

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2019-0005

WASTE DISCHARGE REQUIREMENTS  
FOR  
MUSCO OLIVE PRODUCTS, INC. DBA MUSCO FAMILY OLIVE COMPANY  
AND  
THE STUDLEY COMPANY  
FOR  
MUSCO FAMILY OLIVE COMPANY (TRACY PLANT)  
CLASS II SURFACE IMPOUNDMENTS  
SAN JOAQUIN COUNTY

The California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board or Board) finds that:

1. Musco Olive Products, Inc., doing business as “Musco Family Olive Company” (Musco), owns and operates the Musco Family Olive Company’s Tracy Plant (facility) about 5 miles southwest of Tracy, in Section 34, T2S, R4E, MDB&M. A small portion of the Facility is also situated on land owned by the Studley Company (Studley), and leased to Musco. As Facility owners, Musco and Studley (collectively, Discharger), are responsible for compliance with this Order.
2. At an elevation of 280 feet above sea level, the facility is on the eastern slope of the Diablo Mountain Range. The facility is south of Interstate 580 and east of Patterson Pass Road, as shown in **Attachment A**, which is incorporated herein and made part of this Order by reference.
3. The Discharger operates a series of Class II surface impoundments, which are alternatively referred to herein as waste management units<sup>1</sup> (WMUs) or "Ponds." These Ponds are regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 (Title 27), section 20005 et seq. The facility was previously regulated by Waste Discharge Requirements (WDRs) Order No. R5-2014-0125.
4. The following documents are attached and incorporated as part of this Order:
  - a. Attachment A – Facility Location Map
  - b. Attachment B – Site Map
  - c. Attachment C – Process Wastewater Distribution Diagram
  - d. Information Sheet
  - e. April 2016 Standard Provisions and Reporting Requirements for Industrial Facilities Regulated by Title 27 (Industrial SPRRs)
  - f. December 2015 Standard Provisions and Reporting Requirements: Nonhazardous Solid Waste Discharges Regulated by Subtitle D (Landfill SPRRs)

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<sup>1</sup> Surface impoundments are a specific subset of WMUs regulated under Title 27.

5. The facility is on a 308.73-acre property located at 17950 Via Nicolo Road, Tracy. The facility consisted of two Class II surface impoundments (Pond A and B) until 2014 when the Discharger replaced process wastewater storage and evaporation capacity of Pond A with the combined capacity of Pond C and D. Pond A was clean closed in 2017. Three existing Class II surface impoundments (Ponds B, C and D) at the facility comprise approximately 14.5 acres. The Discharger is proposing to construct three additional Class II surface impoundments (Pond E, F and G) adjacent to the existing facility as shown in Attachment B, which is incorporated herein and made part of this Order by reference.
6. The facility is comprised of Assessor's Parcel Numbers (APN) 209-110-19, 209-110-31, 209-110-32, 251-320-08, and 251-320-09 owned by the Studley Company, and APN 209-110-06 owned by Musco Olive Products, Inc. Pond B is located on APN 209-110-31, and Ponds C and D are located on APN 209-110-06. The proposed Ponds E and will be located on APN 209-110-06 and proposed Pond G will be located on APN 209-110-19. The Musco Family Olive Company currently leases the property from the Studley Company for its existing operations including land application of waste generated by said operations.
7. The facility has been in operation at this site since 1983 and consists primarily of fresh olive storage tanks, olive treatment tanks, boilers, olive processing equipment for olive preparation, such as de-stemming and pitting, and canning operations.
8. Domestic wastewater generated at the facility is discharged to an on-site septic system regulated by San Joaquin County's Environmental Health Department. The septic system, located in the former land application area of waste called "Evaporation North," occupies acreage northwest of Pond B. The system distributes sanitary wastewater to three banks of leach fields around Pond B. Facility process wastewater is no longer applied to that area and domestic wastewater is not commingled with process wastewater. The onsite septic system was expanded in 2003 to provide capacity for up to 500 employees from 200 employees.
9. Process wastewater generated at the facility consists of wastewater produced within the processing and storage areas, generated as a result of processing and canning operations, produced by the regeneration of the ion exchange water softener, filter backwash wastewater, boiler blowdown and stormwater runoff from the processing areas. High strength process wastewater including, but not limited to, neutralization brine, boiler top blowdown, floatation brine, canning floor drains and neutralization rinse, are discharged to the Class II ponds. The Discharger also operates a 200,000-gallon reservoir surge tank, an 84 million-gallon (MG) reservoir, and approximately 160 acres of land for application of non-designated waste (low strength process wastewater) that is regulated under separate WDRs Order R5-2010-0025.
10. These WDRs are necessary to regulate the three existing Class II surface impoundments and three proposed Class II surface impoundments that the Discharger is proposing to construct. The Class II surface impoundments are used for containment and evaporation of hypersaline wastewater generated from olive processing. The hypersaline solution is characterized as non-hazardous designated waste and as such is regulated under Title 27, section 20005 et seq. The constituents of concern (COCs) in the wastewater are predominantly salts and total nitrogen as it relates to nitrates in drinking water supplies. These COCs are quantified as electrical conductivity (EC), total dissolved solids (TDS), sodium, chloride, sulfate, pH, chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN), ammonia-nitrogen, nitrate-nitrogen, bicarbonate, calcium, magnesium, potassium, and total alkalinity.

11. On 07 May 2018, the Discharger requested the Central Valley Water Board, in their responses to Board staff's review comment letter<sup>2</sup>, to update WDRs Order No. R5-2014-0125 to allow construction and discharge of waste to proposed Class II surface impoundments Pond E, F and G which were not envisioned in Order No. R5-2014-0125. On 24 August 2018, the Discharger submitted a *design document package* for new Class II surface impoundments Pond E, F and G. The design document package includes *Geotechnical Design Report* for Ponds E, F and G, construction plans and specifications, *Construction Quality Assurance (CQA) Manual*, water balance for the existing and proposed ponds, and a Memorandum for Response to Regional Water Quality Control Board Comments. Board staff used information provided in the *Geotechnical Design Report* (24 August 2018), *Report of Waste Discharge* (ROWD, 13 December 2013), monitoring reports, case files and other supporting documents submitted by the Discharger per Order No. R5-2014-0125. This revision of the WDRs includes:
- a. Discussion of the clean closure of Pond A;
  - b. Discussion of the construction of Ponds E, F and G;
  - c. Operation and maintenance of Class II surface impoundments;
  - d. Expansion of the Water Monitoring System to include surface water, groundwater, and unsaturated zone monitoring associated with new Ponds C-D and proposed Ponds E-G;
  - e. Revision of Monitoring and Reporting Program (MRP) No. R5-2005-0024 to include monitoring and reporting associated with addition of Ponds C-D and proposed Ponds E-G;
  - f. Establishment of a Water Quality Protection Standard (WQPS) to include background concentrations of all monitored mediums e.g. ground water, surface water, unsaturated zone, and concentration limits and criteria for determining whether there is "measurably significant" evidence that a release from a WMU has occurred;
  - g. Establishment of minimum freeboard limitation criteria to ensure Class II surface impoundments have adequate storage during wet season to protect ponds from possible catastrophic failure due to overtopping and/or blowout; and
  - h. Establishment of Action Leakage Rates (ALR) for Ponds C-G for determining when leak inspections and repairs must be initiated and performed in order to maintain integrity of the waste containment liner system.
12. The existing and future Class II WMUs (also known as Ponds) authorized by this Order are described as follows:

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<sup>2</sup> "Review of Draft Geotechnical Design Report, Musco Family Olive Company Plant New Evaporation Ponds E, F and G, Tracy, San Joaquin County" dated 26 March 2018.

Pond ID	Area	Pond Volume up to 2-foot Freeboard	Liner/LCRS <sup>1</sup> Components <sup>2</sup>	Unit Classification & Status
B	4.5 acres	13.78 MG	Double lined with FML over LCRS over Clay	Class II, active
C	4.9 acres	9.26 MG	Double lined with FML over LCRS over FML over compacted subgrade	Class II, active
D	5.1 acres	8.31 MG	Double lined with FML over LCRS over FML over compacted subgrade	Class II, active
E	4.8 acres	12.77 MG	Double lined with FML over LCRS over FML over compacted subgrade	Class II, future
F	2.9 acres	14.29 MG	Double lined with FML over LCRS over FML over compacted subgrade	Class II, future
G	7.0 acres	11.58 MG	Double lined with FML over LCRS over FML over compacted subgrade	Class II, future

<sup>1</sup> LCRS – Leachate Collection and Removal System

<sup>2</sup> FML-Flexible Membrane Liner (synthetic liner), Clay-low permeability soil having maximum hydraulic conductivity < 1 x10<sup>-6</sup> cm/sec

13. On 10 October 2014, the Central Valley Water Board issued Order No. R5-2014-0125, wherein the existing WMUs at the facility were classified as Class II WMUs for the discharge of designated waste. This Order continues to classify the existing WMUs as Class II WMUs in accordance with Title 27. This Order also finds that the three proposed Ponds E, F and G are classified as Class II WMUs in accordance with Title 27.
14. This Order implements the applicable regulations for discharges of designated waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the applicable Industrial SPRRs and Landfill SPRRs, which are incorporated herein. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2019-0005 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all facilities regulated under Title 27 are considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.

### WASTE CLASSIFICATION AND UNIT CLASSIFICATION

15. The Discharger proposes to continue to discharge designated waste to lined Class II surface impoundments at the facility. These classified wastes may be discharged only in accordance with Title 27.
16. Water Code section 13173 defines “Designated Waste” as either of the following:

- a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to section 25143 of the Health and Safety Code.
- b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a WMU, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

Unless exempt under Title 27 section 20090, designated waste can be discharged only at Class I WMUs, or at Class II WMUs which comply with Title 27 and have been approved by the Central Valley Water Board through adoption of WDRs for containment of the particular kind of waste to be discharged.

17. The following liquids are currently approved for discharge to the Class II ponds:
- a. Process wastewater produced within the processing and storage areas;
  - b. Process wastewater generated as a result of processing and canning operations;
  - c. Process wastewater produced by the regeneration of the ion exchange water softener, from filter backwash wastewater and boiler blowdown; and
  - d. Stormwater runoff from the processing areas.
18. Wastewater is generated from the storage area, the processing areas, the canning areas, and from certain incoming water treatment and boiler feed water treatment processes. Source water for processing comes from California Aqueduct water obtained from the Department of Water Resources State Water Project (SWP). The SWP monitors the water quality at the Harvey Banks Delta Pumping Plant for parameters, including but not limited to, temperature, turbidity, pH, electrical conductivity (EC) and flow. Source water is treated prior to use in the plant.
19. Updated flow rates and characteristics of the contributing process wastewater streams that are discharged to the Class II ponds, were provided via email on 21 September 2018. This information updates information originally provided in ROWD Table 3 and Table 6, respectively, and are provided in following table.

Wastewater Source	Est. Flow in gallons per day (gpd)	BOD (mg/L)	NO <sub>3</sub> (mg/L)	TKN (mg/L)	TDS (mg/L)	FDS (mg/L)	Na (mg/L)	Cl (mg/L)
Neutralization Brine	30,000	14,913	1	300	20,050	10,884	2,863	1,216
"PR" (trade secret)	12,000	3271	<1	35	6,166	3,700	99	1,143
Boiler Top Blowdown	1,587	4.0	0	1	1,179	1,060	404	425
Floatation Brine	3,174	1,202	<0.1	28	21,238	20,050	7,144	12,538
Softener Regeneration	847	3,653	<0.1	58	26,125	25,233	6,100	16,456

Wastewater Source	Est. Flow in gallons per day (gpd)	BOD (mg/L)	NO <sub>3</sub> (mg/L)	TKN (mg/L)	TDS (mg/L)	FDS (mg/L)	Na (mg/L)	Cl (mg/L)
Sumps and Miscellaneous	10,262	5,450	0.5	79	9,200	5,180	1,477	349
New Olive Product	3,788	3,438	<1	10	14,739	8,843	2,871	986
	Total= 61,658	-	-	-	-	-	-	-

BOD - Biochemical Oxygen Demand  
NO<sub>3</sub> – Nitrate  
FDS – Fixed Dissolved Solids  
Na - Sodium  
Cl - Chloride

20. A total volume of 19.5 million gallons of process wastewater was discharged to Ponds B-D in 2017 based on *2017 Annual Monitoring Report*. The design documents for Ponds E-G, submitted by the Discharger did not present estimated process water flow rates to each pond or total process water flow rate. The Discharger shall update the water balance to include anticipated process wastewater flow rates to each pond, as described in Provision H.11.a.7. The Discharger has indicated that the facility routinely shuts down for maintenance purposes and that annually approximately 14.6 million gallons of wastewater would be sent to the Class II surface impoundments.
21. The Discharger provided COC data in the *2017 Annual Monitoring Report for the Class II Surface Impoundments (2017 Annual Monitoring Report)* for samples collected from the existing surface impoundments Ponds B-D from the first semiannual sampling event in 2002 to the second semiannual sampling event in 2017. The following table provides analytical results for COCs in water in the ponds during the second semiannual 2017 sampling event. The table also includes the lowest applicable water quality objective (WQO) for groundwater protection of beneficial uses. COC concentrations that exceed the WQO are in bold.

COC		Pond B	Pond C	Pond D	Lowest Applicable WQO or Goal
Electrical Conductivity	µmhos/cm	<b>38,600</b>	<b>49,400</b>	<b>39,000</b>	700 <sup>1</sup> , 900 <sup>3</sup>
Total Dissolved Solids	mg/L	<b>38,500</b>	<b>53,200</b>	<b>42,300</b>	450 <sup>1</sup> , 500 <sup>3</sup>
Total Kjeldahl Nitrogen	mg/L	80	105	260	
Nitrate as nitrogen	mg/L	0.1	<0.1	<0.1	10 <sup>2</sup>
Sodium	mg/L	<b>12,100</b>	<b>18,200</b>	<b>13,800</b>	69 <sup>1</sup>
Chloride	mg/L	<b>7,300</b>	<b>7,900</b>	<b>4,700</b>	106 <sup>1</sup> , 250 <sup>3</sup>
Sulfate	mg/L	30	20	7	250 <sup>3</sup>

<sup>1</sup> Agricultural Water Quality Goals (Food & Ag Org. of United Nations)

<sup>2</sup> CA Department of Public Health- Primary Maximum Contaminant Levels (1<sup>st</sup> MCL)

<sup>3</sup> CA Department of Public Health- Secondary Maximum Contaminant Levels (2<sup>nd</sup> MCL)

22. The data indicate that the discharge consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable WQOs or that could reasonably be expected to affect beneficial uses of the waters of the state. Therefore, the discharge is a 'designated waste' and as such must be discharged to a Class II waste management unit as required by Title 27.
23. The existing and proposed Class II surface impoundments utilize a double liner which surrounds a leachate collection and recovery system (LCRS). The LCRS situated between the two liners returns any leakage of designated waste through the primary liner back to the surface impoundment from where it originated. The LCRS also serves to prevent any leakage through the primary liner from developing hydraulic pressure on the secondary containment system (secondary liner) which if breached would result in a release of designated waste from the WMU.

