March 18, 2024

Patrick Lennberg
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, Colorado 80203

RE: Lyons Quarry, Permit No. M-1977-208, Reclamation Cost Estimate
Adequacy Review Response No. 2

Mr. Lennberg:

On February 16th, 2024, CEMEX received your Adequacy Review No. 2 following our August 15th, 2023, submittal of our response to the Preliminary Adequacy Review for the Reclamation Cost Estimate for the Lyons Quarry Permit (M-1977-208). Your Adequacy Review No. 2 identified 10 adequacy items to be addressed. Responses to each item are provided in the attached document and numbered as in your review. Additionally, we have included the updated cost for the C-Pit water treatment per the recently submitted Technical Revision #18. Only those cost estimate tables attached to the August 15, 2023, submission that have changed since the last adequacy review (Table 1 and Table 5) have been attached to this submittal.

Please contact me if you need additional information at cita.cisse@cemex.com.

Sincerely,

Cita Cisse

Cita Cisse
Quarry Manager

Enclosures: Lyons Quarry Reclamation Cost Estimate Adequacy Review Response No. 2
Revised Cost Estimate Tables 1 and 5

Cc: Erik Estrada, CEMEX Lyons Plant Manager
Bradley Evans, Incoming CEMEX Lyons Plant Manager
Greg Bridge, CEMEX Corporate Environmental Manager
Robin Bay, Habitat Management, Inc.

The following numbered items address the 10 adequacy items detailed in the February 16, 2024 DRMS Adequacy Review No. 2 of the Lyons Quarry Reclamation Cost Estimate.

1. *The reclamation cost estimate shall be sufficient to assure the completion of reclamation of affected lands in a forfeiture situation. In this situation it cannot be assumed that all hazardous waste will be properly disposed before forfeiture. Please provide the maximum quantities of waste (specify wet and dry) that are accumulated during a 90-day period, typical disposal location and costs associated [with] disposal. These items will be used for the Division's cost estimate calculations.*

   In the unlikely event of CEMEX's forfeiture, waste products that would need to be disposed of would include freelime solution, aqueous ammonia, lab chemicals, and used grease. Maximum quantities of each of these items along with estimated disposal costs have been included in the revised Table 5 attached at the end of this document. Used oil is also accumulated on-site for up to 90 days at a time; however, it is picked up and recycled by Tri-State at no cost to CEMEX.

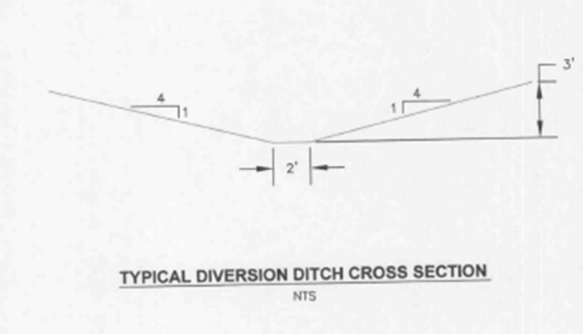
2. *During the reclamation cost estimate in 2003 the Operator provided, in a letter dated April 22, 2003, an itemized list of hazardous chemicals stored at the site. Please provide an updated list of chemicals along with the needed information for a cost estimate for disposal, similar to item 1 above.*

   A list of chemicals including maximum quantities that could be on site at any time and their estimated disposal costs have been included in the revised Table 5 attached at the end of this document.

3. *What is the estimated volume of material to be removed for the stormwater diversion ditch?*

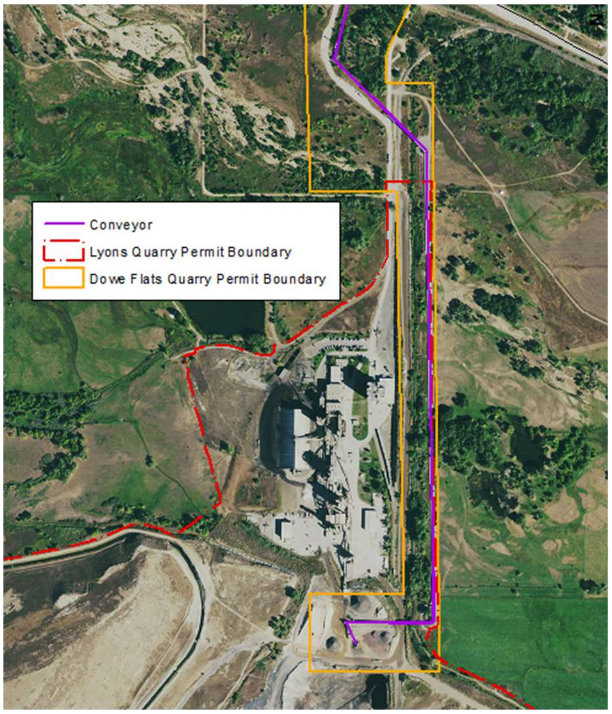
   The diversion ditch around the disposal cell was estimated to be 4,000 linear feet. The original designs included in TR#2 show the design cross-section below. A 4,000-LF ditch with this cross section would result in approximately 6,222 CY of soil removal.

