STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF FEBRUARY 8-9, 2018
Prepared on January 9, 2018

ITEM NUMBER: **7**

SUBJECT: **CEMEX Davenport Cement Plant Cement Kiln Dust (CKD) Landfills, Santa Cruz County**
Revised Waste Discharge Requirements, Order No. R3-2018-0001

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KEY INFORMATION:

Location:	Highway 1 adjacent to and northwest of the community of Davenport in Santa Cruz County as shown on Figure 1 of proposed Waste Discharge Requirements Order No. R3-2018-0001.
Owner/Operator:	CEMEX and its subsidiary RMC Pacific Materials, LLC dba CEMEX owns and maintains two CKD landfills (North CKD Area & Lonestar Closed CKD Landfill). The Trust for Public Land and its subsidiary Coast Dairies and Land Co. owns the property containing a northern portion of the North CKD Area.
Type of Waste:	Predominantly cement kiln dust (CKD), a non-hazardous designated solid waste.
Capacity:	None, this Order requires closure of the North CKD Area, which contains approximately 850,000 cubic yards of CKD.
Disposal:	Canyon-fill, waste slurry surface impoundment.
Liner System:	None
Existing Orders:	Waste Discharge Requirements Order Nos. 94-66 and 99-23
This Action:	**Adopt Waste Discharge Requirements Order No. R3-2018-0001 and rescind Order No. 94-66 and Order No. 99-23**

SUMMARY

The proposed Waste Discharge Requirements (WDRs) for CEMEX Davenport Cement Plant (Facility) Cement Kiln Dust (CKD) Landfills, Order No. R3-2018-0001, replaces and combines the requirements of the two existing Orders, 94-66 and 99-23, for the Lonestar Closed CKD Landfill and the North CKD Area (hereafter collectively referred to as "Landfills"), respectively. The proposed Order includes a historical review of the Landfills and requires closure of the North CKD Area as a Class II landfill pursuant to California Code of Regulations Title 27 (CCR Title 27) by October 1, 2020, or October 1, 2022, with Executive Officer approval. The proposed Order also requires maintenance and monitoring of the Landfills through the minimum

30-year post-closure period, as well as additional provisions and monitoring requirements to address localized groundwater quality and stormwater discharge issues associated with the Facility and Landfills as described in the Discussion section below.

CEMEX through its subsidiary RMC Pacific Materials, LLC dba CEMEX owns the CEMEX Facility, which began operating in 1906 and permanently shut down in 2010 following several extended periods of inactivity. The Facility includes two historical CKD waste management units that are essentially unlined canyon landfills, the Lonestar Closed CKD Landfill and the inactive North CKD Area. CEMEX is the primary Discharger responsible for the operation and maintenance of the Landfills. A waste stream of the cement manufacturing process, CKD contains minerals, nonhazardous levels of various heavy metals, and is caustic with a high pH (>9.5) when in solution. Historically, CKD was disposed of onsite as slurry, which hardened to a cement-like consistency when dried, to facilitate transport and disposal. As a result, CKD within the Landfills is relatively cemented and resistant to infiltration/percolation and erosion when left undisturbed.

The Facility is adjacent to the communities of New Town to the north and Davenport to the south. The potential for windblown CKD and inhalation of CKD dust are the primary public health concerns of the adjacent and predominantly downwind community of Davenport. However, the hardened characteristics of the CKD minimizes fugitive dust emissions and exposure to the public. Although water quality is an issue of concern in the general sense, these communities are not at risk due to water quality related problems associated with the Facility as discussed below. Additional concerns of the adjacent communities are the generally dilapidated and unsightly state of the very prominent Facility infrastructure that includes a portion of the North CKD Area.

Final closure of the North CKD Area includes regrading of the North CKD Area, the construction of a final cover and associated drainage infrastructure, and corrective actions for the Facility stormwater Retention and Detention Ponds to remove impacted sediments and provide additional storage as needed to control offsite stormwater flows. The proposed Order also includes investigation and corrective action requirements for the Lonestar Closed CKD Landfill to address shallow groundwater impacts. Figure 2 of the proposed Order depicts the Facility with respect to the Landfills, drainage infrastructure and other relevant features of the site and is a recommended visual reference in support of this staff report.

Localized groundwater impacts on the Facility property are associated with high pH and mineral levels and non-hazardous levels of heavy metals. However, the groundwater quality conditions do not pose any known or immediate public health threat because groundwater in the area of the Facility is of limited quantity and quality and is not used for drinking water purposes. The nearest water supply well is used for agricultural purposes and is approximately 1,500 feet northwest of the Facility. The water supply of the adjacent unincorporated communities of Davenport and New Town comes from a spring in the hills above the Facility. Recent inspections conducted by staff indicate impacted stormwater discharges mixed with natural and Facility seepage and HWY 1 runoff are being used for agricultural irrigation purposes on CEMEX property. Water Board staff are working with CEMEX and County of Santa Cruz Environmental Health Department staff to either cease or ensure the safe and appropriate use of this water. The County of Santa Cruz Environmental Health Department is also overseeing a broader Facility closure investigation, not including the Landfills, to identify and remediate soil contamination and other non-water related environmental concerns.

