

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF KERN
FOR
OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. The County of Kern (hereafter Discharger) owns and operates a municipal solid waste landfill about seven miles west of the City of Shafter, in Section 8, T28S, R24E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference.
2. The 357-acre waste management facility contains one existing waste management unit (Unit) covering approximately 91 acres. The Unit consists of three contiguous modules: one 48-acre unlined module (Module One), one 22-acre composite-lined module (Module Two), and one 18-acre composite-lined module (Module Three), as shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers (APN) 088-100-08, 088-100-38, and 088-100-40.
3. On 18 October 2002, the Central Valley Water Board adopted Order No. R5-2002-0179, which classified the Unit as a Class III landfill as defined in Title 27, CCR Section 20005, et seq. (Title 27).
4. Waste Discharge Requirements (WDRs) need to be revised to provide for construction of new waste management cells with an engineered alternative composite liner system, acceptance of treated wood waste, and to initiate a corrective action plan.

SITE DESCRIPTION

5. The measured hydraulic conductivity of the native soils underlying the Unit ranges between 2.4×10^{-3} and 1.8×10^{-5} centimeters per second (cm/sec).
6. A Class III landfill must be designed to withstand the maximum probable earthquake (MPE). The MPE is calculated using historic seismic activity within 100 kilometers of the Unit. The closest Holocene fault is the Edison Fault located approximately 18 kilometers to the east. The MPE for the Edison Fault has a magnitude of 6.7. The San Andreas

Fault is located about 42 kilometers to the southwest of the Unit and has a MPE of magnitude 8.25. The MPE for the San Andreas Fault would generate the highest peak horizontal ground acceleration at 0.38g.

7. The waste management facility is located in the southern portion of the San Joaquin Valley geomorphic province. The San Joaquin Valley is a structural trough in which several thousands of feet of sediments have been deposited. The sources of the sediments are the Sierra Nevada to the east and the Coast Ranges to the west. The predominant soils beneath the waste management facility are the Milham sandy-loam; which is a deep, well-drained soil developed on alluvial fans, plains, and low terraces. Milham sandy-loam is typically 35 to 60 per cent sand.
8. Land within 1,000 feet of the facility is used for irrigated agriculture.
9. The facility receives an approximate average of six inches of precipitation per year based on data from the State of California, Department of Water Resources Bulletin No. 195; as reported in the Joint Technical Document. The mean pan evaporation is 73.4 inches per year as measured at the United States Department of Agriculture Cotton Experiment Station in Shafter.
10. The 100-year, 24-hour precipitation event is estimated to be less than 2 inches, based on the rainfall Isohyetal Map of the Kern County Hydrology Manual.
11. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 700-2075.
12. There are seven municipal, domestic, industrial, or agricultural groundwater supply wells known to be within one mile of the site. No surface springs, seeps or perennial surface flows are located within the boundaries of or adjacent to the landfill.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

13. The Discharger disposes of municipal and industrial solid wastes, which are classified as "nonhazardous solid waste" or "inert waste" suitable for discharge to a Class III landfill as defined in Section 20164 of Title 27. Nonhazardous solid waste includes municipal solid wastes, as referred to in Title 40 Code of Federal Regulations, Part 258.2.
14. The site characteristics where the Unit is located (see Finding No. 5) do not meet the siting criteria for a Class III landfill contained in §20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of wastes described in Finding No. 13, without the construction of additional waste containment features in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution No. 93-62.

