



**Jared Blumenfeld**  
Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Meredith Williams, Ph.D.  
Acting Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200



**Gavin Newsom**  
Governor

March 29, 2019

Mr. Robert Henry  
Senior District Manager  
Chemical Waste Management, Inc.  
P.O. Box 471  
Kettleman City, California 93239

**THIRD NOTICE OF DEFICIENCY FOR REVISED PERMIT RENEWAL APPLICATION FOR THE CHEMICAL WASTE MANAGEMENT, INC., KETTLEMAN HILLS HAZARDOUS WASTE FACILITY, 35251 OLD SKYLINE ROAD, KETTLEMAN CITY, CALIFORNIA; EPA ID. NO. CAT 000 646 117**

Dear Mr. Henry:

The Department of Toxic Substances Control (DTSC) has completed its technical review of the *Hazardous Waste Facility Permit Renewal Application* dated March 16, 2018, for the Chemical Waste Management, Inc. (CWMI), Kettleman Hills Facility (KHF) located at 35251 Old Skyline Road, Kettleman City, California, hereinafter referred to as the "Revised Application." The Revised Application has been reviewed for compliance with the applicable requirements of California Code of Regulations, title 22, division 4.5 and the Health and Safety Code, division 20. DTSC has determined that the Revised Application is deficient. The enclosed comments comprise the Notice of Deficiency (NOD) issued for the Revised Application. A meeting between DTSC and CWMI to discuss the deficiencies has been scheduled for April 11-12, 2019 at DTSC's Sacramento Regional Office located at 8800 Cal Center Drive, Sacramento, CA 95826.

**The following must be submitted by July 31, 2019:**

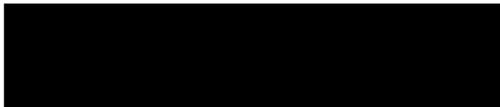
- 1) Three hardcopies and one electronic PDF copy (CD or flash drive) of the complete, clean version of the revised permit application. The revised permit application must be a complete application with all sections, figures, tables, appendices, calculations, attachments and all information required by California Code of Regulations, title 22, division 4.5 and the Health and Safety Code, division 20. In other words, the revised permit application must be a stand-alone document with all deficiencies corrected.

- 2) One hardcopy redlined/strikeout version of the Revised Application showing the changes that have been made as requested in the NOD.
- 3) One hardcopy of the written response to each of the deficiencies identified in the NOD. In responding to each of the deficiencies, restate the deficiency and identify the page number(s) in the revised permit application where each deficiency has been addressed.

Please note that pursuant to Health and Safety Code section 25200.8 and California Code of Regulations, title 22, section 66271.2(e), DTSC may deny permit applications based on a failure of the applicant to respond to a NOD or when the applicant responds with substantially incomplete or substantially unsatisfactory information.

If you have any questions regarding this letter, please contact me at (916) 255-3644 or at [Ryan.Batty@dtsc.ca.gov](mailto:Ryan.Batty@dtsc.ca.gov).

Sincerely,

A black rectangular redaction box covers the signature of Ryan W. Batty. A blue scribble is visible below the redaction.

Ryan W. Batty, P.E.  
Supervising Hazardous Substances Engineer  
Permitting Division

Enclosures (5)

- Permitting NOD 3 dated March 29, 2019
- Geological Services Unit Memorandum dated March 4, 2019
- Geological Services Unit Memorandum dated March 14, 2019
- Engineering and Special Projects Office Memorandum dated February 12, 2019
- Engineering and Special Projects Office Memorandum dated February 20, 2019
- Technical Completeness Checklist (electronic copy only)

cc: See next page.

Mr. Robert Henry  
March 29, 2019  
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cc (via email, w/ enclosures):

Ms. Reyna Verdin, CWMI-KHF, rverdin1@wm.com  
Ms. Barbara Gross, US EPA-Region 9, Gross.Barbara@epa.gov  
Ms. Frances Wicher, US EPA-Region 9, Wicher.Frances@epa.gov  
Ms. Kristen Gomes, CVRWQCB, Kristen.Gomes@waterboards.ca.gov  
Rajiv Mishra, Ph.D., CDPH-RHB, Rajiv.Mishra@cdph.ca.gov  
Mr. Wayne Lorentzen, DTSC-PERM, Wayne.Lorentzen@dtsc.ca.gov  
Ms. Muzhda Ferouz, DTSC-PERM, Muzhda.Ferouz@dtsc.ca.gov  
Mr. Jeff Brown, DTSC-GSU, Jeff.Brown@dtsc.ca.gov  
Mr. Mark Edwards, DTSC-GSU, Mark.Edwards@dtsc.ca.gov  
Mr. Peter Gathungu, DTSC-ESU, Peter.Gathungu@dtsc.ca.gov  
Mr. Perry Myers, DTSC-ESU, Perry.Myers@dtsc.ca.gov  
Ms. Leah White, DTSC-OLC, Leah.White@dtsc.ca.gov  
Ms. Camille Rogado, DTSC-PERM, Camille.Rogado@dtsc.ca.gov

**THIRD  
NOTICE OF DEFICIENCY  
CHEMICAL WASTE MANAGEMENT, INC.  
KETTLEMAN HILLS FACILITY  
EPA ID. NO.: CAT 000 646 117**

**March 29, 2019**

The results of the Department of Toxic Substances Control's (DTSC) technical review of the permit application for the Chemical Waste Management, Inc. (CWMI), Kettleman Hills Facility (KHF), are presented below. The technical review is formatted to correspond with the sections presented in the KHF permit application. For each new deficiency, the following are provided: (1) the chapter/section/page in which the deficiency is found in the application; (2) the requirements (i.e. relevant statute and/or regulations, where applicable), which provides the basis for the deficiency; (3) DTSC's findings; and, (4) instructions for remedying the deficiency.

Comments 1 through 64 in this NOD 3 are the same comments from DTSC's NOD 2. DTSC's reply indicates whether the response has addressed the comment. In addition, NOD 3 contains six new general comments (comments 66 through 70) and 61 new specific comments (comments 71 through 131).

**Reply to Response to NOD 2 Comments**

1. DTSC Reply: Response acceptable.
2. DTSC Reply: Response acceptable.
3. DTSC Reply: Response acceptable.
4. DTSC Reply: Response acceptable.
5. DTSC Reply: Response mostly acceptable.
  - a. Response acceptable.
  - b. Response acceptable.
  - c. Response acceptable.
  - d. Response acceptable.
  - e. Response acceptable.
  - f. Response acceptable.
  - g. Response acceptable.
  - h. Response mostly acceptable (Table in Attachment 5, page 2).

CWMI should revise Chapter 2 and Appendix A of the application to address the comments in Table 1 at the end of this NOD.

6. DTSC Reply: Response acceptable.
7. DTSC Reply: Response acceptable.
8. DTSC Reply: Response acceptable.
9. DTSC Reply: DTSC accepts the response. However, please note that California Environmental Quality Act (CEQA) activities for possible future landfill B-20 have been completed by Kings County but not by DTSC. It is acceptable to include information about landfill B-20 on maps to avoid placing infrastructure there by mistake, but it should be explicitly clear that CWMI has not requested, or received, approval from DTSC to construct the landfill.
10. DTSC Reply: Response acceptable.
11. DTSC Reply: Response acceptable.
12. DTSC Reply: Response is mostly acceptable. However, the response language differs from the language in the application. The response states that the facility “will” halt the acceptance of waste, and the application states that the facility “may” halt the acceptance of waste. These statements are obviously different.

CWMI should revise the application to indicate that acceptance or processing of waste will only occur when the necessary documentation is in place to allow the waste to be managed safely and in conformance with regulations.

13. DTSC Reply: Response acceptable.
14. DTSC Reply: Response acceptable.
15. DTSC Reply: Response is partially acceptable. The language on page 11 of the Waste Analysis Plan (WAP) indicates that incoming waste may be subject to a radionuclide screen. Furthermore, Appendix WAP-D contains formatting errors in the first paragraph.

In addition, the information in Appendix WAP-D, section 3a, is too vague. If the facility is unable to identify the isotope that caused the alarm to trigger, then the waste should not be accepted without first obtaining approval from the California Department of Public Health, Radiologic Health Branch (RHB). Furthermore, a list of isotopes that are assumed to be associated with medical applications should be provided. This way, a definitive statement can be made in the application that if the isotope is not on the list then RHB must be contacted for guidance.

CWMI should revise the language in the application to indicate that all incoming shipments of waste, that will be managed in a DTSC permitted hazardous waste

management unit, will be subject to a radionuclide screen. Furthermore, the formatting errors in Appendix WAP-D should be corrected. Finally, CWMI should revise the language to indicate that the isotope causing an alarm must be identified, and to clarify when RHB will be contacted.

16. DTSC Reply: Response acceptable. However, DTSC recommends changing the order of the bullets in section 5.1.1 to match the order that the waste types are found in Table 5-1.
17. DTSC Reply: Response partially acceptable. The application should include some discussion about the distinction between used oil and waste oil. This is necessary because both used oil and waste oil are likely to be manifested using California hazardous waste code 221. The identification of the source of the oil on the waste profile will be important in this regard.

CWMI should revise the application to provide some discussion of the distinction between used oil and waste oil and the process for differentiating between the two.

18. DTSC Reply: Response is mostly acceptable. The language on page 14 of the WAP indicates that DTSC will be notified of discrepancies that cannot be resolved within 15-days. However, there is no mention of the notification requirements applicable to hazardous waste of concern.

DTSC suggests the following edits:

*If a discrepancy cannot be resolved within 15 days of shipment receipt, the California Department of Toxic Substances Control, and EPA for TSCA regulated waste, will be notified immediately, and in writing, of the discrepancy and of attempts to reconcile it, including a copy of the involved manifest. For discrepancies involving hazardous waste of concern, DTSC will be notified within 24-hours and provided with the information required by 22 CCR 66264.72(h).*

19. DTSC Reply: Response mostly acceptable. The application does not indicate how waste that has not been accepted will be distinguished from waste that has been accepted. In addition, there is no indication of the timeframe when the decision to accept/reject must be made.

DTSC suggests the following edits:

*If adequate information is available to determine that KHF can accept the waste, KHF will direct the waste to the appropriate treatment, storage or disposal unit~~utilize permitted storage areas (BSU 2, DSU, and PCB flushing storage units)~~ to store the waste. If adequate information is not available for KHF to accept the waste, the waste will be either staged or*

~~rejected. For bulk wastes, the truck will be staged on closed Landfill Unit B-15 while resolution is in process. For containerized waste, the waste will either be left on the trailer or on the DSU while information is gathered on the material. If adequate information is not obtained regarding a particular waste by the end of the day, the waste may be rejected.~~

Waste that has not been accepted is staged using one of the following methods:

- The transport vehicle is parked within secondary containment at the sampling rack (day of arrival only).
- The transport vehicle is parked on closed Landfill Unit B-15.
- The transport vehicle (e.g. trailer) or container is placed inside a permitted unit with secondary containment (subject to a waste compatibility determination).

Waste that enters the secure area of the facility that has not been formally accepted will be clearly identifiable by **[indicate how to distinguish]** so that it can be distinguished from waste that has been accepted.

Furthermore, waste that has not been accepted within **[enter timeframe here]** days of arrival at the facility will be rejected.

20. DTSC Reply: Response partially acceptable. DTSC recommends avoiding the term consolidation because unlike bulking, it is not a defined term in the hazardous waste regulations. Further, we suggest the following edits:

The bulking *and* repacking processes will occur at units at the facility where hazardous waste transfer is permitted.

Please insert a definition indicating what you understand the term “decant” to mean. Please address whether it applies to liquids, solids, or both.

Figure 6-2. The figure is confusing because both the upper and lower branches address bulking. Correct “Flash” to “Flush”.

21. DTSC Reply: Response addressed NOD 2 comment. However, DTSC believes that there should also be a maximum number of loads between sampling events.

DTSC suggests the following edits:

The program requires that one shipment of the LDR waste from the waste stream be stabilized, sampled, stored, and analyzed annually, or every **[enter number of loads here]** loads treated (whichever results in more frequent analysis), to verify the treatment efficiency of the established mix ratio.

22. DTSC Reply: Response partially acceptable. Formatting changes to a form, that do not change the content, may not require completion of a permit modification but the new forms should be added to the Operations Plan the next time that a permit modification or renewal is completed.

With respect to the LDR certification, the response does not address DTSC's comment. The certification language must be exactly as described in the regulations without any changes or additions. CWMI provided updated language to DTSC in an email dated January 4, 2019.

CWMI should revise the form consistent with the revised language provided by email on January 4, 2019.

23. DTSC Reply: Response partially acceptable. The purpose of the phrase "where applicable" is unclear. CWMI either does, or does not, intend to sample leachate from each riser independently. Furthermore, the text should indicate the analysis suite for leachate and describe under what conditions leachate from different risers can be mixed versus managed separately.
24. DTSC Reply: Response acceptable.
25. DTSC Reply: Response mostly acceptable. The requirement to screen waste from different profiles to be combined should apply to waste bulked at the DSU in addition to waste bulked in the FSU (WAP Table 3-1, note R\*).
26. DTSC Reply: The NOD 2 response does not address DTSC's comment. However, CWMI provided supplemental information in a letter dated April 13, 2018, after the NOD 2 response was submitted. Therefore, the application should be revised to be consistent with the supplemental information provided to DTSC. In addition, to avoid confusion, the application should state that used oil is ineligible for transfer (including bulking) at the DSU.

As indicated in NOD 2, it is DTSC's belief that the information that has been requested is best presented as a standard operating procedure (SOP) e.g. a standard operating procedure for performing bulking using a vacuum truck.

CWMI should revise the application to be consistent with the information provided in the letter dated April 13, 2018. In addition, DTSC recommends that CWMI prepare SOPs for bulking operations to be conducted at the DSU. Finally, the revised application should indicate that used oil is ineligible for bulking.

27. DTSC Reply: Response acceptable. Regarding Section 14.3(a) (page 14-7), the use of a new solvent may require a permit modification.

CWMI should revise the application to indicate that DTSC will be notified in advance if a flushing solvent other than diesel is proposed for use. At that time, DTSC can assist CWMI in determining whether a permit modification is required.

28. DTSC Reply: Response partially acceptable. The revised application indicates that soft waste such as used PPE will be wrapped with an HDPE liner to achieve macro-encapsulation. DTSC is not convinced that soft and compressible waste can be effectively contained using a liner. For macro-encapsulation to be effective, DTSC believes that soft waste should be compressed prior to applying the HDPE liner. If the waste is not compressed in advance, the pressure of waste placed on top could cause the liner to fail.

CWMI should revise the application to indicate that an HDPE liner will not be used for macro-encapsulation of soft waste. Alternatively, CWMI should indicate that an HDPE liner will only be applied to soft waste that has been compressed. If CWMI elects to pursue adding equipment such as a baler to compress soft waste, DTSC is willing to consider permitting this type of equipment as a miscellaneous unit.

29. DTSC Reply: Response partially acceptable. The application still does not indicate whether the volume of 1,269 cubic feet applies to each of the four bays (two trucks per bay) or the combined volume of the loading/unloading area.