Final closure of the North CKD Area is a priority for both Water Board staff and CEMEX. The planning and implementation of a landfill final closure is a complex, highly technical and time intensive process requiring the development and review of numerous technical and financial assurance documents, and regular coordination between Water Board staff, the Discharger and multiple consultants. CEMEX has been responsive to Water Board staff requests for supplemental water quality monitoring and technical information needed to inform the proposed Order and facilitate closure.

ORDER STRUCTURE & DOCUMENTATION

The findings within the proposed Order contain detailed information about the history of the Facility and provides the technical and regulatory basis supporting the requirements. The findings are organized into the following sections:

- Landfill Location and Owner
- Purpose of Order
- Site Description and History
  - Facility
  - Lonestar Closed CKD Landfill
  - North CKD Area
- Corrective Action History
- Landfill Closure
- Facility Closure
- Classification and Waste Type
- Geology/Hydrogeology
- Groundwater, Surface Water, and Stormwater
- Control Systems and Monitoring
- Basin Plan
- California Environmental Quality Act
- General Findings

The requirements of the proposed Order are organized into the following sections:

A. Compliance with other Regulations and Orders
B. Prohibitions
C. Specifications
   - Design
D. Water Quality Protection Standards
E. Provisions
   - Reporting
   - Enforcement

Figure 2 of the proposed Order depicts the Facility with respect to the Landfills, drainage infrastructure and other relevant features of the site discussed below and is a recommended visual reference in support of this staff report.

GeoTracker Data Management

All of the technical documents, data and formal correspondence relied upon for the preparation of the proposed Order are available on the State Water Resources Control Board GeoTracker

Information System via the following web address, or by searching GeoTracker using the facility information provided below:

http://geotracker.waterboards.ca.gov/profile_report?global_id=L10009974641

Facility Name:	CEMEX DAVENPORT CEMENT PLANT LANDFILLS
Global ID:	L10009974641
Case No.:	3 442004001

Documents related to County of Santa Cruz Environmental Health Department oversight of broader Facility closure are also available on GeoTracker via the following web address or by searching GeoTracker using the facility information provided below:

http://geotracker.waterboards.ca.gov/profile_report?global_id=T10000007011

Facility Name:	CEMEX DAVENPORT CEMENT PLANT
Global ID:	T10000007011
Case No.:	RO0000356

DISCUSSION

The following discussion includes an overview of the Facility, Landfills and associated regulatory oversight, detailed information about CKD, and a summary of significant issues addressed by the proposed Order. In addition, this section also includes an overview of the final closure and monitoring requirements, compliance history, stakeholder outreach and response to public comments.

Facility History and Regulatory Oversight

The Facility began operation in 1906 under the Santa Cruz Portland Cement Company and quickly became the second largest cement plant in the nation, producing approximately 1.4 million barrels of cement per year in 1910. The Facility provided cement for the construction of many notable infrastructure projects including, but not limited to, the Pearl Harbor Dry Docks in 1909, Panama Canal 1914, Golden Gate Bridge in 1937, and California aqueducts in 1960. It was also one of two California plants to accelerate cement production to meet World War II military demand in the Pacific. Over its long history the Facility site has been significantly modified for industrial use associated with cement manufacturing by regrading and filling of the native canyon topography, and the construction of roads, rail lines, offices, control buildings, silos, mills, workshops, materials storage, above ground tanks, waste disposal areas, and drainage facilities. The Facility has been owned and operated by multiple companies and CEMEX has owned and operated it since 2005. The cement plant was permanently closed in 2010 due to economic conditions and uncertainty related to the expansion and permitting of the limestone feedstock quarry in the hills just above the facility.

CEMEX is currently working with the County of Santa Cruz Environmental Health Department to formally close the Facility pursuant to County codes and hazardous materials permitting requirements. This process includes identifying and evaluating areas of environmental concern and the development and implementation of feasibility studies and remedial actions to address impacted areas. Water Board Landfill and Site Cleanup Program staff are following this process and will coordinate with the County as needed regarding potential water quality issues. The

County is not evaluating the Landfills and associated drainage infrastructure because they are regulated by the Water Board. The drinking water and wastewater treatment facilities for the adjacent unincorporated communities of Davenport to the south and New Town to the north are both located on the Facility property and are owned and operated by the Santa Cruz County Sanitation District. The water supply for these communities is derived from a spring in the hills above the Facility.

The Water Board has regulated the Facility since the early 1970s using WDRs for the Landfills, site specific National Pollutant Discharge Elimination System (NPDES) permits for discharges to the Pacific Ocean and the Statewide General [NPDES] Permit for Storm Water Discharges Associated with Industrial Activities (Industrial Permit or IGP) for the entire facility. The most recent site-specific NPDES permit (Order No. R3-2010-0008) was rescinded in 2015. CEMEX is currently enrolled under the IGP for the entire Facility, WDR Order No. 99-23 for the North CKD Area, and WDR Order No. 94-66 for the Lonestar Closed CKD Landfill.