### **SITE DESCRIPTION**

24. The facility is located on the eastern foothills of the Coast Range Mountains at the western edge of the alluvial deposits of the San Joaquin Valley of the Diablo Range. The alluvial fan generally slopes to the northeast, and surface elevations at the facility range from 540 feet above mean sea level (MSL) to 240 feet MSL. Slopes range from approximately 20 percent in the southern part of the facility to nearly flat in the northern portions of the facility.
25. Deposits exposed in the area of the facility include (from bottom to top) the Miocene to Pliocene Neroly Formation, the Pliocene to early Pleistocene Tertiary Pliocene sediments (Tps), and older and younger Quaternary alluvium. The Neroly Formation is a marine to non-marine blue to gray sandstone that is locally pebbly. The Neroly underlies the facility with only minor exposures on the south side of the facility. The top of the Neroly Formation is blue clay, which is used as a marker bed for the transition from the Neroly Formation to the Tps, where the Tps conformably overlies the Neroly. The Tps is exposed across most of the facility and consists of fine-grained sands and clayey silts that alternate with greenish gray clays and minor pebble conglomerates, marl, and sand of non-marine origin. Overlying the Tertiary sediments is older and younger Quaternary alluvium consisting of unconsolidated gravels, sands, silts, and clays. Older alluvium is surficially exposed in minor amounts in the northern portion of the facility as terrace deposits. The younger alluvium occurs as thin surficial deposits in the central drainage swale that bisects the facility, with lesser amounts in tributary drainages. Sediments at the facility are derived primarily from marine deposits of the Coast Ranges.
26. The Tertiary sediments are complexly folded and regionally dip 25 to 30 degrees to the northeast. Based on the blue clay at the top of the Neroly Formation, dips on the facility appear to be approximately 20 degrees to the northeast on the south side of the central drainage swale and approximately 10 degrees to the northeast on the north side of the central drainage swale.
27. The Midway fault is located approximately 500 feet southwest of the southwestern corner of the property, and trends northwest/southeast. A lineament parallel to the Midway fault has been mapped bisecting the facility and a series of parallel faults are found further to the southwest. Structure southwest of the facility is fault-blocked anticlines and synclines. The Midway fault is a normal fault that strikes to the northwest with the down-dropped block on the southwest side of the fault. The significance of these faults and lineaments is that they may provide conduits for to the vertical migration of fluids.

28. Fractures are present in outcrops of the Tps and Neroly at and near the facility. These fractures are steeply dipping and occasionally filled with permeable clastic material. The permeable material may provide a conduit for the vertical migration of fluids.
29. The soils at the facility are predominantly clay, clayey silt and silty clay. Two-thirds of the western portion of the facility is located on the materials from the Pliocene period, which consist of sedimentary deposits of the Tulare and Laguna formations. The other one-third (eastern) is situated on the Pleistocene non-marine sediments. Soils at the facility are predominantly mapped as Calla-Carbona complex and Carbona clay loam by the Natural Resource Conservation Service (NRCS). Carbona complex and Cognia fine sandy loam are also found. Calla-Carbona complex is comprised of 45 percent Calla clay loam and 40 percent Carbona clay loam. The Calla soil is described as very deep and well drained on strongly sloping to moderately steep terrain. The Carbona clay loam is described as very deep, well-drained soils on gently to moderately sloping terrain. Carbona complex soils are described as moderately steep and steep soils that are comprised of 45 percent Carbona clay loam and 40 percent Carbona clay loam containing a sandstone substratum at approximately 57 inches. Both of these soils are deep and well drained. Cognia fine sandy loam is described as very deep, well drained, nearly level soil on alluvial fans.
30. There is one onsite supply well used for the facility's domestic water supply, Musco-1. This well is screened from 207 to 607 feet below ground surface (bgs) with a 50-foot sanitary seal.
31. There is a domestic supply located in the vicinity of the Pond D that is used for landscape irrigation. This well is screened from 235 to 335 feet bgs with a 50-foot sanitary seal. This well appears to be cross-gradient from the site.
32. There is an artesian well in the drainage northwest of and adjacent to the site. This well is of unknown construction. The fact that this well is a flowing artesian (i.e., the water level is above the ground surface) and the location is 30 to 40 feet in elevation above the drainage indicates there are upward vertical gradients in the area. Water from this well is used for stock watering.
33. Known groundwater uses within one mile of the site include stock watering and small domestic supply wells.
34. The ROWD describes the area surrounding the facility as largely undeveloped. Local land use is primarily open space, with some neighboring industrial, residential, and agricultural operations. The City of Tracy is located approximately five miles northeast of the facility and includes a mixture of industrial, commercial, and residential uses. A railroad right-of-way crosses both the northern and southern portions of the facility along west-east alignments. Highway 580 is located adjacent to the facility along the northeastern border. Both the California Aqueduct and the Delta-Mendota Canal are located to the northeast opposite Highway 580.
35. Based on a site-specific seismic analysis, the controlling Maximum Credible Event (MCE) for the site is a moment of magnitude 6.7 event along the Great Valley 7 fault at a closest rupture distance of 4.5 miles from the site. The Discharger's consultant Terraphase Engineering determined that a MCE event would produce a peak ground acceleration of 0.66g at the site using the United States Geological Survey's online seismic design maps tool (USGS 2017). The consultant used the methodology of American Society of Civil Engineers (ASCE) standard *Minimum Design Loads for Buildings and Other Structures* ASCE 7 (ASCE 2016) to develop the site specific seismic spectra.

36. The facility receives an average of 9.82 inches of precipitation per year as measured at the Western Regional Climate Center (WRCC) Tracy Carbona Weather Station. The reference evapotranspiration (ET<sub>o</sub>) which is considered equal to the evaporation from a large body of water, such as a pond or lake is 53.48 inches per year as measured at the California Irrigation Management Information System (CIMIS) Tracy Station# 167.
37. The 100-year return period of the wettest year was calculated to be 21.0 inches based on the probability distribution of the WRCC's annual precipitation data at the Tracy Carbona Weather Station for the period of record (1949-2012).
38. The 1,000-year, 24-hour precipitation event for the facility is estimated to be 4.74 inches, based on NOAA Atlas 14, Volume 6, Version 2, Point Precipitation Frequency Estimates for California.
39. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Numbers 0602990700A and 06077C0725F.

### **SURFACE WATER AND GROUNDWATER CONDITIONS**

40. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fifth Edition* (Basin Plan) designates beneficial uses, establishes water quality objectives (WQOs), and contains implementation plans and policies for all waters of the Basin.
41. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).
42. Storm water drainage from the site flows to an unnamed ephemeral stream that extends eastward toward the valley floor in the North Diablo Range Hydrologic Area (Unit# 543.00) of the San Joaquin Hydrologic Basin. Storm water from the process areas is collected in secondary containment, routed via drains to sumps and pumped to a wastewater treatment/storage reservoir regulated by WDRs Order R5-2010-0025. Storm water from a small chemical storage area is directed to the Class II surface impoundments.

The facility is not required by federal regulations to be regulated by an industrial activities storm water NPDES permit. The Discharger was previously covered under an Industrial Storm Water Permit (WDID# 5S39I017003) issued under Order No. 97-03-DWQ, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities (NPDES General Permit CAS000001). On 1 August 2014, the Discharger provided a letter dated 13 March 2002 from the Department of the Army, U.S Corps of Engineers (Army Corps) who completed their evaluation of the unnamed drainage that bisects the facility property, and made the finding that the drainage is isolated with no apparent interstate commerce connection. The industrial storm water permit was terminated by the Central Valley Water Board on 21 July 2015 after the Discharger filed a Notice of Intent (NOI) on 13 June 2014 and Notice of Termination (NOT) approval request on 21 May 2015 saying that the storm water is retained on site and the facility does not discharge storm water to waters of the United States.

43. The Discharger has identified three distinct water bearing zones in the vicinity below the site: shallow zone, intermediate zone and deep zone. The shallow zone and intermediate zone have

been identified as groundwater existing less than 75 feet below ground surface (bgs) and between approximately 100 feet and 120 feet bgs, respectively. The deep zone has been identified as groundwater existing greater than 150 feet bgs.

44. The direction of groundwater flow in the intermediate zone below the Ponds is generally toward the northeast. The estimated average groundwater gradient is approximately 0.0041 feet per foot per October 2017 groundwater monitoring results.
45. There are five shallow wells monitoring the shallow zone (perched groundwater) underlying existing Ponds B, C, and D. Shown below are the depths and a summary of the monitoring results:

Monitoring Well	WMU(s) monitored	Screened Depth (feet msl)	Monitoring Results
MW-10	Pond B	239 to 249	Reported dry (groundwater declined below bottom of screened interval) since 01/2005
MW-11	Pond B	234 to 239	Declining groundwater elevation since 04/2002. Reported dry (groundwater declined below bottom of screened interval) since 12/2003 except for one monitoring event on 03/2006
MW-19	Pond B	209 to 229	Installed as a dry well in 2006. Reported dry to date except for two monitoring events in 2011
MW-20	Pond B	201 to 221	Installed as a dry well in 2006. No groundwater ever recorded to date.
MW-21	Pond B	192 to 212	Installed as a dry well in 2006. No groundwater ever recorded to date.

46. Shallow zone monitoring data indicate that shallow ground water has declined to depths where it is no longer encountered. It is unclear if this shallow zone of perched water has disappeared or whether the monitoring system is no longer able to monitor it due to well screen placement. The Discharger presented in the *Geotechnical Design Report, Proposed Musco Family Olive Company New Evaporation Ponds E, F and G (22 August 2018)* that long term monitoring of groundwater monitoring wells WM-10R, 33 and 35R, indicates that the shallow water bearing zone has been dry since 2004. Therefore, the shallow zone has been classified as a perched zone and the intermediate zone is the primary water bearing zone for region located between 100 to 250 feet bgs. However, the Discharger shall continue to monitor the shallow zone per Monitoring A.1. of MRP No. R5-2019-0005.
47. The intermediate zone, which functions as the primary water bearing zone, has been identified as groundwater existing between 100 and 120 feet below ground surface (bgs). There are twelve intermediate zone wells monitoring the existing Ponds B, C, and D. Shown below are monitoring well screened depths and a summary of the latest COC concentrations reported in the 2017 Annual Monitoring Report.

Monitoring Well	WMU(s) monitored	Screened Depth (feet msl)	EC umhos/cm	TDS mg/L	Na mg/L	Cl mg/L	NO <sub>3</sub> as N mg/L
MW-10R	Ponds B, C, and D	158 to 178	Dry Well				
MW-12	Pond B	166 to 181	Dry Well				
MW-17	Pond B	203 to 223	Dry Well				
MW-18	Pond B	166 to 186	Dry Well				
MW-18R	Pond B	151 to 171	3,330	1,970	572	620	6.4
MW-20R	Pond B	141 to 161	2,900	2,000	524	460	41.2
MW-21R	Pond B	144 to 164	3,460	2,260	628	520	12.8
MW-32	Pond B	164 to 184	Dry Well				
MW-34	Ponds C and D	147 to 157	2,800	1,560	475	520	8.9
MW-35R	Ponds C and D	100 to 120	3,230	2,030	602	510	8.8
MW-36	Ponds C and D	130 to 140	3,320	2,060	9.4	540	9.4
PZ-1	Ponds C and D	143 to 153	Piezometer used for water levels only				

48. The Discharger has not established background groundwater quality for the intermediate zone. This Order requires the Discharger to establish background water quality for the purposes of establishing WQPS and concentration limits at each point of compliance and monitoring point in the intermediate zone (See Provisions H.11.a.2).

The water bearing zone in the area of PZ-1, MW-35R, and MW-36 are not hydraulically connected with the water bearing zones detective in the northern portion of the site. Data collected in January 2018 indicates that groundwater flow in the shallowest water bearing zone (the “intermediate” zone discussed above) in the vicinity of PZ-1, MW-35R, and MW-36 is to the south with a drop in elevation of approximately 5.5 feet between PZ-1 and MW\_36. Similar groundwater behavior was noted in March 2018 and July 2017. Monitoring will continue at these locations to verify this information. This Order in Provisions H.11.a.8. requires the Discharger to establish groundwater flow and direction underneath Pond D to ensure that compliance wells comply with Title 27 requirements in order to provide earliest detection of a release to underlying groundwater.

#### **UNSATURATED ZONE, LCRS AND SURFACE WATER MONITORING**

49. These WDRs in Provisions H.11.a.5 require the Discharger to evaluate the current unsaturated zone monitoring system in order to bring the site into compliance with Title 27 requirements for detection monitoring within the unsaturated zone.
50. Previous WDRs included 40 suction lysimeters that existed at the site to function as part of the unsaturated zone monitoring system at the site. Suction lysimeters are inherently unreliable and therefore will no longer be a part of the unsaturated zone monitoring system for this site. Existing and proposed pan lysimeters are the appropriate monitoring devices at this site.
51. The Discharger operates an unsaturated zone monitoring system below Ponds C and D through one pan-type lysimeter placed directly below each pond LCRS sump (See Attachment B). The proposed Ponds E, F and G will also have pan-type lysimeters placed directly below each pond LCRS sump. The pan lysimeter monitors any leakage through the pond's secondary liner in the

LCRS sump area. The LCRS sump area is considered the most likely area that a release from the Class II surface impoundment containment system will occur since the secondary liner in the sump area could experience the greatest head pressure (up to 1 foot) due to any leakage through the primary liner. Significant free liquid discovered in pan lysimeters monitoring the unsaturated zone below existing Ponds C, D and proposed ponds E, F and G is considered evidence of a release from the containment system and requires the Discharger to respond in accordance with Title 27 requirements. MRP No. R5-2019-0005 incorporates pan lysimeters PL-C and PL-D for compliance monitoring of the unsaturated zone beneath Ponds C and D.

