TULSA CEMENT LLC
TULSA, OKLAHOMA

PERMIT ATTACHMENT 5
CLOSURE PLAN

SECTION I - CLOSURE PLAN AND FINANCIAL REQUIREMENTS

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1.0 INTRODUCTION

The information in this section is submitted in accordance with 40 CFR 270.14(b)(13). The purpose of this Closure Plan is to ensure that the CPCC kilns will be closed pursuant to 40 CFR 264.111 through 264.115, 266.102, and OAC 252:205-3-2(f). This section includes:

- Closure plan description;
- Closure cost estimate;
- Financial assurance mechanism for closure; and,
- Liability coverage mechanism for sudden accidental occurrences.

A Post-Closure Plan is not required because the waste management activities at the plant do not include the land disposal of hazardous waste. The kilns, Fuel Quality Waste (FQW) feed piping owned by CPCC, and all ancillary equipment will be decontaminated, and all decontamination residues will be removed from the premises. Therefore, no waste inventory will remain at the plant following closure that would require post-closure maintenance.

CPCC will keep a copy of the Closure Plan as part of the Operating Record at the plant until the certificate of final closure has been accepted by the Oklahoma Department of Environmental Quality (ODEQ).

2.0 GENERAL CLOSURE ISSUES

2.1 Closure Performance Standard

40 CFR 264.111 and OAC 252:205-3-2(f) require that closure of the facility be performed in a manner that minimizes the need for further maintenance and controls, minimizes or eliminates threats to human health and the environment, and minimizes or eliminates the post-closure escape of hazardous waste and hazardous-waste constituents to the environment.

The Closure Plan proposed by CPCC achieves those objectives. FQW, including decontamination residues, either will be treated thermally in the pyroprocessing system or will be transported off-site to a permitted or interim status treatment, storage, or disposal (TSD) facility. The equipment and facility areas associated with the management of FQW will be decontaminated to the levels specified in the Closure Plan, if appropriate, removed and disposed of off-site at a permitted or interim status TSD facility, or metal components will be recycled as scrap.

2.2 Amendment to Closure Plan

In accordance with 40 CFR 264.112(c), CPCC will submit a written notification or request for a permit modification to ODEQ to obtain authorization to amend the Closure Plan if: 1) changes in the operating plans or facility design affect the Plan; 2) the year of expected closure changes, if applicable; or 3) modifications to the Plan become necessary because of unexpected events during partial or final closure activities.

2.3 Partial Closure

CPCC does not anticipate the need to conduct partial closure of the pyroprocessing system; but, for a variety of reasons, partial closure of one or more hazardous waste management units (i.e., kilns) within the facility may occur. In the event that partial closure is implemented for a kiln, the same closure procedures outlined for final closure will be implemented during partial closure.

2.4 Location and Retention of Closure Plan

A copy of this Closure Plan and subsequent amendments will be maintained in the Operating Record at the plant until Completion of Closure Certifications have been submitted to and accepted by ODEQ.

2.5 Notification of Partial/Final Closure

CPCC will notify ODEQ in writing at least 45 days before partial/final closure activities are expected to begin. If the facility permit is terminated or the plant is ordered closed by judicial decree or a final order under RCRA §3008, closure notification is not required.

2.6 Schedule for Closure

2.6.1 Time Allowed for Closure

CPCC anticipates completing closure activities within 180 days of receipt of the final volume of waste materials from Systech. All waste materials burned in the CPCC cement kilns are provided by the onsite Systech facility under its RCRA permit.

If the Systech facility is to be closed simultaneously with the CPCC kilns, the closure of the Systech facility will occur according to the Closure Plan in the Systech permit. The Systech Closure Plan includes the FQW tanks, truck unloading area, a container storage area, and feed piping owned by Systech. Table I-1 shows an anticipated schedule for closure of the pyroprocessing system and the CPCC-owned waste materials feed systems.

The projected schedule of closure activities for full closure of the CPCC plant is presented in Table I-1. This schedule complies with the time limitations of 40 CFR 264.113(b) and OAC 252:205-3-2(f) by anticipating full closure within 180 days of receipt of the final volume of FQW.

2.6.2 Extension for Closure Time

CPCC does not anticipate that closure activities will require more than 180 days to complete. If unforeseen circumstances result in a delay of the closure schedule, CPCC will request a schedule extension from ODEQ in accordance with 40 CFR 264.113(b)(2) and OAC 252:205-3-2(f).

2.7 Closure Procedures Summary

Section I.3 describes the closure procedures CPCC will implement to close the kilns, ancillary equipment, and CPCC-owned waste feed system components.

2.7.1 Disposal or Decontamination of Ancillary Equipment, Structures, and Components

The Closure Plan addresses disposal and decontamination activities in accordance with 40 CFR 264.114 and OAC 252:205-3-2(f). Decontamination procedures, generally, are as follows.

Equipment is triple-rinsed using detergents or solvents capable of removing FQW constituents. Alternatively, steam cleaning, high-pressure water sprays, degreasing detergents, or other appropriate cleaning technology may be used to clean and decontaminate equipment. Where appropriate, equipment is dismantled or disassembled prior to such cleaning.

