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SUITE 1400, CITY HALL EAST
200 NORTH MAIN STREET
LOS ANGELES, CA 90012
(213) 485-6112
FAX: (213) 626-6514

MAR 12 1997

Mr. Peter Janicki
California Integrated Waste Management Board
Closure and Remediation Branch
Permitting and Enforcement Division
8800 Cal Center Drive
Sacramento, California 95826

**BOARD'S COMMENTS ON REPLACEMENT VOLUME IV OF THE FINAL
CLOSURE PLAN FOR LOPEZ CANYON SANITARY LANDFILL**

In response to your letter dated October 01, 1996, the Bureau of Sanitation (Bureau) would like to address the comments that both the California Integrated Waste Management Board (Board) and the Local Enforcement Agency (LEA) have regarding the revised closure plan for Lopez Canyon Landfill (Attachment A), prior to final approval being granted by both agencies. The Bureau acknowledges that the Regional Water Quality Control Board (RWQCB) also reserves the right to comment on the revised closure plan should significant changes occur.

The attached revisions to the final closure plan replace in full all prior pages within Volume IV of IV Replacement Amendment to Final Closure Plan, June 1996. The preceding Table of Contents addresses the attachments under this submittal, and the attached Summary Table of Revisions summarizes all the revisions to Volume IV of IV Replacement Amendment to the Final Closure Plan.

Comment No. 1:

"There are several inconsistencies in the closure estimate submitted with this closure plan revision. Specifically, on page 9-2, the text mentions that decrease in final elevations of the Disposal Area "C" will result in material and construction savings totaling \$1,535,386. However, on the bottom of the same page, the final cover construction costs are shown to be reduced from \$10,687,998 to \$10,278,252 (difference of only \$409,746). Also, it is unclear if the cost of demolishing and reconstructing the access road and perimeter drainage channel are additional construction costs induced by the decrease in the final elevation of Area "C".

In addition, Table 9-2 should include a statement explaining that the final construction costs for Area "C" are incorporated under "Other Activities" and that the total final cover costs is a sum of the "Final Cover" and a part of "Other Activities" items.

These issues have been already discussed with Mr. Jeff Dobrowolski of your staff during several recent telephone conversations. Mr. Dobrowolski has agreed verbally to revise both the relevant portions of text and the closure cost estimate to address Board staff concerns."

Response:

The Closure Estimate: Section 9.2.1, page 9-2, third paragraph, has been revised to reflect the correct estimated cost of the geotextile cushion and VFPE geomembrane for the deck and bench areas of Disposal Area C of \$785,740, and the modified construction savings of \$1,466,586, with a final cover construction cost reduction from \$10,687,998 to \$9,221,412. Attachment B replaces Section 9 of the closure plan in its entirety. These text modifications do not affect the closure cost estimate.

The cost of demolishing and reconstructing the haul road and drainage channel is necessary since it was determined that trash was found beneath both areas.

Table 9-1 of the closure plan has been revised to clarify the cost summary. See attachment C.

Additionally, it should be noted that in a conversation with you and Reina Pereira of my staff on November 18, 1996, Ms. Pereira informed you that we would not be replacing the two abandoned lysimeters, since the Regional Water Quality Control Board (RWQCB) concurred that the gas collection indicator probes located around the site are adequate for vadose zone monitoring. Therefore, the City is requesting reimbursement for the lysimeter abandonment work which was estimated to be \$8,400. Attachment D includes Section 2.6.3 of the Monitoring Systems Report submitted to the RWQCB in August 1994, along with a followup letter from the City

to the RWQCB dated November 04, 1994, that discusses the City's intentions with respect to vadose zone monitoring.

