

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0012

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF KERN
FOR
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
MCFARLAND-DELANO SANITARY LANDFILL
KERN COUNTY

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

1. The County of Kern (hereinafter Discharger) owns and maintains the McFarland-Delano Sanitary Landfill (facility) about one and a half miles southwest of Delano, in Section 23, T25S, R25E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in the California Water Code, Section 13000 et seq.; California Code of Regulations, Title 27 ("Title 27"), Section 20005 et seq.; and Title 40, Code of Federal Regulations (40 CFR) Section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The facility is on a 106-acre property on Stradley Avenue. The facility contains one closed unlined 37-acre waste management unit (Unit) as shown in Attachment B, which is incorporated herein and made part of this Order by reference. An active landfill gas extraction system with a flare operates at the facility. The facility is comprised of Assessor's Parcel Numbers (APN) 521-040-02, 521-040-11, 521-060-01, 521-080-03, 521-080-05.
3. On 14 June 2001, the Central Valley Water Board adopted Order R5-01-159 in which the Unit was classified as a Class III unit for the discharge of municipal solid waste. This Order continues to classify the landfill unit as a Class III unit in accordance with Title 27.
4. Cleanup and Abatement Order 98-731 (CAO) was issued on 14 October 1998. The CAO required the Discharger to install an adequate detection monitoring program, complete an evaluation monitoring program, and implement a corrective action program that complies with the provisions of Title 27. The CAO also required the Discharger to submit assurances of financial responsibility for the initiation and completion of corrective action for all reasonable and foreseeable releases.

5. The Discharger has complied with each item in the CAO.
6. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations Section 258, and are hereafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. Section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.
7. This Order implements the applicable regulations for discharges of solid 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 Standard Provisions and Reporting Requirements (SPRRs) dated January 2012, which are attached hereto and made part of this Order by reference. Monitoring and reporting requirements are included in Monitoring and Reporting Program (MRP) R5-2013-0012 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills 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.
8. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, Section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

SITE DESCRIPTION

9. The waste management facility is located in the southeastern San Joaquin Valley. The San Joaquin Valley is an asymmetrical structural trough that has resulted in a depositional basin containing up to six vertical miles of sediment eroded from the adjacent mountains. The uppermost sediments in the vicinity of the facility are Holocene to Pliocene age unconsolidated flood basin, lacustrine, and alluvial deposits. These deposits are laterally and vertically discontinuous mixes of gravel, sand, silt, and clay.

10. The closest Holocene faults are approximately 11 miles to the east. Recorded magnitudes of seismic events along these faults are less than 4.0 on the Richter scale. The maximum credible acceleration for the site is 0.05 g.
11. Land uses within 1 mile of the facility include a livestock feed lot, cultivated crops, and vacant land.
12. There are approximately 23 domestic, industrial, or agricultural groundwater supply wells within one mile of the site. No surface springs or other sources of groundwater supply have been observed.
13. The measured hydraulic conductivity of the native soils underlying the Unit, as measured in laboratory tests, ranges between 1×10^{-4} and 2×10^{-6} centimeters per second (cm/sec).
14. The facility receives an average of 6.8 inches of precipitation per year and the mean pan evaporation is 57.7 inches per year as measured at the CIMIS McFarland/Kern Farms Station.
15. The 100-year, 24-hour precipitation event for the facility is estimated to be 2.5 inches, based on the *Kern County Hydrology Manual* dated 1992.
16. The waste management facility is within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060075 0125B, dated 29 September 1986.
17. A storm water retention basin is located in the southwest portion of the facility as shown on Attachment B. The storm water retention basin captures runoff from the facility and retains it on-site.

WASTE AND UNIT CLASSIFICATION

18. The Discharger previously disposed of municipal solid wastes, which are defined in §20164 of Title 27. Waste discharge ceased in July of 1992.
19. The site characteristics where the Unit is located (see Finding No. 13) do not meet the siting criteria for a new Class III landfill contained in §20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of wastes as described in Finding No. 18, without the construction of additional waste containment features in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution 93-62.