Effective decontamination will be determined by testing rinsates for specified constituents of concern using the applicable procedures contained in the then- current edition of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, (SW-846). The constituents of concern are those constituents contained in 40 CFR Part 261, Appendix VIII that have ever been contained in FQW placed in the equipment or area to be decontaminated. These constituents of concern are identified by the waste codes listed on the Uniform Hazardous Waste Manifests for FQW received at the facility. Decontamination is considered complete when the concentration of constituents of concern is at or below a level prescribed by CPCC and approved by ODEQ and described in Section I.4.

In addition to these options, CPCC may also elect to remove residuals, rinse metal components, and recycle this material as scrap metal.

Two FQW feed lines to the kiln and one return line on CPCC property will be cut off after decontamination, placed in a roll-off, and shipped off-site as scrap metal.

Rinsates and cleaning supplies will be managed as hazardous waste and disposed of by burning for energy recovery in the on-site pyroprocessing system, if appropriate. Otherwise, these wastes will be transferred off-site to a permitted or interim status TSD facility.

Decontamination supplies, such as disposable personal protective equipment, brooms, mops, squeegees, rags, etc., will be managed as hazardous waste and disposed of by thermal treatment in the on-site pyroprocessing system, if appropriate, or disposed of off-site at a permitted or interim status TSD facility.

Non-expendable equipment used during cleaning and decontamination is decontaminated by triple-rinsing using detergents or solvents capable of removing FQW constituents.

Since disposal and decontamination activities will result in CPCC generating hazardous waste, such waste will be handled in accordance with the requirements of 40 CFR Part 262 and OAC 252:205-3-2(d).

2.7.2 Pyroprocessing System

The components of the pyroprocessing system that will be decontaminated include the equipment that may come into direct contact with FQW or FQW residues. The components include the following.

- The rotary kilns and kilns' multi-channel burner pipes.
- The cement kiln dust (CKD)-handling system used to transport CKD from the baghouses. This system will only be addressed in the event that CKD is ever determined to be hazardous per 40 CFR 266.112 and OAC 252:205-3-2(h).

3.0 CLOSURE PROCEDURE DETAILS FOR PYROPROCESSING SYSTEM AND CPCC-OWNED FEED SYSTEM

This Closure Plan has been prepared in accordance with 40 CFR 264.111, 40 CFR 264.112, and OAC 252:205-3-2(f) for the pyroprocessing system that burns FQW at the CPCC Plant located in Tulsa, Oklahoma.

3.1 Description of Regulated Units

This Closure Plan describes how CPCC intends to close the plant's pyroprocessing system that burns FQW and the associated CPCC-owned ancillary equipment and components, i.e., feed systems. For the purpose of this Closure Plan, the regulated units are defined as follows.

Pyroprocessing System

- The rotary kilns, the kilns' multi-channel burner pipes, and associated ancillary equipment that may come into direct contact with FQW or FQW residues.
- The CKD handling system used to transport CKD from the baghouses to the CKD holding silos. This system will only be addressed in the event that CKD is ever determined to be hazardous per 40 CFR 266.112 and OAC 252:205-3-2(h).

CPCC-Owned Feed System

- The CPCC-owned feed system consisting of piping, fittings, instruments, and valves.

3.2 Anticipated Closure Date

Final closure of the pyroprocessing system is not expected to occur before the year 2035.

3.3 Notification of Final Closure

CPCC will notify ODEQ in writing at least 45 days before the date on which final closure of the pyroprocessing system is expected to begin. Closure is expected to be completed no later than 180 days after initiation of closure.

3.4 Closure Schedule

CPCC will begin closure within 30 days of the date on which the known final volume of FQW is received for use in the pyroprocessing system. However, if there is a reasonable possibility that the kiln will receive additional FQW, the closure will begin within a year after the date on which the kiln received the most recent volume of FQW. At least 45 days before beginning the final/partial closure, CPCC will submit a notice in writing to ODEQ stating the date closure is expected to begin. CPCC intends to complete closure of the units within 180 days of the start of closure. The schedule of closure activities is shown in Table I-1.

Within 60 days of completion of closure activities, CPCC will submit certification to ODEQ that the unit has been closed according to the approved Closure Plan. If closure cannot be accomplished within

180 days or if the Certificate of Closure cannot be prepared within the 60-day time period, CPCC will submit to ODEQ a written request for an extension of the deadline. The request for an extension will be submitted at least 30 days before the expiration of the 180- or 60-day period.

CPCC will submit to ODEQ a written request for a permit modification, including a copy of the amended Closure Plan, for approval no later than 60 days after unexpected events or at least 60 days before proposed changes in facility design or operation that affect the Closure Plan. If an unexpected event occurs during the closure period, CPCC will request from ODEQ a permit modification no later than 30 days after the unexpected event.

