

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2**

In the Matter of:

Cayey Municipal Solid Waste Landfill
Cayey, Puerto Rico.

Municipality of Cayey, Puerto Rico,
Respondent.

Proceeding Under Section 7003 of the
Solid Waste Disposal Act, as amended.

**ADMINISTRATIVE ORDER
ON CONSENT**

Docket No.: RCRA-02-2016-7304

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I. JURISDICTION

1. This Administrative Order (the “Order”) is issued on consent to the Municipality of Cayey, Puerto Rico (“the Municipality” or “Respondent”).
2. The Cayey Municipal Solid Waste Landfill (the “Landfill”) is located off Puerto Rico Highway 52, the Autopista Luis A. Ferré (“PR-52”), on State Road PR-184, Guavate Ward, in the Municipality of Cayey in the Commonwealth of Puerto Rico.
3. The Landfill consists of both the active municipal solid waste facility, containing the Active Cell (“Active Cell”), soil mining areas, and other landfill operations areas, and the adjoining Municipal Park, itself containing the Old Cell (“Old Cell”).
4. The Municipality is the owner and operator of the Landfill.
5. The Order is issued by the United States Environmental Protection Agency (“EPA”) pursuant to the authorities vested in the Administrator of EPA by Section 7003 of the Solid Waste Disposal Act, as amended by various laws including the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. § 6901 et seq. (collectively hereinafter referred to as “RCRA” or “the Act”), which authority has been duly delegated to the Regional Administrator of EPA, Region 2.
6. Notice of this Order has been provided to the Commonwealth of Puerto Rico, pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973.

7. The Municipality agrees to undertake the actions required by the terms and conditions of this Order, consents to and will not contest EPA's jurisdiction to issue or, if necessary, enforce this Order, and will not contest the terms of this Order.

II. PARTIES BOUND

8. This Order shall apply to and be binding upon the Municipality and each and every agent of the Municipality. The Municipality shall supply any person or entity that is working on or will work on any issue directly related to the Landfill under the direct or indirect control of the Municipality (including but not limited to any contractor or independent agent retained to perform work on issues related to the Landfill) with a complete copy of the Order. The Municipality shall nonetheless be responsible for ensuring that its contractors, subcontractors and agents comply with the requirements of this Order and perform work in accordance with this Order.

9. The obligations of the Municipality under this Order shall be binding on any successor, whether such successor is created by merger, expansion or otherwise, pursuant to the laws of the Commonwealth of Puerto Rico.

III. EPA'S FINDINGS OF FACT AND CONCLUSIONS OF LAW

Statutory and Regulatory Background

10. Section 7003(a) of RCRA, 42 U.S.C. § 6973(a) states in pertinent part that: "upon receipt of evidence that the past or present handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment, the Administrator may ... issu[e] such orders as may be necessary to protect public health and the environment."

11. Section 4004 (a) of RCRA, 42 U.S.C. § 6944 states, in pertinent part, that the "...Administrator shall promulgate regulations containing criteria for determining which facilities shall be classified as sanitary landfills and which shall be classified as open dumps..."

12. Section 1004 of RCRA, 42 U.S.C. § 6903 defines the term "open dump" to mean any facility or site where solid waste is disposed of which does not meet all the criteria for being classified as a sanitary landfill under section 4004 and which is not a facility for disposal of hazardous waste.

13. The federal regulations promulgated at 40 C.F.R. Part 258, entitled Criteria for Municipal Solid Waste Landfills, "establish [the] minimum national criteria ... for all municipal solid waste landfill units." 40 C.F.R. § 258.1.

14. The Landfill is a "municipal solid waste landfill unit," as that term is defined at 40 C.F.R. § 258.2.

15. Pursuant to 40 C.F.R. § 258.1(h), municipal solid waste landfill units which fail to meet the criteria set forth in Part 258 constitute open dumps.

16. Section 4005(a) of RCRA, 42 U.S.C. § 6945(a) states, in pertinent part: "...any solid waste management practice or disposal of solid waste or hazardous waste which constitutes the open dumping of solid waste or hazardous waste is prohibited."

17. The Landfill has been receiving municipal solid waste since at least 1972 and constitutes an "existing landfill" as that term is defined in 40 C.F.R. § 258.2. Existing municipal solid waste landfill units are subject to many of the requirements set forth in 40 C.F.R. Part 258.

18. Pursuant to 40 C.F.R. § 258.1, municipal solid waste landfills in operation as of 1994 that continue to accept solid waste for disposal, may not laterally expand unless the expansion cell or area meets certain design criteria as set forth in 40 C.F.R. § 258.40, including installation of an impermeable liner membrane and a leachate control system, which acting together, are designed to minimize uncontrolled leachate releases from the Landfill.

19. The Landfill is also subject to the Non-Hazardous Solid Waste Management Regulations of Puerto Rico, administered by the Puerto Rico Environmental Quality Board ("EQB").

20. The Landfill is not authorized by EPA to accept or dispose of "hazardous waste," as that term is defined in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5), and in 40 C.F.R. § 261.3.

Owner and Operator

21. The Municipality has been the "owner" of the Landfill since at least 1972, as that term is defined in 40 C.F.R. § 258.2. The Municipality has contributed and continues to contribute to the handling and disposal of solid waste at the Landfill in its capacity as owner.

22. The Municipality has been the "operator" of the Landfill since at least 1972, as that term is defined in 40 C.F.R. § 258.2. The Municipality has contributed and continues to contribute to the handling and disposal of solid waste at the Landfill in its capacity as operator.

Respondent is a Person

23. Respondent is a "person" as that term is defined in Section 1004(15) of the Act, 42 U.S.C. § 6903(15).

Geographic and Geological Background

24. The Municipality of Cayey is a mountain municipality in central Puerto Rico located on the Central Mountain range, north of Salinas and Guayama; south of Cidra and Caguas; east of Aibonito and Coamo; and west of San Lorenzo and Yabucoa. Cayey is approximately 135 square kilometers in size and has a population of about 48,119 people (U.S. Census, 2010).

25. The Landfill has an area of approximately 54 acres of which at least some 32 acres bears waste (Old Cell at 11 acres and the Active Cell at 21 acres or more). The Landfill is located on the side of a hill alongside of PR-52. See Appendix 1: *Maps*.

26. The Landfill is located in a region that has an annual average rainfall of 56 inches per year.
27. The Municipality of Cayey and the Landfill are located over a volcanic rock formation composed of non-pillowed lava flows, volcanic breccia, sandstone, conglomerate, and minor limestone, siltstone, and tuff.
28. The predominant soil type underlying the Landfill is Naranjito silty clay loam, lower section, and Mucara clay, upper section.
29. The Landfill is sited in a seismic zone in steep topography.
30. The Landfill is located in the Gurabo-Juncos Valley with regional groundwater flow in the underlying alluvial deposits to the south, towards the Gurabo River.
31. The Landfill discharges to a locally significant alluvial valley drinking water aquifer.
32. The alluvial valley aquifers are an important source of public water supply for municipalities in the interior areas of Puerto Rico.

Landfill Background and Regulatory History

33. The Landfill has been receiving municipal solid waste since at least 1972.
34. In 2004, in its *Cayey Landfill Progress Report*, the Puerto Rico Solid Waste Authority cataloged past reports from the EQB identifying significant deficiencies at the Cayey Landfill, including insufficient stormwater controls, no liner or other leachate controls, no groundwater or landfill gas monitoring program, leachate seeps, and poor daily cover. The Puerto Rico Solid Waste Authority has reported that the Landfill had expanded some 100 square meters (m²) beyond its eastern boundary as of 2004.
35. In 2007, in its *Dynamic Itinerary for Infrastructure Projects Technical Report*, the Puerto Rico Solid Waste Authority reported that the Landfill did not meet the 40 CFR Part 258 Subpart B requirements, lacked expansion space, and was not recommended for expansion. The Solid Waste Authority recommended that the Landfill be closed in 2010.
36. In a letter dated September 30, 2014, EQB stated that the Landfill was not in compliance with its solid waste regulations and required that the Municipality permanently cease operations and close the Landfill.

Landfill Inspections, Findings and Environmental Impact

37. On or about December 13, 2005, September 17, 2014, and January 27, 2016, authorized representatives of EPA inspected the Landfill (the “2005, 2014, and 2016 Inspections,” respectively). During the 2014 and 2016 Inspections, EPA was accompanied by authorized representatives of EQB. During the 2005, 2014, and 2016 Inspections and at other times, EPA obtained information concerning the Landfill and its waste disposal practices, including the facts set forth herein.

- Access Control

38. The Landfill does not have adequate control regarding public access to the Landfill as required by 40 C.F.R. § 258.25. During the 2014 Inspection, an unmonitored gate in the northeast corner of the Landfill property was open. Access to and from the recreational areas of the Landfill in the Old Cell and access between the recreation areas and the Active Cell were both unfettered. Failure to completely control public access increases the likelihood of individuals entering the Landfill and the potential for illegal dumping of wastes, thereby potentially jeopardizing human health and the environment.

- Daily Cover

39. Proper cover is required to reduce risk of disease, fires, leachate generation, odors, blowing litter, and scavenging. Proper cover is required by 40 C.F.R. §§ 258.21 and 122.26 (Clean Water Act).

40. In 2004, the Puerto Rico Solid Waste Authority reported that the Landfill did not have a leachate collection system.

41. During the 2005 Inspection, EPA observed areas of the Landfill with poor and no daily cover.

42. During the 2014 Inspection, EPA observed different areas of the Landfill that had poor daily cover, no daily cover, eroded daily cover, and trash wash-out.

43. During the 2016 Inspection, EPA observed different areas of the Landfill that had poor daily cover, eroded daily cover, and trash wash-out.

44. The United States Department of Agriculture’s Soil Survey rates the Naranjito silty clay, which is employed by Cayey as cover and structural support soil, as very limited in suitability for use as daily cover. The steep slopes, limited depth to bedrock, and clayey nature of the material were cited as the main negative issues regarding its suitability for use as daily cover.

- Stormwater

45. During the 2005 Inspection, EPA observed that the Landfill lacked adequate stormwater runoff controls. During the 2014 and 2016 Inspections, EPA observed that the Landfill still lacked adequate stormwater runoff controls. These controls are required by 40 C.F.R. §§ 258.26 and 122.26 (Clean Water Act). The Landfill also had only a limited system for the retention of and no system for the treatment of stormwater. The Landfill did not segregate surface flows of leachate from their stormwater system.

46. Control of run-on, and subsequent runoff, is complicated by the adjacent PR-52, a source of voluminous run-on.

47. Stormwater, originating from the Landfill, flowed overland to an unnamed tributary of the Beatriz Quebrada, itself a tributary of the Rio de la Plata.

48. The Rio de la Plata is a “navigable water” of the United States pursuant to Section 502(7) of the Clean Water Act, 33 U.S.C. § 1362(7).

49. Uncontrolled surface water run-off can flow onto and infiltrate and percolate into surface soils, potentially adversely impacting soil and/or groundwater. Uncontrolled run-off is more likely to occur in instances where, as at the Landfill, there is substantial rainfall and steep surface gradients with poor or no landfill cover.

- Leachate

50. Leachate is a “liquid that has passed through or emerged from solid waste and contains soluble, suspended or miscible materials removed from such waste.” 40 C.F.R. § 258.2. Landfill leachate may be contaminated with hazardous constituents such as toxic chemicals, heavy metals, and complex organic compounds. Leachate can also contain microbial pathogens.

51. Increased volumes of leachate are generated by and released from landfills that do not have requisite engineering controls in place such as surface water run-on controls, impermeable liners and leachate collection systems. The Landfill’s failure to have these controls increases the likelihood that the aquifer beneath the Landfill can become contaminated by operations at the Landfill.

52. Municipal solid waste may contain microorganisms that can cause disease in humans and animals. These pathogenic microorganisms include enteric bacteria, fungi, viruses, and human and animal parasites. Pathogenic bacteria and viruses, originating with soiled diapers, animal waste and other sources, may survive conditions within sanitary landfills and may be leached to ground or surface water.

53. The Landfill does not have an operational impermeable liner. Liners, which are required for “new municipal solid waste landfill units” and “lateral expansions” as those terms are defined in 40 C.F.R. § 258.2, minimize the possibility that liquids, including leachate, can

percolate and seep through a landfill, infiltrate the subsurface, and contaminate soil and groundwater.

54. The Landfill does not have an operational leachate interception and collection system. Such systems are required in Puerto Rico for “sanitary landfill systems” pursuant to EQB Regulations for the Management of Non-Hazardous Solid Waste, Rule 548 C. Owners or operators of sanitary landfill systems are required to design, construct and maintain a leachate control system to prevent and control the pollution of surface and underground water. Such leachate control systems minimize the possibility that liquids, including leachate, can contaminate surface water or percolate and seep through a landfill, infiltrate the subsurface, and contaminate soil and groundwater.

55. The Puerto Rico Solid Waste Authority has reported that, in 2002, the Mayor of Cayey was informed by EQB that plans for a leachate collection system were required as part of the Municipal Landfill’s permit application.

56. In 2004, the Puerto Rico Solid Waste Authority reported that the Landfill did not have a leachate collection system.

57. During the 2014 Inspection, EPA observed continuous leachate seepage surface flow from the Landfill’s waste along the east side. Other instances of surface leachate seepage were also observed by EPA in other Landfill areas during both the 2014 and 2016 Inspections.

58. During the 2005, 2014, and 2016 Inspections, EPA was told by the Landfill Manager that the Landfill lacked a leachate collection system.

59. Pursuant to 40 C.F.R. § 258.1, MSWLF facilities in operation as of 1994 that continue to accept solid waste for disposal, may not laterally expand unless the expansion cell or area meets certain design criteria as set forth in 40 C.F.R. § 258.40, including installation of an impermeable liner membrane and a leachate control system, which acting together, prevent uncontrolled leachate releases from the MSWLF.

- Groundwater Monitoring

60. An adequate groundwater monitoring system is necessary to determine if contaminants are being released into groundwater and are migrating away from the Landfill. Groundwater contaminated by landfill operations could contain hazardous constituents such as toxic chemicals, heavy metals, and organic compounds. 40 C.F.R. § 258.51.

61. In 2004, the Puerto Rico Solid Waste Authority has reported that the Landfill did not have a groundwater monitoring system.

62. During the 2005 Inspection, EPA was told by the Landfill Manager that the Landfill lacked a groundwater monitoring system.

63. During the 2014 Inspection, EPA was told by the Landfill Manager that the Landfill had two groundwater monitoring wells. EPA observed one such well, located in the south east corner of the Landfill property. The well was not locked and the protective outer casing was visibly damaged.

64. During the 2016 Inspection, EPA was told by the Landfill Manager that the Landfill had only one groundwater monitoring well. EPA observed that the well, located in the south east corner of the Landfill property, was open, the protective outer casing was visibly damaged and had been set askew (it appeared to have been struck by landfill equipment).

65. The existing Landfill groundwater monitoring system has been determined by EPA to be inadequate. Because of the site's geology, with shallow soil depth to bedrock and steep terrane, it would be difficult to design and construct an adequate groundwater monitoring system.

- Drinking Water

66. An adequate groundwater monitoring system is necessary to determine if contaminants are being released into groundwater and are migrating away from the Landfill. Groundwater contaminated by landfill operations could contain hazardous constituents such as toxic chemicals, heavy metals, and organic compounds. 40 C.F.R. § 258.51.

67. La Plata Nuevo Water Treatment Plant withdraws some 1.6 million gallons per day from the Rio de la Plata from a point downstream from the Landfill discharges.