SURFACE WATER AND GROUNDWATER CONDITIONS

20. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
21. Surface drainage is northwest toward an unnamed creek in the North Kern Hydrologic Area (558.80) of the Tulare Lake Hydrologic Basin. Surface waters in the North Kern Hydrologic Area are designated as Valley Floor Waters in the Basin Plan.
22. The designated beneficial uses of Valley Floor Waters, as specified in the Basin Plan, are agricultural supply, industrial service and process supply, water contact and non-contact water recreation, warm fresh water habitat, preservation of rare, threatened and endangered species, and groundwater recharge.
23. The first encountered groundwater is about 60 to 78 feet below the native ground surface. Groundwater elevations range from 224 feet MSL to 233 feet MSL. The groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as four feet.
24. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 546 and 3,000 micromhos/cm, with total dissolved solids (TDS) ranging between 370 and 2,900 milligrams per liter (mg/L).
25. The direction of groundwater flow ranges from east to east-southeast. The average groundwater gradient is approximately 0.0025 feet per foot and the average groundwater velocity is approximately 34 feet per year.
26. The facility is in the Kern County Basin Hydrologic Unit, Detailed Analysis Unit (DAU) 256. The designated beneficial uses of the groundwater, as specified in the Basin Plan for DAU 256, are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

27. The existing groundwater monitoring network for the landfill consists of background monitoring wells MD1-11, MD1-26, and MD1-27; detection monitoring wells MD1-22, MD1-23, MD1-24, and MD1-25; and evaluation monitoring wells MD3-01 through MD3-05 as shown on Attachment B.
28. The Discharger's detection monitoring program for groundwater at the landfill satisfies the requirements contained in Title 27.

29. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, Sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, Sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
30. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, Section 20080(a)(1). Water Code Section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
31. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.
32. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern 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).
33. The Discharger submitted a Water Quality Protection Standard (WQPS) report in 2004. The WQPS report proposed statistical data analysis methods to calculate concentration

limits for each monitored constituent in accordance with Title 27. The WQPS and approved data evaluation methods are included in MRP R5-2013-0012.

34. The background groundwater quality at the facility varies with time. This Order requires the WQPS to be updated, at a minimum, every five years; or as required by natural changes in background water quality.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

35. Volatile organic compounds (VOCs) that are not naturally occurring have been detected in groundwater along the point of compliance. The VOCs consistently detected in groundwater are benzene, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethane, cis-1,2-dichloroethene, vinyl chloride, dichlorodifluoromethane (Freon 12), and trichlorofluoromethane (Freon 11).
36. The Discharger submitted an Evaluation Monitoring Program Report on 2 April 2004. The nature of the release was demonstrated to be volatile organic compounds that originated from landfill gas. The extent of the release plume is about 650 feet to the southeast of the Unit. The vertical extent is limited to 100 feet below ground surface.
37. On 20 August 2007, the Discharger submitted an Engineering Feasibility Study in accordance with Section 20425(c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is monitored natural attenuation with landfill gas extraction as a source control.

LANDFILL CLOSURE

38. The Discharger completed construction of a prescriptive standard final cover system in October 1995. The final cover consists of the following: a two-foot thick soil foundation layer; a one-foot thick barrier layer of clay compacted to a maximum hydraulic conductivity of 1×10^{-6} centimeters per second; and a one-foot thick vegetated soil layer.
39. The soil foundation layer contains imported soil contaminated with lead that was excavated from the Duncan Facility (Site #1), Duncan Enterprises, 5673 East Shields Avenue, Fresno, and blended with clean soil.
40. Construction of an active landfill gas extraction system was completed in January 2000. The system has been continuously operated since its installation.

LANDFILL POST-CLOSURE MAINTENANCE

41. The *Final Closure and Post-Closure Maintenance Plan* includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire facility. Inspection and

maintenance will include the condition of the final cover, drainage features, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to water quality, whichever is greater.

42. Once every five years during the post-closure maintenance period, iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years, pursuant to Title 27, Section 21090(e)(2). The most recent iso-settlement map for the facility was submitted in November 2010.
43. The completed final cover will be monitored for performance and for damage or defects by visual inspection and by monitoring surface emissions pursuant to California Code of Regulations, Title 27, Section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure Construction Quality Assurance Plan.

FINANCIAL ASSURANCES

44. Title 27, Sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The *Final Closure and Post-Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2012 dollars is \$1,571,900. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation.
45. Title 27, Section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger's cost estimate for corrective action of all known or reasonably foreseeable releases, adjusted for inflation, is \$237,760. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation.

