

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-0024

WASTE DISCHARGE REQUIREMENTS
FOR
PACTIV LLC
CLASS III SOLID WASTE LANDFILL
TEHAMA COUNTY

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

1. Pactiv LLC (hereinafter Discharger) owns and operates a Class III solid waste landfill about one mile south of the City of Red Bluff and ¼ mile west of the Red Bluff Diversion Dam on the Sacramento River, in Section 33, T27N, R3W, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The Class III solid waste landfill is regulated under authority given in Water Code section 13000 et seq. and California Code of Regulations, title 27 ("Title 27").
2. The 99.98 acre Pactiv LLC facility is located at 1000 Diamond Avenue, Red Bluff on Assessor Parcel Number 035-470-231-1. The facility consists of a molded pulp processing plant for production of paper plates, wastewater treatment ponds, and one 10.2 acre unlined waste management unit (Unit) for disposal of paper pulp sludge solids from Pactiv LLC's onsite wastewater treatment plant as shown in Attachment B, which is incorporated herein and made part of this Order by reference.
3. Industrial and manufacturing activities have been conducted by various companies at the present day Pactiv LLC site for over 100 years. The present day Pactiv property and the adjacent Meyers Motel property were previously owned and operated as a saw mill by the Sierra Lumber Company. In 1907, Diamond Match Company acquired the saw mill as part of a larger purchase. Saw mill operations ended in 1911. In 1956, Diamond International Corporation re-opened the mill and operated a molded products facility at the site. In 1983, the molded products portion of the facility was sold to Pactiv, which was then known as Packaging Company of America. The saw mill portion of the site (west side of the present day property line) was sold to Roseburg Forest Products Company in 1988. Sierra Pacific Industries bought the saw mill in 1993, and then sold the property to Meyers Motel in 1995.
4. The landfill at the Pactiv LLC site was first operated by Diamond International Corporation in 1957 as an open burn dump. During construction of the Red Bluff Diversion Dam (RBDD) in 1964, the Department of Interior, Bureau of Reclamation (BOR) installed a levee system separating the north and east sides of the landfill from the adjacent Sacramento River and Red Bank Creek, respectively. After construction of the levee system, Diamond International Corporation continued using the burn dump area for on-

site disposal of dried paper pulp. It is reported (*Environmental Evaluation Report, CH2MHILL, August 2002*) that Roseburg Forest Products Company "may have" removed other residual burn material from the saw mill property and added it to the present day Pactiv LLC Class III landfill. Pactiv LLC continues to operate the landfill for disposal of dried paper pulp.

5. Prior to 2011, the landfill Unit covered approximately 12.3 acres of land. This area included an approximately 1-acre low area that historically collected storm water runoff from the landfill. During summer 2010, the Discharger investigated this low area to determine if waste disposal activities had occurred within there. The investigation concluded that waste material was buried in the northern portion of the low area to a depth of approximately 249.5 feet msl, which resulted in wastes being saturated during periods of gates-down operation at the Red Bluff Diversion Dam. During spring 2011, the Discharger excavated buried waste within the northern portion of the low area and replaced it with clean fill up to an elevation of approximately 254 feet msl. Waste materials excavated during a partial clean-closure project in 2010 and 2011 were used to fill the remaining air space within the low area to an elevation comparable to existing landfill surface topography. The low area was capped with 1 foot of clean intermediate cover soil and graded to drain away from the Unit. Appropriate erosion and sediment control best management practices were installed after final grading.
6. During 2010 and 2011, the BOR purchased the northern portion of the landfill abutting the Sacramento River on the north and the mouth of Red Bank Creek on the east to allow for construction of the Fish Passage Improvement Project (FPIP), which enables water diversion from the Sacramento River into conveyance structures operated by the Tehama-Colusa Canal Authority (TCCA). The FPIP is described in detail in Findings Nos. 7 through 12 below.
7. The RBDD consists of a concrete weir structure that is approximately 750 feet long with 11 large slide gates. Earth wings and levees make the total length of the dam 5,985 feet. For more than 20 years, the dam was operated with the gates-in, which raised the elevation of the Sacramento River behind the dam a little more than 10 feet and created Lake Red Bluff that allowed gravity flow of river water into the TCCA conveyance structures. Operation of the RBDD with gates-in created an impediment to salmonids and green sturgeon fish passage, so the dam began periodically operating with the gates-out. By July 2008, operation of the RBDD was in the control of the federal court in Fresno and the gates-in operating period had been reduced to approximately 15 June through 31 August annually. Gates-in operation of the RBDD ended as of 1 September 2011, which required construction and operation of the FPIP. The FPIP consists of a fish screen structure abutting the Sacramento River, a forebay, pumping plant, electrical switchyard, an open canal with a siphon below Red Bank Creek for conveyance of water into existing TCCA infrastructure, and a roadway access bridge over Red Bank Creek. Construction of the FPIP required clean-closure of approximately 2.1 acres of the northern portion of the Pactiv LLC Class III Landfill.

8. The partial clean-closure of the northern portion of the Pactiv LLC Class III Landfill was completed by the BOR in accordance with approved work plans so that installation of the FPIP (the open canal, siphon, and landfill access road were constructed in the area of the landfill that was clean-closed) could occur. Clean-closure activities were conducted in two phases by two different contractors. The first phase involved excavation of the northern most portion of the landfill abutting the levee and Sacramento River in an area referred to as Parcel A. In Parcel A, approximately 45,000 cubic yards of material was excavated. The material excavated from Parcel A consisted of approximately 2,000 cubic yards of cover soil, approximately 41,000 cubic yards of waste material (consisting of paper pulp sludge and burn material with soil and debris intermixed), and approximately 2,000 cubic yards of native soil from beneath the waste pile. Three metal drums, or pieces of drums, were unearthed during excavation of Parcel A. These drums appeared to have been used as refuse bins or weights as they were filled with concrete and had a lifting eye attached to them. During excavation of Parcel A, waste material was observed to extend further north toward the levee and Sacramento River. This small pocket of additional waste was excavated after sheet pile walls for the canal construction had been installed.
9. The second phase of clean-closure occurred directly south of Parcel A and is referred to as Parcel B2. Approximately 14,500 cubic yards of material were excavated from Parcel B2. The material excavated from Parcel B2 consisted of approximately 500 cubic yards of cover soil, approximately 13,000 cubic yards of waste material (consisting of paper pulp sludge and burn material with soil and debris intermixed) and approximately 1,000 cubic yards of native soil from beneath the waste pile. Three empty crushed metal drums and another group of empty crushed metal drums were also removed from Parcel B2.
10. Parcel A and Parcel B2 were backfilled with soil generated from other areas of the FPIP that met residential human health screening criteria developed for the project. In general, human health screening levels developed for the project were the lowest concentration for a constituent obtained from United States Environmental Protection Agency Residual Screening Levels and California Human Health Screening Levels.
11. Confirmation samples were obtained from native soil beneath the waste piles in Parcel A and Parcel B2 and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, pesticides, herbicides, total petroleum hydrocarbons (TPH) as gas, diesel, and motor oil, polychlorinated biphenyls (PCBs), and dioxins/furans. The first round of confirmation sampling in Parcel A identified some constituents exceeding approved screening criteria, so additional native soil was removed from the eastern portion of the excavation with a second round of confirmation sampling performed. Results of the second round of sampling found all constituent concentrations below approved screening criteria. A third round of excavation and confirmation sampling took place for the waste material identified between the sheet pile walls and the Sacramento River. For Parcel B2, the initial round of confirmation sampling found all constituent concentrations below approved screening criteria. For both Parcels A and B2, confirmation soil sampling indicated that all waste materials and affected geologic media

beneath the waste pile had been removed to the extent that they no longer posed a threat to water quality, in accordance with Title 27, section 21090(f).