The Lonestar Closed CKD Landfill final cover was constructed in 1995 pursuant to Order 94-66 and consists of a drainage/vegetative layer over a geosynthetic clay liner to promote surface runoff and prevent infiltration of water into the CKD waste. The final cover includes concrete v-ditches to route clean stormwater run-on around and off the landfill. Clean stormwater from the Lonestar Closed CKD Landfill v-ditches discharges to an unnamed canyon/creek drainage located in the south corner of the Facility property and ultimately the Pacific Ocean. Slopes along the north edge and southeast portion of the Lonestar Closed CKD Landfill did not receive a final cover because they were too steep; these slopes rely on positive drainage and vegetation to prevent erosion. Additionally, an established grove of Monterey Cypress trees growing near the toe of the lower portion of the Lonestar Closed CKD Landfill also limited final cover construction to minor grading and drainage improvements only. The trees were planted in compliance with Conditional Order of Abatement and Variance No. 83-4 as a botanical windbreak at the request of the Monterey Bay Unified Air Pollution Control District.

The proposed Order replaces both WDR Order No. 99-23 and Order No. 94-66, and addresses water quality issues associated with ongoing ocean discharges from the Facility Retention Pond in conjunction with the IGP. The Facility discharges stormwater associated with temporary run-on and runoff drainage controls for the North CKD Area, as well as stormwater and seepage from other areas of the Facility to the Pacific Ocean via Discharge Point 001 (see Figure 2 of the proposed Order). Decommissioning of Facility infrastructure and Landfill closure activities (e.g., regrading of North CKD Area and construction of final cover and drainage facilities) will require enrollment under the Statewide General [NPDES] Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit).

Cement Kiln Dust (CKD) Characteristics, Waste Classification and Disposal

CKD Characteristics - The production of cement requires raw materials including limestone, shale, aluminum clay, iron ore, and sand. These materials are ground to a powder and heated to 2800°F to form a glassy product called “clinker”. Cement is then produced by grinding clinker and other additives such as gypsum to form a very fine powder. The primary byproduct of the cement manufacturing process is CKD, which generally consists of unreacted raw materials, partially reacted feedstock materials, and clinker dust. Characterization of CKD from the Facility indicates nonhazardous levels of heavy metals (e.g., barium, cobalt, copper, lead, nickel, silver, selenium, chromium, cadmium, zinc, mercury, molybdenum, thallium, vanadium, etc.) and is caustic with a high pH (>9.5) when in solution.

CKD Waste Classification - Although CKD would be classified as a hazardous waste because of its high pH, it is defined as a "special waste" excluded from applicable hazardous waste regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The proposed Order defines CKD as a California designated waste[1] pursuant to CCR Title 27 because of its potential to impair water quality and the beneficial uses groundwater and surface water. The proposed Order requires the Discharger to close the North CKD Area to Class II landfill standards to protect water quality. Class II standards are more stringent than Class III standards for municipal solid waste landfills and less stringent than Class I standards for hazardous waste landfills.

CKD Disposal - Facility CKD was discharged to the two onsite Landfills which essentially operated as waste impoundments. The Lonestar Closed CKD Landfill operated from 1906 to 1984 and formally closed in 1995, and the North CKD Area received CKD from the 1950s to 1998. Historically, CKD was disposed of as a slurry to reduce fugitive dust emissions and facilitate easy transport by pumping to shallow impoundments acting as drying ponds. Dried CKD slurry has cement-like properties such that it is relatively low permeability and resistant to infiltration/percolation and erosion if left undisturbed. However, cemented CKD can retain moisture because of its relatively high porosity and can be permeable via cracks.

Order No. 99-23 allowed for continued disposal to the North CKD Area on top of CKD already in place, but required any future expansion beyond the existing North CKD Area footprint to comply with CCR Title 27 Class II requirements (i.e., installation of a liner, leachate collection system, etc.). Due to the Discharger's efforts to reduce discharges to the North CKD Area and avoid Class II liner and leachate collection requirements from 1998 to the end of the Facility operations, CKD was either recycled back into cement manufacturing process as a feedstock or recycled for offsite use as an agricultural soil conditioner because of its lime-like properties. Between 2002 and 2010, approximately 90,000 cubic yards of CKD were removed from the North CKD Area for use as an agricultural soil conditioner. Currently, the North CKD Area encompasses an area of about 12 acres and contains approximately 850,000 cubic yards of CKD, and the Lonestar Closed CKD landfill encompasses an area of about 5.8 acres and contains an unknown volume of CKD.

