

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2017-0071

WASTE DISCHARGE REQUIREMENTS
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
DEUEL VOCATIONAL INSTITUTION
CLASS II SURFACE IMPOUNDMENTS
CONSTRUCTION, OPERATION, CLOSURE, AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

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

1. California Department of Corrections and Rehabilitation (hereinafter Discharger) owns and operates the Deuel Vocational Institution (Facility) about 5 miles east of City of Tracy, in Section 20 Township 2S, Range 6E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility currently operates a reverse osmosis (RO) water treatment plant that includes a brine concentrator system (BCS) and four evaporation ponds (Class II Surface Impoundments) that serves the CDCR vocational facility which includes inmate housing and supporting operations. The Class II surface impoundments are regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq. for the containment of designated waste as defined in California Water Code section 13173.
2. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
 - a. Attachment A – Site Location Map
 - b. Attachment B – Existing Facility
 - c. Attachment C – Vicinity Supply Well Location Map
 - d. Attachment D – Detection Monitoring Program Sampling Point Locations
 - e. Attachment E – Future Wastewater Production Process Flow Diagram
 - f. Attachment F – Information Sheet
 - g. Attachment G – April 2016 Standard Provisions and Reporting Requirements
3. The facility is on a 760-acre property at 23500 Kasson Road, Tracy. The existing and future Class II surface impoundments area at the facility is approximately 8.8 acres of which 4.4 acres have been constructed. The facility currently consists of four 1.1-acre Class II surface impoundments as shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is located on Assessor's Parcel Number (APN) 239-120-01.

4. The Class II surface impoundments are used for containment of the discharge of hypersaline wastewater generated during the brine concentration process used in the production of potable drinking water. The primary constituents of concern in the wastewater are total dissolved solids which include chloride, sodium, sulfate, manganese, aluminum, and iron.
5. On 30 September 2016, the Discharger submitted a Report of Waste Discharge (ROWD). The information in the ROWD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the applicable information required in Title 27. The ROWD and supporting documents contain information related to this revision of the WDRs including:
 - a. Clean closure of the four existing 1.1-acre Class II surface impoundments;
 - b. Reconstruction of the clean closed area into two new 1.7 acre Class II surface impoundments;
 - c. Construction of two new 1.7 acre Class II surface impoundments;
 - d. Installation of unsaturated zone and groundwater detection monitoring systems for the new Class II surface impoundments; and
 - e. Updates to financial assurances for closure and post closure maintenance costs.
6. The existing and future waste management units authorized by this Order are described as follows:

<u>Unit(s)</u>	<u>Area</u>	<u>Liner/LCRS¹ Components</u>	<u>Unit Classification & Status</u>
P-1 through P-4	1.1 Acres each	Three geomembrane liners with a geosynthetic LCRS drainage layer between each liner pair.	Class II, inactive, ready for closure
P-01 and P-02	1.71 acres each	Two geomembrane liners with a geosynthetic LCRS drainage layer between the liners.	Class II, future as replacements for Units -1 through -4
P-03 and P-04	1.71 acres each	Two geomembrane liners with a geosynthetic LCRS drainage layer between the liners.	Class II, future

¹ LCRS – Leachate collection and removal system

7. On 25 January 2007, the Central Valley Water Board issued Order R5-2007-0005 in which the waste management units at the facility were classified as Class II units for the discharge of designated waste. This Order continues to classify the waste management units as Class II units in accordance with Title 27.
8. This Order implements the 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, dated April 2016 (SPRRs) which are attached hereto and made part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) R5-2017-0071 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all facilities regulated under Title 27 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.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

9. The Discharger proposes to continue to discharge designated waste to lined Class II surface impoundments at the facility. These classified wastes may be discharged only in accordance with Title 27.
10. Water Code section 13173 defines “Designated Waste” as either of the following:
 - a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code section 25143.
 - b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

Designated waste can be discharged only at Class I waste management units, or at Class II waste management units which comply with Title 27 and have been approved by the regional board for containment of the particular kind of waste to be discharged.

11. The Discharger treats on average 0.8 to 1.2 million gallons per day (MGD) of brackish water from four on-site groundwater supply wells. The raw water is treated using a reverse osmosis process and brine concentration for the production of potable drinking water. The waste byproduct of the reverse osmosis and brine concentration process is hypersaline liquid.
12. The Discharger provided data in the ROWD shown in the table below for samples of hypersaline liquid collected from the discharge from a Vibratory Shear Enhanced Process (VSEP) pilot project which will be installed to replace the brine concentrator system (BCS). The table also includes the California primary maximum contaminant level (primary MCL), the lowest applicable water quality objective (WQO) for groundwater for protection of drinking water beneficial use for domestic and municipal supply wells, and the background groundwater quality pumped from the four onsite supply wells at the site.

Constituent of Concern (COC)	Wastewater Quality ⁵	Background Groundwater Quality	CA MCL ¹	Lowest Applicable WQO ²	
Total Dissolved Solids (mg/L)	53,600	2,207	500 ³	450	Agriculture
Chloride (mg/L)	50,500	1,093	250 ³	106	Agriculture
Calcium (mg/L)	10,067	215	None	None	-
Sodium (mg/L)	9,067	237	None	30	Taste and Odor
Sulfate (mg/L)	6,250	227	250 ³	250	Taste and Odor
Magnesium (mg/L)	5,700	113	None	None	-
Potassium (mg/L)	310	7.5	None	None	-
Strontium (mg/L)	300	6.15	None	4	USEPA Health Advisory
Manganese (mg/L)	24	0.49	0.05 ³	0.2	Agriculture
Iron (mg/L)	6.6	0.14	0.3 ³	5	Agriculture
Barium (mg/L)	3.43	0.12	1 ⁴	1	USEPA Health Advisory
Boron (mg/L)	3.0	0.60	None	0.7	Agriculture
Aluminum (mg/L)	1.82	ND	1 ⁴	0.2	CA Secondary MCL

¹ California Division of Drinking Water Maximum Contaminant Levels

² Water Quality Objective

³ Secondary MCL (taste & odor or welfare-based)

⁴ Primary MCL (health based + technology and economics)

⁵ Values in bold pertain to COCs where the background water quality is of high quality (See definition of high quality waters in the SWRCB Resolution 68-16 State Antidegradation Policy) i.e. better than the CA MCL or lowest applicable WQO and the wastewater quality is worse than the CA MCL or lowest applicable WQO (i.e. a release could cause impairment of receiving water beneficial uses).

13. The data indicate that the discharge consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state. Therefore, the discharge is a “designated waste” and as such must be discharged to a Class II waste management unit as required by Title 27.

SITE DESCRIPTION

14. The primary land uses within one mile radius of the facility is agriculture with a small cluster of commercial and industrial warehouse land use to the northwest.

15. A well survey conducted in 2016 indicated that there are domestic, industrial, and agricultural groundwater supply wells within one mile of the facility. Locations of these wells relative to the facility are shown on Attachment C, which is incorporated herein and made part of this Order by reference.

16. The ROWD states that the facility is located within the central portion of the Great Valley Geomorphic Province that includes the Sacramento Valley in the north, and the San Joaquin Valley in the south. The facility is situated within the northern portion of the San Joaquin Valley that approximately extends from the Sacramento-San Joaquin Delta Region in the north to the City of Bakersfield in the south (Fugro, 2005). Locally, geology is composed primarily of the Dos Palos Alluvium (Qdp), which is Holocene in age, with portions of the facility underlain by Alluvial Fan Deposits (Qf). These units contain laterally extensive fine sands, silts, and clays likely deposited during flooding of the nearby San Joaquin River and other fluvial and alluvial depositional processes.
17. Four test borings were installed as part of a 2005 geotechnical study for the design of the initial site impoundments. Surface soils reportedly consisted of soft to firm clay with sand which extended to depths of 5 to 10 feet bgs. Below the surface soils, firm to very stiff clays intermixed with sand and silt layers were encountered that extended to depths of 42 to 46 feet bgs. Below the clay layer, dense to very dense, poorly graded sand was encountered to a maximum depth explored of 56.5 feet (Fugro, 2005).
18. Additional geotechnical testing was accomplished to update and confirm the 2005 study. Cone penetrometer test (CPT) probes and soil borings were performed. These explorations generally ranged from 11.5 to 50 feet bgs, and were generally focused on the west side of the facility to supplement the existing geotechnical data from previous work by Fugro. The additional geotechnical testing was planned specifically to target areas of uncertainty or to fill gaps in the data obtained during previous studies. Subsurface materials encountered during the exploration program were generally consistent with the Dos Palos Alluvial (Qdp) and Alluvial Fan (Qf) deposits. Observed soils on site generally consisted of fine grained low plasticity clays, sandy clays, silts, and fine grained sands. Lenses of fine gravel up to ½ inch, and coarse sand were also observed in some layers. In conclusion, primary geologic stratigraphic profile at the facility consists of four laterally extensive continuous layers: Upper Clay, Upper Sand, Lower Clay, and Lower Sand.
19. Based on a site-specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment of magnitude 6.6 on the Richter scale along segment 7 of the Great Valley Fault at a closest rupture distance of 9 miles southwest of the site. It is estimated that a MCE event would produce a peak ground acceleration of 0.483 g at the site with a return period of 9 years for a moment of magnitude 6 event and 48 years for a moment of magnitude 7 event.
20. The average annual precipitation at the facility is 9.86 inches based on the Tracy Carbona Station. The 100-year wet season was calculated to be 18.02 inches based on data from the Flood Emergency Response Information Exchange developed by California Department of Water Resources for Tracy Carbona Station. The mean pan evaporation is 97.48 inches per year as measured at the Tracy Pumping Plant.
21. The 1,000-year, 24-hour precipitation event for the facility is estimated to be 4.25 inches, based on National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation frequency data server.

