

**California Regional Water Quality Control Board
Central Valley Region
Board Meeting – 18 and 19 February 2016**

**Response To Written Comments For
Tentative Waste Discharge Requirements For
County of Sacramento
Department of Waste Management and Recycling
Kiefer Landfill, Class III Landfills
Construction, Operation, Closure,
Post-Closure Maintenance and Corrective Action
Sacramento County**

At a public hearing scheduled for 18 and 19 February 2016, the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) will consider adoption of Waste Discharge Requirements (WDRs) for discharges from the County of Sacramento, Municipal Services Agency, Department of Waste Management and Recycling (DWMR or Discharger), Kiefer Landfill (facility).

This document contains responses to written comments received from interested parties regarding the tentative WDRs. Written comments from interested parties were required by public notice to be received by the Central Valley Water Board by 5 January 2016 to receive consideration. The Discharger was the only interested party to submit comments.

Written comments from the Discharger are summarized below, followed by the responses of Central Valley Water Board staff. The Discharger's comment letter included a supporting attachment letter with comments from Brown and Caldwell. The three Brown and Caldwell's comments detailing topics different than the Discharger comments are also summarized with Central Valley Water Board staff responses. Based on the comments, Central Valley Water Board staff revised the tentative WDRs and made minor changes to correct typographical errors. Additionally, Central Valley Water Board staff included added some clarifying language, which is detailed below the comment section below.

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT (DISCHARGER) COMMENTS

On 5 January 2016, the Discharger provided comments regarding the tentative WDRs and Monitoring and Reporting Program. These comments are provided below, along with Central Valley Water Board staff's responses.

COMMENTS ON WDR FINDINGS

Comment #1: WDR Finding 4.a (Page 2): "Implementation of an engineered alternative, evapotranspirative, final cover over the lined areas of the landfill following submittal the evapotranspirative final cover demonstration results and written Executive Officer approval."

PROPOSED REVISION: Delete text.

REASON: Implementation of an engineered alternative, evapotranspirative (ET), final cover over lined areas of the landfill is not covered in the Report of Waste Discharge / Joint Technical Document. Consistent with Finding 88, DWMR is collecting monitoring data from the existing M-1 final ET cover, and will evaluate whether an ET cover could be used over composite lined areas in the future.

Response: Staff incorporated the requested change.

Comment #2: WDR Finding 30 (Page 9): "... The proposed expansion area of the landfill's Sedimentation Basin..."

PROPOSED REVISION: Revise language to read, "... The creation of the proposed Sedimentation Basin..."

REASON: Revision more accurately reflects the context of the sentence.

Response: Staff incorporated the requested change.

Comment #3: WDR Finding 41 (Page 11): Well MW-6A1 listed as Corrective Action.

PROPOSED REVISION: Change MW-6A1 to Detection.

REASON: DWMR believes that sulfate impact at this well is not significant enough to move this well to Corrective Action without further data (ref. Section 3.3.2 of semiannual reports).

Response: Staff incorporated the requested change.

Comment #4: WDR Finding 41 (Page 12): Well MW-37C.

PROPOSED REVISION: For MW-37C, under the *Zone* column, add C.

REASON: Typographical correction.

Response: Staff incorporated the requested change.

Comment #5: WDR Finding 50, mid-paragraph (Page 14): "The extraction wells are shown in Attachment D1 and D2."

PROPOSED REVISION: Revise language to read, "The extraction wells are shown in Attachments D1 and D2."

REASON: Typographical correction.

Response: Staff incorporated the requested change.

Comment #6: WDR Finding 77 (Page 21): "... Currently, two phases of the final evapotranspirative cover system have been installed on the southern slopes. Monitoring devices are installed within the Phase 2 cover area to assess the performance of the evapotranspirative cover. This Order requires the last portion of evapotranspirative cover to be installed on southern slopes of Module M-1 by 2018..."