12. Stockpile Management Areas (SMAs) were established for storing and characterizing excavated materials. The SMAs were constructed with 60-mil HDPE geomembrane liners installed beneath the stockpiles. Samples from each stockpile were obtained and analyzed for the same constituents as the Parcel A and Parcel B2 confirmation samples. Piles were covered with plastic tarps while awaiting sample results. With the exception of cover soil and some native soil from the bottom of the excavations, all materials excavated from Parcel A and Parcel B2 were disposed at authorized off-site landfill facilities. Materials determined to be non-hazardous solid waste were disposed at either Anderson Landfill in Shasta County or Tehama County Landfill west of Red Bluff. Materials classified as hazardous waste were transported to Clean Harbors Buttonwillow Landfill.
13. On 27 June 2013, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The JTD also includes a revised Site-Specific Preliminary Closure and Post-Closure Maintenance Plan and a Site-Specific Corrective Action Plan submitted on 23 September 2013. The information in the ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD/JTD contains applicable information required in Title 27, including revised Unit acreage, a revised groundwater detection monitoring program, and a Preliminary Closure and Post-Closure Maintenance Plan containing cost estimates for closure, post-closure maintenance, and corrective action.
14. On 22 February 1991, the Central Valley Water Board issued Order No. 91-064 in which the landfill Unit was classified as a Class III Unit for the discharge of non-hazardous dried paper sludge generated from Pactiv LLC's on-site wastewater treatment system. This Order continues to classify the landfill Unit as a Class III Unit in accordance with Title 27. This Order supersedes Order No. 91-064.
15. This Order implements applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2014-0024 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
16. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling

(CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

17. The paper pulp sludge that Pactiv LLC produces consists of recycled cellulose paper fiber from the manufacture of paper plates. The paper pulp sludge is classified as non-hazardous solid waste. This paper pulp sludge is generated through operation of the on-site wastewater treatment system. Cellulose paper fibers that are not captured during the manufacture of paper plates are separated through flotation in a series of ponds. Water effluent from the treatment ponds is further treated through the operation of an aeration basin and a clarifier. Treated wastewater effluent is discharged through a buried process line that runs below the west side of the landfill Unit south to north and discharges into the Sacramento River under authority of National Pollutant Discharge Elimination System (NPDES) Permit No. CA0004821. Surface water monitoring of the Sacramento River is also conducted in accordance with NPDES Permit No. CA0004821. Solids removed from the operation of the clarifier are redirected to the treatment ponds for additional separation and removal. Once a pond reaches capacity, it is taken out of service to allow the paper pulp sludge to dry in the sun until the moisture content is below 50%. Once dried, the sludge is excavated from the pond and transported to the on-site landfill for disposal. In general, the sludge takes approximately two years to dry. On average, Pactiv LLC produces approximately 154 tons of pulp waste each year. Disposal occurs infrequently on an as needed basis.

18. As described in Findings 8 and 9 above, some thin layers of burn materials and other wastes are intermixed with paper pulp sludge within the Unit. Samples collected from excavated waste materials during the landfill partial clean-closure project identified constituents of concern that may degrade water quality and/or beneficial uses of groundwater in the vicinity of the Unit. Sample results of excavated wastes identified several metals including copper, lead, and mercury at elevated concentrations, with two samples exceeding the Soluble Threshold Limit Concentration of 5 mg/L for lead (5.8 mg/L and 10.1 mg/L, respectively). Total petroleum hydrocarbons (TPH) as diesel and motor oil were also identified at elevated concentrations. The maximum TPH diesel concentration was 1,200 mg/kg and the maximum TPH motor oil concentration was 5,800 mg/kg. Various VOCs, polycyclic aromatic hydrocarbons (PAHs), and dioxin/furan compounds were detected at low concentrations below applicable screening criteria. SVOCs and PCBs have been detected at low concentrations in samples from the waste pile during previous site assessments. Pesticides and herbicides were not detected above laboratory reporting limits. Waste materials in the Unit are categorized as non-hazardous solid waste, with the exception of the two samples that exceeded the Soluble Threshold Limit Concentration for lead.

19. Prior to construction of the FPIP, waste material was present in the landfill at elevations as low as 243 feet mean sea level (msl). Following completion of the FPIP, the lowest waste elevation in the landfill is estimated to be approximately 247 to 249 feet msl.
20. The Discharger proposes to continue to discharge nonhazardous paper pulp sludge to the unlined Class III landfill Unit at the facility. These classified wastes may be discharged only in accordance with Title 27 as required by this Order.
21. The active unlined landfill Unit at the facility is an "existing Unit" as defined under Title 27, section 20080(d) that was operating before 27 November 1984 and may continue to accept waste until the Unit is ready for closure, unless the Discharger is required to close sooner to address environmental impacts or other regulatory concerns.

SITE DESCRIPTION

22. The Pactiv LLC Class III Landfill is located on relatively flat ground at elevations ranging from 275 feet msl at the southwestern part of the Unit to 265 feet msl at the northeastern part of the Unit. The Unit is bounded by a flood protection levee and the Sacramento River on the north, a flood protection levee and Red Bank Creek on the east, former mill property owned by Meyer Motel on the west, and the Pactiv LLC plant and wastewater treatment ponds on the south.
23. Land uses within one mile of the facility include public land to the north and east, industrial at the site and to the west, and commercial directly south of the facility.
24. There are two on-site deep industrial production wells at the Pactiv LLC facility. Five other municipal, domestic, and/or agricultural wells have been identified within one mile of the facility.
25. Geologic deposits beneath the Pactiv LLC Class III Landfill consist of unconsolidated Quaternary river deposits, alluvial fan deposits, and loosely-consolidated Pliocene age river deposits. The Quaternary Riverbank Formation is a series of unconsolidated stream and flood plain deposits composed of varying mixtures of sand, silt, and clay. The Riverbank Formation is generally present at elevations ranging from 238 feet msl to 280 feet msl. The Quaternary Red Bluff Formation is a continental alluvial fan deposit beneath the Riverbank Formation composed of gravel with varying amounts of sand, silt, and clay. The Red Bluff Formation is generally present at elevations ranging from 218 feet msl to 255 feet msl. The Red Bluff Formation is a water bearing zone even though it has an average hydraulic conductivity of 1.6 feet/day. Underlying the Red Bluff Formation is the Pliocene Tehama Formation, a fluvial deposit composed of dense sandy clay and clayey gravel. The Tehama Formation is present below elevations of approximately 220 feet msl, and regionally, is an aquifer used for domestic, industrial, and agricultural supply.
26. Based on slug tests conducted in several site monitoring wells that are screened across the contact between the Riverbank Formation and the underlying Red Bluff Formation, the

average hydraulic conductivity of the Riverbank Formation is 19.2 feet/day. Slug tests conducted on wells screened entirely within the Red Bluff Formation found the average hydraulic conductivity to be 1.6 feet/day. A slug test on another well screened entirely within the Tehama Formation found the measured hydraulic conductivity to be 1.8 feet/day.