CWMI should revise the application to clearly indicate whether the secondary containment volume applies to each bay, or the four bays combined.

30. DTSC Reply: Response partially acceptable. The calculations for the PCB Flushing/Storage Unit were prepared by a KHF employee. Pursuant to Cal. Code Regs., tit. 22, § 66264.175(c) the certification must be completed by an independent, qualified professional engineer, registered in California.

CWMI should provide a certification for the PCB Flushing/Storage Unit secondary containment calculations that was prepared by an independent, qualified professional engineer, registered in California.

31. DTSC Reply: Response acceptable, to the extent that the container storage cells have been labelled on Figure 14-1. However, the numbering system is awkwardly defined because two of the nine cells are labelled cell "D". This could result in confusion and the storage of incompatible waste together. For example, a worker tasked with storing a container in cell "E" could reasonably conclude that it is the next cell in line following cells "C" and "D", but it is not.

DTSC recommends that CWMI revise Figure 14-1 so that each cell has a unique identifier e.g. as cells "A" through "I". Alternatively, DTSC suggests taking additional steps to avoid confusion such as by painting numbers on the ground or use of free-standing pedestal type signage.

32. DTSC Reply: Response acceptable.
33. DTSC Reply: Response partially acceptable. With respect to Section 14.4(a) (page 14-9), the second paragraph should say that BSU 1 is only used to store waste that does not contain free liquids. The third paragraph should be deleted because TSCA waste is not stored in BSU 1. The fourth paragraph should indicate that one container at BSU 2 may be designated for the accumulation of on-site generated hazardous waste PPE for up to 90 days. The fourth paragraph should reference containers rather than tanks because “frac tanks” are not tanks in a regulatory sense. The fifth paragraph should be deleted because TSCA waste is not stored in BSU 2.
34. DTSC Reply: Mostly acceptable. The revised application indicates that the tanks may be operated with internal sacrificial liners which serve as primary containment. The sacrificial liners do not provide “primary containment” in the regulatory sense because they are not required to be fitted.

CWMI should revise the application to indicate that the tank shell (i.e. not the sacrificial liners) provides primary containment and the concrete vault provides secondary containment. It is acceptable to indicate that the sacrificial liners provide an added layer of containment but it should not be identified as primary or secondary containment.

35. DTSC Reply: Response acceptable.
36. DTSC Reply: Response acceptable.
37. DTSC Reply: Response acceptable.
38. DTSC Reply: Response acceptable.
39. DTSC Reply: Response mostly acceptable. However, it appears the description of the action level shown on Exhibit 17-2 may be incorrect.

CWMI should check that the information on Exhibit 17-2 is correct, and if not, the exhibit should be revised.

40. DTSC Reply: Response acceptable.
41. DTSC Reply: Response acceptable. In addition, DTSC requests that CWMI periodically revise and update the graph. CWMI should add a statement to the application indicating that the graph in Exhibit 17-4 will be updated annually and included in the annual graph report.
42. DTSC Reply: Response acceptable.

43. DTSC Reply: Response acceptable.
44. DTSC Reply: Response partially acceptable. The language cited in NOD 2 was corrected but similar language in Chapter 33, Section 33.6(a) (page 33-4), was not.

CWMI should revise the application to correct the language appearing in Section 33.6(a) (page 33-4) relating to daily cover requirements for untreated waste.

45. DTSC Reply (Daily Cover): Response partially acceptable. The revised application does not make mention of cover requirements for asbestos waste found in Code Fed. Regs., tit. 40, § 61.154. In addition, the RWQCB WDR Standard Provisions and Reporting Requirements (page 18) mentions a requirement for one-foot thickness of low permeability soil or alternative cover on non-active areas during the rainy season.

CWMI should revise the application to address the cover requirements applicable to asbestos waste and for non-active areas during the rainy season.

46. DTSC Reply: Response acceptable.
47. DTSC Reply (Shredder): Response partially acceptable. The revised application presents two options for the design of the shredder. After discussion with DTSC, CWMI has decided to pursue the electrically powered shredder. Therefore, the application should be revised accordingly.

In addition, the application should be revised to demonstrate that there is no conflict between the location selected for the shredder and the nearby stairwell leading to the control room. DTSC is concerned that waste being loaded into the shredder could fall, or that waste could be expelled from the shredder, and impact someone using the stairway. Accordingly, the installation of appropriate shielding will be necessary to address this concern. Finally, the statement that only RCRA waste will be shredded was not expected and should be clarified.

CWMI should revise the application to indicate that the shredder will be electrically powered. The application should also be revised to demonstrate that the shredder will not pose a hazard to workers using the nearby stairway. Finally, the application should clarify if non-RCRA or non-hazardous waste will ever be shredded.

48. (a) DTSC Reply (FSU Containment Building): Response mostly acceptable. If the FSU is not a containment building then the waste must be in a tank, container, or the shredder at all times. The language in Chapter 14, section 14.5(a) (page 14-12) of the application regarding macro-encapsulation implies

that in certain circumstances waste may be intentionally placed on the floor of the building. Hazardous waste cannot be placed directly on the floor of the FSU if it is not a containment building.

CWMI should revise the application to make clear that hazardous waste in the FSU must be in a tank, container, or the shredder at all times. Furthermore, the application should specify that waste will not be discharged directly onto the floor of the building.

(b) DTSC Reply (Checklist Item 445): Response not acceptable. The response indicates that granular activated carbon (GAC) is changed out based on differential pressure readings. Differential pressure will measure particulate loading but does not indicate whether the GAC is saturated with VOCs. A more suitable approach may be to periodically measure influent and effluent vapor concentrations, or to establish a maximum in service time based on an assumed VOC loading rate.

CWMI should revise the application to establish GAC changeout procedures that account for VOC loading independent of particulate loading.

- 49. DTSC Reply: Response acceptable.
- 50. DTSC Reply: Response acceptable.
- 51. DTSC Reply: Response partially acceptable. Cover maintenance (i.e. tracking) should be performed to prevent waste being exposed, not after waste has been exposed.

DTSC suggests the following edits:

*The native clay soils at the facility are subject to forming erosion rills when exposed to rainwater, especially on unvegetated portions of covers. Tracking or spot covering is used to correct necessary, when erosion rills when present deteriorate the cover and waste is exposed. Tracking is performed using a bulldozer where the tracks compress the erosion rills and restore the cover surface, thereby covering the waste. Tracking is completed by operating the bulldozer up and down the slope, never cross slope and is completed only when conditions allow. Spot covering is used to correct rills adjacent to risers and other features and at locations the bulldozer cannot access. Spot covering is performed by personnel walking the slopes and using hand equipment to collapse the erosion rill thereby maintaining cover integrity covering the waste. Tracking and spot covering is performed as needed based on routine inspections, but typically occurs in the spring after the rainy season has ended.*

52. DTSC Reply: Response not acceptable. The application should specify the minimum acceptable aisle spacing and use of the word “approximately” is not appropriate in this context. It is DTSC’s opinion that the minimum acceptable aisle space at the KHF DSU should be at least 30 inches. This opinion takes into consideration the fact that the DSU has a large capacity, multiple waste types, relatively long rows, and double stacking of containers is allowed. In addition, DTSC’s review of the DSU design drawings indicates that it was designed with 30-inch aisles. Lastly, CWMI has previously agreed to 30-inch aisles as indicated by the reference cited in NOD 2.

CWMI should revise the application to state that the aisles between rows of containers in storage will be a minimum of 30 inches wide.

53. DTSC Reply: Response acceptable.
54. DTSC Reply: Response acceptable.
55. DTSC Reply: Response acceptable. See also the reply to response to comment 48.
56. DTSC Reply: Response acceptable.
57. DTSC Reply: Response acceptable.
58. DTSC Reply: Response acceptable.
59. DTSC Reply: Response acceptable.
60. DTSC Reply: Response acceptable.
61. DTSC Reply: Response partially acceptable – new figure in Exhibit 14-1. Regarding the indoor storage area, the configuration of drums appears to restrict access to the PCB tank for unloading. This may require a reduction in the number of drums that can be stored inside. In addition, the label at the top of the figure titled “Enclosed PCB Building (300 Drums)” could be interpreted as indicating that storage of hazardous waste is allowed in the room on the extreme west end of the building.

Regarding exterior storage, 273 drums can physically fit in the exterior storage area. However, the configuration of drums seems very tight with limited access for a forklift to maneuver etc. In addition, the secondary containment calculations do not appear to consider drainage of stormwater or other liquids from the pad labelled “Concrete Pad for Tanker Truck or Tank” on the north side of the unit.

CWMI should revise the application to ensure that there is adequate access to unload waste from the PCB tank. Furthermore, the number of drums in the

exterior storage area should be revised downward to a more reasonable number that allows space for a forklift to operate. In addition, the secondary containment calculations for the exterior storage area should be revised to account for drainage from the upper pad. Finally, Figure 1 in Exhibit 14-1 should be revised to make clear that no storage of hazardous waste is permitted in the room at the extreme west end of the building.

62. DTSC Reply: Response mostly acceptable. The language in the application is an improvement on the prior version but still lacks specificity and is not clear or enforceable.

CWMI should revise the application to add specificity regarding decontamination requirements. For example, the application should state that all visual accumulations of soil/waste will be removed from tracked equipment prior to leaving landfill B-18. In addition, the application should state that full decontamination (e.g. pressure washing and/or steam cleaning) will be performed on equipment that has contacted hazardous waste, and that will be transferred off-site.

63. DTSC Reply: Response mostly acceptable. With respect to calcium polysulfide, the revised application still does not indicate how the chemical is used.

CWMI should revise the application to indicate how, and for what purpose, calcium polysulfide is used for treatment. For example, DTSC is looking for language similar to the following:

*Calcium polysulfide is a binding/fixation reagent used to help achieve stabilization of hazardous waste. The reagent reacts chemically with the waste to form metal polysulfide complexes that are less mobile and less prone to leaching than the untreated waste. The facility uses a **[enter concentration here]** % solution of calcium polysulfide in water that is stored in a **[enter volume here]** gallon tank located on the south side the FSU.*

64. DTSC Reply: Response not acceptable. DTSC specifically requested figures or photographs explaining the labels used at the facility. No figures or photographs were provided.

CWMI should revise the application to provide figure(s) or photograph(s) with an explanation of the information contained on facility generated labels, and the location of the information on the label. In addition, the application should include information on labelling commonly found on hazardous waste packaging. As an example of what we are looking for, DTSC is requesting information similar to that present on pages 6 through 9 and 14 through 19 of the Department of Transportation 2016 Emergency Response Guidebook, or 49 CFR 172.521 - 560.

## **NOD 3 Comments**

### **General Comments**

65. References to TSCA Activities: The permit application discusses activities for which approval has not been requested from U.S. EPA. For example, Chapter 14 (page 14-9), of the application states that “BSU 1 is also used to store TSCA-regulated waste.”

The application is the facility Operations Plan and should be clear so as not to confuse those required to use the plan. If information about managing TSCA waste is inaccurate, then it is possible that this will lead to the inadvertent mismanagement of TSCA waste.

CWMI should take out any information from the application that conflicts with the authorization that has been sought from U.S. EPA.

66. Application Specificity: The application should not contain overly vague language. The use of the words “may” and “as necessary” should be avoided. If the application indicates that CWMI may perform a task, DTSC must assume that the activity will not be performed. DTSC prefers alternative language that indicates what you will do under normal circumstances. It is acceptable to provide for exceptions, as long as there is a reasonable basis for the exception and the reason is documented in the operating record.

For example, consider the following language from Chapter 12, page 11.

*Incoming waste shipments may be subjected to a radionuclide screen upon entry to the facility through the truck scales.*

*Incoming waste shipments ~~may~~ will be subjected to a radionuclide screen upon entry to the facility through the truck scales. If it is not possible to perform a radionuclide screen at the trucks scales, then alternative procedures that result in screening for the presence of radionuclides may be employed and a note of explanation will be added to the operating record.*

67. Chapter Numbering: The structure of Chapter 12 of the application is different from the remainder of the application in that the entire chapter is an exhibit. This creates some confusion because the numbering scheme for pages and tables/figures does not follow the “12-X” format. For consistency and improved readability, the WAP should be the chapter (rather than an exhibit) with consistent formatting to all other chapters. Similarly, page numbers using the “15-X” and “35-X” format should be added to Chapters 15 and 35, respectively.

68. Waste Profile Specificity: CWMI includes copies of waste profiles with release reports submitted to DTSC. Based on a review of waste profiles, DTSC concludes that some profiles do not contain an adequate level of detail. For example, several of the profiles reviewed by DTSC list the process generating the waste as “spent material”, waste color as “various”, and list the pH as “N/A”. DTSC considers these descriptors to be inadequate.

CWMI should add a new section to an appropriate chapter of the application that indicates the degree of specificity required of waste profiles. At a minimum, the generator should be indicating the type of process or industry that generated the waste. Each waste should be identified by a color or color range (e.g. brown to black). In addition, each waste, including solids, that can be mixed with water must have an associated pH range which should be as narrow as possible. EPA’s guidance document titled “Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste” dated April 2015, recommends that pH be specified with a tolerance of +/- 2 pH units. In addition to color and pH, the guidelines for development of waste profiles should make mention of the other components of the mandatory analysis listed in Chapter 12, Table 3-1.

69. Land Use Restrictions and Soil Management Plan: Pursuant to Cal. Code Regs., tit. 22, §§ 66264.119(b) and 67391.1, the future use of a closed hazardous/solid waste management unit must be appropriately restricted if the unrestricted use would result in an unacceptable health risk. Therefore, the applicant must record a land use covenant for closed solid and hazardous waste management units that establishes appropriate restrictions on the future use of the site.

The land use covenant (LUC) will be drafted by DTSC and provided to the applicant for comment. Upon finalization of the LUC language, the document will be signed by the applicant and DTSC and then recorded with the County. To support the development of a LUC, the application should include a soil management plan. DTSC recommends that the applicant consider the following provisions for inclusion in the plan:

- All waste soil or asphalt/concrete that is generated from the site must be tested prior to off-site disposal; waste sent off-site must be sent to a landfill – either hazardous or non-hazardous as appropriate.
- Notify DTSC in advance if planning to perform soil or cover (e.g., asphalt/concrete) disturbance involving greater than 100 cubic yards (i.e., prior to completing major site work).
- Soil excavated from the restricted area of the site can go back into the hole from which it originated but cannot be moved from one area of the site to another.
- Keep records indicating the quantity and disposal location of any soil or asphalt/concrete waste sent off-site.

70. Other: DTSC and CWMI are currently in discussion concerning revision of the following documents:

- Ambient air monitoring work plan
- Soil matrix monitoring work plan
- Risk to off-site receptors from exposure to diesel particulate matter from facility bound trucks.

CWMI should revise the application consistent with the outcome of these discussions.