68. There are Puerto Rico Aqueduct and Sewer Authority ("PRASA") drinking water wells in the vicinity of the Landfill.

- Stability, Overcapacity, & Expansion

69. Pursuant to 40 C.F.R. § 258.14, new MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the Director of an approved State/Tribe that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

70. Pursuant to 40 C.F.R. §§ 258.1 and 258.15, lateral expansions of MSWLF Facilities in operation since 1994 that are located in unstable areas must demonstrate that special engineering measures have been incorporated into the expansion design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted.

71. Landfill side slopes exceeding the standard 3:1 ratio (ratio of horizontal to vertical which may also be described as a slope of 18.4 degrees or 33 percent) represent an increased potential for unstable slopes. Steep slopes are at higher risk of failure in seismic and extreme weather (*e.g.*, hurricane) zones.
72. EPA observed steep slopes exceeding 3:1 (*i.e.*, 3 horizontal to 1 vertical, greater than 18.48 or 33%) during the 2005 Inspection. EPA determined that the south slope of the Landfill was too steep to traverse safely.
73. EPA observed steep slopes exceeding 3:1 during the 2014 Inspection. EPA measured the following slopes:
- a. ESE area of the landfill, mid-slope of Active Cell. Slope measured at ~808 (0.2:1 or 500%) peak from upper to midlevel of landfill with average, overall 458 (1:1 or 100%) slope. Washed-out and uncovered trash at base and mid-slope; and
 - b. SSE area of the landfill, lower-slope of Active Cell. Slope measured at ~39.58 (1.2:1 or 83%). Erosion with washed-out trash was clearly visible.
74. In 2004, the Puerto Rico Solid Waste Authority reported that:
- a. The active portion of the Landfill within the property boundary would reach capacity within approximately seven years [2011]; and
 - b. The Landfill was graded with 2:1 (278 or 50%) configuration slopes
75. In 2007, in the *Dynamic Itinerary for Infrastructure Projects Technical Report, PR-SWA, February, 2007*, the Puerto Rico Solid Waste Authority, based on estimated site capacity, designated 2010 as the closure date for the Landfill.
76. During the 2016 Inspection, EQB informed EPA that the waste disposal area of the Landfill had been laterally expanded to the south since the 2014 Inspection.
77. During the 2016 Inspection, the Landfill Manager agreed to physically delineate the current extent of bulk waste disposal at the toe of the southern slope through a series of repositioned boulders and not to expand waste placement past that delineation.
78. Based on observations and measurements made during the 2014 and 2016 Inspections, reviews of photomap imagery, and other information sources, EPA determined that the Landfill slopes are dramatically overbuilt. The southern waste extent, the toe of the slope, has been expanding into the borrow area. As a result, the Landfill is unlikely to be closable without major structural support or significant, further southern expansion (with the required liner and leachate collection system) to achieve a more stable configuration.

79. The United States Geological Service has opined that “Almost all [Puerto Rico] areas having slopes greater than 50 percent should be included in the area of high [landslide] susceptibility except in the arid southwest [of Puerto Rico].”¹

80. The Landfill is sited on steep bedrock foundation slopes of 40 to 60% (228 to 318 or 2.5:1 to 1.7:1).

81. The United States Department of Agriculture’s Soil Survey rates the Landfill’s soil foundation, Naranjito silty clay loam and Mucara clay, as very limited in suitability for siting a landfill. The steep slopes, limited depth to bedrock, and seepage issues were cited as the main negative issues with respect to the suitability of these soils for siting a landfill.

- Operational Permit

82. On January 26, 2016, EQB informed EPA that the Landfill did not have a permit for operation.

Environmental Risk Factors

- Location Within an Extreme Weather Zone

83. The U.S. Geological Survey has ranked the U.S. coastal areas by the number of hurricanes expected to occur during a 100-year period based on historical data. Puerto Rico was classified at the most extreme category of risk, with more than 60 hurricanes/100 years.

- Location Within/Adjacent to Sensitive Ecosystem

84. The Landfill and the surrounding area has been identified by the U.S. Fish and Wildlife Service as possible habitat for the following federal endangered species: the Puerto Rican plain Pigeon (*Columba inornata wetmorei*) and the Puerto Rican Boa (*Epicrates inornatus*). The Puerto Rican plain Pigeon and Boa have been identified by the Commonwealth of Puerto Rico as threatened species.

- Landfill Gas

85. As of January 2016, the Landfill did not have an operational explosive gases control system. A methane monitoring system is required pursuant to 40 C.F.R. § 258.23.

86. Landfill gas is generated during the natural process of anaerobic decomposition of refuse contained in a landfill. Landfill gas is predominantly methane and carbon dioxide, and small amounts of non-methane organic compounds (“NMOCs”) such as ethane, toluene and benzene. NMOCs are a collection of toxic pollutants, which when released into the atmosphere

¹ Monroe, W.H., 1979, Map showing landslides and areas of susceptibility to landsliding in Puerto Rico: U.S. Geological Survey Miscellaneous Investigations Series Map I-1148, 1 sheet

can lead to adverse effects. Methane gas is odorless and highly combustible. The accumulation of methane gas within a landfill can potentially cause fires and/or explosions.

87. Carbon dioxide and methane are greenhouse gases that can contribute to climate change, and NMOCs contribute to ozone formation. Methane is of particular concern because it is extremely effective in trapping heat in the atmosphere.

88. Subsurface migration is the underground movement of landfill gas from landfills to other areas within or outside the landfill property. Most subsurface migration occurs at older, unlined landfills because there is minimal barrier for lateral migration of landfill gas. It is possible for landfill gas to travel underground, accumulate in enclosed structures, and ignite. Incidences of subsurface migration have caused fires and explosions on both landfill property and private property.

89. People may be exposed to landfill gases either at the landfill or in their communities. Gases can also move through the landfill surface to the ambient air. Once in the air, the landfill gases can be carried with the wind to adjacent communities.

90. The Landfill contains community recreational facilities (Municipal Park) including a running track and baseball field, built on top of the Old Cell and adjacent to the Active Cell.

91. The closest residential housing to the Active Cell's waste is some 30 meters from the southeast side. Eight or so homes, a large, open air restaurant, and various other businesses are all less than 100 meters from the Active Cell's waste.

The Municipality's Recycling Program

92. The Municipality has a recycling program approved by the Puerto Rico Solid Waste Authority. The municipality is presently working on increasing community participation in recycling.

93. An improved recycling program would further reduce the amount of waste from the Municipality that has to be disposed of at the Landfill before its closure.

Conclusion

94. The lack of proper operational controls at the Landfill, including insufficient run-off controls, inadequate daily cover, potentially unstable slopes, lateral expansion, lack of leachate collection, lack of impermeable liners, lack of explosive gases control, and lack of adequate access controls at the Landfill, may present an imminent and substantial endangerment to health and/or the environment. The risk to health and/or the environment is exacerbated by its location on a site not suitable for landfills and with the added risk of contamination of a drinking water aquifer and surface water supply.

95. The Municipality's past and present handling and disposal of solid waste have contributed to and continue to contribute to the conditions at the Landfill that may present an imminent and substantial endangerment to health or the environment.

96. The lateral expansion of the Landfill without meeting required design criteria, including the installation of an impermeable liner membrane and a leachate control system, constitutes prohibited open dumping of solid waste.

IV. DETERMINATION

97. Based on the foregoing EPA's FINDINGS OF FACT AND CONCLUSIONS OF LAW and the full Administrative Record, the Regional Administrator of EPA Region 2, upon receipt of evidence and information that the past and present handling and disposal of solid wastes at the Landfill may present an imminent and substantial endangerment to health or the environment, and that the Municipality as the owner and operator of the disposal facility has contributed to such handling and disposal, has determined that the issuance of this Order is necessary to protect public health and the environment.

98. Based on the foregoing EPA's FINDINGS OF FACT AND CONCLUSIONS OF LAW and the full Administrative Record, the Regional Administrator of EPA Region 2, upon receipt of evidence and information that the past and present handling and disposal of solid wastes at the Landfill constitutes the open dumping of solid waste, and that the Municipality as the owner and operator of the disposal facility has contributed to such handling and disposal, has determined that the issuance of this Order is necessary to protect public health and the environment.

V. ORDER AND WORK REQUIREMENTS

99. IT IS HEREBY ORDERED that the Municipality shall perform the actions required by this Order and comply with its provisions. The Municipality shall fully cooperate with EPA representatives in carrying out the provisions of this Order. The Appendices referenced below and attached to this Order, shall be considered part of this Order and are incorporated by reference into it.

100. All submissions of documents to EPA by the Municipality pursuant to this Order shall be in English (unless a Spanish-only submission is approved by EPA). Portions of such documents that are intended to direct and execute work and other operations at the Landfill shall be prepared in both English and Spanish. Documents shall be submitted to EPA electronically in an accessible form that incorporates necessary signatures. Reasonable extensions of deadlines for required translations will be granted by EPA upon request by the Municipality.

Immediate Operational Requirements

101. On or before the effective date of this Order, the Municipality shall comply with Appendix 2: *Immediate Operational Requirements*, including: incoming load inspections and

prohibitions, posting of Order notice, adequate Landfill security, daily cover, provisional stormwater measures, operator oversight, single active face, and reporting.

Other Operational Requirements

- Safety and Health & Operator Training Programs

102. The Municipality shall comply with the Facility-wide Safety and Health Program provisions set forth in Appendix 3: *Training Programs*.

103. The Municipality shall ensure that the on-site operator at the Landfill, the supervisor of the Landfill, its employees, agents, independent contractors, and subcontractors comply with the training and certification requirements of the approved Facility-wide Safety and Health Program when on-site.

- Eco-System Protection Plan

104. The Municipality shall comply with Appendix 4: *Cayey Eco-System Protection Plan*, including:

- a. Submit to EPA for review and approval a Cayey Eco-System Protection Plan,
- b. Implement the approved Cayey Eco-System Protection Plan.

105. Upon EPA request, the Municipality shall submit written reports to EPA concerning implementation of the approved Cayey Eco-System Protection Plan.

- Waste Delineation

106. The Municipality shall comply with Appendix 5: *Waste Extent Determination*, including:

- a. Maintaining the toe of the slope delineation.
- b. Submit to EPA, for review and approval, a Solid Waste Delineation Plan designed to determine the full (*i.e.*, total, complete and comprehensive) extent of solid waste disposal.
- c. Implement the approved Solid Waste Delineation Plan.
- d. Submit to EPA, for review and approval, a Solid Waste Delineation Report.
- e. Implement the measures specified in the approved Solid Waste Delineation Report.

107. The Municipality shall incorporate the Revised Waste Disposal Perimeter in the approved Solid Waste Delineation Report into any required Landfill system designs and plans, including those for closure. The area within the Revised Waste Disposal Perimeter will constitute the "Existing Landfill" for purposes of this Order.

- Ground Water Monitoring

108. The Municipality shall comply with the Ground Water Monitoring provisions set forth in Appendix 6: *Additional Landfill Requirements*.

- Intermediate Cover

109. The Municipality shall comply with the Intermediate Cover provisions set forth in Appendix 6: *Additional Landfill Requirements*.

- Slope Remediation Plan

110. The Municipality shall comply with the Slope Remediation Plan provisions set forth in Appendix 6: *Additional Landfill Requirements*.

Landfill Closure and Post Closure Plans

111. The Municipality shall comply with Appendix 7: *Landfill Closure and Post Closure Plans*, including:

- a. Retain the services of a professional engineer to prepare final Closure and Post-Closure Plans for the Landfill.
- b. Submit to EPA, for review and approval, Landfill Closure and Post Closure Plans.
- c. Implement the approved Landfill Closure and Post Closure Plans.

Landfill Closure

- Schedule for Ceasing Receipt of Waste at the Landfill

(Including Notifying Carters, and Applying Intermediate Cover)

112. The Municipality shall cease waste disposal at the Landfill on or before January 1, 2018, unless a later date is approved in writing by EPA either directly or through an approved Closure Plan. See Appendix 7: *Closure and Post-Closure Plans Requirements*.

113. The Municipality shall, within sixty (60) days of the date when cessation of waste disposal is required, provide, apply, and thereafter maintain Intermediate Cover, consistent with the Intermediate Cover provisions set forth in Appendix 6: *Additional Landfill Requirements*, throughout the Landfill until final closure.

114. The Municipality shall secure the Facility against unauthorized waste disposal within thirty days after it ceases receiving waste for disposal.

115. No later than thirty (30) calendar days before the date the Municipality is required to cease to receive waste for disposal, the Municipality shall give written notice to carters serving

customers of Cayey specifying the date after which waste from such carters may no longer be deposited at the Landfill. This notification shall be made earlier if contractual arrangements for waste disposal require more advance notification to carters. The Municipality shall submit to EPA copies of all such notices.

116. The Municipality shall, within sixty (60) days of the date when cessation of waste receipt is required, provide, apply, and thereafter maintain Intermediate Cover, consistent with the Intermediate Cover provisions set forth in Appendix 6: *Additional Landfill Requirements*, throughout the existing Landfill until final closure.

- Photovoltaic Power Generation and Landfill Cap System

117. The Municipality shall comply with the Photovoltaic Power Generation and Landfill Cap System requirements set forth in Appendix 7: *Closure and Post-Closure Plans*.

- Landfill Gas Control

118. The Municipality shall comply with Appendix 8: *Landfill Gas Control*.

- Final Notice of Deficiencies

119. When EPA determines in its sole discretion that it is necessary to invoke the procedures in this subparagraph in order to achieve the development and implementation of approvable Closure and Post-Closure Plans, it will notify the Municipality in writing setting forth a final date for the Municipality's submission of acceptable Plan(s) to EPA. The written notice will specify the corrections, amendments and/or changes that the Municipality needs to make to previously submitted Plan(s) to achieve EPA approval, and the reasons why such corrections, amendments and/or changes are necessary. The notification letter will carry the caption: FINAL NOTICE OF DEFICIENCIES across the top of the page and will specify the date by which the Plan(s), signed by the professional engineer and approved by the Municipality, must be submitted to EPA. If the professional engineer believes in his/her best professional judgment that certain proposed corrections, amendments and/or changes described in the FINAL NOTICE OF DEFICIENCIES cannot or should not be complied with, the Municipality may provide notice to EPA that the matter is subject to the Dispute Resolution provisions set forth herein. After a decision on any matter or matters submitted for dispute resolution, EPA will, if necessary, submit a SECOND FINAL NOTICE OF DEFICIENCIES letter specifying the date by which the Plan(s) must be resubmitted to EPA. Thereafter, EPA will promptly notify the Municipality in writing of its final approval or non-approval of the Closure and/or Post Closure Plans. The Municipality's failure to submit acceptable Closure and/or Post Closure Plans by the date specified in the FINAL NOTIFICATION OF DEFICIENCIES, or in the event of a dispute resolution, by the date specified in the SECOND FINAL NOTIFICATION OF DEFICIENCIES, shall constitute the Municipality's failure to comply with a requirement of this Order, and the Municipality shall be subject to stipulated penalties herein for such failure.

Recycling Program

120. The Municipality shall comply with Appendix 9: *Recycling Program*.

Zika Virus & Mosquito Control

121. The Municipality shall comply with Appendix 10: *Zika Virus & Mosquito Control*.

VI. FINANCIAL ASSURANCE

- Closure and Post-Closure Financial Assurance

122. The Municipality shall, starting one hundred and eighty (180) days of the effective date of this Order, maintain a Financial Assurance Plan, that is consistent with the requirements for closure and post-closure care set forth in 40 C.F.R. §§ 258.71, 258.72, and 258.74, describing how the Municipality intends to finance the closure and post-closure care requirements of this Order. The Municipality shall thereafter submit updates to EPA, as set forth in *Appendix 11: Annual RCRA Reports*.