52. The Discharger monitors water quality in the Class II surface impoundments as part of its surface water quality monitoring program. These WDRs prohibit the discharge of designated waste to waters of the state.
53. Storm water drainage from the site flows to an unnamed ephemeral stream that extends eastward toward the valley floor in the North Diablo Hydrologic Area (Unit #543.00) of the San Joaquin Hydrologic Basin. Storm water from the process areas is collected in secondary containment, routed via drains to sumps and pumped to a wastewater treatment/storage reservoir regulated by WDRs Order R5-2010-0025. Storm water from a small chemical storage area is directed to the surface impoundments.
54. As noted in Finding 40, The Discharger previously conducted monitoring of storm water under the Industrial Storm Water Permit (WDID# 5S39I017003) issued under WDRs 97-03-DWQ Order, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities (NPDES General Permit CAS000001). The Discharger submitted a Notice of Termination on 21 May 2015 that claimed the facility did not discharge to waters of the US and could contain the largest historic rain event. The CVRWQCB approved the Notice of Termination on 21 July 2015.
55. WDRs R5-2014-0125 required the Discharger to monitor storm water runoff adjacent to the now clean closed Pond A and existing Pond B for the COCs listed above and allowed the Discharger to report monitoring results under the NPDES General Permit as long as the Discharger was covered by that Permit. As the facility is no longer covered under the NPDES General Permit, the Discharger is required to continue monitoring and reporting of storm water runoff adjacent to the clean closed Pond A and Pond B at the location designated as storm water monitoring point SW-4 on a biannual. With the changes at the facility that have occurred since the last WDRs were written, including construction of Ponds C-D and now the proposed construction of Ponds E-G, the Discharger shall submit a surface water monitoring plan as part of the WQPS as described in Provision H.11.a.2.
56. The Discharger submitted "GW Limitations Compliance Assessment Plan – Class II surface impoundments" report in March 2015 that included an updated Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. This Order requires the Discharger to submit an updated WQPS for Ponds B-D as described in Provision H.11.a.2.

### **GROUNDWATER CORRECTIVE ACTION**

57. At the time this Order was adopted, the Discharger has not reported any evidence of a release from the existing Class II surface impoundments. Since 2005, the Central Valley Water Board has worked with the Discharger to evaluate the performance of the former Pond A LCRS with the concern of its operability. On 14 December 2012, the Discharger reported that the LCRS in former

Pond A continued to fail operability tests and on 17 September 2013 the Discharger notified the Regional Board that Pond A's storage and evaporation capacity would be replaced with Ponds C and D as a corrective action to Pond A with inoperable LCRS. The Ponds C and D were designed and constructed to replace the storage and evaporation capacity of Pond A. Once Ponds C and D were operational, the Discharger stopped discharging waste to former Pond A and clean closed it in 2017.

### **DESIGN OF WASTE MANAGEMENT UNIT(S)**

58. Water Code section 13360, subdivision (a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
59. Title 27 section 20310 Table 4.1 specifies the minimum construction standards for a double lined Class II surface impoundment consisting of, from top to bottom:
  - a. A primary synthetic liner (40-mil minimum thickness).
  - b. A Leachate Collection and Removal System (LCRS) more commonly referred in industry as a Leakage Detection System (LDS) in surface impoundment applications.
  - c. A secondary clay liner consisting of minimum two-foot thickness with maximum hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec.
60. Pond B was constructed in 1991 with a liner system consisting of, from top to bottom:
  - a. A primary synthetic liner (45-mil Hypalon reinforced chlorosulfonated polyethylene synthetic liner);
  - b. LCRS with ridges and valleys along the bottom with 4" perforated collector pipes and two LCRS sumps;
  - c. A secondary liner (two to three-foot thick low permeability native clay layer); and
  - d. A compacted subgrade.
61. Ponds C and D were constructed in 2014, with an engineered alternative double liner system, consisting of, from top to bottom:
  - a. A primary synthetic liner (80-mil High Density Polyethylene (HDPE) geomembrane);
  - b. A LCRS (Non-woven needle-punched 6-ounce geotextile bonded on both sides of a 300-mil tri-planar geonet);
  - c. A secondary synthetic liner (45-mil scrim reinforced polypropylene geomembrane); and
  - d. A compacted subgrade with minimum slope of 2% towards the LCRS sump.
62. The Discharger proposes an engineered alternative double liner system for the three proposed Class II surface impoundments (Ponds E-G), same as Ponds C-D, consisting of, from top to bottom:

- e. A primary synthetic liner (80-mil High Density Polyethylene (HDPE) geomembrane);
  - f. A LCRS (Non-woven needle-punched 6-ounce geotextile bonded on both sides of a 300-mil tri-planar geonet);
  - g. A secondary synthetic liner (45-mil scrim reinforced polypropylene geomembrane); and
  - h. A compacted subgrade with minimum slope of 2% towards the LCRS sump.
63. Title 27 section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27 section 20080(c)(1) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative(s) provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 section 20080(b)(2) of Title 27 and that any proposed engineered alternative is consistent with the performance goal in accordance with Title 27 sections 20240, 20250, and 20310.
64. The Discharger proposes a liner system that will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the post closure maintenance period in accordance with the criteria set forth in Title 27 for Class II units.
65. The Discharger adequately demonstrated that construction of the liner prescriptive standard for the Class II surface impoundment as described in Title 27 would be unreasonable and/or unnecessarily burdensome when compared to the proposed engineered alternative design because the prescriptive standard using clay as the secondary liner of a double liner system is not as protective of water quality as using the proposed alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the containment structures for a Class II WMU affords equivalent protection against water quality impairment.
66. Leachate collected through the existing LCRSs is discharged to the respective sumps and pumped back to the Class II surface impoundment where the leachate is generated from. The Discharger proposes that LCRS of the proposed Ponds E-G will be operated same as existing Ponds C-D.
67. Title 27 sections 20370(a) and 21750(f)(5) require Class II WMUs to be designed under both static and dynamic conditions to withstand the maximum credible earthquake (MCE) without damage to the Unit, including the foundation, final slopes, and containment structures including structures that control leachate, surface drainage, or erosion, or gas throughout the Unit's life, closure period, and post-closure maintenance period. The Discharger submitted Geotechnical Design Report dated 22 August 2018, prepared on its behalf by Terraphase Engineering, that contained a stability analysis for the proposed Class II surface impoundments (Ponds E, F and G). The stability analysis for the Class II surface impoundments was performed under both static and dynamic conditions. The controlling MCE for the site is a moment of magnitude 6.7 event along the Great Valley 7 fault (Finding 33) and the associated PGA is 0.66 g at the site. The Discharger has determined that pseudostatic earthquake acceleration of 0.33 g, half the PGA caused by MCE moment of magnitude 6.7 earthquake, is sufficient for this facility. The static stability analysis indicates a factor of safety of

2.5, which is greater than the factor of safety of 1.5 required by Title 27. The dynamic (seismic) stability analysis using the ground acceleration of 0.0.295g, less than ground acceleration of 0.33 g, indicates a factor of safety of 1.0, which is less than the required 1.5. However, Title 27 section 21750(f)(5)(D) allows the Discharger to utilize a more rigorous analytical method that provides a quantified estimate of the magnitude of movement in lieu of achieving the minimum factor of safety of 1.5. The Discharger performed a Newmark type analysis which determined that under dynamic conditions the maximum magnitude of movement of the berms during an earthquake is estimated at 10 inches which is less than the minimum freeboard requirement of 2 feet. Therefore, the Discharger concluded “no loss of freeboard is expected even if the outer slopes of the berm do move.” Finally, Terraphase Engineering provided six recommendations during preparation and construction of the berms upon which the stability analysis relies on that the Discharger is responsible for ensuring in order for the stability analysis to be valid. This Order requires the Discharger to implement a Construction Quality Assurance (CQA) plan that implements those recommendations.

68. Title 27 section 20375(a) requires Class II surface impoundments to have sufficient freeboard to accommodate seasonal precipitation and a 1,000-year 24-hour design storm event, but in no case less than two feet. The 1,000 year, 24-hour storm event for the site is 4.74 inches (or 0.4 feet), and is referred to hereafter as the “design storm.” For Title 27 required seasonal precipitation, the Discharger has been required to use the 100-year wet season distributed monthly to prevent overflow of the impoundment or less than two feet of freeboard during a reasonable worst-case scenario wet season. The 100-year 365-day precipitation event for the site is 21.0 inches. The ROWD specified how this rainfall would be distributed monthly as tabulated below:

<b>Month</b>	<b>100-Year Precipitation Distributed Monthly (Inches)</b>
<i>January</i> <sup>1</sup>	4.0
<i>February</i> <sup>1</sup>	3.6
<i>March</i> <sup>1</sup>	2.9
<i>April</i> <sup>1</sup>	1.8
May	1.0
June	0.2
July	0.1
August	0.2
September	0.4
October	1.1
<i>November</i> <sup>1</sup>	2.4
<i>December</i> <sup>1</sup>	3.4
<b>Total</b>	<b>21.0</b>

<sup>1</sup>Months shown in italics are considered wet season months

69. The Discharger submitted a water balance for Class II surface impoundment Ponds B-G, prepared by Terraphase Engineering on behalf of the Discharger, dated 14 August 2018. The water balance assessed the operational capacity of existing and proposed Class II surface impoundments under different rainfall conditions. Three rainfall cases were studied in the water balance to evaluate the function of the surface impoundments over 50-year period and the rainfall cases are:

- a. 50-years of normal average rainfall

- b. 100-year rainfall volumes occurring four times during 50-years, (years, 10, 11, 12 and 25), and
- c. Removal of Pond G for a period of four years after 9 years of operation and average rainfall during the period Pond G was out of service.

The water balance report presented the details of the Class II surface impoundments, monthly weather data (precipitation and evaporation) and the analysis results for different rainfall cases, and concluded that the Class II surface impoundments have sufficient capacity and surface area to evaporate all process water and rainfall over a 50-year period, and to maintain 2-foot freeboard at all times. However, the estimated average process wastewater flowrate to the Class II surface impoundments and pond capacity loss due to solid accumulation were not provided in the water balance report. The Discharger shall revise the water balance report as described in Provision H.11.a.7.

- 70. Title 27 section 20375 (a) states that surface impoundments shall be operated to maintain minimum of 2-foot freeboard and part (c) states that direct discharge to surface impoundments shall be either equipped with devices or shall have fail-safe operating procedures to prevent overfilling. Estimated annual average process wastewater flow that will be discharged to the Class II surface impoundments is 19.3 MG. However, process wastewater generation rate at the facility depends on year-to-year variations in crop production. In the ROWD which addressed the design of Ponds C and D, the Discharger proposed alternative disposal methods for excess process wastewater to maintain 2-foot freeboard in the Class II surface impoundments when the water level reaches freeboard requirements and the proposed alternative disposal methods are:
  - a. Cease operations for extended periods as necessary during the rainy season; and
  - b. Haul excess wastewater to a permitted wastewater treatment facility for disposal.

The Discharger submitted Operations and Maintenance (O&M) Plan for Surface Impoundments B-D, dated 29 January 2015, which did not include the alternative disposal methods for excess process wastewater in the event of Class II surface impoundment water level reaches 2-foot freeboard requirements. The Discharger shall update and submit the O&M Plan that meets Title 27 section 21760(b) requirements, to include operation and maintenance of existing and proposed Class II surface impoundments and any contingency plan that to be implemented to maintain 2-foot freeboard, as described in Provision H.11.a.6. Additionally, the Discharger shall monitor and report inflow rates and water level at each Class II surface impoundments, and any off-site disposal of excess process wastewater per section A of Monitoring and Reporting Program (MRP) R5-2019-0005.

- 71. The daily freeboard levels for Ponds B-D presented in *Annual 2017 Monitoring Report* indicate that the Class II surface impoundments storage capacity and freeboard are adequately managed by the Discharger.
- 72. This Order includes an Action Leakage Rate (ALR) for the Class II surface impoundment LCRS. The ALR is the maximum flow rate through the primary liner to the LCRS beyond which the Discharger is required to take actions to inspect and repair the primary liner system. The ALR is typically based on the recommendations in the 1992 USEPA guidance document Action Leakage Rate for Leak Detection Systems. The guidance recommends that ALR for lined surface impoundments be set at no more than 1,000 gallons per acre per day (gpad) unless site-specific conditions dictate otherwise.

The Discharger proposed an ALR of 3,000 gpad in *Geotechnical Design Report* for Ponds C-D, dated 10 April 2014, for the following reasons:

- a. The 1992 EPA guidance document provides for different ALR than the rule of thumb based on site-specific conditions;
- b. The Musco surface impoundments exceed the minimum Title 27 design standards for the secondary liner allowing additional leakage through the primary liner;
- c. The drainage layer's ability to pass 3,000 gpad without building up head on the secondary liner;
- d. Potential difficulties locating very small holes in the primary liner with hypersaline water;
- e. Consulting engineer, Jeff Raines (California Professional Engineer No. C51120 and Geotechnical Engineer No. 2762) certified that an ALR of 6,000 gpad would pass through the LCRS and meet the requirements of Title 27 for head build-up; and
- f. The Santa Ana Regional Water Board allowed 2,700 gpad for a surface impoundment site in the Riverside area.

Staff identified that 1,000 to 3,000 gpad values have been set for WDRs at other Central Valley sites. Therefore, due to the proposed double-lined system and the hypersaline water to be stored in the ponds, Order No. R5-2014-0125 set the 3,000 gpad ALR for the Ponds C-D and sets the 1,000 gpad ALR for existing Pond B. The ALR for Pond B is based on historical leakage rates. In the *Geotechnical Design Report* for Ponds E-G, the Discharger estimated that the LCRSs of the proposed Ponds E-G have sufficient capacity to handle liquid flow rate greater than 3,000 gpad. This Order sets the ALR for the proposed Ponds E-G at 3,000 gpad, same as Ponds C-D. Actual leakage rates for the existing and proposed ponds will be calculated based on readings of the flow totalizer that records flow from the LCRS back to the Class II surface impoundment from where the leakage was collected and removed.