### Specific Comments

71. Chapter 2 – Part A Attachment 4, Page 2: Correction/clarification.

- Row 1 – the listed volume for the PCB Flushing/Storage Unit equates to 300 55-gallon drums. This is less than the total number of drums for the indoor and outdoor area specified elsewhere in the Part B.
- Row 3 – Include the FSU and list the design capacity as 80,000 gallons.
- Row 6 – The word “decant” is not defined in hazardous waste regulations. Suggest using transfer or bulking instead.
- Row X – The table does not include other treatment (T04) associated with drum top solidification.

CWMI should revise Attachment 4 as necessary to address DTSC’s comments.

72. Chapter 3 – Section 3.2, Environmental Setting, Page 3-1: Correction/clarification.

The application indicates that the nearest occupied residence is approximately four air miles from KHF in Kettleman City. However, it appears that the closest residence is located west of KHF on Tehama Avenue.

CWMI should confirm the location of the closest residence to KHF and update the application as necessary.

**The following new specific comments concerning Chapter 12 are based on a review of the Waste Analysis Plan by staff from DTSC’s Environmental Chemistry Laboratory. (Section reference: Cal. Code. Regs., tit. 22, § 66264.13).**

73. Chapter 12 – Section 2.0, Sampling Methodology, Page 3: Correction/clarification.

The application states:

*Therefore, as described in EPA document SW-846, a sampling approach that is less comprehensive than that used by a generator to make the initial waste determination is appropriate for incoming waste shipments.*

DTSC does not disagree with this reasoning. However, if reference is made to SW-846 it would be helpful to indicate where in the document supporting information is found.

CWMI should revise the application to indicate the relevant chapter/section of SW-846.

74. Chapter 12 – Section 2.2, Sampling Strategies, Page 3: Correction/clarification.

The application states:

*In addition to ASTM and EPA sampling procedures, CWMI has instituted specific methodologies for taking samples from various types of containers.*

This statement is overly vague. CWMI should use the ASTM and/or U.S. EPA sampling methodologies described in Table 2-1 if at all possible. If the ASTM or U.S. EPA methods cannot be used, then it is acceptable to use alternative methods provided that the method is adequately described/documented.

CWMI should revise the application to indicate that there is a hierarchy for selecting sampling methods that first directs use of the methods described in Table 2-1, but allows for use of alternative site-specific methods when necessary.

75. Chapter 12 – Section 2.2, Sampling Strategies, Page 4: Correction/clarification.

The application states:

*The EPA-sanctioned procedure for the open tube sampler, described in SW-846, has been adopted for use at the facility.*

CWMI should revise the application to indicate where in SW-846 procedures for use of the open tube sampler are found.

76. Chapter 12 – Section 2.2.2, Surface Impoundments, Page 4: Correction/clarification.

The application states:

*If more than one sample is collected, the samples may be composited prior to analysis.*

The application should provide more specific information regarding the sampling of surface impoundments. For example, is one sample typically collected per impoundment or more than one? What criteria are used to determine if one sample is sufficient or if two or more samples should be collected and composited?

CWMI should revise the application to more specifically describe requirements for the sampling of surface impoundments.

77. Chapter 12 – Section 2.2.3, Process In-line Sampling, Page 4: Correction/clarification.

This section is very vague and does not provide any meaningful information on procedures used at KHF to confirm that treatment, such as stabilization, is effective.

CWMI should either revise Section 2.2.3 of the WAP to provide specific and useful information, or delete the section.

78. Chapter 12 – Section 3.0, Analytical Rationale, Page 6: Correction/clarification.

The application states:

*The waste management unit parameters for tanks, impoundments, and landfills discussed in the applicable sections of the Operation Plan represents current criteria for KHF. They should not be considered strict, unchangeable limitations. As a consequence of changes in incoming wastes, market conditions, facility operations (for example, availability of process or unit capacities), regulations, etc., it may be necessary to reassign a specific tank or impoundment to a different waste management operation or to expand the list of parameters for a given unit. Should such changes be warranted, KHF will conduct the necessary review to ascertain the acceptability and compatibility of the new waste with the waste previously stored/treated in the unit.*

*In the event that the wastes targeted for a unit is potentially incompatible with the unit's previous use, the unit will be decontaminated/cleaned out prior to the new service.*

It is unclear what is meant by the term “waste management unit parameters”. Most waste management unit parameters (e.g. capacity, waste types etc.) are fixed and can only be changed through a permit modification. There are only limited exceptions such as the ability to assign a DSU storage bay to store a different waste type. The application should be specific about which waste management unit parameters can be changed.

CWMI should revise the application to clarify the waste management unit parameters that can be changed without prior DTSC approval and a permit modification.

79. Chapter 12 – Section 3.2, Supplemental Analyses, Page 6:  
Correction/clarification.

The decision on whether to perform supplemental analysis is a significant decision. The application does not provide information or examples of the types of factors that facility management will consider when determining the need to perform supplemental analysis. For example, do you have a list of waste types that experience indicates are commonly mischaracterized or difficult to treat?

CWMI should revise the application to provide additional detail that explains the process used by facility management to determine whether supplemental analysis is required.

80. Chapter 12 – Section 5.0, Incoming Waste Shipment Procedures, Page 10:  
Correction/clarification.

The application states that other measures of inspection will be taken if the container type prohibits adequate visual inspection. No information is provided that indicates that types of alternative inspections that are performed.

CWMI should revise the application to indicate the types of alternative inspections that are performed when visual inspection is not possible.

81. Chapter 12 – Incoming Waste Shipment Procedures, Page 10:  
Correction/clarification.

The application states:

*In addition, for each waste prohibited under regulatory Land Disposal Restrictions and have been treated, exempted, variances, or meet the appropriate treatment standard or prohibitions without treatment, the treater or generator must submit a one-time written certification or notification, as appropriate, with the initial shipment that the waste meets the appropriate treatment standard, prohibition, exemption, or variance (or that the waste naturally meets the appropriate treatment standard in accordance with 22 CCR 66268.7 and 40 CFR 268.7)."*

CWMI should revise the language for clarity.

82. Chapter 12 – Receiving Procedures, Page 10: Correction/clarification.

The application states:

*Compatible container samples may be composited. No more than ten individual container samples may be composited to form a composite sample for analysis.*

If multiple containers of waste are received on the same profile, are the samples not all assumed to be compatible? How do you decide whether to take one sample from one of the ten containers, or to take samples from all ten containers and form a composite? Furthermore, what process (SOP, method, standard) is used for creating a homogenized composite sample.

CWMI should revise the application to explain when and how composite samples are used.

83. Chapter 12 – Section 5.1.1, Exceptions, Page 11 (also reference Page 10, paragraph 1 and Figure 6-1): Correction/clarification.

The application indicates that CWMI provides an exception to mandatory fingerprint analysis of incoming waste, if that waste is designated for storage and subsequent trans-shipment off-site. The rationale for this exception fails because it does not consider safety during storage. Waste that will be sent off-site should still be subject to mandatory analysis to ensure that the waste matches the profile, and to ensure that it is compatible with other waste in the container storage unit.

CWMI should revise the application to either remove, or revise, the exception to mandatory fingerprint analysis for waste intended for shipment off-site.

84. Chapter 12 – Section 5.2, Decision Evaluation Logic, Page 14: Pursuant to Cal. Code Regs., tit. 22, § 66264.13 a detailed chemical and physical analysis of a representative sample of the waste must be obtained prior to transfer, treatment, storage, or disposal.

The application states:

*If the shipment is accepted, the manifest is signed and the transporter is given his copies. In addition, a new waste disposal decision **may** be initiated for the non-conforming waste. (bold emphasis added)*

The language in the application is vague because it does not indicate what will occur. The application should state that a non-conforming waste will only be accepted if the information required by Cal. Code Regs., tit. 22, § 66264.13 has been obtained, i.e. a new/revised profile for the non-conforming waste has been created.

CWMI should revise the application to clarify that the only options for dealing with a non-conforming waste are rejection, or creation of a new/revised profile for the non-conforming waste.

85. Chapter 12 – Section 6.2, Waste Repacking/Bulking Operations, Page 16:  
Correction/clarification.

The application states:

*Prior to co-mingling wastes it **may** be necessary to conduct a waste compatibility test to ensure that the wastes will not adversely react when combined. (bold emphasis added)*

This language is less specific than the language in Table 3-2. DTSC suggests the following revisions:

*Prior to co-mingling wastes, it may be necessary to conduct a waste compatibility test to ensure that the wastes will not adversely react when combined. Table 3-2 contains information indicating when compatibility testing is required. In addition, some wastes would not require this test due to their nature, such as batteries, aerosol cans, light ballasts, lamps etc. because compatibility can be readily discerned.*

86. Chapter 12 – Section 6.2, Waste Repacking/Bulking Operations, Page 16:  
Correction/clarification.

The application indicates that non-bulk containers of waste may be bulked prior to treatment to meet LDRs. DTSC requests that the application state that only compatible material types will be bulked. For example, mixing of soil and PPE should not occur because the PPE interferes with the ability to thoroughly mix the waste and the treatment reagents.

CWMI should revise the application to indicate that only waste with similar physical/material properties, as well chemical compatibility, are eligible for bulking prior to LDR treatment.

87. Chapter 12 – Section 6.3.1/2, Bin/Drum Top Solidification, Page 17:  
Correction/clarification.

The references to bin and drum top solidification should be changed to bulk-container top, and container top, solidification, respectively. In addition, the application should provide greater details on how bin/drum top solidification is performed, and what equipment is used.

As written, the application makes no mention of adding absorbent when performing bin or drum top solidification. The only mention of the use of

absorbents and/or treatment reagents is in Section 6.3.3 in the context of stabilization at the FSU.

CWMI should revise the application to provide further detailed information indicating what bin and drum top solidification entails, and where at the facility it is performed.

88. Chapter 12 – Section 6.3.3.1, Stabilization of Waste Containing Free Liquids, Page 17: Correction/clarification.

The Stabilization Evaluation Test (SET) is mentioned frequently in the WAP and is an important test utilized at the facility. Accordingly, the actual procedure for performing the SET (e.g. the Standard Division Practice [SDP]), should be included in the application.

CWMI should revise the application to include the actual detailed procedure for performing the SET. Either the SDP, or much of the content from the SDP, should be added to the application.

89. Chapter 12 – Section 6.3.3.2, Stabilization of LDR Wastes, Page 18: Correction/clarification.

The application discusses mix ratios for LDR treatment but does not address mixing time. The mixing time used per unit volume of waste treated is an important variable that should be specified as part of the recipe so that it can be replicated each time a batch of waste is treated.

CWMI should revise the application to specify that the mixing time per unit volume of waste treated will be tracked to ensure that each load/batch of waste is treated in the same manner. This is especially important for waste placed on an annual testing program.

90. Chapter 12 – Section 6.3.6, Solar Evaporation, Page 21: Correction/clarification.

The application states:

*Aqueous waste accepted for solar evaporation at the KHF are limited to less than 1% total organics, less than 2% oil and grease and less than 1,000 ppm halogenated organics...*

The reference to one percent total organics appears to be incorrect. The information in Chapter 17 (page 17-1) refers to 10,000 ppm total organic carbon (TOC). Furthermore, the reference to two percent oil and grease may be redundant because any waste approaching this limit is likely to have greater than one percent TOC.

CWMI should revise the application to clarify the waste acceptance requirements for surface impoundments.

91. Chapter 12 – Section 6.3.6, Solar Evaporation, Page 21: Correction/clarification.

It appears that the Commingled Liquid Waste Compatibility Test (CLWCT) is the test described as Practice A in ASTM D5058-12. The test is not limited to liquids; rather, it also has applicability to sludges, semi-solids, and solids.

CWMI should revise the application to remove references to the CLWCT and replace them with the “Comingled Waste Compatibility Test - CWCT.”

92. Chapter 12 – Section 6.4, Final Disposal, Page 21: Correction/clarification.

The application states:

*A test may be performed to confirm the absence of free liquids.*

This language is vague because it does not describe the process used to determine whether the paint filter test is required. Furthermore, because the paint filter test is quickly and easily performed, it should be used routinely when there is any indication that liquids may be present. DTSC suggests the following edits:

*A test may be performed to confirm the absence of free liquids. All loads of waste that have been solidified, including container top solidification, will be tested prior to disposal, and all semi-solid and sludge waste that is not treated by solidification will be tested prior to disposal. In addition, any load of waste involved in a release of liquids (spill) while at KHF will be tested for the presence of free liquids prior to disposal.*

93. Chapter 12 – Chapter 7.0, Quality Assurance/Quality Control, Page 22: Pursuant to Cal. Code Regs., tit. 22, § 66260.11, the referenced version of SW-846 is Update III to the Third Edition.

The application references Update I to the Third Edition of SW-846.

CWMI should revise the application to reference, at a minimum, the most current version of SW-846 referenced in the regulations i.e. Update III to the Third Edition. Please note that SW-846 is referenced in several places throughout the application.

94. Chapter 12 – WAP, Table 2-1: Correction/clarification.

The table references SW-846 as a source for methods used to sample containerized liquids and liquids in surface impoundments. The application does not indicate where in SW-846 (chapter, section, method etc.) the relevant information is found, which makes the Operations Plan less useful for someone wanting to review sampling procedures.

CWMI should revise Table 2-1 to provide a more complete reference indicating where in SW-846 the relevant information on sampling methods is found.

95. Chapter 12 – WAP, Table 3-1: Correction/clarification.

The table references a Water Compatibility test, and Practice C of ASTM standard D5058. As indicated in the standard, if no reactions were observed and no significant temperature change is noted, the waste has passed the Water Compatibility Test. The application should indicate what temperature change (delta T) will be considered a significant temperature change that results in a failed test. Furthermore, the criteria for special handling outlined in SDP LAB-403 should be mentioned in the application.

ASTM D4980-89 was withdrawn in 2009. The method was withdrawn because ASTM concluded that it was essentially a combination of SW-846 Method 9041a and 9045d.

ASTM D5049-90 was withdrawn in 2009. The method can be used as a line of evidence for determining reactivity but cannot be used as a dispositive test for establishing whether the criteria in Cal. Code Regs., tit. 22, § 66261.23 are present.

CWMI should revise the application to indicate what magnitude of temperature change will be used to determine when a sample fails the Water Compatibility test. In addition, CWMI should revise the application to reference EPA methods 9041a and 9045d in place of ASTM D4980, and should clarify that ASTM method D5049 is not a dispositive test for determining reactivity.

96. Chapter 12 – WAP, Table 3-2: Correction/clarification.

The table of supplemental analysis does not include total mass analysis for metals, VOCs, or SVOCs. DTSC understands that totals are commonly provided by generators and are very useful to assist with the pre-acceptance process. In addition, totals data are often used as a basis for determining that TCLP or STLC analysis are not required.

Totals mass analysis (e.g. U.S. EPA Method 8260, 8270, 6010 etc.) are included in Table 3-3 but this table contains less frequently utilized methods. It seems more appropriate to include this information in Table 3-2 given the frequency that totals data are utilized.

CWMI should move total mass analysis for metals, VOCs, and SVOCs, from Table 3-3 to Table 3-2.