15. The Discharger proposes to discharge/continue to discharge treated wood waste in the composite-lined units at the landfill. Title 22, CCR defines “treated wood” to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood, and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following) (FIFRA). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).
16. Title 22 Section 67386.11 allows treated wood waste to be disposed in a composite-lined portion of a Municipal Solid Waste landfill that is regulated by WDRs issued pursuant to the California Water Code provided that the landfill owner/operator:
 - a. Comply with the prohibitions in Title 22 Section 67386.3, which are:
 - i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in iii, below), treated except in compliance with Section 67386.10, or disposed to land except in compliance with Section 67386.11.
 - ii. Any label or mark that identifies the wood and treated wood waste shall not be removed, defaced, or destroyed.
 - iii. Treated wood waste may be recycled only by reuse when all of the following apply:
 - (1) Reuse is on-site.
 - (2) Reuse is consistent with FIFRA approved use of the preservative.
 - (3) Prior to reuse, treated wood waste is handled in compliance with Title 22, Division 4.5, Chapter 34.
 - b. Ensure treated wood waste is managed at the landfill according to Title 22, Division 4.5, Chapter 34 prior to disposal.
 - c. Monitor the composite-lined portions of the landfill for a release and, if a verified release is detected from the portion of the Unit where treated wood is disposed, the disposal of treated wood will be terminated at the Unit with the verified release until corrective action ceases the release.
 - d. Handle treated wood waste in a manner consistent with the applicable sections of the California Occupational Safety and Health Act of 1973.

SURFACE WATER AND GROUNDWATER CONDITIONS

17. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition, revised January 2004 (hereafter Basin Plan), designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Board.
18. Surface drainage is toward Jerry Slough in the Semitropic Hydrologic Area (558.70) of the Tulare Lake Basin.
19. The landfill is on the floor of the southern San Joaquin Valley. The designated beneficial uses of Valley Floor Waters, as specified in the Basin Plan, are agricultural supply, industrial service and process supply, water contact and non-contact water recreation, warm fresh water habitat, preservation of rare, threatened and endangered species, and groundwater recharge.
20. The facility is in the Kern County Basin Hydrologic Unit, Detailed Analysis Unit (DAU) 255. The designated beneficial uses of the groundwater, as specified in the Basin Plan for DAU 255, are municipal and domestic water supply, agricultural supply, industrial service supply, and wildlife habitat.
21. The first encountered groundwater, occurring in a perched water-bearing zone, is about 60 to 74 feet below the native ground surface. Groundwater elevations in the perched water-bearing zone range from approximately 227 to 236 feet mean sea level (MSL). The groundwater in the perched water-bearing zone is unconfined. Depth to groundwater in the perched water-bearing zone fluctuates seasonally as much as three feet. Additionally, perched groundwater elevations have decreased as much as 10 feet in the last seven years.
22. Monitoring data indicates background groundwater quality in the perched water-bearing zone has a specific electrical conductivity (EC) ranging between 1,270 and 2,560 micromhos/cm, with total dissolved solids (TDS) ranging between 840 and 1,800 milligrams per liter (mg/l).
23. The direction of groundwater flow in the perched water-bearing zone was consistently toward the northeast, until 2005. Since then, the flow direction has shifted to the east. The average groundwater gradient is approximately 0.002 feet per foot. The average groundwater velocity is 18 feet per year.
24. Underlying the perched water-bearing zone is the regional unconfined aquifer. Only one monitoring well (SW1-06) is completed in the regional unconfined aquifer. Depth to

groundwater in the regional unconfined aquifer has been measured from 252 to 299 feet below native ground surface. Groundwater elevations have ranged from approximately 44 feet above MSL to three feet below MSL. Because only one well has been completed into the regional unconfined aquifer, the site-specific direction of groundwater flow and gradient are unknown. According to studies conducted by the Discharger's consultant, the direction of groundwater flow in the regional unconfined aquifer is toward the northwest.