TABLE I-1 PROJECTED SCHEDULE OF CLOSURE ACTIVITIES

CLOSURE ACTIVITY	COMPLETION DATE FROM CLOSURE START DATE
1. Removal of FQW from CPCC-owned portion of the feed lines and return line	Day 30
2. Decontamination of cement kilns	Day 60
3. Decontamination of ancillary equipment	Day 90
4. Disposal of decontamination residuals and rinses	Day 120
5. Completion of closure	Day 180
6. Submission of certification to ODEQ	Day 240

3.5 Disposal of Maximum Inventory of Hazardous Liquid Waste-Derived Fuel

FQW burned in the CPCC kilns is provided by Systech under its RCRA permit. At closure, CPCC will receive no additional FQW from Systech so that no bulk inventory of FQW will remain on CPCC property. The disposal of the maximum inventory of FQW is limited to the volume of waste remaining in the CPCC feed and return piping. However, as the worst-case scenario, FQW can remain in the two feed lines to the kiln and one return line. The amount of FQW in these lines on CPCC property is calculated as follows:

Amount of FQW:

$= (2 \text{ feed lines} \times 750 \text{ ft/line} + 1 \text{ return line} \times 750 \text{ ft/line}) \times \pi[3/(12 \times 2)]^2$

$= 2{,}250 \text{ ft} \times 0.049 \text{ ft}^2$

$= 110.45 \text{ ft}^3$

$= 826 \text{ gallons}$

Hazardous wastes, including rinsates and decontamination residues, will be treated on-site in the pyroprocessing system or will be transported to an off-site permitted or interim status TSD facility.

3.6 Closure Procedures

3.6.1 Cement Kilns, Kiln Combustion Components, and Air Pollution Control System Closure

Standard kiln combustion components closure activities shall consist of the following procedures:

- Disconnect and dismantle burner control system, nozzles, flow meters, valves, feed and return lines, and other appurtenant equipment.
- Use a high-pressure wash with detergent to clean any residues contained in the components.
- Inspect kiln components for visual cleanliness. Clean again if necessary. Visual cleanliness will be an adequate closure criterion for ancillary equipment prior to recycling as scrap metal.
- If CPCC elects to reuse these components or to dispose of the items as other than hazardous waste, collect a final rinse water sample and analyze the sample, using methods outlined in Attachment I-1, to check for the presence of hazardous waste constituents. The kiln combustion components will be considered clean closed when analytical results on the final rinse water sample indicate that levels of constituents are below the closure criteria presented in Section I.4.
- Contaminated cleaning solutions, rinse waters, and other residues resulting from cleaning activities will be collected in appropriate containers. The contaminated materials will be pyroprocessed in the cement kiln, if applicable, or sent off-site for proper treatment and disposal.

Standard kiln and air pollution control system cleaning activities shall consist of the following procedures:

- Allow kiln to burn normally for 24 hours on non-hazardous fuel (e.g., fuel oil, petroleum coke, natural gas, coal, or other fuel).

During “burn out” period, collect and analyze samples of CKD at the main discharge point of each associated baghouse every 6 hours.

Analyze the CKD samples, using methods outlined in Attachment I-1, to check for the presence of hazardous waste constituents. The kiln and the associated air pollution control components will be considered clean closed when analytical results of the CKD indicate that levels of constituents are below the closure criteria presented in Section I.4.

3.6.2 Ancillary Equipment Closure

Routine operational replacement of CPCC-owned ancillary equipment, such as piping, valves, hoses, and fittings, etc., may require removal and partial closure during the life of the facility. This section addresses the “partial closure” of these items during the normal, routine operations of the facility, prior to reuse, recycle for scrap metal recovery, or disposal as a hazardous waste.

Standard cleaning activities associated with ancillary equipment replacement include the following procedures:

- Isolate and remove all liquid from the equipment. A vacuum pump may be used, if necessary. Transfer the liquid contents to a tank/container that is in hazardous waste service for further processing and/or proper disposal.
- Remove any solids/slurry that may have settled out, using a vacuum pump if necessary. Transfer the solids/slurry contents into a tank/container that is in hazardous waste service for further processing and/or proper disposal.
- Clean the parts and/or equipment using parts washers; recirculation of virgin or recycled solvents such as alcohols, ketones, aliphatic hydrocarbons, etc.; and/or high-pressure wash with detergent solution and other methods to remove visible signs of contamination.
- Inspect the equipment for visual cleanliness. Repeat the above steps if necessary. Visual cleanliness will be the adequate closure criteria for ancillary equipment prior to recycling as scrap metal.
- If CPCC elects to reuse this equipment, collect a final rinse water sample and analyze the rinse water, using methods outlined in Attachment I-1, to check for the presence of hazardous waste constituents. The equipment will be certified as clean closed when analytical results of the final rinse water indicate that levels of constituents are below the closure criteria presented in Section I.4.
- Equipment that meets the clean closure criteria will be removed from service. Equipment that does not meet the criteria will have the cleaning steps repeated until they meet the requirements or the item will be disposed at an off-site facility as hazardous waste, or it will be shipped off-site as scrap metal for recycling.

Cleaning solutions, rinse waters, and other liquids resulting from cleaning activities will be collected and may be fuel blended, if appropriate, or sent off-site for proper treatment or disposal.