22. The waste management facility is within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 06077C0755F. These WDRs require the Discharger to design, construct, and maintain the surface impoundments such that the designated waste within the surface impoundments remains above the 100-year flood plain estimated flood level of 27 feet msl. Furthermore, these WDRs require the Discharger to protect the surface impoundments such that they are not inundated or washed out due to a flood event with a 100-year return period.

SURFACE WATER AND GROUNDWATER CONDITIONS

23. The *Water Quality Control Plan for 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.

24. Surface drainage is toward the San Joaquin River in the Sacramento San Joaquin Delta Hydrologic Area (544.00).

25. The beneficial uses of the Sacramento-San Joaquin Delta are municipal and domestic supply; agricultural supply; industrial; industrial service supply, water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organism; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

26. The first encountered groundwater reported between 2007 and 2016 ranges from about 2.0 feet to 7.4 feet below the native ground surface as reported in the Discharger's 2016 1st Semiannual Monitoring Report. Groundwater elevations ranged from about 9.3 feet MSL to 16.4 feet MSL in groundwater monitoring wells MW-2 and MW-3 respectively. Based on variability of historical groundwater elevation measurements including an estimation of the capillary fringe above the zone of saturation, the Discharger estimates highest anticipated groundwater elevation including capillary fringe below Ponds P-01 and P-02 to be 18.64 feet MSL. The Discharger also estimates highest anticipated groundwater elevation including capillary fringe below Ponds P-03 and P-04 to be 16.75 feet MSL. To maintain a minimum of five feet of separation between waste in the ponds and highest anticipated groundwater including capillary fringe, these WDRs require waste in the ponds to be at least five feet above the highest anticipated groundwater including capillary fringe.

27. The ROWD states that the estimated hydraulic conductivity of the native soils underlying the existing surface impoundments is 1×10^{-7} centimeters per second (Source: Amec Geomatrix, 2008).

28. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 4,500 and 5,220 micromhos/cm, with total dissolved solids (TDS) ranging between 3,800 and 4,500 milligrams per liter (mg/L).

29. The downgradient direction of groundwater is generally toward the north-northeast and to the northeast. The estimated average groundwater gradient is approximately 0.004 to 0.007 feet per foot.
30. 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, UNSATURATED ZONE, AND SURFACE WATER MONITORING

31. The existing groundwater monitoring network for the Class II surface impoundments P-1 through P-4 consists of background monitoring well MW-3, and detection monitoring wells MW-1 and MW-2, as shown on Attachment D. The monitoring network also includes two additional groundwater monitoring points MW-1A and MW-4.
32. The Discharger's detection monitoring program for groundwater at the facility satisfies the requirements contained in Title 27 for surface impoundments P-1 through P-4 and for rehabilitated surface impoundments P-01 and P-02 which will replace surface impoundments P-1 through P-4. However, the ROWD proposed a groundwater detection monitoring system for surface impoundments P-03 and P-04 that does not meet the requirements of Title 27 sections 20415(b)(1)(B) and 21760(a)(1)-(3). These WDRs require the Discharger to install a groundwater detection monitoring system that complies with Title 27 requirements and to develop water quality protection standards for the monitoring system, as required by Title 27, prior to placement of waste in surface impoundments P-03 and P-04.
33. The unsaturated zone monitoring system for the Class II surface impoundments P-1 through P-4 currently consists of pan lysimeters LCRS-1 through LCRS-4 respectively, located under the LCRS sumps in each Class II surface impoundment. The Discharger's detection monitoring program for the unsaturated zone satisfies the requirements contained in Title 27 for surface impoundments P-1 through P-4. However, the Discharger's ROWD proposed to install one suction lysimeter under the LCRS sumps of each new Class II surface impoundments P-01, P-02, P-03, and P-04. The Discharger's proposed unsaturated zone monitoring system does not meet the requirements of Title 27 sections 20415(d)(2)(B) and 21760(a)(1)-(3). These WDRs require the Discharger to install an unsaturated zone detection monitoring system that complies with Title 27 requirements and to develop water quality protection standards for the monitoring system, as required by Title 27, prior to placement of waste in surface impoundments P-01 through P-04.
34. No surface water monitoring is required in these WDRs since the Discharger does not propose to discharge solid waste to any areas other than the Class II surface impoundments covered under these WDRs.
35. The Discharger submitted a June 2008 Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each

monitored constituent in accordance with Title 27. The WQPS report proposed to use Intrawell data analysis to calculate control limits for the monitored constituents using the Shewhart-CUSUM method. The WQPS and approved data evaluation methods are included in MRP R5-2017-0071.

GROUNDWATER CONDITIONS AND CORRECTIVE ACTION

36. Following construction of the four 1.1-acre ponds in 2008, a leak in the secondary liner was discovered on 18 September 2014. In February 2015, the Discharger ceased discharging waste to the ponds. The Discharger is currently storing waste generated from the reverse osmosis facility in onsite tanks and periodically transporting and disposing the waste at a wastewater treatment plant.
37. On 30 March 2015 Central Valley Water Board issued a Cleanup and Abatement Order (CAO) requiring amongst other things to:
 - a. Submit a Long Term Compliance Implementation Report which included a schedule when the leaks in the primary and secondary liners would be repaired;
 - b. Submit a plan and proposed timeline for clean closing the ponds if the Discharger proposes a means to eliminate a need for use of Class II surface impoundments.
38. In response to the CAO, as corrective action the Discharger submitted a ROWD in which the Discharger chose to continue to operate the reverse osmosis facility in a manner that would require discharge to Class II surface impoundments. Instead of repairing the four 1.1 acre ponds, the Discharger chose to clean close them and in their place construct four new 1.7 acre Class II surface impoundments. These WDRs regulate the proposed corrective action of clean closure of the existing four 1.1 acre surface impoundments and replacement with four new 1.7 acre surface impoundments through prohibitions, specifications, and provisions.

DESIGN OF WASTE MANAGEMENT UNIT(S)

39. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
40. The Discharger proposes a liner system for the reconstructed and new Class II surface impoundments consisting of, from top to bottom:
 - a. A primary 60-mil High Density Polyethylene (HDPE) geomembrane.
 - b. A 300 mil geonet drainage layer, as a Leachate Collection and Removal System (LCRS).
 - c. An LCRS sump for removal of any leakage through the primary liner.
 - d. A secondary 60-mil HDPE geomembrane.

- e. Lysimeter(s) below for secondary liner for unsaturated zone monitoring.
 - f. A compacted soil foundation layer.
41. The LCRS will drain to a sump where leachate will be pumped back into the surface impoundment. The LCRS is designed with capacity for at least twice the maximum anticipated daily volume of leachate.
42. Title 27 section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27 section 20080(c)(1) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative(s) provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 section 20080(b)(2) of Title 27 and that any proposed engineered alternative is consistent with the performance goal in accordance with Title 27 sections 20240, 20250, and 20310.
43. The Discharger proposes a liner system which will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the postclosure maintenance period in accordance with the criteria set forth in Title 27 for Class II waste management units.
44. The Discharger adequately demonstrated that construction of the liner prescriptive standard using a clay liner as the secondary liner for the Class II surface impoundment as described in Title 27 would not be as protective of receiving water quality when compared to the proposed engineered alternative design utilizing a 60-mil geomembrane as the secondary liner. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the containment structures for a Class II waste management unit affords equivalent protection against water quality impairment.
45. Title 27 section 20370(a) requires Class II units to be designed to withstand the maximum credible earthquake (MCE) without damage to foundation or containment structures. The ROWD contains a stability analysis for the existing Class II surface impoundment. The stability analysis analyzes the impoundment under both static and dynamic conditions. The static stability analysis indicates a factor of safety of 1.8, which is greater than the factor of safety of 1.5 required by Title 27. The dynamic (seismic) stability analysis using the peak ground acceleration of 0.483 g for the MCE indicates a factor of safety of 1.5, which meets the required 1.5 factor of safety required by Title 27.
46. Title 27 section 20375(a) requires Class II surface impoundments to have capacity for seasonal precipitation, a 1,000-year 24-hour design storm event, and to maintain at least

two feet of freeboard at all times. The 1,000-year, 24-hour storm event for the site is 4.25 inches, and is referred to hereafter as the “design storm”. For Title 27 required seasonal precipitation, the Discharger has been required to use the 100-year wet season distributed monthly to prevent overflow of the impoundment or less than two feet of freeboard during a reasonable worst-case scenario wet season. The 100-year wet season for the site is 18.02 inches. The ROWD includes a table showing how this rainfall would be distributed monthly by distributing the total amount among the months using the percentage of monthly precipitation that occurs on average. This results in the following for the 100-year wet season as shown in the ROWD:

Month	100-Year Wet Season (Inches)
January	3.47
February	3.14
March	2.50
April	1.54
May	0.82
June	0.16
July	0.05
August	0.16
September	0.40
October	0.95
November	2.01
December	2.83
Total	18.02

47. A detailed water balance for the surface impoundment is included in the ROWD. The water balance takes the following factors into account:

- a) The average daily base wastewater flow is 15,120 gpd or approximately 5.51 million gallons per year.
- b) Evaporation losses from the four surface impoundments will total approximately 6.92 million gallons per year, distributed monthly in accordance with adjusted local pan evaporation rates and a salinity reduction factor.
- c) The 100-year wet season 18.02 is distributed monthly in accordance with average monthly rainfall patterns.
- d) The total bottom surface area of the surface impoundments will be 6.8 acres.
- e) The surface impoundments were not sized to store wastewater other than that produced by the reverse osmosis water treatment process.
- f) The 1000-year design storm event requires an additional 4.25 inches of freeboard that needs to be maintained to accommodate the design storm event.
- g) The capacity of the four surface impoundments at the two-foot freeboard level is approximately 9.79 million gallons.