DETECTION MONITORING PROGRAM

25. The existing groundwater detection monitoring system consists of 21 monitoring wells. Monitoring wells SW1-02, SW1-03, SW1-11, SW1-12, SW1-16, SW1-20, SW2-01, and SW2-02 are used to collect background water quality data in the perched water-bearing zone. Monitoring wells SW1-01, SW1-04, SW1-07, SW1-08, SW1-09, SW1-10, SW1-13, SW1-14, SW1-18, SW1-19, SW1-21, SW1-22, and SW1-23 are used to collect water quality data in the perched water-bearing zone downgradient of the Unit. Monitoring well SW1-06 is used to monitor the regional unconfined aquifer north of the Unit.
26. Section 20415(d) of Title 27 requires the Discharger to establish an unsaturated zone monitoring system for the Unit that is capable of collecting soil moisture samples.
27. Module One was constructed prior to the adoption of requirements for unsaturated zone monitoring and it is infeasible to retrofit Module One with an unsaturated monitoring zone system.
28. The unsaturated zone monitoring system for Modules Two and Three consists of three pan lysimeters, one under each leachate collection and removal system (LCRS) sump. Soil moisture has not been detected in the unsaturated zone monitoring system for Modules Two and Three.
29. This Order requires an unsaturated zone monitoring system consisting of a pan lysimeter constructed beneath the LCRS of any future expansion of the Unit.
30. The existing detection monitoring program for groundwater at this Unit satisfies the requirements contained in Title 27.
31. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a Unit.
32. Title 27 CCR Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a

release from a Unit in accordance with Title 27 CCR Section 20415(b)(1)(B)2.-4. However, Title 27 CCR does not specify a specific method for non-statistical evaluation of monitoring data.

33. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27 CCR Section 20080(a)(1). Section 13360(a)(1) of the California Water Code allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
34. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
35. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

36. Organic compounds that are not naturally occurring have been detected in groundwater along the point of compliance since 1992. The six most frequently detected VOCs at concentrations greater than the laboratory Practical Quantitation Limit are: dichlorodifluoromethane (Freon 12); 1,1-dichloroethane; 1,2-dichloropropane (1,2-DCP); tetrachloroethene (PCE); trichloroethene (TCE); and trichlorofluoromethane (Freon 11). PCE has been consistently detected in monitoring wells SW1-04 at concentrations exceeding the primary Maximum Contaminant Level of 5 micrograms per liter for drinking water, established by the State of California, Department of Health Services, at the point of compliance.

37. A Water Quality Protection Standard has been established for the Unit. The concentration limits for the constituents of concern are listed on Table V of Monitoring and Reporting Program No. R5-2012-XXXX.
38. The Discharger completed an Evaluation Monitoring Program for the release of waste constituents to the groundwater. The nature of the release was demonstrated to be volatile organic compounds that originated from landfill gas. The extent of the release is a plume approximately 1,800 feet wide, 4,000 feet long, and 80 feet deep. The plume extends from the Unit approximately 1,800 feet beyond the boundary of the waste management facility to the east.
39. The release consists of Freon 12; 1,1-dichloroethane; 1,2-DCP; PCE; TCE; and Freon 11 from the migration of landfill gas to the groundwater.
40. The Discharger completed an Engineering Feasibility Study in accordance with Section 20425(c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is monitored natural attenuation in conjunction with landfill gas extraction.
41. Monitoring and Reporting Program No. R5-2012-XXXX requires the Discharger to monitor the release of waste constituents and the progress of corrective action in accordance with a Corrective Action Plan approved by the Executive Officer.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

42. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
43. Resolution No. 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.
44. Resolution No. 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
45. Section 20080(b) of Title 27 allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Sections 20080(c)(1) or (2) of Title 27, the Discharger must demonstrate that the prescriptive design is unreasonably and

unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Section 20080(b) of Title 27, or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Section 20080(b)(2) of Title 27.

46. Section 13360(a)(1) of the California Water Code allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
47. The Discharger proposes to construct a waste containment system which will be designed, constructed, and operated to prevent degradation of waters of the state during disposal operations, closure, and the post-closure maintenance period in accordance with the criteria set forth in Title 27 for a Class III waste management unit.
48. The proposed engineered alternative waste containment system consists of, from the bottom up:
 - a. Twelve-inch thick prepared subgrade for the bottom liner;
 - b. Prepared subgrade for the side slopes;
 - c. 30-mil thick high-density polyethylene (HDPE) geomembrane;
 - d. Geosynthetic clay liner (GCL);
 - e. 60-mil thick HDPE geomembrane;
 - f. 12-inch granular leachate drainage layer; and
 - g. three-foot soil operations layer.
49. Side slope liners are proposed to be constructed of the same materials and in the same sequence and manner as the bottom liner system, with the exception of the subgrade. It will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free of rocks, sticks, and other debris that could damage or otherwise limit the performance of the geosynthetic clay layer and/or geomembrane, and certified in accordance with this Order and the approved Construction Quality Assurance (CQA) Plan.