97. Chapter 12 – WAP, Table 3-2: Correction/clarification.

Table 3-2 contains information that is out of date and that should be revised. For example, U.S. EPA method 8080 is no longer an appropriate method to use for analysis of PCBs. Furthermore, the table should reference Update III to the Third Edition of SW-846. Finally, a citation for the waste extraction test should be added to the table.

Table 3-2 references a Comingled Liquid Waste Compatibility test and references Practice A of ASTM standard D5058. As indicated in the standard, the practice is applicable to waste liquids, sludges, semi-solids, and solids. In addition, the standard indicates that if any reaction or temperature rise is observed, the incoming waste has failed the compatibility test and is reported. This raises several questions as follows:

- Does CWMI intend for the test described in Practice A of ASTM D5058 to apply to liquids only or to all forms of hazardous waste?
- What temperature change does CWMI consider a temperature rise that results in a failed test?
- What happens if the test fails?
- If CWMI intends to bulk waste and then perform stabilization, is the test performed to confirm that the wastes are compatible prior to stabilization?

CWMI should revise Table 3-2 of the application to address the indicated comments. In addition, CWMI should revise the application to provide further information concerning the use of the Comingled Waste Compatibility Test described in Practice A of ASTM standard D5058.

98. Chapter 12 – WAP, Table 3-2 and Table 3-3: Pursuant to Cal. Code Regs., tit. 22, § 66264.13(b)(2), a hazardous waste facility must have a WAP that specifies the test methods which will be used.

The information in Table 3-2 and Table 3-3 of the WAP should be thoroughly reviewed to ensure that it contains up-to-date and accurate information. For example, DTSC considers it highly unlikely that CWMI will use U.S. EPA methods 8080, 8240, or 8250 in the future because they have been replaced with newer methods. In addition, DTSC requests that the application includes the actual method version numbers for both ASTM standards and EPA methods. DTSC is aware that the inclusion of this information could periodically necessitate a Class 1 permit modification if the information changes. Please clarify if the Bench-Scale Treatment Evaluation mentioned in this table is the same as the Stabilization Evaluation Test (SET) mentioned elsewhere. The reference for the

California Percent Moisture Test appears to be incorrect. Additionally, Method 3015 is listed twice.

CWMI should revise Tables 3-2 and 3-3 of the application to ensure that they contain only test methods that are reasonably expected to be used in the future, and to ensure that method revision/version numbers are included. In addition, clarify testing terminology and check the reference for the moisture test.

99. Chapter 12 – WAP, Appendix WAP D: Correction/clarification.

The application states:

*If a handheld radioisotope identification device is not readily available, the facility will evaluate the decision to accept the material in accordance with the decision evaluation logic described in Section 5.2 of the Waste Analysis Plan.*

It is not clear how the language in Section 5.2 of the WAP would be used to accept waste that has triggered the radiation alarm without knowing what isotope was involved.

CWMI should revise the application to indicate that waste that triggers the radiation alarm will only be accepted if the source of the radiation can be identified, and/or prior approval has been received from RHB.

100. Chapter 14 – Section 14.1.1, Repacking and Bulking Operations, Page 14-2: Pursuant to Cal. Code Regs., tit. 22, § 66260.10, transfer means the loading, unloading, pumping or packaging of hazardous waste.

The description of bulk liquid transfer techniques omits other commonly employed transfer processes such as gravity drain and syphon.

CWMI should ensure that the description of processes to be used to achieve bulk liquid transfer is complete.

101. Chapter 14 – Section 14.2(a), Overview, Page 14-4: Correction/clarification.

The application states:

*Most wastes received at KHF in small containers (e.g., drums, labpacks) are sent directly to the DSU for sampling, analysis and/or inspection. The primary exception is Toxic Substances Control Act (TSCA)-regulated polychlorinated biphenyl (PCB) wastes that are received at the DSU where they are not stored temporally or permanently. The PCB wastes are transferred directly to the PCB Flushing/Storage Unit for storage and/or processing.*

The phrase “received at the DSU” is unclear. DTSC prefers more specific language that indicates that TSCA waste may be on a transport vehicle located at the DSU unloading bays but will not be removed from the transport vehicle.

DTSC suggests the following edits:

*Most wastes received at KHF in small containers (e.g., drums, labpacks) are sent directly to the DSU for sampling, analysis and/or inspection. The primary exception is Toxic Substances Control Act (TSCA)-regulated polychlorinated biphenyl (PCB) wastes. TSCA waste may be present on a transport vehicle at the DSU unloading bays, but will not be taken off the transport vehicle at the DSU, except as necessary to allow for the unloading of non-TSCA waste that are received at the DSU where they are not stored temporarily or permanently. The PCB wastes are transferred directly to the PCB Flushing/Storage Unit for storage and/or processing.*

102. Chapter 14 – Section 14.4(c), Analysis and Removal of Collected Liquids, Page 14-10: Correction/clarification.

The application states:

*Normally, the aggregate would be removed to the depth of affected soil, or a maximum depth of six inches to preserve the integrity of the geocomposite and underlying geomembranes. Affected soils would typically be treated at the FSU, if required to meet Land Disposal Restrictions, and then landfilled onsite.*

There is no regulatory basis for the position that spill residue at a depth greater than six inches from the surface may remain in place because such a practice constitutes land disposal. Accordingly, DTSC suggests the following edits:

~~*Normally, the aggregate will be removed and replaced with clean aggregate of the same specification to the depth of affected soil, or a maximum depth of six inches to preserve the integrity of the geocomposite and underlying geomembrance. Affected soils would typically be treated at the FSU, if required to meet Land Disposal Restrictions, and then landfilled onsite.*~~

103. Chapter 15 – Section 15.3, Final Stabilization Unit, Third Page: Correction/clarification.

The application references planned expansion and references section 15.3(b). The expansion of the FSU that was previously proposed has been removed from the application.

CWMI should revise the application to remove references to expansion of the FSU.

104. Chapter 15 – Section 15.3(a)(2)(A), Tank System and Secondary Containment Design, Fifth Page: Correction/clarification.

The application states:

*The capacity of each tank (approximately 20,000 gallons) is much greater than the volume of the bulk loads received (typically 5,000 gallons) so overtopping of the tank is unlikely.*

The capacity of a tank cannot be approximate. Based on the information in Table 15-1, the capacity of each tank is 20,000 gallons. For ease of ascertaining compliance, it would be helpful if the minimum tank freeboard when storing 20,000 gallons was calculated and presented.

CWMI should revise the application to specifically indicate the maximum amount of waste that can be in an FSU tank at any time. Furthermore, this maximum capacity should be restated as a minimum tank freeboard.

105. Chapter 15 – Section 15.3(a)(2)(A), Tank System and Secondary Containment Design, Sixth Page: Correction/clarification.

The application discusses short term storage of waste in the FSU tanks. However, the application is not clear whether the tank covers will be fitted when storage is occurring. Furthermore, the application should indicate where the tank covers will be stored when not in use. Finally, the application does not address operation of the baghouse extraction system when storage is the only activity that is occurring in the FSU.

CWMI should revise the application to indicate that the FSU tank covers will be used when storage is occurring, to specify a storage location for the FSU tank covers when not in use, and to discuss conditions for operation of the baghouse ventilation system. DTSC believes that the decision to operate the baghouse can be a case-by-case decision based on the type and quantity of waste that is being stored.

106. Chapter 15 – Section 15.3(a)(2)(E), Ignitable, Reactive, or Incompatible Wastes, Seventh Page: Pursuant to Cal. Code Regs., tit. 22, § 66264.194(a), hazardous waste must not be placed in a tank system if it could cause the tank to corrode.

The language in Chapter 15 of the application implies that CWMI uses sacrificial liners in the waste processing tanks to allow for the processing of incompatible materials such as acids. The use of a sacrificial liner is acceptable to prevent

damage to the tank resulting from abrasion due to contact with debris and/or the excavator bucket. However, a sacrificial liner should not be used to allow the processing of highly corrosive acidic waste.

CWMI should revise the application to clarify that highly corrosive acidic waste will not be placed into carbon steels tanks, regardless of the presence of a sacrificial liner. In addition, the application should indicate how CWMI will determine whether the waste is sufficiently corrosive to preclude processing in the tanks e.g. how will the results of the mandatory testing described in the WAP be used.

107. Chapter 15 – Table 15-1: Correction/clarification.

Some of the table footnotes are no longer relevant. In addition, the remaining service life of the FSU tanks is incorrect.

CWMI should revise Table 15-1 of the application to correct the remaining service life of the FSU tanks to 2025 and remove the footnotes that are not relevant.

108. Chapter 15 – Exhibit 15-5: Correction/clarification.

The FSU Layout and Process Flow Drawings are not legible.

CWMI should revise the application to ensure that the drawings found in Exhibit 15-5 are legible.

109. Chapter 15 – General Comment: Pursuant to Cal. Code Regs., tit. 22, § 66264.191(a), a minimum tank shell thickness must be maintained at all times to ensure sufficient shell strength.

The application does not indicate the minimum tank shell thickness that is necessary for the FSU and PCB tanks to function as intended. This information is necessary as a point of reference for comparison with the results of the annual tank wall thickness measurements. (See Chapter 31 inspection tables).

CWMI should revise the application to include information on the minimum tank shell thickness that is necessary to ensure that the tanks are fit for purpose.

110. Chapter 17 – Section 17.1, General, Page 17-1: Correction/clarification.

The application indicates that the surface impoundments accept low solid content wastes, but this term is not defined. DTSC understands, based on the information in Standard Division Practice LAB-411, that waste containing up to 10 percent solids is accepted at the facility for treatment in surface impoundments.

CWMI should revise the application to include the maximum solids content of 10 percent for waste that can be discharged to the surface impoundments.

111. (a) Chapter 17 - Response Action Plan, Exhibit 17-1: Pursuant to Cal. Code Regs., tit. 22, §§ 66264.301(a)(2) and 66264.303(c)(3), the leachate collection and removal system (LCRS) pump operating conditions are to be specified in DTSC's permit. Furthermore, Cal. Code Regs., tit. 23, § 2543 appears to impose more stringent operating requirements for removal of leachate.

(b) (Checklist Items 679 and 1062) Procedures for inspection of the LCRS are not specified.

The application contains proposed pump action and compliance levels but it is not clear how the levels were calculated (for example, see Table 1, final page of monthly reports). Please provide the figure identified as Figure 2 in the footnote to the table. In addition, please indicate why inactive surface impoundment P-15 is not included in the table.

CWMI should revise the application to include documentation indicating how the LCRS compliance levels (i.e. max sump levels) were calculated. In addition, CWMI should explain how impoundment P-15 is operated to minimize the infiltration of clean water. Finally, the application should include procedures for inspection of the LCRS.

112. Chapter 17 - Surface Impoundment P-15: Pursuant to Cal. Code Regs., tit. 22, § 66264.113(d), a surface impoundment that no longer receives hazardous waste may continue to be used, under certain circumstances. However, the obligation to monitor the surface impoundment does not necessarily end just because the unit no longer receives hazardous waste.

Surface impoundment P-15 is no longer used to manage hazardous waste but has not been formally closed. Therefore, CWMI must ensure that any subsequent use of the impoundment does not impact closure of the impoundment, or the operation of the surrounding active impoundments. Furthermore, CWMI must have a mechanism for demonstrating that impoundment P-15 is not leaking which could have the effect of mobilizing any underlying contaminants.

CWMI should revise the application to indicate the monitoring, maintenance, and inspection procedures to be applied to surface impoundment P-15.

113. Chapter 17 - Surface Impoundment Certification: Pursuant to Cal. Code Regs., tit. 22, § 66264.226(c), surface impoundments must be certified by a qualified engineer. In addition, the surface impoundments must be recertified after any

extended period of time (at least six months) during which the impoundment was not in service.

The application does not include a newly prepared engineer's certification for the surface impoundments.

CWMI should revise the application to include an engineer's certification. Furthermore, the certification should include P-15 because the impoundment has not been closed and a failure of this impoundment could impact P-14 and P-16.

114. Chapter 30 – Security, Page 30-1: Pursuant to Cal. Code Regs., tit. 22, § 66264.14(b), the applicant must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility. In addition, pursuant to Cal. Code. Regs., tit. 22, § 66270.32(b)(2), permits shall contain terms and conditions as the Department determines necessary to protect human health and the environment.

In the revised application, CWMI has removed provision for a 24-hr-a-day, 7-day-a-week, security guard, and instead proposes to rely on the facility fencing and locked access gates. This reduction in site security is unjustified. The applicant may propose changes to the existing security arrangements but must demonstrate that the alternative approach provides an equivalent or greater level of site security. For example, in verbal conversations with DTSC, CWMI has raised the possibility of installing security cameras that are monitored remotely.

CWMI should revise the application to require a 24-hr, 7-day a week, security guard or change the proposal so that it provides for an equal or greater level of security using new alternative measures. CWMI should seek verbal approval from DTSC for any changes to the status quo prior to responding to this NOD comment.

115. Chapter 31 - Exhibit 31-1, Daily Inspection Program, Pages 3 and 4: Correction/clarification.

The unit name is listed as "PCB Storage/Transfer Unit". This unit is referred to as the "PCB Flushing/Storage Unit" elsewhere in the application.

CWMI should change the name on the inspection form to "PCB Flushing/Storage Unit" to be consistent with the name used elsewhere in the application.

116. Chapter 31 - Exhibit 31-1, Daily Inspection Program, Page 8: Pursuant to Cal. Code Regs., tit. 22, §§ 66264.175 and 66264.193, spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system in a timely manner, not to exceed 24 hours, to maintain containment availability.

The inspection checklist states the following:

*Check containment sumps for liquids [ 12" ]*

*\*If particulate emissions are noticeable, notify Environmental Manager for further evaluation.*

*Check for adequate freeboard (max. of 1' from top deck)\*\**

The checklist does not indicate what quantity of material in the sump will trigger the need to remove the liquid. DTSC recommends that the requirements for the removal of accumulated liquids differentiate between spilt liquids (product or hazardous waste) versus rainwater.

It appears that there is a star missing from the checklist item relating to checking for baghouse emissions to tie it to the footnote. Furthermore, DTSC disagrees with the language in SDP ER-202 regarding the timeframe for responding to observed emissions from the FSU baghouse.

The checklist indicates that a maximum of one foot of freeboard is acceptable in the FSU processing tanks. Freeboard should be specified as a minimum, one foot of freeboard in the FSU tanks seems insufficient, and there is no apparent correlation between the permitted tank volume and freeboard (see also comment 104). Finally, it is not clear what "adequate freeboard limit is applied after initial load(s) have been processed" means.

DTSC recommends that CWMI revise the application to indicate that pumpable quantities of spilt chemicals or hazardous waste will be removed upon discovery. In addition, CWMI should provide a calculation showing the relationship between the FSU permitted tank volume and freeboard, and demonstrate the adequacy of this freeboard based on seismic factors e.g. consideration of "sloshing" effects.