- h) The accumulation of solids in the four surface impoundments is approximately 50 cubic feet per day or approximately 1.22 feet of salt accumulation at the bottom of the surface impoundments over a 20 year period.

48. Based on the water balance in the ROWD, the Discharger reports that the surface impoundment has sufficient capacity to maintain more two feet of freeboard and the required additional volume for the design storm event during the height of the 100-year wet season. The highest volume would be seen during March at 3 million gallons stored in the four impoundments which is less than the volume of 9.79 million gallons of capacity at the two-foot freeboard level, plus the additional volume of the design storm event.
49. This Order requires the Class II surface impoundment to have capacity for wastewater flows to the impoundment, precipitation from a 100-year wet season of 18.02 inches distributed at least monthly, a 1,000-year 24-hour storm event (design storm) of 4.25 inches, and shall maintain at least two (2.0) feet of freeboard at all times. To ensure compliance with this requirement, the Discharger is required to maintain at least 2.4 feet of freeboard at all times except in the event of a storm equal to or exceeding the 1,000-year 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained. Based on these requirements, the Class II surface impoundment must have at least 9.79 million gallons of capacity minus volume of solids accumulation up to the two (2.0) foot freeboard level. These WDRs limit the discharge of wastewater to the four 1.7-acre class II surface impoundments to a flow of 15,120 gpd evaluated as a monthly average and approximately 5.51 million gallons per year.
50. This Order includes an Action Leakage Rate (ALR) for the Class II surface impoundment LCRS. The ALR is the maximum flow rate through the primary liner to the LCRS beyond which the Discharger is required to take actions to inspect and repair the primary liner system. The ALR is based on the recommendations in the 1992 USEPA guidance document *Action Leakage Rate for Leak Detection Systems*. The guidance recommends that ALR for lined surface impoundments be set at no more than 1,000 gallons per acre per day (gpac) unless site-specific conditions dictate otherwise.

An ALR of 2,000 gpac is being proposed at the site for the following reasons:

- a. The 1992 EPA guidance document provides for different ALR than the rule of thumb based on site-specific conditions;
- b. The surface impoundments exceed the minimum Title 27 design standards for the secondary liner allowing additional leakage through the primary liner;
- c. The LCRS drainage layer's ability to pass 3,000 gpac without building up head on the secondary liner;
- d. Potential difficulties locating very small holes in the primary liner with hypersaline water;
- e. The consultant, Dewberry Engineers, Inc., certified that an ALR of 4,182 gpac would pass through the LCRS and meet the requirements of Title 27 for head build-up.

51. Based on the Finding above the site specific recommendation for the ALR is 2,000 gpad to be used to calculate the daily allowable leakage from the 1.7-acre impoundments. Therefore, this Order sets the ALR for each surface impoundment at 3,400 gallons per day. The leakage rate will be calculated based on monthly readings of the flow totalizer that records flow from the LCRS manhole back to the surface impoundment.
52. Construction will proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.

CLEAN CLOSURE AND CLOSURE FINANCIAL ASSURANCES

53. A Preliminary Closure Plan (PCP) for the existing and future surface impoundments is included in the ROWD. Pursuant to Title 27 Section 21400(b)(1), the PCP proposes clean-closure of the surface impoundments. The PCP proposes to prepare and this Order requires that a final closure plan prior to commencing closure activities. The liner system, LCRS, and any sludges will be removed and taken to an off-site appropriately-permitted landfill. The PCP plan assumes that approximately 350,000 cubic feet of salt accumulation will require disposal after the estimated 20-year service life of the surface impoundments. The soil underlying the impoundment will be sampled for the presence of contaminants, and the PCP assumes limited over-excavation of the top two feet of soil will be conducted. The site will then be graded for future use.
54. The PCP includes an itemized cost estimate for third party costs to clean-close the surface impoundment. The total of the estimate is 2.6 million dollars in 2016 dollars. This cost estimate is approved by the adoption of these WDRs. Pursuant to Title 27 Section 22207(a), this Order requires the Discharger to establish financial assurances for closure of the Class II surface impoundments in accordance with the approved cost estimate naming the Central Valley Water Board as the beneficiary or providing an alternative state approved financial assurance mechanism per Title 27 section 22254. On 30 April 2009 the Discharger submitted an alternative financial assurance mechanism using (1) the Discharger's Special Repair funds, (2) appropriation of funds by the State Legislature, and (3) use of the Discharger's Operations Budget, Central Valley Water Board staff approved alternative financial assurance mechanism as providing adequate financial assurances on 12 June 2009. These revised WDRs continue to accept the financial assurances mechanism provided by the Discharger so long as the Discharger continues to use the approved language in the 30 April 2009 certification submitted by the Discharger's deputy secretary.

FINANCIAL ASSURANCES FOR CORRECTIVE ACTION

55. Title 27 Section 22222 requires the Discharger to establish financial assurances for corrective action of a known or reasonably foreseeable release. A cost estimate for corrective action is included in the ROWD. The total of the cost estimate for corrective action is \$2.6 million in 2016 dollars. This cost estimate is approved by the adoption of these WDRs. This Order requires the Discharger to establish financial assurances for corrective action in accordance with the approved cost estimate naming the Central Valley

Water Board as the beneficiary or providing an alternative state approved financial assurance mechanism per Title 27 section 22254. Central Valley Water Board staff approved alternative financial assurance mechanism as providing adequate financial assurances on 12 June 2009. These revised WDRs continue to accept the financial assurances mechanism provided by the Discharger so long as the Discharger continues to use the approved language in the 30 April 2009 certification submitted by the Discharger's deputy secretary. This Order also requires annual adjustments to account for inflation by 30 April of each year.

CEQA AND OTHER CONSIDERATIONS

56. On 7 April 2017, the California Department of Corrections and Rehabilitation as lead agency certified an addendum to its 2005 Initial Study/Mitigated Negative Declaration (IS/MND) for the Reverse Osmosis Water Treatment Facility project. The addendum was intended to evaluate and confirm CEQA compliance for proposed changes at the facility including enlargement of its Class II surface impoundments. A Notice of Determination was filed on 10 April 2017 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (Title 14, section 15000 et seq.). The Central Valley Water Board considered the addendum to the 2005 IS/MND and incorporated mitigation measures from the negative declaration and addendum into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.
57. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition.*
 - 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.
58. 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."
59. 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 discharge or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity

of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes 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.

60. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2017-0071 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

61. 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.
62. 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.
63. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
64. 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 that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final 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.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order R5-2007-0005 is rescinded except for purposes of enforcement, and that California Department of Corrections and Rehabilitation, 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' 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.
2. The discharge of solid waste or liquid waste to surface waters, surface water drainage courses, or groundwater is prohibited.
3. The discharge of wastes outside of a waste management unit or portions of a waste management unit specifically designed for their containment is prohibited.
4. The Discharge of any waste to the Class II surface impoundments other than that generated in the process of treating brackish groundwater for use at the facility is prohibited.
5. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements dated April 2016 (SPRRs).

B. DISCHARGE SPECIFICATIONS

1. The discharge shall not cause a condition of pollution or nuisance as defined by the Water Code section 13050.
2. Prior to the discharge of waste to a Class II waste management unit, all wells within 500 feet of the unit shall have sanitary seals or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Central Valley Water Board and to the State Department of Water Resources.
3. In accordance with the water balance provided by the Discharger in the ROWD, the Discharger is limited to discharging from its brackish groundwater treatment plant a wastewater flow of 15,120 gpd evaluated as a monthly average and approximately 5.51 million gallons per year of wastewater to the four 1.7-acre class II surface impoundments.
4. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated April 2016.

C. FACILITY SPECIFICATIONS

1. Annually, prior to the anticipated rainy season but no later than **1 November**, any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed and reported in compliance with MRP R5-2017-0071.