PROPOSED REVISION: Revise language to read, "Currently, two phases of the final cover system have been installed on the southern slopes. Monitoring devices are installed within the Phase 2 cover area to assess the performance of the evapotranspirative cover. This Order requires the last portion of *the south slope final cover* to be installed on southern slopes of Module M-1 by 2018..."

REASON: The Phase 1 final cover was 34 acres of a prescriptive clay cover, not an evapotranspirative cover. Revision more accurately reflects the closure status at the site.

Response: Staff incorporated the requested change.

Attachment A Specific Comment #1: WDR Finding 24 (p. 7) refers to Quaternary Alluvium as a 'geologic unit'

Rationale: The KLF-DMP (BC, 2015) used the naming convention established by Blair and Others (1991). As discussed in this report, quaternary units others have proposed are based on geomorphic or buried-soil information rather than on criteria by which formal formations are distinguished. More importantly, the criteria used by others cannot be easily distinguished in drill cuttings. In the Oroville area, Blair and Others (1991) used this same broader definition but designated all post-Mehrten sediments as the Laguna Formation. This same definition has been used for the Site in that units identified as "Quaternary Alluvium" represent the same alluvial deposits as the Laguna Formation and could not be distinguished in drill cuttings.

Proposed Revision: Use Laguna Formation for all post-Mehrten Formation sediments.

Response: Finding 24 remains unchanged. Although the 2015 Kiefer Landfill Detection Monitoring Program does not identify Quaternary Alluvium, historical geological reports do identify Quaternary Alluvium. The reference to Quaternary Alluvium will remain to maintain continuity with the site historical documents.

COMMENTS ON WDR PROHIBITIONS, SPECIFICATIONS & TASKS

Comment #7: WDR Order B.13 (Page 31): "(3) Surface water; (4) Freeboard"

PROPOSED REVISION: Revise language to read, "(3) Surface water monitoring; (4) Freeboard monitoring".

REASON: Revision more accurately reflects the requirement.

Response: Staff incorporated the requested change.

Comment #8: WDR Order B.14 (Page 31): "Only extracted groundwater with non-detect VOC concentrations may be discharged into an infiltration basin."

PROPOSED REVISION: Revise language to read, "Only extracted groundwater that has been treated and tested to remove VOCs prior to contact with unlined surface soil in any infiltration basin may be discharged into such infiltration basins."

REASON: DWMR is evaluating several different treatment options for use in conjunction with the infiltration basin that will remove the VOCs from the groundwater prior to the extracted groundwater infiltrating into the subsurface. DWMR understands that extracted groundwater may not cause degradation to the aquifer and is evaluating options that meet that standard. The Discharger will submit a work plan to the RWQCB for approval prior to initiating any change to the current discharge.

Response: Staff did not incorporate the requested change. The intent of Discharge Specification B.14 is to provide a numerical discharge limit for VOCs into an infiltration basin. The discharge limit was adjusted from non-detect to 0.5 µg/L to coincide with the current NPDES permit VOC discharge limit.

Comment #9: WDR Order D.7 (Page 33): “The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRR dated January 2012 which are attached hereto and made part of this Order by reference.”

PROPOSED REVISION: Revise language to read, “...SPRR dated *December 2015*...”

REASON: Typographical correction.

Response: Staff incorporated the requested change.

Comment #10: WDR Order E.3 (Page 34): “As detailed in Finding 77...”

PROPOSED REVISION: Revise language to read, “As detailed in Finding 76...”

REASON: Typographical correction.

Response: Staff incorporated the requested change.

Comment #11: WDR Order G.7 (Page 37): “The Discharger shall monitor corrective action monitoring wells on a quarterly basis...”

PROPOSED REVISION: Change *quarterly* to *semiannually*.

REASON: Over the course of the past 25 years, DWMR has conducted both semiannual and quarterly monitoring at the site and has evaluated seasonal variations. The current MRP No. R5-2007-0107 only requires semiannual monitoring. The purpose of Corrective Action Plan (CAP) monitoring is to assess the effectiveness of the CAP. Sufficient data has been collected to show trends developed by the CAP and a lack of seasonal variations. Going forward, additional frequency of data acquisition (quarterly monitoring) would not modify operations of the CAP or serve any other beneficial use in corrective action.