With respect to the sumps, DTSC suggests language similar to the following:

*Sumps are inspected daily for the presence of liquids. If a pumpable quantity of spilt material is present, the material will be removed within [enter time frame] of discovery. In addition, if the sump is full of a non-spilt material (i.e. rainwater) it will be removed within [enter time frame] of discovery. Accumulated rainwater in the sump that does exceed the volume of the sump may be left to evaporate.*

117. Chapter 31 - Exhibit 31-1, Daily Inspection Program, Page 16: Correction /clarification.

The indicated sump liquid levels (in brackets) are different from those listed in the table on the final page of the monthly progress reports (see also comment 111).

CWMI should check and confirm which values are correct, and modify the application if necessary.

118. Chapter 31 - Table 31-2, Page 4 of 7: Correction/clarification.

The prior version of the inspection plan called for a weekly inspection of the Final Stabilization Unit secondary containment sumps. The inspection frequency was reduced to monthly.

CWMI should revise the application to increase the FSU secondary containment sump inspection frequency to weekly.

119. Chapter 31 - Table 31-2 (Page 5 of 7) and Exhibit 31-1 (Page 6): Correction/clarification.

Application Table 31-2, Page 5 of 7 (Bulk Storage Units), states:

<i>Container Storage Areas</i>	<i>Check for evidence of spills</i>	<i>Weekly</i>
--------------------------------	-------------------------------------	---------------

Application Exhibit 31-1, Page 6 (Bulk Storage Unit – Phase 1), states:

<i>Stored Containers</i>	<i>Check for spills</i>	<i>(D) daily</i>
--------------------------	-------------------------	------------------

*Check to ensure containers are properly located*

- *Stabilized Waste*
- *Drums overnight in asphalt area*
- *Tankers < 24 hours in asphalt area*

Table 31-2 indicates that checks for spills will occur weekly and Exhibit 31-1 indicates the checks will occur daily; therefore, an inconsistency exists. The entire table and exhibit should be checked for consistency. In addition, BSU 1 is not suitable for storing liquids, regardless of container type, and non-bulk containers (without free liquids) must be elevated such as on a truck or trailer.

CWMI should revise the inspection checklist to indicate that container storage area inspections will occur daily. In addition, the checklist should reflect the fact that waste containing free liquids will not to be stored in BSU 1 and non-bulk containers must be elevated.

120. Chapter 31 - Final Page: Clarify what is 7422 A Respirator Cartridge. DTSC understands that Scott branded respirator cartridges use the 7422-XXX number format. This information is necessary so that DTSC staff can bring appropriate PPE when travelling to the site.

121. Chapter 31 - (Checklist Item 26): The DSU weekly inspection should explicitly include verifying that the fire water supply tank contains water, and the minimum acceptable water level should be specified.
122. Chapter 33 - Section 33.2(d), Unloading Bulk Liquid Waste, Page 33-3: Pursuant to Cal. Code Regs. tit. 22, § 66264.1, hazardous waste transfer is a regulated activity in California.

The application states:

*At the FSU, BSU, and PCB Flushing/Storage Unit bulk liquid wastes are typically unloaded by pump or gravity...*

This language in the application is too general because it does not reference activities by unit. For example, presumably the reference to BSU means BSU 2. Furthermore, it is not clear why the DSU is not mentioned given that transfer will occur at the unloading bays.

CWMI should revise the application to clearly state whether you are requesting authorization to transfer bulk liquid wastes at BSU 2. If transfer will be performed, then this will need to be described in detail in Chapter 14 and should be identified as a new activity in Chapter 2, Attachment 5, and Chapter 51.

123. Chapter 33 - Section 33.6(a), Engineering Controls, Page 33-4: Correction/clarification.

The application lists examples of engineering, and administrative controls. Some of the items are misidentified as engineering controls. For example, warning signs, deluge showers, and eye-wash stations are not engineering controls because they do not reduce the source of exposure. Warning signs are used to notify workers of hazards that cannot be engineered out. Deluge showers and eye wash stations serve to mitigate the severity of an exposure only after it has occurred.

CWMI should revise the application to correctly identify project safety controls.

124. Chapter 33 - Section 33.6(b), Administrative Controls, Page 33-5: The statement that the surface impoundments treat only less toxic aqueous waste is inaccurate. There are many examples of aqueous metal bearing wastes that are highly toxic that may be treated in surface impoundments.

DTSC suggests the following edits:

*Surface impoundments treat only ~~less toxic~~ aqueous wastes with low levels of toxic volatile organic compounds concentrations, which limits the potential for harmful emissions.*

125. Chapter 35 – Exhibit 35-1, Section 35.10, Contingency Plan, Page 11:  
Correction/clarification.

The application states:

*Such incidents may include fire, explosion, or natural occurrences, and releases will be reported in accordance with Enforcement Order Docket #HWCA 20102948, issued May 20, 2011.*

It is not clear why the enforcement order is referenced. The reporting provisions of the Order (Section 3.1.1) direct compliance with Permit 02-SAC-03 which will no longer be in effect when the new application becomes effective. Therefore, it is sufficient to simply cite regulatory requirements.

CWMI should revise the application to reflect the regulatory requirements relating to reporting.

126. Chapter 35 – Exhibit 35A, Section 35A.2, PCB Flushing/Storage Unit, Page 18:  
Correction/clarification.

The application mentions a future recirculation tank which is no longer proposed. In addition, the PCB Flushing/Storage Unit is described as a containment building which is confusing because the unit is not permitted as a containment building.

CWMI should revise Exhibit 35A to remove references to a recirculation tank and containment building.

127. Chapter 35, Exhibit 35A (Specific Response Procedures): Wildfires pose a risk to KHF given its location and climate. Given this knowledge, the Contingency Plan should include language specifically addressing wildfires. Furthermore, the Contingency Plan should address wildfires that originate both onsite and offsite.

The Contingency Plan should be revised to address, at a minimum, the following:

- Fire breaks, including their specification (width) and maintenance
- Identify critical infrastructure susceptible to damage during a fire
- On-site firefighting resources that are effective against wildfires
- On-site sources of water e.g. surface impoundment P-15
- Actions to be taken as a wildfire approaches the facility including distance as a trigger
- Training in wildfire response
- Notification requirements for wildfires

CWMI should revise Chapter 35 of the application to provide more specific information concerning wildfires. DTSC's expectation is that CWMI adds a

significant amount of new material to the application to ensure that this issue is comprehensively addressed.

128. Chapter 36: Pursuant to Cal. Code Regs., tit. 22, § 66264.16, the owner or operator of a hazardous waste facility must ensure that facility personnel are adequately trained to perform their duties safely.

The personnel training requirements were recently revised as a result of new rule making following the passage of Senate Bill SB 673. Chapter 36 of the application does not include the new training requirements because they were only promulgated after the application was submitted.

CWMI should revise the application to reflect the new personnel training requirements applicable to hazardous waste facilities.

129. Chapter 39, Page 39-1: Pursuant to Cal. Code Regs., tit. 22, § 66264.11(a)(1), the application must include a written closure plan describing how and when each hazardous waste management unit at the facility will be closed.

The language in Chapter 39 does not clearly describe how closure of the facility will occur. The application describes two closure scenarios: current closure and final closure. However, it is not clear how these two scenarios are different. Because there is currently only one active hazardous waste landfill (B-18), the concept of sequential closure of landfills is not relevant. Furthermore, the reader is not directed to the Closure and Post-closure Plan (bound separately).

CWMI should revise Chapter 39 of the application to remove references to two closure scenarios, and should direct the reader to refer to the Closure and Post-closure Plan.

130. Chapter 41, Exhibit 41-1 (Checklist Items 367, 368): Pursuant to Cal. Code Regs., tit. 22, § 66264.147, an owner or operator of a hazardous waste transfer, treatment, storage or disposal facility or a group of such facilities, shall demonstrate to the Department financial responsibility for bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operations of the facility or group of facilities.

The insured name on the Liability Certification of Insurance is Waste Management Inc. The insurance requirement applies to the owner, which is identified in Part A of the permit application as Chemical Waste Management, Inc.

CWMI shall revise the Liability Certification of Insurance so that the facility owner/operator is listed as the insured party.

**The following comments relate to DTSC's permit application technical completeness checklist (attached). For each of the indicated comments, please indicate where in the application the information is found, or include the information if it is not currently in the application.**

131. DTSC Technical Completeness Checklist:

- a) Checklist Item 21: Copy of the most recent grant deed.
- b) Checklist Item 20: Missing assessor's parcel numbers.
- c) Checklist Items 64, 70: Location of air monitoring stations is not indicated on the topographical map.
- d) Checklist Item 112: EPA method 1310 is identified in Chapter 12, Table 3-3, as available for use but there is no mention of its application to D004 and D008 waste as described in 22 CCR 66268.40(b).
- e) Checklist Item 117: No specific mention of the requirement from 22 CCR 66268.40(c) that for mixtures of waste subject to treatment, the treatment residue shall meet the most stringent treatment standard for the constituent of concern.
- f) Checklist Item 215: Discuss any arrangements that CWMI has with emergency response contractors e.g. Chemtrec.
- g) Checklist Item 217: Document refusal to enter into arrangement of state and local emergency services.
- h) Checklist Item 223: Provide a copy of the facility health and safety manual.
- i) Checklist Item 243: Include a statement indicating that the emergency coordinator (and alternates) has the authority to commit the resources needed to carry out the contingency plan. 22 CCR 66264.55.
- j) Checklist Items 268, 269: The application does not discuss the possibility of transferring waste out of a leaking impoundment to another impoundment e.g. P-14 to P-16 or vice versa. If P-9 was found to be leaking, would there be any way to transfer liquid to P-14 or P-16? 22 CCR 66264.227(b)(5).
- k) Checklist Item 724: If a tank is found to be leaking, the waste shall be removed from the tank within 24 hours. 22 CCR 66264.196(b)(3)(A).
- l) Checklist Item 725: Contain all visible releases. 22 CCR 66264.196(b)(4)(A)/(B).
- m) Checklist Item 726: Report a release to the environment within 24 hours. 22 CCR 66264.196.

Table 1 – Supplemental information for NOD comment 5.h.

<b>Appendix A</b>	
<b>Waste Code</b>	<b>Comment</b>
121	Add groupings 1 and 2. Delete grouping 20 because groupings 1 and 2 more specifically describes the waste. Delete grouping 21 because the waste is a liquid.
123 through 135	Delete grouping 21 because these wastes are all liquids.
151 and 172	Delete groupings 20 and 22 because the waste is a solid.
231	Delete grouping 21 because the waste is a liquid.
341, 342, 343	Delete groupings 7, 8, and 21 because the waste is a liquid.
351	Delete grouping 20 because the waste is a solid.
181, 351, 352, 511, 512, 513, 571, 591, 613, 614, 751	Delete grouping 22 because the waste is a solid.
711 through 728	Delete grouping 21 because the waste is a liquid.
751	Delete grouping 22 because the waste is a solid.
D001	Delete groupings 9, 10, 11, 12, and 18 because groupings 5, 6, 7, and 8 more specifically describes the waste.
D002	Delete groupings 18 and 19 because groupings 3 and 4 more specifically describes the waste.
D003	Delete groupings 18 and 19 because groupings 11 and 12 more specifically describes the waste.
<b>Chapter 2, Attachment 5</b>	
The following comments are predicated on the assumption that a waste that is mostly solid (e.g. >90% solids by weight) is referred to as a solid in the table, and a waste that is mostly liquid is described as a liquid. This issue requires clarification to ensure that there are no conflicts with the definition of a solid/sludge/liquid in Standard Division Practice LAB-400 (Physical Description Screening Analysis).	
<b>Group</b>	<b>Comment</b>
1 and 20	Delete DSU container top solidification. Container top solidification only applies to solids with small amounts of liquids. If the waste is mostly liquid then container top solidification is not appropriate.
3 and 21	Did you mean to include DSU container top solidification?
7	Delete landfill because ignitable waste cannot be landfilled. Lab pack waste, which may contain ignitables, has its own category (#13).
Footnote 3	Treatment in surface impoundments is by solar evaporation and limited to waste meeting LDRs, and containing <=10% solids.



## Department of Toxic Substances Control



Jared Blumenfeld  
Secretary for  
Environmental Protection

Meredith Williams, Ph.D.  
Acting Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200

Gavin Newsom  
Governor

### MEMORANDUM

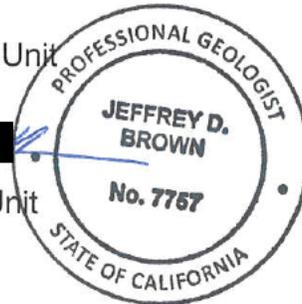
TO: Ryan Batty, CH #6508  
Senior Hazardous Substances Engineer  
Sacramento Permitting Division - Landfill Unit  
Hazardous Waste Management Program

FROM: Jeff Brown, PG #7757 [REDACTED]  
Chief, Sacramento Geological Services Unit  
Sacramento Geologic Services Branch  
Site Mitigation and Restoration Program  
[REDACTED]

REVIEWER: Stephen C. Sterling, PG #4752  
Senior Engineering Geologist  
Sacramento Geologic Services Branch  
Site Mitigation and Restoration Program

DATE: March 4, 2019

SUBJECT: 2018 Engineering Feasibility Study  
Chemical Waste Management – Kettleman Hills Facility  
Kings County, California  
Project No. 25040/100032-33/20050827



### DOCUMENTS REVIEWED

- Comments to January 26, 2018, Memorandum from DTSC Regarding 2017 Draft Engineering Feasibility Study, Kettleman Hills Facility, Kings, County, California; prepared by Amec Foster Wheeler Environment & Infrastructure, Incorporated, dated May 18, 2018.
- Engineering Feasibility Study 2018, Class I Waste Management Units, Kettleman Hills Facility, Kings County, California; prepared by Amec Foster Wheeler Environment & Infrastructure, Incorporated, dated May 10, 2018.

The Sacramento Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) reviewed the above-referenced documents and prepared the following comments. If you have any questions regarding this memorandum, please contact me at (916) 255-3704 or [jeff.brown@dtsc.ca.gov](mailto:jeff.brown@dtsc.ca.gov).

## SCOPE OF REVIEW

The Response to Comments (RTCs) and Engineering Feasibility Study (EFS) present responses to technical observations and recommendations made by GSU in a memorandum issued on January 26, 2018, and provides a revised evaluation of releases from Class I regulated waste management units at the Kettleman Hills Facility (KHF). The EFS provides recommendations and a path forward for achieving the water quality protection standards (WQPS) and environmental protection standards (EPS) set forth in Title 22 of the California Code of Regulations (CCR).

GSU was asked to conduct a technical review of the RTCs and revised EFS to determine if the information provided is sufficient to meet the monitoring program requirements of Title 22, specifically, §66264.98(k)(6) et seq., needed to support a remedy selection for the saturated zone beneath the facility.

## COMMENTS

GSU has reviewed the responses, information and data provided by Chemical Waste Management, Inc. The information in both the RTCs and EFS substantively address GSU's comments outlined in the January 2018 memorandum.