4.0 CLOSURE STANDARDS

4.1 Cement Kiln, Kiln Combustion Components, and Air Pollution Control System Closure Standards

In order to verify that the kiln and its associated combustion and air pollution control components have been properly decontaminated, the kiln and its associated combustion and air pollution control components shall be considered clean closed when sampling verifies the following.

- Kiln and Air Pollution Control Equipment - CKD samples exhibit metals concentrations below Toxicity Characteristic Leaching Potential (TCLP) hazardous waste levels.
- Kiln Combustion Components - Final rinsate samples exhibit constituent concentrations below practical quantitation limits (PQLs) or below two standard deviations of an average (three sample minimum) background constituent concentration of the rinse water used during the final rinse activities.

Final rinse samples from the kiln combustion components will be collected and analyzed for total metals, volatile organics, and semi-volatile organics as presented in Attachment I-1. To achieve the clean closure standard for the combustion components, the components will be emptied of all hazardous

wastes (i.e., liquids and solids). Subsequently, the combustion components will be cleaned and rinsed adequately to achieve the clean closure standard. Rinsate generated during kiln combustion component cleaning will be managed as a hazardous waste, with the exception of final rinsates that meet the clean closure standard. Rinsate material not demonstrated to meet the clean closure standard will be pyroprocessed in the cement kiln or transported off-site for proper disposal.

Following the final kiln combustion component rinsing, the following options, depending upon rinsate analytical results, may be exercised:

- If the final rinsate meets the clean closure standard, no end use restrictions shall be placed on decontaminated combustion components and closure of the combustion components will be deemed final.
- Combustion components that cannot meet the clean closure standard will be disposed of properly.

Alternately, units may be scrapped for metal recovery without performing rinsate analyses after visible signs of contamination have been removed from them.

CKD samples will be collected from the discharge of the air pollution control devices and analyzed for TCLP metals as described in Attachment I-1. To achieve the clean closure standard for the kiln and air pollution control components, the kiln will be burned normally for 24 hours on non-hazardous fuel (e.g., fuel oil, petroleum coke, natural gas, coal, or other fuel).

During this "burn out" period, four samples of CKD will be collected at the discharge of the baghouses and analyzed at 6-hour intervals. The kiln and the associated air pollution control components will be considered clean closed when the CKD samples exhibit metals concentrations below TCLP hazardous waste levels.

4.2 Ancillary Equipment Closure Standards

In order to verify that ancillary equipment has been properly decontaminated, the ancillary equipment shall be considered clean closed when the sampling verifies that the final rinsate sample exhibits constituent concentrations below PQLs or below two standard deviations of an average (three sample minimum) background constituent concentration of the rinse water used during final rinse activities.

Final rinsate samples will be collected and analyzed for total metals, volatile organics, and semi-volatile organics, as presented in Attachment I-1. To achieve the clean closure standard, the ancillary equipment will be initially emptied of all hazardous wastes (i.e., liquids and solids). Subsequently, the ancillary equipment will be cleaned and rinsed adequately to achieve the clean closure standard. Rinsates generated during equipment cleaning will be managed as a hazardous waste, with the exception of final rinsate samples that meet the clean closure standard. Rinsate material not demonstrated to meet clean closure standards will be pyroprocessed in the cement kiln or transported off-site for proper disposal.

Following final ancillary equipment rinsing, the following options, dependent upon rinsate analysis, may be exercised:

- If the final rinsate meets the clean closure standard, no end use restrictions shall be placed on decontaminated process equipment and closure of the ancillary equipment unit will be deemed final.

- Ancillary equipment that can meet the clean closure standard will be recycled as scrap metal or disposed of properly.

Alternately, units may be scrapped for metal recovery without performing rinsate analyses after visible signs of contamination have been removed from them.

5.0 CLOSURE COST ESTIMATE

An estimate of the closure cost for the pyroprocessing system and associated CPCC-owned feed system components for the CPCC plant has been developed and is included in Attachment I-2. The closure cost estimates have been based on off-site shipment of approximately 826 gallons of FQW (from the feed and return lines) and rinsates generated from the clean closure of the ancillary equipment and equipment decontamination activities. The estimated decontamination costs for equipment and structures have been listed. The decontamination costs include labor, sampling, and testing. The cost of obtaining a Closure Certificate from a registered Professional Engineer is also included. Administrative and contingency costs of 15% each of the total closure cost estimate have been included in the estimate. No salvage value from the recycling of scrap metal components has been incorporated in the estimate.

Closure cost estimates are adjusted annually for inflation in accordance with 40 CFR 264.142(b) and OAC 252:205-3-2(f). The latest closure cost estimates and the latest adjustments for inflation are kept in the facility Operating Record, in accordance with 40 CFR 264.142(d) and OAC 252:205-3-2(f).

6.0 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE AND LIABILITY

CPCC will establish financial assurance for the closure of the Tulsa pyroprocessing system and CPCC-owned ancillary equipment. The option that will be selected by CPCC is to provide financial assurance as a bond as provided in 40 CFR 264.143(c) and OAC 252:205-3-2(f). Documents demonstrating financial assurance for closure and liability requirements for the CPCC plant pyroprocessing systems based upon 2020 dollars are included in Attachment I-3.