73. Discharge of wastewater to Ponds E-G will proceed only after all applicable construction quality assurance reports have been approved by Board staff. (See Provision H.11.a.1.)

#### **CLEAN-CLOSURE OF SURFACE IMPOUNDMENTS**

74. The Discharger submitted *Pond A Clean Closure Work Plan*, Revision 3.0 dated 7 October 2016, prepared by Terraphase Engineering on behalf of the Discharger, for the closure of Pond A pursuant to Title 27, section 21400, subdivision (b)(1), and *Surface Impoundment A Clean Closure Report* dated 15 March 2017. The Central Valley Water Board approved the clean closure of Pond A on 29 March 2017.
75. A Preliminary Closure Plan (PCP) for Ponds B-D dated 21 May 2014 was included in *ROWD 2013 Addendum* submittals. Pursuant to Title 27, section 21400, subdivision (b)(1), the PCP proposes clean-closure of the three surface impoundments. The liner system, LCRS, sludges, and any contaminated soil will be removed, and then recycled or taken offsite to an appropriately-permitted landfill. The soil underlying the impoundment will be sampled for the presence of contaminants, and if necessary will be removed and disposed of at the appropriate waste disposal site. This Order requires a final closure plan be submitted prior to commencement clean-closure activities on Ponds B-D, per Closure and Post-Closure Maintenance Specification E.2.

76. The PCP for Ponds B-D includes an itemized cost estimate for third party costs to clean-close the surface impoundments. The total estimate to clean-close the Ponds B-D at the end of their useful life is \$2.33 million in 2014 dollars. This final cost estimate, out of the \$3.28 million for clean-closure of former Pond A, and existing Ponds B-D, was approved by the adoption of previous WDRs Order No. R5-2014-0125.
77. The Discharger provided an estimated postclosure cost of \$1.43 million, in 2018 dollars, in the *Musco Family Olive Company Financial Assurance Plan*, dated 22 March 2018. The estimate was not separated for individual closures Ponds B, C and D and corrective actions. These WDRs require the Discharger to provide an updated cost for closure of each Class II surface impoundments.
78. Title 27 section 21400 sets the closure requirements for the surface impoundments and allows the Discharger either to clean close the surface impoundment, or close as a landfill or land treatment unit in cases where clean-closure is infeasible. Further, Title 27 section 21769(a) and (b) sets the closure and post-closure maintenance plan requirements including estimate of the cost of carrying out all actions necessary to close the unit and for the Regional Water Board's review and approval of such plans. The Discharger did not submit a PCP and the closure cost estimates for the proposed Ponds E-G with the design documents submitted on 24 August 2018. The Discharger shall submit a PCP and the closure cost estimates for the proposed Ponds E-G, as described in Provision H.11.a.

### FINANCIAL ASSURANCES

79. Pursuant to Title 27, sections 22207, subdivision (a), the Central Valley Water Board requires operators of Class II surface impoundments to "establish an irrevocable closure fund (or to provide other means) pursuant to [Chapter 6 of Title 27, i.e., sections 22240-22254] ... to ensure closure ... in accordance with an approved plan meeting all applicable SWRCB-promulgated requirements of [Title 27]."
80. Disposal of solids, which gradually accumulate over the working life of the surface impoundment, accounts for the majority of estimated clean-closure costs. The longer a surface impoundment is in operation, the more expensive disposal will be. When a surface impoundment is prematurely closed, the volume of accumulated solids for disposal will therefore be proportionally less than the volume on the planned closure date. For this reason, Order No. R5-2014-0125, allowed the Discharger to provide prorated financial assurances based on estimated solids accumulation in each Class II surface impoundment. This Order continues to allow financial assurances prorated over the operating life of each surface impoundment, based on estimated solids accumulation by 1 September every year, as described in Provision H.11.a.3 of this Order.
81. Pursuant to Title 27, section 22222, the Central Valley Water Board also requires operators of Class II surface impoundments to "establish an irrevocable fund (or to provide other means) pursuant to [Chapter 6 of Title 27, i.e., sections 22240-22254] ... to ensure funds are available to address a known or reasonably foreseeable release[s]...."
82. The Discharger identified two reasonably foreseeable corrective actions associated with former Pond A and existing Pond B in *Musco Family Olive Company Financial Assurance Report*, dated 17 April 2015. Further, the Discharger assumed that no corrective action for Ponds C and D as these ponds were constructed in 2014, and waste had not been discharged to Ponds C-D at the time of

report submittal. Estimated cost for reasonably foreseeable corrective action associated with the former Pond A and B is \$59,000 in 2015 dollars.

83. The Discharger did not distinguish between cost estimates for closure and corrective action in its *Musco Family Olive Company Financial Assurance Plan* dated 22 March 2018. Additionally, a cost estimate for corrective action was not included in the design documents submitted for proposed Ponds E-G. This Order requires the Discharger submit a corrective action cost estimate for existing and proposed ponds, as described in Provision H.11.a.3 of this Order.
84. Upon approval of the corrective action cost estimate for the existing and proposed ponds, the Discharger shall establish financial assurances for corrective action in accordance with the approved cost estimate naming the Central Valley Water Board as the beneficiary, and submit corrective action cost estimate annually adjusted to account for inflation and financial assurances by 1 September every year, as described in Provision H.11.a.4.
85. To the extent that the Discharger seeks to use the “financial means test” as a financial assurance mechanism for closure or corrective action, Chapter 6 of Title 27 does not expressly permit for such an application. (See Title 27, § 22246; see also Title 27, § 22200 [defining the “financial means test” as the mechanism “by which an operator demonstrates his or her ability to pay third party claims ... and/or to pay future postclosure maintenance costs...”].) Even if the “financial means test” were permitted to be used as a financial assurance mechanism for closure or corrective action under Title 27, such applications will not ultimately provide adequate assurances. This is partly because the “financial means test” is functionally equivalent to self-insurance, which does not fully account for unforeseeable financial difficulties that might require diversion of funds otherwise set aside for closure or corrective action. Moreover, the “financial means test” does not adequately demonstrate that the Discharger is taking affirmative steps to fund the full cost of closing its surface impoundments.

### CEQA AND OTHER CONSIDERATIONS

86. In accordance with the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.), the San Joaquin County Community Development Department prepared and circulated an Initial Study and Mitigated Negative Declaration (SCH #2018082020) that contained an analysis of the potential for the project (construction of three new Class II surface impoundments) to result in significant environmental effects. The Board, acting as a responsible agency, was consulted during the development of these documents. San Joaquin County’s Community Development Department certified the Initial Study and Mitigated Negative Declaration on 6 September 2018. As a CEQA responsible agency, the Central Valley Water Board finds that the mitigated negative declaration, including issuance of these WDRs, will ensure that any water quality impacts are less than significant.
87. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the facility is assigned a threat-complexity rating of **2-B**, based on the following:
  - a. Threat to Water Quality—Category 2: “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

- b. Complexity—Category B: “Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.”

88. Water Code section 13267, subdivision (b)(1) provides that:

[T]he Regional Board may require that any person who has discharged, discharges..., or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

89. The technical reports required by this Order, as well as under the separately-issued Monitoring and Reporting Program No. R5-2019-0005, are necessary to verify the Discharger’s compliance with WDRs prescribed in this Order.

#### **PROCEDURAL REQUIREMENTS**

90. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
91. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
92. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

**IT IS HEREBY ORDERED**, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2014-0125 is rescinded (except for purposes of enforcement); and that Musco Olive Products, Inc. and The Studley Company, their agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of “hazardous waste,” as defined per Title 23, section 2510 et seq., is prohibited.
2. The discharge of solid waste or liquid waste to surface waters, surface water drainage courses, or groundwater is prohibited.
3. The discharge of wastes outside of a waste management unit (WMU) or portions of a WMU specifically designed for their containment is prohibited.

4. The Discharger is prohibited from allowing the pressure head on the secondary liner of any Class II surface impoundment to exceed one foot, except for LCERS sump area where liquid depth shall be kept at the minimum needed for safe pump operation.
5. The Discharger is prohibited from placing waste in Ponds E-G until all applicable construction quality assurance reports have been approved by Central Valley Water Board staff.
6. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements dated April 2016 (Industrial SPRRs).

## **B. DISCHARGE SPECIFICATIONS**

1. Only nonhazardous liquid wastes shall be discharged to the Class II surface impoundment. The discharge shall not cause a condition of pollution or nuisance as defined by the Water Code section 13050. The nonhazardous liquid wastes allowed to be discharged to the Class II surface impoundments are:
  - a. Process wastewater produced within the processing and storage areas;
  - b. Process wastewater generated as a result of processing and canning operations;
  - c. Process wastewater produced by the regeneration of the ion exchange water softener, from filter backwash wastewater and boiler blowdown; and
  - d. Stormwater runoff from the processing areas.
2. Prior to the discharge of waste to a Class II waste management unit, all wells within 500 feet of the unit shall have sanitary seals or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Central Valley Water Board and to the State Department of Water Resources.
3. The Discharger shall comply with all applicable Standard Discharge Specifications listed in Section D of the Industrial SPRRs.

## **C. FACILITY SPECIFICATIONS**

1. Annually, prior to the anticipated rainy season but no later than **1 November**, any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed and reported as required by MRP No. R5-2019-0005.

### **Class II Surface Impoundments**

2. All Class II surface impoundments shall have containment capacity for all wastewater flows into the impoundment, precipitation from a 100-year wet season of 21.0 inches distributed monthly, and a 1,000-year 24-hour storm event of 4.74 inches, and shall maintain at least 2.0 feet of freeboard at all times. To ensure compliance with this requirement, the Discharger shall maintain at least 2.4 feet (2.0 feet plus the amount needed to hold the design storm to the nearest tenth of a foot) of freeboard during the wet season except in the event of a storm equal to or exceeding

the 1,000-year 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained.

3. The Discharger shall **immediately** notify Board staff by telephone and email, in the event that freeboard levels are equal to or less than the minimum freeboard requirements set forth in Specification C.2.
4. The Discharger shall record daily onsite rainfall using an onsite rain gauge, and continue using the California Irrigation Management and Information system, using station number 167 Tracy (or nearest alternate station if #167 is offline) as a backup to track the magnitude of precipitation events.
5. The Discharger shall also record surface impoundment freeboard levels in accordance with the attached monitoring and reporting program.
6. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overflowing.
7. The surface impoundment(s) shall be designed, constructed, operated, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
8. Leakage removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.
9. The **Action Leakage Rate** (ALR) for each Class II surface impoundment is as follows:

Pond Identification	B	C	D	E	F	G
Area (acres)	4.5	4.9	5.1	4.8	2.9	7.0
Action Leakage Rate (gpad)	1,000	3,000	3,000	3,000	3,000	3,000
Notification Level (gpd) <sup>1</sup> (33% above ALR)	1,485	4,851	5,049	4,752	9,504	14,400
Evaluation Monitoring Trigger (gpd) <sup>1</sup> (66% above ALR)	2,970	9,702	10,098	2,871	5,742	8,700
Corrective Action Level (gpd) <sup>1</sup> (100% above ALR)	4,500	14,700	15,300	6,930	13,860	21,000

<sup>1</sup>Gallons per day (gpd) shall be measured by a calibrated flow totalizer.

- a. If leakage in the LCRS of the Class II surface impoundment exceeds the **Notification Level**, the Discharger shall:
  1. Submit written notification within **seven days** that includes historical and graphical information which describes how the leakage in the class II surface impoundment has increased over time to reach the Notification Level.
  2. Discuss any noticeable increases in leakage rates that may indicate a significant defect has developed in the primary liner.

- b. If leakage in the LCRS of the Class II surface impoundment exceeds the **Evaluation Monitoring Trigger**, the Discharger shall:
  1. **Immediately** notify Central Valley Water Board staff by telephone and email.
  2. Submit written notification within **seven days** with an evaluation monitoring plan that proposes increased monitoring and reporting of the LCRS and unsaturated zone, and a contingency plan for how the facility will operate if the pond level reaches the Corrective Action Level.
  3. Provide information specified at the notification level.
  4. Provide estimated schedule of when pond can be repaired to meet facility operational needs.
- c. If leakage in the LCRS of the Class II surface impoundment exceeds the **Corrective Action Level**, the Discharger shall:
  1. **Immediately** notify Central Valley Water Board staff by telephone and email.
  2. Submit written notification within **seven days** that includes a time schedule to locate and repair leak(s) in the liner system.
  3. Submit a plan to reduce head pressure on the primary liner such that leakage through the primary liner is reduced to the evaluation monitoring trigger leakage rates.
  4. If repairs do not result in a leakage rate less than the required Notification level leakage rates, the Discharger shall submit written notification within seven days that includes a time schedule for replacement of the upper liner of the surface impoundment or other action necessary to reduce leakage production.
  5. Complete repairs or liner replacement in accordance with the approved time schedule under "2" and/or "4", above.
10. For existing and proposed surface impoundments, the Discharger shall perform an annual LCRS transmissivity test to determine the ability of the LCRS to contain and transmit liquid to its sump pump without allowing excessive head pressure upon the secondary liner. At least 60 days prior to performing the test, the Discharger shall submit a workplan including proposed pass/fail criteria. The workplan, once approved by Central Valley Water Board staff shall be used to determine when the LCRS is failing and when the Discharger is required to perform evaluation monitoring and corrective action.
11. Free liquid detected in a pan lysimeter of a Class II surface impoundment is an indication of a release from the secondary containment structure. In this case, the Discharger shall:
  - a. **Immediately** notify Board staff by telephone and email that free liquid has been detected in the pan lysimeter.
  - b. **Immediately** sample and test the liquid in accordance with the unsaturated zone monitoring requirements in MRP R5-2019-0005.

- c. Submit written notification to Board staff within **seven days** including a time schedule to repair the containment structures, if a release has been confirmed.
  - d. Complete repairs of the containment structures in accordance with the approved time schedule.
12. The Discharger shall distribute wastewater to the class II surface impoundments as shown in Attachment C, the Discharger's wastewater distribution diagram, which is incorporated herein and made part of this Order by reference. Any modification to the Discharger's wastewater distribution diagram contained in Attachment C shall be submitted to the Executive Officer for prior approval as modifications to the Discharger's operations plans per Title 27 sections 20375(b) and 21760(b).
  13. Solids that accumulate in the Class II surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment inflows. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Board staff for review at least 60 days prior to the date for the removal of the solids.
  14. Solids that accumulate in the solids removal screen as shown in Attachment C (prior to discharge to the Class II surface impoundments) shall be collected in a manner that prevents liquid or other waste from coming in contact with the ground surface.
  15. The Discharger shall operate and maintain the Class II surface impoundments in accordance with an approved O&M plan that complies with Title 27 sections 20375 and 21760(b).
  16. The Discharger shall comply with all applicable Standard Facility Specifications listed in Section E of the Industrial SPRRs.