- Corrective Action Financial Assurance

123. In the event that corrective measures are required, the Municipality shall comply with the financial assurance requirements for corrective action set forth in 40 C.F.R. § 258.73. The Municipality shall thereafter provide documentation of its maintenance of the required financial assurance for corrective action in the annual RCRA reports submitted pursuant to this Order as set forth in *Appendix 11: Annual RCRA Reports*.

VII. CERTIFICATIONS

124. Wherever this Order (including all appendices) requires that a “Certification” be submitted to accompany written reports or documents, the following Certification language shall be submitted, and shall be dated and signed by an authorized senior official of the Municipality:

“I certify under penalty of law that this document [Identify Document] and all attachments being submitted were prepared under my direction or supervision in order to ensure that qualified personnel properly gathered, evaluated and prepared this submission. Based on my review of the documents, data and other information available at the time of this certification, including my inquiry of the person or persons who prepared the submission, the information contained in this submission is to the best of my knowledge, true, accurate and complete. I am aware that there are significant potential penalties for knowingly submitting false information.”

VIII. RETENTION & AVAILABILITY OF RECORDS

125. The Municipality shall maintain records pertaining to the operations of the Landfill and the recycling program and shall make such records available to EPA and its representatives for inspection upon request. The Municipality shall also maintain records pertaining to the work

being performed pursuant to this Order, including the Recycling Program, and shall make such records available to EPA and its representatives for inspection upon request. Each record relating to closure shall be maintained for a period of at least five (5) years from the date that permanent closure of the Landfill is completed. Post-closure records shall be retained until two years after the completion of post-closure or for a period of at least five (5) years from the date the record is created, whichever period is longer. Records relating to the Recycling Program shall be maintained for a period of at least ten years from the Effective Date of this Order, and shall be maintained at the Cayey City Hall. The Municipality shall also ensure the availability to the public of this Order and key documents related to work being performed under this Order.

IX. PROJECT COORDINATORS

126. EPA and the Municipality have each designated a Project Coordinator (“PC”) and the name of at least one alternate who may function in the absence of the designated Project Coordinator. The Project Coordinators shall be responsible for overseeing implementation of this Order. The Municipality’s designated PC and alternate(s) must include a Municipal official with relevant solid waste management experience. EPA and the Municipality shall each have the right to change the PC and shall inform the other parties should such change occur. Unless approved by EPA, counsel for the Municipality may not serve as a PC.

- a. The EPA has designated Mr. Carl Plössl, Environmental Engineer, as Project Coordinator and Ms. Emily McCleary, as Alternate Project Coordinator.
- b. The Municipality has designated Ms. Natasha M. Vazquez Perez, as Project Coordinator and _____ [TBD] as Alternate Project Coordinator.

127. All communications between the Municipality and EPA, and all documents, reports, plans, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed to and through the respective Project Coordinators. Unless otherwise requested by EPA or the Municipality, documents, reports, plans, approvals, and other correspondence shall be transmitted electronically, either by email or other mutually agreeable means.

X. NOTICES

128. For purposes of this Order, all written communications, notices or submissions required by this Order shall be directed to a person or persons specified by each party. The Municipality’s designee(s) must include a Municipal official. EPA and the Municipality, with written advance notice, shall each have the right to change the person(s) who are to receive documents.

- a. The EPA has designated the EPA Project Coordinator as recipient, at the following address:

Carl Plössl
Environmental Engineer
U.S. Environmental Protection Agency, Region 2

RCRA Compliance Branch, 21st Floor
290 Broadway
New York, New York 10007-1866
plossl.carl@epa.gov

- b. The Municipality has designated the Project Coordinator as recipient, at the following address:

Natasha M. Vazquez Perez
Municipality of Cayey
PO Box 371330
Cayey, Puerto Rico 00737-1330
natashavazquezperez@gmail.com

XI. EMERGENCY PROVISIONS/CORRECTIVE ACTION

129. In the event the Municipality identifies a current or immediate threat to human health or the environment at the Landfill, the Municipality shall immediately upon becoming aware of it, notify EPA orally and in writing within twenty four (24) hours summarizing the immediacy and magnitude of the potential threat to human health or the environment. The Municipality shall thereafter submit to EPA for approval, as soon as possible, a plan to mitigate this threat. EPA will approve or modify this plan, and the Municipality shall implement this plan as approved or modified by EPA. In the case of an extreme emergency, the Municipality may act as it deems appropriate at its own risk.

130. In the event the Municipality identifies the need for corrective action due to conditions at the Landfill, or off-site, caused by contamination released from the Landfill, other than those conditions identified by groundwater monitoring carried out pursuant to the Groundwater Monitoring section of Appendix 6: *Additional Landfill Requirements*, the Municipality shall notify EPA within fifteen (15) calendar days of such identification. After review of available information, EPA may, after consultation with the Municipality, require the Municipality to prepare and implement a corrective action assessment and/or corrective action remedy. The corrective action assessment and/or corrective action remedy shall be implemented subject to EPA oversight.

131. If EPA determines that activities in compliance or non-compliance with this Order have caused or may cause a release of a hazardous waste or hazardous constituent, or may pose a threat to human health or the environment, EPA may direct the Municipality, as it deems appropriate, to stop further implementation of this Order, or a portion of this Order, for such period of time as EPA determines may be needed to abate any such release or threat, and/or to undertake any action which EPA determines to be necessary.

132. If EPA determines the need for corrective action due to conditions at the Landfill, or off-site, caused by contamination released from the Landfill, EPA will notify the Municipality and may, after consultation with the Municipality, require the Municipality to prepare and

implement a corrective action assessment and/or corrective action remedy. The corrective action assessment and/or corrective action remedy shall be implemented subject to EPA oversight.

XII. RESERVATION OF RIGHTS

133. EPA expressly reserves, without limitation, all of its statutory and regulatory powers, authorities, rights, remedies and defenses, both legal and equitable, including the right to seek injunctive relief, cost recovery, monetary penalties, or punitive damages. EPA may exercise its authority under federal law to undertake removal or remedial actions.

134. This Order shall not be construed as a covenant not to sue, or as a release, waiver or limitation of any claim, rights, remedies, defenses, powers and or authorities which EPA has under RCRA, or any other statutory, regulatory or common law authority of the United States.

135. This Order shall not limit or otherwise preclude EPA from taking any additional legal action against the Municipality should EPA determine that any such additional legal action is necessary or warranted.

136. This Order shall not limit or otherwise preclude the Municipality from taking legal actions, which may be otherwise brought, against any other person(s) for indemnification, contribution, or other relief as it may deem appropriate; provided, however that EPA is not a party in such actions and that the legal action is not inconsistent with this Order. Third party actions initiated by or against the Municipality shall not alter the obligations in this Order and shall not toll deadlines in this Order.

137. Notwithstanding compliance with the terms of this Order, the Municipality is not released for the costs of any response actions taken by EPA. EPA reserves the right to seek reimbursement from the Municipality for any costs incurred by the United States.

XIII. STIPULATED PENALTIES

138. Unless the Municipality is excused under the "Force Majeure and Excusable Delay" provision of the Order, the Municipality shall pay a stipulated penalty for failure to comply with any requirement, term, or condition set forth in or required by this Order. The stipulated penalty for each non-complying act is as follows:

- a. For major requirements, terms, or conditions, including the failure to:
 - i. Comply with the Experienced On-site Operator requirements set forth in Paragraph 2 of Appendix 3;
 - ii. Comply with the Waste Delineation requirements set forth in Paragraphs 106 and 107 and Appendix 5;

- iii. Comply with the Groundwater Monitoring requirements set forth in Paragraph 108 and Appendix 6;
- iv. Comply with the Ceasing Receipt of Waste at the Landfill requirements set forth in Paragraphs 112 through 116;
- v. Comply with the Closure and Post Closure Plan requirements set forth in Paragraph 111 and Appendix 7;
- vi. Comply with the Closure Plan Implementation requirements set forth in Paragraph 111 and Appendix 7;
- vii. Comply with the Recycling Program requirements set forth in Paragraph 120 and Appendix 9; and
- viii. Comply with the Financial Assurance requirements set forth in Paragraphs 122 through 123 and Appendix 11.

The stipulated penalty for each act of non-compliance is as follows:

<u>Period of Failure to Comply</u>	<u>Penalty for Non-compliance per Day</u>
1 st through 60 th day	\$ 500
61 st through 120 th day	\$ 1,000
121 st through 180 th day	\$ 3,000
181 st day and thereafter	\$ 5,000

- b. For failure to comply with any other requirement, term, or condition set forth in or required by the Consent Order, the stipulated penalty for each act of non-compliance is as follows:

<u>Period of Failure to Comply</u>	<u>Penalty for Non-compliance per Day</u>
1 st through 60 th day	\$ 300
61 st through 180 th day	\$ 500
181 th day and thereafter	\$ 2,000

- c. Stipulated penalties shall be paid by cashier's or certified check, payable to the Treasurer, United States of America, and mailed to the:

U.S. Environmental Protection Agency
 Fines and Penalties
 Cincinnati Finance Center
 P.O. Box 979077
 St. Louis, MO 63197-9000

- d. Said payment(s) shall be identified as **Cayey Municipal Solid Waste Landfill, Cayey, Puerto Rico** and must reference **Docket No.: RCRA-02-2016-7304**.

139. All stipulated penalties begin to accrue on the day each act of noncompliance with any requirement, term, or condition set forth in or required by this Order first takes place. Said stipulated penalties shall continue to accrue through, and including, the day on which any failure to comply with such requirement, term, or condition is remedied. Nothing herein shall preclude, or is intended to preclude, the simultaneous accrual of separate stipulated penalties for each separate act of noncompliance with this Order. Penalties shall accrue regardless of whether EPA has notified the Municipality of the act or acts of non-compliance, but need only be paid upon demand.

140. After receipt of a demand from EPA for stipulated penalties pursuant to this Section of the Order, the Municipality may within thirty (30) calendar days of such demand, provide EPA with a written explanation of why it believes the stipulated penalties are not appropriate for the act(s) of non-compliance cited by EPA. If the Municipality elects not to file such explanation, the stipulated penalties shall be paid within sixty (60) calendar days after receipt of the penalty demand.

141. The Director of the Division of Enforcement and Compliance Assistance may, in his or her sole discretion, reduce or eliminate such stipulated penalties based on the Municipality's written explanation as specified immediately above. If the Municipality makes a submittal as specified above, and the Division Director does not eliminate the stipulated penalties, then EPA will again notify the Municipality in writing that the original or reduced stipulated penalties must be paid by the Municipality. The Municipality shall pay the stipulated penalties as set forth in EPA's notice pursuant to this sub-section within sixty (60) calendar days of its receipt of the notice.

142. At any time (including when EPA makes its initial demand for stipulated penalties), the Director of the Division of Enforcement and Compliance Assistance may, for good cause as independently determined by him or her, reduce or eliminate the amount of stipulated penalties that are demanded or otherwise due. If the amount of stipulated penalties EPA decides to demand is different from the figure previously communicated to the Respondent, EPA will notify Respondents in writing of the change.

143. Except as provided above, all penalties owed to EPA under this Section XIII. STIPULATED PENALTIES, shall be due and owing within sixty (60) calendar days after receipt of the penalty demand. Interest shall also accrue on any amount not paid when due at the rate established by the Secretary of the Treasury pursuant to 31 U.S.C. § 3717.

144. If the Municipality fails to pay stipulated penalties as required under this Order, EPA may refer this matter to the U. S. Department of the Treasury or the Department of Justice for collection under applicable law. Nothing in this section, however, limits, or shall be construed

as limiting, any rights or remedies available to EPA to enforce this Order and to seek compliance with the terms and conditions of this Order or any other applicable law or regulation.

XIV. NON-RELEASE OF OTHER CLAIMS AND PARTIES/COOPERATION WITH THIRD PARTIES

145. Nothing in this Order shall constitute, or be construed to constitute, a release from any claim, cause of action or demand in law or equity brought by EPA against any person, firm, partnership, or corporation for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituent, hazardous substance, solid waste, hazardous waste, pollutant, or contaminant found at, taken to, taken from, or emanating from the Landfill.

146. In carrying out its responsibilities under this Order, the Municipality, upon notification from EPA, shall use its best efforts to cooperate with any third party which may, in the future, be issued a unilateral or consent order relating to the Landfill (“additional Respondent(s)”). The Municipality shall keep all such third parties fully informed of its activities pursuant to the Order’s requirements and shall, unless otherwise agreed to by the parties, provide copies to such parties of all correspondence and submissions to EPA under the Order.

XV. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

147. The Municipality shall indemnify, save and hold harmless the United States Government, its agencies, departments, agents, and/or employees, from any and all claims or causes of action arising from or on account of acts or omissions of the Municipality or its agents, independent contractors, receivers, trustees, subcontractors or successors and/or assigns in carrying out activities required by this Order. This indemnification shall not be construed as in any way affecting or limiting the rights or obligations of the Municipality or the United States under their various contracts or statutes.

XVI. OTHER APPLICABLE LAWS

148. Nothing herein shall relieve the Municipality of its obligations to undertake all actions required by this Order in accordance with local, Commonwealth and federal laws and regulations. The Municipality shall obtain all permits or approvals necessary to perform the work required by this Order.

XVII. SEVERABILITY

149. If any provision or authority of this Order or the application of this Order to any party or circumstance is found to be invalid, or is temporarily stayed, the remainder of this Order shall remain in force and shall not be affected thereby.

XVIII. FORCE MAJEURE AND EXCUSABLE DELAY

150. The Municipality shall perform all the requirements of this Order within the time limits set forth, approved, or established herein, unless the performance is prevented or delayed

solely by events which constitute a *force majeure*. A *force majeure* is defined as any event arising from causes not reasonably foreseeable and beyond the control of the Municipality which could not be overcome by due diligence and which delays or prevents performance by a date required by this Order. Such events do not include unanticipated or increased costs of performance, changed economic circumstances, normal precipitation events, or failure to obtain federal, Commonwealth, or local permits. Nothing in this Section XVIII. bars the Municipality from seeking a scheduling modification pursuant to "XXI. MODIFICATION," herein.

151. The Municipality shall notify in writing the EPA Project Coordinator within ten (10) days after becoming aware of any event, which it knows or should know, constitutes a *force majeure*. Such notice shall detail the estimated length of delay, including necessary demobilization and remobilization, its causes, measures taken or to be taken to minimize the delay, and an estimated timetable for implementation of these measures. The Municipality shall adopt all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this section shall constitute a waiver of the Municipality's right to assert a *force majeure* and may be grounds for EPA to deny the Municipality an extension of time for performance.

152. After receiving notice from the Municipality that it is invoking the force majeure provisions of this Order, EPA will respond in writing indicating either EPA's agreement that the event constitutes a force majeure or its disagreement and the reasons therefore.

153. If the Parties agree that a *force majeure* has occurred, the time for performance may be extended, upon EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through written amendment to this Order, or modifying the schedule in a previously approved plan. Such an extension or modification will not alter the schedule for performance or completion of any other tasks required by this Order unless EPA determines that the delayed task is a prerequisite or necessary requirement for other specified tasks and the schedule is specifically altered in accordance with XXI. MODIFICATION, herein.

154. In the event the parties cannot agree that any delay or failure has been or will be caused by a *force majeure*, or if there is no agreement on the length of the extension, the dispute will be resolved in accordance with the Dispute Resolution provisions contained in this Order.

XIX. ON-SITE AND OFF-SITE ACCESS

155. The Municipality consents to and agrees to grant access to EPA and other federal agency and EQB representatives, including authorized employees, agents, contractors, subcontractors, or consultants to enter and freely move about the Landfill for, but not limited to, the following purpose(s): observing conditions and/or activities at the Landfill, including work performed pursuant to this Order, interviewing personnel, conducting sampling or monitoring, taking photographs and verifying information or data that has been submitted.

