A & 1B	G-9	
			G-10	
			G-10R <sup>3</sup>	
			G-10M	

- 1. Monitoring data from all wells evaluated by intrawell method.
- 2. Location of well relative to flow streams passing through module,
- 3. Well sampled only if G-10M is dry.

- (2) Landfills 2 & 3

Table A.1.a.i(2)				
Intrawell Monitoring Points – LFs-2 & 3				
<u>Unit</u>	<u>Program</u>	<u>Module</u>	<u>Well<sup>1</sup></u>	<u>Well Location<sup>2</sup></u>

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sumps of each unit/module (e.g., the assumed location within a landfill module where a significant leachate release could occur).

Table A.1.a.i(2)				
Intrawell Monitoring Points – LFs-2 & 3				
Unit	Program	Module	Well <sup>1</sup>	Well Location <sup>2</sup>
LF-2 & LF-3 <sup>3</sup>	Background	DMs-2.1, 2.2 & 11	G-2	Upgradient
		DMs-2.1 & 2.2	4BR	
	Detection & Corrective Action	DM-11	G-1	Sidegradient
		DMs-2.1 & 2.2	G-12	
		DMs-2.1 & 11	G-13	
		DM-2.2	G-27	
		DMs-2.1, 2.2, 11.1 & 11.2	G-11	Downgradient
			G-11M	
	G-11R <sup>4</sup>			

1. Monitoring data from all wells evaluated by intrawell method.
2. Location of well relative to flow streams passing through module.
3. Landfill units contiguously monitored per Title 27, section 20415(e)(3).
4. Well sampled only if G-11 or G-11M is dry.

The groundwater monitoring network shall also include all future or replacement wells installed under these WDRs to monitor existing and future modules/phases constructed per the landfill development plan (e.g., DMs-2.3, 10, & 11.3).

b. Landfill 4

i. Monitoring Points

(1) Landfill 4

Table A.1.b.i(1)					
Interwell Monitoring Points – LF-4					
Unit	Program	Modules <sup>2</sup>	Well <sup>1</sup>	Well Location	
LF-4	Background	DMs-3, 4 & 7.1	G-26	Upgradient	
		5.1A	G-18		
		5.1B, 5.2 & 6	G-17		
	Detection & Corrective Action	DM-5.1A	D-7	Sidegradient	
		DM-9.1B <sup>3</sup>	G-17		
		DMs-5.2 & 6	G-18		
		DMs-5.1B, 6 & 9.1B <sup>3</sup>	G-16	Downgradient	
			DM-5.1A, 5.2		G-20
			DMs-4.1 & 9.1A <sup>3</sup>		G-25
			DMs-3.1 & 9.1A <sup>3</sup>		G-28
			DM-3.2		G-29
DMs-3.3 & 7.1	G-30				

1. Monitoring data from all wells evaluated by interwell method.
2. Location of well relative to flow streams passing through module.
3. Future disposal modules/phases.

(2) WP-9.1 & LTU

Table A.1.b.i(2)				
Interwell Monitoring Points – WP-9.1 & LTU				
<u>Unit</u>	<u>Program</u>	<u>Module</u>	<u>Well</u>	<u>Well Location</u>
WP-9.1	Background	WPs-9.1A & B	G-4R	Upgradient
	Detection	WP-9.1A	G-19R <sup>3</sup>	Downgradient
			G-38 <sup>4</sup>	
	Corrective Action	WP-9.1B <sup>2</sup>	G-21 <sup>3</sup>	Downgradient
			G-22 <sup>1,3</sup>	
G-23 <sup>3</sup>				
LTU <sup>2</sup>	Background	LTU-1 <sup>4</sup>	G-19R <sup>3</sup>	Upgradient
	Corrective Action		G-26 <sup>3</sup>	Downgradient

1. Groundwater extraction well.
2. Unit/module to be clean closed to make room for construction of DM-9.1.
3. Wells to be abandoned prior to construction of DM-9.1.
4. Well to be installed down gradient of WP-9.1A concurrent with clean closure of WP-9.1B and the LTU. See WDR Provision I.9.b.3. and I.9.c.

The groundwater monitoring network shall also include all future or replacement wells installed under these WDRs to monitor existing and future modules/phases constructed per the landfill development plan (e.g., DMs-7.2, 8, & 9).

c. Monitoring Schedule

Monitoring at each unit shall include field parameter testing and groundwater sampling. Groundwater samples shall be collected and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Appendix 1 attached to this Order. It is noted that other Board Orders may require a different schedule for corrective action monitoring. The most recent monitoring schedule shall take precedence.

Table A.1.c Groundwater Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i>			
Groundwater Elevation <sup>1</sup>	Feet & 100ths, NADV 88.	Daily/Weekly/Quarterly <sup>2</sup>	Semiannually
Groundwater Separation <sup>5</sup>	Feet & 10ths		
Volume Extracted <sup>3</sup>	gallons	Quarterly	Semiannually
Temperature	oF	Semiannually	Semiannually

Table A.1.c Groundwater Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<i>Monitoring Parameters</i>			
General Minerals			
Total Dissolved Solids <sup>6</sup>	mg/L	Semiannually	Semiannually
Bicarbonate Alkalinity <sup>6</sup>	mg/L	Semiannually	Semiannually
Chloride <sup>6</sup>	mg/L	Semiannually	Semiannually
Nitrate-N	mg/L	Semiannually	Semiannually
Sulfate <sup>6</sup>	mg/L	Semiannually	Semiannually
Calcium <sup>6</sup>	mg/L	Annually	Annually
Carbonate <sup>6</sup>	mg/L	Annually	Annually
Magnesium <sup>6</sup>	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium <sup>6</sup>	mg/L	Annually	Annually
Nitrogen Compounds			
Ammonia-Nitrogen	mg/L	Annually	Annually
Total Kjeldahl Nitrogen	mg/L	Annually	Annually
Volatile Organic Compounds (VOCs)	ug/L	Semiannually	Semiannually
Dissolved Metals			
Arsenic	ug/L	Annually	Annually
Chromium (total)	ug/L	Annually	Annually
Iron	ug/L	Annually	Annually
Lead	ug/L	Annually	Annually
Manganese	ug/L	Annually	Annually
<i>Constituents of Concern</i> <sup>4</sup>	---	Every 5 years	Every 5 years

1. Based on water depth measurements/readings at groundwater wells and piezometers.
2. Groundwater elevation monitoring of piezometers installed adjacent to each LCRS sump shall be monitored on a daily, weekly, or monthly basis, as detailed in A.1.c.i, unless the Executive Officer authorizes an alternative frequency. Groundwater elevation monitoring of groundwater wells shall be on a quarterly basis.
3. This parameter applies only to groundwater extraction well(s).
4. See Appendix 1 for COCs and analytical methods.
5. Measured as the distance between the bottom of the LCRS sump (as listed in Table 1 of the WDRs) or the bottom of the waste for unlined module DM-1B and the elevation of the underlying groundwater.
6. These parameters have been excluded from the detection monitoring in order to reduce the risk of false positive indications and to therefore increase the reliability of detecting a leachate release. They are included as supplemental parameters for water quality trend analysis.

Once per quarter, the Discharger shall measure the piezometric groundwater elevation in each well/piezometer, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of

perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

- i. Primary LCRS Sumps - Monitoring of the groundwater elevation, including capillary fringe, as applicable, shall be conducted at the piezometers installed outside the liner system and adjacent to the primary LCRS sump at locations that allow for measurement of the groundwater table. The piezometers associated with DMs-3.1, 3.2, 3.3, and 7.2 sumps, as well as the four piezometers associated with DM-1 (3 on the northeast side and one on the southeast side) shall be monitored daily during the wet season from October 15 to March 30 and weekly during the dry season from April 1 to October 14. Other piezometers installed adjacent to shall be monitored weekly during the wet season from October 15 to March 30 and monthly during the dry season from April 1 to October 14.

Reporting of this groundwater elevation and separation data of each unit shall include the highest and lowest recorded groundwater elevations (and corresponding groundwater separation data) during each quarter of the reporting period and, time periods in which the required separation was not maintained, including capillary fringe, as applicable.

Groundwater samples shall be collected at least semiannually in all wells, including any future wells added as part of the approved groundwater monitoring system. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the currently-approved Sample Collection and Analysis Plan. Samples collected for the COC monitoring specified in Appendix 1 shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in **October 2015** and shall be monitored again in **October 2020**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

Background, detection, and corrective action monitoring data analysis shall be conducted consistent with the statistical and non-statistical data analysis methods described in Section C.1.e, as updated in the WQPS Report submitted under WDR Provision I.7, as approved by the Executive Officer.

## 2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection and corrective action monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. Unsaturated zone monitoring at the facility shall include both soil pore liquid monitoring and soil pore gas monitoring. Soil pore liquid and gas monitoring shall be accomplished by monitoring pan lysimeters installed in the capillary break layer beneath the LCRS sumps of Title 27 classified units at the site (i.e., landfills and waste pile). Soil pore gas monitoring shall be further accomplished

by monitoring gas monitoring probes installed along or near the perimeter of the classified units at the site.<sup>2</sup> The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module.