Significant Issues Addressed by the Proposed Order

In addition to or as part of final closure of the North CKD Area, the proposed Order addresses the following issues:

<u>Interim Cover Degradation – North CKD Area</u>
In 2000, a temporary exposed high-density polyethylene (HDPE) membrane was installed over the large CKD pile on the top deck of the North CKD Area and adjacent steep slopes to address erosion and fugitive dust emission concerns. The flatter top deck was left uncovered to facilitate CKD removal efforts occurring at that time. The interim cover has degraded due to ultra-violet (UV) exposure and wind damage, exposing portions of the CKD pile and creating an unsightly appearance and windblown plastic trash (i.e., torn and shredded membrane partially contained by hundreds of automobile tires tied together with rope). In October 2016, Water Board staff required CEMEX to submit an Interim Cover Repair Evaluation Report for the North CKD Area

[1] A designated waste is a hazardous waste which has been granted a variance or a nonhazardous waste that consists of, or contains, pollutants that, under ambient conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state.

to evaluate erosion and fugitive dust emission risks and propose repairs as needed to mitigate any risks (note: portions of the cover were repaired in 2011 in response to Water Board staff requirements). The Interim Cover Repair Evaluation documented the CKD pile to be relatively cemented and resistant to water and wind erosion, and did not recommend repairs due to the forthcoming final cover construction and enrollment under the IGP to address potential CKD erosion related stormwater discharges. Water Board staff have conducted multiple inspections during high wind events and have confirmed the CKD pile is not subject to fugitive dust emissions. Water Board staff have also been onsite following rain events. Although cemented CKD is clearly resistant to erosion, the dissolution of minerals and metals into seepage appears to be an ongoing issue associated with exposed portions of the North CKD area.

Water Board staff issued a letter on January 12, 2017, accepting the Interim Cover Repair Evaluation under the condition that CEMEX prioritize final closure of the North CKD Area and implement additional surface water monitoring to supplement the IGP monitoring requirements. The results of the supplemental surface water monitoring implemented in 2017 document pH, metals, and mineral impacts to the Detention Pond, Retention Pond and Discharge Point 001. The proposed Order requires closure of the North CKD Area by October 2020 (or October 2022 with Executive Officer approval) and incorporates the supplemental surface water monitoring into MRP Order No. R3-2018-0001 to allow for continued evaluation of stormwater discharges and potential impacts prior to, during and after closure. If final closure is delayed, Water Board staff may require the installation of a new interim cover on the North CKD Area or other mitigations measures.

Retention and Detention Pond Water Quality Issues

The Retention Pond and Detention Pond (tributary to the Retention Pond) collect stormwater from the North CKD Area and other areas of the Facility. Both ponds are unlined. Upon reaching capacity, the Retention Pond discharges to Discharge Point 001 via an overflow control structure and subsurface stormwater conveyance system under HWY 1. As noted above, results of supplemental surface water monitoring implemented in response to the Interim Cover Repair Report document the Retention Pond and Detention Pond contains elevated pH (of approximately 11) and mineral levels and low parts per billion concentrations of various heavy metals. The Detention Pond impacts are likely a result of the more recent degradation of the temporary membrane cover on the west and south side of the North CKD Area.

The Retention Pond is more significantly impacted due to its primary historical purpose to collect wastewater and stormwater for reuse, and to capture sediment contained in runoff from cement manufacturing, material stockpile areas (i.e. coal, iron slag, lime) and the North CKD Area. Groundwater downgradient of the Retention Pond also has elevated pH and mineral levels, and low parts per billion concentrations of various heavy metals. Although the ponds still function to retain solids, stormwater leaving the ponds that is tributary to Discharge Point 001 are impacted with fluctuating low levels of various [dissolved] metals at concentrations approaching or exceeding California Ocean Plan standards (e.g., chromium (VI), lead, and mercury). Neither the IGP nor proposed Order permit the discharge of waste to Discharge Point 001.

To address the groundwater and surface water issues, the proposed Order requires the Discharger to propose and implement corrective actions for both the Retention Pond and Detention Pond as part of the final closure of the North CKD Area. The proposed Order also includes ongoing monitoring of the ponds, stormwater flows and other contributing flows to Discharge Point 001 to verify the effectiveness of closure and pond remediation activities. If final closure is delayed or closure activities are not effective in reducing offsite discharges of waste, Water Board staff will require interim or long-term corrective actions to address Retention

and Detention Pond function and related water quality impacts. Conversely, the proposed Order allows for scaling back monitoring requirements based upon Executive Officer approval if it can be demonstrated over time that closure activities effectively and consistently reduce offsite discharges of waste.

Capture and Use of Impacted Water Downstream of Discharge Point 001

Public exposure to stormwater discharges and potential seepage along the coast is limited because of restricted access to CEMEX property, heavy vegetation, steep cliffs and no beach access. However, a dam is constructed in the steep coastal canyon a short distance downstream of Discharge Point 001 and above the high-tide line to hold back "fresh" water. Discharge Point 001 receives stormwater discharges from the Retention Pond as noted above mixed with natural and Facility seepage along the steep cliff face in the canyon and HWY 1 runoff, which also appear to be both contributing to and diluting mineral and metal concentrations (depending on the constituent) observed downstream of the mixing point. Water collected behind this dam is pumped up to the flat coastal terrace property owned by CEMEX south/southwest of HWY 1 and is used for agricultural irrigation purposes by growers leasing the property from CEMEX.