Comment No. 2:

"The revised plan indicates that the top deck and benches of Area "C" will incorporate a 40-mil very flexible polyethylene (VFPE) synthetic membrane (smooth on the top deck and textured on the benches). However, Section 2.3, Revised Final Cover Configuration, does not include detailed design information or any design justification which is expected from a final closure plan. Specifically:

- a. No technical specifications are provided for the VFPE to be used on Area "C". The plan must include a set of minimum specifications for the synthetic membrane which are acceptable for the proposed design.*
- b. The plan must include calculations supporting use of VFPE (shear stress, VFPE elongation vs. differential settlement, anchorage, etc.).*
- c. The plan must include design drawings showing synthetic membrane system key points (anchors [if present], key points, pipe intercepts, etc.).*
- d. The plan must provide supporting documentation used to establish the minimum design yield point and its interpretation as "the point on the stress-strain curve at which the tangent modulus first becomes 290 psi."*
- e. The plan must provide design drawings for portions of the access road which is to be constructed over disposal areas (over final cover). Please include culvert details and final cover protection features.*

While the text of the closure plan refers to the synthetic membrane to be used in the final cover as very flexible polyethylene (VFPE), Appendix I (Revised Construction Quality Assurance Plan) addresses the synthetic membrane as Very Low Density Polyethylene (VLDPE). It is our understanding that the VLDPE material is either no longer available or very difficult to obtain in large quantities. Thus, we request that the synthetic membrane terminology remain consistent throughout the closure documents."

Response:

- (a) Technical specifications for the 40-mil very flexible polyethylene (VFPE) synthetic membrane to be used on Area C are included under attachment E and should be inserted into the Tables Section, Table 2-1 of the final closure plan.*

- (b) GeoSyntec has provided an analysis of the VFPE geomembrane to be used on the deck and benches of Area C. See Attachment F. This is to be included under Appendix III of Appendix H of the final closure plan. Section 3.2 of Appendix H has been revised to reflect this reference.
- (c) Drawings showing the extent of the synthetic membrane and corresponding key points in Area C are included in the Figures Section, Figure 2-1(a) through 2-1(e).
- (d) Appendix I, "Revised Construction Quality Assurance Plan," of the closure plan has been revised to include an appendix that provides supporting documentation used to establish the minimum design yield point. See attachment G.
- (e) Design drawings for the haul road which is to be reconstructed over refuse to the north of area AB+ have been included in the Figures Section, Figures 2-4 and 2-4(a) of the closure plan. See attachment E.

VFPE geomembranes include very low density polyethylene (VLDPE) and linear low density polyethylene (LLDPE). Since the appendices of the closure plan were previously approved by your office on October 10, 1995, the City is requesting that any reference made to VLDPE or LLDPE in the Appendices be assumed to fall under the general VFPE geomembrane definition as stated in the text. Section 2.3.1 of the closure plan has been revised to clarify this issue. See attachment E.

Comment No. 3:

Section 2.3.2, Revised Final Cover Configuration, Disposal Area A, B, and AB+ Deck Areas, states that the geotextile between the vegetative layer and low permeability layer had been deleted. Please provide an explanation why this change occurred.

Also, the same section of text states that a geosynthetic clay liner (GCL) may be used as a barrier layer in the event a low permeability source is not available. Since the current submittal is identified as the final closure plan, the issue of securing sufficient volumes of cover material should be already resolved. Since the current cost estimate accounts for a clay low permeability material at a specific cost, this statement raises concern about the accuracy of the cost estimate.

Board staff indicated the above concern to Bureau of Sanitation (BOS) staff and was informed that the low permeability material for remaining portions of the landfill will be handled under a separate bid and the choice of the material will depend not only on its availability but also on economical conditions within the BOS (utilizing existing BOS work force, agreement with labor union, etc.) Thus, we request that the plan include

an explanation of this approach along with the anticipated time frames.

As agreed during the meeting, should the low permeability type and/or its source differ from the current one, appropriate steps will be taken to update the current plan.

These will include:

- a. A new test pad and permeability tests conducted prior to implementation of low permeability layer installation. This requirement shall be enforced in the event that a GCL is proposed instead of clay as a low permeability barrier.*
- b. An updated grading plan for the affected areas and supplemental QA/QC plan along with updated postclosure maintenance plan. This requirement shall be enforced in the event that a GCL is proposed instead of clay as a low permeability barrier.*

For the purpose of the current plan revision, the text should include a section stating an intent to comply with the above conditions. The current closure plan should also acknowledge that all changes will be submitted as an amendment to the current plan and include updated cost estimated.