   Figure from Lyons Quarry Permit Technical Revision #2



4. *There is a conveyor belt system located within the Lyons Quarry permit boundary that leads to the Dowe Flats permit. Please clarify if this system will be removed during the reclamation of Dowe Flats or the quarry permit. If the quarry permit please specify removal costs.*

   As shown below, the Lyons Quarry permit (M-1977-208) boundary and the Dowe Flats Quarry permit (M-1993-041) boundary overlap where the conveyor that used to carry material from Dowe Flats to the Lyons Plant enters the Lyons Quarry permit boundary. The removal of the entire length of the conveyor and reclamation of the associated area is included in the bond for the Dowe Flats Quarry permit. The conveyor removal and reclamation are scheduled to be completed in 2024.



5. *There is a railroad spur line that enters the site from the north and leads to the Clinker Storage Building. Please provide a cost estimate for removal of the spur line.*

   There are approximately 8,142 linear feet of railroad inside the Lyons Quarry permit boundary. The railroad falls within the area that was already included in the reclamation cost estimates, so only the rail removal cost was added to the cost estimate. The rail removal cost is included in the revised Table 5 attached at the end of this document.

6. *Please provide a cost estimate for plugging and abandoning all site monitoring wells on a per well basis.*

   There are five monitoring wells and six piezometers on the Lyons Quarry property. An estimated cost to plug and abandon these wells along with reclamation of the areas around the wells has been added to the revised Table 5 below. The cost estimate of $6,383 was based on the costs provided in the Wyoming Department of Environmental Quality Land Quality Division Guideline No. 12: Standardized Bond Format and Cost Calculation Methods (Revised December 2023).

7. *The indirect costs associated with the Division's cost estimate do not account for specialized QA/QC of the GCL installation. Please provide cost estimate or percentage of quoted cost for QA/QC activities?*

   It is assumed that the GCL will be installed per manufacturer specifications and that a qualified contractor will be engaged to complete the installation. Manufacturer-recommended installation specifications for GCL liners include appropriate overlapping and seam inspection by the qualified installer; however, these are not typically welded liner systems that might require a third-party QA/QC certification for installation.

8. *Please clarify the following statement made in response [to] item #8* However, it was determined that this approach was not feasible *when referring to the source of backfill for C-Pit. Why was [it] determined to be not feasible?*

   When preparing adequacy response #1, a calculation error was found in the spreadsheet that had been used for the initial cost estimate. Once the error was corrected, it was determined that excavating sufficient material from the disposal cell location to both fill C-Pit and provide the cap materials necessary to meet the onsite disposal area design would result in a hole rather than a hill at the disposal cell location. Thus, it was necessary to find a different location from which to obtain the soil.

9. *The C-Pit volume estimation needs additional clarification. In response [to] item #8 it is stated the volume needed to fill C-Pit is 200,963 CY. In response [to] item #11 the estimated volume needed is 217,742 CY (265,819 CY - 48,077 CY), although 200,963 CY appears to have been incorrectly stated. In Table 7 Backfilling and Capping the volume quoted for backfilling is 205,158 CY. Please clearly state the volume needed to backfill C-Pit and provide the calculations used to arrive at the volume.*

   The volume included in Table 7 (205,158 CY) is correct and the 200,963 CY used in the text responses was a typo based on old numbers from the first round of calculations. Because the number in Table 7 is what was used for the cost calculation, this typo did not result in a change to the cost calculation.

   The total volume of material required to backfill C-Pit was calculated at 265,819 CY using December 12, 2022 aerial imagery and SURPAC 35 modelling software. It was estimated that 14.9 acres of the C-pit final surface will still need to be capped with 2 feet of shale (see Adequacy Response #1, Item #12). Thus, the quantity of shale (48,077 CY) was subtracted from the total volume. Additionally, 12,584 CY of topsoil was subtracted from the total volume to reach the 205,158 CY reported in Table 7. This topsoil volume was calculated based on 8 inches of topsoil placed over the portion of the C-Pit area that was more than 2 feet deeper than the final surface at the time of the calculation (estimated at 10.4 acres).

Total Backfill Volume	265,819 CY
Shale Cap (14.9 acres, 2-ft deep)	-48,077 CY
Topsoil (10.4 acres, 8-inches deep)	-12,584 CY
Other Backfill Material	205,158 CY

10. *In response [to] item #8 the quoted volume for clean soil material required for protecting the clay liner, interstitial fill, and cover for the disposal cell is 108, 000 CY. In Table 6 On-Site Concrete Disposal Cell the volume totals given sum to 109,000 CY. Please clarify the discrepancy.*

    The value provided in Table 6 (42,000 + 27,000 + 40,000 = 109,000 CY) is correct. These numbers were taken directly from the table in TR#2. The 108,000 CY shown in Adequacy Response #1, Item #8 was a typo. Because the number in Table 6 is what was used for the cost calculation, this typo did not result in a change to the cost calculation.