Unsaturated zone samples shall be collected from the monitoring networks listed below and analyzed for the parameters and constituents listed in the monitoring schedules listed below in accordance with the specified methods and frequencies. Samples collected for the 5-year COC analyses specified above shall be collected and analyzed in accordance with the methods listed in Appendix 1 every five years, beginning again in **2020**.

a. Soil Pore Liquid Monitoring

i. Monitoring Points (See Attachment E: Leachate & Lysimeter Monitoring)

The soil pore liquid monitoring points shall consist of all pan lysimeters substantially meeting the specifications of WDR Construction Specification E.5 (as noted above) installed beneath existing and future landfill modules and the Class II waste pile as summarized in the tables below.

(1) LF-3

<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Lysimeter</u>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		
LF-3	DM-2	2.2A	Existing	Corrective Action	PL-2.2A <sup>1</sup>
		2.2B			PL-2.2B <sup>1</sup>
		2.3	Future	Detection	PL-2.3 <sup>2</sup>
	DM-10	10.1	Future	Detection	PL-10.1 <sup>2</sup>
		10.2			PL-10.2 <sup>2</sup>
	DM-11	11.1	Existing	Corrective Action	PL-11.1 <sup>1</sup>
		11.2			PL-11.2 <sup>1</sup>
		11.3	Future	Detection	PL-11.3 <sup>2</sup>

1. All pan lysimeters installed within, and open to, capillary break layer (not welded pans).  
 2. Future modules required to be constructed with pan lysimeter.

2. Soil pore liquid monitoring shall not be required at existing landfill modules not constructed (and that cannot feasibly be retrofitted) with a pan lysimeter meeting the requirements of WDR Construction Specification E.5 (e.g., beneath LCRS sump, open to unsaturated zone). Such areas of the facility include all of LF-1 (no lysimeters installed beneath this unit) and LF-2 (suction lysimeter installed beneath this unit) and all LF-4 modules constructed with pan lysimeters welded to the base of the secondary LCRS sumps.

(2) LF-4

Table A.2.a.i(2) Soil Pore Liquid Monitoring Points: LF-4					
<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Lysimeter</u> <sup>1</sup>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		
LF-4	DM-3	3.1	Existing	Detection & Corrective Action	--- <sup>1,2</sup>
		3.2			--- <sup>1,2</sup>
		3.3			--- <sup>1,2</sup>
	DM-4	4.1	Existing	Detection & Corrective Action	--- <sup>1,2</sup>
		4.2			--- <sup>3</sup>
		4.3			--- <sup>3</sup>
	DM-5	5.1A	Existing	Detection & Corrective Action	PL-5.1A
		5.1B			PL-5.1B
		5.2			--- <sup>2</sup>
	DM-6	6.1	Existing	Detection	--- <sup>1,2</sup>
		6.2			--- <sup>3</sup>
	DM-7	7.1	Existing	Detection	--- <sup>4</sup>
		7.2	Future		PL-7.2 <sup>5</sup>
	DM-8	8.1	Future	Detection	PL-8.1 <sup>5</sup>
		8.2			PL-8.2 <sup>5</sup>
DM-9	9.1	Future	Detection	PL-9.1 <sup>5</sup>	
	9.2			PL-9.2 <sup>5</sup>	

1. Soil pore liquid monitoring not required on modules with welded pan lysimeters.
2. Welded pan lysimeters monitored as leak detection sumps. See Section A.4.
3. Module phase not constructed with its own LCRS sump (i.e., LCRS drains to another phase).
4. No pan lysimeter installed because this sump location is temporary..
5. Future modules required to be constructed with pan lysimeter.

(3) Waste Pile 9.1

Table A.2.a.i Soil Pore Liquid Monitoring Points: WP-9.1				
<u>Unit</u>	<u>Module</u>			<u>Lysimeter</u>
	<u>Name</u>	<u>Status</u>	<u>Program</u>	
WP-9.1 <sup>1,3</sup>	9.1A	Existing	Corrective Action	PL-9.1A
	9.1B <sup>2</sup>	Clean Closure Pending		PL-9.1B

1. Unit will be limited to single module (9.1A) after clean closure of Module 9.1B (estimated to occur in 2016).
2. Module WP-9.1B pending clean closure along with LTU.
3. Discharger plans to clean close this unit by 2020 to accommodate construction of DM-9. See WDR Closure and Postclosure Specification F.17.

ii. Monitoring Schedule

Pan lysimeters shall be inspected for the presence of liquid **monthly**. Lysimeters need only be sampled when liquid is present. Any liquid confirmed to be present in a leak detection monitoring device per Section A.2.a.iii below (i.e., a release), including ongoing or intermittent (e.g., seasonal) detections, shall be sampled at least **semiannually** for the field and monitoring parameters listed in Table A.2.a.ii below. (More frequent monitoring may be required under an approved Evaluation Monitoring Program or Corrective Action Program). Thereafter, upon written approval by Board staff, pan lysimeter sampling and analysis at the module may revert to an annual schedule using the applicable test methods for each constituent listed in Appendix 1 attached to this Order.

Table A.2.a.ii Soil Pore Liquid Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i>			
Presence of liquid	---	Monthly	Semiannually
Volume of liquid removed and disposal location	Gallons, location	Monthly	Semiannually
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
<i>Monitoring Parameters</i>			
General Minerals			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Bicarbonate Alkalinity	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Nitrate-N	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually/Annually <sup>1</sup>	
Carbonate	mg/L	Semiannually/Annually <sup>1</sup>	
Magnesium	mg/L	Semiannually/Annually <sup>1</sup>	
Potassium	mg/L	Semiannually/Annually <sup>1</sup>	
Sodium	mg/L	Semiannually/Annually <sup>1</sup>	
VOCs <sup>1</sup>	ug/L	Semiannually	Semiannually
Dissolved Metals			
Arsenic	ug/L	Semiannually	Semiannually <sup>1</sup>
Chromium (total)	ug/L	Semiannually	Semiannually <sup>1</sup>
Iron	ug/L	Semiannually	Semiannually <sup>1</sup>
Lead	ug/L	Semiannually	Semiannually <sup>1</sup>
Manganese	ug/L	Semiannually	Semiannually <sup>1</sup>

Table A.2.a.ii Soil Pore Liquid Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Constituents of Concern</i> <sup>1</sup>	---	Every 5 years <sup>1</sup>	

1. Pan Lysimeter liquid shall be sampled at least semiannually for all field parameters and monitoring parameters until such time as the liquid has been identified and Board staff approves a reduction to annual monitoring.
2. See Appendix 1 below.

iii. Confirmation of a Release

If liquid is detected at a lysimeter in detection monitoring (e.g., a historically dry lysimeter), the Discharger shall verbally notify Central Valley Water Board staff within seven days and immediately sample and test the liquid for the Field and Monitoring Parameters listed in Table A.2.a.ii above. In the event that a release is tentatively indicated, the Discharger shall proceed with confirmation sampling under the Landfill (Standard Monitoring Specifications G.46 and G.47) and Industrial (Standard Monitoring Specifications G.44 and G.45) SPRRs, as applicable to a given unit (i.e., landfill or waste pile). The Discharger shall also consider whether the detection of the liquid in the lysimeter constitutes significant physical evidence of a release under the Landfill (Standard Monitoring Specification G.48) and Industrial (Standard Monitoring Specification G.46, respectively). See also Title 27, Section 20385(a)(3).

Upon confirmation of a release to the unsaturated zone, the Discharger shall identify the type of soil pore liquid detected in the pan lysimeter using the procedures and sample analysis profiles provided in the updated Sample Collection and Analysis Plan and follow the Response to Release requirements of the WDRs and SPRR. The confirmation of leachate in a pan lysimeter may also trigger the need to de-water the module per WDR Facility Specification C.1.

b. Soil Pore Gas Monitoring

i. Monitoring Points (See Attachment F: Gas Controls & Monitoring)

The soil pore gas monitoring system for the landfill units shall include all existing and future gas monitoring probes installed in the unsaturated zone along the landfill facility and unit perimeters, and all pan lysimeters installed within the capillary break layer underneath the landfill units, as follows:

Table A.2.b.i Soil Pore Gas Monitoring Points				
<u>Unit(s)</u>	<u>Monitoring Point</u>	<u>Type</u>	<u>Program</u>	<u>Completion</u>
LF-1	GPs-1, 9, 12 & 21S	Facility	Detection	Shallow

Table A.2.b.i				
Soil Pore Gas Monitoring Points				
<u>Unit(s)</u>	<u>Monitoring Point</u>	<u>Type</u>	<u>Program</u>	<u>Completion</u>
	GP-21D	Probe		Deep
	GPs-2 & 7 <sup>1</sup>	Unit Probe	Corrective Action	Shallow
	--- <sup>1</sup>			Deep
LF-2 & LF-3	GPs-6,10,11, 18, 19, & 20S	Facility Probe	Detection	Shallow
	20D			Deep
	GPs-3A, 4A & 5 <sup>1</sup>	Unit Probe	Corrective Action	Shallow
	GPs-3B, 4B & 5B <sup>1</sup>			Deep
	PLs-2.2A, 2.2B, 11.1 & 11.2	Lysimeter	Detection	Capillary Break
	PLs-2.3, 10.1, 10.2 & 11.1 <sup>2</sup>			
LF-4	GP-14,15,16,17	Facility Probe	Detection	Shallow
	--- <sup>1</sup>			Deep
	--- <sup>1</sup>	Unit Probe	Corrective Action	Shallow
	--- <sup>1</sup>			Deep
	PLs-5.1A&B	Lysimeter		Capillary Break
	PLs-7.2, 8.1, 8.2, 9.1 & 9.2 <sup>2</sup>	Lysimeter	Detection	Capillary Break

1. Monitoring shall include any future gas wells installed along the facility or unit perimeter. See WDR Provision H.10.
2. Future lysimeters to be installed per the landfill development plan.

ii. Monitoring Schedule

Soil-pore gas samples shall be collected from the monitoring network listed above and analyzed in accordance with the following schedule.