Water Board staff identified this activity during 2017 inspections associated with the implementation of supplemental water quality monitoring. Monitoring results of the flows downstream of Discharge Point 001 detected lead concentrations exceeding the drinking water standard, arsenic and chromium VI concentrations of approximately one-half of the drinking water standard, and molybdenum concentrations exceeding the Basin Plan irrigation supply water quality objective (Table 3-2). To address potential public health concerns associated with the use of this water, Water Board staff are coordinating with CEMEX and Santa Cruz County Environmental Health Department staff and have recommended that the use of this of this water discontinue immediately and all associated water supply infrastructure be removed from the site. If the use of this water continues, Water Board staff will require CEMEX to document the implementation of various actions (e.g., notification, signage, etc.) in coordination with the County to limit exposure and ensure the protection of public health.

Groundwater Separation and Water Quality Impacts

The proposed Order does not require the CCR Title 27 prescriptive requirement for a 5-foot vertical separation between groundwater and waste because it is not feasible based on the geology and nearby groundwater recharge relative to how the Facility was constructed in a canyon. In addition, the North CKD Area is defined as an existing facility pursuant to CCR Title 27 and is therefore allowed a variance from this prescriptive requirement. Shallow groundwater beneath and adjacent to the Landfills contacts the edges of CKD waste due to the historically steep native canyon geology and groundwater recharge upgradient of and adjacent to the Landfills. The CKD, due to its low permeability, acts as a hydraulic plug or barrier that forces groundwater to flow around it in the more permeable terrace deposits. Final closure of the North CKD Area with a final cover and permanently lined drainages to prevent infiltration into the landfill and groundwater recharge immediately adjacent to CKD waste will help address this vertical separation issue. The Discharger also proposes to improve California Red Legged Frog Habitat at the North Pond and seasonal ponds upgradient and adjacent to the North CKD Area with a partial liner that will reduce groundwater recharge upgradient of the landfill. Additional upgradient drainage controls are also being proposed by CEMEX as part of the draft Final Closure Plan to more effectively divert surface water flows around the Facility. The proposed Order requires the Discharger to propose and install a groundwater monitoring well(s) downgradient of the North CKD Area to confirm that the North CKD Area is not impacting shallow groundwater.

The final cover of the Lonestar Closed CKD Landfill does not appear to have improved historical shallow groundwater quality impacts immediately adjacent to the Lonestar Closed CKD Landfill. As noted in the Facility history related discussion above, the steep slopes and lack of a final cover along the north edge and southeast portion of the Lonestar Closed CKD Landfill may be partly responsible for this problem, in addition to a lack of vertical separation as noted above. Although well logs are not available for the wells in question, a review of available logs for other shallow monitoring wells at the Facility indicate groundwater impacts may also be associated with the construction of wells in areas containing fill material mixed with CKD. The proposed Order requires the Discharger to submit a Monitoring and Final Cover/Drainage Evaluation Report to evaluate and propose mitigation measures addressing shallow groundwater impacts near the Lonestar Closed CKD Landfill. Potential mitigation measures include final cover and drainage improvements and new monitoring wells that are more appropriately located and constructed.

Groundwater monitoring requirements associated with the proposed Order facilitate the ongoing assessment of groundwater separation and water quality, and Water Board staff will require additional investigation activities and/or mitigation measure as necessary if this becomes a more significant problem.

Other Wastes

Historical groundwater monitoring data for the Lonestar Closed CKD Landfill has detected very low levels of volatile organic compounds (VOCs) potentially associated with the disposal of industrial or municipal solid waste. This is not surprising given the age and relatively remote location of the Facility. If present in the Landfills, any other wastes are likely encapsulated within the cemented CKD and make up a low percentage of the total waste mass. Regardless of the presence of other wastes, the primary threat to water quality associated with the Landfills is the production of high pH runoff or leachate with the potential to contain various minerals or heavy metals at concentrations approaching or exceeding water quality objectives as documented by historical water quality monitoring at the Facility. The most recent groundwater monitoring for the full suite of constituents of concern in 2016 for the Lonestar Closed CKD Landfill did not detect impacts from other wastes (e.g., total petroleum hydrocarbons, volatile and semi-volatile carbon constituents, pesticides, PCBs, herbicides, etc.). The North CKD Area monitoring wells have not been sampled for these constituents of concern. In addition to semi-annual groundwater monitoring for pH, minerals and heavy metals, the proposed Order (i.e., Monitoring and Reporting Program) requires monitoring for these constituents of concern once every five years for the Landfills as is customary for Class II and Class III landfills.