Table 1: Cost Estimate Summary

Task			Cost[1]
Direct Costs			
Reclamation Tasks			
Demolition/Disposal of Buildings/Structures		(Table 2)	$ 3,949,066
Steel Demolition/Disposal		(Table 3)	$ 955,602
Concrete Demolition/Disposal		(Table 4)	$ 2,598,923
Other Reclamation Costs		(Table 5)	$ 6,194,042
On-Site Concrete Disposal Cell		(Table 6)	$ 472,043
Backfill & Capping of C Pit area		(Table 7)	$ 517,095
Grading & Ripping		(Table 8)	$ 14,048
Growth Media Application		(Table 9)	$ 266,396
Revegetation		(Table 10)	$ 179,182
Mobilization/Demobilization	2.5%	of Reclamation Tasks	$ 378,660
		Total Direct Costs	**$ 15,525,057**
Indirect Costs			
Overhead & Profit			
Liability Insurance	2.02%	of Direct Costs	$ 313,606
Performance Bond	1.05%	of Direct Costs	$ 163,013
Profit	10%	of Direct Costs	$ 1,552,506
Superintendent	0.25%	of Direct Costs	$ 38,813
		Total Overhead & Profit	**$ 2,067,938**
Legal, Engineering, & Project Management			
Financial Warranty			$ 500
Engineering Work	4.25%	of Contract Amount	$ 747,702
Reclamation Management	5%	of Contract Amount	$ 879,650
		Total Indirect Costs	**$ 3,695,790**
Total Contract Amount (Direct Costs + Overhead & Profit)			**$ 17,592,995**
Total Bond Amount			**$ 21,288,785**

[1] All costs based on CIRCES Cost estimates from September 2020 or April 2003 with an inflation factor applied per the US Bureau of Labor Statistics (https://www.bls.gov/data/inflation_calculator.htm)
[2] Asbestos abatement cost to be determined by DRMS estimating software.

Table 5: Other Reclamation Costs

Reclamation Area/Task	Description	Quantity		Operating Costs $/Unit	Operating Costs Total Cost
Asbestos Abatement					
Plant Buildings	Contractor Quote	11,292	SF		TBD[1]
Waste Disposal (maximum quantity)					
Freelime Solution (liquid)	Contractor Quote	30	Gal		$ 458
Aqueous Ammonia 19%	Contractor Quote	31,500	Gal		$ 96,949
Used grease (90-days)	Landfill Cost	330	Gal		$ 698
Lab Chemical Disposal (maximum quantity)					
Hydrochloric Acid (liquid)	Contractor Quote	3	L		$ 2,342.50
Ethyl Alcohol (liquid)		30	L		
Ammonium Acetate (dry)		500	g		
Phenolphthalein (dry)		100	g		
Sodium Hydroxide (dry)		1	kg		
Strontium Nitrate (dry)		1	kg		
Calcium Hydroxide (dry)		500	g		
Rail Removal					
Rail Removal	Contractor Quote	8,142	LF		$ 308,000
Utility Lines					
Utility Poles		90	EA	$ 302	$ 27,180
Utility Lines		2,640	LF	$ 0.012	$ 32
Well Abandonment[2]					
Monitoring wells (2), 4" casing	CEM-001 & 005	542	LF	$ 2.00	$ 1,084
Monitoring wells (3), 2" casing	CEM-002, 003 & 004	190	LF	$ 2.00	$ 380
Piezometers (6), 1" casing	P-001 through P-006	86	LF	$ 2.00	$ 172
Well Reclamation[2]					
Small site grading and seeding (<150 sf)		11	EA	$ 70	$ 770
Capping using a pre-cast concrete cap		11	EA	$ 10	$ 110
Location fee		11	EA	$ 10	$ 110
Remove pump, wiring, and drop pipe		818	LF	$ 0.40	$ 327
Removal and disposal of top few feet of casing		11	EA	$ 30	$ 330
Monitoring well concrete pedestal disposal		11	EA	$ 100	$ 1,100
Mobilization		1	LS	$ 2,000	$ 2,000
Water Selenium Removal					
C-Pit	Biological Treatment (TR #18)	15,132,635	Gal		$ 5,752,000
Totals					**$ 6,194,042**

[1] Asbestos abatement cost to be determined by DRMS estimating software.

[2] Wyoming Department of Environmental Quality Land Quality Division Guideline No. 12: Standardized Bond Format and Cost Calculation Methods, Revised December 2023.