CEQA AND OTHER CONSIDERATIONS

46. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, Section 15301.
47. This order implements:
 - a. *The Water Quality Control Plan for the Tulare Lake Basin, Second Edition*;
 - b. The prescriptive standards and performance goals of California Code of Regulations, Title 27, Section 20005 et seq., effective 18 July 1997, and subsequent revisions;

- c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
 - d. The applicable provisions of Title 40 C.F.R. Section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.
48. Based on the threat and complexity of the discharge, the facility is determined to be classified 2B as defined below:
- a. Category 2 threat to water quality, defined as, "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. Category B complexity, defined as, "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."
49. Water Code Section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."
50. The technical reports required by this Order and the attached "Monitoring and Reporting Program R5-2013-0012 are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

51. 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.
52. 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.

53. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

54. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code Section 13320 and California Code of Regulations, Title 23, Sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code Sections 13263 and 13267, that Order R5-01-159 is rescinded except for purposes of enforcement, and that the County of Kern, its 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 any additional waste at this facility is prohibited.
2. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012.

D. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Finding No. 44, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding No. 45. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
3. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012.

E. 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 MRP R5-2013-0012 and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012.
2. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP R5-2013-0012, and the SPRRs dated January 2012.
3. The concentrations of the constituents of concern 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 landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP R5-2013-0012.

4. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-2013-0012 and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012.
5. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012.

F. CORRECTIVE ACTION SPECIFICATIONS

1. The Discharger shall implement a corrective action program pursuant to Section 20430 of Title 27 to remediate the release of waste constituents from the Unit and to ensure compliance with the WQPS. Corrective action shall be performed in accordance with a corrective action plan approved by the Executive Officer.
2. The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. Sample collection and analysis shall coincide with Groundwater Detection Monitoring D.1 of MRP R5-2013-0012.
3. Corrective action measures may be terminated when the Discharger demonstrates to the satisfaction of the RWQCB that the concentrations of all COCs are reduced to levels below their respective concentration limits throughout the entire zone affected by the release.
4. After suspending the corrective action measures, the Discharger shall demonstrate that the concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least three consecutive years, beginning immediately after the suspension of corrective action measures.
5. Upon completion of corrective action, the Discharger shall certify, in writing, that corrective action has been completed in compliance with Title 27 and the WDRs. The certification shall be signed by a California Registered Civil Engineer or Professional Geologist.
6. If either the Discharger or the Executive Officer determines that the corrective action program is not adequate (i.e. does not satisfy the provisions of Section 20430 of Title 27), the Discharger shall, within 90 days of making the determination, or of receiving written notification from the Central Valley Water Board of such determination, submit an amended RWD to make appropriate changes to the program. The amended RWD shall include the following:

- a. A discussion as to why existing corrective action measures have been ineffective or insufficient.
- b. A revised evaluation monitoring plan if necessary to further assess the nature and extent of the release.
- c. A discussion of corrective action needs and options.
- d. Proposed additional corrective action measures, as necessary, for:
 - 1) Source control,
 - 2) Groundwater cleanup, and/or
 - 3) Landfill gas control.
- e. A plan to monitor the progress of corrective action measures consistent with MRP R5-2013-0012.
- f. Cost estimates for implementing additional corrective action, including monitoring.
- g. An implementation schedule.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the offices of the Kern County Waste Management Department, including the MRP R5-2013-0012 and the SPRRs dated January 2012, and make it available at all times to facility maintenance personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP R5-2013-0012, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated January 2012.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.

6. All reports required by this Order shall be submitted pursuant to Water Code Section 13267.
7. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Financial Assurance Review	
1. Annual Review of Financial Assurance for closure and post-closure maintenance (see Financial Assurance Specification D.1).	1 June each year
2. Annual Review of Financial Assurance for initiating and completing corrective action (see Financial Assurance Specification D.2).	1 June each year

8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated January 2012.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that 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 1 February 2013.

Original signed by

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0012
FOR
COUNTY OF KERN
FOR
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
MCFARLAND-DELANO SANITARY LANDFILL
KERN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code Section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, Section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order R5-2013-0012, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall 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 and the Monitoring Specifications in Section E of the WDRs. All monitoring shall be conducted in accordance with the approved August 2009 *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection 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, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through IV.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, are approved by the Executive Officer, and are incorporated into the Sample Collection and Analysis Plan.