However, GSU has two additional comments, the first of which should be addressed in a revision of the EFS:

1. Monitored Natural Attenuation (MNA) Performance Metrics. The performance metrics currently proposed for the MNA remedy for the various units at the facility address only contaminant concentration evaluation in wells. Pursuant to industry standard guidance for MNA remedy selection and performance, the facility needs to provide data which can demonstrate plume extent and stability as a means to show the subsurface has the capacity to naturally attenuate the plume. These are central concepts in the viability and acceptance of any MNA remedy.

Plume extent and stability, however, cannot be determined solely evaluating concentration trends at an individual well or wells as currently proposed in the EFS. Instead, plume extent and stability should be demonstrated via data collected from wells which are downgradient of the detected contamination. The EFS should be revised to acknowledge and include this metric.

2. EFS Purpose. GSU review indicates, once comment #1 above is adequately addressed, the EFS will include sufficient information to support a remedy selection for groundwater.

However, it should be noted that the provision of the EFS is not intended, and does not contain sufficient information, to be usable as a corrective action plan to 1) manage the corrective action program for groundwater or 2) manage any soil

vapor monitoring or corrective action program anticipated for the unsaturated zone.

Separate documents detailing the monitoring scope, well locations, frequency of sampling, and other technical elements of a corrective action plan for these two programs, would need to be submitted for DTSC review and approval to support the implementation of the program pursuant to CCR §66264.100.



Jared Blumenfeld  
Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Meredith Williams, PhD.  
Acting Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200



Gavin Newsom  
Governor

### MEMORANDUM

TO: Ryan Batty, P.E.  
Project Manager  
Permitting Division, Sacramento

FROM: Peter Gathungu, P.E., G.E. [REDACTED] 2/20/19  
Senior Hazardous Substances Engineer  
Engineering and Special Projects Office

REVIEWER: Perry Myers, P.E. [REDACTED]  
Senior Hazardous Substances Engineer  
Engineering and Special Projects Office

SUBJECT: REVIEW OF HAZARDOUS WASTE FACILITY PERMIT RENEWAL  
APPLICATION OPERATION PLAN, AND CLOSURE AND POST-  
CLOSURE PLANS, KETTLEMAN HILLS FACILITY, KINGS COUNTY,  
CALIFORNIA (SITE CODE: DTSC100032-33)

DATE: FEBRUARY 20, 2019



### DOCUMENTS REVIEWED

1. *Hazardous Waste Facility Permit Renewal Application, Operation Plan, Chemical Waste Management, Inc., Kettleman Hills Facility*, dated February 18, 2013 (Revision 1: May 15, 2013, Revision 2: July 15, 2017, Revision 3: March 16, 2018) (Operation Plan) .
2. *Closure and Post-Closure Plans, Kettleman Hills Facility, Kings County, California*, dated March 15, 2018 submitted to Chemical Waste Management, Inc., 35251 Old Skyline Road, Kettleman City, CA 93239 prepared by Golder Associates, Inc., 3 Corporate Park, Suite 200, Irvine, CA 92606.
3. *Second Notice of Deficiency for Chemical Waste Management, Inc., Kettleman Hills Facility*, EPA ID No. CAT 000646117. (not dated) (RTC)

## INTRODUCTION

The Engineering and Special Projects Office (ESPO) of the Department of Toxic Substances Control (DTSC) has completed its review of the above listed documents for the Kettleman Hills Facility (KHF), in Kettleman City, Kings County, California. We previously reviewed an earlier version of the Application and provided our review comments in a memo dated November 6, 2017. If you have any questions or comments regarding this memorandum, please contact me at (916) 255-6662 or via email at [Peter.Gathungu@dtsc.ca.gov](mailto:Peter.Gathungu@dtsc.ca.gov).

## PROJECT SUMMARY

The KHF is owned and operated by Chemical Waste Management, Inc. (CWMI) and is located on the north side of Highway 41 about 2.5 miles west of Interstate 5 and about 3.5 miles southwest of Kettleman City in Kings County, California. The KHF site is surrounded by cattle grazing and oil and gas production operations. The KHF was established in 1979 and encompasses about 1600 acres of which 696.5 acres are presently permitted for active hazardous and municipal solid waste management activities. However, the hazardous (Class I) and municipal solid waste (Class II/III) operations are managed separately. The facility, an active hazardous waste treatment, storage, and disposal facility (TSDF), consists of several active, inactive, and closed Class I hazardous waste management units. There is one active hazardous waste landfill (Unit B-18), one active municipal solid waste landfill unit (Units B-17), a polychlorinated biphenyl (PCB) flushing/storage unit, a final stabilization unit (FSU), two bulk storage units (BSU I and BSU II), a drum storage unit, four closed landfill units, one inactive landfill unit (B-19, which also contains municipal solid waste separated from the hazardous waste), and several active and inactive surface impoundments.

The Operation Plan was submitted to DTSC to satisfy California Code of Regulations (CCR) Title 22 Division 4.5 requirements for an operations plan for the Kettleman Hills Facility as part of the permit renewal application. The closure and post-closure plans address how and when closure of existing active and inactive hazardous waste management units and final closure of the facility will occur, post-closure monitoring and maintenance, and closure and post-closure cost estimates.

ESPO has the following comment(s) and recommendation(s) on the RTC and revised Report. We have included our previous comments and our responses to the RTC and revised Report, in italics, for ease of reference.

## COMMENTS AND RECOMMENDATIONS

### PREVIOUS COMMENTS

#### Operation Plan

1. Exhibit 14-1, Containment Capacity Calculations for Containers. The seventh bullet in the Storage Bay Available Capacity uses the full two-foot depth over the entire 86-foot length of the trench. However, our review of Figure 14-1 Drum Storage Unit shows that the trench is sloped. In addition, the footnote in this section states that the facility configuration was based on as-built drawings from 1989. The calculations should be checked to see if the volume in the trench overlaps with the volume in the storage bay surface, and revisions made if necessary. Although it is fine to use the as-built drawings in determining facility configuration, the drawings should be used together with a current inspection/review of existing conditions. The footnote should be augmented to include current conditions inspection verifying that as-built drawings still represent currently existing conditions.

*No further comment.*

2. Figure 14-1 Drum Storage Unit, Kettleman Hills Facility. This figure is not dated. We note that the other figures in this section also are not dated. The figures should be revised to include dates. We also noted that detail sections A-A' and B-B' are not to scale. It would be helpful to the reader to include a scale or dimensions with the details.

*No further comment.*

3. Section 15.2(c) New Installations (22 CCR 66270.16(f)). The last sentence lists the regulations that will be followed in installation of new tanks. In addition to following the listed regulations, the text should be revised/expanded to state that DTSC will be given an opportunity to review and approve any tank replacement.

*No further comment.*

4. Exhibit 15-3.2 Most Recent Tank Assessment and Certification Report for PCB Liquids Storage Tank. The last paragraph of the recertification dated July 11, 2017 is missing the word "be" in the portion of the second sentence after a comma and starting with the word "to". In addition, the certification is signed and stamped, but a signing and stamping date is not included. The text should be revised and a signing and stamping date should be included as required by Section 6735 of the California Business and Professions Code.

*No further comment.*

5. Exhibit 15-3.2 Most Recent Tank Assessment and Certification Report for PCB Liquids Storage Tank. Appendix 1—Field Inspection Recertification Report. An  $S_{DS}$  value of 1.105 is used in calculating seismic loads. However, our review of the USGS website resulted in a slightly higher value of 1.116. In addition, the resisting moment calculation shows a value of 607,615 ft#, but our review of the data in the calculation resulted in a higher value of 729,138 which yields factor of safety of 2.9 instead of the 2.4 shown in the calculation. The calculations should be reviewed and corrections made as necessary.

*No further comment on the revised  $S_{DS}$  value. However, we note that the calculation for resisting moment (RM) was not changed and still appears to be incorrect. The line “= (116,758# + 4765#) (12.0/2)” appears to have been calculated using 10.0/2 instead of the listed 12.0/2. The calculation should be revised to use the correct value.*

6. Exhibit 15-3.2 Most Recent Tank Assessment and Certification Report for PCB Liquids Storage Tank. Appendix 2—tank Calculations and thickness Assessment. The Criteria subsection in the section titled Structural Calculations lists tank dimensions of 12-foot diameter and 7-foot height. However, the section title lists tank dimensions of 12-foot diameter and 12-foot height. The discrepancy should be removed. Also, see comment 5 above regarding the value of  $S_{DS}$  used.

*The revised report includes a note stating that liquid height is limited to seven feet and directs the reader to AWWA D100. However, the liquid height limitation is based on secondary containment and not AWWA D100. Alternatively a full citation of the relevant section in AWWA D100 should be included. In addition, the tank is restricted to a volume of 7,500 gallons (which equates to an approximate liquid height of nine feet) as stated on page 3 of 3 of Exhibit 15-2 Containment Capacity Calculations for Tanks at the PCB Flushing/Storage Unit. The calculations should be revised to use the maximum allowable height restriction, or the height restriction should be revised to seven feet.*

7. Exhibit 15-3.2 Most Recent Tank Assessment and Certification Report for PCB Liquids Storage Tank. Appendix 4 – Photographs. The photographs are not dated. A date when each photograph was taken should be added to the photo captions for clarity and completeness.

*No further comment.*

8. Exhibit 15-4 Tank Construction Material Compatibility Charts. The included compatibility chart is difficult to read or not legible. We also note that the chart is

dated September 1974. A clear, legible and updated chart should be provided.

*No further comment on the content, however, significant portions of the copy are not legible. A cleaner/legible copy should be included.*

9. Exhibit 15-5 FSU Layout and Process Flow Diagrams. The included drawings are not dated. In addition, portions of the drawings and diagrams are difficult to read or not legible at all. All the drawings should be dated, and clear legible drawings and diagrams should be provided.

*The drawings appear to have been revised, however, the included drawings are not legible. Clear legible drawings should be included.*

10. Exhibit 15-6 Most Recent Tank Assessment Certification Report for FSU Waste Processing Tanks. The first sentence in the first paragraph of the certification includes a description of the tank, but does not include the tank capacity and dimensions. The text should be revised clearly indicate the number of tanks being certified and the tank dimensions. We also note that the concrete secondary containment is part of the tank system and should be fully described.

*No further comment.*

11. Exhibit 15-6 Most Recent Tank Assessment Certification Report for FSU Waste Processing Tanks. The second sentence in the first paragraph of the certification refers to regulations for existing tanks, however, these tanks were installed in 1990 (as stated in the third paragraph) and therefore are considered new tanks. The text should be revised to reference regulations for new tanks and subsequent analysis should be revised accordingly.

*No further comment.*

12. Exhibit 15-6 Most Recent Tank Assessment Certification Report for FSU Waste Processing Tanks. The last paragraph of the recertification dated July 11, 2017 is missing the word "be" in the portion of the second sentence after a comma and starting with the word "to". In addition, the certification is signed and stamped, but a signing and stamping date is not included. The text should be revised and a signing and stamping date should be included as required by Section 6735 of California Business and Professions Code. In addition, the certification should include information/certification of the secondary containment system.

*No further comment.*

13. Exhibit 15-6 Most Recent Tank Assessment and Certification Report for FSU Waste Processing Tanks. Appendix 1 – Field Inspection/Certification Report. The

information near the top of the first page references the correct regulation for new tank systems, however, item k(3) on the second page as well as items l and m on the third page reference existing tank systems. All references to existing tank systems should be revised to new tank systems.

*No further comment on new/existing tank designation. The included calculations cover page states that the governing code is 2016 California Building Code (CBC), but the second page states that ASCE 7-05 was used for wind analysis. The calculations should be revised to use ASCE 7-10 or 7-16.*

14. Exhibit 15-6 Most Recent Tank Assessment Certification Report for FSU Waste Processing Tanks. Appendix 1 – Field Inspection/Certification Report. The note under the 66265.193(c)(2) section states that stamped and signed foundation design calculations and drawings are onsite. These calculations and drawings should be updated to use the most current seismic design information/practice and should also be included in the certification report.

*The included calculations cover page states that the governing code is 2016 California Building Code (CBC), but the second page states that ASCE 7-05 was used for wind analysis. The calculations should be revised to use ASCE 7-10 or 7-16.*

15. Exhibit 15-6 Most Recent Tank Assessment Certification Report for FSU Waste Processing Tanks. Appendix 4 –Photographs. The photographs are not dated. A date when each photograph was taken should be added to the photo captions for clarity and completeness.

*No further comment.*

16. Exhibit 17-1 Response Action Plan. The response action is dated October 1997. The response action plan should be updated to reflect current conditions at the facility, for example Landfill B-18 is not included in the current version.

*No further comment.*

17. Chapter 31.0 Inspection Program Plan. Table 31-2 Storage and Treatment Units Inspection, Kettleman Hills Facility. The inspection element and nature of inspection column in the table for Surface Impoundments should be revised to include leak detection and leachate collection systems.

*No further comment.*

18. Chapter 35.0 Contingency Plan. Table 35-1 Outside Entity Incident Notifications, Kettleman Hills Facility. The table should be revised to show that DTSC will be notified for incidents involving natural disasters.

*No further comment.*

19. Chapter 35.0 Contingency Plan. Section 35A.3 Bulk Storage Unit. The second sentence in the fourth bullet under the Spill or Material Release bullet states that large liquid spills would be absorbed by the aggregate liner protection layer and/or flow to the closed sumps. The text should be expanded to state if absorbent aggregate was installed, or the text should be revised if normal, generally non-absorbent aggregate was used.

*No further comment.*

20. Chapter 37 Closure and Post-Closure Plans. Section 37.1 Background and Scope. The first sentence in the third paragraph states that approved copies of the closure and post-closure plans will be maintained onsite until the post-closure period for the entire facility begins. However, we note that 22 CCR 66264.118(c) requires an updated and approved post-closure plan be maintained in accordance with 22 CCR 66264.118(b)(3) and the text should be expanded/revised accordingly.

*No further comment.*

### **Closure and Post-Closure Report**

21. Section 1.2 Maintenance of Plans. The last sentence states that after final closure, a copy of the closure and post-closure plan will be maintained at the location specified in Section 5.1. However, we could not find Section 5.1 in the document. The text should be revised to reference the correct section, or Section 5.1 should be created and the information included therein.

*No further comment.*

22. Section 1.3.3 Existing Hazardous Waste Management Units. This section lists active, inactive, and closed hazardous waste management units at the facility. The text should be revised/expanded to include a detailed summary of the units at the facility. Unit details for all units, similar to those provided in the annual post-closure reports for closed units would be sufficient.

*No further comment.*

23. Section 2.3.2 Final Cover Design. The third sentence in the sixth paragraph lists final cover system and includes a 40-mil double sided textured high density polyethylene (HDPE) geomembrane. Please note that the recommended geomembrane thickness has changed to a minimum of 30 mil for flexible membrane liner and 60 mil for HDPE because of USEPA's concerns about seaming of polyethylene (HDPE, VLDPE, LLDPE) below 60 mil thickness (40CFR§258.40) (EPA 2001). All references to 40-mil HDPE should be revised to 60-mil HDPE throughout the entire document.