Existing Underground Drainage System Infrastructure

Pursuant to CCR Title 27, closure of the North CKD Area Landfill as a Class II landfill requires that drainage infrastructure be designed to handle a 1,000-year, 24-hour storm, or an engineered alternative for a less significant design storm subject to Executive Officer approval. Consistent with Water Board staff concerns, the Conceptual Closure Plan and associated stormwater design hydraulic analysis identifies but does not address, concerns regarding the potential hydraulic limitations of the decade's old underground drainage system consisting of a series of concrete tunnels, corrugated metal pipes and associated transitions and standpipes.

This underground drainage system receives stormwater flows from the Retention Pond, as well as flows from other areas of the Facility, flows under HWY 1 and discharges to the Pacific Ocean at Discharge Point 001. The primary concern is that the closure drainage design for upstream facilities does not adequately account for the potential and relatively uncertain

limitations of the downstream historical underground drainage infrastructure and could result in critical failure of the drainage system and cause uncontrolled runoff and erosion along or under HWY 1.

To address this concern, Water Board staff have required that the Final Closure Plan include a revised and more detailed hydraulic analysis that identifies and addresses the limitations of the downstream drainage system relative to all inputs into the system. If the analysis determines that the system is unable to safely handle the combined design storm flow, then the Final Closure Plan must include, either upgrades to the existing drainage system to handle the combined flow, or upstream controls such as increased Retention Pond sizing and an associated outlet structure to safely control the combined design storm flow into system. Water Board staff are coordinating with Caltrans staff to ensure applicable portions of the drainage system design are consistent with Caltrans standards and addresses their concerns, particularly with respect to the components of the historical drainage system beneath HWY 1.

CKD Fugitive Dust Emissions

The coastal area of Davenport is windy on a seasonal and sometimes more frequent diurnal basis. The North CKD Area, despite the degraded interim cover and exposed top deck, is relatively cemented and resistant to erosion and wind. However, final cover construction will require breaking up and grading portions of the North CKD area to establish smooth uniform slopes and drainages. This work will generate CKD dust that can be blown offsite unless aggressive dust mitigation measures are implemented. To address this issue, the proposed Order requires the Final Closure Plan to include a dust mitigation plan. Water Board staff recognize that dust mitigation and weather related construction specifications associated with this plan will likely limit the daily and seasonal construction windows and has the potential to delay final construction activities. In addition, water application or other measures to prevent dust will be necessary with a corresponding increased threat to water quality that is also required to be addressed by the Final Closure Plan and associated documents. Water Board staff will coordinate with the Monterey Bay Air Resources District to help facilitate mitigation and monitoring activities, as may be required to prevent offsite discharges of CKD.

Feedstock Material Stockpiles

There are numerous material stockpiles at the Facility that need to be removed and the sites remediated. The Conceptual Closure Plan includes a grading balance for the North CKD Area final cover foundation that estimates volumes of cut and fill materials required to meet design grades that includes imported or disposed of materials. The balance includes sediments from the Retention and Detention Pond remediation activities, materials removed from the coal, iron slag, lime, etc. storage areas and over-excavation to remediate the sites, and material from closure related drainage ditch and pipe trenching. The proposed Order prohibits the discharge of waste to the North CKD Area, except as provided in an Executive Officer-approved Final Closure Plan. The materials proposed for fill or disposal must be nonhazardous and compatible with the CKD waste and final cover design. CEMEX is currently finalizing its evaluation and characterization of the onsite material stockpiles and the Retention and Detention Ponds sediments for potential disposal in the North CKD Area and is expected to incorporate them into the grading balance of the Final Closure Plan as appropriate.

Property Ownership (North CKD Area)

The Trust for Public Land and its subsidiary Coast Dairies and Land Co., owns the northern portion of the inactive North CKD Area historically leased to the Facility owners/operators. To facilitate final closure and post-closure compliance, CEMEX is currently in discussion with Coast Dairies and Land Co. to adjust the lot lines and transfer ownership of land containing all of the

CKD and associated drainage infrastructure to CEMEX. The proposed Order identifies CEMEX and its subsidiary RMC Pacific Materials, LLC dba CEMEX and the Trust for Public Land and its subsidiary Coast Dairies and Land Co. as Dischargers. The proposed Order states that if CEMEX acquires the North CKD Area Property that is currently owned by Coast Dairies and Land Co., then the Trust for Public Land and Coast Dairies and Land Co. will no longer be responsible for compliance with the proposed Order.

PROPOSED ORDER PROVISIONS/REQUIREMENTS

In addition to standard Water Code and Basin Plan prohibitions, discharge specifications, water quality protection standards, and provisions, the proposed Order includes specific provisions (i.e., required actions and technical reports) associated with CCR Title 27 Class II landfill requirements, as well as additional provisions addressing the site-specific and water quality issues noted above.