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	Leachate Seep Monitoring
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, Sections 20415 and 20420. 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 detection monitoring system meets the applicable requirements of Title 27. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>
MD1-11	Background
MD1-26	Background
MD1-27	Background
MD1-31	Detection
MD1-32	Detection
MD1-33	Detection
MD3-02	Corrective Action
MD3-06	Corrective Action

Groundwater samples shall be collected from the background wells, detection monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, including the times of expected highest and lowest elevations of the water levels in the wells, the Discharger shall measure the groundwater elevation in each well, 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 pursuant to Title 27, Section 20415(e)(15). The results shall be reported semiannually.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table IV every five years. Five-year COCs were last monitored in 2008 and shall be monitored again in **2013**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring

The facility was permitted and in operation before 1 July 1991; therefore, it qualifies for exemption of unsaturated zone monitoring pursuant to Section 20415(d) of Title 27. The Discharger demonstrated that there is no monitoring device or method designed to operate under the existing subsurface conditions and installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures. Unsaturated zone monitoring is not required.

3. Leachate Seep Monitoring

Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table II upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

4. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than 30 September, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any 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.4 of this MRP.

b. **Major Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events (i.e., a storm that causes continuous runoff for at least one hour). 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.5 of this MRP.

c. **Five-Year Iso-Settlement Survey for Closed Units**

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of the evapotranspirative final cover. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, Section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP.

d. **Standard Observations**

The Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard observations shall be conducted monthly

The Standard Observations shall include:

1) For the landfill units:

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

2) Along the perimeter of the landfill units:

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

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

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, Section 20430 and this MRP. Groundwater monitoring wells that are in a corrective action monitoring program shall be monitored in accordance with the groundwater monitoring requirements in parts A.1 and A.2 of this MRP.

Corrective Action monitoring data analysis shall include the following:

- a. Nature and Extent
 - 1) Comparisons with concentration limit to identify any new or previously undetected constituents at a monitoring point.
- b. Effectiveness of Corrective Action
 - 1) Preparation of time series plots for representative waste constituents.
 - 2) Trend analysis for each waste constituent.
 - 3) The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Report, as specified under reporting Section B below. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in Section 20430(h) of Title 27.

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 September, 31 March	30 November, 31 May
B.2	Annual Monitoring Report	31 December	30 April
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility	31 October	15 November

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
	Inspection Report		
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	30 April 2015 and Every Five Years Thereafter
B.7	Financial Assurances Report	31 December	1 June

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 R5-2013-0012 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 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 and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

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 life of the facility including the post-closure maintenance period. Such records shall be legible and shall show the following for each sample:

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

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **30 November** and **31 May**. 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, unsaturated zone, and leachate. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I and II unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit.
 - g) An evaluation of the effectiveness of the run-off/run-on control facilities. Include information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
 - h) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
 - i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.
2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **30 April** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was

performed, than these parameters shall also be graphically presented. 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) Every fifth year, updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - h) A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.5.
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
- a) A map showing the location(s) of seepage;
 - b) An estimate of the flow rate;
 - c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);

- d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4 of this MRP, above.
 5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of damage or erosion that could impair the integrity of the waste containment facility; and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.4.b of this MRP, above.
 6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, Section 21090(e). Refer to Section A.4.c of this MRP, above.
 7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications D.1 through D.3 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, 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.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water

Quality Protection Standard other than 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 surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, Section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost 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.

The Discharger proposed the methods for calculating concentration limits in the March 2004 *Water Quality Protection Standard Report Update*. The limits are calculated using interwell tolerance limits at 95% confidence and 95% coverage based on background data from background monitoring wells MD I-II, MD1-26, and MD1-27.

The Water Quality Protection Standard shall be updated, at a minimum, every five years; or as required by natural changes in background water quality.

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 Tables I through III for the specified monitored medium.

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, Sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I and II for the specified monitored medium, and Table IV. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2008 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2013**.

4. 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).

5. 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.45 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.46 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.47 of the SPRRs.