156. The Municipality consents to and agrees to make available to EPA and its representatives for inspection, copying, or photographing, all records, files, photographs, documents, or any other writing, including monitoring and sampling data that pertain to any work undertaken pursuant to this Order.

157. To the extent that work required by this Order must be performed on property not owned or controlled by the Municipality, the Municipality shall use best efforts to obtain "Site Access Agreements" to perform such work within thirty (30) days of the date the Municipality become aware or should be aware of the need to perform such work. Any such access agreement shall provide for reasonable access by EPA. In the event that Site Access Agreements are not obtained within the thirty (30) day period, the Municipality shall notify EPA, in writing, documenting its best efforts to obtain such agreements.

158. Nothing in this Order shall be construed to limit or otherwise affect EPA's right of access and entry pursuant to any applicable laws and regulations.

159. Nothing in this Order shall be construed to limit or otherwise affect the Municipality's liabilities and obligations to perform corrective action, including corrective action beyond the Landfill property boundary, notwithstanding the lack of access. EPA may determine that additional on-site measures must be taken to address releases beyond the Landfill boundary if access to off-site areas cannot be obtained.

XX. NO FINAL AGENCY ACTION

160. Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, Region 2, or any authorized representative of EPA, shall constitute final agency action giving rise to any rights of judicial review prior to EPA's initiation of a judicial action for a violation of this Order, which may include an action for penalties, an action to compel the Municipality's compliance with the terms and conditions of this Order, or such other relief as may be available at law.

161. In any action brought by EPA for a violation of this Order, the Municipality shall bear the burden of proving that EPA's action was arbitrary and/or capricious and not in accordance with law, or this Order. In any such action, EPA shall bear the burden of proving that the Municipality has violated a term or terms of this Order.

XXI. MODIFICATION

162. This Order may be amended by the Municipality and EPA. Such amendment(s) shall be in writing, shall first be signed by the Municipality, and shall have as its effective date the date on which it is signed by the EPA Regional Administrator.

163. Notwithstanding the above, EPA's and the Municipality's Project Coordinators may agree to changes in the scheduling of events. Any such changes shall be requested in writing by

the Municipality and must be approved in writing by the EPA PC. Delays in obtaining required permits despite good faith, diligent efforts by the Municipality to obtain them, will be grounds for extensions of deadlines for work requiring such permits.

164. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Municipality will be construed as an amendment or modification to this Order.

XXII. TRANSFER OF OBLIGATIONS

165. The Municipality shall give notice, and a copy, of this Order to any successor in interest prior to any transfer of ownership or responsibility for the Landfill. The Municipality shall give notice to EPA at least sixty (60) days prior to any such transfer. No such transfer shall in any way alter, extinguish or otherwise affect the Municipality's responsibility to meet all the terms and obligations of this Order. The Municipality may, however, transfer the responsibility for unperformed obligations imposed by this Order to a new owner/operator of the Landfill, provided there is a demonstration made to EPA's satisfaction that the new owner/operator is capable of undertaking these obligations and has expressly agreed to do so in writing, provided further that EPA has given its approval in writing to any such transfer of obligations, and provided finally that this Order has been modified to reflect the transfer and make the new owner/operator responsible for future performance of obligations under the Order. Any stipulated penalties which may have accrued pursuant to the terms of this Order shall remain the responsibility of the Municipality (against whom the penalties accrued) unless EPA consents in writing to the transfer of said liability to the successor. The Order Modification reflecting the transfer of obligations to a successor party or parties may, if appropriate, establish modified schedules for continuing obligations under the Order.

XXIII. DISPUTE RESOLUTION

166. All parties shall use their best efforts to informally and in good faith resolve all disputes and differences of opinion, which may arise concerning provisions of this Order. Notwithstanding the foregoing, if the Municipality disagrees, in whole or in part, with any disapproval or modification or other decision or directive made by EPA pursuant to this Order, the Municipality shall notify EPA in writing of such disagreements and their basis or bases within twenty (20) calendar days of receipt of EPA's disapproval, modification, decision or directive. The notice shall set forth the specific points of the dispute, the position the Municipality maintains, the basis or bases for the Municipality's position, and any matters the Municipality considers necessary for EPA's review. EPA may unilaterally refuse to review any dispute brought by the Municipality under this provision if the Municipality fails to fully set forth the basis or bases of its position and/or fails to provide materials which are necessary for EPA's determination. EPA may, but is not obliged, to request that the Municipality submit additional information regarding any points concerning any dispute brought by the Municipality. EPA will determine which of its officials will have responsibility for a decision concerning a dispute. EPA shall provide to the Municipality its decision in writing on the pending dispute, which decision shall be binding. The parties may continue to confer and to

use informal efforts to resolve the dispute during the period that EPA's final determination is pending. Notwithstanding the above, the Municipality may not invoke the dispute resolution procedures for the deadline for ceasing receiving solid waste for disposal at the Facility, as established in Section V, Paragraph 114 of this Order, nor may the Municipality invoke the dispute resolution procedures concerning which EPA official is designated by EPA as the official to make a determination concerning the dispute.

167. EPA's decision on any dispute shall be incorporated into and become an enforceable part of this Order, and shall no longer be subject to dispute pursuant to this Order. The Municipality shall proceed in accordance with EPA's decision regarding the matter in dispute. If the Municipality does not actually perform the work in accordance with EPA's decision, EPA reserves the right in its sole discretion to conduct the work itself, and seek reimbursement from the Municipality, seek enforcement of this Order, seek stipulated penalties, and/or seek any other appropriate relief. Any disputes arising under this Order, and EPA's decisions concerning such disputes, are not subject to judicial review until such time as EPA seeks judicial enforcement of this Order.

168. The existence of a dispute as defined herein, and EPA's consideration of such matters as are placed into dispute, shall excuse, toll or suspend during the pendency of the dispute resolution process any compliance obligation which is demonstrably dependent on the matters in dispute, and EPA shall not seek to impose a penalty for non-compliance with the obligation for the period of time during which the obligation was excused, tolled or suspended, regardless of the final decision on the dispute. No compliance obligation shall be excused, tolled or suspended, unless the Municipality's dispute is in good faith and the Municipality exercises due diligence to resolve the dispute.

XXIV. TERMINATION

169. This Order and all of its terms and provisions shall remain in effect until all of the activities called for by the Order are completed and the Municipality is so notified in writing by the EPA. Such notice shall be signed by the Regional Administrator, EPA Region 2. The Municipality may request that EPA Region 2 provide the Municipality with such notice, and shall supply EPA with such information, including certifications, as EPA may specify.

XXV. ENFORCEMENT

170. The failure of the Municipality to comply with any provision of this Order may be considered a violation of this Order. Such violation may give rise to an enforcement action pursuant to Section 7003(b) of the Act, 42 U.S.C. § 6973(b), as amended by the Debt Collection Improvement Act of 1996, 31 U.S.C. Section 3701 et seq.

171. Nothing herein shall preclude EPA from taking any additional enforcement actions, and/or such other actions as it may deem necessary for the abatement or prevention of an imminent threat to public health or the environment arising from conditions at the Landfill. Nor shall EPA be precluded from taking any such other enforcement actions under the Act or other

laws as EPA may deem necessary based on additional information about conditions at the Landfill.

XXVI. COOPERATION AND POTENTIAL ASSIGNMENT OF RESPONSIBILITIES

172. The Municipality shall use its best efforts to cooperate with any additional Respondent(s) that may be ordered to carry out legal obligations relating to the Facility. In the event that one or more additional parties are issued an Order to carry out legal obligations relating to the Facility, EPA reserves its right to assign some of the specific tasks set forth in this Order to any additional Respondent(s) that is ordered in the future to carry out legal obligations relating to the Facility.

XXVII. GENERAL PROVISIONS

173. Nothing in this Order constitutes a satisfaction or release from liability with respect to any conditions or claims arising as a result of past, current or future operation, ownership or use of the Landfill by the Municipality, its agents, officials, successors or assigns.

174. Nothing in this Order affects any right, claim, interest, defense or cause of action of EPA with respect to the Municipality or any third parties.

XXVIII. CONSENT/AUTHORITY TO SIGN

175. The Municipality consents to and agrees not to contest EPA's jurisdiction to issue this Order. In addition, whether brought in an administrative or judicial proceeding, the Municipality consents to and agrees not to contest EPA's jurisdiction to enforce or compel compliance with any term of this Order. The Municipality neither admits nor denies the EPA's Findings of Fact and Conclusions of Law stated herein. The Municipality enters into this Order in good faith, and the execution of this Order is not intended and shall not be construed as an admission relating to any violations of any law or regulations or an assumption of liability beyond that expressly stated herein.

176. Finding this Order to be accurate and reasonable, the Municipality consents to its issuance and its terms, and agrees to undertake the actions required by the terms and conditions of this Order. The Municipality consents to the issuance of this Order, as an Order, pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973, and explicitly waives any rights it may have to request a hearing on this matter.

177. The Municipality agrees not to contest and agrees to waive any defense concerning the validity of this Order, or any particular provision explicitly contained in the Order.

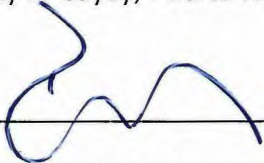
178. The Municipality's signatory to this Order certifies that he or she is fully authorized to sign this Order.

XXIX. EFFECTIVE DATE

179. The effective date of this Order shall be fifteen (15) days after the date the Order is signed by the Regional Administrator, EPA Region 2.

The Municipality of Cayey, Puerto Rico

By: _____



Rolando Ortiz Velázquez

Name: _____

(PRINT)

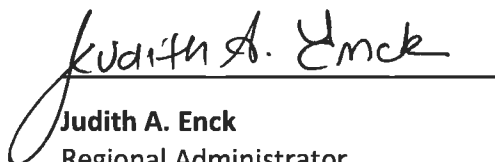
Title: _____

Mayor

Date: September 15, 2016

Administrative Order on Consent
Cayey Municipal Landfill
Cayey, Puerto Rico
Docket No. RCRA 02-2016-7304

It is so Ordered:

 Date: 9.21.16
Judith A. Enck
Regional Administrator
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

APPENDICES

Appendix 1: Maps



Figure 1: Cayey Municipality, Puerto Rico



Figure 2: Cayey Landfill Location



Figure 3: Cayey Landfill Approximate Location

Appendix 2: Operational Requirements

1. On or before the effective date of this Order, and continuing thereafter, Cayey shall continue to randomly inspect incoming loads of waste to be deposited at the Landfill so as to prevent the disposal of i) regulated hazardous wastes and PCBs prohibited under 40 CFR § 258.20; ii) liquid wastes prohibited by 40 C.F.R. § 258.28; and iii) “White Goods,” scrap tires, or any bulk disposal of recyclable material, bulk ash (except in a lined, permitted cell compliant with 40 C.F.R Part 258), or bulk green waste (as those terms are defined in Appendix 9 of this Order) at the Landfill. The Municipality shall continue to maintain a log of incoming waste loads. The log shall contain the delivery date, name of the hauler or carter, a brief description of each load’s contents and an estimate of its volume, as well as details (similar to those just listed) regarding the receipt and rejection of any loads with unacceptable materials.
2. On or before the effective date of this Order, and continuing thereafter, Cayey shall maintain the toe of the slope delineation established by EPA during the January 27, 2016 Inspection, until superseded under the provisions of Appendix 5: *Waste Extent Determination*.²
3. On or before the effective date of this Order, and maintaining thereafter, the Municipality shall cause the following NOTICE to be posted in Spanish and English at the Landfill entrance in large lettering on a mounted sign at least four feet by five feet in size:

NOTICE

THIS LANDFILL IS SUBJECT TO A UNITED STATES ENVIRONMENTAL PROTECTION AGENCY ADMINISTRATIVE ORDER ON CONSENT WITH THE MUNICIPALITY OF CAYEY

The Municipality shall confirm in writing to EPA, within seven (7) days of posting, that the Notice has been posted, and shall send EPA one or more photographs either in digital form or clearly developed of the Notice sign.

4. On or before the effective date of this Order, and continuing thereafter, the Municipality shall undertake best efforts to maintain adequate security at the Landfill to restrict unauthorized access to the Landfill so as to prevent scavenging, trespass, and unauthorized waste disposal. Such security measures shall include maintenance of existing fencing and ensuring that entrance gate(s) is locked during non-business hours, when the Landfill is otherwise not operating, and when the Landfill does not have someone controlling the entrance or inspecting incoming loads.
5. If either EPA or the Municipality determine that the security measures implemented are insufficient, the Municipality shall develop and implement a plan for additional steps to ensure that unauthorized access to the Landfill is prevented (“Enhanced Security Plan”). Such additional measures may include additional security personnel, installation and maintenance of an additional gate(s), and fencing. If the Municipality, rather than EPA, determines that the

² During the January 27, 2016 Inspection, the Cayey Landfill Manager agreed to physically delineate the current extent of bulk waste disposal at the toe of the southern slope through a series of repositioned boulders and to not expand waste placement past that delineation.

security measures implemented are insufficient, the Municipality shall notify EPA of the security issues within one week of such determination. Upon request by EPA, the Municipality shall submit, for review and approval, the Enhanced Security Plan. Unless otherwise indicated by EPA, the Municipality shall carry out the provisions of the Enhanced Security Plan within thirty (30) calendar days of either notification by EPA or the Municipality's own determination of such need.

6. On or before the effective date of this Order, and continuing thereafter, the Municipality shall cover disposed solid waste with six inches of earthen material, and/or an acceptable alternative daily cover, at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.³ Daily cover must be maintained except for days in which severe weather condition makes it impossible to maintain daily cover. Daily cover operations must be consistent with the *Cayey Eco-System Protection Plan* (Appendix 4 of this Order).

7. On or before the effective date of this Order, and maintaining thereafter, the Municipality shall commence installation of the following Stormwater Provisional Measures:^{4,5}

- a. Minimize stormwater run-on with a temporary dike or channel system;
- b. Minimize the area of exposed working face;
- c. Manage runoff to reduce pollutant discharge through use of vegetative buffer strips, sediment traps/ponds, and diversion berms;
- d. Employ erosion control techniques such as mulching and matting, temporary check dams, filter fences, and straw bales;
- e. Regularly inspect and maintain such Provisional Measures.

8. The Stormwater Provisional Measures must be substantially installed and operational within thirty (30) calendar days of the effective date of this Order, or by such other later deadline as is approved by EPA in writing, and thereafter maintained until supplemented or replaced under an EPA-approved Stormwater Pollution Prevention Plan.

9. Upon the effective date of this Order, an on-site operator must be present at the Landfill during all times of operation. The on-site operator must have at least one year of experience in operating a solid waste landfill.

³ EPA Region 2 recommends consideration of spray-on cementitious cover materials as alternate daily cover in situations where the remaining airspace must be conserved or accessibility of suitable daily cover soil is problematic. See: *Review of the Use of Posi-Shell® as Landfill Alternate Daily Cover (ADC)*, EPA Region 2, RCRA Compliance Branch, 11 May 2015.

⁴ See: <http://www.epa.gov/npdes/industrial-stormwater-fact-sheet-series>, *Industrial Stormwater Fact Sheet Series-Sector L: Landfills and Land Application Sites*. Covers the federally required and recommended landfill stormwater management measures.

⁵ <http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>. The New Hampshire Stormwater Manual was developed as a planning and design tool for the communities, developers, designers and members of regulatory boards, commissions, and agencies involved in stormwater programs.

10. Starting on or before the effective date of this Order, the Supervisor of Landfill Operations shall weekly report to EPA on Landfill compliance and progress toward closure until EPA indicates it no longer requires such reports. Unless otherwise agreed to by EPA, such reports shall be short electronic mail messages and include Landfill photos (*e.g.*, on-site, end of the week reporting utilizing a “smart” cellular phone to send electronic mail messages and attached photos).