#### **D. DESIGN AND CONSTRUCTION SPECIFICATIONS**

1. Containment structures and precipitation and drainage control systems shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, and washout under 1,000-year, 24-hour precipitation conditions.
2. WMUs shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.
3. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over their operating life.
4. Materials used to construct the LCRS shall have appropriate physical and chemical properties to ensure the required transmission of primary liner leakage over the life of the surface impoundments and the post-closure maintenance period.

5. The LCRS shall be designed, constructed, operated, and maintained to collect twice the anticipated daily volume of leakage generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The LCRS pump shall be capable of removing this volume of leakage or twice the Action Leakage Rate flow, whichever is greater.
6. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation without excessive pump cycling that could damage the pump.
7. The Discharger shall submit a design report including plans, specifications, and a construction quality assurance plan for review and approval prior to constructing any new lined WMU.
8. The Discharger shall submit a final report documenting construction of any new lined WMU for review and approval prior to discharging wastes to the WMU.
9. The Discharger shall comply with all Standard Design and Construction Specifications listed in Section E of the Industrial SPRRs.

### **Class II Surface Impoundments**

10. The Class II surface impoundment Ponds E, F and G liner system shall consist of:
  1. A primary synthetic liner (80-mil High Density Polyethylene (HDPE) geomembrane);
  2. A LCRS (Non-woven 6-ounce needle-punched geotextile bonded on both sides of a 300-mil tri-planar geonet);
  3. A secondary synthetic liner (45-mil scrim reinforced polypropylene geomembrane); and
  4. A compacted subgrade with minimum slope of 2% towards the LCRS sump that is properly constructed per manufacturer's specifications to accept the secondary liner without jeopardizing liner integrity due to surface irregularities.
11. All Class II surface impoundments shall have a LCRS sump to collect and return all liquid within the sump to the impoundment resulting from leakage through the primary liner. The LCRS sump shall include a dedicated automated pump to remove leakage and return it to the impoundment.
12. All Class II surface impoundments shall have backup provisions installed, operational, and routinely tested for the LCRS dedicated automated sump pump such that the time interval required to repair/replace a LCRS sump pump shall not cause leakage from the primary liner to exceed a maximum one-foot pressure head limitation on the secondary liner.
13. All Class II surface impoundments shall have a flow totalizer to measure liquid volumes pumped from the LCRS sump in order to track leakage rates.

14. All new Class II surface impoundments shall have an unsaturated zone monitoring system consisting of a pan lysimeter beneath the entire LCRS sump area of the impoundment that is capable of detecting a release to the unsaturated zone at the earliest time possible per Title 27 requirements.
15. All Class II surface impoundments and any overflow basin shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded at any time. The reference point zero shall be in relation to the lowest point along the top of the surface impoundment containment berm e.g. spillway. The markings or gauge shall have increments no greater than 0.10 feet in vertical height. The freeboard gauge shall also have major markings clearly indicating critical freeboard depths including 2-foot vertical freeboard level below the reference point.
16. The Discharger shall comply with all applicable Standard Construction Specifications listed in Section F of the Industrial SPRRs.
17. The Discharger shall comply with all applicable Storm Water Provisions listed in Section L of the Industrial SPRRs.

#### **E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS**

1. At closure of a Class II surface impoundment, the Discharger shall propose clean closure of the unit pursuant to Title 27 section 21400(b)(1) unless demonstrated and the Central Valley Water Board finds that it is infeasible to attempt clean closure. In the case of clean closure, all precipitates, settled solids, and liner materials contaminated by wastes, and adjacent natural geologic materials contaminated by wastes shall be completely removed for disposal to an approved Unit in accordance with an approved final closure plan. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment and/or overflow basins shall be closed as a landfill pursuant to Title 27 section 21400(b)(2)(A). In this event, the Discharger shall backfill and grade the area and submit a revised Final Closure and Post-Closure Maintenance Plan proposing a final cover meeting the requirements of Title 27 section 21090 and shall perform all post-closure maintenance in the approved Post-Closure Maintenance Plan. The Discharger shall also submit updated Financial Assurances for post closure maintenance and monitoring.
2. Prior to closure, the Discharger shall submit a Final Closure and Post-Closure Maintenance Plan prepared by a California-registered civil engineer or certified engineering geologist, and that contains all applicable information required in Title 27 section 21769. The plan shall include any applicable closure/post-closure elements proposed in the ROWD, and shall meet the requirements of this Order.
3. The Discharger shall comply with all Closure and Post-Closure Maintenance Specifications listed in Section F of the Industrial SPRRs dated April 2016.

## F. FINANCIAL ASSURANCES

### 1. Financial Assurances for Closure of Surface Impoundments

- a. By **17 July 2019**, the Discharger shall submit a report demonstrating it has, in accordance with Title 27, section 22207, subdivision (a), either:
  - i. Established an irrevocable closure fund to pay for closure activities;
  - ii. Obtained another financial assurance mechanism expressly provided for with respect to closure activities under Title 27, Chapter 6, Article 2 [§ 22240 et seq.], or a combination of such mechanisms;<sup>3</sup> or
  - iii. Obtained or established another mechanism not expressly provided for under Title 27, Chapter 6, Article 2, but approved by the Executive Officer in writing, with a determination that the proposed mechanism provides financial assurances at least equivalent to those mechanisms expressly provided for under Title 27, Chapter 6, Article 2 with respect to closure activities.
- b. The Discharger's irrevocable closure fund or other financial assurance mechanism shall be sufficient to pay for initial closure of each of the Discharger's four onsite surface impoundments at the Facility, in accordance with the Discharger's operative closure plan for each surface impoundment. (See Provision H.11; Finding 78.) The amount shall be individually prorated according to the operating life of each surface impoundment, particularly with respect to the accrual of accumulated solids estimated as of 1 September of each year.

### 2. Financial Assurances for Corrective Action

- a. By **17 July 2019**, the Discharger shall also submit a report demonstrating it has, in accordance with Title 27, section 22222, either:
  - i. Established an irrevocable fund to pay for corrective action;
  - ii. Obtained another financial assurance mechanism expressly provided for with respect to corrective action under Title 27, Chapter 6, Article 2 [§ 22240 et seq.], or a combination of such mechanisms; or
  - iii. Obtained or established another mechanism not expressly provided for with respect to corrective action under Title 27, Chapter 6, Article 2, but approved by the Executive Officer in writing, with a determination that the proposed mechanism provides financial assurances at least equivalent to those mechanisms expressly provided for under Title 27, Chapter 6, Article 2 with respect to corrective action.
- b. The Discharger's irrevocable fund or other financial assurance mechanism shall be sufficient to address known or reasonably foreseeable releases from its Class II surface impoundments. This amount shall not be prorated.

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<sup>3</sup> The "Financial Means Test" is not a financial assurance mechanism expressly contemplated with regard to either closure or corrective action. (See Title 27, § 22246.)

### 3. Funding of Financial Assurance Mechanisms

- a. If the funding of any financial assurance mechanism is required, and no payment schedule is proposed, the mechanism shall be fully funded, in the amount required, as of **17 July 2019**.
  - b. In lieu of immediate funding, the Discharger may propose a graduated payment schedule for fully funding any of its chosen financial assurances.
  - c. No later than **1 September 2019**, the Discharger shall submit a report either (i) confirming that its chosen mechanisms are fully funded in the amount required, or (ii) proposing a graduated payment schedule capable of achieving full funding within an appropriate timeframe. (See Provision H.11.)
4. The Central Valley Water Board shall be designated as the beneficiary for all financial assurance mechanisms obtained or established pursuant to this Order.
  5. By **1 September** of each year following 2019, the Discharger shall submit a report to the Central Valley Water Board that reports the balance of both the closure and corrective action funds or the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27, section 22236.
  6. The Discharger shall comply with all applicable Standard Financial Assurance Specifications listed in Section H of the Industrial SPRRs dated April 2016.

## G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2019-0005, and the applicable Standard Monitoring Specifications listed in Section I of the Industrial SPRRs dated April 2016.
2. The Discharger shall, for any surface impoundment (waste management unit or WMU) in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2019-0005, and the applicable Standard Monitoring Specifications listed in Section I of Industrial SPRRs dated April 2016.
3. The Discharger shall comply with the Water Quality Protection Standard (WQPS) as specified in this Order, MRP No. R5-2019-0005, and the applicable sections of the Industrial SPRRs dated April 2106.
4. The concentrations of the constituents of concern (COCs) in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the WMU) or Monitoring Points shall not exceed the concentration limits established pursuant to MRP No. R5-2019-0005.
5. For each monitoring event, the Discharger shall determine whether the WMU is in compliance with the WQPS using procedures specified in MRP No. R5-2019-0005 and the Standard Monitoring Specifications in Section I of the Industrial SPRRs dated April 2016.

6. The Discharger shall comply with MRP No. R5-2019-0005 regarding any changes to the Discharger's monitoring system for its Class II surface impoundments due to implementation of an Evaluation Monitoring Program or Corrective Action Program on any WMU.
7. The Discharger shall comply with all applicable Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the Industrial SPRRs dated April 2016.

#### **H. PROVISIONS**

1. The Discharger shall comply with the applicable sections of the Industrial Standard Provisions and Reporting Requirements, dated April 2016, which are attached hereto and made part of this Order by reference. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the applicable Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. Pursuant to Water Code section 13267, the Discharger shall comply with Monitoring and Reporting Program No. R5-2019-0005, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring groundwater, the unsaturated zone, and surface waters throughout the active life of the waste management units and any applicable post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2019-0005 is a violation of these waste discharge requirements.
3. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
4. The Discharger shall maintain legible records of the volume and type of waste discharged to the surface impoundments and the manner and location of the discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period for each surface impoundment. These records shall be available for review by representatives of the Central Valley Water Board and of the State Water Resources Control Board. Copies of these records shall be sent to the Central Valley Water Board upon request.
5. The Discharger shall comply with all applicable provisions in Title 27 regulations that are not specifically referred to in this Order.
6. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order and of the California Water Code.
7. The Discharger shall immediately notify the Central Valley Water Board of any flooding, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or wastewater containment facilities or precipitation and drainage control structures.
8. In the event of any change in control or ownership of the facility or disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting

transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of General Provision K.2.e in the Industrial Standard Provisions and Reporting Requirements and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

9. In the event a surface impoundment is closed as a landfill, the Discharger shall provide proof to the Central Valley Water Board **within sixty days after completing the final closure** of the surface impoundment that the deed to the facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
  - a. The parcel has been used for disposal of wastes.
  - b. Land use options for the parcel are restricted in accordance with post-closure land uses set forth in any post-closure plan (if applicable).
  - c. In the event that the Discharger defaults on carrying out either any corrective action needed to address a release, groundwater monitoring, or any post-closure maintenance (if applicable), then the responsibility for carrying out such work falls to the property owner.
10. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
11. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared in accordance with Provisions H.10:

<u>Task</u>	<u>Compliance Date</u>
a. Submit the following information:	
1. <b>CQA:</b> Submit all applicable Final Construction Quality Assurance (CQA) Reports for Ponds E, F and G to demonstrate that construction was completed in accordance with approved construction plans (see Standard Construction Specifications in Section F of the SPRRs). The CQA Reports shall include a description of the permanent pumps and pipes to be used to convey wastewater to Ponds E, F, and G	90 days after completion of construction

<p>2. <b>WQPS:</b> Submit a proposed Water Quality Protection Standard that complies with Title 27 section 20390 for groundwater and unsaturated zone for Ponds B, C, D, E, F, and G using a minimum of 8 samples. The WQPS shall establish background water quality for the purposes of anti-degradation analysis and for establishing concentration limits at each monitoring point and point of compliance.</p>	<p>180 days after approval of the CQA Report</p>
<p>3. <b>Corrective Action Financial Assurance Estimate:</b> Submit updated financial assurances estimate that complies with Title 27 section 22222 for corrective action for known or reasonably foreseeable releases from all class II surface impoundments.</p>	<p>17 July 2019</p>
<p>4. <b>Preliminary Closure Plan and Financial Assurances:</b> Submit Preliminary Closure Plan, cost estimates, and financial assurance demonstrations for closure and corrective action, as described in Specifications F.1 and F.2.</p>	<p>17 July 2019</p>
<p>5. <b>Monitoring System Certification:</b> Submit certification per Title 27 Section 20415(e)(1) that the Class II surface impoundment monitoring system for Ponds E, F, and G complies with Title 27 requirements.</p>	<p>90 days after Ponds E, F, and G are constructed</p>
<p>6. <b>Revised Operations and Maintenance (O&amp;M) Plan:</b> Submit an O&amp;M Plan that complies Title 27 section sections 20375 and 21760(b) as well as describes how freeboard violations will be prevented during the wet season (see Finding 117 and Facility Specification C.15)</p>	<p>30 August 2019</p>
<p>7. <b>Revised Water Balance for the Class II Surface Impoundments</b>  The Discharger shall submit a revised water balance for the Class II surface impoundments including the proposed Ponds E, F and G for Water Board staff review and approval. The revised water balance shall take following factors into account:</p> <ul style="list-style-type: none"> <li>a) The average daily base wastewater inflows.</li> <li>b) Evaporation losses from the Class II surface impoundment total gallons per year, and distributed monthly.</li> <li>c) The 100-year wet season distributed monthly in accordance with average monthly rainfall patterns.</li> <li>d) The total surface area of the Class II surface impoundment in square feet (or) acres.</li> <li>e) The total surface area of the site runoff area captured by</li> </ul>	<p>20 March 2019</p>

<p>the impoundment in square feet (or) acres, specially the uncovered process area.</p> <p>f) The design storm event requirements that translates to additional freeboard that needs to be maintained to accommodate the design storm event.</p> <p>g) The capacity of the lined impoundment at the 2-foot and 2.4 feet freeboard levels in gallons.</p> <p>h) Loss of storage volume in the surface impoundment due to solids accumulation each year.</p>	
<p><b>8. Pond D Compliance Well Placement:</b> Submit a technical report that certifies that compliance point MW-35R is placed downgradient of Pond D sump and the two associated piezometers (constructed as monitoring wells) have been located such that they comply with Title 27 requirements for a groundwater monitoring system.</p>	<p>2 March 2019</p>

12. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
13. The Central Valley Water Board will review this Order periodically and may revise requirements when necessary.
14. This Order shall take effect upon the date of adoption.
15. The Discharger shall comply with all applicable General Provisions listed in Section K of the SPRRs dated November 2013.