*We concur with the RTC that 40 CFR §258.40 pertains to base liner systems for municipal solid waste landfills. We note that 22 CCR 66264.552(e)(3)(A) requires flexible membrane liners (FMLs) consisting of HDPE shall be at least 60 mil thick. We also note that 22 CCR 66264.310(a)(6) requires the cover to have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils. The RTC also states that concerns with seaming of HDPE geomembranes that are thinner than 60 mils were raised in the 1980s before the use of fusion welding methods and under different seaming and equipment standards than are now in-place. We note that a similar requirement for a minimum 60-mil thick HDPE, while allowing 40-mils thick for other synthetic liners, is included in State Water Resources Control Board Resolution No. 93-62 (As Amended on July 21, 2005). We further note that when the resolution requires a minimum 60-mil thick synthetic liner, it also requires a minimum 80-mil HDPE liner for the same case. The thickness requirement appears to be a material specific issue related to HDPE.*

*The RTC states that longevity (i.e. durability) of the 40-mil HDPE geomembrane material in the cover system is not an issue because recent research on expected lifetimes indicates that HDPE geomembranes that are buried should last at least several hundred years (Koerner et al., 2017) which significantly exceeds the requirements of 22 CCR 66264.310(a)(1). However, we note 22 CCR 66264.310(a)(1) refers to prevention of downward entry of water into the closed landfill, and not to the expected lifetime. Therefore, a direct comparison between predicted lifetimes and ability to prevent downward entry of water into the closed landfill may not be appropriate as downward entry of water may be caused by other factors such as burrowing animal damage.*

24. Section 2.3.4.2 Post-Closure Waste Settlement. The second sentence in the first paragraph states that it was assumed that primary consolidation of waste material will fully occur during placement. The text should be revised/expanded to include a basis/justification for the assumption.

*The revised text states that primary consolidation of the waste will fully occur during placement because all of the waste placed in B-18 is essentially unsaturated. However, waste will be exposed to precipitation during the active*

*phase of the landfill until a final cover is installed. In addition, it is not clear what waste compaction levels are used during placement. The effects of exposure to precipitation during waste placement and compaction levels should be included in discussion of waste settlement.*

25. Section 2.3.4.3 Slope stability. The first sentence in the fifth paragraph states that Peak Horizontal Ground Accelerations (PHGAs) and Maximum Credible Earthquake (MCE) discussed in a 2011 Golder report were used. We note that this was prior to the adoption UCERF 3, the current tectonic framework for California, and that 22 CCR 66264.228(m) requires landfills and surface impoundments be able to withstand the MCE without significant damage to foundations, structures, waste containment features and features which control leachate, surface drainage, erosion and gas. The seismic information should be updated and based on UCERF 3.

*No further comment.*

26. Section 2.3.4.3 Slope Stability. The third sentence in the 11<sup>th</sup> paragraph refers to compacted clay liner. However, we note that the current cover design does not include a compacted clay liner layer. The text should be revised to refer to the current final cover design.

*No further comment.*

27. Section 2.3.4.5 Surface Water Drainage. The third bullet in the first paragraph states that HEC-HMS version 3.1.0 developed by the United States Army Corps of Engineers was used to calculate peak storm run-offs. We note that the software version used is several versions behind the latest version issued in March 2017. The calculations should be evaluated against the newest or other newer versions and revisions made as necessary.

*No further comment.*

28. Section 2.3.4.7 Frost and Biotic Protection. The second sentence in the second paragraph states that burrowing animals will be confined to the vegetative cover on the B-18 final cover system based on information presented in Appendix A.9. However, we note that the referenced information refers to a geonet which is not part of the final cover system. In addition, there is not supporting evidence on the use of a geomembrane or geonet as a biotic barrier layer. The text should be revised to include supporting evidence for use of geomembrane or geonet as a biotic barrier.

*The RTC states that a HDPE geomembrane is expected to afford protection against burrowing animals similar to a HDPE geonet, with a possibility that a*

*geomembrane might be harder for an animal to burrow through due to its planar structure not giving anything to grip onto as opposed to a geonet which has an open structure. The RTC states that the wildlife biologist's letter applies to both HDPE geomembranes and geonets. In addition, the RTC cites the presence of 2.5 feet of compacted soil cover and geotextile as serving to further discourage burrowing animals. The RTC further cites lack of nutritional value for the geotextile and geomembrane, and observed performance of existing final covers at KHF over the last 10 to 25 years as evidence of the low likelihood of animals to burrow "through" the geosynthetics.*

*However, we note that burrowing animals can damage geosynthetics even without burrowing "through" them. The likelihood of damage is increased where the underlying geomembrane has wrinkles which burrowing animals can grip onto/bite into. We concur that geosynthetics have no nutritional value and note that burrowing animals are not known to derive any nutrition from soil, but rather the burrows are used as a space for habitation (nesting, hibernation, safety, food storage). Although observations have been made on existing final covers and apparently no evidence that any animals have burrowed down to the geomembrane, it is not clear if the inspections/observations have included efforts directed at exposing the burrows and evaluating damage to the geosynthetics such as claw/bite holes, if any. Additionally, the RTC states that hazardous wastes under the geomembrane do not attract burrowing animals, however, it is not clear if the presence of hazardous wastes discourages burrowing animals or is a factor in where such animals choose to burrow.*

*The 1989 biologist's opinion/recommendation did not identify the burrowing rodents (species) of concern at the site, or burrowing behavior of such species. Site/species specific recommendations for cover protection from burrowing animals should be included in the revised text. We also note that geomembranes, geotextiles and geonets are not designed as burrowing animal barriers, and any evidence that they are suitable for such use should be provided.*

29. Section 2.7.2 Closure Procedures. The second sentence in the sixth paragraph states that all contaminated soils will be removed from the Bulk Storage Unit (BSU) areas. The second sentence in the seventh paragraph states that contamination above hazardous waste levels will be removed. The text should be revised to clearly indicate the level of contamination removal and remove the discrepancy.

*No further comment.*

30. Section 4.2 Inspection and Maintenance Activities and Schedule. The second sentence in the second paragraph refers to inspection requirements in 22 CCR 66264.228(k). We note that there are other inspection and maintenance

requirements in both 66264.228 and 66264.310 and the text should be expanded/revised to include the other requirements.

*No further comment.*

31. Appendix A.2 Technical Specifications. The specifications are dated November 2008. It is likely that material and design changes may occur in the future prior to construction of features that are yet to be constructed at the facility. For this reason, the technical specifications should be revised/updated and submitted to DTSC for review and approval prior to construction of these features, and enough time should be allowed for the review and approval.

*No further comment.*

32. Appendix A.2 Technical Specifications. Section 4.2.4 Construction Testing. The first sentence in the subsection titled Destructive Seam Sampling Procedures and Field Testing states that destructive seam samples will be taken at intervals of at least one per 500 linear feet of geomembrane. The text should be expanded/revised to state that the samples will be random and dispersed so that they are representative of the entire geomembrane.

*No further comment.*

33. Appendix A.2 Technical Specifications. Section 7.4 Design and Specification Changes. The second sentence states that design and specification changes will only be made with the written agreement of the Design engineer, Owner, and Contractor. The text should be expanded to include DTSC as the regulatory oversight agency.

*No further comment.*

34. Appendix A.5 Slope Stability Analyses. The slope stability report is dated September 15, 2008. This report should be updated as required by 22 CCR 66264.25. In particular, the design ground motions as presented in Section 2.2.2 Design ground Motions, the final cover design, and all other information should use existing conditions or approved revised design for features to be constructed in the future. See comment 25 above.

*No further comment.*

35. Appendix A.7 Surface Water Drainage Analyses. The table in the fourth bullet in the Assumptions section uses Mercey Loam in the soil type column. However, we noted that the table in the Soils subsection under the Assumptions section in Appendix A.6 Soil erosion Analyses uses Kettleman Loam in the soil property row.

The basis for the use of different soil types in both sections should be included or the text should be revised to remove the discrepancy.

*No further comment.*

36. Appendix A.9 Frost and Biotic Protection. The text in the Biotic Protection section includes a conclusion that a 40-mil HDPE is expected to constrain any rodent burrowing to the overlying vegetative layer. This conclusion is based on an August 4, 1989 letter from Biosystems Analysis, Inc. We note that the letter referred to a geonet and compacted clay and that these materials are not part of the proposed Landfill B-18 final cover. In addition, we note that the letter is from about 28 years ago. The conclusion should be reviewed and updated based on current knowledge and information.
37. *The RTC refers to the RTC to Specific Comment 28, however, as noted in response to the RTC to that comment, the basis for using a geomembrane, geotextile or geonet as a barrier against burrowing animals and therefore preventing damage to the barrier system is inadequate as these materials are not designed to function as biotic barriers. The referenced letter should be updated to include site-specific information of the burrowing species of concern and basis for using geosynthetics as biotic barriers, and the long-term performance/permanence of such systems.*

## **NEW COMMENTS**

### **Closure and Post-Closure Report**

38. Section 1.3.3.4 Landfill Unit B-16 and Section 2.3.1 Final Cover Design. The second bullet in the third paragraph in Section 1.3.3.4 lists geotextile drainage layer transmissivity as  $\leq 0.03$  gallons/minute/foot, but the fourth bullet in the sixth paragraph in Section 2.3.1 list geotextile drainage layer transmissivity as  $\geq 0.03$  gal/min/ft. It is not clear if the text is referring to the same type of geotextile, or why the landfill B-16 transmissivity is limited. The text should be revised to remove the discrepancy, or a basis for the differences in transmissivity should be included.
39. Section 2.3.1 Final Cover Design. The fourth bullet in the sixth paragraph calls for a geotextile drainage layer with a transmissivity of  $\geq 0.03$  gal/min/ft. However, the design document does not include enough basis to show that the geotextile will meet the regulatory requirement for cover drainage as stated in 22 CCR 66264.228(e)(10) which requires a drainage layer to provide a path for water to exit rapidly. We note that the fourth bullet in the first paragraph in Section 2.3.3.6 Cover Infiltration states that it is assumed that the nonwoven geotextile has an in-plane permeability of 0.25 to 0.40 cm/sec. However, no basis or specification

requirement is included for this assumption. In addition, we note that a typical permeability coefficient of  $4 \times 10^{-2}$  cm/sec (transmissivity of  $2.0 \times 10^{-6}$  m<sup>2</sup>/s) is provided in the 6<sup>th</sup> edition of Designing with Geosynthetics by Robert M. Koerner. We also note that geotextiles are generally used as filter material and geocomposites are used for drainage. Tests and specifications such as ASTM D4716, D5101, and D5567 should be included to demonstrate site-specific (soil type, loading, etc.) long-term performance of the geotextile drainage layer, or a geocomposite drainage product that is more likely to meet the regulatory requirement for rapid exit of water should be used and the text and drawings should be revised accordingly. Table 2 Non-Woven Geotextile Conformance Testing Frequencies and Table 027752-1 Required Physical Properties of Geotextile should be revised/expanded to include additional ASTM testing as listed above.



## Department of Toxic Substances Control



**Jared Blumenfeld**  
Secretary for  
Environmental Protection

Meredith Williams, Ph.D.  
Acting Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200

**Gavin Newsom**  
Governor

### MEMORANDUM

**TO:** Ryan Batty, CH #6508  
Senior Hazardous Substances Engineer  
Chief, Sacramento Permitting Division - Landfill Unit  
Hazardous Waste Management Program

**FROM:** Jeff Brown, PG #7757 [REDACTED]  
Unit Chief, Sacramento Geological Services Unit (GSU)  
Geologic Services Branch  
Site Mitigation and Restoration Program

**REVIEWER:** Lora Jameson, PG #8134 [REDACTED]  
Senior Engineering Geologist, Sacramento GSU  
Geologic Services Branch  
Site Mitigation and Restoration Program

**DATE:** March 14, 2019

**SUBJECT:** Permit Renewal Part B  
Groundwater Monitoring Program, Well Network Changes  
Chemical Waste Management – Kettleman Hills Facility  
Kings County, California  
Project No. 25040/100032-33/200



### DOCUMENT REVIEWED

- Sufficiency of Groundwater Monitoring Program; prepared by Amec Foster Wheeler Environment & Infrastructure, Incorporated, dated February 7, 2018.  
[Report]

The Sacramento Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) reviewed the above-referenced document and prepared the following comments. If you have any questions regarding this memorandum, please contact me at (916) 255-6532 or [jeff.brown@dtsc.ca.gov](mailto:jeff.brown@dtsc.ca.gov).

## **SCOPE OF REVIEW**

The Report was provided to DTSC after Chemical Waste Management (CWM), its consultant Amec, and DTSC met on December 7, 2017 to discuss DTSC's second Notice of Deficiency (NOD) dated November 6, 2017 for the permit renewal application. GSU was asked to conduct a technical review of the Report to determine the following:

- If information and data provided in the Report address groundwater monitoring data gaps identified by DTSC in the second NOD permit renewal comments;
- If information and data provided in the Report accurately reflect content and general conclusions of the December 2017 NOD meeting; and
- If the groundwater monitoring and response program, as proposed in the Report, is regulatorily supportable pursuant to Title 22 §66264.90 et seq. (Article 6) and technically supportable in accordance with industry standard practices.

## **SUMMARY OF REVIEW**

The Report does not address the groundwater monitoring data gaps identified in the second NOD, does not accurately reflect the discussion and recommendations made by DTSC during the NOD meeting specific to well needs and is insufficient to comply with Article 6.

The Report states no new wells are needed at the facility but lacks a regulatory basis to support this argument.

To resolve this issue, and for additional clarification, this memorandum provides a list and general location of five new wells that are necessary for CWM to comply with Article 6. This list is accompanied by the technical and regulatory basis for each of the new wells.

The recommendations and basis for the recommendations provided herein remain consistent with the past GSU memoranda (dated August 15, 2015 and November 6, 2017) and the content of GSU recommendations provided verbally to CWM and its consultants during NOD discussions.

## **GENERAL COMMENT**

1. The conclusions in the Report suggest additional groundwater wells are not necessary at the facility.

However, the explanation provided for this conclusion fails to address the regulatory obligations and requirements of Article 6, does not address the framework of the reasoning presented by DTSC in previous memoranda (dated August 15, 2015 and November 6, 2017) and presented by DTSC during the December 2017 NOD discussions.

Instead, CWM's argument to not install additional wells relies on items or concepts which are not included in the language of Article 6 regulations and/or presents ideas

which are subjective. For example, the Report suggests no new wells are needed citing the following:

- The idea that contaminated groundwater moves very slowly and contamination would not travel far; or
- The idea that contaminants previously detected in a water bearing zone (WBZ) have not been detected recently and no longer are a concern; or
- The idea that a landfill liner failure potential is low because it was designed well or is unlikely to be pierced;

Article 6 regulations, however, require all permitted facilities to monitor groundwater for detections under a cell with hazardous waste in place, regardless of its monitoring history or landfill liner design.

In addition, Article 6 regulations require corrective action program (CAP) performance monitoring to occur under cells where historical releases occurred in the past, regardless of how many, or how few, contaminants were detected, and regardless, of how long ago the last detection occurred, or how slowly groundwater moves.