The Municipality shall also submit a written report to EPA within ninety (90) calendar days of the effective date of this Order, or by such other later deadline as is approved by EPA in writing, documenting compliance or statement of and reason for non-compliance with the above, Appendix 2: *Operational Landfill Requirements*. The report shall be accompanied by the certification set forth in Section VII. CERTIFICATIONS of this Order. This report shall be in addition to the information required in Appendix 11: Annual RCRA Report.

Appendix 3: Training Programs

- Safety & Health Program

1. Within ninety (90) calendar days of the effective date of this Order, the Municipality shall develop, enforce, and maintain a facility-wide Safety and Health Program. This Program must comply with applicable Commonwealth and Federal Occupational Safety & Health Administration (“OSHA”) regulations. The following requirements must be addressed within the facility-wide Safety & Health Program (regulatory references are to Federal OSHA regulations and are believed to be correct as of May 2015):

a. Management Commitment to Safety and Health

- i. Provide employees with sanitary and safe working conditions [29 C.F.R. § 1926.20(a)].
- ii. Assign safety and health responsibilities [29 C.F.R. § 1926.20(b)].
- iii. Give safety and health designees authority to correct hazards [29 C.F.R. § 1926.32(f)].
- iv. Ensure employees that they may voice safety and health concerns without fear of reprisal [29 C.F.R. § 1903.11(d)].
- v. Inform employees of hazards [29 C.F.R. § 1926.21(b), 29 C.F.R. § 1910.1020, 29 C.F.R. § 1910.1200, 29 C.F.R. § 1926 Subpart Z].
- vi. Coordinate hazard communication with other employers on-site [29 C.F.R. § 1926.59, 29 C.F.R. § 1926.65, 29 C.F.R. § 1926.652].
- vii. Post the OSHA State or Federal Poster [29 C.F.R. § 1903.2(a)].

b. Hazard Identification and Determination

- i. Evaluate operations, procedures, facilities, and equipment to identify hazards [29 C.F.R. § 1926.20(a), 29 C.F.R. § 1926.21(b), 29 C.F.R. § 1926 Subpart O, 29 C.F.R. § 1926.400 (b), 29 C.F.R. § 1926.416].
- ii. Monitor exposure levels [29 C.F.R. § 1926.55, 29 C.F.R. § 1926.62, 29 C.F.R. § 1926 Subpart Z, 29 C.F.R. § 1926.1101].
- iii. Ensure regular safety and health inspections [29 C.F.R. § 1926.20(b)(2)].
- iv. Conduct accident investigations [29 C.F.R. § 1904.4, 29 C.F.R. § 1926.20(b)].
- v. Determine if engineering or administrative controls or personnel protective equipment are to be used [29 C.F.R. § 1926.20(f), 29 C.F.R. § 1926 Subpart E].

c. Hazard Elimination and Control

- i. Ensure machines and tools are in safe working order and in compliance with relevant standards [29 C.F.R. § 1926.20(b)(3), 29 C.F.R. § 1926 Subpart O].
 - ii. Institute engineering and work practice controls to eliminate health hazards [29 C.F.R. § 1926.55, 29 C.F.R. § 1926 Subpart E, 29 C.F.R. § 1926 Subpart Z].
 - iii. Perform housekeeping to remove hazards posed by scrap and debris in work areas [29 C.F.R. § 1926.25, 29 C.F.R. § 1926.152(c)(5)].
 - iv. Provide appropriate personal protective equipment when other controls are infeasible [29 C.F.R. § 1926.28(a), 29 C.F.R. § 1926 Subpart E].
 - v. Guarantee safe means of egress [29 C.F.R. § 1926.34]
 - d. Emergency Response Planning
 - i. Develop emergency response plans [29 C.F.R. § 1926.35, 29 C.F.R. § 1926.65(q)].
 - ii. Develop fire prevention and protection programs [29 C.F.R. § 1926.24, 29 C.F.R. § 1926 Subpart F].
 - e. First Aid and Medical
 - i. Provide medical services, first aid treatment, and supplies [29 C.F.R. § 1926.50(a), 29 C.F.R. § 1926.103, 29 C.F.R. § 1926.50(c), 29 C.F.R. § 1926.50(d), 29 C.F.R. § 1926 Subpart Z].
 - ii. Ensure availability of emergency rescue for injured employees [29 C.F.R. § 1926.50(e), 29 C.F.R. § 1926.106(a), 29 C.F.R. § 1926.21(b)(6)].
 - iii. Post emergency numbers for physicians, hospitals, or ambulances [29 C.F.R. § 1926.50(f)].
 - f. Training
 - i. Train employees to recognize hazards [29 C.F.R. § 1926.21(b)(2), 29 C.F.R. § 1926.65, 29 C.F.R. § 1926.302(e)]
 - ii. Train workers to recognize and avoid unsafe conditions [29 C.F.R. § 1926.21(b)(2), 29 C.F.R. § 1926.65, 29 C.F.R. § 1926.454].
 - iii. Provide training on safe work practices and applicable standards [29 C.F.R. § 1926.21(b)].
 - iv. Provide training on safe operation of equipment and machinery [29 C.F.R. § 1926.20(b)(4), 29 C.F.R. § 1926.302(e)].
 - v. Provide training on identification of confined and enclosed space hazards (if applicable to the Landfill) [29 C.F.R. § 1926.21].
- Operator Training Program

2. Upon the effective date of this Order, an on-site operator must be present at the Landfill during all times of operation (including closure activities). The on-site operator must have at least one year of experience in operating a solid waste landfill.
3. Within two hundred and forty (240) calendar days of the effective date of this Order, in the event that waste placement operations are ongoing, the on-site operator(s) shall have completed Solid Waste Association of North America ("SWANA") Landfill Operations Basics training or an equivalent education program approved in advance by EPA. Such training must be maintained annually and must include:
 - a. The basics of landfill gas, stormwater, and leachate management and groundwater monitoring;
 - b. Equipment selection, waste inspections and prohibitions, security measures, cell construction, daily cover, and litter and dust management; and
 - c. The fundamentals of accident prevention.
4. Within two hundred and forty (240) days of the effective date of this Order, the management of the Landfill will be supervised by an individual who is:
 - a. Properly trained in the operation of landfills and the implementation of design and operational plans;
 - b. Properly trained in the operation of landfill gas collection and treatment systems (before such systems are operational at the landfill);
 - c. Properly trained in the implementation of closure and post-closure plans (before such implementation commences); and
 - d. A certified supervisor of landfill operations ("SOLO"). The SOLO certification shall be the SWANA Certified Manager of Landfill Operations or an equivalent course of study, independently-proctored exam, and certification program approved in advance by EPA. SOLO or equivalent, EPA approved certifications must be maintained.

Appendix 4: Cayey Eco-System Protection Plan

1. Within one hundred and eighty (180) calendar days of the effective date of this Order, or other date agreed to by EPA to allow time for appropriate consultations with appropriate agencies (*e.g.*, the U.S. Fish and Wildlife Service, and the Puerto Rico Department of Natural Resources), the Municipality shall submit to EPA for review and approval a Cayey Eco-System Protection Plan and implementation schedule, and shall timely make such revisions to this Plan as requested by EPA. The Cayey Eco-System Protection Plan is intended to establish operational and other measures to protect waterways and endangered and threatened species and their habitat. The Plan must include the following:

- a. The Stormwater Pollution Prevention Plan (“Stormwater Plan”) for the Landfill, as well as any related equipment maintenance, access roads, and operations areas. The Stormwater Plan shall incorporate (supplement and/or replace) the interim stormwater measures of Appendix 2: *Operational Requirements* and shall be revised and updated pursuant to the Closure and Post Closure provisions of this Order;
- b. Provisions for obtaining appropriate cover material (and any required permits) and properly applying and maintaining daily and intermediate cover so as to minimize impacts on sensitive eco-systems;
- c. Measures and management practices to prevent wash-outs and windblown trash;
- d. A survey of locally listed or federally listed species that may inhabit or otherwise be impacted by the Landfill, in order to comply with the federal Endangered Species Act (ESA) and local conservation laws; and
- e. Initial identification of indigenous plant life suitable for both wildlife habitat and the landfill closure requirements set forth in Appendix 7 of this Order.

2. Upon EPA approval, the Municipality shall implement the Cayey Eco-System Protection Plan pursuant to the approved implementation schedule.

3. Upon request by EPA, the Municipality shall submit written reports to EPA concerning implementation of the approved Protection Plan (supplemental to those required under *Appendix 11: Annual RCRA Reports*).

Appendix 5: Waste Extent Determination

1. On or before the Effective Date, the Municipality shall develop and implement a Solid Waste Delineation Plan ("Delineation Plan"). The Delineation Plan shall determine the full (*i.e.*, total, complete and comprehensive) extent of solid waste disposal or otherwise approved extent (in all past and current disposal areas). The Municipality shall use its best efforts to obtain past permitting information so that the Delineation Plan can include to the extent possible a clear delineation of the area that has been permitted by EQB for solid waste disposal and include any supporting documentation, such as the Municipality's EQB permit. Unless otherwise agreed to by EPA, the Delineation Plan shall be designed so that the waste extent determination will comprise two distinct areas:

- a. **Waste Area.** The Delineation Plan shall determine (including in areas where the waste extent is obscured by foliage, topography, or otherwise) the actual extent of bulk waste disposal along the entire perimeter of the Landfill, through the use of soil borings, trenching, noninvasive geophysical exploration (*e.g.*, ground-penetrating radar or electromagnetic conductivity surveys), or other EPA approved methods. The line delineating the actual extent is hereafter referred to as the "Revised Waste Disposal Perimeter." "Bulk Waste," as used in this Appendix, shall mean the contiguous or mostly contiguous solid waste disposed anywhere in the Landfill area to a depth of 6 inches or more. The Municipality shall physically delineate the entire Revised Waste Disposal Perimeter by installing a series/system of highly visible markers (superseding the existing toe of the slope delineation). The Municipality shall thereafter ensure that the landfill slope base and any engineering controls that may be present such as stormwater channels and leachate interception systems are accessible for inspection;
- b. **Peripheral Disposal Areas.** The Delineation Plan shall determine, to the extent practicable, considering accessibility and safety, and taking into account private property access considerations (governed by Section XIX. ON-SITE AND OFF-SITE ACCESS), the location of peripheral solid waste areas (if present), including but not limited to scrap metal, located within 50 meters beyond the Revised Waste Disposal Perimeter (or other, reasonable, alternative distance approved by EPA);

2. On or before the Effective Date by EPA, the Municipality shall submit, for review and approval, the Delineation Plan.

3. In implementing the Delineation Plan, the Municipality shall comply with the following requirements:

- a. Any scrapped vehicles, tanks, drums, and any other vessels potentially containing fluids shall be identified; and
- b. The location and characteristics of the peripheral disposal areas shall be documented and included in the facility records (and reported to EPA in the Solid Waste Delineation Report).

4. Within thirty (30) calendar days of the Effective Date, after completion of the work required under the Solid Waste Delineation Plan, the Municipality shall submit to EPA, for review and approval, a Solid Waste Delineation Report that shall document the results of the waste extent determination and shall include an implementation schedule for follow up work. The follow up work under the implementation schedule shall, unless otherwise approved by EPA, take no more than ninety (90) days to perform, and shall include the following:
- a. Establish with the best available field information the Revised Waste Disposal Perimeter, which shall be used for work conducted pursuant to this Order and for all relevant future construction, maintenance, and planning activities, including closure.
 - b. To the extent not previously achieved, permanent physical demarcation of the Revised Waste Disposal Perimeter through a system of substantial engineering constructs such as roadway, labeled concrete post systems, and/or perimeter fencing. Access to this new permanent perimeter for inspection and repairs of the landfill slope (via vehicular or pedestrian access) and any engineering constructs such as stormwater channels and leachate interception systems, shall be maintained.
 - c. Identification and removal, for appropriate management, scrapped vehicles, drums, tanks, and any other vessels potentially containing fluids, and any other waste material representing a significant, ongoing risk of releases, located beyond the Revised Waste Disposal Perimeter. The activities required herein under this subparagraph shall be implemented only upon EPA approval and, if so requested by EPA, under EPA's or an EPA representative's oversight. Except as noted above, the Municipality is not required by this Order to recover solid waste previously disposed beyond the Revised Waste Disposal Perimeter.
5. The Municipality shall incorporate the Revised Waste Disposal Perimeter into any required Landfill system designs and plan that it, or its representative prepares.

Appendix 6: Additional Landfill Requirements

- Toe of the Slope Delineation

1. Except as allowed under an approved Solid Waste Delineation Plan, Closure Plan, or Eco-System Protection Plan, the Municipality shall maintain the toe of the slope delineation established by EPA during the January 27, 2016 Inspection.⁶ Internal roads, stormwater and leachate collection and conveyance infrastructure are allowable beyond the toe of the slope delineation.

2. The municipality shall maintain, and improve as needed, substantial, visible demarcations of the boundaries so as to prevent any disposal of waste beyond the toe of the slope delineation.

3. The municipality shall inspect and maintain the areas beyond the toe of the slope delineation so as to prevent any waste encroachment. If such waste encroachment occurs, it shall be removed upon discovery.

- Intermediate Cover

4. Except as noted below, within ninety (90) calendar days of the Effective Date, the Municipality shall complete application of Intermediate Cover on all areas of the Landfill where waste is not being deposited on a regular basis. Any intermediate cover shall be maintained until a Final Cover is installed.

5. For purposes of this Order, Intermediate Cover is defined as a waste cover, more durable than daily cover, consisting of at least 12 inches of compacted soil (or other approved alternative cover material) with appropriate storm water erosion controls (*e.g.*, vegetated cover, temporary chutes, channels, berms, and/or swales).⁷ An Intermediate Cover is intended to further limit precipitation infiltration and to control disease vectors, fires, odors, blowing litter and scavengers until active disposal operations are resumed in the affected area or as a preliminary closure step prior to the installation of a final landfill cover.

6. Inactive portions of the existing landfill with substantial vegetative cover need not be disturbed if no waste is exposed and the Municipality determines that the existing, substantial vegetative cover offers equivalent or greater erosion controls and provides limits to precipitation infiltration, disease vectors, fires, odors, blowing litter, and scavengers.

7. The Municipality may request that EPA approve installation of an alternative form of Intermediate Cover that will provide equivalent protection.

- Groundwater Monitoring

⁶ During the January 27, 2016 Inspection, the Cayey Landfill Manager agreed to physically delineate the current extent of bulk waste disposal at the toe of the southern slope through a series of repositioned boulders and to not expand waste placement past that delineation.

⁷ Intermediate cover can include existing daily cover to the extent it is compacted soil and consistent with the requirements for intermediate cover.

8. Within one hundred and twenty (120) calendar days after the Effective Date of the Order, the Municipality shall submit to EPA either a Groundwater Monitoring Plan or a copy of the existing Groundwater Monitoring Plan for the Landfill. The Municipality shall also submit sufficient information concerning the implementation of such plan, including the most current and the last three years of groundwater monitoring analytical results, if available, to allow EPA to determine whether the plan and its implementation are sufficient to detect contamination, above background levels, in the uppermost aquifer. Furthermore:

- a. If EPA determines that the Groundwater Monitoring Plan and its implementation are insufficient to detect contamination, above background levels, in the uppermost aquifer, the Municipality shall, within ninety (90) days of being notified of such determination, submit to EPA, for review and approval, a revised Groundwater Monitoring Plan and implementation schedule that will be sufficient to detect such contamination;
- b. Upon notification of approval by EPA and, if appropriate, by EQB also, the Municipality shall implement the approved Groundwater Monitoring Plan; and
- c. Non-detection of landfill leachate constituents in routine groundwater monitoring analytical results will constitute evidence of an insufficient Groundwater Monitoring Plan and/or implementation of such Plan.