50. The thickness and the construction criteria of the prepared subgrade for the bottom liner and the thickness of the operations layer were specified to address the following concerns:

- The barrier portion of the proposed liner design (the two geomembranes and the GCL) would be less than 0.5 inches thick. The thickness of the proposed liner design makes it vulnerable to damage during construction and during the placement of wastes.
- The vadose zone does not offer substantial protection for the groundwater. The bottom of the proposed expansion will be approximately 25 feet above the highest anticipated groundwater elevation.
- Groundwater is degraded from the existing unlined portion of the landfill.

51. The Discharger demonstrated that the proposed liner system will meet the performance goal contained in Section 20310 of Title 27. The demonstration utilized a computer model to predict the performance of the proposed liner design and the fate and transport of a release of waste constituents from the lined portion of the Unit.

52. Construction will proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

CEQA AND OTHER CONSIDERATIONS

53. The Kern County Board of Supervisors certified the final environmental impact report for the facility on 29 September 2009. The Kern County Clerk filed a Notice of Determination on 12 October 2009 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the environmental impact report into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.

54. The final environmental impact report states that the potential significant impacts identified in the geology and soils section (related to exposure of people or structures to adverse effects resulting from seismic shaking) and the hydrology and water quality section (related to violation of water quality standards) would be reduced to less than significant by mitigation. The final environmental impact report includes mitigation measures related to geology, hydrology, and water quality.

55. The Central Valley Water Board, acting as a CEQA-responsible agency in compliance with CCR, Title 14, Section 15096, Subdivision (g)(2), evaluated the significant and potentially significant impacts to geology and water quality identified in the final

environmental impact report. The mitigation measures include requirements for landfill construction to be designed and built to withstand the maximum probable earthquake and to comply with the WDRs to mitigate the existing groundwater impact and any future groundwater impact. The Central Valley Water Board finds that these mitigation measures for significant and potentially significant geology and water quality impacts in the final environmental impact report, supplemented with the provisions in this Order, are adequate to reduce the impacts to less than significant levels.

56. This order implements:

- a. *The Water Quality Control Plan for the Tulare Lake Basin, Second Edition;*
- b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
- c. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.

57. This Order is consistent with the prescriptive standards and performance criteria of RCRA Subtitle D, Part 258.

58. Section 13267(b) of California Water Code provides that: *In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.*

59. The technical reports required by this Order and attached Monitoring and Reporting Program No. R5-2012-XXXX are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

60. This Order requires full containment of wastes and does not permit degradation of surface water or groundwater. Further antidegradation analysis is therefore not needed. The discharge as permitted is consistent with the antidegradation provisions of State Water Resources Control Board Resolution No. 68-16.

PROCEDURAL REQUIREMENTS

61. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
62. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
63. Any person affected by this action of the Central Valley Water Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.waterboards.ca.gov/laws_regulations/index.shtml and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263, 13267, and 13304 of the California Water Code, that Order No. R5-2002-0179 is rescinded and that the County of Kern, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23, California Code of Regulations, Section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed Unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

B. DISCHARGE SPECIFICATIONS

1. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
2. The discharge of solid waste, liquid waste, leachate, or waste constituents shall neither cause nor contribute to any degradation, contamination, pollution, or nuisance to surface waters, ponded water, or surface water drainage courses.
3. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.
4. The waste discharged to the initial three feet of all new waste management units or any expansion of the existing waste management unit, as measured from the top of the operations layer of the liner system, shall consist only of “packer waste”, excluding waste that would pose a danger of physical damage to the liner system.
5. The Discharger shall discharge treated wood wastes only to the portions of the Units equipped with a composite liner system and a leachate collection and removal system. If a verified release is detected from the portions of the Unit where treated wood is discharged, the disposal of treated wood shall be terminated at the Unit with the verified release until corrective action ceases the release.
6. The Discharger shall manage treated wood waste in accordance with California Health and Safety Code Sections 25143.1.5 and 250150.7 and shall comply with all prohibitions listed in Title 22 Section 67386.3.
7. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