North CKD Area Closure

CEMEX submitted a Conceptual Final Closure Plan for the North CKD Area in April 2017. Due to the method of disposing the CKD as a slurry in drying ponds, the North CKD Area is considered a surface impoundment pursuant to CCR Title 27 until it is either clean-closed[2] or closed as a landfill. The Conceptual Final Closure Plan determined that clean-closure of the North CKD Area was infeasible because of the increased environmental risks and cost associated with removing and disposing of approximately 1,000,000 cubic yards of material (i.e., 850,000 cubic yards of CKD and contaminated soil). Assuming a suitable disposal or reuse location was available, clean-closure would require 60,000 to 120,000 truck trips (depending on truck size) to remove the material, resulting in significant greenhouse gas and fugitive dust emissions, and traffic related impacts. In addition, the added time it would take to excavate and remove of all the material during the dry/construction season would result in the increased potential for fugitive dust and runoff issues without appropriate controls. Alternatively, onsite closure, consisting of regrading only the top portion of the North CKD Area and installing a cover and drainage system, can be implemented in a shorter timeframe, at a reduced cost with significantly reduced impacts to the environment and adjacent Davenport and New Town communities (i.e. noise, greenhouse gas and fugitive dust emissions, traffic, etc.).

The Conceptual Closure Plan proposes a final cover for the North CKD Area consisting of the following components (from bottom to top), that when completed will be contoured and vegetated to approximate the surrounding landscape:

- Foundation consisting of 2 feet of compacted CKD (or soil around perimeter fill areas),
- 60-mil low density polyethylene membrane,
- Geocomposite drainage net,
- Minimum 18-inches protective cover soil, and
- Minimum 6-inches vegetative soil.

Water Board staff conditionally approved the Conceptual Final Closure Plan in August 2017. The Final Closure Plan is due April 1, 2018, along with the standard CCR Title 27 final design engineering reports (i.e., specifications, construction quality assurance, slope stability, storm

[2] Pursuant to CCR Title 27 §21400(b)(1), the Discharger must make a “mandatory clean-closure attempt” to remove all residual wastes from the impoundment and restore the site unless it can demonstrate, and the RWQCB finds, that it is infeasible to attempt clean-closure of the impoundment.

design, stormwater hydraulic analysis, and closure and post-closure maintenance cost estimates, etc.). The following reports are also required as part of the Final Closure Plan: 1) a corrective action plan for remediation of the Retention and Detention Ponds, 2) a closure materials characterization and disposal plan, 3) a multi-season construction plan (as needed if the project is expected to occur over multiple seasons), and 4) a dust mitigation plan.

The proposed Order incorporates the Final Closure Plan due date and requires final closure of the North CKD Area by October 1, 2020, or October 1, 2022, with Executive Officer approval. If final closure is delayed, Water Board staff will require the implementation and documentation of additional mitigation measures to prevent erosion and fugitive dust emissions associated with disturbed and exposed CKD. A list of the required actions and technical reports, and associated due dates, with references to the governing provision numbers are provided in the Compliance Schedule Summary table at the end of the proposed Order.

MONITORING AND REPORTING PROGRAM

The Monitoring and Reporting Program (MRP) associated with the proposed Order combines and expands on the monitoring requirements of the previous MRPs for the Landfills, requiring monitoring for additional metals and minerals in groundwater and surface water for the Landfills, conditional leachate seep sampling, and more frequent surface water monitoring at Discharge Point 001. Monitoring of stormwater discharges from the Facility will also continue under the IGP.

The proposed Monitoring and Reporting Program format has been updated to facilitate compliance monitoring requirements, consistency with other landfill monitoring programs, and includes the following components:

Part I – Monitoring and Observation Schedule: This section requires periodic routine inspections of the Landfill and drainage systems, rainfall data records, and detailed analytical monitoring of groundwater and surface water.

Part II – Sample Collection and Analysis: This section establishes criteria for sample collection and analysis, methods to determine concentration limits, and specifies how the Discharger must maintain these records.

Part III – Statistical and Non-Statistical Analysis of Data: This section establishes methods for the Discharger to determine Landfill compliance with water quality protection standards based on laboratory analytical information.

Part IV – Reporting: This section establishes formats and requirements that the Discharger must follow when submitting analytical data, annual reports and summaries to the Water Board, and uploading information to GeoTracker.

Part V – Definition of Terms: This section defines specific terms used in the MRP.

The Executive Officer can revise the MRP, as necessary. Following final closure, if water quality monitoring at Discharge Point 001 documents the effectiveness of closure activities in reducing offsite discharges of waste, CEMEX may request a reduction in surface water monitoring frequency from monthly to annual at Discharge Point 001. Additionally, if groundwater monitoring indicates positive trends indicative of reduced groundwater impacts

during post-closure, monitoring requirements may be revised to reduce monitoring frequency or scope.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The proposed Order is for an existing facility and therefore is exempt from the provisions of the California Environmental Quality Act (CEQA, Public Resources Code, §21000, and et seq.) in accordance with Title 14, Chapter 3, §15301. Although the existing WDR Order No. 99-23 required compliance with all applicable siting and design criteria of CCR Title 27 prior to developing new CKD waste management units, no new waste management units were proposed, which would have required compliance with CEQA.