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and Title 23, section 2050 et seq. The State Water Board must receive the petition by 5pm on the 30th day after the date that this Order becomes final, except that if the 30th day falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5 pm on the next business day. Copies of the law and regulations applicable to filing petitions are available on the Internet (at the address below) and will be provided upon request.

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

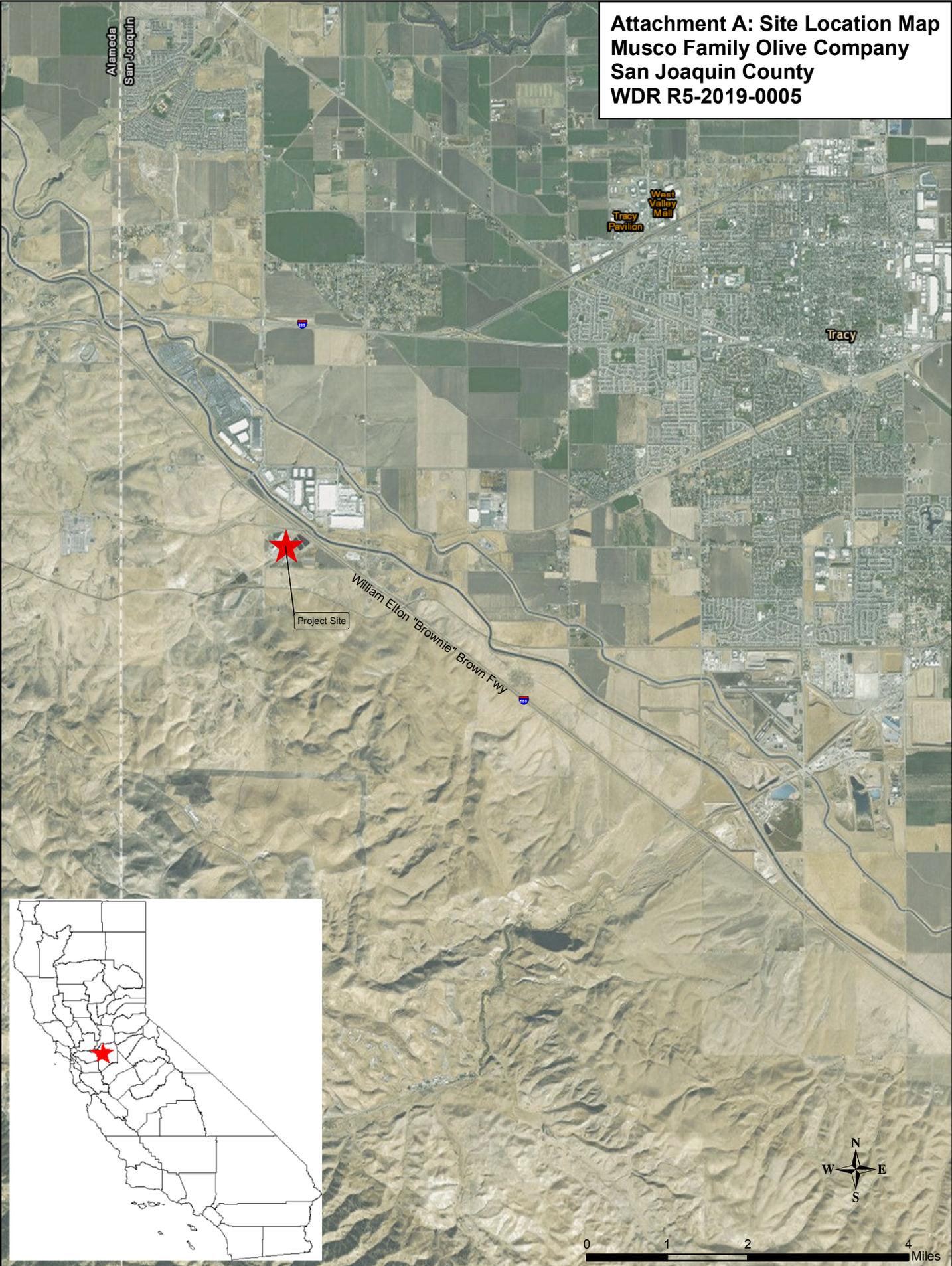
I, PATRICK PULUPA, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 8 February 2019.

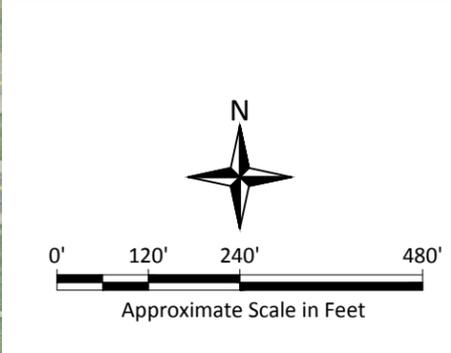
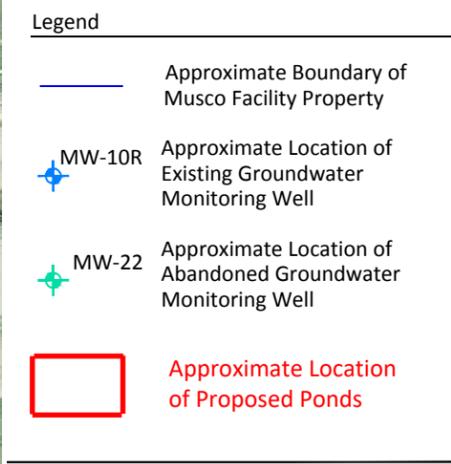
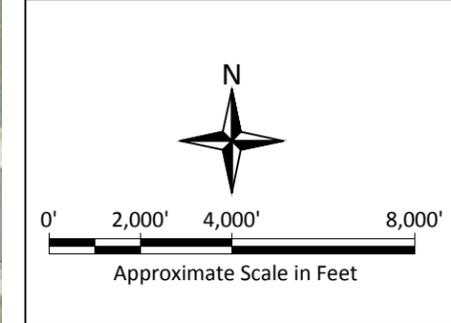
*ORIGINAL SIGNED BY*

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PATRICK PULUPA  
 Executive Officer

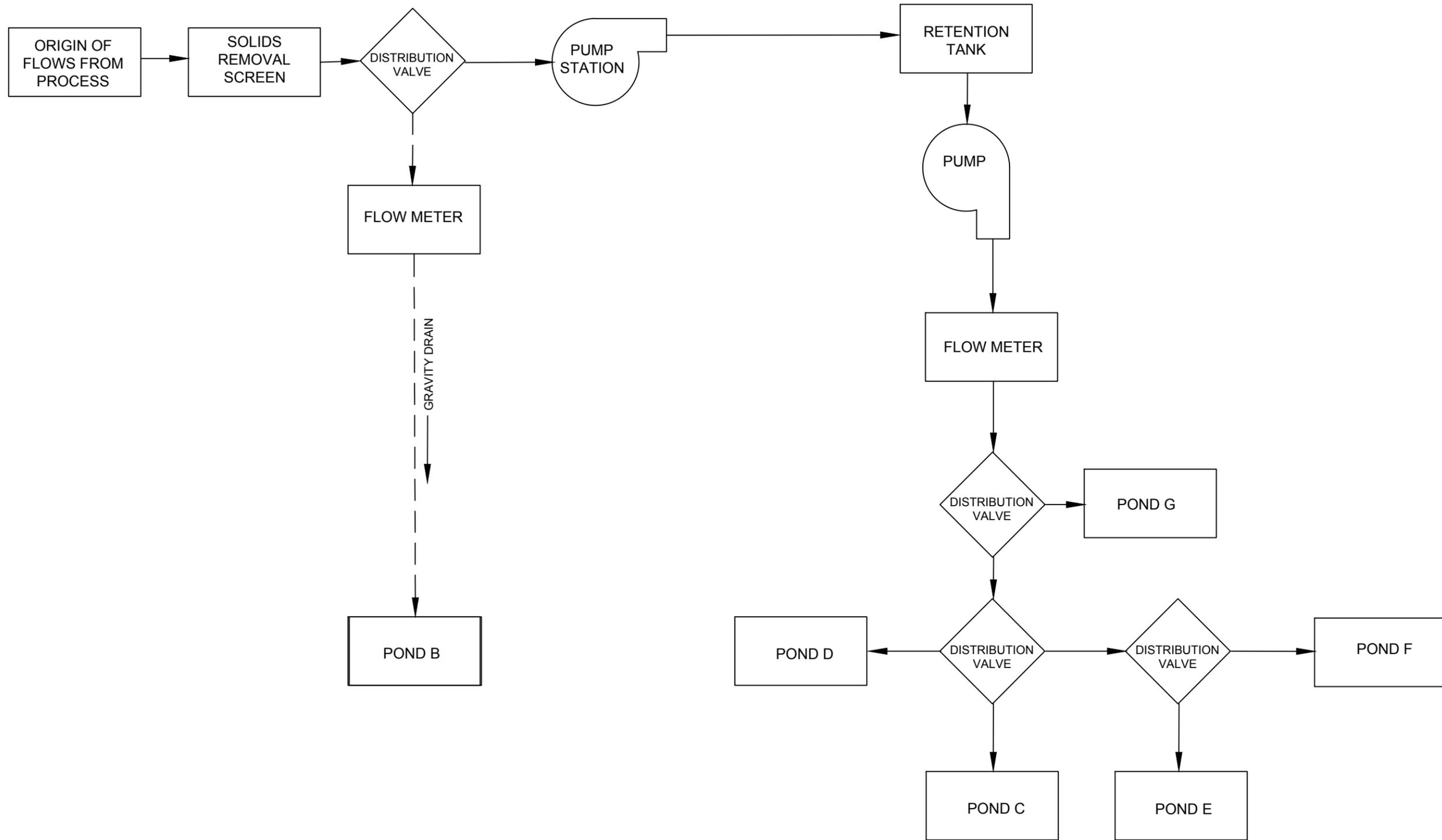
**Attachment A: Site Location Map  
Musco Family Olive Company  
San Joaquin County  
WDR R5-2019-0005**





Musco Family Olive Company  
San Joaquin County  
WDR R5-2019-0005

Attachment B - Site Map



 	CLIENT: MUSCO FAMILY OLIVE	<b>PROCESS FLOW DIAGRAM</b> <b>WDR R5-2019-0005</b>
	PROJECT: PONDS E, F and G	
	PROJECT NUMBER: 0042.001.010	<b>ATTACHMENT C</b>

## INFORMATION SHEET

ORDER NO. R5-2019-0005  
MUSCO OLIVE PRODUCTS, INC.  
AND  
THE STUDLEY COMPANY  
MUSCO FAMILY OLIVE COMPANY (TRACY PLANT)  
CLASS II SURFACE IMPOUNDMENTS  
SAN JOAQUIN COUNTY

Musco Olive Products, Inc., doing business as “Musco Family Olive Company” (Musco), owns and operates the Musco Family Olive Company Tracy Plant (Facility), which is located about five miles southwest of Tracy, in Section 34, T2S, R4E, MDB&M. At an elevation of 280 feet above sea level, the Facility is on the eastern slope of the Diablo Mountain Range. The Facility is south of Interstate 580 and east of Patterson Pass Road. Musco and the Studley Company each own a portion of the land upon which the Facility operates.

The Facility is on a 308.73-acre property located at 17950 Via Nicolo Road. The Facility consisted of two Class II surface impoundments (Ponds A-B) until 2014, when the Musco replaced process wastewater storage and evaporation capacity of Pond A with the combined capacity of Ponds C-D. Pond A was clean-closed in 2017. Three existing Class II surface impoundments (Ponds B-D) at the Facility comprise approximately 14.5 acres. Musco is proposing to construct three additional Class II surface impoundments (Ponds E-G) adjacent to the existing Facility.

The Facility has been in operation at this site since 1983, and consists primarily of fresh olive storage tanks, olive treatment tanks, boilers, olive processing equipment for olive preparation such as de-stemming and pitting, and canning operations. Domestic wastewater generated at the Facility is discharged to an onsite septic system regulated by San Joaquin County’s Environmental Health Dept. The septic system, located in the former land application area of waste called “Evaporation North”, occupies acreage northwest of Pond B. The system distributes sanitary wastewater to three banks of leach fields around Pond B. Facility process wastewater is no longer applied to that area and domestic wastewater is not commingled with process wastewater.

On 16 October 2014, the Central Valley Water Board issued Order No. R5-2014-0125 wherein the existing WMUs at the Facility were classified as Class II WMUs for the discharge of designated waste. This Order continues to classify the existing WMUs as Class II WMUs in accordance with Title 27. This Order also finds that the three new proposed Ponds E-G are classified as Class II WMUs in accordance with Title 27.

These WDRs are necessary to regulate three existing Class II surface impoundments and three new Class II surface impoundments which Musco is proposing to construct. The Class II surface impoundments are used for containment and evaporation of

ORDER NO. R5-2019-0005  
MUSCO OLIVE PRODUCTS, INC. DBA MUSCO FAMILY OLIVE COMPANY  
AND THE STUDLEY COMPANY  
MUSCO FAMILY OLIVE COMPANY (TRACY PLANT)  
SAN JOAQUIN COUNTY

hypersaline wastewater generated from olive processing. The hypersaline solution is characterized as non-hazardous designated waste, and as such, is regulated under Title 27, section 20005 et seq. The constituents of concern (COCs) in the wastewater are predominantly salts and total nitrogen as it relates to nitrates in drinking water supplies. These COCs are quantified as electrical conductivity, total dissolved solids, sodium, chloride, sulfate, pH, chemical oxygen demand, total Kjeldahl nitrogen, ammonia, nitrate, and total alkalinity.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2019-0005  
FOR  
MUSCO OLIVE PRODUCTS, INC. DBA MUSCO FAMILY OLIVE COMPANY  
AND  
THE STUDLEY COMPANY  
FOR  
MUSCO FAMILY OLIVE COMPANY (TRACY PLANT)  
CLASS II SURFACE IMPOUNDMENTS  
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) is issued to Musco Olive Products, Inc. doing business as (dba) Musco Family Olive Company and the Studley Company hereinafter referred to jointly as “Discharger” 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; and financial assurances reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2019-0005 (hereafter referred to as “WDRs Order”), and the Standard Provisions and Reporting Requirements dated April 2016 (SPRRs) as applicable. 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. Failure to comply with this MRP (including late or incomplete reports), or with the SPRRs, constitutes noncompliance with the WDRs and with Water Code Section 13267, which can result in the imposition of civil monetary liability.