After 20 years of the CAP program, the data shows declining concentrations and approximately 81 percent of VOC mass removed from the groundwater during this period.

Response: Staff incorporated the requested change.

Comment #12: WDR Order H.9.a (Page 38): “Methodology used to verify intermediate cover thickness (i.e.pot-holing). At a minimum, intermediate cover thickness shall be verified in a grid pattern on 100-foot centers over the eastern slopes of Module M-1.”

PROPOSED REVISION: Revise language to read, “Methodology used to verify intermediate cover thickness (e.g. pot-holing). At a minimum, intermediate cover thickness shall be verified using a grid pattern on *300-foot* centers over the eastern slopes of Module M-1. *At locations, if any, where the cover is determined to be less than 12 inches, cover thickness will be re-verified using a grid pattern on 100-foot centers.*”

REASON: DWMR believes the cover thickness to be in excess of 12 inches over the eastern slopes of Module M-1, and that pot-holing on 300-foot centers will provide adequate assurance that the cover meets the minimum cover requirements of 12 inches. If a pothole reveals there is less than 12 inches of cover at a specific location, DWMR will pothole using a 100-foot grid on an increased frequency in the vicinity of that pothole.

Response: Staff incorporated the requested change.

MONITORING & REPORTING PROGRAM

Comment #13: MRP (Monitoring and Reporting Program) Section A.2.b (Page 7-8): “In the event of a shutdown of the landfill gas extraction system, the Discharger shall notify Board staff via e-mail, fax, or telephone within 24 hours of knowledge and shall provide weekly status updates. This requirement excludes shutdown events where the landfill gas system restarts itself or whether the system is restarted manually within 24 hours. All shutdowns, regardless of the type of restart, shall be summarized in the semiannual reports.”

PROPOSED REVISION: Revise language to read, “In the event of a shutdown of the landfill gas extraction system *exceeding 24 hours*, the Discharger shall notify Board staff via e-mail, fax, or telephone within 24 hours of knowledge and shall provide weekly status updates. This requirement excludes shutdown events where the landfill gas system restarts itself or whether the system is restarted manually within 24 hours. All shutdowns *in excess of 24 hours* shall be summarized in the semiannual reports.”

REASON: DWMR suggests that LFG system downtimes in excess of 24 hours be reported. Reporting of all system shutdowns regardless duration would provide little beneficial information. Complete system shutdowns are rare for the Kiefer LFG collection system. For example, during the period of July 1, 2014 through June 30, 2015 there were no system shutdowns in excess of one hour. The system has redundant destruction capacity with the flare station being capable of destroying the entire collection system production. Only if the electricity transmission lines serving both the energy plant and the flare station fail would the collection system be shut down for more than one hour.

As an alternative requirement, reporting of collection system in a manner similar to the reporting requirements for the Elk Grove Landfill would provide a better indication of the collection system performance.

Response: Staff incorporated the requested change.

Comment #14: MRP Section A.2.b (Page 8): “Landfill gas monitoring reports shall be included with the semiannual reports and shall include an evaluation of potential impacts of landfill gas on the unsaturated zone beneath and adjacent to the landfill and compliance with the Water Quality Protection Standard”

PROPOSED REVISION: Revise language to read, “Landfill gas monitoring reports shall be included with the semiannual reports and shall include an *annual* evaluation of potential impacts of landfill gas on the unsaturated zone beneath and adjacent to the landfill and compliance with the Water Quality Protection Standard”

REASON: Per the schedule presented in Table III, soil gas screening will be conducted semiannually, and subsequent sampling (at targeted locations) for laboratory analysis of VOCs will be conducted annually. As VOCs will be sampled annually, assessing the groundwater related impacts of landfill gas and compliance with the Water Quality Protection Standard is more appropriate on an annual basis with the receipt of the VOC data.