C. FACILITY SPECIFICATIONS

1. The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste, or leachate containment facilities, or precipitation and drainage control structures.

2. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control and construction.
3. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
4. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
5. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
6. The Discharger shall maintain a Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site, until closure of the landfill is complete and approved.
7. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval either prior to, or concurrent with, submission of the Construction Quality Assurance Plan as per Construction Specification D.2.a., a Design Report for the construction of new Units and expansions of existing Units that includes detailed plans, specifications, and descriptions for the liner components and LCRS components. The Design Report shall incorporate design rationale, with supporting calculations, for all components of the proposed containment system, and shall describe design details that allow for annual integrity testing of the LCRS to demonstrate whether the LCRS was designed and is operating to function without clogging, pursuant to Section 20340(d) of Title 27.
2. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for new Units and expansions of existing Units, that include the following:
 - a. A Construction Quality Assurance Plan meeting the requirements of Section 20324 of Title 27; and

- b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and
 - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and post-closure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with Section 20415(d) of Title 27.
3. The liner systems of all new Units and lateral expansion areas of existing Units shall be constructed in accordance with one of the following engineered alternative composite liner designs:
- a. The bottom liner shall be comprised, in ascending order, of the following:
 - 1) A twelve-inch thick engineered soil foundation layer that shall be constructed of select fine-grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and shall be either:
 - a) Compacted to attain a hydraulic conductivity of 1×10^{-5} cm/sec or less; or
 - b) Meet the following gradation criteria:
 1. A maximum size of 3/8-inch;
 2. At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve; and
 3. A gradation series (i.e., well-graded) that is amenable to compaction.
 - 2) A minimum 30-mil thick flexible membrane of HDPE, which may be part of the GCL.
 - 3) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
 - 4) A 60-mil thick synthetic flexible membrane of HDPE.
 - 5) A minimum 12-inch thick drainage layer composed of granular material with a minimum hydraulic conductivity of 1×10^{-3} cm/s.
 - 6) A filter geotextile.

- 7) A three-foot thick soil operations layer constructed of appropriate material to allow drainage of leachate to and through the LCRS and provide a working surface protective of the LCRS.
- b. The side slope liner shall be comprised, in ascending order, of the following:
- 1) A prepared subgrade that meets the criteria contained in Construction Specification D.5, below.
 - 2) A minimum 30-mil thick flexible membrane of HDPE, which may be part of the GCL.
 - 3) A GCL that shall exhibit appropriate strength characteristics to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
 - 4) A 60-mil thick synthetic flexible membrane of HDPE.
 - 5) A geocomposite drainage layer.
 - 6) A three-foot thick soil operations layer constructed of appropriate material to allow drainage of leachate to and through the LCRS and provide a working surface protective of the LCRS.
4. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board.
 5. The subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
 6. The LCRS shall be designed and operated so that there is no buildup of hydraulic head on the base or sideslope liners.
 7. Construction shall proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

8. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
9. The CQA program shall be supervised by a registered civil engineer or certified engineering geologist who shall be designated the CQA officer. The CQA officer and personnel performing monitoring and testing shall be independent of the construction contractor.
10. After the operations layer is installed, the liner system shall be tested for the presence of defects. All detected defects shall be repaired before waste is discharged to the unit. The location and nature of each detected defect shall be noted in the construction report.
11. Following the completion of construction of any portion of a Unit, and prior to discharge to the newly constructed Unit, the final documentation required in Section 20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
12. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of a Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Central Valley Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
13. Closure shall not proceed in the absence of closure waste discharge requirements.

E. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices. At the beginning of each sampling period, in accordance with Section B. Reporting of Monitoring and Reporting Program No. R5-2012-XXXX, a schedule shall be submitted listing anticipated sampling dates for that reporting period.
2. The Discharger shall comply with the Water Quality Protection Standard (as defined in Section 20390 of Title 27), which is specified in Monitoring and Reporting Program No. R5-2012-XXXX and the Standard Provisions and Reporting Requirements, dated April 2000.

3. The Water Quality Protection Standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2012-XXXX.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2012-XXXX and Section 20415(e) of Title 27.
6. The Discharger shall establish and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures;
 - d. Sample quality assurance/quality control (QA/QC) procedures; and
 - e. Chain of Custody control.
7. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.
8. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) *Methods for the Analysis of Organics in Water and Wastewater* (USEPA 600 Series), (2) *Test Methods for Evaluating Solid Waste* (SW-846, latest edition), and (3) *Methods for Chemical Analysis of Water and Wastes* (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.

9. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval prior to use.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
12. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
13. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
14. The Quality Assurance/Quality Control **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.

15. **Unknown chromatographic peaks** shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
16. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Section 20415(e)(7) of Title 27 that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in this Order for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Section 20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
17. The Discharger may propose an alternate statistical method [to the methods listed under Section 20415(e)(8)(A-D) of Title 27] in accordance with Section 20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). The analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
18. The Discharger shall use the following nonstatistical method specified in Detection Monitoring Specification E.19 for all constituents which are not amenable to the statistical tests above (i.e., less than 10% of the data from background samples that equal or exceed their respective MDL). This includes all constituents in the Monitoring Parameters and for all Constituents of Concern (COC) found in groundwater and unsaturated zone (in soil-pore liquid or gas). Each constituent at a monitoring point shall be determined to meet this criterion based on either:
 - a. The results from a single sample for that constituent, taken during that reporting period from that monitoring point; or

- b. If more than one sample has been taken during a reporting period from a monitoring point, the results from the sample which contains the largest number of qualifying constituents shall be used.

Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under 27 Section 20415(e)(8)(A-D)] in accordance with Section 20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.

19. The nonstatistical method shall be implemented as follows:

- a. For every compliance well, regardless of the monitoring program, the Discharger shall use this data analysis method, jointly, for all monitoring parameters and COCs that are detected in less than 10% of background samples. Any COC that triggers a discrete retest per this method shall be added to the monitoring parameter list.

Triggers — From the monitoring parameters and COC list identify each constituent in the current sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provide a measurably significant indication] of a change in the nature or extent of the release, at that well, if either:

- 1) The data contains two or more qualifying monitoring parameters and/or COCs that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - 2) The data contains one qualifying monitoring parameter and/or COC that equals or exceeds its PQL.
- b. Discrete Retest [Title 27, Section 20415(e)(8)(E)]:
 - 1) In the event that the Discharger concludes (pursuant to paragraph 19.a., above) that there is a preliminary indication, then the Discharger shall immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the indicating compliance well.
 - 2) For any given compliance well retest sample, the Discharger shall include, in the retest analysis, only the laboratory analytical results for those constituents indicated in that well's original test. As soon as the retest data are available, the Discharger shall apply the same test [under 19.a.], to separately analyze each of the two suites of retest data at that compliance well.

- 3) If either (or both) of the retest samples meets either (or both) of the triggers under 19.a., then the Discharger shall conclude that there is a measurably significant increase at that well for the constituent(s) indicated in the validating retest sample(s).

20. If the Executive Officer determines, after reviewing the submitted report that the detected constituent(s) most likely originated from the Unit(s), the Discharger shall **immediately** implement the requirements of Section XI. Response To A Release, C. Release Has Been Verified, contained in the Standard Provisions and Reporting Requirements.