**A. MONITORING**

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs. All monitoring shall be conducted in accordance with an approved *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leakage, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables 1 through 5.

The Discharger shall use USEPA approved Part 136 test methods with the lowest achievable detection limit for that constituent taking any matrix interferences into account. The reporting limit shall be no higher than the practical quantitation limit (PQL). The

Discharger shall report an estimated value for all trace concentrations that are between the detection limit and the PQL. All metals analyses shall be for dissolved metals.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Surface Water Monitoring
A.4	Surface Impoundment/Waste Pile/LTU Monitoring
A.5	LCRS/ LDS Monitoring, Action Leakage Rate, and Annual Testing
A.6	Waste Discharge Monitoring (Not applicable)
A.7	Facility Monitoring

## 1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Zone</u>	<u>Units Being Monitored</u>
MW-10	Detection(Cross-gradient)	Shallow	Pond B
MW-11	Detection(Cross-gradient)	Shallow	Pond B
MW-19	Background(Upgradient)	Shallow	Pond B
MW-20	Detection(Downgradient)	Shallow	Pond B
MW-21	Detection(Downgradient)	Shallow	Pond B
MW-10R	Detection(Cross-gradient)	Intermediate	Pond B
MW-12	Detection(Cross-gradient)	Intermediate	Pond B
MW-17	Detection(Downgradient)	Intermediate	Pond B
MW-18	Detection(Downgradient)	Intermediate	Pond B
MW-18R	Detection(Cross-gradient)	Intermediate	Pond B
MW-20R	Detection(Downgradient)	Intermediate	Pond B
MW-21R	Detection(Downgradient)	Intermediate	Pond B
MW-32	Background(Upgradient)	Intermediate	Pond B
MW-34	Detection(Downgradient)	Intermediate	Pond C, Pond D
MW-35R	Detection(Downgradient)	Intermediate	Pond C, Pond D
MW-36	Detection(Downgradient)	Intermediate	Pond C, Pond D
PZ-1	Groundwater Elevation	Intermediate	Pond C, Pond D
MW-33	Background(Upgradient)	Deep	Pond C, Pond D

Additional monitoring wells will be installed after the construction of the proposed surface impoundments (Ponds E,F and G). WDRs Order No. R5-2019-0005 requires the submittal of a revised Water Quality Protection Standard report to address the monitoring for the new surface impoundments.

Samples shall be collected semiannually from all existing wells, and any additional wells added as part of the approved groundwater monitoring system. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in the following table:

<b>Table 1. Groundwater Monitoring</b>			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Groundwater Elevation	feet & hundredths, MSL	Quarterly <sup>1</sup>	Semiannually
Temperature	°C	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Bicarbonate (HCO <sub>3</sub> )	mg/L	Semiannually	Semiannually
Chemical Oxygen Demand	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Nitrate as nitrogen	mg/L	Semiannually	Semiannually
Total Hardness	mg/L	Semiannually	Semiannually
TKN (Total Kjeldahl nitrogen)	mg/L	Semiannually	Semiannually
Ammonia as nitrogen	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually	Semiannually
Magnesium	mg/L	Semiannually	Semiannually
Potassium	mg/L	Semiannually	Semiannually
Alkalinity	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually

<sup>1</sup> The Discharger shall measure the groundwater elevation in each well **quarterly**, to 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).

## 2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time a new Class II waste management unit is constructed.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
PL-C	Detection	Pond C
PL-D	Detection	Pond D
PL-E*	Detection	Future Pond E
PL-F*	Detection	Future Pond F
PL-G*	Detection	Future Pond G

\*to be installed during construction of proposed pond

Pond B was constructed in 1991 and does not have an underlying pan lysimeter. Therefore, unsaturated zone monitoring for Pond B is not practicable.

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in the following table in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present).

Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is present, the Discharger shall follow the procedures in the WDRs Order under "C. Facility Specifications" and shall **immediately** sample and test the liquid for Field and Monitoring Parameters listed in the following table.

<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters for Pan Lysimeters</u>			
Presence of Water	Observation	Monthly	Semiannually
Depth of Water	Inches	Monthly	Semiannually
<u>Monitoring Parameters<sup>1,2,3</sup></u>			
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually
TKN	mg/L	Semiannually	Semiannually
Ammonia as Nitrogen	mg/L	Semiannually	Semiannually
Bicarbonate (HCO <sub>3</sub> )	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Chemical Oxygen Demand	mg/L	Semiannually	Semiannually

Total Hardness	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually	Semiannually
Magnesium	mg/L	Semiannually	Semiannually
Potassium	mg/L	Semiannually	Semiannually
Alkalinity	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually

<sup>1</sup>If the presence of liquid is observed from the unsaturated zone monitoring device, the Discharger shall collect the liquid for laboratory analysis for the monitoring parameters in Table 2.

<sup>2</sup>The Discharger is required to submit the sample for laboratory analysis even if it is known that not enough sample volume exists to perform all the laboratory tests for the monitoring parameters specified. The laboratory shall perform the laboratory tests using the listing in Table 2 as the order of precedence.

<sup>3</sup>If liquid is present in a pan lysimeter, a sample shall be collected and tested.

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control (QA/QC) standards contained in the approved Sample Collection and Analysis Plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include **an evaluation** of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

- 3. Surface Water Monitoring.** The Discharger shall operate a surface water detection monitoring system for any facility where runoff from waste management unit areas flows or could flow to waters of the United States, as applicable. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Musco Family Olive Company's Tracy Plant, runoff from waste management unit areas flows from the site to a dry wash. Storm water from the process areas is collected in secondary containment, routed via drains to sumps and pumped to the wastewater holding pond regulated under WDRs Order R5-2010-0025. Storm water monitoring was previously performed in accordance with the Musco Stormwater Pollution Prevention Plan (SWPPP) and the National Pollution Discharge Elimination System (NPDES) General Permit No. CAS000001. Coverage under the NPDES General Permit No. CAS000001 was terminated at the Discharger's request on 21 July 2015 by the Central Valley Water Board.

Since the Discharger is no longer covered under NPDES General Permit No. CAS000001, the Discharger shall continue to perform monitoring in accordance with the Musco Stormwater Pollution Prevention Plan (SWPPP). The Discharger in its ROWD dated 13 December 2013 identified the following constituents monitored under the NPDES General Permit: pH, biochemical oxygen demand (BOD), total dissolved solids (TDS), volatile dissolved solids (VDS), total suspended solids (TSS), ammonia, nitrate, total Kjeldahl nitrogen (TKN), sodium, chloride, sulfate, iron, calcium, bicarbonate, and carbonate. This MRP continues to require monitoring and reporting of storm water runoff

adjacent to Ponds B, C, and D at the current location designated as storm water monitoring point SW-4 on a biannual basis.

#### 4. Surface Impoundment Monitoring

Samples shall be collected from each Class II surface impoundment in accordance with the following table. One sample shall be collected from each surface impoundment during each monitoring period.

<b>Table 3. Class II Surface Impoundment Monitoring</b>			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<b><u>Field Parameters</u></b>			
Condition of Exposed Liner	None	Weekly	Semiannually
Flow Rate to each impoundment <sup>1</sup>	gallons/day	Daily	Semiannually
Precipitation <sup>2</sup>	Inches & Tenths	Daily	Semiannually
Freeboard <sup>3</sup>	Feet & Tenths	Weekly/Daily	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Off Site Removal of Wastewater <sup>4</sup>	Gallons per Event	Daily	Semiannually
<b><u>Monitoring Parameters</u></b>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Bicarbonate (HCO <sub>3</sub> )	mg/L	Semiannually	Semiannually
Chemical Oxygen Demand	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Nitrate as Nitrogen	mg/L	Semiannually	Semiannually
TKN	mg/L	Semiannually	Semiannually
Ammonia as Nitrogen	mg/L	Semiannually	Semiannually
Total Hardness	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually	Semiannually
Magnesium	mg/L	Semiannually	Semiannually
Potassium	mg/L	Semiannually	Semiannually
Alkalinity	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually

<sup>1</sup> Flow of wastewater into Class II surface impoundments as measured and recorded at totalizing meter.

<sup>2</sup> Precipitation shall be measured as described in Discharge Specifications.

<sup>3</sup> Freeboard shall be measured and recorded weekly from May through October, and then daily five days per week during wet weather months of November through April. Freeboard shall be measured from the lowest point of the berm at the top of the surface impoundment down to the water level in the impoundment and can be measured using permanent markings on the primary geomembrane liner or a free-standing gauge.

- <sup>4</sup> Each time wastewater is removed from the facility for disposal elsewhere, the Discharger shall document the date of removal, gallons removed, and the location of disposal. A copy of each hauling receipt shall be included in the semiannual report.

## 5. LCRS Monitoring, Action Leakage Rate, and Annual Testing

**LCRS Monitoring:** The Discharger shall monitor the sumps below the primary liners of the ponds, record and calculate daily leakage rates, and conduct annual testing of each LCRS in accordance with Title 27 and this monitoring program.

The current LCRS sump monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
LCRS-B-S	Pond B (South Sump)
LCRS-B-N	Pond B (North Sump)
LCRS-C	Pond C
LCRS-D	Pond D

All existing LCRS sumps and sumps for proposed Ponds E, F and G shall be inspected weekly for the presence of liquid, and flow shall be recorded in accordance with the following table. If liquid is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in the following table. Liquids observed in the LCRS sumps shall be analyzed for all parameters in the following table whenever liquid is present.

<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Presence of liquid	observation	Weekly	Semiannually
Flow Rate <sup>1</sup>	gallons/day	Continuously/Weekly	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Chemical Oxygen Demand	mg/L	Semiannually	Semiannually
Bicarbonate (HCO <sub>3</sub> )	mg/L	Semiannually	Semiannually

<sup>1</sup> Flow in gallons per day measured with a flow totalizer from LCRS sump back to surface impoundment.

**Action Leakage Rate:** The Discharger shall calculate the leakage rate for each LCRS on a weekly basis, and convert the results into a gallons per day value. The results shall be included in the information in the semiannual reports, and compared to the Action Leakage Rates found in the WDRs under Facility Specification C.9. If monitoring of the flow rate into the LCRS shows an exceedance of the Action Leakage Rate required by the WDRs, the Discharger shall follow the procedures in the WDRs under "C. Facility Specifications". Tabulated leakage rates shall be included in the semiannual monitoring reports.

**Annual LCRS Testing:** Consistent with the previous MRP, the LCRSs for all Class II Surface Impoundments shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. 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.

**6. Waste Discharge Monitoring (Not Applicable)**

**7. Facility Monitoring**

**a. Waste Management Unit Annual Inspection**

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the surface impoundment and associated equipment. The inspection shall assess freeboard, repair and maintenance needed for liner systems; LCRS/LDS pumps, piping and control systems; drainage control systems; groundwater monitoring wells; unsaturated zone monitoring systems; and shall assess preparedness for winter conditions including but not limited to surface impoundment capacity and erosion and sedimentation control. The Discharger shall take photos of the above items as well as any problem areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.3 of this MRP.

**b. Major Storm Events**

The Discharger shall inspect all precipitation, collection, diversion, and drainage facilities and all waste management unit berms for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problem 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.4 of this MRP.

**c. Rainfall Monitoring**

The Discharger shall monitor and record onsite rainfall data using an onsite rainfall gauge as described in C. Facility Specifications. Data shall be used in establishing the severity of storm events and wet seasons for comparison with design parameters used for waste management unit design and conveyance and drainage design. Daily data and onsite observation shall be used for establishing the need for inspection and repairs after major storm events. Rainfall data shall be reported in the semiannual monitoring reports as required by this MRP under "Reporting".

**d. Water Balance- Waste Exportation**

Any designated waste not discharged to the Class II surface impoundments or removed from the Class II surface impoundments shall be accounted for and reported accordingly. The Discharger shall account for the final disposition of the wastewater by providing documentation that the waste was disposed of in an approved waste management unit including date of removal, gallons removed, and the location of disposal. A copy of each hauling receipt shall be included in the semiannual report.

**B. REPORTING**

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

**Reporting Schedule**

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	<b>1 August, 1 February</b>
B.2	Annual Monitoring Report	31 December	<b>1 February</b>
B.3	Annual Facility Inspection Report	31 October	<b>15 November</b>
B.4	Major Storm Event	Continuous	<b>7 days from damage</b>

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.5	Reporting Financial Assurances Report	31 December	<b>discovery 1 September</b>

### Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2019-0005 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). 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. Data shall also be submitted in a digital format, such as on a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data, monitoring reports, and technical reports into the online Geotracker database as required by Division 3 of Title 23.

The results of **all monitoring** conducted at the site 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.