27. No faults have been identified as passing through the Pactiv LLC facility. The closest potentially active fault is the Battle Creek Fault located approximately 16 miles north of the site. The nearest identified active faults are the Hat Creek Fault located approximately 58 miles northeast of the site and the Cleveland Hill Fault located approximately 63 miles southeast of the site. Seismic events originating on these faults are not likely to produce ground accelerations exceeding 0.05g at the landfill site.
28. The facility receives an average of 22 inches of precipitation per year as measured at the Red Bluff Airport Station. The mean pan evaporation is 70 inches per year.
29. The 100-year, 24-hour precipitation event for the facility is estimated to be 4.74 inches, based on Department of Water Resources' Bulletin 195 entitled *Rainfall Analyses for Drainage Design*, dated October 1976.
30. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 065053-0789-H, Map Number 06103C0789H, the waste management facility is located within the 100-year flood plain, which has been determined to be at an elevation of 266.3 feet msl. However, the 100-year flood plain determination does not take into account the levee system that was installed around the north and east sides of the Unit to an elevation of 268.5 feet msl in 1964 by the BOR. The levee system effectively protects the Unit from floods with a 100-year return frequency.
31. Storm water discharges from the Unit are managed through perimeter drainage ditches and culverts. Intermediate cover over the Unit is well vegetated, which acts as an effective best management practice.

SURFACE WATER AND GROUNDWATER CONDITIONS

32. The *Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
33. Surface water drainage from the site is to Red Bank Creek on the east, a tributary of the Sacramento River, and to the Sacramento River on the north.
34. The designated beneficial uses of the Sacramento River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply; navigation; hydropower generation; water contact recreation; non-contact water recreation; commercial and sport fishing; warm fresh water habitat; cold freshwater

habitat; wildlife habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development.

35. Prior to the FPIP, operation of the Red Bluff Diversion Dam caused the Sacramento River elevation, and in turn the groundwater elevation in the vicinity of the landfill, to rise approximately 10 feet seasonally during periods when the dam gates were lowered. When the dam gates were lifted, groundwater elevations quickly returned to a normal elevation of approximately 242 feet msl. This seasonal rise and fall of the groundwater elevation affected the groundwater flow direction as observed in landfill monitoring wells.
36. Prior to the FPIP, waste material was present in the landfill at elevations as low as approximately 243 feet msl, resulting in some waste being saturated during gates-down operation of the Red Bluff Diversion Dam. Since August 2009, the Red Bluff Diversion Dam has been operated with gates out, keeping surface water elevations around 242 feet msl with groundwater elevations stabilizing at an elevation below the surface water elevation. Following completion of the FPIP, the lowest waste elevation in the landfill is estimated to be approximately 247 to 249 feet msl.
37. Since completion of the FPIP in September 2012, groundwater elevations as observed in landfill monitoring wells range from approximately 248.69 feet msl at the southeast end of the Unit to 244 feet msl at the northern portion of the Unit.
38. Since completion of the FPIP, monitoring data indicates background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 238 and 278 micromhos/cm, with total dissolved solids (TDS) ranging between 139 and 555 milligrams per liter (mg/L).
39. The direction of groundwater flow is generally toward the west and an area of unconsolidated alluvial deposits in the Riverbank Formation. This area directly west of the Unit has hydraulic connection with the deeper Tehama Formation. A downward vertical gradient exists in this area which may be influenced by pumping of production and agricultural wells screened in the deeper Tehama Formation. The estimated average groundwater gradient is approximately 0.0156 feet per foot. The estimated average groundwater velocity is 60.7 feet per year.
40. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER, STORM WATER, AND UNSATURATED ZONE MONITORING

41. The existing groundwater monitoring network for the landfill consists of five monitoring wells, MW-1R, MW-2, MW-3R, MW-4, and MW-5. Two additional groundwater monitoring wells, MW-1 and MW-3, were previously included with the groundwater monitoring network. However, wells MW-1 and MW-3 were excavated and removed during

construction of the FPIP. Well MW-1 was replaced with new well MW-1R on 30 October 2012 along the northern boundary of the Unit and well MW-3 was replaced with new well MW-3R on 2 October 2013 along the western boundary of the Unit. Wells MW-2 and MW-5 appear to be hydraulically upgradient of the landfill Unit. Wells MW-1R and MW-4 are located hydraulically crossgradient of the Unit. Well MW-3R is hydraulically downgradient of the Unit.

42. Details of the existing groundwater monitoring network are provided below:

Well ID	Installation Date	Total Depth	Screen Interval	Well Type
MW-1R	October 2012	39 ft ¹	29 ft – 39 ft bgs ²	Compliance
MW-2	January 1989	36.5 ft	24.4 – 34.4 ft bgs	Background
MW-3R	October 2013	55 ft	44.75 – 54.75 ft bgs	Compliance
MW-4	January 1989	31.5 ft	19.4 – 29.4 ft bgs	Compliance
MW-5	January 1989	35 ft	24.7 – 34.7 ft bgs	Background

¹ft = feet

²bgs = below ground surface

43. Storm water from the landfill is directed toward a culvert (sample point SW-3) that discharges to Red Bank Creek. Additionally, a perimeter drainage ditch on the west and south sides of the Unit directs storm water away from the Unit and into another culvert (sample point SW-1) that also discharges to Red Bank Creek. The Discharger is enrolled under the State Water Resources Control Board Water Quality Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit), Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, WDID No. 5R52I019120. Storm water discharges from the site are monitored in accordance with provisions of the General Permit.

44. The existing Unit at this landfill is unlined and there is no unsaturated zone detection monitoring system on-site.

45. VOCs are often detected in a release of waste from a landfill. Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

46. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
47. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], is a preliminary indication that a release of waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.
48. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern be determined as follows:
- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
 - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
49. The Discharger has not submitted a Water Quality Protection Standard (WQPS) Report for the landfill. The Discharger is currently assessing groundwater quality and hydrogeologic conditions at the site since completion of the FPIP to determine if significant changes have occurred. Data from this assessment will be used to prepare a WQPS Report. This Order requires the Discharger to prepare and submit a WQPS Report.

GROUNDWATER CONDITIONS

50. As described above, hydrogeologic conditions at the site have been significantly altered with the change in operation of the Red Bluff Diversion Dam and completion of the FPIP. During 2007 and 2008, the Discharger conducted a Preliminary Hydrogeologic Investigation that included sampling landfill groundwater monitoring wells and analyzing

for VOCs, SVOCs, PCBs, pentachlorophenol (PCP), TPH, dioxins and furans, metals, cyanide, and general mineral constituents. Sample results found that VOCs, SVOCs, PCBs, PCP, TPH, cyanide, and dioxin/furan concentrations were below laboratory reporting limits. Several metals and general mineral parameters were identified above laboratory reporting limits. Only total Kjeldahl nitrogen and arsenic in monitoring well MW-1 were reported to be statistically elevated when compared to monitoring well MW-4. However, because of the FPIP, MW-1 is no longer a downgradient location for monitoring the landfill. Based on pre-FPIP conditions, the conclusion of the Preliminary Hydrogeologic Investigation was that waste disposal activities have not significantly impacted groundwater quality. The current detection monitoring program will continue to collect groundwater quality data to assess the dynamics of existing hydrogeologic conditions and to provide the earliest possible indication of a release of waste from the landfill.