ATTACHMENT I-1 CLOSURE SAMPLING AND ANALYSIS PLAN

CLOSURE SAMPLING AND ANALYSIS PLAN

1.0 PURPOSE

The purpose of this Plan is to provide an outline of the sampling and analyses that will be performed during closure of the pyroprocessing system and ancillary equipment.

2.0 MEDIA TO BE SAMPLED AND ANALYZED

Samples of CKD and rinse water (if applicable) will be analyzed. Rinse water may be analyzed for volatile organics according to Method 8260, semi-volatile organics according to Method 8270, and for total metals by using the Method 3050 digestion procedure followed by Inductively Coupled Argon Plasma analysis for metals according to Method 6010 and the 7000 series methods for specific metals. CKD samples will be analyzed for TCLP metals utilizing Method 1311. These analyses will provide a suitable representation of the hazardous waste constituents managed in the pyroprocessing units and ancillary equipment. Table AI-1 provides a list of the hazardous constituents contained in the analytical suites with the associated practical quantitation limit (PQL).

3.0 FIELD SAMPLING PROCEDURES

3.1 Rinsate Samples

The rinsate sampling procedure will consist of collecting samples of the final rinsate from kiln combustion components and ancillary equipment. Rinse water samples will be collected utilizing standard sample collection techniques and placed into an appropriate sample jar. QA/QC samples will also be collected as described in Section 5.0. Appropriate personnel protective equipment (PPE) and sample collection procedures will be utilized in order to minimize exposure and potential cross-contamination of samples.

3.2 CKD Samples

CKD samples will be collected from the discharge of the baghouse(s) every 6 hours during the course of the 24-hour burnout period. CKD will be collected by placing an appropriate sample jar into the access ports. QA/QC samples will be collected as described in Section 5.0. Appropriate PPE and sample collection procedures will be utilized in order to minimize exposure and potential cross-contamination of samples.

3.3 Background Samples

Background samples of rinse water (if appropriate) will be collected for the purpose of determining if the clean closure criteria have been met. Background rinse water samples will be collected from the water source providing the water for rinsing activities. A minimum of three background samples from the media will be collected. Background samples will be collected utilizing standard sample collection techniques.

4.0 SAMPLING METHODS, EQUIPMENT, AND DECONTAMINATION PROCEDURES

Final rinsate samples from the ancillary equipment will be taken by draining the final rinsate directly into the sample jar or using a COLIWASA after draining the rinsate in a clean container. Background water samples of rinse water will be collected by first putting the rinse water in a clean container and then pouring the rinse water into a sample jar, or by directly pouring the rinse water into a sample jar from the source. CKD sampling at closure will be performed by using a scoop, or by directly putting the CKD into the sample jar through CKD sampling ports. Proper cleaning and decontamination of all sampling implements that contact the samples will be ensured to prevent cross-contamination and assure valid analytical results.

Workers who clean or use the sampling implements must wear protective gloves to protect themselves and to prevent the equipment from being contaminated. During the decontamination procedures, all rinsate material will be accumulated for disposal as hazardous waste, in accordance with all applicable regulations.

4.1 Sample Preservation and Holding Times

The samples will be collected in clean glass containers with Teflon-lined lids appropriate to the analytical method. The samples will be preserved by refrigeration at or below 4°C plus or minus 2°C until extraction and analysis. The maximum allowable sample holding times and preservatives, if any, are listed in Table AI-1.

5.0 QA/QC

5.1 QA/QC Plan for Field Sampling

In order to ensure reliable sampling results, trip blanks, field blanks, and duplicate samples will be taken at least once with each analytical media batch with a minimum of once for every twenty samples in each media batch. Strict chain-of-custody procedures would be followed in transferring the samples to the selected analytical laboratory.

5.2 QA/QC Plan for Laboratory Analysis

In order to ensure reliable analytical results, a laboratory that has an established, written QA/QC Program that follows USEPA guidelines will be retained to perform the analyses.