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 compliance period for each WMU. 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

1. **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:
    - 1) The time of water level measurement;
    - 2) 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;
    - 3) 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;
    - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
    - 5) 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) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
  - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, LCRS leakage, unsaturated zone (including all lysimeters), surface water, and the surface impoundments. 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 1 through 6 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 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 Section J: Response to a Release in the SPRRs for verified exceedances of a concentration limit.
  - g) Tabulated freeboard levels in the Class II surface impoundments with comparison to the freeboard requirement.
  - h) Tabulated leakage rates (in values of gallons per day) into the LCRS or LCRS sump with comparison to the Action Leakage Rate, and a discussion of required response if ALR was exceeded.
  - i) A summary of all waste discharge monitoring required in Section A.6 of this MRP.
  - j) A summary of all Facility Monitoring including onsite rainfall data for the reporting period required in Section A.7 of this MRP.
  - k) A discussion about any solids that were removed from the Class II surface impoundment during the reporting period to regain capacity.
  - l) A tabulated summary of waste export information by date with supporting documentation that reports how much designated waste was diverted from the class II surface impoundments or removed in order to maintain the 2-foot minimum freeboard requirement at all times. The tabulated data should also include by date information on freeboard levels (see B.1.g), waste discharged to the surface impoundments (See B.1.i) and onsite rainfall data (see B.1.j).
2. **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 additional information beyond what is required for semiannual monitoring reports:
- a) All monitoring parameters (collected from monitoring wells, LCRSs, and unsaturated zone devices) shall be tabulated and graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. 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. 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) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
  - 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) For all Class II Surface Impoundments, the results of the annual transmissivity testing of the LCRS, and a comparison to previous results. The 2014 Annual Report shall contain the results for Pond B only.
  - h) Updated concentration limits for each monitoring parameter at each monitoring well based on the new background data set.
3. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection required by Item A.7.a. and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs.
4. **Major Storm Event Reporting:** The Discharger shall notify Central Valley Water Board staff within 24 hours after a storm event of greater than one inch in 24 hours as to the status of freeboard in any Class II surface impoundment. The Discharger shall also notify Central Valley Water Board staff within **7 days** after major storm events of any damage or significant erosion and report any needed repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.7.b of this MRP above for requirements for performing the inspection and conducting the repairs.
5. **Financial Assurances Report:** By **1 September** of each year, the Discharger shall submit a report and supporting documentation to the Central Valley Water Board that reports the balance of both the closure and corrective action funds or the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27 Section 22236. Refer to Financial Assurances Specifications F.1 through F.4 of the WDRs.

## **C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

### **1. Water Quality Protection Standard Report**

For each surface impoundment, the Water Quality Protection Standard shall consist of all COCs listed in Tables 1, 2, and 4, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium. Any proposed changes to the Water Quality Protection Standard other than the annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- 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 and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b) Include a map showing the monitoring points and background monitoring points for the groundwater monitoring program and the unsaturated zone monitoring program. The map shall include the points of compliance in accordance with Title 27, section 20405.
- c) Evaluate the quarterly direction(s) of groundwater movement within all monitored groundwater zone(s).
- d) Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e) Include 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).

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

## **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 the tables in Section A of this MRP for the specified monitored medium.

## **3. Concentration Limits**

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a) By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b) By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

## **4. Retesting Procedures for Confirming Evidence of a Release**

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.43 of the SPRRs, then:

- a) For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.44 of the SPRRs.
- b) For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.45 of the SPRRs.

## **5. Point of Compliance**

The point of compliance for the water standard at each waste management unit for protection of groundwater is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells and Monitoring Point Wells</u>
Pond B	MW-12, MW-17, MW-18, MW-18R, MW-20, MW-20R, MW-21, MW-21R, W-2
Pond C	MW-34
Pond D	MW-35R, MW-36

The point of compliance for the water standard at each waste management unit for the determination of a release to the unsaturated zone are a sufficient number of monitoring points at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that provide the best assurance of the earliest possible detection of a release from the waste management unit. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Lysimeters</u>
Pond C	Pan Lysimeter PL-C
Pond D	Pan Lysimeter PL-D

## 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, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

## 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.

I, PATRICK PULUPA, Executive Officer, do hereby certify the forgoing is a full, true and correct copy of the Monitoring and Reporting Program issued by the California Regional Water Quality Control Board, Central Valley Region, on 8 February 2019.

*ORIGINAL SIGNED BY*

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PATRICK PULUPA, Executive Officer

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS  
FOR  
WASTE DISCHARGE REQUIREMENTS  
FOR  
INDUSTRIAL FACILITIES REGULATED BY TITLE 27  
(Title 27, § 20005 et seq.)

April 2016

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## **A. APPLICABILITY**

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to Class II surface impoundments, waste piles, and land treatment units that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

## **B. TERMS AND CONDITIONS**

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:

- a. Violation of any term or condition contained in this Order;
  - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
  - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
  - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
- a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
  - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
  - c. A change in the type of waste being accepted for disposal; or
  - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].
5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is

made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].

8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

### **C. STANDARD PROHIBITIONS**

1. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
  - a. require a higher level of containment than provided by the unit; or
  - b. are 'restricted wastes'; or
  - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].
2. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed waste management unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited, except within the treatment zone at a land treatment unit.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

### **D. STANDARD DISCHARGE SPECIFICATIONS**

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
4. The discharge shall remain within the designated disposal area at all times.
5. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

#### **E. STANDARD FACILITY SPECIFICATIONS**

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
4. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
6. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
7. The Discharger shall maintain the depth of the fluid in the sump of each waste management unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).

8. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
9. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.

#### **F. STANDARD CONSTRUCTION SPECIFICATIONS**

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new Class II waste management units that include the following:
  - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, and access to the LCRS for required annual testing.
  - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
  - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
  - d. Information about the seismic design of the proposed new waste management unit (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
  - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
  - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, sections 21760(b) and 20375(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have

been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].

4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].
5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the waste management unit foundation, final slopes, and containment systems under both static and dynamic conditions throughout the life of the unit [Title 27, § 21750(f)(5)].
10. New Class II Units, other than LTUs and expansions of existing Class II units, shall have a 200 foot setback from any known Holocene fault. [Title 27, § 20250(d)].
11. Liners shall be designed and constructed to contain the fluid, including waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].
14. A test pad for each barrier layer and any final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
16. The Discharger shall propose an electronic leak location survey of the top liner for any new waste management unit in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
17. Leachate collection and removal systems are required for Class II surface impoundments [Title 27, § 20340(a)].
18. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
19. Leachate collection and removal systems shall be designed and operated to function without clogging through the life of the waste management unit.
20. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].
21. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
22. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
23. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.

24. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new Class II waste management unit, construction of a final cover (for units closed as a landfill), or any other construction that requires Central Valley Water Board staff approval under this Order.
25. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new Class II waste management unit. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
26. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.

#### **G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS**

1. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, future land use, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
2. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
3. The final cover of waste management units closed as a landfill shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
4. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
5. All final cover designs shall include a minimum 1-foot thick erosion resistant vegetative layer or a mechanically erosion-resistant layer [Title 27, § 21090(a)(3)(A)(1 & 2)].

6. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
7. The Discharger shall design storm water conveyance systems for Class II units that are closed as a landfill for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. Construction or repair of a final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
9. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that units that are closed as a landfill shall be maintained in accordance with an approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
10. The post-closure maintenance period for units closed as a landfill shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].
11. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, and any areas damaged by equipment operations [Title 27, § 21090(a)(4)(B)].
12. The Discharger shall repair any cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

#### **H. STANDARD FINANCIAL ASSURANCE PROVISIONS**

1. The Discharger shall establish an irrevocable fund (or provide other means) for closure to ensure closure of each Class II unit in accordance with an approved closure plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b) and § 22222].

#### **I. STANDARD MONITORING SPECIFICATIONS**

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that

monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new Class II waste management unit shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
  - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures;
  - d. Sample quality assurance/quality control (QA/QC) procedures;
  - e. Chain of Custody control; and
  - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.
9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively

interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)].
19. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
20. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].

21. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
22. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
23. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
24. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405).
25. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
26. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
27. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].
28. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
29. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].

30. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
31. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
32. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
33. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
34. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 20415(e)(13)].
35. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
36. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
37. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for determining "measurably significant" (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].
38. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether

there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.

39. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
40. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger's technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX, Article 19 to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
41. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).
42. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
43. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the

Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:

- a. Standard Monitoring Specification I.44 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
- b. Standard Monitoring Specification I.45 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

**44. Verification Procedure for Analytes Detected in Less than 10% of**

**Background Samples.** The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
  - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
  - 2) The data contains one or more analyte that equals or exceeds its PQL.
- b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:
  - 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.44.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
  - 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more

analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

- a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
- b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
- c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

**45. Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.**  
The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].
- b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].
  - 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.45.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(8)(E)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests

(i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.45.b.1, above and shall:
  - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
  - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
  - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

46. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

## J. RESPONSE TO A RELEASE

1. **Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.44 or I.45, then the Discharger shall:
  - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
  - b. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)].
  - c. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].
  - d. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the

waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].

- e. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.b is approved (the date is it established), the Discharger shall complete and submit the following:
  - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
  - ii) **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
  - iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

## K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
  - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
  - b. For a partnership or sole proprietorship: by a general partner or the proprietor.

- c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
  - d. A duly authorized representative of a person designated in a, b or c above if:
    - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
    - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
    - 3) The written authorization is submitted to the Central Valley Water Board.
  - e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
  4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and leachate generated by discharged waste during the active life, closure, and any post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
  5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger’s violations of this Order.
  6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost

estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].

7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

## **L. STORM WATER PROVISIONS**

1. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

2. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
3. Precipitation on Class II waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
4. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
  - a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit.
  - b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities.
  - c. Prevent surface erosion through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.
  - d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
  - e. Take into account:
    - i) For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.
    - ii) For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.
    - iii) The possible effects of the waste management unit's drainage pattern on and by the regional watershed.
    - iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility.
  - f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

5. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].
6. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
7. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
8. Any drainage layer in a final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS  
FOR  
WASTE DISCHARGE REQUIREMENTS  
FOR  
NONHAZARDOUS SOLID WASTE DISCHARGES  
REGULATED BY SUBTITLE D AND/OR TITLE 27  
(40 C.F.R. section 258 and Title 27, § 20005 et seq.)

December 2015

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## **A. APPLICABILITY**

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

## **B. TERMS AND CONDITIONS**

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or

other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
  - a. Violation of any term or condition contained in this Order;
  - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
  - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
  - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
  - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
  - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
  - c. A change in the type of waste being accepted for disposal; or
  - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].
8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

### **C. STANDARD PROHIBITIONS**

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:
  - a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].
  - b. Leachate and/or landfill gas condensate that is returned to the composite-lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].
2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
  - a. require a higher level of containment than provided by the unit; or
  - b. are 'restricted wastes'; or
  - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].

3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

#### **D. STANDARD DISCHARGE SPECIFICATIONS**

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].
3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].
4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.
5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].

6. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
7. The discharge shall remain within the designated disposal area at all times.
8. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

#### **E. STANDARD FACILITY SPECIFICATIONS**

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].
4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].
5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
6. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.
9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (Industrial General Permit) or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

## F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new landfill modules that include the following:
  - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.
  - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
  - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
  - d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
  - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
  - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].
4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].
10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].
11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].
13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].
16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].
19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].
20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.
22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.
26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.
27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.
29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

#### **G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS**

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least **two years** prior to the anticipated date of closure [Title 27, § 21780(d)(1)].

2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].
3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within **one year** of receipt of most recent waste if additional capacity remains [40 C.F.R. § 258.60(f)].
4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].
5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.
6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40 C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.
7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:
  - a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];
  - b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];
  - c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and
  - d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].

8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].
13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].
14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].
15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].
16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment

structures, and monitoring facilities can be determined throughout the post-closure maintenance period [Title 27, § 20950(d)].

19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].
20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].
22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). Every **five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].
23. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

26. The Discharger shall conduct a periodic leak search to monitor of the integrity of the final cover in accordance with the schedule in the approved final post-closure maintenance plan [Title 27, § 21090(a)(4)(A)].
27. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, areas damaged by equipment operations, and localized areas identified in the required five-year iso-settlement survey [Title 27, § 21090(a)(4)(B)].
28. The Discharger shall repair the cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].
29. Throughout the post-closure maintenance period, the Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the final cover as necessary to correct the effects of settlement and other adverse factors, continue to operate the LCRS as long as leachate is generated and detected, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, § 21090(c)].
30. Post-closure maintenance shall be conducted for a minimum period of **30 years** or until the waste no longer poses a threat to environmental quality, whichever is greater [Title 27, § 21180(a) and Title 27, § 21900(a)].

#### **H. STANDARD FINANCIAL ASSURANCE PROVISIONS**

1. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified unit in accordance with an approved closure and post-closure maintenance plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b), § 22221, and § 22222].

#### **I. STANDARD MONITORING SPECIFICATIONS**

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4) and 40 C.F.R. § 258.53(b)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
  - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures;
  - d. Sample quality assurance/quality control (QA/QC) procedures;
  - e. Chain of Custody control; and
  - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that

ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.
19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].
20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design

specifications throughout the life of the monitoring program [40 C.F.R. § 258.51(c)(2)]. Monitoring devices that cannot be operated and maintained to perform to design specifications shall be replaced after review and approval of a report (i.e., work plan) for the proposed replacement devices.

21. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
22. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].
23. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
24. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
25. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
26. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405].
27. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
28. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
29. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].

30. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
31. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].
32. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
33. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
34. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
35. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
36. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 21415(e)(13)].
37. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
38. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
39. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for

determining “measurably significant” (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].

40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.
41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
42. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger’s technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a “trace” detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory’s concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of “ties”.
43. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall

be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).

44. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:
- a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
  - b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.
46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples.** The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
    - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
    - 2) The data contains one or more analyte that equals or exceeds its PQL.

b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:
  - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
  - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
  - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

47. **Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.47.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.47.b.1, above and shall:
  - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
  - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
  - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

48. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately

verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

## J. RESPONSE TO A RELEASE

1. **Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:
  - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
  - b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
  - c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).
  - d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed

description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

- e. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].
- f. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.c is approved (the date is it established), the Discharger shall complete and submit the following:
  - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
  - ii) **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
  - iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

- g. The Discharger shall (for releases from MSW landfill units) discuss the results of the updated engineering feasibility study, prior to the final selection of a remedy, in a public meeting with interested and affected parties [40 C.F.R. § 258.56(d)].

## K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
  - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
  - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
  - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
  - d. A duly authorized representative of a person designated in a, b or c above if:
    - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
    - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
    - 3) The written authorization is submitted to the Central Valley Water Board.

- e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger’s violations of this Order.
6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].
7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or

operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.

9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

#### **L. STORM WATER PROVISIONS**

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].
2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].
3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].
5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding,

infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

6. Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
7. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
  - a. accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit:
  - b. effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities;
  - c. prevent surface erosion;
  - d. control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;
  - e. take into account:
    - i) for closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern;
    - ii) for operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time;
    - iii) the possible effects of the waste management unit's drainage pattern on and by the regional watershed;
    - iv) the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and
  - f. preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.
8. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].

9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].