LANDFILL CLOSURE

51. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
 - a. Two-foot soil foundation layer.
 - b. One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
 - c. One-foot soil erosion resistant/vegetative layer.
52. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the post-closure maintenance period.
53. The Discharger submitted a 23 September 2013 *Preliminary Closure and Post-Closure Maintenance Plan and Site-Specific Corrective Action Plan* as part of the JTD/ROWD for closure and post-closure maintenance of the landfill Unit at the facility. Based on current waste generation rates, the Discharger estimates that final closure of the landfill Unit will not occur for at least 20 years.
54. The Discharger's Preliminary Closure and Post-Closure Maintenance Plan proposes an engineered alternative final cover consisting of, in ascending order, the following layers:
 - a. Two-foot soil foundation layer.
 - b. Low-hydraulic conductivity layer consisting of a synthetic geomembrane with a hydraulic conductivity of 1×10^{-7} cm/sec, or less.
 - c. One-foot soil erosion resistant layer, with vegetation.
55. The Discharger will be required to demonstrate in the Final Closure and Post-Closure Maintenance Plan that the proposed engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.

56. At closure, the final cover slopes for the landfill shall not be steeper than 1.75H:1V. A final cover with proposed slopes steeper than 3H:1V, or having a geosynthetic component, shall have those aspects of their design specifically supported in a slope stability report required under Title 27, section 21750(f)(5).
57. The Discharger has not completed a slope stability analysis for the proposed final cover design. The Discharger will be required to provide a slope stability analysis in the Final Closure and Post-Closure Maintenance Plan in accordance with Title 27, sections 21090(a)(6) and 21750(f)(5).
58. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
59. This Order requires that a Final Closure and Post-Closure Maintenance Plan, design documents, and Construction Quality Assurance (CQA) plan be submitted for review and approval at least 180 days prior to initiating actual closure.

LANDFILL POST-CLOSURE MAINTENANCE

60. The Discharger submitted a 23 September 2013 *Site-Specific Preliminary Closure and Post-Closure Maintenance Plan and Site-Specific Corrective Action Plan* as part of the JTD/ROWD for closure and post-closure maintenance of the landfill Unit. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire facility. Facility inspections will include assessment of the condition of the final cover, drainage features, groundwater monitoring wells, access roads, landfill gas system, and site security facilities. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
61. Once every five years during the post-closure maintenance period, topographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
62. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, Title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

63. Title 27, sections 21820 and 22206 require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When

closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The Discharger's 23 September 2013 *Preliminary Closure and Post-Closure Maintenance Plan and Site-Specific Corrective Action Plan* includes a cost estimate for landfill closure. The total amount of the closure cost estimate in 2013 dollars is one million ten thousand dollars (\$1,010,000). This Order requires that the Discharger maintain financial assurances with the Central Valley Water Board in at least the amount of the closure cost estimate adjusted annually for inflation.

64. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 23 September 2013 *Preliminary Closure and Post-Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in is two hundred seventy nine thousand and two hundred dollars (\$279,200). This Order requires that the Discharger maintain financial assurances with the Central Valley Water Board in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation.
65. Title 27, section 22100(b) requires owners and operators of disposal facilities that are required to be permitted as solid waste landfills to provide cost estimates for initiating and completing corrective action for known or reasonably foreseeable releases of waste. Title 27, section 22101 requires submittal of a *Water Release Corrective Action Estimate* and a *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is for scenarios where there is statistically significant evidence of a release of waste to ground or surface water when comparing point-of-compliance analyte concentrations to background concentrations. The *Non-Water Release Corrective Action Cost Estimate* is for complete replacement of the landfill final cover system, however a site-specific corrective action plan pursuant to Title 27, section 22101(b)(2) may be provided in lieu of the final cover replacement cost estimate. Title 27, section 22221 requires establishment of financial assurances in the amount of the approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.
66. In the 23 September 2013 *Preliminary Closure and Post-Closure Maintenance Plan and Site-Specific Corrective Action Plan*, the Discharger included a *Water Release Corrective Action Estimate* in the amount of one hundred fifty-three thousand one hundred dollars (\$153,100) and a site-specific *Non-Water Release Corrective Action Cost Estimate* in the amount of twenty thousand six hundred dollars (\$20,600). The Discharger prepared the *Non-Water Release Corrective Action Cost Estimate* in accordance with the *Technical Guidance and FAQs for the Preparation of Site-Specific Non-Water Release Corrective Action Plans, February 2011* from CalRecycle.
67. This Order requires the Discharger to maintain financial assurances with the Central Valley Water Board in the amount of the *Water Release Corrective Action Estimate*, which is higher than the *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is required to be adjusted annually for inflation in accordance with Title 27, section 22236.

CEQA AND OTHER CONSIDERATIONS

68. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with California Code of Regulations, title 14, section 15301.
69. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*; and
 - b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
70. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B, as defined below:
- a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
 - b. Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."
71. Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
72. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2014-0024" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

73. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
74. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
75. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. 91-064 is rescinded except for purposes of enforcement, and that Pactiv LLC, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Water Code section 13173.
2. Any discharge of waste outside of the Unit is prohibited. This prohibition supersedes Standard Discharge Specification D.5 in the SPRRs.
3. The Discharger shall comply with all applicable Standard Prohibitions listed in section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in the Findings of this Order.
2. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger demonstrates it meets the requirements in Title 27, section 20705, and the Discharger has received approval that it may begin using the material as ADC.
3. If the Discharger receives approval to use ADC, then the ADC shall only be used in internal areas of the landfill that do not drain outside of the limits of the Unit unless the

Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved.

4. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at the landfill in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
5. The Discharger shall comply with all applicable Standard Discharge Specifications listed in section D of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all applicable Standard Facility Specifications listed in section E of the SPRRs dated January 2012 which are part of this Order.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall comply with all applicable Standard Construction Specifications listed in section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. The Discharger shall comply with all applicable Storm Water Provisions listed in section L of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a Final Closure and Post-Closure Maintenance Plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in section G of the Standard Closure and Post-Closure Specifications in the SPRRs. The Final Closure and Post-Closure Maintenance Plan shall include a slope stability analysis as required under Title 27, section 21750(f)(5).
2. The Discharger shall close the landfill Unit with a final cover as proposed in a Final Closure and Post-Closure Maintenance Plan that is approved by the Executive Officer.
3. The Discharger shall obtain revised WDRs prior to initiating final closure construction.
4. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.

5. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
6. Following closure of the landfill Unit, the Discharger shall notify the Executive Officer that the deed to the landfill property, or some other instrument that is normally examined during a title search, has been recorded with a copy placed in the operating record and uploaded to the State Geotracker database. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the Post-Closure Maintenance Plan. This specification supersedes Standard Closure and Post-Closure Specification G.19 in the SPRRs.
7. The Discharger shall comply with all applicable Standard Closure and Post-Closure Specifications listed in section G of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall establish an irrevocable fund (or provide other means) for closure and post-closure maintenance to ensure closure and post-closure maintenance of the Unit in accordance with an approved closure and post-closure maintenance plan. This specification supersedes Standard Financial Assurance Provision H.1 in the SPRRs.
2. The Discharger shall obtain and maintain assurances of financial responsibility with the Central Valley Water Board for closure and post-closure maintenance of the landfill in at least the amounts described in Findings 63 and 64, adjusted for inflation annually. The initial financial assurance demonstration for closure and post-closure maintenance in the amounts of the approved cost estimates is due **by 1 October 2014**. A report calculating adjustment of the closure and/or post-closure maintenance cost estimate due to the inflation factor for the previous calendar year shall be submitted to the Central Valley Water Board by **1 June of each subsequent year**, in accordance with Title 27, section 22236. If it's determined that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to the Central Valley Water Board for at least the amount of the approved cost estimate.
3. The Discharger may update the preliminary closure and post-closure maintenance plan (PCPCMP) at any time that material costs or available technologies alter previously approved plans. The updated PCPCMP shall include updated cost estimates and shall be submitted to the Central Valley Water Board for approval. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design

specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurances required in F.1 above shall reflect the updated cost estimate(s).