Article 6 language also does not refer to landfill liner construction quality or its probability of failure; it therefore, is not usable as a mechanism to exempt or limit a facility's obligation to fulfill groundwater monitoring requirements.

The water bearing zones (WBZs) underneath the CWM facility are a unique hydrogeologic condition warranting a monitoring approach that is congruent with Title 22 §66264.97(b)(1)(B)(3), which requires monitoring to be conducted in "other aquifers, low-yielding saturated zones and from zones of perched water as necessary." The WBZs at the CWM facility are steeply dipping, low-yielding water bearing zones (sandstone layers) which CWM has demonstrated, through various studies, to be hydraulically separated from each other (by claystone and siltstone layers) and shown to have differing groundwater flow directions. It is 1) not possible to know where releases will, or will not, occur underneath the landfill cell footprint; and 2) not possible to know which WBZ that underlies a landfill cell would receive such a release. Furthermore, because of the hydraulic separation of the WBZs, it is not possible, or reasonable, to assume monitoring conducted in any given WBZ would be capable of detecting a release that occurred in a different WBZ that also underlies the same landfill cell. A release could occur in any one of these sandstone units, which if unmonitored, would therefore, not be detected and not comply with Title 22 §66264.97(b)(1)(B)(3).

Accordingly, at least one well pair is needed in each WBZ that bisects and underlies a landfill cell(s).

A well pair, versus a single well, is needed to establish the groundwater flow direction in each WBZ pursuant to Title 22 §66264.97(e)(15), which can provide the data needed to establish the earliest possible detection of a release pursuant to Title 22 §66264.97(b)(1)(B)(3) for a detection monitoring program (DMP), and 3) the

performance monitoring data to demonstrate remedy effectiveness pursuant to Title 22 §66264.100 for a CAP.

## SPECIFIC COMMENTS

1. Minimum Number of Wells Needed to Comply with Article 6 Regulations.  
Five new wells need to be installed for the facility to comply with Article 6 regulations pursuant to §66264.90(a), §66264.95(a), §66264.97(b)(1)(B)(3), §66264.97(b)(1)(D)(2), §66264.98, and §66264.100 as described in GSU memoranda dated August 14, 2015 and November 6, 2017, and as described in general comment #1 above.

Details specific to the five new wells are listed in items a through e below:

- a) Tuffaceous A, Southeast of B-15. One well is needed in this sandstone unit for the following reasons:
  - i. Contaminants have been detected in well K63 within the Tuffaceous A, which have been attributed to a release from B-15.
  - ii. This release, among other wells in cell B-15, triggered CWM to include all the wells within the B-15 waste unit to be part of the CAP;
  - iii. The CWM-proposed remedy for the CAP at B-15 is Monitored Natural Attenuation (MNA);
  - iv. The prevailing gradient in the Tuffaceous A WBZ is to the southeast. A well downgradient of well K63, between cell B-15 and the operating limits of the facility, currently does not exist;
  - v. To evaluate the effectiveness of MNA pursuant to §66264.100(d), a new well is needed downgradient (southeast) of the release in the Tuffaceous A. Data from this well are needed to confirm there are no new releases, no plume growth, and no contaminant migration outside of the landfill cell has occurred.
- b) Mya E, Northwest of the Combined Closure Unit (CCU). One well is needed in this sandstone unit for the following reasons:
  - i. Contaminants have been released from the CCU, yet, no monitoring wells exist within this WBZ to demonstrate the WBZ has not been impacted by, or is not currently being impacted by contaminant releases within the CCU;
  - ii. Because there are no wells in this WBZ, groundwater flow direction and water quality data are unavailable. This data is needed to 1) support the effectiveness of the CWM-proposed MNA remedy for the CCU, and 2) confirm that there are no new releases, no plume growth, and ensure no contaminant migration outside of the CCU has occurred within this WBZ;

- iii. Pursuant to §66264.97(b)(1)(D)(2) and §66264.100, a CAP requires up-gradient and down-gradient wells to establish groundwater flow direction and gradient and to monitor effectiveness of the selected remedy.
- c) Mya E, Southeast of B-18. One well is needed in this sandstone unit for the following reasons:
- i. No monitoring wells exist within this sandstone unit at the facility. As such, groundwater flow direction and water quality data are unavailable to monitor for earliest possible evidence (detection) of a release across the Mya E WBZ beneath B-18.
  - ii. Pursuant to §66264.97(b)(1)(B)(3) and §66264.98, the DMP for landfill cell B-18 requires an up-gradient and down-gradient well to establish groundwater flow direction and determine the earliest possible detection of a release.
  - iii. Water level and water quality monitoring data collected from this well can be paired with the new Mya E well (identified in item #1b above). Doing so would allow CWM to use data from only one new well pair to serve a dual purpose: providing data to meet Article 6 requirements for 1) the CAP at the CCA and 2) the DMP for landfill cell B-18.
- d) Pectin A, Southeast of B-18. One well is needed in this sandstone unit for the following reasons:
- i. Currently, there is only one well (K60) installed in the Pectin A WBZ at the facility. It is, therefore, not possible to determine current groundwater flow direction the WBZ and establish earliest possible evidence of release;
  - ii. Pursuant to §66264.97(b)(1)(B)(3) and §66264.98, a DMP requires a monitoring well pair which can provide the data needed to establish groundwater flow direction and monitor for earliest possible evidence of a release;
  - iii. Section 3.2.2 of the Report suggests historical monitoring data from the leachate collection and recovery system (LCRS) installed at landfill cell B-18 could be used to exempt the facility from groundwater monitoring requirements. However, Federal regulations and Title 22 do not have provisions that exempt a facility from groundwater monitoring based on historical operations of the landfill and its LCRS.

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Accordingly, a new well needs to be installed on the southeast of landfill cell B-18. The data from this new well can be paired with existing well K60, which is currently positioned in the Pectin A on the Northwest side of landfill cell B-18. Water level and water quality data from this well pair can then be used to address Article 6 groundwater monitoring requirements for the DMP.

- e) Acila A, Southeast of B-18. One well is needed in this sandstone unit for the following reasons:
- i. Currently, there is only one well (K14) installed in the Acila A WBZ at the facility. It is, therefore, not possible to determine current groundwater flow direction in the WBZ or establish earliest possible evidence of release from landfill cell B-18;
  - ii. DTSC cannot use historical data from former well K11 to predict future groundwater flow direction or suggest future water quality protection within this WBZ;
  - iii. Pursuant to §66264.97(b)(1)(B)(3) and §66264.98, a DMP requires a monitoring well pair which can provide the data needed to establish current groundwater flow direction in this WBZ and monitor for earliest possible detection of a release.
  - iv. Water level and water quality monitoring data collected from this new well can be paired with data collected from existing well K14, which is installed on the northwestern side of landfill cell B-18.

## 2. WBZs Where Groundwater Wells Are Not Needed.

- a) Acila B, Northwest and Southeast of B-18. No new wells are needed in the Acila B WBZ because the exposure of this sandstone layer is small, intersects only the corner of the B-18 landfill cell (as illustrated in Figure 6 of the Report), and does not bisect the overlying landfill cell extent.
- b) Pecten A, Northwest of Pond P-10/P-11. A new well would not be needed northwest of former Pond P-10/P-11 in the WBZ assuming the new well proposed for the Pecten A (see specific comment #1d) is 1) installed and 2) the groundwater gradient data between the new well and well K60 continues to demonstrate groundwater flow occurs in a predominantly southeasterly direction. Under these conditions, well K60 would be the downgradient well for contaminant releases to Pond P-10/P-11 and, therefore, be capable of providing sufficient water quality sampling data to evaluate the effectiveness of the proposed MNA remedy for the CAP for this unit. However, if the prevailing groundwater gradient in the Pecten A is determined to be towards the northwest, then an additional well would be needed northwest of former Pond P-10/P-11.
- c) Mya C/D, Northwest of the Combined Closure Unit (CCU). New wells are not needed in the Mya C/D northwest of the CCU because 1) the prevailing groundwater flow direction is to the southeast and 2) a well pair exists in this WBZ which can provide sufficient groundwater flow direction data and water quality sampling data to evaluate the effectiveness of the proposed remedy of MNA for the CCU under the CAP.



Department of Toxic Substances Control

**Jared Blumenfeld**  
Secretary for  
Environmental  
Protection

Meredith Williams, Ph.D.,  
Acting Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200

**Gavin Newsom**  
Governor

**MEMORANDUM**

TO: Ryan Batty, P.E.  
Project Manager  
Permitting Division, Sacramento

FROM: Perry Myers, P.E.  
Senior Hazardous Substances Engineer  
Engineering and Special Projects Office

REVIEWER: Peter Gathungu, P.E., G.E. [REDACTED]  
Senior Hazardous Substances Engineer  
Engineering and Special Projects Office

SUBJECT: REVIEW OF CLOSURE AND POST-CLOSURE COST ESTIMATE FOR  
FINANCIAL ASSURANCE (MARCH 2018), KETTLEMAN HILLS  
FACILITY, KINGS COUNTY, CALIFORNIA (SITE CODE: DTSC100032-  
33)

DATE: February 12, 2019



2/2/19

**DOCUMENT REVIEWED**

*Closure and Post-Closure Cost Estimates, Kettleman Hills Facility, Kings County, California*, dated March 15, 2018 (Cost Estimate), submitted to Chemical Waste Management, Inc., 35251 Old Skyline Road, Kettleman City, CA 93239, prepared by Golder Associates, Inc., 3 Corporate Park, Suite 200, Irvine, CA 92606.

**INTRODUCTION**

The Engineering and Special Projects Office (ESPO) of the Department of Toxic Substances Control (DTSC) has completed its review of the above listed document for the Kettleman Hills Facility (KHF), in Kettleman City, Kings County, California. The review focused on determining if previous comments made by William Kilgore of

DTSC's ESPO on the July 13, 2017 version of this document were addressed. Chemical Waste Management's responses to Mr. Kilgore's comments provided by the DTSC project manager and portions of the March 15, 2018 versions of the Closure and Post-Closure Plans were used to facilitate our review. If you have any questions or comments regarding this memorandum, please contact me at (916) 255-3708 or via email at [perry.myers@dtsc.ca.gov](mailto:perry.myers@dtsc.ca.gov).

## PROJECT SUMMARY

The KHF is owned and operated by Chemical Waste Management, Inc. (CWMI) and is located on the north side of Highway 41 about 2.5 miles west of Interstate 5 and about 3.5 miles southwest of Kettleman City in Kings County, California. The KHF site is surrounded by cattle grazing and oil and gas production operations. The KHF was established in 1979 and encompasses about 1600 acres of which 696.5 acres are presently permitted for active hazardous and municipal solid waste management activities. However, the hazardous (Class I) and municipal solid waste (Class II/III) operations are managed separately. The facility, an active hazardous waste treatment, storage, and disposal facility (TSDF), consists of several active, inactive, and closed Class I hazardous waste management units. There is one active hazardous waste landfill (Unit B-18), one active municipal solid waste landfill unit (Unit B-17), a polychlorinated biphenyl (PCB) flushing/storage unit, a final stabilization unit (FSU), two bulk storage units (BSU I and BSU II), a drum storage unit, four closed landfill units, one inactive landfill unit (B-19, which also contains municipal solid waste separated from the hazardous waste), and several active and inactive surface impoundments.

The Cost Estimate was submitted to DTSC to satisfy financial assurance requirements for the facility. While the financial assurance cost estimate is based on the closure and post-closure plans, review of those plans was not included in this review as those plans were reviewed by others.

ESPO has the following comments and recommendations

## COMMENTS AND RECOMMENDATIONS

1. Response to NOD October 26, 2017 ESPO Review Memo Specific Comment Number 6. The response refers the reader to Exhibit A-5 which asserts that leachate from Landfill B-19 did not require incineration and that Landfill B-19 generally accepted the same types of hazardous waste that Landfill B-18 receives today. This assertion is used to justify the assumption that 10% of the leachate generated during post-closure will be sent for incineration is conservative (section 2.4.2.3). Please provide a comparison of the analytical results of leachate from Landfill B-19 to that of

Landfill B-18 that demonstrates they are sufficiently similar, and thus Landfill B-18 leachate will not require incineration.

The original comment also requested additional substantiation for the assumptions of the quantity of waste transported to and incinerated at the Port Arthur, Texas treatment facility for drummed waste. We could not find this information for the drummed waste and the response to comment did not address drummed waste.

2. Response to NOD October 26, 2017 ESPO Review Memo Specific Comment Number 9. This comment requested substantiation of the Cleansing/Treatment Rates listed in Table A-6 beyond that provided by EPA/600/2-85/028. All of the rates included in Table A-6 are still based off the production rate for Pressure Wash, Pad, Foundation, or Equipment from EPA/600/2-85/028. A review of current RS Means production rates for high-pressure washing of concrete indicates the rates used in Table A-6 are an order of magnitude higher. The production rates should be revised to something on the order of 375 square feet per day for pads, foundations, and walls (average staining) and not 375 square feet per hour. A change in the production rate will also affect the volume of residual waste liquids generated during closure.
3. Response to NOD October 26, 2017 ESPO Review Memo Specific Comment Number 21. The original ESPO comment recommended costs for security post-closure be included at a level of at least one person onsite eight hours per day, five days per week to comply with the requirements of California Code of Regulations (CCR) section 66264.117(c). The revised cost estimate includes eight hours per week for security staff. We recommend this cost be increased to reflect 40 hours per week for security staff.
4. Section 2.7.2 of the Closure Plan and Table B-7-2 PCB Flushing/Storage Unit. The table in section 2.7.2 indicates the tanks in this unit will be decontaminated or removed. Table B-7-2 list \$0.00 for decontamination and tank removal. Please clarify where the cost to remove the two tanks in this unit is accounted for or revise the cost estimate to include such costs.
5. Section 2.3.3.6 Clean Closures. The text in this section states discrete soil samples will be composited into one composite sample for each five discrete samples for analytical testing to verify clean closure. The text and cost estimate should be revised to include analytical costs based on discrete soil samples or samples collected using the Incremental Sampling Methodology ([https://www.itrcweb.org/ism-1/Executive\\_Summary.html](https://www.itrcweb.org/ism-1/Executive_Summary.html)). Additionally, sampling for the presence of volatile organic compounds in soil should include collecting representative soil gas samples with analysis by USEPA Method TO-15.

6. High-density polyethylene (HDPE) geomembrane. A comment from Peter Gathungu with ESPO, provided under separate cover, recommends a minimum 60-mil thickness for HDPE geomembranes used in the cover. If a minimum thickness of 60-mils is adopted for HDPE geomembranes used to construct the final cover then all costs associated with the HDPE geomembranes should be updated in the cost estimate to reflect this change.
  
7. Final cover design drainage layer. If the response to the comment from Peter Gathungu with ESPO regarding the use of a geotextile as the drainage layer of the final cover (Section 2.3.1 Final Cover Design under New Comments) results in the use of alternate materials (i.e. geocomposite drainage product) to those currently described in the cost estimate then the cost estimate should be revised, as necessary, to accurately reflect the final cover design.