Table A.2.b.ii Soil Pore Gas Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i> <sup>1</sup>			
Methane	%	Semiannually	Semiannually
Carbon Dioxide	%	Semiannually	Semiannually
Oxygen	%	Semiannually	Semiannually
Organic Vapors <sup>2</sup>	ppm	Semiannually	Semiannually
<i>Monitoring Parameters</i>			
VOCs <sup>3,4</sup>	µg/cm <sup>3</sup>	If detected	If detected

1. Field gas monitoring shall be conducted using appropriate field meter(s).
2. Total organic vapors shall be measured using a photoionization detector (PID) meter calibrated to a hexane standard or other straight-chain, fuel-related hydrocarbon. Conversion to benzene-equivalents shall be conducted using a response factor for benzene provided by the manufacturer.
3. Consistent with the previous WDRs, this Monitoring and Reporting program requires that the Discharger conduct field monitoring for methane and total organic vapors and sample for VOCs if vapors exceed a given trigger level of >1% methane and/or >1 ppmv total organic vapors.
4. VOC analysis shall be conducted using USEPA Method TO-15.

c. Confirmation of a Release

Confirmation of a gas release (i.e., LFG) to the unsaturated zone shall be conducted consistent with the procedures applicable to a gas leak described in Section 4.c.ii, herein, and, upon Central Valley Water Board staff approval of the report of findings submitted thereunder, constitute physically significant evidence of a release under the Landfill and Industrial SPRRs, as applicable. Upon confirmation of a gas release, the Discharger shall implement appropriate short term and long term corrective action measures consistent with the Correction Action Specifications and the Response to Release requirements of the applicable SPRRs.

**3. Leachate Monitoring, Seep Monitoring, and Annual LCRS Testing**

The Discharger shall operate, maintain, and monitor all primary LCRS sumps and leachate monitoring wells installed at the units at the site. Leachate monitoring shall be conducted to quantify the amount of leachate being generated by the unit, characterize the strength of the leachate, and to identify/update landfill concentration of constituents of concern. In addition, the Discharger shall monitor each unit/module for leachate seeps, and conduct annual testing of each module's LCRS(s) in accordance with Title 27 and this monitoring program.

a. Monitoring Points (See Attachment E: Leachate & Lysimeter Monitoring

i. Landfill 1

Leachate monitoring at LF-1 shall be conducted at the following existing monitoring points:

Table A.3.a.i LF-1 Leachate Monitoring Points					
<u>Module</u>		<u>Program</u>		<u>Monitoring Points</u>	
<u>Unit</u>	<u>Name</u>	<u>Status</u>		<u>Primary LCRS Sump</u>	<u>Leachate Well</u>
LF-1	DM-1A	Existing	Corrective Action	---	LWs-1, 2 & 3
	DM-1B	Existing		LS-1	---

1. Module not constructed with LCRS sump.
2. No leachate monitoring wells in module.

ii. Landfills 2 & 3

Leachate monitoring at LFs 2 & 3 shall be conducted at the following existing and future monitoring points:

Table A.3.a.ii LFs-2 & 3 Leachate Monitoring Points					
<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Monitoring Points</u>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		<u>Primary LCRS Sump</u>
LF-2	DM-2.1	---	Existing	Corrective Action	S-2.1
LF-3	DM-2	2.2A	Existing	Corrective Action	S-2.2A
		2.2B			S-2.2B
		2.3	Future	Detection	S-2.3
	DM-10	10.1	Future	Detection	S-10.1
		10.2			S-10.2
	DM-11	11.1	Existing	Corrective Action	S-11.1
		11.2			S-11.2
11.3		Future	Detection	S-11.3	

iii. Landfill 4

Leachate monitoring at LF-4 shall be conducted at the following existing and future monitoring points:

Table A.3.a.iii LF-4 Leachate Monitoring Points					
<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Monitoring Points</u>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		<u>Primary LCRS Sump</u>
LF-4	DM-3	3.1	Existing	Detection & Corrective Action	S-3.1
		3.2	Existing		S-3.2
		3.3	Existing		S-3.3
	DM-4 <sup>2</sup>	4.1	Existing	Detection & Corrective Action	S-4.1 <sup>1</sup>
		4.2	Existing		
		4.3	Existing		
	DM-5	5.1A	Existing	Detection & Corrective Action	S-5.1A
		5.1B	Existing		S-5.1B
		5.2	Existing		S-5.2
	DM-6	6.1	Existing	Detection	S-6.1 <sup>1</sup>
		6.2	Existing		
	DM-7	7.1	Existing	Detection	S-Temp <sup>2</sup>
		7.2	Future		S-7.2 <sup>1</sup>
	DM-8	8.1	Future	Detection	S-8.1
		8.2	Future		S-8.2
DM-9	9.1	Future	Detection	S-9.1	
	9.2	Future		S-9.2	

1. Module constructed (or will be constructed) only one primary LCRS sump.
2. Module constructed with temporary LCRS sump pending construction of second phase of module

iv. Waste Pile 9.1

Leachate monitoring at WP-9.1 shall be conducted at the following existing monitoring points:

Table A.3.a.iv WP 9.1 Leachate Monitoring Points					
<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Monitoring Points</u>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		<u>Primary LCRS Sump</u>
WP-9.1 <sup>1,3</sup>	WP-9.1A	---	Existing	Corrective Action	LS-9.1A
	WP-9.1B	---	Existing <sup>2</sup>		LS-9.1B

1. Unit will consist of single module (WP-9.1A) after clean closure of WP-9.1B.
2. Module WP-9.1B pending clean closure along with LTU.
3. Unit will ultimately be clean closed to make room for DM-9. See WDR Finding 210.

b. Leachate Monitoring Schedule

Leachate monitoring shall be conducted in accordance with the following schedule. (See Appendix 1 attached to this Order for applicable test methods.)

Table A.3.b Leachate Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i>			
Depth of liquid	feet and tenths, NADV88	Monthly	Semiannually
Flow Rate	gallons/day	Monthly	Semiannually
Volume Pumped			
To Storage Tanks	gallons	Monthly	Semiannually
Recirculated, location	Gallons, location	Monthly	Semiannually
Disposal, location	Gallons, location	Monthly	Semiannually
Electrical Conductivity	umhos/cm	Quarterly	Semiannually
pH	pH units	Quarterly	Semiannually
<i>Monitoring Parameters</i>			
General Minerals			
Total Dissolved Solids	mg/L	Annually	Annually
Bicarbonate Alkalinity	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Nitrate-N	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually

Table A.3.b Leachate Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Calcium	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Nitrogen Compounds			
Ammonia-Nitrogen	mg/L	Annually	Annually
Total Kjeldahl Nitrogen	mg/L	Annually	Annually
VOCs	ug/L	Annually	Annually
Dissolved Metals			
Arsenic	ug/L	Annually	Annually
Chromium (total)	ug/L	Annually	Annually
Copper	ug/L	Annually	Annually
Iron	ug/L	Annually	Annually
Lead	ug/L	Semiannually	Annually
Manganese	ug/L	Semiannually	Annually
Pentachlorophenol (PCP)	ug/L	Annually	Annually
<i>Constituents of Concern</i> <sup>4</sup>	---	Every 5 years	Every 5 years

1. LCRS sump freeboard shall be measured from the lowest elevation of the top of the surface impoundment down to the water level in the impoundment and can be measured using markings on the primary geomembrane liner or a free-standing gauge.
  2. Monitoring for this parameter shall also be conducted within 24 hours of storm event producing more than two inches of rainfall in a 24 hour period.
  3. See Appendix 1 below.
- c. Seep Monitoring -- The Discharger shall monitor all areas of the units (e.g., top deck, side slopes, toe areas, and levee corridor) for leachate seeps, including as part of Facility Monitoring under Section A.7. Any observed leachate seepage from the landfill unit shall be sampled upon detection and analyzed in accordance with Table A.3.b above using the applicable test methods for each constituent listed in Appendix 1 attached to this Order. Reporting for leachate seeps shall be conducted as required in Section B.4 of this MRP. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day).
- d. Annual LCRS Testing -- All LCRSs shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation (except if existing LCRS is not equipped with test port). The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include

comparisons with earlier tests made under comparable conditions.