COMPLIANCE HISTORY

CEMEX is out of compliance with the existing Orders because of the Interim Cover Degradation, groundwater impacts, Retention and Detention Pond impacts, and the resulting stormwater impacts to Discharge Point 001 as discussed above. Water Board staff have developed the proposed Order and included specific requirements as noted above to address this noncompliance. In addition, several compliance issues for the Landfills have been noted by Water Board staff since 2005 when CEMEX acquired the Facility:

1. Monitoring Reports – On August 6, 2010, Water Board staff issued a Failure to Submit Monitoring Reports letter to CEMEX stating that recent 2010 monitoring reports had not been submitted and previously required monitoring report submittals had been inconsistent or not timely. It was our understanding that the Cement Plant had undergone significant staffing changes since its purchase in 2005, with multiple periods of inactivity and reduced staffing. CEMEX promptly corrected the pattern of inconsistent submittals, and has since submitted all required monitoring reports.

2. Financial Assurance – The Facility's previous owner did not establish financial assurance as required by Orders 99-23 and 94-66. The proposed Order requires CEMEX to provide closure and post-closure cost estimates in the Final Closure Plan, and a corrective action cost estimate for reasonably foreseeable release by June 1, 2018. Upon receiving approval of the financial assurance cost estimates from Water Board staff, the proposed Order requires CEMEX to establish financial assurance mechanisms by September 1, 2018, for ongoing operation and maintenance of the closed Landfills and for corrective action in the event of a significant release or failure of or damage to the closed landfill infrastructure (e.g., cover, drainage system, etc.).

Since 2010, CEMEX and their consultants have been responsive to Water Board staff's information requests, comments and concerns. CEMEX and their consultants have readily set up conference calls to discuss submittals or Water Board staff requests and participated in onsite meetings for inspection purposes and to discuss closure requirements and related issues.

PUBLIC OUTREACH

On February 23, 2017, Water Board staff attended an evening public meeting in Davenport hosted by Assemblyman Mark Stone (District 29) and County Supervisor Ryan Coonerty (District 3) for county and state agency staff to discuss the closure status of the Facility with concerned members of the adjacent communities of Davenport and New Town. In addition to

Water Board staff, staff from the County of Santa Cruz Environmental Health Department and Monterey Bay Air Resources District were also present to give brief presentations regarding their relative oversight roles and answer questions from the public. During the meeting, members of the public expressed, and agency staff responded to, frustration about delays in the closure process and uncertainty regarding the closure process and outcomes. The public also expressed public health concerns primarily related to the ongoing potential for CKD fugitive dust emissions, particularly during the implementation of closure related activities. Members of the public were invited to sign up to be on an interested parties list for the forthcoming closure WDRs.

PUBLIC NOTICE AND COMMENTS

On November 22, 2017, Water Board staff posted draft WDR Order No. R3-2018-0001 and associated MRP Order No. R3-2018-0001 on the Central Coast Water Board website and distributed it via hyperlink to interested parties, including local agencies and individuals (i.e., surrounding landowners and members of the Davenport and New Town communities) with potential interest in the Facility closure. The distribution list included a number of individuals who signed up to be on an interested parties list during the February 23, 2017 meeting in Davenport. Public comments were due December 22, 2017. No formal comments were received during the public comment period.

Water Board staff has also been in ongoing discussions with CEMEX regarding the draft Order via conference calls and email correspondence. This correspondence has only resulted in non-substantive changes to the draft Order for clarification purposes.

CONCLUSION

The proposed Order updates closure and post-closure requirements for the Landfills and protects groundwater and surface water by requiring adequate design, maintenance, and monitoring of engineering controls (e.g., final cover and drainage facilities). To address wastewater discharges to groundwater and surface water, the proposed Order also requires corrective actions for the Retention and Detention Ponds, an evaluation of monitoring and final cover/drainages for the Lonestar Closed CKD Landfill, and supplemental surface water monitoring to evaluate the effectiveness of final closure activities both during and after construction.

The proposed Order requires the completion of final closure construction activities for the North CKD Area by October 2020, or 2022 with Executive Officer approval. To facilitate final closure, the proposed Order requires the Discharger to submit a Final Closure Plan consistent with CCR Title 27 performance standards and Water Board staff Conceptual Closure Plan conditions of approval by April 1, 2018.

RECOMMENDATION

Adopt Waste Discharge Requirements (WDR) Order No. R3-2018-0001 with Monitoring and Reporting Program No. R3-2018-0001 and rescind WDR Order No. 94-66 and Order No. 99-23

ATTACHMENT

Attachment 1: Proposed Waste Discharge Requirements Order No. R3-2018-0001
Attachment 2: Monitoring and Reporting Program No. R3-2018-0001