Class II Surface Impoundments

2. The Class II surface impoundments shall have capacity for wastewater flows to the impoundment, precipitation from a 100-year wet season of 18.02 inches distributed at least monthly, a 1,000-year 24-hour storm event (design storm) of 4.25 inches, and shall maintain at least two (2.0) feet of freeboard at all times. To ensure compliance with this requirement, the Discharger shall maintain at least 2.4 feet of freeboard at all times except in the event of a storm equal to or exceeding the 1,000-year 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained.
3. The Discharger shall **immediately** notify Central Valley Water Board staff by telephone and email and **immediately** take measures to regain surface impoundment capacity in the event that freeboard levels in any surface impoundment are equal to or less than 2.4 feet.
4. The Discharger shall record onsite rainfall to track the magnitude of storm events and shall record surface impoundment freeboard levels in accordance with the attached monitoring and reporting program.
5. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
6. The surface impoundment(s) shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
7. Leachate removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.
8. The **Action Leakage Rate** (ALR) for each of the four 1.7-acre Class II surface impoundments is **3,700 gpd** or 111,000 gallons over a 30-day period. If leachate generation in the LCRS of any of the Class II surface impoundments exceeds the ALR over a 30-day period, the Discharger shall:
 - a. **Immediately** notify Central Valley Water Board staff by telephone and email.
 - b. Submit written notification within **seven days** that includes a time schedule to locate and repair leak(s) in the liner system.
 - c. If repairs do not result in a leakage rate less than the required ALR, the Discharger shall submit written notification within **seven days** that includes a time schedule for replacement of the upper liner of the surface impoundment or other action necessary to reduce leachate production.
 - d. Complete repairs or liner replacement in accordance with the approved time schedule under "b" and/or "c", above.

9. If leachate is detected in the pan lysimeter of a Class II surface impoundment indicating a leak in the containment structures, the Discharger shall:
 - a. **Immediately** notify Central Valley Water Board staff by telephone and email that the containment structures have failed.
 - b. **Immediately** sample and test the liquid in accordance with the unsaturated zone monitoring requirements in MRP R5-2017-0071.
 - c. Submit written notification of the release to Central Valley Water Board staff within **seven days** including a time schedule to repair the containment structures.
 - d. Complete repairs of the containment structures in accordance with the approved time schedule.
10. Solids that accumulate in the Class II surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Central Valley Water Board staff for review.
11. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated April 2016.

D. DESIGN AND CONSTRUCTION SPECIFICATIONS

1. Containment structures and precipitation and drainage control systems shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, and washout under 1,000-year, 24-hour precipitation conditions.
2. Waste management units shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.
3. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over their operating life.
4. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the surface impoundments and the post-closure maintenance period.

5. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The LCRS pump shall be capable of removing this volume of leachate and/or 150% of the Action Leakage Rate flow, whichever is greater.
6. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation without excessive pump cycling that could damage the pump.
7. The Discharger shall submit a design report including plans, specifications, and a construction quality assurance plan for review and approval prior to constructing any new lined waste management unit.
8. The Discharger shall sufficiently characterize underlying soil and soil pore water characteristics below any new Class II surface impoundments to be constructed prior to placement of waste such that the soil and soil pore water characterization results may be used to determine the level of clean up necessary to certify that the overlying Class II surface impoundment is clean closed per Title 27 section 21400(b)(1) requirements for clean closure certification.
9. The Discharger shall submit a final report documenting construction of any new lined waste management unit for review and approval prior to discharging wastes to the waste management unit.
10. The Discharger shall comply with all Standard Design and Construction Specifications listed in Section E of the SPRRs dated April 2016.

Class II Surface Impoundments

11. Each Class II surface impoundment liner system shall consist of, from the top down:
 - a. A primary 60-mil High Density Polyethylene (HDPE) geomembrane.
 - b. A 300-mil geonet drainage layer with a minimum transmissivity of 0.011 ft²/sec, as a Leachate Collection and Removal System (LCRS).
 - c. A secondary 60-mil HDPE geomembrane.
 - d. An unsaturated zone monitoring system consisting of a pan lysimeter located below the entire LCRS sump.
 - e. A compacted soil foundation layer that meets the requirements of the geotechnical report prepared by Amec Foster Wheeler Environment & Infrastructure, Inc. dated 27 September 2016.

12. Highest anticipated groundwater elevation including capillary fringe is estimated to be 18.64 feet MSL below ponds P-01 and P-02. Highest anticipated groundwater including capillary fringe is estimated to be 16.75 feet MSL below ponds P-03 and P-04 (see Finding 26). The Discharger shall maintain a minimum of five feet of separation between waste in the ponds and highest anticipated groundwater elevation including capillary fringe.
13. The Class II surface impoundments are located within a 100-year flood area. Therefore, the Discharger shall protect the surface impoundments such that they are not inundated or washed out due to a flood event with a 100-year return period.
14. Each Class II surface impoundment shall have a sump to collect and return leachate to the impoundment that leaks through the primary liner. The sump shall include a dedicated automated pump to remove leachate and return it to the impoundment.
15. Each Class II surface impoundment shall have a flow totalizer to measure leachate volumes pumped from the sump in order to track leakage rates.
16. Each Class II surface impoundment shall have an unsaturated zone monitoring system consisting of a pan lysimeter beneath the entire sump area of the impoundment.
17. Each Class II surface impoundment shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded at any time. The markings on the liner shall have increments no greater than 3-inches and if a vertical freeboard gauge is used the markings on the vertical freeboard gauge shall have increments no greater than 1-inch. The markings shall also clearly indicate the 2-foot freeboard level.
18. The Discharger shall comply with the recommendations in the geotechnical report prepared by Amec Foster Wheeler Environment & Infrastructure, Inc. dated 27 September 2016 in order to ensure seismic stability of waste containment structures.
19. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated April 2016.
20. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated April 2016.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. At closure of the Class II surface impoundment(s), the Discharger shall clean-close the unit(s) pursuant to Title 27 section 21400(b)(1). All precipitates, settled solids, liner materials, and adjacent natural geologic materials contaminated by wastes shall be completely removed and discharged to an appropriately permitted landfill facility. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the

impoundment and/or overflow basins shall be closed as a landfill pursuant to Title 27 section 21400(b)(2)(A). In this event, the Discharger shall backfill and grade the area and submit a revised Final Closure and Post-Closure Maintenance Plan proposing a final cover meeting the requirements of Title 27 section 21090 and shall perform all post-closure maintenance in the approved Post-Closure Maintenance Plan.

2. The Discharger shall clean close the four 1.1-acre Class II surface impoundments P-1 through P-4 by 1 January 2018 in accordance with the Discharger's clean closure workplan approved in Central Valley Water Board staff letter dated 24 January 2017. Clean Closure shall be completed per the schedule in the Discharger's ROWD and as required in the Provisions section of these WDRs.
3. Prior to closure of any Class II surface impoundment, the Discharger shall submit a Final Closure Plan prepared by a California-registered civil engineer or certified engineering geologist, and that contains all applicable information required in Title 27 section 21769 at least 120 days prior to the initiation of closure activities in order to provide Central Valley Water Board staff sufficient time for review and approval. The plan shall include any closure/post-closure elements proposed in the ROWD, and shall meet the requirements of this Order.
4. The Discharger shall comply with all Closure and Post-Closure Maintenance Specifications listed in Section F of the SPRRs dated April 2016.

F. FINANCIAL ASSURANCE

1. Pursuant to Title 27 Section 22207, the Discharger shall submit a report by 30 April of each year showing that it has established an irrevocable \$2.6 million **closure fund** with the Central Valley Water Board named as beneficiary to ensure closure of the Class II surface impoundments in accordance with the cost estimate in the ROWD or provide an alternative state approved financial assurance mechanism per Title 27 section 22254. The financial assurances mechanism shall be one listed in Title 27 Section 22228 for which the Discharger is eligible. On 30 April 2009 the Discharger submitted an alternative financial assurance mechanism using (1) the Discharger's Special Repair funds, (2) appropriation of funds by the State Legislature, and (3) use of the Discharger's Operations Budget. Central Valley Water Board staff approved the alternative financial assurance mechanism as providing adequate financial assurances on 12 June 2009. These revised WDRs continue to accept the financial assurances mechanism provided by the Discharger so long as the Discharger continues to use the approved language in the 30 April 2009 certification submitted by the Discharger's deputy secretary. The Discharger shall submit a report by **30 April of each year** certifying that the financial assurance mechanism continues to be fully funded. .
2. Pursuant to Title 27 Section 22222, the Discharger shall submit a report showing that it has established an irrevocable \$2.6 million **corrective action fund** with the Central Valley Water Board named as beneficiary to ensure funds are available to address a known or reasonably foreseeable release from the Class II surface impoundments or provide an alternative state approved financial assurance mechanism per Title 27

section 22254. The financial assurances mechanism shall be one listed in Title 27 Section 22228 for which the Discharger is eligible. On 30 April 2009 the Discharger submitted an alternative financial assurance mechanism using (1) the Discharger's Special Repair funds, (2) appropriation of funds by the State Legislature, and (3) use of the Discharger's Operations Budget. Central Valley Water Board staff approved the alternative financial assurance mechanism as providing adequate financial assurances on 12 June 2009. These revised WDRs continue to accept the financial assurances mechanism provided by the Discharger so long as the Discharger continues to use the approved language in the 30 April 2009 certification submitted by the Discharger's deputy secretary. The Discharger shall submit a report by 30 April of each year certifying that the financial assurance mechanism continues to be fully funded.