- e. Storage Tanks – The Discharger shall also monitor, and include in the semiannual monitoring reports, the total volume of leachate (including any commingled LFG condensate) pumped from onsite storage and hauled offsite for disposal each month. Disposal location information shall also be provided in the monitoring reports.

**4. Leak Detection Monitoring**

The Discharger shall conduct leak detection monitoring to detect a leak in (or other breach of) the primary containment system (including primary LCRS sump) by landfill leachate, LFG or LFG condensate, or any other foreign fluid (e.g., contact storm water, groundwater). The Discharger shall operate, maintain, and monitor all leak detection devices, including all secondary LCRS sumps and all underlying pan lysimeters not open to the unsaturated zone (i.e., pan lysimeters welded to the base of the secondary LCRS sump, hereafter referred to as “welded pan lysimeters” or “WPLs”).

a. Monitoring Points

- i. Landfill 1 – none (unit not constructed with secondary LCRS sump)
- ii. Landfills 2 & 3

Leak detection monitoring at LFs 2 & 3 shall be conducted at the following existing and future monitoring points:

Table A.4.a.ii Leak Detection Monitoring Points: LFs-2 & 3					
<u>Unit</u>	<u>Module</u>			<u>Program</u>	<u>Monitoring Points</u>
	<u>Name</u>	<u>Phase</u>	<u>Status</u>		<u>Secondary Sump</u>
LF-2	DM-2.1	---	Existing	Corrective Action	--- <sup>1</sup>
LF-3	DM-2	2.2A	Existing	Corrective Action	--- <sup>1</sup>
		2.2B			--- <sup>1</sup>
		2.3	Future	Detection	LD-2.3
	DM-10	10.1	Future	Detection	LD-10.1
		10.2			LD-10.2
	DM-11	11.1	Existing	Corrective Action	--- <sup>1</sup>
11.2		--- <sup>1</sup>			
11.3		Future	Detection	LD-11.3	

1. Module/phase not constructed with secondary LCRS sump.

iii. Landfill 4

Leak detection monitoring at LF-4 shall be conducted at the following existing and future monitoring points:

Module		Program	Monitoring Points		
Name	Phase	Status		Secondary Sump	Pan Lysimeter
DM-3	3.1	Existing	Detection & Corrective Action	LD-3.1	WPL-3.1 <sup>1</sup>
	3.2	Existing		LD-3.2	WPL-3.2 <sup>1</sup>
	3.3	Existing		LD-3.3	WPL-3.3 <sup>1</sup>
DM-4	4.1	Existing	Detection & Corrective Action	LD-4.1	WPL-4.1 <sup>1,2</sup>
	4.2	Existing			
	4.3	Existing			
DM-5	5.1A	Existing	Detection & Corrective Action	---	---
	5.1B	Existing		---	---
	5.2	Existing		LD-5.2	WPL-5.2 <sup>1</sup>
DM-6	6.1	Existing	Detection	LD-6.1	WPL-6.1 <sup>1,2</sup>
	6.2	Existing			
DM-7	7.1	Existing	Detection	LD-Temp	---
	7.2	Future		LD-7.2	---
DM-8	8.1	Future	Detection	LD-8.1	---
	8.2	Future		LD-8.2	---
DM-9	9.1	Future	Detection	LD-9.1	---
	9.2	Future		LD-9.2	---

1. Pan Lysimeter welded to bottom of secondary LCRS sump.
2. All module phases drained by single primary LCRS sump.
3. Module/phase not constructed with secondary LCRS sump.
4. Module/phase not constructed with a welded pan lysimeter.

iv. Waste Pile 9.1 – none (unit not constructed with secondary LCRS sump)

See Attachment D: Leachate & Lysimeter Monitoring.

b. Monitoring Schedule

All leak detection monitoring devices (i.e., secondary LCRS sumps and underlying WPLs) shall be monitored **monthly** for the presence (i.e., depth of) liquid and **semiannually** for the presence of LFG. Any liquid or LFG confirmed to be present in a leak detection monitoring device (as described in Section A.4.c below), including an ongoing or intermittent (e.g., seasonal) leak, shall then be monitored in accordance with Tables A.3.b (liquid) and A.2.b.ii (gas) respectively.

c. Confirmation of a Leak

i. Liquids

If liquid is detected in a leak detection monitoring device, the Discharger shall, within 24-hours, notify Central Valley Water Board staff by telephone or email and, within 7-days, sample and test the liquid for the field and monitoring parameters listed in Table A.3.b. Weekly retest sampling shall be conducted thereafter, as necessary, to confirm the identity of the liquid using the sampling and analysis procedures (including sample analysis profiles) in the most recent updated Sample Collection and Analysis Plan submitted under this MRP.

**Within 45 days** of the initial detection, the Discharger shall identify the liquid (e.g., leachate, condensate, contact storm water) by comparing the sample results to the background sample analysis profiles as described in the Corrective Action Specifications and submit a written report of the findings to the Central Valley Water Board. Upon approval of this report (i.e., confirmation of the identity of the liquid), the Discharger shall then implement the appropriate response measures under the Corrective Action Specifications and/or as otherwise directed by Central Valley Water Board staff.

ii. Gas

In the event that LFG is detected at levels triggering VOC testing (i.e., methane at or above 1% by volume and/or total organic vapors at or above 50 ppbv), the Discharger shall, within 24-hours, notify Central Valley Water Board staff by telephone or email and, within 7-days, sample for the required LFG field and monitoring parameters listed in Table A.2.b.ii. Weekly retest sampling may be conducted thereafter, as necessary, to assess whether the gas leak is ongoing or intermittent. Confirmation and response procedures for a LFG leak shall be the same as those described above for a liquid leak (i.e., submit report of findings within 45 days, implement appropriate response measures upon approval).

Any liquid or LFG confirmed to be present in a leak detection monitoring device in accordance with the above procedures, shall also trigger the need to investigate whether a release has occurred and/or needs to be addressed consistent with MRP section A.2 and the applicable O&M plans submitted under Facility Specification C.2.

## 5. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system to detect a release from the landfill and any resulting impacts to surface water if such a release occurs. Surface water monitoring is specifically required where runoff from waste management unit flows, or could flow, to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420.

Surface water monitoring at the Recology Hay Road Landfill shall be conducted at the following monitoring points, as shown in Attachment G: Drainage Controls & Surface Water Monitoring.

a. Monitoring Points  
 i. Surface Water

Table A.5.a.i Surface Water Monitoring Points				
<u>Area</u>	<u>Surface Water</u>	<u>Monitoring Point</u>	<u>Program</u>	<u>Location</u>
LF-1, LF-3, LF-4,& WP-9.1	Alamo Creek A-1 Channel	SW-3	Background	South side of culvert under Hay Road
		SW-4	Background	Upstream of Bird Sanctuary Pond outfall
		SW-7	Detection	Downstream of Bird Sanctuary Pond outfall
	Bird Sanctuary Pond	SW-8	Background	Upstream of LF-3 west of borrow pit discharge
		SW-9	Detection	Discharge into the Bird Sanctuary Pond
		SW-5	Detection	Bird Sanctuary Pond

ii. Storm Water

Storm water monitoring shall be conducted in accordance with the NPDES General Permit for Storm Water Dischargers Associated with Industrial Activities (Water Quality Order NO. 2014-006-DWQ, NPDES No. CAS000001). The Discharger shall submit a copy of the storm water Annual Report with the first semi-annual monitoring report for each year submitted under this program.

b. Monitoring Schedule

Surface water samples (excluding Storm Water samples collected in accordance with Water Quality Order No. 2014-006-DWQ) shall be collected from the above monitoring network and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Appendix 1 attached to this Order.

Table A.5.b Surface Water Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i>			
pH	pH units	Semiannually	Semiannually
Temperature	degrees F	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
<i>Monitoring Parameters</i>			
General Minerals			

Table A.5.b			
Surface Water Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Bicarbonate Alkalinity	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Nitrate-N	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrogen Compounds			
Ammonia-Nitrogen	mg/L	Annually	Annually
Total Kjeldahl Nitrogen	mg/L	Annually	Annually
VOCs	ug/L	Semiannually	Semiannually
Dissolved Metals			
Arsenic	ug/L	Semiannually	Semiannually
Chromium (total)	ug/L	Semiannually	Semiannually
Iron	ug/L	Semiannually	Semiannually
Lead	ug/L	Semiannually	Semiannually
<i>Constituents of Concern</i> <sup>1</sup>	---	Every 5 years	Every 5 years

1. See Appendix 1 below.

- c. Leachate Seeps -- Surface water samples shall also be collected and analyzed for the monitoring parameters in the above table when leachate seeps are observed that may have impacted surface water quality. If leachate seeps are identified extending out of the disposal area or that potentially impact on-site drainages, those drainages shall be sampled as close to the leachate as possible (in addition to sampling of the actual leachate seep as required in Section A.3 above).
- d. General Storm Water Permit -- Storm water monitoring shall also be conducted in accordance with the NPDES Industrial Storm Water General Permit (NPDES NO. CAS000001, Order 2014-0057-DWQ).