F. CORRECTIVE ACTION SPECIFICATIONS

1. The Discharger shall implement a corrective action program pursuant to Section 20430 of Title 27 to remediate the release of waste constituents from the Unit and to ensure compliance with the WQPS. Corrective action shall be performed in accordance with a corrective action plan approved by the Executive Officer.
2. The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action. Sample collection and analysis shall coincide with Groundwater Detection Monitoring D.1 of Monitoring and Reporting Program No. R5-2012-XXXX.
3. Prior to termination of corrective action measures required under Section 20430(c) of Title 27 and this Order, the discharger shall demonstrate, pursuant to Section 20430(f) of Title 27, that the constituents of the release have been reduced to levels below concentration limits throughout the entire zone affected by the release. During this "proof period", the Discharger shall demonstrate that:
 - a. The concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least one year, beginning immediately after the suspension of corrective action measures; and
 - b. The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of at least eight sampling events per year per monitoring point.
4. If either the Discharger or the Executive Officer determines that the corrective action program is not adequate (i.e. does not satisfy the provisions of Section 20430 of Title 27), the Discharger shall, within 90 days of making the determination, or of receiving written notification from the Central Valley Water Board of such determination, submit an amended report of waste discharge (RWD) to make appropriate changes to the program. The amended RWD shall include the following:

- a. A discussion as to why existing corrective action measures have been ineffective or insufficient.
- b. A revised evaluation monitoring plan if necessary to further assess the nature and extent of the release.
- c. A discussion of corrective action needs and options.
- d. Proposed additional corrective action measures, as necessary, for:
 - 1) Source control,
 - 2) Groundwater cleanup, and/or
 - 3) Landfill gas control.
- e. A plan to monitor the progress of corrective action measures consistent with Monitoring and Reporting Program No. R5-2012-XXXX.
- f. Cost estimates for implementing additional corrective action, including monitoring.
- g. An implementation schedule.

G. PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
3. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
4. The Discharger shall comply with Monitoring and Reporting Program No. R5-2012-XXXX, which is incorporated into and made part of this Order.
5. The Discharger shall comply with the applicable portions of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous*

Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which is hereby incorporated into this Order.

6. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b or c above if;
 - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
 - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - 3) The written authorization is submitted to the Central Valley Water Board.
 - e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
7. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
8. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-

closure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.

9. The fact that it would be necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order **within 14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision G.6. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.
11. The Discharger shall establish and maintain an approved cost estimate for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill.
12. The Discharger shall conduct an annual review of the financial assurance for initiating and completing corrective action, and submit a report for Executive Officer review and approval by **30 April of each year**. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Central Valley Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.
13. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and post-closure maintenance cost estimate or as required in Section 21865 of Title 27. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and the California Department of Resources Recycling and Recovery. The PCPCMP shall meet the requirements of Section 21769(b) of Title 27, and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. A final (or partial final) closure and post-closure maintenance plan shall be submitted prior to closure and closure shall not be conducted in the absence of closure WDRs.

14. The Discharger shall conduct an annual review of the financial assurance for closure and post-closure maintenance, and submit a report for Executive Officer review and approval by **30 April of each year**. The assurances of financial responsibility shall provide that funds for closure and post-closure maintenance shall be available to the Central Valley Water Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.
15. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Construction Plans	
Submit construction and design plans for review and approval. (see Construction Specification D.1)	Prior to construction
B. Construction Report	
Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans. (see Construction Specification D.11)	Prior to discharge
C. Financial Assurance Review	
1. Annual Review of Financial Assurance for initiating and completing corrective action (see Provision G.12).	30 April each year
2. Annual Review of Financial Assurance for closure and post-closure maintenance (see Provision G.14).	30 April each year

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may apply to the Attorney General for judicial enforcement or issue a complaint for Administrative Civil Liability.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2012-XXXX
COUNTY OF KERN
FOR OPERATION AND CONSTRUCTION
SHAFTER-WASCO SANITARY LANDFILL
KERN COUNTY

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I, PAMELA CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

PAMELA C. CREEDON, Executive Officer

REH: 11/29/2011