Table AI-1: Liquid Analytical Parameters

TEST PARAMETERS	METHOD[1]	INSTRUMENT	ANALYTES (CAS NO.)	PQLS[2]	SAMPLE HOLDING TIMES	SAMPLE CONTAINER PRESERVATIVE
Total Metals	SW6010 (metals)	ICP	Antimony (Sb) (7440-36-0)	0.06 (mg/l)	180 days	liter polyethylene, HNO_3, 4°C
			Arsenic (As) (7440-38-2)	0.05		
			Barium (Ba) (7440-39-3)	0.02		
			Beryllium (Be) (7440-41-7)	0.005		
			Cadmium (Cd) (7440-43-9)	0.005		
			Chromium (Cr) (7440-47-3)	0.005		
			Lead (Pb) (7439-92-1)	0.05		
			Nickel (Ni) (7440-02-0)	0.01		
			Silver (Ag) (7440-22-4)	0.01		
			Selenium (Se) (7782-49-2)	0.10		
			Thallium (Tl) (7440-28-0)	0.10		
	SW7470 (mercury)	Cold Vapor	Mercury (Hg) (7439-97-6)	0.20 (mg/l	28 days	(See above)
Organic Constituents	SW8270 (semi-volatiles)	GC/MS	Phenol (108-95-2)	10 (ppb)	14 days	1 liter amber, 4°C
			Bis(2-Chloroethyl)Ether(111-44-4)	10		
			2-Chlorophenol (95-57-8)	10		
			1,3-Dichlorobenzene (541-73-1)	10		
			1,4-Dichlorobenzene (106-46-7)	10		
			Benzyl Alcohol (100-51-6)	10		
			1,2-Dichlorobenzene (95-50-1)	10		
			2-Methylphenol (1319-77-3)	10		
			Bis(2-Chloroisopropyl)Ether (108-60-1)	10		
			4-Methylphenol (108-39-4)	10		
			N-Nitroso-Di-n-Propylamine	10		
			Hexachloroethane (67-72-1)	10		
			Nitrobenzene (98-95-3)	10		
			Isophorone (78-59-1)	10		
			2,4-Dimethylphenol (105-67-9)	10		
			2-Nitrophenol (88-75-5)	10		
			Benzoic Acid (65-85-0)	50		
			Bis(2-Chloroethoxy)Methane	10		
			2,4-Dichlorophenol (120-83-2)	10		
			1,2,4-Trichlorobenzene (120-82-1)	10		
			Naphthalene (91-20-3)	10		
			4-Chloroaniline (108-42-9)	10		
			Hexachlorobutadiene (87-68-3)	10		
			4-Chloro-3-Methylphenol	10		
			2-Methylnaphthalene (91-57-6)	10		
			Hexachlorocyclopentadiene (77-47-4)	10		
			2,4,6-Trichlorophenol (88-06-2)	10		
			2,4,5-Trichlorophenol (95-95-4)	50		
			2-Chloronaphthalene (91-58-7)	10		
			Nitroaniline (88-74-4)	50		
			Dimethylphthalate (131-11-3)	10		
			2,6-Dinitrotoluene (606-20-2)	10		
			Acenaphthylene (208-96-8)	10		
			Nitroaniline (100-01-6)	50		
			Acenaphthene (83-32-9)	10		
			2,4-Dinitrophenol (51-28-5)	50		
			Nitrophenol (100-02-7)	50		
			2,4-Dinitrotoluene (121-14-2)	10		
			Dibenzofuran (132-64-9)	10		
			Diethylphthalate (84-66-2)	10		
			4-Chlorophenyl-Phenylether	10		
			Fluorene (86-73-7)	10		
			4-Nitroaniline (99-09-2)	50		
			4,6-Dinitro-2-Methylphenol	50		
			N-Nitrosodiphenylamine (86-30-6)	10		

TEST PARAMETERS	METHOD[1]	INSTRUMENT	ANALYTES (CAS NO.)	PQLS[2]	SAMPLE HOLDING TIMES	SAMPLE CONTAINER PRESERVATIVE
Organic Constituents (cont'd)	SW8270 (semi-volatiles) (cont'd)	GC/MS	4-Bromophenyl-Phenylether (101-55-3)	10	14 days	1 liter amber, 4°C
			Hexachlorobenzene (118-74-1)	10		
			Pentachlorophenol (87-86-5)	50		
			Phenanthrene (85-01-8)	10		
			Anthracene (120-12-7)	10		
			Di-N-Butylphthalate (84-74-2)	10		
			Fluoranthene (206-44-0)	10		
			Pyrene (129-00-0)	10		
			Butylbenzylphthalate	10		
			Bis(2-Ethylhexyl)phthalate (117-81-7)	10		
			3,3'-Dichlorobenzidine (91-94-1)	50		
			Benzo(A)Anthracene (56-55-3)	10		
			Chrysene (218-01-9)	10		
			Di-N-Octylphthalate (117-84-0)	10		
			Benzo(b)Fluoranthene (205-99-2)	10		
			Benzo(k)Fluoranthene (207-08-9)	10		
			Benzo(a)Pyrene (50-32-8)	10		
			Dibenzo(A,H)Anthracene (53-70-3)	10		
			Indeno(1,2,3-CD)Pyrene (193-39-5)	10		
			Benzo(G, H, I)Perylene (191-24-2)	10		
	SW8260 (volatiles)	GC/MS	Chloromethane (74-87-3)	10 (ppb)	14 days	2-40 ml vials, HCL, 4°C
			Bromomethane (74-83-9)	10		
			Vinyl Chloride (75-01-4)	10		
			Chloroethane (75-00-3)	10		
			Methylene Chloride (75-09-2)	5		
			Acetone (67-64-1)	10		
			Carbon Disulfide (75-15-0)	5		
			1,1-Dichloroethene (75-35-4)	5		
			1,1-Dichloroethane (75-34-3)	5		
			Total-1,2-Dichloroethene (540-59-0)	5		
			Chloroform (67-66-3)	5		
			1,2-Dichloroethane (107-106-2)	5		
			2-Butanone (78-93-3)	10		
			1,1,1-Trichloroethane (71-55-6)	5		
			Carbon Tetrachloride (56-23-5)	5		
			Vinyl Acetate (108-05-4)	10		
			Bromodichloromethane (75-27-4)	5		
			1,1,2,2-Tetrachloroethane (79-34-5)	5		
			1,2-Dichloropropane (78-87-5)	5		
			Trans-1,3-Dichloropropene (10061-02-6)	5		
			Trichloroethene (79-01-6)	5		
			Dibromochloromethane	5		
			1,1,2-Trichloroethane (79-00-5)	5		
			Benzene (71-43-2)	5		
			Cis-1,3-Dichloropropene (10061-01-5)	5		
			Bromoform (75-25-2)	5		
			2-Hexanone (591-78-6)	10		
			4-Methyl-2-Pentanone (108-10-1)	10		
			Tetrachloroethene	5		
			Toluene (108-88-3)	5		
			Chlorobenzene (108-90-7)	5		
			Ethylbenzene (100-41-4)	5		
			Styrene (100-42-5)	5		
			Total Xylenes (1330-20-7)	5		