4. The Discharger shall obtain and maintain assurances of financial responsibility with the Central Valley Water Board for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 66. The initial financial assurance demonstration for corrective action in the amount of the approved cost estimate is due **by 1 October 2014**. A report calculating the change in the corrective action cost estimate due to the inflation factor for the previous calendar year shall be submitted to the Central Valley Water Board by **1 June of each subsequent year**, in accordance with Title 27, section 22236. If it's determined that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to the Central Valley Water Board for at least the amount of the approved cost estimate.
5. The Discharger shall comply with all applicable Standard Financial Assurance Specifications listed in section H of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater in accordance with Monitoring and Reporting Program (MRP) No. R5-2014-0024, and the Standard Monitoring Specifications listed in section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. **By 1 July 2014**, the Discharger shall prepare and submit a Water Quality Protection Standard Report in accordance with Title 27, sections 20390 through 20415 for Executive Officer review and approval. Once approved, the Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2014-0024, and the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
3. **By 1 July 2014**, the Discharger shall submit for Executive Officer review and approval a Sample Collection and Analysis Plan, as specified in the Standard Monitoring Specifications in section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill Unit that extends through the uppermost aquifer underlying the Unit) shall not exceed the concentration limits established in an approved Water Quality Protection Standard Report.

5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures allowed under Title 27, section 20415 and/or as specified in the Standard Monitoring Specifications in section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
6. The Discharger shall comply with all applicable Standard Monitoring Specifications and Response to a Release specifications listed in sections I and J of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2014-0024 and the SPRRs dated January 2012 which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall upload all necessary data and technical reports to the State Water Resources Control Board's Geotracker database in accordance with requirements for electronic submittal of information prescribed in California Code of Regulations, Title 23, Division 3, Chapter 30 and Title 27, Division 3, Subdivisions 1 and 2.
3. The Discharger shall comply with all applicable provisions of Title 27 that are not specifically referred to in this Order.
4. The Discharger shall comply with MRP No. R5-2014-0024, which is incorporated into and made part of this Order by reference.
5. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated January 2012, which are attached hereto and made part of this Order by reference.
6. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
7. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
8. The Discharger shall comply with all applicable General Provisions listed in section K of the SPRRs dated January 2012 which are part of this Order.
9. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Facility Monitoring	
1. Submit a Water Quality Protection Standard Report for review and approval. (see Monitoring Specifications G.2 above).	By 1 July 2014
2. Submit a Sample Collection and Analysis Plan for review and approval. (see Monitoring Specification G.3 above).	By 1 July 2014
B. Financial Assurances	
1. Submit the initial financial assurance demonstration for closure, post-closure maintenance, and corrective action in the amounts of the approved cost estimates (see all Financial Assurance Specifications in section F above, and section H of the SPRRs).	By 1 October 2014
2. Submit the Annual Report calculating the inflation factor for the previous year and adjust the monetary amount of the financial assurances for closure, post-closure maintenance, and corrective action based upon the inflation factor. (see all Financial Assurance Specifications in section F above, and section H of the SPRRs).	By 1 June annually
C. Final Closure and Post-Closure Maintenance Plans	
1. Submit a Final Closure and Post-Closure Maintenance Plan, design plans, specifications, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in section E above, and section G of the SPRRs).	Two years prior to closure

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 7 February 2014.

A handwritten signature in cursive script, reading "Pamela Creedon". The signature is written in black ink and is positioned above a horizontal line.

PAMELA C. CREEDON, Executive Officer

DPS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-0024
FOR
PACTIV LLC
CLASS III LANDFILL
TEHAMA COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2014-0024, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with an approved Sample Collection and Analysis Plan. The Discharger is required to submit a Sample Collection and Analysis Plan for review and approval **by 1 July 2014**.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I and III.

The Discharger may use alternative analytical test methods, including new United States Environmental Protection Agency approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP, and are identified in the approved Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Leachate Seep Monitoring
A.3	Facility Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with applicable provisions of Title 27, sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

The current groundwater monitoring network consists of the following:

Well ID	Installation Date	Total Depth	Screen Interval	Well Type
MW-1R	October 2012	39 ft ¹	29 ft – 39 ft bgs ²	Compliance
MW-2	January 1989	36.5 ft	24.4 – 34.4 ft bgs	Background
MW-3R	October 2013	55 ft	44.75 – 54.75 ft bgs	Compliance
MW-4	January 1989	31.5 ft	19.4 – 29.4 ft bgs	Compliance
MW-5	January 1989	35 ft	24.7 – 34.7 ft bgs	Background

¹ft = feet

²bgs = below ground surface

Groundwater samples shall be collected from the background wells, detection monitoring wells (compliance wells), and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with an approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest

elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table III every five years. The first five-year COC sampling event is required to occur **during first half of 2014** and shall be monitored again **during first half of 2019**. The results shall be reported in the corresponding Semiannual and Annual Monitoring Reports for the year in which the samples were collected.

2. Leachate Seep Monitoring

Seep Monitoring: Leachate that seeps to the surface from a landfill Unit shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and 5-Year Constituents of Concern listed in Table II upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in section B.3 of this MRP, below.

3. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repairs and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Results of the annual facility inspection shall be submitted in the Annual Monitoring Report and as required in section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. For facility monitoring purposes, a major storm event shall be defined as a five-year 24-hour storm event, resulting in 2.5 inches or more of rain within a 24-hour period. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting

requirements for major storm events shall be conducted as required in section B.5 of this MRP.

c. **Five-Year Iso-Settlement Survey for Closed Units**

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with section B.6 of this MRP.

d. **Standard Observations**

The Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Active	Weekly	Wet: 1 October to 30 April
Active	Monthly	Dry: 1 May to 30 September
Inactive/Closed	Monthly	Wet: 1 October to 30 April
Inactive/Closed	Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the landfill Unit:
 - a) Evidence of ponded water at any point on the landfill (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter of the landfill units:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.

Results of Standard Observations shall be submitted in the corresponding semiannual monitoring report for the reporting period in which the observations were made, as required in Section B.1 of this MRP.

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 December	1 February
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso- Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.7	Financial Assurances Report	31 December	1 June

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2014-0024 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all technical reports, monitoring data, and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

The results of **all monitoring** conducted at the site shall be reported to the Central Valley Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, any original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

- a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b) Date, time, and manner of sampling;
- c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e) Calculation of results; and
- f) Results of analyses, and the Method Detection Limits (MDLs) and Practical Quantitation Limits (PQLs or Reporting Limits - RLs) for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with an approved Sample Collection and Analysis Plan.