9. Upon implementation of the approved Groundwater Monitoring Plan, the Municipality shall provide to EPA, in the *Annual RCRA Report*, the preceding year's analytical results with supporting documents (such as quality assurance/quality control), and any other relevant information requested by EPA, on or before August 15 of each calendar year (see Appendix 11 of this Order).

10. If information obtained through groundwater monitoring, or otherwise, indicates that measures and procedures are necessary to conduct a corrective action assessment and/or a corrective action remedy, as those terms are described in 40 C.F.R. §§ 258.56, 258.57, and 258.58, the Municipality shall undertake such measures or procedures as approved by EPA and, if appropriate, by EQB also.

- Slope Remediation Plan

11. No later than one hundred and eighty (180) calendar days after the effective date of this Order, the Municipality shall submit a Slope Remediation Plan ("Slope Plan") to EPA for review and approval. At a minimum, the Slope Plan shall include: i) a methodology to study the slope geometry of all existing slopes on the Landfill; ii) a plan to grade all slopes to a maximum of 3:1 (*i.e.*, 3 horizontal to 1 vertical or gentler slopes) unless an equivalent or better slope stability can be engineered (*e.g.*, geo-grid reinforcement, retaining walls, buttressing); and iii) an implementation schedule.

12. The Municipality shall make all revisions to the Plan as directed by EPA.

13. The Municipality shall begin implementation of the Slope Plan within sixty (60) calendar days from EPA approval and comply with the timeframes specified with the approved plan,

unless otherwise approved by EPA.

14. Upon request by EPA, the Municipality shall submit written quarterly reports to EPA detailing its implementation of the Slope Plan until slope stabilization is completed. Documentation of implementation, including photographs, shall be included in the submittal.

Appendix 7: Closure and Post-Closure Plans Requirements

- Professional Engineer

1. The Municipality, to the extent it has not already done so, shall retain the services of a professional engineer, experienced in landfill design and licensed by the Commonwealth of Puerto Rico or permitted to practice engineering in Puerto Rico, to prepare final Closure and Post-Closure Plans and implementation schedules for the Landfill as set forth below.

- Ceasing Waste Disposal

2. The Municipality shall permanently cease receiving waste for disposal at the Landfill on or before January 1, 2018, unless a later date is approved in writing by EPA either directly or through the approved Closure Plan. Any extension of the January 1, 2018 cease waste receiving date will be contingent upon the Municipality meeting Off-Site Waste Disposal and Phased Closure provisions, below.

- Plan Preparation and Submittals

3. The Closure and Post-Closure Plans shall be submitted to EPA for review no later than July 1, 2017, unless EPA approves a later date in writing. EPA will notify the Municipality in writing of EPA's approval or non-approval of the Plans. In the event of non-approval of either the Closure or Post-Closure Plans, EPA will specify deficiencies in the Plan(s) in writing and outline necessary revisions or modifications. Thereafter, the Municipality shall within thirty (30) calendar days of receipt of EPA's notice of non-approval of the Plan(s), modify/revise the Plan(s) and resubmit the Plan(s) to EPA for final review. This process shall be repeated in the event of EPA's non-approval of the resubmitted Plan(s), but if the repeated process does not produce acceptable revised Plan(s), EPA may in its discretion determine that it is necessary to invoke the procedures in the Final Notice of Deficiencies section of this Order. Throughout the process, EPA and the Municipality shall confer as necessary and appropriate in order to clarify and resolve any outstanding issues. EPA will notify the Municipality in writing of its final approval or non-approval of each of the Closure and Post-Closure Plans.

4. The Municipality shall submit the Closure and Post-Closure Plans to EQB for its review and comments prior to or simultaneously with their submittal to EPA and shall diligently pursue any required approvals from EQB for such Plans.

5. The Closure Plan implementation schedule shall provide for the completion of final closure of the Landfill by January 1, 2019, unless a later date is agreed upon in writing by EPA.

- Landfill Closure and Post Closure Plan Elements

6. The Landfill Closure and Post Closure Plans shall, at a minimum meet the closure and post-closure criteria set forth at 40 C.F.R. §§ 258.60 and 258.61 (except as otherwise allowed or required below) and shall:

- a. Incorporate a Stormwater Control Plan for the Landfill, equipment maintenance, and other operations areas of the Facility that will comply with or include the following:
 - (1) Meet the criteria set forth at 40 C.F.R. § 258.26 (run-on/run-off control systems), which requires owners and operators of municipal solid waste landfill units to design, construct and maintain a run-on control system to prevent storm water run-on flow onto the Landfill during the peak discharge from a 25-year storm; and
 - (2) Meet the criteria set forth at 40 C.F.R. § 258.26, which requires owners and operators of municipal solid waste landfill units to design, construct and maintain a run-off control system of the landfill to collect and control at least the water volume resulting from a 24-hour, 25-year storm;
- b. Incorporate the Revised Waste Disposal Perimeter;
- c. Be consistent with the Cayey Eco-System Protection Plan;
- d. Incorporate an interception/collection system to limit leachate migration from the areas of the existing, unlined landfill. Such a system would consist, in part, of a leachate interception/collection trench, conveyance line, and collection sump (or equivalent system approved by EPA such as slurry walls combined with groundwater pumping). Any leachate interception/collection system shall account for and beneficially use the site's relatively shallow depth to bedrock to limit pass-under leachate flow (*i.e.*, connect hydraulically to relatively impermeable subsurface layers).⁸
- e. Provide for the sustainable management and disposal of leachate, leachate seepage and leachate seepage contaminated storm water;⁹
- f. Incorporate a closure cap design that provides substantial reductions in rainwater infiltration into the waste mass and in leachate generation.¹⁰ Proposed closure cap designs may include, with EPA approval, evapotranspirative caps and other, appropriate, alternative designs;¹¹ and
- g. The Closure and Post Closure Plans shall incorporate the design and installation of the following systems, when applicable:

⁸ See: *Cayey Landfill Progress Report*, Puerto Rico Solid Waste Authority, Vincenty, Heres, and Lauria, and Malcolm Pirnie, Inc., November 2004. Also: *Appendix A – Progress Report Conceptual Site Plans: Cayey Landfill Recommended Environmental Improvements, PH2-Cayey-03*.

⁹ Any leachate management and disposal plan must be economically and environmental sustainable. EPA does not currently believe that on-site tank/pond storage and offsite disposal via tanker truck transport to a wastewater treatment plant are economically sustainable.

¹⁰ "Substantial reductions" must be documented either through *in situ* field studies, the *Hydrologic Evaluation of Landfill Performance* (HELP) model, UNSATH HYDRUS or any other method approved by EPA.

¹¹ See: *Puerto Rico Municipal Solid Waste Landfill Evapotranspiration Cover Design Guidance*, U.S. Environmental Protection Agency National Risk Management Research Laboratory, Cincinnati, Ohio, DRAFT – August 2010.

- (1) A landfill gas collection and control system for reducing methane and NMOC emissions from the Landfill, in accordance with the Landfill Gas Control provisions of this Order (see Appendix 8: *Landfill Gas Control*);
- (2) A landfill gas to energy system, if deemed viable by the Municipality (see Appendix 8: *Landfill Gas Control*); and
- (3) A photovoltaic power generation system, if deemed viable by the Municipality. The Municipality agrees to, and upon EPA request, consult with and supply status reports to EPA on this matter. Upon request, and as EPA resources allow, EPA will provide technical assistance to the Municipality with planning any photovoltaic power generation system. Final determination on the technical and economic viability of the photovoltaic power generation system, after consultation with EPA, will be made by the Municipality.

7. The Closure and Post Closure Plans shall meet the following landfill slope stabilization requirements:

- a. Limit all landfill slopes to 3:1 or shallower (unless steeper slopes are approved by EPA);
 - b. Conduct a stability assessment in order to avoid or prevent a destabilizing event (*e.g.*, earthquake, landslide, hurricane) from impairing the structural integrity of the landfill slopes (and other component systems);
 - c. The landfill stability assessment shall be prepared by a licensed, professional geotechnical engineer legally able to practice in the Commonwealth of Puerto Rico;
 - d. Such a stability assessment must include:
 - (1) An evaluation of subsurface conditions;
 - (2) An analysis of slope stability; and
 - (3) An examination of related design needs;¹²
 - e. Slopes shall be designed or stabilized to have a minimum 1.5 safety factor on critical cross-sections against failure and yield accelerations for steady state/static conditions and a minimum 1.15 safety factor for seismic conditions; and
 - f. Slope stability monitoring, such as installed inclinometers and observation wells, shall be incorporated in any slope steeper than 3:1.
- Off-Site Waste Disposal and Phased Closure

¹² See: <http://www.epa.gov/osw/nonhaz/municipal/landfill/techman/subpartb.pdf> EPA Solid Waste Disposal Facility Criteria, EPA530-R-93-017. Subpart B: Location Criteria, for a more detailed examination of slope stability related design needs.

8. In the event that an extension of the January 1, 2018 cease waste receiving date is to be requested by the Municipality, then the Closure Plan shall incorporate the following off-site disposal and phased closure provisions:

- a. The Municipality shall, in preparation for closure, initiate off-site disposal of part of the Municipality's solid waste according to the following schedule:
 - (1) On or before October 1, 2017, the Municipality shall dispose of least one twenty (20) cubic yard compactor truck load per week, or its equivalent, in another landfill facility.
 - (2) On or before April 1, 2018, the Municipality shall increase the rate of off-site disposal of part of the Municipality's solid waste to at least four twenty (20) cubic yard compactor truck loads per week, or its equivalent.
 - (3) On or before January 1, 2019, and thereafter, unless a later date is approved in writing by EPA, the Municipality shall manage and recycle or otherwise dispose of off-site at least 25%, by weight, of the Municipality's solid waste.
 - (4) On or before January 1, 2020, and thereafter, unless a later date is approved in writing by EPA, the Municipality shall manage and recycle or otherwise dispose of off-site at least 50%, by weight, of the Municipality's solid waste.
 - (5) If at any point EPA requests this information, the Municipality shall provide EPA with its choice or choices of off-site landfill and recycling facilities for review by EPA.
- b. The Closure Plan shall provide for the phased closure of the Landfill as described herein.
 - (1) On or before January 1, 2018, the Municipality shall cease disposing waste within the northern (upper) one third of the surface area of the Landfill and, within ninety (90) days of such cessation, place an intermediate cover on that portion.
 - (2) On or before January 1, 2019, the Municipality shall
 - (a) Cease disposing waste within a second area that entails approximately one third of the surface area of the Landfill and, within ninety (90) days of such cessation, place an intermediate cover on that portion; and
 - (b) Complete installation of final cover on the northern (upper) one third portion of the Landfill.
 - (3) On or before January 1, 2020, the Municipality shall

- (a) Cease disposing waste within the final portion of the surface area of the Landfill and, within ninety (90) days of such cessation, place an intermediate cover on that portion; and
 - (b) Complete installation of final cover on the second portion of the Landfill.
- (4) On or before January 1, 2021, the Municipality shall complete installation of final cover on the final portion of the Landfill.
 - (5) EPA will consider Municipality requests for extensions to the deadline for the cessation of waste disposal within the final portion and for the complete installation of final cover on the final portion of the Landfill dates.

- Closure and Post Closure Plan Implementation

- 9. Within ninety (90) days of EPA approval of any Closure Plan or revised Closure Plan, the Municipality shall submit to EPA a certification that the Landfill is being operated in accordance with the approved Closure Plan. Such certification shall thereafter be submitted to EPA on an annual basis, as part of the *Annual RCRA Report* (see Appendix 11), as long as the Landfill continues to operate.
- 10. The Municipality shall implement the Closure Plan, in accordance with the approved provisions and the timetables in this Order and the implementation schedule in the approved Closure Plan.
- 11. The Municipality shall begin closure work in accordance with the implementation schedule in the approved Closure Plan, or within twenty (20) calendar days of any required EQB approval, whichever comes later.
- 12. The Municipality shall notify EPA in writing within thirty (30) calendar days after completion of the Closure Plan work, and shall certify that the work has been performed in accordance with the provisions of the approved Closure Plan, its associated plans and specifications, and any permits or other forms of prior approval the Municipality obtained in connection with the Closure work. The notification shall be signed by a professional engineer. A senior official of the Municipality shall also certify that the work has been completed. After the closure of the Landfill, the Municipality shall have a notation made in the Land Register Property Registry indicating that the Landfill property was used as a "Sistemas de Relleno Sanitario" (municipal solid waste landfill). The Municipality must then notify EPA and EQB that the notation has been recorded and that a copy thereof has been included in the record of operations.
- 13. The Municipality shall carry out the provisions of the Post-Closure Plan. If monitoring discloses that repairs or alterations must be made to the landfill cap, the methane monitoring system, the gas control system, the groundwater monitoring system, or any other component, the Municipality shall timely make such repairs.

14. The Municipality annually shall submit a report to EPA that describes post-closure activities during the preceding year as specified in *Appendix 11: Annual RCRA Reports*.

Appendix 8: Landfill Gas Control

1. The Municipality shall meet the following requirements regarding a Gas Collection and Control System ("GCCS"):

- a. On or before March 1, 2017, Respondents shall, to the extent not already performed, submit to EPA a design capacity report for the current calendar year which meets the substantive requirements of the New Source Performance Standards ("NSPS") for municipal solid waste landfills, 40 C.F.R. Part 60, Subpart WWW ("NSPS Subpart WWW") and/or the Puerto Rico Regulations for the Control of Atmospheric Pollution ("PRRCAP"), Part VII, Rule 701 et seq. ("Puerto Rico 111(d) Plan"), collectively hereinafter called the Landfill Regulations.
- b. The report shall be sent to:
Robert Buettner, Branch Chief
Air Compliance Branch
290 Broadway, 21st Floor
NY, NY 10007-1866

2. If a GCCS is determined not to be required at the Landfill under the Landfill Regulations, the Municipality shall plan, design, install, and operate a limited landfill gas collection and control system ("LFG System") to provide for significant reductions in methane and NMOC emissions, as follows:

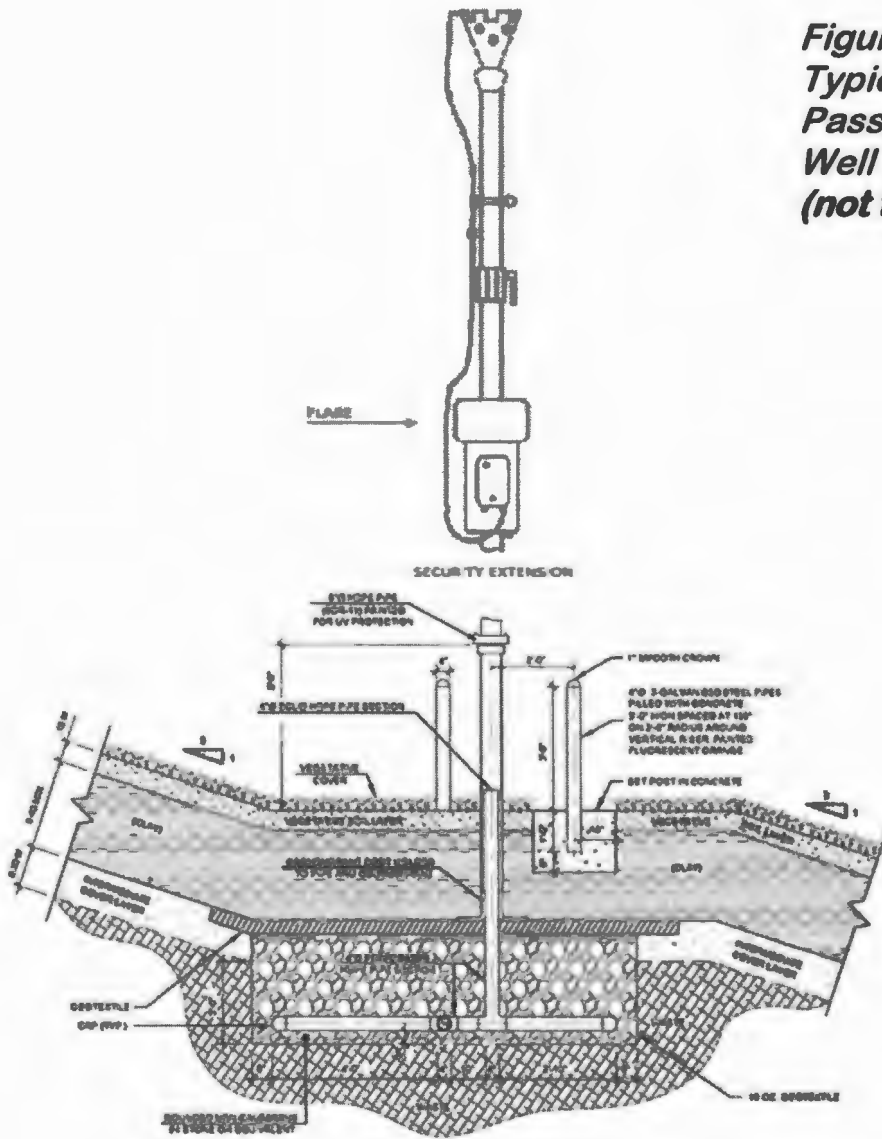
- a. The LFG System shall consist of a series of passive gas wells and, where appropriate, flares installed as part of the closure cap;¹³
- b. The LFG System shall meet or exceed flare operation standards specified at 40 C.F.R. § 60.18 (except for 40 C.F.R. § 60.18 (f)(2));
- c. LFG System flares shall be maintained and operated for at least five (5) years;
- d. Passive gas wells shall be spaced at least one per acre throughout the landfill;
- e. Flares shall be installed on at least 50% of the passive gas wells in a pattern designed to maximize LFG capture and treatment;
- f. Protection of the LFG System shall be incorporated into the Landfill security program or any Enhanced Security Plan;
- g. Gas wells and flares shall be designed and constructed consistent with Figure 5, below, or other design acceptable to EPA; and
- h. The Municipality shall submit plans for the LFG System to EPA for review and approval. These plans are to be part of the Closure and Post-closure Plans as specified in Appendix 7: *Closure and Post-closure Plan Requirements*. EPA's review,

¹³An example of an acceptable flare system would be suitable solar-powered, continuous-ignition, passive flares.

comments on, and, if acceptable, approval of a proposed LFG System will be done as part of the general review process for submitted Closure and Post-Closure Plans.

3. To the extent technically and economically viable, the Municipality agrees to recover gas from the Landfill and either market it for energy recovery or directly use it to generate electrical power for market. Any energy recovery must be coordinated with the GCCS or other gas system to be installed by the Municipality at the Landfill. The Municipality shall maintain compliance with applicable regulations governing the GCCS in connection with any energy recovery system. The Municipality agrees to periodically, and upon EPA request, consult with and supply status reports to EPA on this matter. Upon request, and as EPA resources allow, EPA may provide technical assistance to the Municipality with planning landfill gas to energy systems. Final determination on the technical and economic viability of landfill gas to energy systems (i.e., the recovery, marketing and use of landfill gas), after due consultation with EPA, will be made by Respondent in its sole discretion.

**Figure 5:
Typical
Passive Gas
Well
(not to scale)**



Appendix 9: Recycling Program

- Recycling and Compostable Material Management Program Development

1. Within one hundred and eighty (180) days of the Effective Date of the Order, the Municipality shall submit a plan for a Recycling and Compostable Material Management Program (“Recycling Plan”) to EPA for its review and approval. The Recycling Plan shall be consistent with all Commonwealth of Puerto Rico regulations and/or requirements and shall incorporate and/or provide for the use of any relevant existing or planned recycling infrastructure (*e.g.*, transfer stations, materials recovery facilities, etc.) operated by or on behalf of Cayey. EPA will review the Recycling Plan, and provide its initial comments in writing to the Municipality. Following EPA’s initial comment’s on the Recycling Plan, within one hundred and twenty (120) days of its receipt of EPA’s comments, or by such other later deadline as is approved by EPA, the Municipality shall:

- a. Revise the Recycling Plan to address EPA’s comments;
- b. Seek public comment on the revised Recycling Plan; and
- c. Resubmit to EPA the Recycling Plan incorporating any additional revisions addressing public comment.

EPA and the Municipality will consult as necessary, and, after any further revisions are incorporated into the Recycling Plan, EPA will notify the Municipality in writing of its approval of the Recycling Plan. The Municipality shall carry out the Recycling Plan in accordance with its implementation schedules.

2. The Recycling Plan shall include all the definitions and requirements that are set forth below, and shall include an implementation schedule covering each component of the Program. The Recycling Plan shall have the goal of eliminating the Municipality of Cayey’s disposal of “Recyclable Material,” “Ash” (except in a lined, permitted cell compliant with 40 C.F.R Part 258 or other applicable regulations), “Scrap Tires,” “Auto Shredder Residue” (“ASR”), “White Goods,” and “Compostable Material,” as those terms are defined in *Definitions*, below, at the municipal solid waste landfill located in the Municipality or at any other solid waste landfill or incinerator. The Recycling Plan shall also have the goal of eliminating these materials in bulk loads of waste brought to the Landfill by any other customers.

3. The Municipality shall designate and retain a Qualified Municipal Recycling Manager who shall have the responsibility of implementing the approved Recycling Plan and submitting all required reports. This municipal officer must maintain the *Manager of Recycling Systems* (or equivalent) certification or must acquire it according to a time schedule approved by EPA. This certification requirement is subject to the reasonable availability of Spanish language training in Puerto Rico. The Municipality may substitute a combination of relevant professional experience and continuing training for the certification requirements for employees or officers employed by the Municipality as of the effective date of this Order. EPA recognizes that certain Municipal employees may have been completed the initial training requirement prior to the effective date of this Order.

4. The Recycling Plan shall include the following:
- a. An educational and community outreach program, including community workshops, to educate the community regarding recycling and composting, their benefits, and guidelines for household and/or commercial implementation. Outreach must be extended to households, schools, municipal and other government facilities, small businesses, hospital and clinics, farms, and other establishments within the Municipality that generate solid waste. The Recycling Plan must provide for outreach to be conducted on at least an annual basis.
 - b. The development and implementation of a Collection Plan so that Recyclable Material, bulk Ash, Scrap Tires, ASR, White Goods, Agricultural Waste and Yard Waste¹⁴ generated in locations throughout the Municipality are placed in bins or other suitable receptacles for collection, on a regularly scheduled basis, in order to be transported to approved/permitted locations for proper disposition. The Municipality may collect and transport these materials itself and/or enter into agreements with licensed haulers to do so.
 - c. The Recycling Plan shall cover residences, apartment buildings, schools, hospitals, small businesses, including “hotels,” and governmental establishments (hereafter, “covered entities”), and shall contain provisions to ensure that collection bins, or other suitable receptacles, are utilized by the covered entities for the curbside collection of Recyclable Material and Compostable Material.
 - d. The Recycling Plan shall provide for curbside collection or EPA approved equivalent means of collection for residences (including apartment buildings), small businesses, schools, hospitals, and governmental establishments.
 - e. A program to recycle Recyclable Material, Scrap Tires, ASR and White Goods collected in the Municipality, or agreements with a MRF(s), or other facility(ies), to process these collected materials. All facilities processing these materials must have any permits/authorizations required by the Commonwealth for recycling.
 - f. A pilot program for composting material. The pilot Composting Program shall increase the use of Compostable Materials to create compost in residences, government and/or businesses; and/or necessitate the bulk collection of Compostable Materials for composting by the Municipality or by other entities that have entered into an agreement with the Municipality to collect and/or compost the Compostable Material pursuant to the program. The pilot Composting Program must include a plan and schedule for addressing priorities, benchmarks, logistics,

¹⁴ Agricultural and Yard Wastes are Compostable Materials subject to the pilot program for composting materials referenced in Section 4.f. below. However, because Agricultural and Yard Wastes can be collected immediately, they may be collected and managed under either the: Recycling Plan as referenced in Section 4.b.; or the pilot and approved composting programs referenced in Sections 4.f., 17. & 18. In no instance, however, shall agricultural and/or yard waste be discarded in the Landfill without EPA approval.

priority uses for composted material, areas of potential improvement, and/or expansion of the pilot composting program.

- g. The development and implementation of disposal restrictions so that Bulk Disposal of Recyclable Material, bulk Ash (except in a lined, permitted cell compliant with 40 C.F.R Part 258 or other applicable regulations), and bulk Compostable Materials, and the disposal of Scrap Tires, ASR, and White Goods do not occur at the Landfill. The program shall include routine, documented inspections of loads coming into the Landfill, and shall also include the prohibition by local ordinance or regulation of the disposal of these materials in the Landfill if the Municipality determines such an ordinance or regulation to be necessary to achieve compliance with the disposal restrictions.
- h. The identification of a specific area at the Landfill to temporarily store, pending the proper disposition of, any Recyclable Material, Ash, Compostable Materials Scrap Tires, ASR, and/or White Goods detected in, and removed from, incoming loads of waste (except as otherwise allowed within this Order). (This area shall only be used when the truck that delivered the material to the Landfill is not able to transport the material from the Landfill to another destination for proper handling.) The Plan must further ensure that these materials are removed from the temporary location and sent to designated facilities to be recycled and/or composted within thirty (30) days of receipt (or later for white goods and yard waste).
- i. A waste characterization plan or update of an existing waste characterization plan.
- j. A municipal survey measuring Recycling participation rates.

5. When any compliance obligation under the Recycling Plan requires the Municipality to obtain a Commonwealth or local permit or approval, the Municipality shall submit timely and complete applications and take all other actions necessary to obtain such permits or approvals. Nothing in the Recycling Plan shall be interpreted to relieve the Municipality of any requirements imposed by Commonwealth law governing recycling or composting.

6. The Municipality may apply for federal or Commonwealth grants in connection with the implementation of the Recycling Plan. However, the Municipality shall be obligated to implement the Recycling Plan regardless of whether it is successful in obtaining any such grants.

7. Upon request and as EPA resources allow, EPA will provide technical assistance to the Municipality in the development of recycling and composting strategies, including identification of potential funding sources.

- Enforcement Program

8. The Municipality shall develop a suitable enforcement program to address non-compliance with the Municipality's approved Recycling Plan, including such actions or procedures as it may determine are suitable to help achieve compliance with the Recycling Plan.

- Recycling Plan Implementation

9. Within one hundred and twenty (120) days after EPA approval of the Recycling Plan or by such other date as is approved by EPA, the Municipality shall start the implementation of the Recycling Plan.

10. The Municipality shall implement its inspection program of incoming loads at the Landfill designed to keep Scrap Tires, ASR, White Goods, Bulk Recyclable Material, Bulk Ash, and Bulk Compostable Materials from being disposed of at the Landfill (except as otherwise allowed within this Order).

11. Within one hundred and twenty (120) days of EPA's approval of the Recycling Plan, and on an annual basis thereafter, the Municipality shall implement its educational and outreach program concerning recycling and composting.

- Recycling Plan Reports

12. The Municipality shall submit biannual reports to EPA, on or before August 15 and February 15 of each year, summarizing the efforts undertaken during the prior six months to implement the requirements of the Recycling Plan. The first such report shall be submitted on or before February 15, 2017. The Municipality may submit supplemental reports to EPA to inform EPA of any information concerning market conditions, Commonwealth regulations, or other factors that may affect the Recycling Plan.

13. The biannual reports must include, without limitation, the following information for the prior six month period:

- a. The number of households serviced with Curbside Collection;
- b. The number and type of other locations serviced with Curbside Collection;
- c. The tons of waste material generated in the Municipality that were recycled under the Recycling Plan, including a breakdown of the amount of Recyclable and Compostable Materials obtained using Curbside Collection; The tons of waste material generated in the Municipality that were sent to the Landfill or other solid waste landfills or incinerators for disposal;
- d. The Recycling Rate of the Municipality, including the results of a community survey to measure Recycling participation rates;
- e. The material quality, quantity, and percentage composition of each type of Recyclable and Compostable Material collected under the Recycling Plan;
- f. To the extent the Municipality contracts with MRFs, the amount charged by MRFs to take Recycled Materials; and
- g. The status of the Pilot Composting Program (see *Improvement/Expansion of the Pilot Composting Program*, below).

14. The August 15 biannual reports must include, without limitation, the following additional information for the prior twelve month period:

- a. A municipal waste characterization, with respect to Recyclable Material and Compostable Material to determine material quality, quantity, and percentage composition in order to assist in identifying potential markets; and
- b. An expanded Composting Report (see *Improvement/Expansion of the Pilot Composting Program*, below).

15. In any of the biannual or supplemental reports, the Municipality may submit to EPA, for review and approval, proposed changes to the Recycling Plan based on the information obtained during operation of the Recycling Plan prior to the submission of the report, in order to improve the efficiency of the recovery efforts or to vary the quantity, quality, and diversity of Recyclable Material collected. Such reports may include a request to temporarily exempt certain materials from the list of Recyclable Material based on market conditions.

16. After three years of implementing an approved Recycling Plan, the Municipality may submit to EPA a written request for relief from the mandatory requirements of Appendix 9: *Recycling Program*. Such a request shall not be unreasonably denied by EPA if the Municipality has made good faith efforts to fully implement the Recycling Plan.

- Improvement/Expansion of the Pilot Composting Program

17. In the August 15, 2017, Biannual Report, and annually thereafter, for the duration of the Recycling Plan, the Municipality shall submit to EPA:

- a. A report describing the results of its pilot Composting Program (as required in ¶13.g. and 14.b., above); and
- b. For EPA's review and approval, a plan addressing areas of potential improvement and/or any expansion of the pilot Composting Program. Consideration of additional waste streams or locations must be made based on local conditions, success of any current program, the rapidly expanding experience of other programs throughout Puerto Rico and the rest of the U.S., and the breadth of research being conducted regarding municipal composting.

18. The Municipality shall begin implementation of a revised municipal composting program within sixty (60) days of EPA's approval of the revised program.

- Definitions

19. The following definitions apply to recycling and composting conducted under this Order. To the extent, however, applicable regulations promulgated by the Commonwealth define these terms to include a wider range of materials, those materials are hereby incorporated by reference into the definitions below.

- a. "Agricultural Waste" shall mean plant waste generated by residential sources, commercial sources and/or from agricultural activities including, but not limited to, bean, nut and grain hulls and chaff, sugar cane bagasse, orchard pruning, and coffee bean hulls and ground.