3. By **30 April** of each year, the Discharger shall submit a report to the Central Valley Water Board that reports the balance of both the closure and corrective action funds or the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27 Section 22236.
4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated April 2016.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) R5-2017-0071, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated April 2016.
2. The Discharger shall, for any waste management unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-2017-0071, and the Standard Monitoring Specifications listed in Section I of SPRRs dated April 2016.
3. The Discharger shall comply with the Water Quality Protection Standard (WQPS) as specified in this Order, MRP R5-2017-0071, and the SPRRs dated April 2016. The Discharger shall use the same WQPS method used for determining a release throughout the site for its groundwater monitoring system.
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 waste management unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP R5-2017-0071.
5. For each monitoring event, the Discharger shall determine whether the waste management unit is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-2017-0071 and the Standard Monitoring Specifications in Section I of the SPRRs dated April 2016.

6. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated April 2016.

H. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated April 2016, which are attached hereto and made part of this Order by reference. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. Pursuant to Water Code section 13267, the Discharger shall comply with Monitoring and Reporting Program R5-2017-0071, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring groundwater, the unsaturated zone, and surface waters throughout the active life of the waste management units and any applicable post-closure maintenance period. A violation of Monitoring and Reporting Program R5-2017-0071 is a violation of these waste discharge requirements.
3. The Discharger shall not discharge waste to a Class II waste management unit until the following tasks are completed and approved by Central Valley Water Board staff:
 - a. Install a groundwater monitoring system.
 - b. Establish background groundwater quality through at least one year of monitoring (a minimum of 8 samples is required to develop statistical values for inorganic COCs).
 - c. Submit a report proposing a Water Quality Protection Standard including a method for calculating concentration limits.
4. Prior to discharging waste to a Class II waste management unit, the Discharger shall establish Financial Assurance funds for closure and corrective action.
5. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
6. The Discharger shall maintain legible records of the volume and type of waste discharged to the surface impoundments and the manner and location of the discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Central Valley Water Board and of the State Water Resources

Control Board, copies of these records shall be sent to the Central Valley Water Board upon request.

7. The Discharger shall comply with all applicable provisions Title 27 that are not specifically referred to in this Order.
8. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order and of the California Water Code.
9. The Discharger shall immediately notify the Central Valley Water Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
10. In the event of any change in control or ownership of the facility or disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of General Provision K.2.e in the Standard Provisions and Reporting Requirements and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
11. The Discharger shall provide proof to the Central Valley Water Board **within sixty days after completing final closure** of the facility that the deed to the facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
 - a. The parcel has been used for disposal of wastes.
 - b. Land use options for the parcel are restricted in accordance with post-closure land uses set forth in any post-closure plan (if applicable).
 - c. In the event that the Discharger defaults on carrying out either any corrective action needed to address a release, groundwater monitoring, or any post-closure maintenance (if applicable), then the responsibility for carrying out such work falls to the property owner.

12. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
13. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by a California-registered civil engineer or certified engineering geologist:

<u>Task</u>	<u>Compliance Date</u>
A. Construction Plans	
Submit construction and design plans for review and approval. (See all Construction Specifications in Section D, above and Section F of the SPRRs.)	90 days prior to proposed construction
B. Groundwater Monitoring Plan	
1. Submit a groundwater monitoring plan and Well Installation Plan for review and approval for surface impoundments P-03 and P-04 that comply with Title 27 sections 20415(b)(1)(B) and 21760(a)(1)(3) prior to placement of waste.	1 August 2017
2. Install an approved groundwater monitoring system and collect sufficient background water quality data to establish WQPS.	1 October 2017

<u>Task</u>	<u>Compliance Date</u>
C. Unsaturated Zone Monitoring Plan	
1. Submit an unsaturated zone monitoring plan for review and approval for surface impoundments P-01 through P-04 that complies with Title 27 sections 20415(d)(2)(B) and 21760(a)(1)(3) prior to construction of surface impoundments P-01 through P-04.	1 August 2017
2. Install approved unsaturated zone monitoring system and collect sufficient background water quality data to establish WQPS.	Prior to construction of surface impoundment liner system.
D. Clean Closure of surface impoundments P-1 thru P-4	
Complete clean closure of ponds P-1 through P-4 by 1 January 2018 using approved clean closure plan dated 24 January 2017 and submit a final clean closure report.	90 days after clean closure of ponds P-1 thru P-4
E. Construction of new surface impoundments P-01 through P-04	
Complete construction of new ponds P-01 through P-04 per approved design criteria, plans, and specifications.	1 August 2018
F. Construction Report	
Submit a report for review and approval upon completion of construction demonstrating construction was in accordance with approved construction plans (see Standard Construction Specifications in Section F of the SPRRs).	60 days prior to proposed discharge
G. Establish WQPS for surface impoundments P-03 and P-04	
The Discharger shall establish WQPS per Title 27 section 20390 and concentration limits per Title 27 section 20400 using sufficient background data to establish background water quality prior to placement of waste in P-03 and P-04.	1 August 2018

14. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
15. The Central Valley Water Board will review this Order periodically and may revise requirements when necessary.
16. This Order shall take effect upon the date of adoption.
17. The Discharger shall comply with all General Provision listed in Section K of the SPRRs dated April 2016.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify 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 9 June 2017.

Original Signed By

PAMELA C. CREEDON, Executive Officer

VKJ/WMH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2017-0071
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
DEUEL VOCATIONAL INSTITUTION
CLASS II SURFACE IMPOUNDMENTS
CONSTRUCTION, OPERATION, CLOSURE, AND CORRECTIVE ACTION
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) is issued to California Department of Corrections and Rehabilitation (Discharger) pursuant to California Water Code section 13267 and incorporates requirements for groundwater, and unsaturated zone 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 R5-2017-0071, and the Standard Provisions and Reporting Requirements dated April 2016 (SPRRs). 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. Failure to comply with this MRP, or with the SPRRs, constitutes noncompliance with the WDRs and with Water Code Section 13267, which can result in the imposition of civil monetary liability.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs. All monitoring shall be conducted in accordance with the approved April 2007 *Sample Collection and Analysis Plan* or more recent approved revisions, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). The Discharger shall use the same WQPS method for all groundwater monitoring wells. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate (LCRS), surface impoundments, and other groundwater monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables 1 through 5.

The Discharger shall use USEPA test methods with the lowest achievable detection limit for that constituent taking any matrix interferences into account. The reporting limit shall be no higher than the practical quantitation limit. The Discharger shall report all trace concentrations that are between the detection limit and the practical quantitation limit. All metals analyses shall be for dissolved metals.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Surface Water Monitoring (Not Applicable)
A.4	Surface Impoundment Monitoring
A.5	LCRS Monitoring, Action Leakage Rate, and Annual LCRS Testing
A.6	Waste Discharge Monitoring (Not Applicable)
A.7	Facility Monitoring
A.8	Corrective Action Monitoring

1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the 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 detection monitoring system meets the applicable requirements of Title 27 for four 1-acre Class II surface impoundments P-1, P-2, P-3, and P-4. After clean closure and rehabilitation of Class II surface impoundments P-1 through P-4, the Discharger will construct two new 1.7-acre Class II surface impoundments P-01 and P-02 as replacements. The existing groundwater detection monitoring network will continue to meet the applicable requirements of Title 27 for Class II surface impoundments P-01 and P-02. The Discharger proposed one groundwater monitoring well for groundwater detection monitoring of two new 1.7-acre Class II surface impoundments designated as P-03 and P-04. However, the groundwater detection monitoring system for P-03 and P-04 does not comply with Title 27 sections 20415(b)(1)(B) and 21760(a)(3). Therefore, prior to construction and use of two new 1.7-acre Class II surface impoundments designated as P-03 and P-04, the Discharger shall install an appropriate groundwater detection monitoring network and establish water quality protection standards (WQPS) for the P-03 and P-04 Class II surface impoundments.

The current groundwater detection monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Zone</u>	<u>Units Being Monitored</u>
MW-1	Detection	Shallow	P-1 through P-4, P-01 and P-02
MW-1A	Monitoring Point	Shallow	P-1 through P-4, P-01 and P-02
MW-2	Detection	Shallow	P-1 through P-4, P-01 and P-02
MW-3	Background	Shallow	P-1 through P-4, P-01 and P-02
MW-4	Monitoring Point	Shallow	P-1 through P-4, P-01 and P-02

Groundwater samples shall be collected semiannually from the background wells, detection monitoring wells, monitoring points, corrective action monitoring wells (if any), and any additional wells added as part of the approved groundwater monitoring system. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in the following table:

Table 1. Groundwater Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Groundwater Elevation	feet & hundredths, MSL	Quarterly ¹	Semiannually
Temperature	°F	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Carbonate	mg/L	Semiannually	Semiannually
Bicarbonate	mg/L	Semiannually	Semiannually
Nitrate – Nitrogen	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually	Semiannually
Magnesium	mg/L	Semiannually	Semiannually
Potassium	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Iron	mg/L	Semiannually	Semiannually
Barium	mg/L	Semiannually	Semiannually
Strontium	mg/L	Semiannually	Semiannually
Aluminum	mg/L	Semiannually	Semiannually
Manganese	mg/L	Semiannually	Semiannually
Boron	mg/L	Semiannually	Semiannually
Volatile Organic Compounds per USEPA Method 8260B	ug/L	Annually	Annually

¹ The Discharger shall measure the groundwater elevation in each well **quarterly**, 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).