Finally, it must be acknowledged that in the event the costs of a changed design exceed the costs provided with the current plan, these additional costs will be absorbed by the BOS using additional funds.

Response:

The geotextile on the decks of areas A, B and AB+ has been deleted since it was originally intended as a barrier layer between the vegetative layer and low permeability layer. However, it has been determined by GeoSyntec Consultants, that it does not serve any additional purpose, it is not required, and it accounts for an additional cost savings.

The Bureau would like to reserve the option of using a geosynthetic clay liner (GCL) on the decks of Areas A, B AB+ and C. Final cover drawings using this option are shown in Figures 2-1(a) and 2-2(a), and technical specifications for GCL are shown in Table 2-2. Sections 2.3.1 and 2.3.2 of the closure plan have been modified to include the above revisions, (see attachment E). The Bureau will notify the Board, LEA and RWQCB, and update the grading plan, and postclosure maintenance plan, if this option is chosen. The QA/QC plan has been revised to include the GCL option, (see attachment G).

The GCL option will provide an easier, faster, less labor intensive, and more economical installation of the final cover on the decks as compared to the one foot of

low permeability clay layer.

The Bureau acknowledges that in the event the costs of a changed design exceed the costs provided within the current plan, these additional costs will be paid by the City.

Should the low permeability type and/or its source differ from the current one, appropriate steps will be taken with respect to additional testing and updating the current plan.

Comment No. 4:

The limits of the refuse must be clearly shown on all appropriate drawings.

Response:

Drawing No. 5 has been added to the final closure plan to show the limits of refuse. See attachment H.

Comment No. 5:

The plan must include a more detailed drawing showing the design of benches on the northern face of the AB+ disposal area slopes. Specifically, the interface between the eastern edges of the benches and the sheet flow area should be shown in detail.

Response:

Drawing No. 1 submitted with Volume IV of IV Replacement Amendment to the Final Closure Plan has been revised. See attachment I.

Comment No 6:

The drawing depicting the drainage plan should include drainage patterns for the entire landfill in accordance with the design described in the revised plan.

Response:

Figure No. 3-1 and Drawing No.1 submitted with Volume IV of IV Replacement Amendment to the Final Closure Plan have been revised. See attachment I.

LEA COMMENTS DATED SEPTEMBER 29, 1996, AND BUREAU RESPONSES

Comment No. 1:

Appendix H, Final Cover Performance Evaluation, Section 3.1, Page 17

Remove reference to the reason for alternative cover being "would significantly reduce the volume of waste that Disposal Area C can accommodate." This is not a valid reason for selection of the alternative cover design because the facility closed before the utilization of total capacity. In this specific case, the LEA did not consider the reduction of waste capacity as a factor in the evaluation of the alternative final cover design. Please delete other text referring to reduced waste disposal capacity (e.g., Page 19, second paragraph, etc.).

Response:

Comment acknowledged. However, the Final Cover Performance Evaluation Report was submitted in January 1994 for approval of an alternative final cover for Disposal area C, when reduction in landfill volume was still a legitimate concern, and an integral part of the justification process.

Comment No. 2:

Section 9.2.1

Please revise Section 9.2.1 and remove the description of the geotextile cushion and associated cost discussion, as you have elected not to use the geotextile cushion, Revise Appendix F, Updated Closure and Post-Closure Estimates-Revised Initial Cost Estimate Worksheet (Amends Appendix K of Volume II of IV of the FCP and Table 4-1 of Volume II of II of the FPCMP) Line Item 21 (a) (3) and related cost items.

Response:

Section 9.2.1 discusses use of the geotextile cushion and costs related to it for the deck and benches of Disposal Area C only. This should not be confused with the City's decision to delete the use of the geotextile cushion on the decks of Disposal Areas A, B, and AB+. The City has requested to be reimbursed for the total estimated amount shown on line 21(a)(3) of Appendix F of the final closure plan.

Comment No. 3:

Appendix H, Final Cover Performance Evaluation Report, Page 18

The LEA requests all literature or documentation in your files on the reduction of the static safety factor on a sloped surface. Particularly, when the vegetative soiled layer is saturated, in a final cover design, and the vegetative soil layer is in direct contact

of a geomembrance and/or geotextile/geomembrane.