- b. "Ash" shall mean the residue matter that remains after burning and includes, but is not limited to, such residues produced by manufacturing, energy production, burning coal and other commercial processes.
- c. "Auto Shredder Residue" or "ASR" shall mean the residues, after removal of metals, from the shredding of automobiles and major household appliances. ASR consists of glass, fiber, rubber, automobile liquids, plastics, residual metal (nonferrous), and dirt.
- d. "Bulk" shall mean an agglomeration of waste consisting of predominantly the same material. Bulk disposal does not mean the disposal of a given waste material within a mixed, residential wastestream.¹⁵
- e. "Compostable Material" shall mean Agricultural Waste, Yard Waste, food waste, and other biodegradable material not otherwise included in the definition of Recyclable Material.
- f. "Composting" shall mean the controlled biological aerobic decomposition of organic material that is sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth in that it has the unique ability to improve the chemical, physical, and biological characteristics of soils or growing media.
- g. "Curbside Collection" shall mean regular collection of Recyclable and/or Compostable Material directly from households and other establishments.
- h. "Hotel" shall mean all hotels, motels, bed and breakfast inns, casino hotels, and all other traveler accommodations (*e.g.*, NAICS Codes 721110, 721191, 721120, and 721199).
- i. "Material Recovery Facility" or "MRF" shall mean a permitted facility where Recyclable Material is sorted into specific categories and processed, or transported to processors, for re-manufacturing (*i.e.*, making the recycled material into new products).
- j. "Qualified Municipal Recycling Manager" shall mean one or more individuals who are certified as a *Manager of Recycling Systems* by the Solid Waste Association of North America ("SWANA") or after an equivalent course of study, independently-proctored exam, and certification program.
- k. "Recyclable Material" shall mean glass, paper, cardboard, metals, plastics, electronics, batteries, and other material that may be identified by EPA (after discussion with the Municipality) as economically recyclable in Puerto Rico.
- l. "Recycling" shall mean the separation, collection, processing, and sale or distribution of Recyclable Material as a precursor to making the recycled material into new products.

¹⁵ Examples of bulk disposal of a given waste material include: (1) a clear, plastic bag containing mixed plastic; (2) 55-gallon drums of incinerator ash; and (3) a pickup truck bed of yard waste.

- m. "Recycling Rate" shall be 100% multiplied by the tons of waste generated in the Municipality that were recycled divided by the total tons of waste material generated in the Municipality.
- n. "Scrap Tires" shall mean motor vehicle, truck or heavy equipment tires that are discarded.
- o. "Yard Waste" shall mean vegetation waste, such as grass, bushes, shrubs, trees and associated clippings, generated by residential and/or commercial sources through the maintenance of private or public lands.
- p. "White Goods" shall mean refrigerators, stoves, washers, dryers, sinks or other such objects that are discarded.

Appendix 10: Zika Virus & Mosquito Control

- **Mosquito Control at Landfills**

1. As of the Effective Date of this Order, the Municipality shall, in response to the increased risk to human health presented by the *Aedes* species mosquito and the Zika virus, provide EPA and EQB with a Disease Vector Control Plan, or an updated version of an existing Plan, for the landfill facility property, including integrated pest management (IPM) procedures to remove mosquito habitats and prevent mosquito exposures and the provisions specified in the *Disease Vector Control Plan* section below.¹⁶
2. The Disease Vector Control Plan must, at a minimum, address and include measures, as set forth below, to reduce the potential for mosquito breeding in all standing waters on the property, including those impacted by stormwater run on and run off, leachate seepage, surface ponding on and around the landfill, access and egress roadway drainage, sedimentation ponds, conveyance channels and ditches, and exposed waste rainwater catchment issues (*e.g.*, scrap tires). Implementation of the plan must commence as of the Effective Date of this Order.
3. The Disease Vector Control Plan must include the posting of signs in locations at the landfill frequented by employees, contractors, and visitors, which provide mosquito control and bite protection information. Under the Federal regulations for solid waste landfills, 40 C.F.R. Part 258, owners or operators of all municipal solid waste landfill (MSWLF) units must prevent or control on-site populations of disease vectors (*e.g.*, mosquitoes) using techniques appropriate for the protection of human health and the environment. The development, implementation and/or improvement of existing facility disease vector control plans will assist landfill owners and operators in controlling *Aedes* species (*A. aegypti* and *A. albopictus*) mosquitoes. The best mosquito control program is an integrated program that includes the elimination of breeding areas, routine larviciding in those breeding areas that cannot be eliminated, and adulticiding only when necessary. Traditional spraying or fogging of pesticides, such as Malathion, may, on occasion, represent a direct risk to human and environmental health.¹⁷

***Aedes* Mosquito Facts**

- *Aedes* species prefer to bite people, and live indoors and outdoors near people. They are aggressive daytime biters. They can also bite at night.
- These mosquitoes use natural and artificial water-holding containers (*e.g.*, plastic covers, bowls, used tires, bottle caps) to lay their eggs. After hatching, larvae grow and develop into pupae and subsequently into a terrestrial, flying adult mosquito.
- About three days after feeding on blood, these mosquitoes lay their eggs over a period of several days. These eggs are resistant to desiccation and can survive for periods of six or more months. When rain floods the eggs with water, the larvae hatch. Generally

¹⁶ EQB contact: Nilda del Mar Sánchez Santiago, Director, Land Pollution Control, 787-767-8181, ext. 3574, or NildaSanchez@jca.pr.gov

¹⁷ <http://www.epa.gov/mosquitocontrol/controlling-adult-mosquitoes>

larvae feed upon small aquatic organisms, algae and particles of plant and animal material in water-filled containers. The entire immature or aquatic cycle (*i.e.*, from egg to larva to pupa to adult) can occur in as little as 7-8 days. The life span for adult mosquitoes is around three weeks.

Disease Vector Control Plan

The Disease Vector Control Plan must, at a minimum, address the potential for mosquito breeding in all standing waters on the property, including those impacted by stormwater run on and run off, leachate seepage, surface ponding on and around the landfill, access and egress roadway drainage, sedimentation ponds, conveyance channels and ditches, and exposed waste rainwater catchment issues (*e.g.*, scrap tires). The Plan must include each of the following elements:

1. **Daily Cover.** As required in Appendix 2: *Operational Requirements*, owners or operators must cover disposed solid waste with 6 inches of earthen material, or an approved alternative daily cover, at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging. Frequent applications of cover will also serve to limit on-site bird, rodent, dog, and other potential mosquito-borne disease vectors and mosquito food (blood) supplies. Daily cover must be graded and compacted to minimize ponding, a source of standing/stagnant water. Frequent placement of soil cover will also eliminate exposed solid waste, such as discarded containers, that can serve as mosquito breeding grounds.
2. **Reduction of Standing/Stagnant Water.** Stormwater and leachate drainage chutes and channels should be regularly inspected and maintained to insure proper grading and surfacing as to prevent local ponding. Unneeded drainage ditches should be filled in. Exposed tires, scrap metal piles, and scrapped vehicles (junkers) should be reduced or eliminated as both may retain significant amounts of rainwater (consistent with requirements established within this Order).¹⁸ Covering with tarps, storing indoors, or shredding are options as is direct application of larvicides and aduticides (pesticides). Stormwater detention ponds should be engineered or reengineered to fully drain and remain dry after storm events and a larvicide program may be needed.
3. **Worker Protection.** Landfill workers (and contractors and visitors) may be exposed to mosquito vector-borne diseases. The Disease Vector Control Plan must include the posting of signs in locations at the landfill frequented by employees, contractors, and visitors, which provide mosquito control and bite protection information (see *Mosquito Control & Protection Information for Posting*, below). Owners or operators must supply workers with mosquito repellents that should be consistent with the U.S. Center for Disease Control and Prevention, Mosquito Bite Prevention guidelines (also see *Mosquito Control & Protection Information for Posting*, below).
4. **Larvicide Program.** There are areas at most solid waste landfills, such as stormwater detention ponds, where mosquitoes breed that cannot or should not be eliminated or

¹⁸ Please contact the EPA Project Coordinator regarding any potential conflict with or other issue regarding Order Stormwater Plan requirements.

altered. Mosquitoes breeding in permanent water areas or temporary floodwater areas can be controlled by using biological larvicides. Larvicides can effectively control mosquito larvae when applied as needed without killing the natural predators of mosquitoes. Permanent water areas generally harbor many species of fish and insects that feed on mosquito larvae. Liquid larvicide products are applied directly to water using backpack sprayers and truck or aircraft-mounted sprayers. Tablet, pellet, granular, and briquette formulations of larvicides are also applied by mosquito controllers to breeding areas (See Reference 2, *EPA: Larvicides for Mosquito Control*). The Disease Vector Control Plan must include a Larvicide Program. Larvicides for landfill consideration include the following:

- a. Bacterial Larvicides. Mosquito larvae that are exposed to the *Bacillus* species have trouble digesting food they eat after the exposure. The larvae then die of starvation. Bacterial larvicides routinely employed for mosquito control include:
 - i. *Bacillus thuringiensis israelensis* (Bti) is a naturally occurring soil bacterium registered for control of mosquito larvae. Bti was first registered by EPA as an insecticide in 1983. There are 25 *Bti* products registered for use in the United States. Aquabac, Teknar, Vectobac, and LarvX are examples of common trade names for the mosquito control products.
 - ii. *Bacillus sphaericus* (Bs) is a naturally occurring bacterium that is found throughout the world. Bs was initially registered by EPA in 1991 for use against various kinds of mosquito larvae. VectoLex CG and WDG are registered *B. sphaericus* products, and are effective for approximately one to four weeks after application.
- b. Water Surface Films.
 - i. Monomolecular films are chemicals that spread a thin film on the surface of the water that makes it difficult for mosquito larvae, pupae and emerging adults to attach to the water's surface, causing them to drown. Films may remain active for typically 10-14 days on standing water, and have been used in the United States in floodwaters, brackish waters, and ponds. They may be used along with other mosquito control measures. They are also known under the trade names Arosurf MSF and Agnique MMF.
 - ii. Oils, like films, are used to form a coating on top of water to drown larvae, pupae and emerging adult mosquitoes. They are specially derived from petroleum distillates and have been used for many years in the U.S. to kill aphids on crops and orchard trees, and to control mosquitoes. They may be used along with other mosquito control measures. Trade names for oils used in mosquito control are Bonide, BVA2, and Golden Bear-1111 (GB-1111).

Note, under Commonwealth regulations, owners and operators need to keep an onsite record of all pesticide applications (larvicides, surface films, adulticides, etc.) at the landfill for a period of at least two years. Please contact the Puerto Rico Department of Agriculture for more information on larvicide vendors and larvicide application requirements.¹⁹ You may also wish to contact the Puerto Rico Pest Control Association.²⁰

Other Mosquito Disease Vector Controls

1. Mosquito Surveillance Program. In addition to the above four required Disease Vector Control Plan elements, EPA recommends that landfill owners and operators consider incorporating a Mosquito Surveillance Program. Mosquito surveillance is a key component of a complete Disease Vector Control Plan. The goal of mosquito-based surveillance is to quantify human risk by determining local vector presence and abundance. Reference 1, below, addresses, among other elements, the detailed development of Mosquito Surveillance Program.
2. Adulticides. Pesticide targeting the mosquito adult stage are employed to combat an outbreak of mosquito-borne disease or a very heavy, nuisance infestation of mosquitoes. Adulticide may also be useful where larvicide cannot be effectively applied, such as unstacked tire piles. The development of such a program is beyond the scope of this Appendix. Please contact the Puerto Rico Department of Agriculture for more information on adulticide programs.¹⁹

In addition, the Puerto Rico Department of Natural and Environmental Resources (DNER) has designated the Puerto Rican harlequin butterfly (mariposa arlequín de Puerto Rico) as Critically Endangered (candidate species for listing under the Federal Endangered Species Act). As the application of adulticides may impact this species, landfills within or bordered by forested areas should contact the Caribbean Field Office of the U.S. Fish & Wildlife Service prior to applying adulticides along the boundary of the landfill.²¹

References

1. http://msdh.ms.gov/msdhsite/_static/resources/800.pdf
Setting Up a Mosquito Control Program, Jerome Goddard, Ph.D., Medical Entomologist, Bureau of General Environmental Services, Mississippi State Department of Health, Updated June 2003.
2. <http://www.cmmcp.org/larvfs.pdf>
Larvicides for Mosquito Control, United States Environmental Protection Agency, Prevention, Pesticides and Toxic substances, May 2000, 735-F-00-002.

¹⁹ Puerto Rico Department of Agriculture contact:

Juan C. Muñoz Ruiz, Agronomist, 787-796-1735 ext. 276, jcmunoz@agricultura.pr.gov

²⁰ Puerto Rico Pest Control Association, 787-764-1869, www.pestworldpr.com/

Francisco San Miguel, President

²¹ U.S. Fish & Wildlife contact: Carlos Pacheco, U.S.FWS, Caribbean Field Office, 787 851 7297 x 221

- **Mosquito Control & Protection Information for Posting**

1. U.S. Center for Disease Control and Prevention, Zika Virus Fact Sheets:
 - a. http://www.cdc.gov/zika/pdfs/control_mosquitoes_chikv_denv_zika.pdf
 - b. http://www.cdc.gov/zika/pdfs/control_mosquitoes_chikv_denv_zika_spanish.pdf
2. U.S. Center for Disease Control and Prevention, Mosquito Bite Prevention Poster:
 - a. http://www.cdc.gov/chikungunya/pdfs/fs_mosquito_bite_prevention_us.pdf
 - b. http://www.cdc.gov/chikungunya/pdfs/factsheet_mosquito_bite_prevention_us_spanish.pdf
3. La Autoridad de Desperdicios Sólidos (ADS), Zika Virus Fact Sheets/Posters:
 - a. <http://www.ads.pr.gov/files/2016/02/Virus-Zika-Final.pdf>

- **Detailed Aedes species Surveillance & Control Guidance**

1. Surveillance and Control of *Aedes aegypti* and *Aedes albopictus* in the United States
U.S. Centers for Disease Control and Prevention
 - <http://www.cdc.gov/chikungunya/resources/vector-control.html>

Guidance for *Aedes aegypti* and *Aedes albopictus* surveillance and control in response to the risk of introduction of dengue, chikungunya, Zika, and yellow fever viruses in the United States and its territories. This document is intended for state and local public health officials and vector control specialists.

2. Arboviral Disease Weekly Reports
Puerto Rico Department of Health
 - <http://www.salud.gov.pr/Estadisticas-Registros-y-Publicaciones/Pages/Informe-Arboviral.aspx>

The Puerto Rico Department of Health collects the latest information on arthropod-borne viruses (*e.g.*, mosquito-borne dengue, chikungunya and Zika). It includes cases reported to the respective surveillance systems and is published every Friday.

Appendix 11: Annual RCRA Reports

1. On or before August 15 of each year, starting in 2017, the Municipality shall submit to EPA an Annual RCRA Report, including a certification pursuant to the requirements of Section VII (CERTIFICATIONS). At a minimum, the Annual RCRA Report shall, to the extent applicable to the status of the Landfill at that time, include:

- a. Documentation of compliance or statement of and reason for non-compliance with the *Operational Requirements* set forth in Appendix 2 of this Order.
- b. Update on the implementation of the approved Cayey Eco-System Protection Plan.
- c. Documentation of compliance or statement of and reason for non-compliance with the approved Closure Plan, including:
 - i. Detailed updated information on elevations and grading/slopes for the Landfill;
 - ii. Estimates for remaining life of the Landfill; and
 - iii. A report on the status of implementation of the Closure Plan, including any updated information on the viability of a photovoltaic power generation system (upon request from EPA, the Municipality shall also submit quarterly reports to EPA on the implementation status).
- d. Permits and Approvals: A listing of all necessary permits and approvals required and a description of the status of each (including any anticipated, filed, pending, and finalized/approved).
- e. Groundwater and Gas Monitoring: Preceding year's (August through July) analytical results with supporting documents (such as quality assurance/quality control, and other information requested by EPA) from any groundwater and methane monitoring.
- f. Post Closure: A description of post-closure activities during the preceding year (August through July), including the status of the permanent landfill cap, Landfill Gas System, operating and maintenance activities, and other relevant information, including any repairs or alterations.
- g. Financial Assurance: the Municipality shall submit to EPA documentation of compliance with the financial assurance requirements for closure and post-closure, and, if applicable, compliance with the financial assurance requirements for any required corrective action.
- h. Recycling: The Municipality shall submit biannual Recycling reports to EPA as set forth in Appendix 9, *Recycling Program*.