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system for existing surface impoundments P-1 through P-4 meets the applicable requirements of Title 27. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time a new Class II waste management unit is constructed. The Discharger proposed in its ROWD one suction (vacuum type) lysimeter under each LCRS sump for unsaturated zone detection monitoring of four new 1.7-acre Class II surface impoundments designated as P-01 through P-04. However, the unsaturated zone detection monitoring system for P-01 through P-04 does not comply with Title 27 sections 20415(d)(2)(B) and 21760(a)(3). Therefore, prior to construction and use of the four new 1.7-acre Class II surface impoundments designated as P-01 through P-04, the Discharger shall install an appropriate unsaturated zone detection monitoring network and establish water quality protection standards (WQPS) for the P-01 through P-04 Class II surface impoundments.

The current unsaturated zone monitoring network consists of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
PL-1	Detection	P-1
PL-2	Detection	P-2
PL-3	Detection	P-3
PL-4	Detection	P-4

Unsaturated zone samples shall be collected from the applicable monitoring network listed above and shall be analyzed for the parameters and constituents listed in the following table in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present). Lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry lysimeter, the Discharger shall follow the procedures in the WDRs under “B. Discharge Specifications” and shall **immediately** sample and test the liquid for Field and Monitoring Parameters listed in the following table.

Table 2. Unsaturated Zone Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Presence of liquid	observation	Monthly	Semiannually
Flow Rate	gallons/day	Monthly	Semiannually
Electrical Conductivity	umhos/cm	Monthly	Semiannually
pH	pH units	Monthly	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	When liquid is present	Immediately
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	“”	“”
Iron	mg/L	“”	“”
Barium	mg/L	“”	“”
Strontium	mg/L	“”	“”
Aluminum	mg/L	“”	“”
Manganese	mg/L	“”	“”
Boron	mg/L	“”	“”
Volatile Organic Compounds per USEPA Method 8260B	ug/L	“”	“”

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

In the event of any non-functional lysimeter suction (vacuum type) lysimeter (if used) e.g., clogged, broken, unable to hold vacuum etc., the Discharger shall notify Central Valley Water Board staff within 7 days and report any needed repairs or replacement within 14 days of completion of the repairs, including photographs of the problem and the repairs or replacement performed.

3. Surface Water Monitoring and Table 3. (Not Applicable)

4. Surface Impoundment Monitoring

For each operating surface impoundment samples shall be collected from each Class II surface impoundment in accordance with the following table:

Table 4. Surface Impoundment Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Freeboard	feet and tenths	Weekly ¹	Semiannually
Remaining Capacity (each surface impoundment)	gallons	Monthly	Semiannually
Discharge Flow ²	gallons/day	Monthly	Semiannually
pH	pH units	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
Temperature	°F	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Carbonate	mg/L	Semiannually	Semiannually
Bicarbonate	mg/L	Semiannually	Semiannually
Nitrate – Nitrogen	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Calcium	mg/L	Semiannually	Semiannually
Magnesium	mg/L	Semiannually	Semiannually
Potassium	mg/L	Semiannually	Semiannually
Sodium	mg/L	Semiannually	Semiannually
Iron	mg/L	Semiannually	Semiannually
Barium	mg/L	Semiannually	Semiannually
Strontium	mg/L	Semiannually	Semiannually
Aluminum	mg/L	Semiannually	Semiannually
Manganese	mg/L	Semiannually	Semiannually

Table 4. Surface Impoundment Monitoring			
Boron	mg/L	Semiannually	Semiannually
Volatile Organic Compounds per USEPA Method 8260B	ug/L	Annually	Annually

- ¹ Freeboard shall be measured weekly and within 24 hours after onsite rainfall of greater than two inches in a 24 hour period. Freeboard shall be measured from the top of the surface impoundment down to the water level in the impoundment and can be measured using markings on the primary geomembrane liner or a free-standing gauge.
- ² Flow of wastewater into Class II surface impoundment as measured and recorded at totalizing meter. Discharge flow shall also be reported as the sum of discharge to all surface impoundments.

Freeboard Monitoring: If weekly monitoring of freeboard shows less than 2.4 feet of freeboard remaining in any surface impoundment the Discharger shall follow the procedures in the WDRs under “C. Facility Specifications”. Weekly freeboard levels shall be included in the semiannual monitoring reports.

5. LCRS Monitoring, Action Leakage Rate, and Annual LCRS Testing

LCRS Monitoring: The Discharger shall operate and maintain leachate collection and removal system (LCRS) sumps, record and calculate monthly leakage rates, and conduct annual testing of each LCRS in accordance with Title 27 and this monitoring program.

The current LCRS monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
LCRS-1	P-1
LCRS-2	P-2
LCRS-3	P-3
LCRS-4	P-4

Once surface impoundments P-01 through P-04 are constructed, the LCRS leachate sump monitoring points will be:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
LCRS-01	P-01
LCRS-02	P-02
LCRS-03	P-03
LCRS-04	P-04

All LCRS sumps shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with the following table. If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in the following

table. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in the following table whenever liquid is present.

Table 5. LCRS Monitoring			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Presence of leachate	observation	Monthly	Semiannually
Flow Rate ¹	gallons/day	Monthly	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Total Dissolved Solids	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate – Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Iron	mg/L	Annually	Annually
Barium	mg/L	Annually	Annually
Strontium	mg/L	Annually	Annually
Aluminum	mg/L	Annually	Annually
Manganese	mg/L	Annually	Annually
Boron	mg/L	Annually	Annually
Volatile Organic Compounds per USEPA Method 8260B	ug/L	Annually	Annually

¹ Flow in gallons per day from LCRS sump back to surface impoundment.

Action Leakage Rate: If monthly monitoring of the flow rate into the LCRS shows an exceedance of the Action Leakage Rate required by the WDRs, the Discharger shall follow the procedures in the WDRs under “C. Facility Specifications”. Tabulated monthly leakage rates shall be included in the semiannual monitoring reports.

Annual LCRS Testing: All LCRSs shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions.

6. Waste Discharge Monitoring (Not Applicable)

7. 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 repair and maintenance needed for liner systems; LCRS pumps, piping and control systems; drainage control systems; groundwater monitoring wells; unsaturated zone monitoring systems; and shall assess preparedness for winter conditions including but not limited to the required surface impoundment capacity and 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**. Annual facility inspection reporting shall be submitted as required in Section B.3 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all waste management unit berms for damage **within 7 days** following major storm events capable of causing damage or significant erosion. Freeboard in Class II surface impoundments shall be measured and recorded within 24 hours after onsite rainfall of greater than two inches in 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.4 of this MRP.

c. Rainfall Monitoring

The Discharger shall monitor and record onsite rainfall data using an automated rainfall gauge. Data shall be used in establishing the severity of storm events and wet seasons for comparison with design parameters used for waste management unit design and conveyance and drainage design. Daily data and onsite observation shall be used for establishing the need for inspection and repairs after major storm events. Rainfall data shall be reported in the semiannual monitoring reports as required by this MRP under "Reporting".

8. Corrective Action Monitoring

As corrective action, the Discharger is hauling wastewater that normally would be discharged to surface impoundments P-1 through P-4 until the surface impoundments can be clean closed and replaced with new surface impoundments P-01 through P-04. Until the date when the Discharger is authorized to place waste in surface impoundments P-01 through P-04, the Discharger shall monitor all wastes diverted from and/or removed from the Class II surface impoundments and exported from the facility for disposal on a daily basis and report the results in monthly corrective action monitoring reports. The monthly report shall include copies of the haul receipts and location of disposal:

Table 6. Corrective Action Monitoring		
<u>Parameters</u>	<u>Units</u>	<u>Reporting Frequency</u>
Quantity Discharged	gallons/day	Monthly

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	Annual Facility Inspection Report	31 October	15 November
B.4	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.5	Financial Assurances Report	31 December	1 June
B.6	Corrective Action Report	Last day of Month	1st day of following month

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 R5-2017-XXX 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 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, all 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. 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 MDL and PQL 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 the 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 based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, LCRS/leachate, unsaturated zone, and the surface impoundments. 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 1 through 6 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.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter 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 in the SPRRs for verified

exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.