- b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
- c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored.
- d) Cumulative tabulated monitoring data for all groundwater monitoring points. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through III unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs (or RLs).
- e) Laboratory statements of results of all analyses evaluating compliance with requirements.
- f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when 5-year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit.
- g) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, then these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- h) A summary of all Standard Observations for the reporting period required in section A.3.d of this MRP.
- i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
 - a) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - b) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form. A digital file format such as a computer disk shall also be provided with this data. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - c) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - d) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - e) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) Updated Water Quality Protection Standard concentration limits for each monitoring parameter and COC at each monitoring well based on the new data set.
 - h) Results of the annual facility inspection (see Section A.3.a of this MRP).
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
 - a) A map showing the location(s) of seepage;
 - b) An estimate of the flow rate;

- c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d) Verification that samples have been submitted for analyses of the Field Parameters, Monitoring Parameters, and Constituents of Concern listed in Table II of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting:** The Discharger shall submit results of the annual facility inspection in the Annual Monitoring Report due by **1 February of each year**. Reporting for the annual facility inspection shall include a discussion on site preparations for winter and describe any repair measures implemented as a result of the inspection, including photographs of all problem areas before and after necessary repairs. Refer to section A.3.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger shall **immediately** notify Central Valley Water Board staff of any damage or significant erosion discovered during the required Major Storm Event inspection. Necessary repairs shall be completed within **30 days** of discovery of the problem and a report describing the repairs, including photographs of the problem before and after the repairs, shall be submitted within **14 days** of completion of the repairs. Refer to section A.3.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for the Unit every five years pursuant to Title 27, section 21090(e). Refer to section A.3.c of this MRP, above.
7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.4 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For the waste management unit, the Water Quality Protection Standard (WQPS) shall consist of all constituents of concern (COCs), the concentration limit for each COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The WQPS for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any

proposed changes to the WQPS other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the groundwater monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The WQPS shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the WQPS.

The Discharger has not submitted a *Water Quality Protection Standard Report*. Monitoring Specification G.3 of WDR Order No. R5-2014-0024 requires the Discharger to submit a WQPS Report **by 1 July 2014**.

Once approved, the WQPS shall be updated annually for each monitoring well using new and historical monitoring data. The updated WQPS shall be included with the Annual Monitoring Report, **due by 1 February each year**. Refer to section B.2.g of this MRP, above.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for the Unit are those listed in Tables I and II for the specified monitored medium.

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for the Unit at the facility are those listed in Tables I and II for the specified monitored medium, and Table III. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. **The first 5-year COC sampling event is to be completed during the first half of 2014.**

4. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

The methods for calculating concentration limits shall be included in the WQPS Report referenced in section C.1 of the MRP, above.

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.

- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The point of compliance for the water standard at the Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. Wells MW-1R, MW-3R, and MW-4 are the current monitoring locations at the point of compliance.

7. Compliance Period

The compliance period for the Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points


A monitoring point is a well, device, or location specified in the waste discharge requirements and this MRP, at which monitoring is conducted and the WQPS applies. The monitoring points for each monitored medium are listed in Section A.1 of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, then this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by:



PAMELA C. CREEDON, Executive Officer

7 February 2014

DPS

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Tannins and Lignins	mg/L	Semiannual	Semiannual
Total Organic Carbon	mg/L	Semiannual	Semiannual
5-Year Constituents of Concern (see Table III)			
Inorganics (dissolved)	ug/L ²	5 years	By 1 August 2014
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	and every 5 years thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years ³	" "

¹ Milligrams per liter

² Micrograms per liter

³ SVOC monitoring required at compliance wells MW-1R, MW-3R, and MW-4 only

TABLE II
LEACHATE SEEP MONITORING¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting² Frequency</u>
Field Parameters			
Total Flow	Gallons	Upon detection	7 days after detection
Flow Rate	Gallons/Day	"	"
Electrical Conductivity	umhos/cm	"	"
pH	pH units	"	"
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Upon detection	7 days after detection
Chloride	mg/L	"	"
Carbonate	mg/L	"	"
Bicarbonate	mg/L	"	"
Nitrate - Nitrogen	mg/L	"	"
Sulfate	mg/L	"	"
Calcium	mg/L	"	"
Magnesium	mg/L	"	"
Potassium	mg/L	"	"
Sodium	mg/L	"	"
Tannins and Lignins	mg/L	"	"
Total Organic Carbon	mg/L	"	"
Constituents of Concern (see Table III)			
Inorganics (dissolved)	mg/L	Upon detection	7 days after detection
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	"	"
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	"	"

¹ Leachate seeps shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and Constituents of Concern in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

² Notification of leachate seeps shall occur within seven days of discovering the seep(s). The notification shall include verification that a sample of the seep has been collected and an estimated date of when the sample results will be available. See section B.3 of this MRP for additional reporting requirements.

TABLE III
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

Volatile Organic Compounds, extended list:

USEPA Method 8260B

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE III

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, I-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene

TABLE III

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270D - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)

TABLE III

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

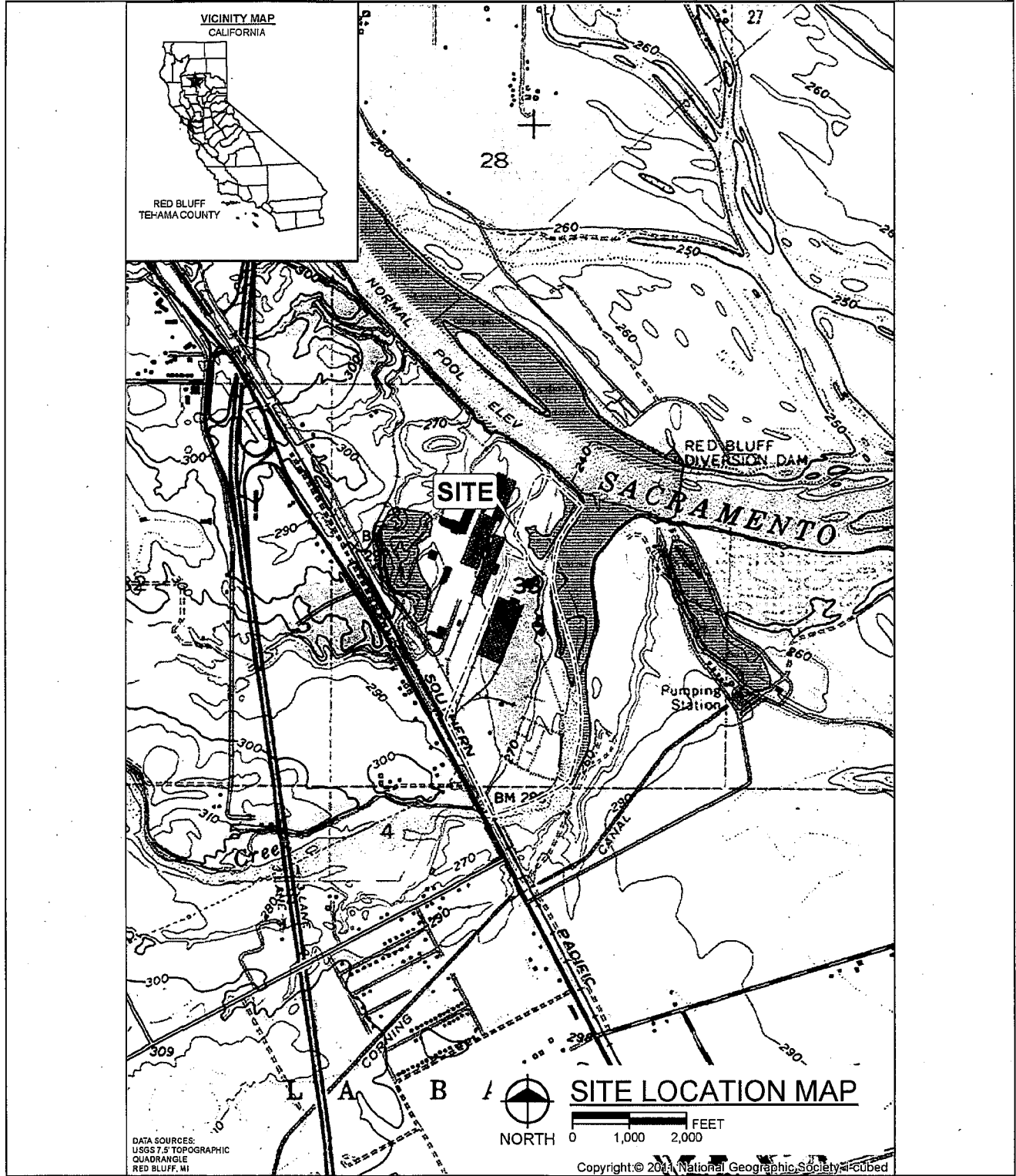
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene

TABLE III

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylNitrosamine)
N-Nitrosodiethylamine (DiethylNitrosamine)
N-Nitrosodimethylamine (DimethylNitrosamine)
N-Nitrosodiphenylamine (DiphenylNitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylNitrosamine)
N-Nitrosomethylethylamine (MethylethylNitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene



DATA SOURCES:
USGS 7.5' TOPOGRAPHIC
QUADRANGLE
RED BLUFF, MI

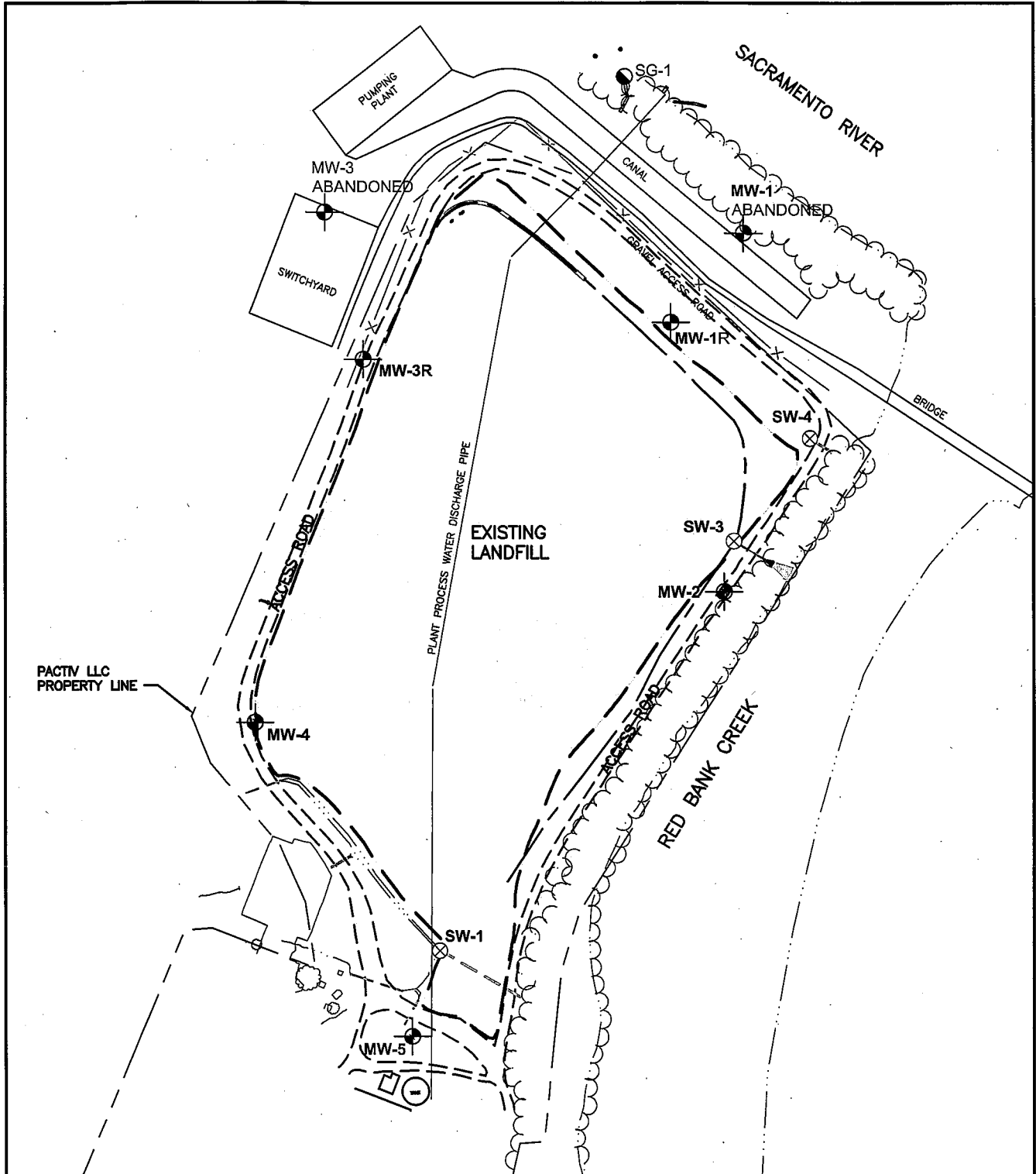
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Drawing Reference:






SITE LOCATION MAP
Pactiv, LLC
Red Bluff, Tehama County
SEC. 33, T 27 N., R 3 W.



Scale:
Approx 1:24,000



MAP KEY:

-  Monitoring Well
-  Surface Water Sample
-  Staff Gauge
-  Landfill
-  Access Road

SITE MAP

PACTIV, LLC

Red Bluff, Tehama County

SEC. 33, T 27 N., R 3 W.



NORTH

Scale:
Approx 1" = 200'

INFORMATION SHEET

ORDER NO. R5-2014-0024
PACTIV LLC
CLASS III SOLID WASTE LANDFILL
TEHAMA COUNTY

Pactiv LLC owns and operates a Class III Solid Waste Landfill (Landfill) located approximately one mile south of the City of Red Bluff and ¼ mile west of the Red Bluff Diversion Dam (RBDD) on the Sacramento River in Tehama County. The Landfill has no base liner or leachate collection and removal system and is used exclusively for disposal of paper pulp sludge generated from the wastewater treatment plant used during the manufacture of paper plates at the adjacent Pactiv LLC molded pulp processing plant. The entire Pactiv LLC facility covers approximately 100 acres. The Pactiv LLC facility includes the molded pulp processing plant, wastewater treatment ponds, and the Landfill.