The above monitoring system meets Title 27 requirements for surface/storm water monitoring.

**6. Solid & Semi-Solid Waste Monitoring**

The Discharger shall monitor all wastes discharged to the landfill on a quarterly basis and report to the Board as follows:

Table A.6			
Solid & Semi-Solid Waste Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Unit accepting waste	---	Quarterly	Semiannually
Type(s) of waste	---	Quarterly	Semiannually
Quantity of waste	cu yds. & tons <sup>1</sup>	Quarterly	Semiannually
Moisture content of waste <sup>2</sup>	percent	Quarterly	Semiannually
Quantity of cover	cu yds. & tons <sup>1</sup>	Quarterly	Semiannually
Type(s) of cover	---	Quarterly	Semiannually
Elevation range of discharges	Feet & 10ths, NADV 88	Quarterly	Annually
Remaining capacity of unit	%	Quarterly	Annually

1. Tonnage may be estimated based on volume conversion provided volume conversion factor is reported.
2. Required for waste pile and landfill co-disposal operations.

## 7. Landfill Facility Monitoring

### a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **15 September**, the Discharger shall conduct an inspection of all classified units at the landfill facility, including landfill units, waste pile, and LTU (as applicable). The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October** in accordance with the **Annual Winterization Plan** submitted under the WDR Facility Specifications. Annual facility inspection reporting shall be submitted as required in Section B.5 of this MRP.

### b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all unit side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.6 of this MRP.

### c. Five-Year Topographic Surveys

The most recent aerial topographic survey of the site was conducted in April 2015.

#### i. Active Units

For active units, or portions thereof, the Discharger shall provide copies of topographic maps obtained from 5-year aerial topographic surveys conducted

under Title 27, section 21570(f) (10). The most recent topographic survey of the active landfill units (LFs-1 through 4) was conducted in April 2015. The first 5-year topographic survey of the active units at the site conducted under this Order shall therefore be completed by **30 April 2020**. Subsequent topographic surveys of the active units under this Order shall be coordinated with surveys conducted on the closed units (i.e., by **15 November 2025** and **every five years** thereafter).

ii. Closed Units

Title 27 requires that the Discharger conduct an initial final cover topographic survey upon completion of closure or partial closure and at least every five years thereafter. The purpose of the survey is to track differential settlement of the landfill's low hydraulic conductivity (LHC) layer of the cover. The Discharger is also required to produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's LHC (or engineered alternative cover, as applicable).

WDR Closure and Postclosure Specifications require that LF-1 be closed by 15 October 2021. The first postclosure topographic survey for LF-1 under this Order shall therefore be completed by **15 November 2021**. Subsequent topographic surveys for LF-1 shall be conducted by **15 October 2025** and at least **every five years** thereafter.

Reporting of the above shall be in accordance with Section B.7 of this MRP.

d. Standard Observations

The Discharger shall conduct Standard Observations at all classified units at the site (i.e., landfills, waste pile & LTU) in accordance with this section of the MRP. Standard observations shall be conducted weekly during the wet season (1 October to 30 April) and monthly during the dry season (1 May to 30 September).

The Standard Observations shall include:

i. For the units:

- (1) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
- (2) Evidence of erosion and/or of day-lighted refuse.

ii. Along the perimeter of the units:

- (1) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
- (2) Evidence of erosion and/or of day-lighted refuse.

iii. For receiving waters:

- (1) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and

- (2) Discoloration and turbidity - description of color, source, and size of affected area.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP.

Landfill Facility Monitoring shall also include continuous leachate seep monitoring under Section A.3.c.

## **8. Additional Corrective Action Monitoring**

### **a. LFG Extraction**

LFG extraction monitoring shall be conducted to assess the nature and source of impacts at the site; to provide an ongoing assessment as to the effectiveness of existing landfill gas controls in mitigating that source; and to evaluate the possible need for additional corrective action measures to protect underlying water bearing media.

#### **i. Monitoring Points**

LFG extraction monitoring shall be conducted at the following monitoring points in the LFG extraction system:

##### **(1) LF-1**

- (A) Gas Extraction Wells -- GEWs 28 through 41
- (B) Leachate Wells -- LWs 1, 2 & 3
- (C) LCRS Sumps - S-1

##### **(2) LF-2**

- (A) Gas Extraction Wells -- GEWs 7, 8R, 25 & 52;
- (B) LCRS Sumps -- S-2.1

##### **(3) LF-3**

- (A) Gas Extraction Wells -- GEWs 1 through 6; 9R, 10R, 11, 11R, 12; 23, 24, 26 and 53 through 57
- (B) LCRS Sumps -- S-2.1, S-2.2A, S-2.2B, S-11.1, & S-11.2

##### **(4) LF-4**

- (A) Gas Extraction Wells -- GEWs 13 through 22; GEWs 42 through 51; and GEWs 58 through 67.
- (B) LCRS Sumps -- S-3.2, S-3.3, S-4.1, S-5.1A, S-5.1B, S-5.2, and S-6,

The LFG monitoring network shall also include the sampling port of the gas header(s) at each landfill unit and all future LFG extraction wells and primary LCRS sumps installed at the landfill units at the site.

#### **ii. Monitoring Schedule**

Extracted LFG samples shall be collected from the above monitoring network and analyzed in accordance with the following schedule using the applicable test methods.

**TABLE A.8  
 LANDFILL GAS CONTROL SYSTEM MONITORING PROGRAM**

<u>LFG Control System Parameter</u>	<u>Units</u>	<u>Monitoring Frequency</u>
<b>Parameters</b>		
LFG Control System Run-time	Hours	Monthly
LFG Control System Down-time	%	Monthly
Temperature into Plant	<sup>0</sup> F	Monthly
Flare Combustion Temperature	<sup>0</sup> F	Monthly
System Vacuum	mm Hg vacuum	Monthly
Totalized flow into Plant	Cubic Feet	Monthly
Totalized flow rate into Plant	CFM	Monthly
<b>LFG System Influent Monitoring Parameters</b>		
Volatile Organic Compounds (USEPA Method TO-15)	ug/cm <sup>3</sup>	Semiannually
Methane	%	Semiannually
<u>Parameter</u>	<u>Units</u>	<u>Monitoring Frequency</u>
<b>Field Parameters for LFG Extraction Points<sup>1</sup></b>		
Weather Conditions		Monthly
Atmospheric Temperature	<sup>0</sup> F	Monthly
Atmospheric Pressure	inches Hg	Monthly
Gas concentrations at each well/point		
Methane	% by volume	Monthly
Carbon Dioxide	% by volume	Monthly
Oxygen	% by volume	Monthly
Remainder gas	% by volume	Monthly
Gas temperature at each well	<sup>0</sup> F	Monthly
Gas Pressure at each well		
Initial static pressure in wellhead	inches H <sub>2</sub> O	Monthly
Adjusted static pressure in wellhead	inches H <sub>2</sub> O	Monthly
<b>Monitoring Parameters for LFG Monitoring</b>		
Volatile Organic Compounds (USEPA Method TO-15)	ug/cm <sup>2</sup>	Semiannually

Notes:

- Attachment F shows the LFG monitoring locations and designations.
- VOC monitoring shall be limited to LFG samples collected from the LF-1 gas header.
- Monthly and semi-annual monitoring results required in Table A.8 shall be reported in the semi-annual monitoring reports.

All shutdowns of the landfill gas extraction system, regardless of the type of restart, shall be summarized and tabulated in the semiannual reports. The summary shall include the start/stop dates, and the cause of the shutdown. In addition, the LFG plant run-time per month and percent down-time per month shall be reported and tabulated in each semiannual report.

b. LFG Condensate

i. Monitoring Points

LFG condensate monitoring shall be conducted at the LFG condensate sumps for LFG extracted from each landfill unit/module, as follows:

<u>Landfill</u>	<u>Modules</u>	<u>Module Status</u>	<u>Condensate Sump</u>
LF-1	DMS-1A & 1B	Existing	CS-4
LF-2	DM-2.1	Existing	CS-1
LF-3	DMS-2.2, 11.1 & 11.2	Existing	CS-1
LF-3	DMS-2.3, 10 & 11.3 <sup>2</sup>	Future	--- <sup>2</sup>
LF-4	DMS-3 & 4.1	Existing	CS-2
LF-4	DMS-4.3, 6 & 7.1 <sup>1</sup>	Existing	--- <sup>1</sup>
LF-4	DMS-4.1, 4.2 & 5	Existing	CS-3
LF-4	DMS-8 & 9 <sup>2</sup>	Future	--- <sup>2</sup>
All	All existing modules	Existing	CS-5

1. Gas controls not yet installed at these modules.
2. Future modules.

LFG condensate monitoring shall also be conducted at all future LFG condensate sumps installed as part of the existing or future LFG extraction system. LFG condensate recovered from each landfill unit shall be handled as leachate consistent with the Discharge Prohibitions and the Landfill Liquids Management Plan, as approved by Central Valley Water Board staff.