6. Point of Compliance

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

7. 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].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, at which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium 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 whether the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260, short list, see Table III)	ug/L ²	Semiannual	Semiannual
5-Year Constituents of Concern (see Table IV)			
Total Organic Carbon	mg/L	5 years	30 April 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141)	ug/L	5 years	" "

¹ Milligrams per liter
² Micrograms per liter

TABLE II
LEACHATE SEEP MONITORING¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260, short list, see Table III)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table IV)			
Total Organic Carbon	mg/L	5 years	30 April 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141)	ug/L	5 years	" "

¹ Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

TABLE III

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)

TABLE III
MONITORING PARAMETERS FOR DETECTION MONITORING
Continued

Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE IV
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	200.7
Antimony	200.8
Barium	200.7
Beryllium	200.8
Cadmium	200.7
Chromium	200.7
Cobalt	200.7
Copper	200.7
Silver	200.7
Tin	200.7
Vanadium	200.8
Zinc	200.7
Iron	200.7
Manganese	200.7
Arsenic	200.8
Lead	200.8
Mercury	200.8
Nickel	200.8
Selenium	SM 3114 B
Thallium	200.8
Cyanide	SM 4500-CN E
Sulfide	SM 4500-S E (18 th edition)

Volatile Organic Compounds, extended list:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)

TABLE IV

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE IV

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)

TABLE IV

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE IV

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE IV
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151

2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141

Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0012
COUNTY OF KERN
FOR POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
MCFARLAND-DELANO SANITARY LANDFILL
KERN COUNTY

The County of Kern (hereinafter Discharger) owns and maintains the McFarland-Delano Sanitary Landfill (facility) about one and a half miles southwest of Delano. The 106-acre facility contains one closed, unlined 37-acre waste management unit.

The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order R5-01-159 on 14 June 2001, which classified the waste management unit (Unit) as a Class III unit for the discharge of municipal solid waste as defined in Title 27, California Code of Regulations, Section 20005 et seq. (hereafter Title 27). The proposed Order revises the existing WDRs to regulate post-closure maintenance and to implement a corrective action program.

Cleanup and Abatement Order 98-731 (CAO) was issued on 14 October 1998. The CAO required the Discharger to install an adequate detection monitoring program, complete an evaluation monitoring program, and implement a corrective action program that complies with the provisions of Title 27. The CAO also required the Discharger to submit assurances of financial responsibility for the initiation and completion of corrective action for all reasonable and foreseeable releases. The Discharger has complied with each item in the CAO. The proposed Order rescinds the CAO.

The waste management facility is located in the southeastern San Joaquin Valley. The San Joaquin Valley is an asymmetrical structural trough that has resulted in a depositional basin containing up to six vertical miles of sediment eroded from the adjacent mountains. The uppermost sediments in the vicinity of the facility are Holocene to Pliocene age unconsolidated flood basin, lacustrine, and alluvial deposits. These deposits are laterally and vertically discontinuous mixes of gravel, sand, silt, and clay.

The depth to first encountered groundwater ranges from about 60 feet to 78 feet below the native ground surface. Groundwater elevations range from about 224 feet above mean sea level to 233 feet above mean sea level. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity ranging between 546 and 3,000 micromhos/centimeter, with total dissolved solids ranging between 370 and 2,900 milligrams per liter. The direction of groundwater flow ranges from east to east-southeast. The

average groundwater gradient is approximately 0.0025 feet per foot and the average groundwater velocity is approximately 34 feet per year.

Volatile organic compounds (VOCs) that are not naturally occurring have been detected in groundwater along the point of compliance. The VOCs consistently detected in groundwater are benzene, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethane, cis-1,2-dichloroethene, vinyl chloride, dichlorodifluoromethane (Freon 12), and trichlorofluoromethane (Freon 11).