[1] Methods are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, USEPA.

[2] PQLs - Practical Quantitation Limits. These PQLs represent typical laboratory reporting limits for liquids.

CAS No. - Chemical Abstract Service Number

GC/MS - Gas Chromatography/Mass Spectrometer

GC - Gas Chromatography

ICP - Inductivity Coupled Plasma

ATTACHMENT I-2 CLOSURE COST ESTIMATE

ATTACHMENT I-2

CLOSURE COST ESTIMATE

CLOSURE COST ESTIMATE[1] CPCC KILNS AND FEED SYSTEM	QUANTITY	COST PER UNIT	COST
1. Disposal of FQW in Piping on CPCC Property			
a. Cost of 55-gallon drums (15 drums @ $67/drum)	15 ea	$67/drum	$1,005
b. Cost of loading drums on trucks ($2.85/drum)	15 ea	$2.85/drum	$43
c. Transportation cost (125 miles @ $4/mile)	125 miles	$4/mile	$500
d. Disposal Cost	826 gal	$0.25/gal	$207
Subtotal 1			$1,755
2. Dismantling of Burner Lances and Ancillary Piping (approximately 10 feet per kiln)	2 burner lances 20' piping		
a. Labor (2 persons @ $52.48/hr x 8 hr/kiln x 2 kilns)	32 hrs	$52.48/hr	$1,679
b. Equipment, supplies, and PPE	1	$600	$600
Subtotal 2			$2,279
3. Decontamination of Burner Lances and Ancillary Piping (approximately 10 feet per kiln)	2 burner lances 20' piping		
a. Labor (2 persons @ $52.48/hr x 4 hr/kiln x 2 kilns)	16 hrs	$52.48/hr	$840
b. Equipment, supplies, and PPE	1	$800	$800
c. 55-gal drums (4 drums/kiln x 2 kilns x $67/drum)	8	$67/drum	$536
Subtotal 3			$2,176
4. Off-site Transportation and Disposal of Generated Rinsate at Off-Site Thermal Treatment Facility	400 gal		
a. Transport of rinsate (8 55-gal drums; 1 box truck; 16 miles/truck)	1 shipment	$4/mile	$64
b. Disposal cost	400 gal	$0.25/gal	100
Subtotal 4			$164
5. Removal of Fuel Feed Lines and Return Line on CPCC Property			
a. Roll-off rental ($430/week)	1 week	$430/week	$430
b. Labor for cutting feed and return lines (No. of cuts - 2,250 ft / 15 ft = 150; time per cut = 15 minutes)	37.5 hr	$52.48/hr	$1,968
Subtotal 5			$2,398
6. Decontamination of Kilns by Burning Fuel Other Than FQW	2 kilns		
a. Kiln operator	48 hr	$75/hr	$3,600
b. Laborer	48 hr	$52.48/hr	$3,936
c. Fuel costs (5 tons/hr x 24 hr x 2 kilns)	240 tons	$58/ton	$13,920
Subtotal 6			$21,456
7. Decontamination Verification			
a. Analysis of CKD for TCLP metals	10 samples	$569.25/sample	$5,693
b. Analysis of rinsate for organics and metals	4 samples	$878/sample	$3,512
c. Labor	8 hr	$52.48/hr	$420
Subtotal 7			$9,625
8. Closure Certification			
a. Third-party oversight (1 person @ $110/hr x 40 hr) (expenses)	40 hr 5 days	$110/hr $125/day	$4,400 $625
b. Registered Professional Engineer (1 person @ $110/hr x 16 hr)	16 hr	$110/hr	$1,760

.