c. Groundwater Remediation Projects

i. Nitrate-N Plume(s)

Monitoring and reporting of remediation of the existing nitrate-N plume shall be in accordance with General Order R5-2008-0149-056 (*General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-volatile Organic Compounds and/or Petroleum Compounds*, adopted 11 September 2008).

ii. Future

Monitoring and reporting for any future remediation projects shall be similarly handled in accordance with the above General Order and the Notice of Applicability for a given project, as applicable, or with any specific Order issued to the Discharger.

d. Borrow Pit Dewatering

The Discharger performs dewatering activities at an area referred to as the "Borrow Pit" in order to harvest earthen material for landfill cover and base liner

construction. The Discharger has installed a pump to dewater the borrow pit and to discharge the water. These activities are regulated by the Water Board under the *General Order for Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). The Discharger is required to comply with all the requirements of the Limited Threat General Order, including operation and maintenance requirements. In addition to the requirements of the Limited Threat General Permit, for each semiannual monitoring report required under this MRP, the Discharger shall monitor and report the following for the Borrow Pit:

- i. The monthly flows of groundwater extracted from the borrow pit shall be tabulated and reported in the semiannual monitoring reports.
- ii. If groundwater wells between the borrow pit and nitrate impacted areas have confirmed detections of Nitrate-nitrogen, nitrite-nitrogen, total Kjeldahl nitrogen above concentration limits, then the Discharger shall monitor the borrow pit discharge for these nitrogen constituents.
- iii. If groundwater wells between the borrow pit and the landfill units have confirmed detections of VOCs that are identified from the landfill, the Discharger shall monitor the borrow pit discharge for VOCs.

## 9. Compost Pond Monitoring

### a. Leachate/Wastewater

- i. Monitoring Points – Ponds A & B
- ii. Monitoring Schedule

The Discharger shall monitor Compost Ponds A and B in accordance with the table below:

Table A.9.a.ii			
Compost Pond Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<i>Field Parameters</i>			
Action Level (0, 1, 2 or 3) <sup>1</sup>	---	Weekly <sup>2</sup>	Semiannually
Freeboard <sup>3</sup>	feet and tenths, NADV88	Weekly <sup>2</sup>	Semiannually
Liquid Level	feet and tenths, NADV88	Weekly <sup>2</sup>	Semi-Annually
Volume pumped from ponds:			
Pond A to Pond B	gallons	Weekly	Semi-Annually

Table A.9.a.ii			
Compost Pond Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Onsite reuse - location and volume	Gallons, location	Weekly	Semi-Annually
Storage Tanks	gallons	Weekly	Semi-Annually
Offsite Disposal - location and volume	Gallons, location	Weekly	Semi-Annually
pH	pH units	Quarterly	Semi-Annually
Turbidity	Turbidity units	Quarterly	Semi-Annually
Electrical Conductivity	ug/L	Quarterly	Semi-Annually
Dissolved Oxygen	mg/L	Quarterly	Semi-Annually
<i>Monitoring Parameters</i>			
Total Dissolved Solids	mg/L	Semi-Annually	Semi-Annually
Fixed Dissolved Solids	mg/L	Semi-Annually	Semi-Annually
Biochemical Oxygen Demand	mg/L	Semi-Annually	Semi-Annually
Chloride	mg/L	Semi-Annually	Semi-Annually
Sulfate	mg/L	Semi-Annually	Semi-Annually
Nitrate-N	mg/L	Semi-Annually	Semi-Annually
Ammonia-N	mg/L	Semi-Annually	Semi-Annually
Total Kjeldahl Nitrogen	mg/L	Semi-Annually	Semi-Annually
Total Phosphorous	mg/L	Semi-Annually	Semi-Annually
Total Coliform Organisms <sup>4</sup>	MPN/100 mL	Semi-Annually	Semi-Annually

1. Action level under approved interim or final Compost Facility O&M Plan. The Discharger shall provide a log or other brief description of the activities conducted under each action level, as reported,
2. Monitoring for this parameter shall also be conducted within 24 hours of storm event producing more than two inches of rainfall in a 24 hour period.
3. Freeboard shall be measured from the top of the surface impoundment down to the water level in the impoundment and can be measured using markings on the primary geomembrane liner or a free-standing gauge.
4. Using a minimum of 15 tubes, or three dilutions.

b. Groundwater

- i. Monitoring Points -- The groundwater monitoring points for the compost ponds shall include the following existing and future wells:

Table A.9.b.i			
Compost Pond Monitoring Points			
<u>Pond</u>	<u>Well</u>	<u>Program</u>	<u>Location</u>
A	G-4R <sup>1</sup>	Background	Upgradient
	CP-1 <sup>2</sup>	Detection	Downgradient
B		Background	Upgradient
	CPs 2 & 3 <sup>2</sup>	Detection	Downgradient

1. Existing monitoring well.

2. Future monitoring wells to be installed in the uppermost saturated interval, as approved by Water Board staff.

- ii. Monitoring Schedule - Same as Table A.9.a.ii, except for action level, freeboard, and liquid level (not applicable to groundwater monitoring).

## 10. Compost Facility Monitoring

### a. Annual Inspection

No later than **15 September** each year, the Discharger shall conduct an **annual** inspection of the compost facility to confirm that all drainage, containment, operating and monitoring systems/structures (e.g., working surfaces, berms, ditches, ponds, sumps, monitoring wells) are prepared for the pending wet season. The Discharger shall take photos of any problem areas before and after repairs. Any necessary construction, maintenance, and/or repairs of these structures and systems shall be completed by **31 October** in accordance with the **Annual Winterization Plan** submitted under the WDR Facility Specifications. Annual facility inspection reporting shall be submitted as required in Section B.5 of this MRP.

### b. Major Storm Events

The Discharger shall inspect all leachate/storm water drainage and containment facilities, including, but not necessarily limited to, leachate pad, sumps and ditches, containment berms, precipitation and drainage controls; and adjacent areas for damage **within 7 days** following major storm events. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs including photographs of the problem and repairs in the Annual Monitoring Report required under Section B.3 of this MRP.

### c. Monthly O&M Inspections

The Discharger shall conduct **monthly** O&M inspections of the compost facility and submit the following observations and records in the Annual Monitoring and Maintenance Report:

- i. Date and time of inspections along with name of inspector;
- ii. The overall condition of the compost facility's drainage, operations, and containment systems, including leachate pad; concrete-lined sumps & ditches; pumps & pipelines; storm water controls; containment system berms & liners (e.g., leachate pad, compost ponds); storage tanks, and all other related

facilities;

- iii. The available capacity within storage systems and the current volume of wastewater (gallons) or solids (cubic yards) contained;
- iv. Action levels triggered/executed during the monitoring under the approved Leachate Collection System/Pond O&M Plan (interim or final, as applicable) described in WDR Finding 168;
- v. Standard Observations for all applicable items listed in Section A.7.d;
- vi. Volume of wastewater discharged or re-used onsite; and
- vii. Volume of wastewater disposed at an off-site treatment system and name and location of the WWTP, if applicable.

The results of monthly O&M inspections of the compost facility shall be submitted in the semiannual monitoring reports required under Section B.2 of this MRP.

## B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

<b>Reporting Schedule</b>			
<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.2	Semiannual Monitoring Report	30 June & 31 December	<b>1 August, 1 February</b>
B.3	Annual Monitoring Report	31 December	<b>1 February</b>
B.4	Seep Reporting	Continuous	<b>Immediately &amp; Within 7 Days</b>
B.5	Annual Facility Inspection Report	31 October	<b>15 November</b>
B.6	Major Storm Event Reporting	Continuous	<b>Immediately &amp; 14 days from damage repair</b>
B.7	5-Year Topographic Survey & Iso-Settlement Maps	Upon closure	<b>15 November 2021 (LF-1) 15 December 2020 (LF-2)</b>
		30 April 2020	<b>30 May 2020 (LFs-3 &amp; 4)</b>
		15 November 2024 & Every 5 Years	<b>15 December 2025 &amp; Every 5 years thereafter (All units)</b>

### Reporting Requirements

#### 1. General

The results of **all monitoring** conducted under this Order shall be reported to the Central Valley Water Board in accordance with the reporting schedule above for the

calendar period in which samples were taken or observations made. All reports shall include the data and information required for that report in this Monitoring and Reporting Program and as required in WDRs Order R5-2016-XXXX and the Landfill and Industrial SPRRs, particularly the monitoring and response to release provisions (i.e., WDR Section H and SPRR Sections I and J). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Field and laboratory sheets shall be reported in each monitoring report.

All monitoring reports, technical reports, and analytical data required under this MRP and described herein shall be submitted in electronic form in accordance with WDR Provision H.15.

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b. Date, time, and manner of sampling;
- c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e. Calculation of results; and
- f. Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported.