Industrial and manufacturing activities have been conducted by various companies at the present day Pactiv LLC site for over 100 years. The Pactiv LLC property and the adjacent Meyers Motel property were previously owned and operated as a saw mill by the Sierra Lumber Company. In 1907, Diamond Match Company acquired the saw mill as part of a larger purchase. Saw mill operations ended in 1911. In 1956, Diamond International Corporation re-opened the mill and operated a molded products facility at the site. In 1983, the molded products portion of the facility was sold to Pactiv LLC (known then as Packaging Company of America). The mill portion of the site (west of the present day property line) was sold to Roseburg Forest Products Company in 1988. Sierra Pacific Industries bought the saw mill in 1993, and then sold the property to Meyers Motel in 1995.

The landfill at Pactiv LLC was first operated by Diamond International Corporation in 1957 as an open burn dump. During construction of the RBDD in 1964, the Department of Interior, Bureau of Reclamation installed a levee system separating the north and east sides of the landfill from the adjacent Sacramento River and Red Bank Creek, respectively. After construction of the levee system, Diamond International Corporation continued using the burn dump area for on-site disposal of dried paper pulp. It is reported (*Environmental Evaluation Report, CH2MHILL, August 2002*) that Roseburg Forest Products Company "may have" removed other residual burn material from the saw mill property and added it to the present day Pactiv LLC Class III landfill. Pactiv LLC continues to operate the landfill for disposal of dried paper pulp from its wastewater treatment plant.

The paper pulp sludge that Pactiv LLC produces consists of recycled cellulose paper fiber from the manufacture of paper plates. The paper pulp sludge is classified as non-hazardous solid waste. This paper pulp sludge is generated through operation of the on-site wastewater treatment system. Cellulose paper fibers that are not captured during the manufacture of paper plates are separated through flotation in a series of ponds. Water effluent from the treatment ponds is further treated through the operation of an aeration basin and a clarifier. Treated

wastewater effluent is discharged through a buried process line that runs through the west side of the landfill Unit south to north and discharges into the Sacramento River under authority of National Pollutant Discharge Elimination System (NPDES) Permit No. CA0004821. Surface water monitoring of the Sacramento River is also conducted in accordance with NPDES Permit No. CA0004821. Solids removed from the operation of the clarifier are redirected to the treatment ponds for additional separation and removal. Once a pond reaches capacity, it is taken out of service to allow the paper pulp sludge to dry in the sun until the moisture content is below 50%. Once dried, the sludge is excavated from the pond and transported to the on-site landfill for disposal. In general, the sludge takes approximately two years to dry. On average, Pactiv LLC produces approximately 154 tons of pulp waste each year. Disposal occurs infrequently on an as needed basis.

The Pactiv LLC Class III Landfill is located on relatively flat ground at elevations ranging from 275 feet msl at the southwestern part of the Unit to 265 feet msl at the northeastern part of the Unit. Geologic deposits beneath the Pactiv LLC Class III Landfill consist of unconsolidated Quaternary river deposits, alluvial fan deposits, and loosely-consolidated Pliocene age river deposits.

During 2010 and 2011, the Bureau of Reclamation purchased the northern portion of the landfill abutting the Sacramento River on the north and the mouth of Red Bank Creek on the east to allow for construction of the Fish Passage Improvement Project (FPIP), which enables water diversion from the Sacramento River into conveyance structures operated by the Tehama-Colusa Canal Authority (TCCA). TCCA distributes water to agricultural lands in the northern Sacramento Valley. Prior to 2011, historical operation of the RBDD caused the surface water elevation of the Sacramento River to rise upstream of the dam creating Lake Red Bluff which allowed for gravity flow of river water into the TCCA conveyance system. However, operation of the RBDD with gates-in created an impediment to salmonids and green sturgeon fish passage, so the dam began periodically operating with the gates-out. By July 2008, operation of the RBDD was in the control of the federal court in Fresno and the gates-in operating period had been reduced to approximately 15 June through 31 August annually. Gates-in operation of the RBDD ended as of 1 September 2011, which required construction and operation of the FPIP. The FPIP consists of a fish screen structure abutting the Sacramento River, a forebay, pumping plant, electrical switchyard, an open canal with a siphon below Red Bank Creek for conveyance of water into existing TCCA infrastructure, and a roadway access bridge over Red Bank Creek. Construction of the FPIP required clean-closure of approximately 2.1 acres of the northern portion of the Pactiv LLC Class III Landfill.

The partial clean-closure of the northern portion of the Pactiv LLC Landfill was conducted in accordance with approved work plans and included waste excavation and removal actions, waste characterization to determine disposal options, and confirmation sampling of the area that was clean-closed to ensure that residual waste constituents no longer pose a threat to water quality and beneficial uses. Approximately 59,500 cubic yards of wastes, cover soil, and native soil beneath the waste pile were excavated during the clean-closure project. Wastes other than paper pulp wastes, including several metal drums and burn ash were also encountered during

clean-closure activities. Excavated materials were transported to Stockpile Management Areas for characterization purposes. With the exception of cover soil and some native soil from the bottom of the excavations, all materials excavated from Parcel A and Parcel B2 were disposed at authorized off-site landfill facilities. Materials determined to be non-hazardous solid waste were disposed at either Anderson Landfill in Shasta County or Tehama County Landfill west of Red Bluff. Materials classified as hazardous waste were transported to Clean Harbors Buttonwillow Landfill. Prior to the clean-closure project, the landfill area covered approximately 12.3 acres. After completing the project, the landfill area now covers approximately 10.2 acres.

Prior to the FPIP, operation of the Red Bluff Diversion Dam caused the Sacramento River elevation, and in turn the groundwater elevation in the vicinity of the landfill, to rise approximately 10 feet seasonally during periods when the dam gates were lowered. When the dam gates were lifted, groundwater elevations quickly returned to a normal elevation of approximately 242 feet msl. This seasonal rise and fall of the groundwater elevation affected the groundwater flow direction as observed in landfill monitoring wells. Before clean-closure of the northern portion of the landfill during the FPIP, waste material was present in the landfill at elevations as low as approximately 243 feet msl, resulting in some waste being saturated during gates-down operation of the Red Bluff Diversion Dam. Since August 2009, the Red Bluff Diversion Dam has been operated with gates out, keeping surface water elevations around 242 feet msl with groundwater elevations stabilizing at an elevation below the surface water elevation. Following completion of the FPIP, the lowest waste elevation in the landfill is estimated to be approximately 247 to 249 feet msl.

Since completion of the FPIP in September 2012, groundwater elevations as observed in landfill monitoring wells range from approximately 248.69 feet msl at the southeast end of the Unit to 244 feet msl at the northern portion of the Unit. The direction of groundwater flow is generally toward the west and an area of unconsolidated alluvial deposits in the Riverbank Formation. This area directly west of the Unit has hydraulic connection with the deeper Tehama Formation. A downward vertical gradient exists in this area which may be influenced by pumping of production and agricultural wells screened in the deeper Tehama Formation. The estimated average groundwater gradient is approximately 0.0156 feet per foot. The estimated average groundwater velocity is 60.7 feet per year.

Five monitoring wells make up the groundwater detection monitoring system. Monitoring data collected since completion of the FPIP indicates background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 238 and 278 micromhos/cm, with total dissolved solids (TDS) ranging between 139 and 555 milligrams per liter (mg/L).

Pactiv LLC currently operates the Class III landfill in accordance with Waste Discharge Requirements Order No. 91-064. These revised waste discharge requirements continue to classify the landfill Unit as a Class III Unit and implement applicable provisions of California Code of Regulations, Title 27.