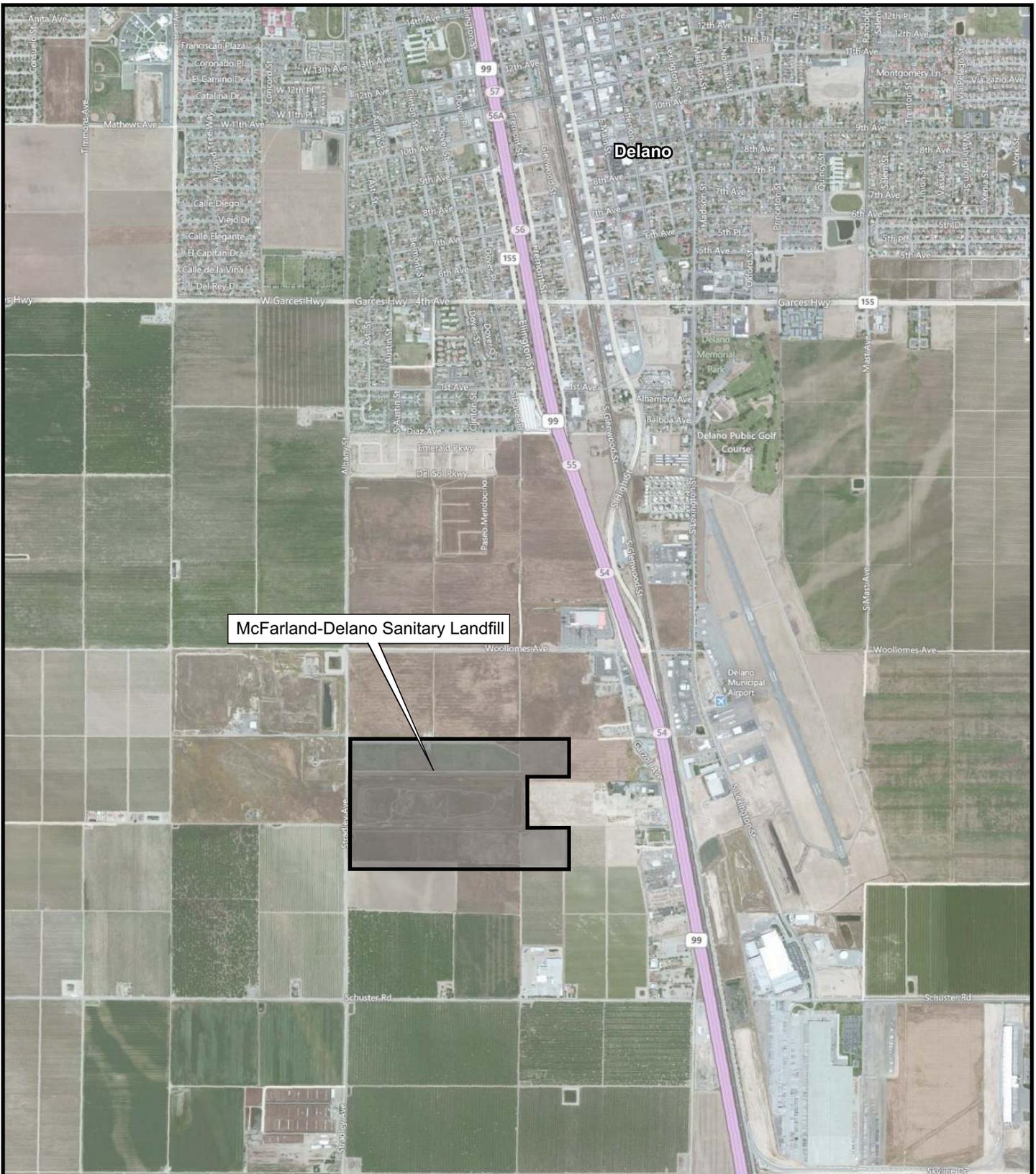
The Discharger submitted an Evaluation Monitoring Program Report on 2 April 2004. The nature of the release of waste constituents from the waste management unit is associated with landfill gas migration. The extent of the release plume is about 650 feet to the southeast of the Unit. The vertical extent is limited to 100 feet below ground surface.

The Discharger completed an Engineering Feasibility Study in accordance with Section 20425(c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is landfill gas extraction and monitored natural attenuation.

The Discharger completed construction of a prescriptive standard final cover system in October 1995. The final cover consists of the following: a two-foot thick soil foundation layer; a one-foot thick barrier layer of clay compacted to a maximum hydraulic conductivity of 1×10^{-6} centimeters per second; and a one-foot thick vegetated soil layer. Construction of an active landfill gas extraction system was completed in January 2000. The system has been continuously operated since its installation.

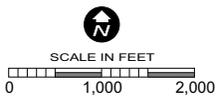
The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, section 15301.

This order requires full containment of wastes and does not permit degradation of surface water or groundwater. Further antidegradation analysis is therefore not needed. The discharge is consistent with the antidegradation provisions of State Water Resource Control Board Resolution 68-16.