### **Required Reports**

#### **2. Semiannual Monitoring Report**

Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:

- a. For each groundwater monitoring point addressed by the report, a description of:
  - i. The time of water level measurement;
  - ii. The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
  - iii. The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH,

- temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
- iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - v. A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
  - c. Groundwater elevation contour and flow stream maps showing groundwater elevations and the directions of groundwater flow in the uppermost aquifer and in any additional zones of saturation based upon quarterly groundwater elevation monitoring prior to sampling. Corresponding estimates of groundwater gradients and flow velocity shall also be provided.
  - d. Tabulated monitoring data for the monitoring period for all classified units/modules, both compost facility ponds, all monitoring points, all field and monitoring parameters, all 5-year COCs, as applicable, and all monitored media (e.g., groundwater, unsaturated zone, leachate, gas, and surface water). Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
  - e. Laboratory statements of results of all analyses evaluating compliance with requirements.
  - f. An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under SPRRs Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
  - g. Identification of any gas or liquid detected in a leak detection monitoring device or pan lysimeter based on the fluid sample analysis profiles provided in the Sample Collection and Analysis Plan consistent with the corrective action specifications of this Order.
  - h. An evaluation of the effectiveness of run-off/run-on control facilities.
  - i. The results of landfill and compost facility monitoring required under Sections A.7.d (landfill standard observations) and A.10.c (compost facility monthly O&M inspections) of this MRP.
  - j. The results of solid and semi-solid waste monitoring required under Section A.6.

- k. A discussion as to the effectiveness of corrective action per Title 27, section 20430(h).

### 3. Annual Monitoring Report

The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a. All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous 10 calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented for the entire history of COC monitoring. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. Constituent monitoring data of incompatible scales/ranges shall not be plotted on the same graph. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b. An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
- c. Cumulative historical monitoring data organized per B.2.d in an electronic data format amenable to statistical analysis (i.e., Excel). See Title 27, section 20420(h).
- d. Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
- e. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- f. A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
- g. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
- h. A comprehensive discussion of the Corrective Action Program(s), including corrective action measures implemented at each unit, as applicable.
- i. For the purpose of identifying fluid detected in a pan lysimeter or leak detection sump, updated sample analysis profiles (based on current and historical

monitoring data) for each fluid (e.g., leachate; contact storm water, LFG) that could potentially be detected in a pan lysimeter or leak detection sump at the site. See WDR Corrective Action Specification D.6.

#### 4. Seep Reporting

The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:

- a. A map showing the location(s) of seepage;
- b. An estimate of the flow rate;
- c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
- d. Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table A.3.b of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
- e. Corrective measures underway or proposed, and corresponding time schedule.

#### 5. Annual Facility Inspection Reporting

By **15 November** of each year, the Discharger shall submit an Annual Facility Inspection Report describing measures implemented under the approved Annual Winterization Plan, including inspections and repairs, preparations for winter, and include photographs of any problem areas and the repairs. See Sections A.7.a and A.10.a.

#### 6. Major Storm Event Reporting

Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Sections A.7.b and A.10.b of this MRP.

#### 7. 5-Year Topographic Survey(s)

By **15 December 2021**, the Discharger shall submit the initial postclosure topographic surveys conducted under this Order for LF-1. Each report shall include topographic survey and a base-line iso-settlement map for the closed unit. By **30 June 2020**, the Discharger shall also submit a report of results for the first topographic map of the active units conducted under this Order showing the development contours of LF-3 and LF-4. Subsequent topographic reports for the site, including both active and closed units, shall be submitted by **15 December 2025**, and at least **every five years** thereafter, and may be combined in a single report. See MRP Section A.7.c.

### C. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard for the landfill unit shall consist of all Constituents

of Concern (COCs), Concentration Limits, the Point of Compliance, and all Monitoring Points consistent with this Order and Title 27, Section 20390.

## 1. Water Quality Protection Standard Report

By **30 November 2016**, the Discharger shall submit an updated Water Quality Protection Standard (WQPS) Report proposing a WQPS for each classified unit at the site consistent with the Findings and Requirements of this Order. At a minimum, the report shall include the following information:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer, unsaturated zone, and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- c. A map showing the monitoring points and background monitoring points for groundwater, the unsaturated zone, and surface water for each unit. The map shall show the point of compliance for each unit in accordance with Title 27, section 20405.
- d. Listings/tables showing all elements of the WQPS for each unit and water bearing media, including, but not limited to, concentration limits for all monitoring parameters and 5-year COCs. See Standard Monitoring Specification I.25, SPRR.
- e. Proposed data analysis methods for calculating concentration limits for naturally-occurring monitoring parameters and constituents of concern detected (i.e., constituents detected in 10% or greater of the background data) per Title 27, section 20415(e)(8)(A-D) or section 20415(e)(8)(E). See WDR Monitoring Specification H.6.
- f. A retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

Once approved, the concentration limits of the WQPS shall be annually updated to reflect current background monitoring data using the approved data analysis methods. Any subsequent proposed changes to the WQPS, other than annual update of the concentration limits shall be submitted in the form of a revised WQPS report for review and approval by the Executive Officer. The WQPS shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27.

## 2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Table A.1.c (groundwater), Table A.2.a.ii (soil pore water), Table A.3.b (classified unit leachate); Table A.2.b.ii (soil pore gas), Table A.5.b (surface/storm water), A.8.a.ii (landfill gas) and A.9.b.ii (Compost Pond Liquid). The

WQPS shall further identify which monitoring parameters are in Detection Monitoring and which are in Corrective Action monitoring.

### 3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored at least every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are referenced in Table A.1.c (groundwater), Table A.2.a.ii (soil pore water), Table A.3.b (leachate), and Table A.5.b (surface/storm water); and listed along with laboratory test methods in Appendix 1 (attached). The WQPS shall further identify which COCs are in Detection Monitoring and which are in Corrective Action monitoring.

The Discharger shall monitor all COCs every 5 years (or more frequently if required in a Corrective Action Program). The previous 5-year COC monitoring event was conducted in September 2015. The next 5-year COC monitoring event shall therefore be conducted by **30 October 2020** and the results reported in the Second Half and Annual 2020 monitoring report due by **1 February 2021**.

### 4. Concentration Limits

As noted in the WDR Findings, the Discharger does not yet have a complete list of approved concentration limits for naturally occurring constituents and the WQPS for the site needs to be updated. Proposed concentration limits for all water bearing media (e.g., surface water and groundwater) shall therefore be included in the revised WQPS Report required under the WDR Provisions.

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined by calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or by an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

#### a. Detection Monitoring

- i. Non-naturally occurring COCs - The concentration limits for non-naturally-occurring constituents of concern, including organic compounds (e.g., VOCs and dissolved metals not detectable in background), shall be non-detect.
- ii. Naturally Occurring COCs - The concentration limits for naturally-occurring COCs (e.g., general minerals and dissolved metals detectable in background) shall be determined by statistical analysis of upgradient monitoring data for the eastern site area and historical background for intrawell comparisons in the western site area. The revised WQPS shall demonstrate whether the use of intrawell monitoring on the west half of the facility is consistent with Title 27, Section 20080(b) and (c), and if not consistent with Title 27, propose to change the detection groundwater monitoring to interwell comparisons using hydraulically upgradient wells as background.

The data analysis method for calculating concentration limits for naturally-occurring COCs under this Order shall be the interwell/intrawell Tolerance Limit

Method, or as otherwise proposed in the revised WQPS Report and approved by Board staff. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Monitoring Report submitted under Section B.3.g of this MRP.

b. **Corrective Action Monitoring**

The concentration limits for corrective action monitoring shall be the same as those for detection monitoring absent approval of a proposal for concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. Time series plots and an intrawell statistical procedure (e.g., the Sens Slope Method) shall be used for trend analysis to monitor corrective action progress.

**5. Point of Compliance**

The Point of Compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit. The Point of Compliance wells for each classified unit at the site shall be the downgradient and side gradient wells listed for each unit in Section A.1.

**6. Compliance Period**

The compliance period for each waste management unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

**7. Monitoring Points**

A monitoring point is a well, device, or location specified in the waste discharge requirements at which monitoring is conducted and at which the Water Quality Protection Standard applies. The monitoring points for each monitored medium at the site are listed in Sections A.1 (groundwater), A.2.a.i (soil pore liquid), A.2.b.i (soil pore gas), and A.5.a.i (surface water) of this MRP. The WQPS shall further identify which monitoring points are in Detection Monitoring and which monitoring points are in Corrective Action monitoring.