Response: Staff incorporated the requested change.

Comment #15: MRP Section A.6 (Page 11): Table listing groundwater wells in the Corrective Action Monitoring Program and their respective sampling frequency.

PROPOSED REVISION: Change the Sampling Frequency for the Corrective Action Monitoring Program from quarterly to semiannually.

REASON: See discussion in Item 11 above.

Response: Staff incorporated the requested change.

Comment #16: MRP Section A.6 (Page 11): Table lists monitoring well MW-6A1 as a corrective action well.

PROPOSED REVISION: Delete MW-6A1 from the list of corrective action wells.

REASON: As stated above in Item 3, DWMR believes that sulfate impact at this well is not significant enough to move this well to Corrective Action without further data.

Response: Staff incorporated the requested change.

Comment #17: MRP Section B.1.d (Page 15): “Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water.”

PROPOSED REVISION: Delete the word, “*Cumulative*.”

REASON: Cumulative tabulated monitoring data consists of a large body of data inconsistent with the data analysis performed in the Semiannual Report. The Semiannual Report has always shown relevant historical data; however, DWMR recommends that the cumulative tabulated monitoring data be presented with the Annual Monitoring Report (as required in the previous WDRs and in MRP R5-2016-XXXX Section B.2), where historical trends and analysis are discussed.

Response: Staff incorporated the requested change.

Comment #18: MRP Section C.4.b (Page 20): “B-zone concentration limits shall be calculated using background wells MW-10B, MW-38B, and MW-39B, and future background wells MW-34A and MW- 35A.”

PROPOSED REVISION: Replace “*MW-34A and MW-35A*” with “*MW-34B and MW-35B*.”

REASON: Typographical correction.

Response: Staff incorporated the requested change.

Comment #19: MRP Section C.4.c (Page 20): “C-zone concentration limits shall be calculated using background well MW-10C.”

PROPOSED REVISION: Propose calculating CLs [Concentration Limits] for Zone C using either all data from Zone C wells or using the intrawell comparisons from each Zone C well (MW 2C, MW-10C, MW-12C, MW-20C, MW-37C and Well E).

REASON: The last 17 years of monitoring data shows no reported VOC detections in the C- zone wells over that period. DWMR believes determining concentration limits using either of the proposed methods would more accurately represent the water quality within the C-zone. Additionally MW-10C is proximate to current operations and will be decommissioned prior to excavation within Module M-7.

Response: Staff did not incorporate the requested change. If background well MW-10C will be removed with the construction of Module M-7, then another background C-zone well shall be installed to determine calculations limits. The text in the MRP was modified to identify future C-zone wells for use to calculate C-zone concentration limits.

Comment #20: MRP Table I (Page 24): Units Column, Temperature, degrees Fahrenheit.

PROPOSED REVISION: Change temperature reporting to degrees Celsius.

REASON: Kiefer Landfill historical groundwater data is in Celsius. DWMR requests maintaining reporting in Celsius for program and database continuity.

Response: Staff incorporated the requested change.

Comment #21: MRP Tables I, II, IV and V, Monitoring Parameters (Pages 24, 25, 27 and 28): Carbonate.

PROPOSED REVISION: DWMR proposes that Carbonate be removed from the constituent list.

REASON: DWMR does not believe that this testing is necessary because the standard carbonate alkalinity test method (2320 B., attached) defines carbonate as zero whenever $\text{pH} < 8.3$ (at Kiefer Landfill, pH does not exceed 8.3 at any monitoring well).

Response: Staff incorporated the requested change.

Comment #22: MRP Tables I, II, IV and V, Monitoring Parameters (Pages 24, 25, 27 and 28): Calcium, Magnesium, Potassium, and Sodium.

PROPOSED REVISION: DWMR proposes that Calcium, Magnesium, Potassium, and Sodium be moved to the 5-year Constituents of Concern (COC) list.