CLOSURE COST ESTIMATE[1] CPCC KILNS AND FEED SYSTEM	QUANTITY	COST PER UNIT	COST
c. Closure report preparation and certification Expenses	1 1	$5,000 $200	$5,000 $200
Subtotal 8			$11,985
SUBTOTAL (1 THROUGH 8)			$51,838
9. Administration (15%)			$7,776
10. Contingency (15%)			$7,776
2010 GRAND TOTAL (1 THROUGH 10)			$67,389
2020 ADJUSTED FINANCIAL			$78,163.61
FINANCIAL ASSURANCE BOND SUBMITTED TO OKDEQ IN 2018			$80,000.00

[1] Based on values from CostPro 6.0 (May 2009) supplemented by disposal cost quotations

*Assumed 2019 Closure Cost of $76,811.73 submitted to the OKDEQ and using the IPD for Gross National Product of 1.76 for 2020.

ATTACHMENT I-3 FINANCIAL ASSURANCE DOCUMENTS

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

November 24, 2020

Jennifer Smith, Environmental Manager
Tulsa Cement LLC
2609 N. 145th East Avenue
Tulsa, Oklahoma 74116

Re: Financial Assurance – Liberty Mutual Insurance Company, Surety Bond No. 022027307
Facility: Tulsa Cement LLC (Tulsa Cement)
EPA ID No. OKD064558703

Dear Ms. Smith:

In a letter dated September 25, 2019, the Department of Environmental Quality (DEQ) approved 2019 cost estimate adjustments for Tulsa Cement LLC (Tulsa Cement), EPA ID No. OKD064558703. DEQ approved $76,811.73 for closure.

On September 4, 2020, DEQ received Tulsa Cement's letter dated September 2, 2020, regarding the facility's 2020 closure cost estimate calculation. Tulsa Cement's 2020 closure cost estimate of $78,163.62 reflects the annual inflationary adjustment based on the Implicit Price Deflator for Gross National Product pursuant to 40 CFR 264.142(b). The 2020 inflation rate is 1.76%. The 2020 closure cost estimate of $78,163.62 is approved.

Tulsa Cement's current financial assurance mechanism is Liberty Mutual Insurance Company, Surety Bond No. 022027307, in the amount of $80,000.00. The bond amount is in excess of Tulsa Cement's 2020 approved closure cost. Therefore, Tulsa Cement is satisfactorily meeting its annual financial assurance obligation as required by 40 CFR 264 Subpart H, Financial Requirements.

Thank you for ensuring Tulsa Cement is meeting its annual financial assurance obligation. If you have any questions, please contact Carol Bartlett at (405) 702-5109.

Sincerely,

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/cb

Terri Morrison
Assistant Vice President

Marsh USA Inc.
500 Dallas Street
Suite 1500
Houston, TX 77002
713-276-8776
Terri.L.Morrison@marsh.com
www.marsh.com

MARSH

October 09, 2018

Keena Collins
Eagle Materials Inc.
3811 Turtle Creek Blvd.
Dallas, TX 75219

Subject: Increase Rider

Principal: Tulsa Cement LLC
Obligee: Oklahoma Department of Environmental Quality
Bond Description: Closure Bond - Tulsa Portland Cement Plant
New Bond Amount: $80,000.00
Bond Number: 022027307
Surety Name: Liberty Mutual Insurance Company

Dear Rodney Cummickel:

In response to the request dated 10/9/2018, I am pleased to enclose an increase rider for the above-referenced bond that is based on the information we received with the request.

Prior to filing with Oklahoma Department of Environmental Quality, the following items need to be completed:

1. Signed by authorized officer
2. Officer's name and title inserted below signature
3. Corporate seal affixed (if applicable)

As always, the bond document should be re-checked for accuracy before filing with Oklahoma Department of Environmental Quality.

If you have any questions, please feel free to contact me. Thank you for allowing Marsh to service your surety needs.

Sincerely,

Terri Morrison
Assistant Vice President

Enclosure

SURETY RIDER

To be attached to and form a part of

Bond No. 022027307

dated effective 11/28/2012
(MONTH-DAY-YEAR)

executed by Tulsa Cement LLC , as Principal,
(PRINCIPAL)

and by Liberty Mutual Insurance Company , as Surety,

in favor of Oklahoma Department of Environmental Quality
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

The Bond Amount to:

Eighty Thousand And No/100 ($80,000.00)

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider is effective 11/28/2018
(MONTH-DAY-YEAR)

Signed and Sealed 10/9/2018
(MONTH-DAY-YEAR)

Tulsa Cement LLC
(PRINCIPAL)

By: _____
(PRINCIPAL)

Liberty Mutual Insurance Company
(SURETY)

By: _____

Terri L Morrison, Attorney-in-Fact

S-0443/GEEF 10/99

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees. To confirm the validity of this Power of Attorney call 610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint,

Terri L Morrison

of the city of Houston, state of Texas its true and lawful attorney-in-fact, with full power and authority hereby conferred to sign, execute and acknowledge the following surety bond:

Principal Name: Tulsa Cement LLC

Obligee Name: Oklahoma Department of Environmental Quality

Surety Bond Number: 022027307 **Bond Amount:** $80,000.00

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 27th day of February, 2017.

The Ohio Casualty Insurance Company
Liberty Mutual Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 27th day of February, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of , Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of October, 2018.

By: _____
Renee C. Llewellyn, Assistant Secretary