- g) Tabulated weekly freeboard levels in the Class II surface impoundment with comparison to the freeboard requirement in the Facility Specifications of the WDRs.
 - h) Tabulated monthly leakage rates into the LCRS sump with comparison to the Action Leakage Rate in the Facility Specifications of the WDRs, and a discussion of required response if ALR was exceeded.
 - i) A summary of all waste discharge monitoring required in Section A.6 of this MRP.
 - j) A summary of all Facility Monitoring including onsite rainfall data for the reporting period required in Section A.7 of this MRP.
 - k) A summary of all Corrective Action Program monitoring required in Section A.8 of this MRP if applicable.
 - l) A discussion about any solids that were removed from the Class II surface impoundment during the reporting period to regain capacity.
 - m) Tabulated reporting of any monitoring requirements specified in section A of this MRP on a semiannual basis not specifically identified to be reported in this section B.1.
 - n) A tabulated summary and graphical display of the results of the Shewhart-Cusum analysis for determining exceedance of the WQPS for each monitoring parameter. The tabulated summary shall show current and historical laboratory results in the units specified in the tables in Section A along with corresponding calculated S and Z values. Exceedances of the concentration limits $h=5$, and $SCL=4.5$ shall be highlighted in bold in the tabular summary. The tabulated summary shall be displayed on a time series plots for the laboratory results, and the S and Z values along with the concentration limits h and SCL. A time series shall show identified outliers for each monitoring parameter and each outlier shall be clearly indicated. Each monitoring report transmittal cover letter shall clearly indicate whether the monitoring period being reported contained exceedances of the Shewart-Cusum concentration limits.
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 additional information beyond what is required for semiannual monitoring reports:

- a) 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. 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.
 - b) 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.
 - c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. 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.
 - d) 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.
 - e) 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.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) The results of the annual testing of the LCRS.
 - h) Updated concentration limits for each monitoring parameter at each monitoring well based on the new background data set.
 - i) If applicable a comprehensive discussion of any Corrective Action Program required by this MRP under Section A.8 including a discussion of long-term trends in the concentrations of the pollutants in the groundwater monitoring wells and an analysis of whether the pollutants are being effectively treated.
3. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.7.a of this MRP, above.
 4. **Major Storm Event Reporting:** The Discharger shall notify Central Valley Water Board staff within 24 hours after a storm event of greater than two inches in

24 hours as to the status of freeboard in any Class II surface impoundment. The Discharger shall also notify Central Valley Water Board staff within **7 days** after major storm events of any damage or significant erosion and report any needed repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.7.b of this MRP above for requirements for performing the inspection and conducting the repairs.

5. **Financial Assurances Report:** By **30 April** of each year, the Discharger shall submit a report to the Central Valley Water Board that reports the balance of both the closure and corrective action funds or the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27 Section 22236. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.
6. **Corrective Action Report:** By the 1st of the month following the end of a corrective action reporting period the Discharger shall submit a report to the Central Valley Water Board that reports all wastes diverted from and/or removed from the Class II surface impoundments and exported from the facility for disposal. The monthly report shall include copies of the haul receipts and location of disposal.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, 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 Water Quality Protection Standard 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 Water Quality Protection Standard 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, and the

unsaturated zone 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 Water Quality Protection Standard 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 Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in the June 2008 *Water Quality Protection Standard Report*. The control limits are calculated using the Shewhart-CUSUM method.

The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data.

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 all waste management units are those listed in the tables in Section A of this MRP specified monitored medium.

3. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern 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 were included in the June 2008 *Water Quality Protection Standard (WQPS) Report*. The approved method uses **intrawell** background data from each monitoring well to establish control limits for each monitoring parameter using the Shewhart-CUSUM method. The method uses the following equations to determine compliance:

$$Z_i = (\bar{X}_i - \mu) \left(\frac{\sqrt{n_i}}{\sigma} \right)$$

where:

- Z_i = the standardized mean for the i^{th} time period
 \bar{X}_i = the mean of the n measurements of the i^{th} time period, if only one sample is collected in the i^{th} time period, the mean is the value itself
 μ = the baseline sample mean
 n_i = the number of baseline measurements for the i^{th} time period, if only one sample is collected in the i^{th} time period, $n = 1$
 σ = the baseline sample standard deviation; and

$$S_i = \max[0, (Z_i - k) + S_{i-1}]$$

where:

- S_i = the cumulative sum of the i^{th} time period
 k = the reference value recommended by the EPA, equal to 1

The Shewhart-CUSUM method uses three user-defined values that include a decision interval value (h), a reference value (k), and a Shewhart-CUSUM Control Limit (SCL) to determine earliest detection of a release. The Discharger's WQPS Report established these values to be $h=5$, $k=1$, and $SCL=4.5$ in units of standard deviation. The data analysis compares the standardized mean (Z) and the cumulative sum (S) for each sampling date with the established values h and SCL and any points plotted on a control chart where $S > h$ or $Z > SCL$ the data indicates an exceedance indicating evidence of a release.

The most recent concentration limits for select parameters as reported in the *2015 Annual Monitoring Report* dated 18 January 2016 were as follows:

Monitoring Wells	Analysis Type	Monitoring Parameters	Concentration Limit (Standardized Concentration)		
			H	k	SCL
MW-01, MW-02, MW-1A, MW-4	Intrawell	Monitoring Parameters in Section A.1 except VOCs	5	1	4.5
MW-01, MW-02,	Intrawell	VOCs in Section A.1	Nondetect		

MW-1A, MW-4			
MW-03	Intrawell	Monitoring Parameters in Section A.1	Not Applicable, Upgradient Well

4. 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.43 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.44 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.45 of the SPRRs.

5. Point of Compliance

The point of compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells</u>
P-01 and P-02	MW-1 and MW-2

6. Compliance Period

The compliance period for each waste management 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 waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

7. Monitoring Points

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

D. TRANSMITTAL LETTER FOR ALL REPORTS

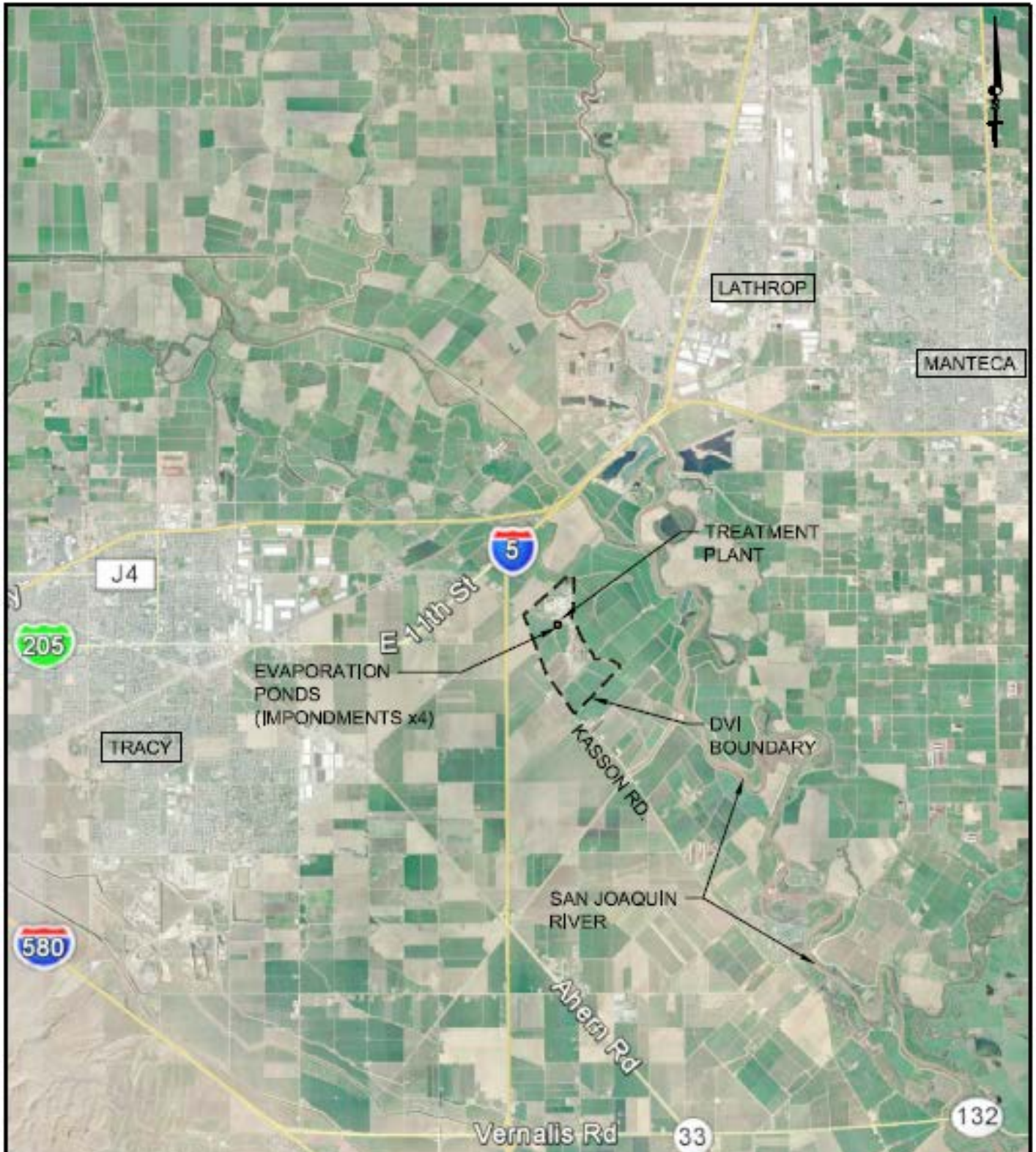
A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be 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: Original Signed By
PAMELA C. CREEDON, Executive Officer