REASON: For the past 10 years, DWMR has monitored for anions (bicarbonate, chloride, nitrate and sulfate) and electrical conductance (EC). These constituents either have associated drinking water standards (chloride, nitrate and sulfate) or are VOC indicators (bicarbonate and EC). In the tentative MRP, the RWQCB has proposed to include calcium, magnesium, potassium, and sodium for routine sampling and statistical analysis. The collection of these additional analytes (which do not have associated drinking water standards, and with the exception of sodium, do not have any water quality goals) may provide cation/anion balance for quality control purposes, or possibly serve as a check to see if a metallic cation is being missed. Such a check would be more appropriately conducted as part of a COC screening event, where additional metals are monitored. DWMR proposes including cation / anion balance information on a 5-year COC list to provide quality control evaluation at the two wells with the highest levels of total VOCs annually (per Note 5 of Table I) and all background and constructed module POC wells every 5 years (per Note 4 of Table I).

Response: Staff incorporated the requested change.

Comment #23: MRP Table III, footnote 1 (Page 26): “The Discharger may prescreen the gas sample to determine if the sample is required to be laboratory analyzed using Method TO-15 by using an approved gas analyzer to establish methane concentrations at the sampling point. If while using an approved sampling and analysis plan procedure the Discharger detects methane concentrations exceeding 1.0 percent by volume, then a gas sample shall be obtained and laboratory analyzed for specific VOCs using EPA Method TO-15. Both the screening results and the laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane and total VOC screening results and no further laboratory analysis is required.”

PROPOSED REVISION: Revise last sentence in paragraph to read, “Otherwise, the Discharger shall report the screening results and no further laboratory analysis is required.”

REASON: The gas analyzer (Landtec GEM) currently used by DWMR for taking routine landfill gas field measurements does not analyze for VOCs. The proposed revision provides flexibility, that the screening results reported shall be those measured by the approved gas analyzer used to do the screening.

Response: Staff incorporated the requested change.

Comment #24: MRP Table VI, Monitoring Parameters For Detection Monitoring (Pages 29, 30):

PROPOSED REVISION: DWMR proposes that, for monitoring locations with no individual VOC concentrations above 1 ppb, the compounds ethanol, methyl iodide (aka iodomethane) and vinyl acetate be removed from the constituent list, and that a search for unknown chromatographic peaks (SPRR Section I.17) be waived.

REASON: DWMR can achieve much lower detection and reporting limits for the other VOCs listed in Table VI by removing these three compounds (which are non-detect or believed to be non-detect at all monitoring wells) from this list and waiving the unknown chromatographic peak search requirement.

As an example of the type of improvement in detection and reporting limits that may be expected, please refer to EPA Method 8260B Revision 2 (December 1996), Tables 1 and 2, for wide-bore and narrow-bore capillary columns, respectively. Wide-bore capillary columns can handle a greater variety and concentration range of compounds (including ethanol, methyl iodide and vinyl acetate), but utilize much higher Method Detection Limits (MDLs), as can be seen in the referenced tables. The wide-bore column (Table 1 of EPA 8260B) cannot measure compliance with the current Public Health Goals of 0.06 ug/l and 0.05 ug/l for tetrachloroethene (PCE) and vinyl chloride, respectively, as the MDLs listed for these compounds in Table 1 are substantially in excess of these PHGs. PCE and vinyl chloride are currently being detected in Kiefer Landfill corrective action monitoring wells.

Methyl iodide and vinyl acetate were tested for in 2015 at corrective action wells MW-2A1, 4A, 4B, 5A, 7AR, 7B, 16A, 18A, 19A, 20A, 21A, 21B, 22A, 23A and 29A, and no detections of these two compounds were recorded. This list of fifteen corrective action monitoring wells includes the ten monitoring wells with the highest measured concentrations of VOCs at the site, and all monitoring wells (6) currently exceeding drinking water standards (MCLs). Methyl iodide and vinyl acetate have no drinking water standards or health-based water quality objectives,

although vinyl acetate has a published odor threshold of 88 ug/l.