Response:

Appendix H, page 18, discusses justification of the use of an alternative final cover for the slopes of Disposal Area C, namely the various analyses that were undergone to determine what frictional angle and slope angle would yield the required static factor of safety of 1.5. These analyses showed that placement of geotextile and/or geomembrane on the slopes of Disposal Area C would be both impractical and burdensome. The alternative final cover maintains the required factor of safety of 1.5.

Comment:

Additionally, the LEA had another comment in a letter to the Bureau dated February 25, 1997, requiring the Lopez Canyon Landfill proposed energy recovery facility (ERF) to be included in the Final Closure Plan.

Response:

Section 7, "Revised Landfill Gas Control System," of the Final Closure Plan, has been revised to include Section 7.3 on the proposed ERF. Figure Nos. 7-2 through 7-4 have also been included into the Figures Section of the closure plan. Refer to Attachment J.

The Bureau acknowledges that the Board will issue a conditional approval letter on the closure plan pending compliance with the CEQA requirements, since formal approval of the plan cannot be granted prior to the finalization of the CEQA documents.

If you have any questions regarding the above issues or the attached closure plan revisions, please contact Reina Pereira at (213) 893-8206.



DREW B. SONES
Assistant Director

c: Joe Maturino, LEA
Rod Nelson, RWQCB
Kelly Gharios
Reina Pereira

a:ciwmbcom/rp.wp

**SUMMARY TABLE OF REVISIONS TO
VOLUME IV OF IV REPLACEMENT AMENDMENT TO
FINAL CLOSURE PLAN**

The following revisions and additions to the final closure plan address the CIWMB and LEA's comments of October 1, 1996, and September 30, 1996, respectively. Please ensure that these revisions are incorporated into your closure plan, and all previous sections discarded.

Sections, Details, Drawings to be Amended	Description of Change	Comment
Table of Contents	Replace in Entirety	Updated to reflect revisions/additions
Section 2: "Revised Final Cover Design"	Replace in Entirety	Revised Sections 2.3.1 & 2.3.2 to include VFPE and GCL specifications.
Section 7: "Revised Landfill Gas Control System"	Replace in Entirety	Include Section 7.3 on proposed Energy Recovery Facility.
Section 9: "Revised Closure Cost Estimate"	Replace in Entirety	Revised Sections 9.2.1 and 9.3 to include corrected final cover costs.
Tables	Add Table 2-1 Add Table 2-2 Replace Table 9-1	VFPE Properties GCL Properties Revised Summary of Closure Cost Est.
Figures	Replace Fig. 2-1 Add Fig. 2-1(a) Add Fig. 2-1(b) Add Fig. 2-1(c) Add Fig. 2-1(d) Add Fig. 2-1(e) Replace Fig. 2-2 Add Fig. 2-2(a) Add Fig. 2-2(b) Add Fig. 2-2(c) Add Fig. 2-2(d) Add Fig. 2-4 Add Fig. 2-4(a) Replace Fig. 3-1 Add Fig. 7-2 Add Fig. 7-3 Add Fig. 7-4	Revised Figure GCL option - C Cny (Deck) VFPE limits - C Cny Vertical well - C Cny (Deck) Vert. well, GCL option - C Cny (Deck) Downdrain Placement - C Cny (Bench) Revised Figure GCL option - A, B, AB+ Cny (Decks) GCL limits on Deck Areas Vertical well - A, B, AB+ Cny (Decks) Vert. Well, GCL - A, B, AB+ (Decks) Final Cover at Haul Road Final Cover at Haul Road, GCL option Revised Figure Site Map for Energy Recovery Facility (ERF) Floor Plan for ERF Process & Instrumentation Drawing for ERF
Drawings	Replace Dwg. No. 1 Add Drawing No. 5	Revised to include drainage and grading changes. Limits of Refuse
Appendix H: "Final Cover Performance Evaluation Report"	Add Appendix III to back of Appendix H	"Analysis of VFPE geomembrane"
Appendix I: "Revised Construction Quality Assurance Plan"	Replace in Entirety	Includes CQA for GCL option, and Appendix on justification of Design Yield Point for VFPE.