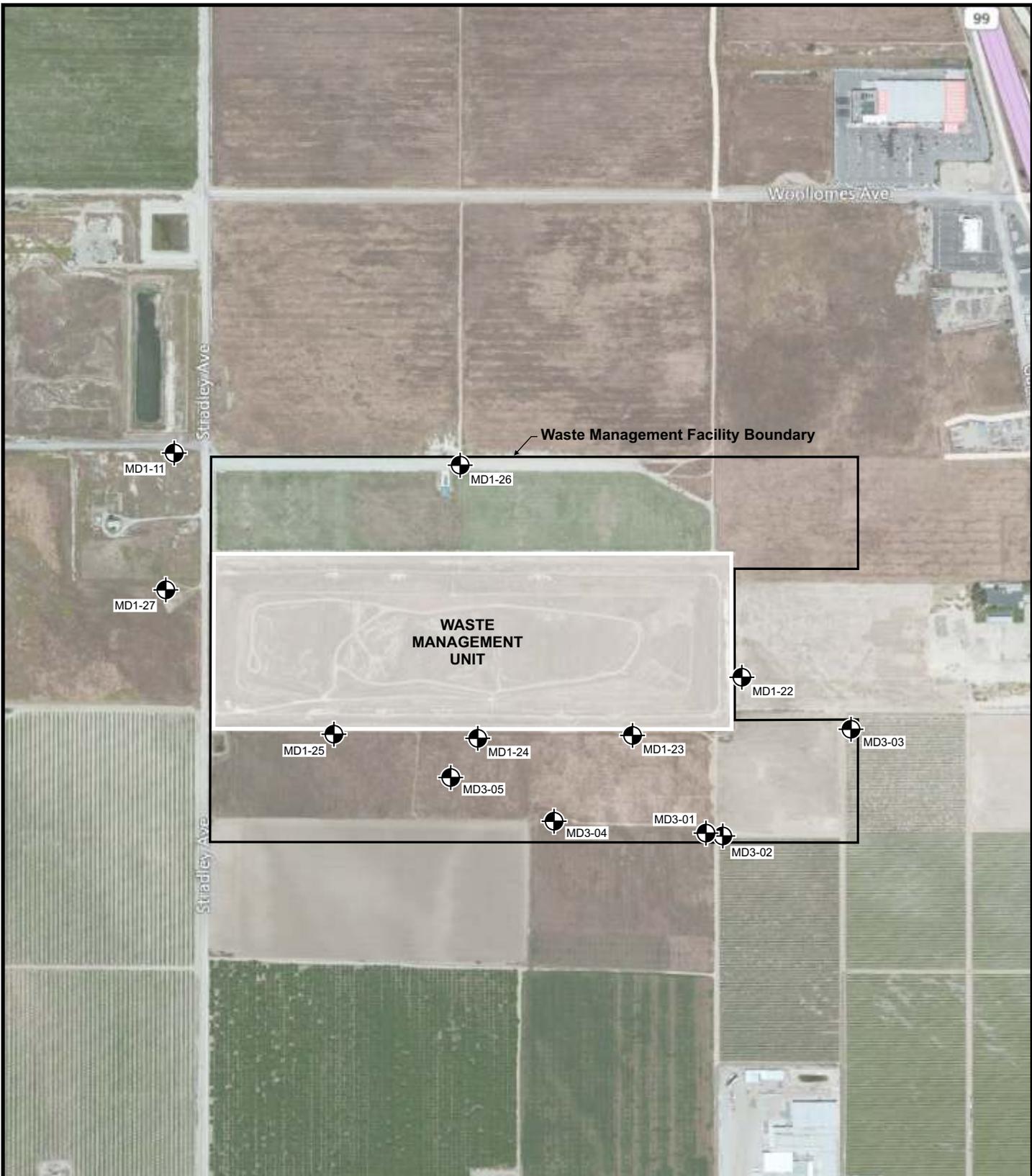
McFarland-Delano Sanitary Landfill

Map Source:
 ESRI's ArcGIS Online Premium Services
 Section 23, T25S, R25E, MDB&M



LOCATION MAP
 ORDER R5-2013-0012
 WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF KERN
 FOR
 POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
 MCFARLAND-DELANO SANITARY LANDFILL
 KERN COUNTY

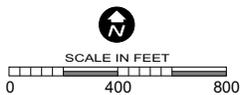
ATTACHMENT A



Explanation

 Groundwater Monitoring Well

Map Source:
 ESRI's ArcGIS Online Premium Services
 Section 23, T25S, R25E, MDB&M



SITE MAP

ORDER R5-2013-0012
 WASTE DISCHARGE REQUIREMENTS
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