At all detection wells and lesser-impacted corrective action wells, DWMR currently utilizes a low-level EPA method, which excludes methyl iodide and vinyl acetate, in compliance with our current MRP No. R5-2007-0107, which does not contain a list of required VOCs for semiannual monitoring. The low-level method currently in use has MDLs for PCE and vinyl chloride below current PHGs.

Ethanol is not regularly analyzed at any well, but has not been detected as a tentatively identified compound at monitoring wells. Subject to MRP R5-2016-XXXX, ethanol will be monitored at the most impacted sites on an annual basis going forward, since ethanol is on the list of COCs (see MRP Table VIII), as are methyl iodide and vinyl acetate. Ethanol has no health-based water quality objectives, although it has a published odor threshold of 760,000 ug/l.

Response: Staff incorporated the requested change. Further data analysis provided by the Discharger showed that vinyl acetate and methyl iodide have not been detected in groundwater since monitoring for these constituents began over 20 years ago. Additionally, vinyl acetate has only been detected once and methyl iodide has only been detected once over 1.4 µg/L in leachate since monitoring began 18 years ago. Based on the analytical data, detections of vinyl acetate and methyl iodide are unlikely in groundwater because these constituents are not often detected in leachate. It is beneficial to maintain low laboratory reporting limits in wells with individual VOC concentrations less than 1 ug/l to assess the effectiveness of the groundwater corrective action program. This MRP requires more frequent (semi-annual) monitoring of methyl iodide and vinyl acetate in groundwater wells with individual VOCs greater than 1 ug/l and 5-year monitoring of methyl iodide and vinyl acetate in all groundwater wells.

There is no historical monitoring data for ethanol because it has not been required in previous MRPs. This MRP requires ethanol to be analyzed every 5 years in all of the groundwater wells and annually in the groundwater wells with the highest VOC concentrations.

Attachment A Specific Comment #2: MRP C.4 lists pH as a constituent that requires concentration limits to be calculated.

Rationale: Title 27 Section 20415(e)(10)(A) by reference to historical data allows for a procedure for determining a background value for each constituent that does not display appreciable variation. Based on the most recent 15 years of data, pH does not vary from pH 6.5-8.5.

Proposed Revision – Employ the historical pH range of pH 6.5-8.5.

Response: Staff did not incorporate the requested change. A review of the most recent 15 years of pH data shows some pH values outside of the 6.5 to 8.5 range. Additionally, the pH concentration limits calculated in the most recent Annual Report do not have upper limits as high as 8.5. For example, the upper C-zone concentration limit was calculated as 7.5. Using the calculated concentration limit may identify changes in water chemistry sooner than using the 6.5 to 8.5 range.

Attachment A Specific Comment #3: Table I (MRP, p. 24) lists Turbidity as a field parameter and requires that Concentration Limits (CLs) must be calculated for this parameter.

Rationale: Turbidity is used to evaluate monitoring well conditions and is dependent upon the development of a well and not groundwater quality and cannot be used to assess potential impacts

from the landfill units.

Proposed Revision – Remove requirement for calculation of CLs for turbidity.

Response: Staff incorporated the requested change.

CENTRAL VALLEY WATER BOARD MODIFICATIONS

MRP Section C.4 (Page 20): “Concentration limits are calculated using Interwell tolerance limits for each groundwater zone at 95% confidence and 95% coverage based on 10 years of background data from background monitoring wells as specified below.”

REVISION: “10 years of” was removed from the sentence that now reads, “Concentration limits are calculated using Interwell tolerance limits for each groundwater zone at 95% confidence and 95% coverage based on background data from background monitoring wells as specified below.”

REASON: 5-year COCs are only collected every 5 years. Limiting the use of 10 years of background data to calculate concentration limits does not leave enough data to calculate concentration limits for the 5-year COCs.

MRP Table III (Page 26): Methane, Carbon Dioxide, and Oxygen soil pore gas sampling and reporting.

REVISION: The reporting frequency was changed from annual to semiannual.

REASON: Typographical correction.