**D. TRANSMITTAL LETTER FOR ALL REPORTS**

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger,

or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
(Date)

WMH

<b>APPENDIX 1</b>		
<b>CONSTITUENTS OF CONCERN &amp; APPROVED USEPA ANALYTICAL METHODS</b>		
<b>Constituent of Concern</b>	<b>USEPA TEST Method</b>	<b>Concentration Limit<sup>1</sup></b>
<b>General Minerals (mg/L)</b>		
Bicarbonate Alkalinity	2320B	---
Calcium	200.7/600	---
Carbonate	2320B	---
Chloride	300	---
Magnesium	200.7/600	---
Nitrate-N – Nitrogen	300	---
Phosphate	300	---
Potassium	200.7/600	---
Sodium	200.7/600	---
Sulfate	300	---
<b>Nitrogen Compounds</b>		
Ammonia Nitrogen	4500-NH <sub>3</sub>	0.56
Total Kjeldahl Nitrogen	4500-N-org	18
Nitrite Nitrogen	300	5
<b>Other Parameters</b>		
Chemical Oxygen Demand	410.4	---
Fecal Coliform	9221B	---
Phosphorus	365.3	---
Total Alkalinity	2320B	---
Fixed Dissolved Solids	2540E	---
Total Dissolved Solids	2540C	---
Total Organic Carbon	415.1	---
<b>Dissolved Inorganics (µg/L)</b>		
Aluminum	6010	---
Antimony	7041	---
Arsenic	7062	50
Barium	6010	---
Beryllium	6010	---
Cadmium	7131A	---

Chromium (total)	6010	35
Cobalt	6010	---
Copper	6010	---
Cyanide	9010C	---
Iron	6010	---
Lead	7421	---
Manganese	6010	---
Mercury	7470A	---
Nickel	7521	---
Selenium	7742	---
Sulfide	9030B	---
Silver	6010	---
Thallium	7841	---
Tin	6010	---
Vanadium	6010	---
Zinc	6010	---
<b>Constituent of Concern</b>	<b>USEPA TEST Method</b>	<b>Concentration Limit</b>
<b>Volatile Organic Compounds (µg/L)</b>	<b>8260B</b>	<b>ND</b>
Acetone		
Acetonitrile (Methyl cyanide)		
Acrolein		
Acrylonitrile		
Allyl chloride (3-Chloropropene)		
Benzene		
Bromochloromethane (Chlorobromomethane)		
Bromodichloromethane (Dibromochloromethane)		
Bromoform (Tribromomethane)		
Carbon disulfide		
Carbon tetrachloride		
Chlorobenzene		
Chloroethane (Ethyl chloride)		
Chloroform (Trichloromethane)		
Chloroprene		
Dibromochloromethane (Chlorodibromomethane)		
1,2-Dibromo-3-chloropropane (DBCP)		
1,2-Dibromoethane (Ethylene dibromide; EDB)		
o-Dichlorobenzene (1,2-Dichlorobenzene)		
m-Dichlorobenzene (1,3-Dichlorobenzene)		
p-Dichlorobenzene (1,4-Dichlorobenzene)		
trans- 1,4-Dichloro-2-butene		

Dichlorodifluoromethane (CFC 12)		
1,1 -Dichloroethane (Ethylidene chloride)		
1,2-Dichloroethane (Ethylene dichloride)		
1,1 -Dichloroethylene (1, I-Dichloroethene)		
cis- 1,2-Dichloroethylene		
trans- 1,2-Dichloroethylene		
1,2-Dichloropropane (Propylene dichloride)		
1,3-Dichloropropane (Trimethylene dichloride)		
2,2-Dichloropropane (Isopropylidene chloride)		
1,1 -Dichloropropene		
cis- 1,3-Dichloropropene		
trans- 1,3-Dichloropropene		
Di-isopropylether (DIPE)		
Ethanol		
Ethyltertiary butyl ether		
Ethylbenzene		
Ethyl methacrylate		
Hexachlorobutadiene		
2-Hexanone (Methyl butyl ketone)		
Isobutyl alcohol		
Methacrylonitrile		
Methyl bromide (Bromomethane)		
Methyl chloride (Chloromethane)		
Methyl ethyl ketone (MEK; 2-Butanone)		
Methyl iodide (Iodomethane)		
Methyl t-butyl ether		
Methyl methacrylate		
4-Methyl-2-pentanone (Methyl isobutyl ketone)		
Methylene bromide (Dibromomethane)		
Methylene chloride (Dichloromethane)		
Naphthalene		
Propionitrile (Ethyl cyanide)		
Styrene		
Tertiary amyl methyl ether		
Tertiary butyl alcohol		
1,1,1,2-Tetrachloroethane		
1,1,2,2-Tetrachloroethane		
Tetrachloroethylene (Perchloroethylene; PCE)		
Toluene		
1,2,4-Trichlorobenzene		
1,1,1 -Trichloroethane (Methylchloroform)		
1,1,2-Trichloroethane		

Trichloroethylene (Trichloroethene; TCE)		
Trichlorofluoromethane (CFC- 11)		
1,2,3-Trichloropropane		
Vinyl acetate		
Vinyl chloride (Chloroethene)		
Xylene (total)		
<b>Semi-Volatile Organic Compounds (µg/L):</b>	<b>8270</b>	<b>ND</b>
Acenaphthene		
Acenaphthylene		
Acetophenone		
2-Acetylaminofluorene (2-AAF)		
Aldrin		
4-Aminobiphenyl		
Anthracene		
Benzo[a]anthracene (Benanthracene)		
Benzo[b]fluoranthene		
Benzo[k]fluoranthene		
Benzo[g,h,i]perylene		
Benzo[a]pyrene		
Benzyl alcohol		
Bis(2-ethylhexyl) phthalate		
alpha-BHC		
beta-BHC		
delta-BHC		
gamma-BHC (Lindane)		
Bis(2-chloroethoxy)methane		
Bis(2-chloroethyl) ether (Dichloroethyl ether)		
Bis(2-chloro-1-methylethyl) ether; DCIP)		
4-Bromophenyl phenyl ether		
Butyl benzyl phthalate (Benzyl butyl phthalate)		
Chlordane		
p-Chloroaniline		
Chlorobenzilate		
p-Chloro-m-cresol (4-Chloro-3-methylphenol)		
2-Chloronaphthalene		
2-Chlorophenol		
4-Chlorophenyl phenyl ether		
Chrysene		
o-Cresol (2-methylphenol)		
m-Cresol (3-methylphenol)		
p-Cresol (4-methylphenol)		

4,4'-DDD		
4,4'-DDE		
4,4'-DDT		
Diallate		
Dibenz[a,h]anthracene		
Dibenzofuran		
Di-n-butyl phthalate		
3,3'-Dichlorobenzidine		
2,4-Dichlorophenol		
2,6-Dichlorophenol		
Dieldrin		
Diethyl phthalate		
p-(Dimethylamino)azobenzene		
7,12-Dimethylbenz[a]anthracene		
3,3'-Dimethylbenzidine		
2,4-Dimehtylphenol (m-Xylenol)		
Dimethyl phthalate		
m-Dinitrobenzene		
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)		
2,4-Dinitrophenol		
2,4-Dinitrotoluene		
2,6-Dinitrotoluene		
Di-n-octyl phthalate		
Diphenylamine		
Endosulfan I		
Endosulfan II		
Endosulfan sulfate		
Endrin		
Endrin aldehyde		
Ethyl methanesulfonate		
Famphur		
Fluoranthene		
Fluorene		
Heptachlor		
Heptachlor epoxide		
Hexachlorobenzene		
Hexachlorocyclopentadiene		
Hexachloroethane		
Hexachloropropene		
Indeno(1,2,3-c,d)pyrene		
Isodrin		
Isophorone		

Isosafrole		
Kepone		
Methapyrilene		
Methoxychlor		
3-Methylcholanthrene		
Methyl methanesulfonate		
2-Methylnaphthalene		
1,4-Naphthoquinone		
1-Naphthylamine		
2-Naphthylamine		
o-Nitroaniline (2-Nitroaniline)		
m-Nitroaniline (3-Nitroaniline)		
p-Nitroaniline (4-Nitroaniline)		
Nitrobenzene		
o-Nitrophenol (2-Nitrophenol)		
p-Nitrophenol (4-Nitrophenol)		
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)		
N-Nitrosodiethylamine (Diethylnitrosamine)		
N-Nitrosodimethylamine (Dimethylnitrosamine)		
N-Nitrosodiphenylamine (Diphenylnitrosamine)		
N-Nitrosodipropylamine (Di-n-propylnitrosamine)		
N-Nitrosomethylethylamine		
N-Nitrosopiperidine		
N-Nitrosopyrrolidine		
5-Nitro-o-toluidine		
Pentachlorobenzene		
Pentachloronitrobenzene (PCNB)		
Pentachlorophenol		
Phenacetin		
Phenanthrene		
Phenol		
p-Phenylenediamine		
Polychlorinated biphenyls (PCBs; Aroclors)		
Pronamide		
Pyrene		
Safrole		
1,2,4,5-Tetrachlorobenzene		
2,3,4,6-Tetrachlorophenol		
o-Toluidine		
Toxaphene		
2,4,5-Trichlorophenol		
0,0,0-Triethyl phosphorothioate		

sym-Trinitrobenzene		
<b>Chlorophenoxy Herbicides (µg/L)</b>	<b>8151A</b>	<b>ND</b>
2,4-D (2,4-Dichlorophenoxyacetic acid)		
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)		
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)		
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		
<b>Organophosphorus Compounds</b>	<b>8141B</b>	<b>ND</b>
Atrazine		
Chlorpyrifos		
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)		
Diazinon		
Dimethoate		
Disulfoton		
Methyl parathion (Parathion methyl)		
Parathion		
Phorate		
Simazine		

1. "---" denotes concentration limit not yet established for this constituent.