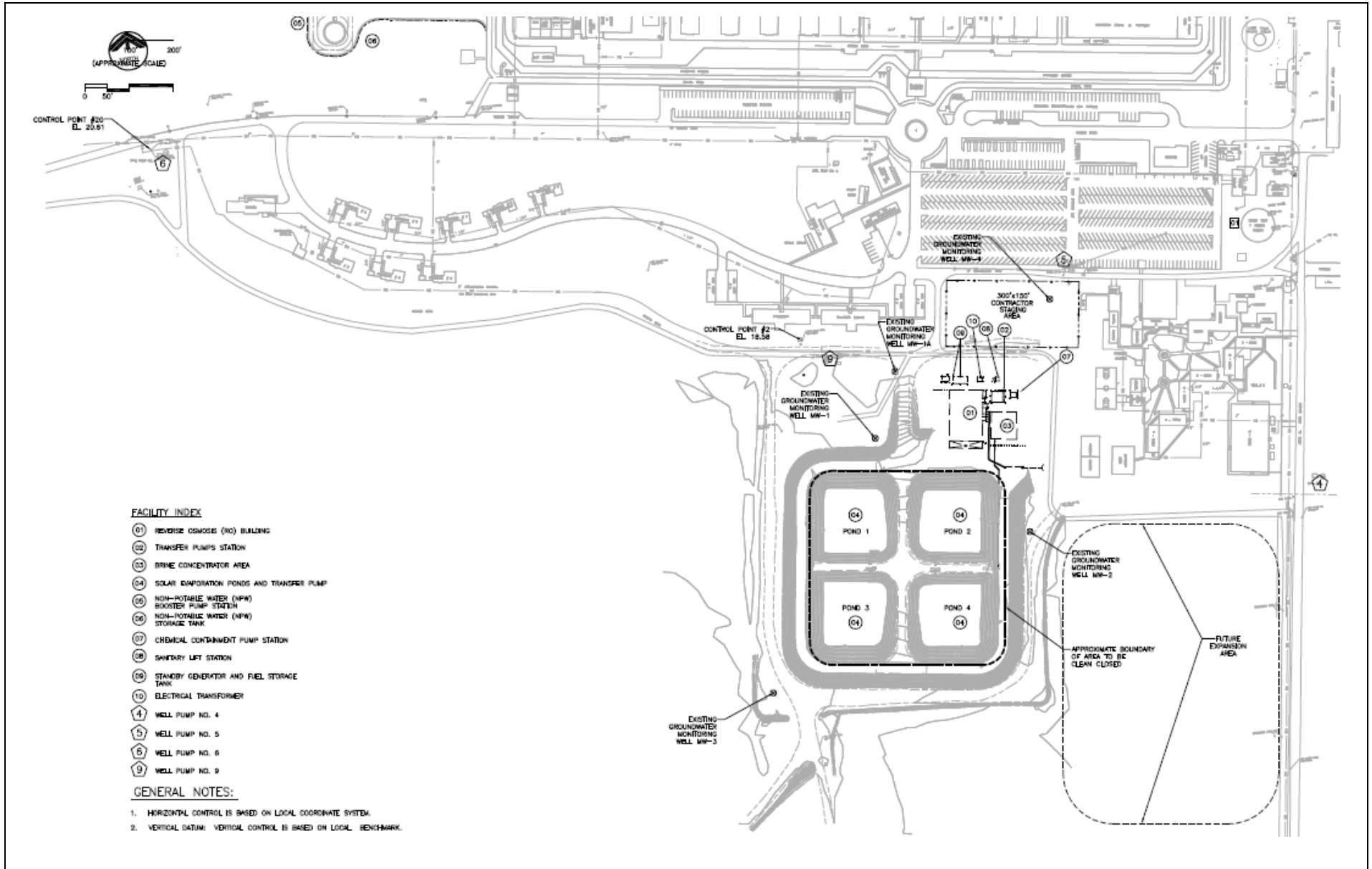
9 June 2017
(Date)

vkj



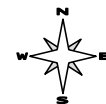
Drawing Reference:
Dewberry Engineers, Inc.
ROWD, Figure 1
September 2016

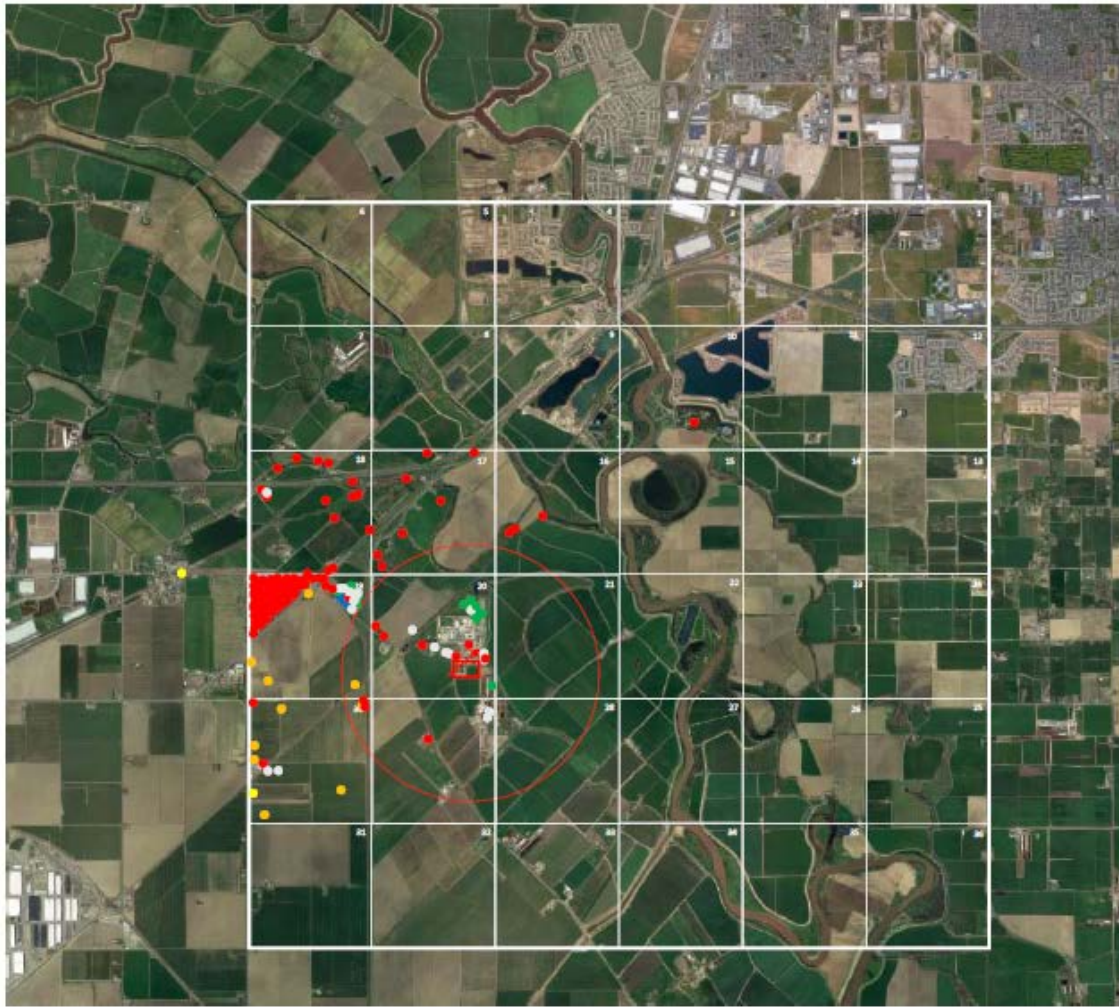
SITE LOCATION MAP
CA Department of Corrections and Rehabilitation.
Deuel Vocational Institution, Class II Surface Impoundments
San Joaquin County



Drawing Reference:
 Dewberry Engineers, Inc.
 ROWD, Figure 2
 September 2016

EXISTING FACILITY
 CA Department of Corrections and Rehabilitation.
 Deuel Vocational Institution, Class II Surface Impoundments
 San Joaquin County





Note: Locations are estimates based on well logs obtained from California Department of Water Resources

Legend:

- Domestic Groundwater Wells (118)
- ◐ Abandoned or Destroyed (15)
- Vapor Extraction Wells (12)
- Monitoring Wells (18)
- Industrial Wells (2)
- Irrigation Wells (10)
- ↗ Groundwater Flow at Impoundment
- ◻ Impoundment Location
- One Mile Distance from Impoundment

Drawing Reference:
Dewberry Engineers, Inc.
Amended ROWD
30 January 2017

VICINITY SUPPLY WELL LOCATION MAP
CA Department of Corrections and Rehabilitation.
Deuel Vocational Institution, Class II Surface Impoundments
San Joaquin County

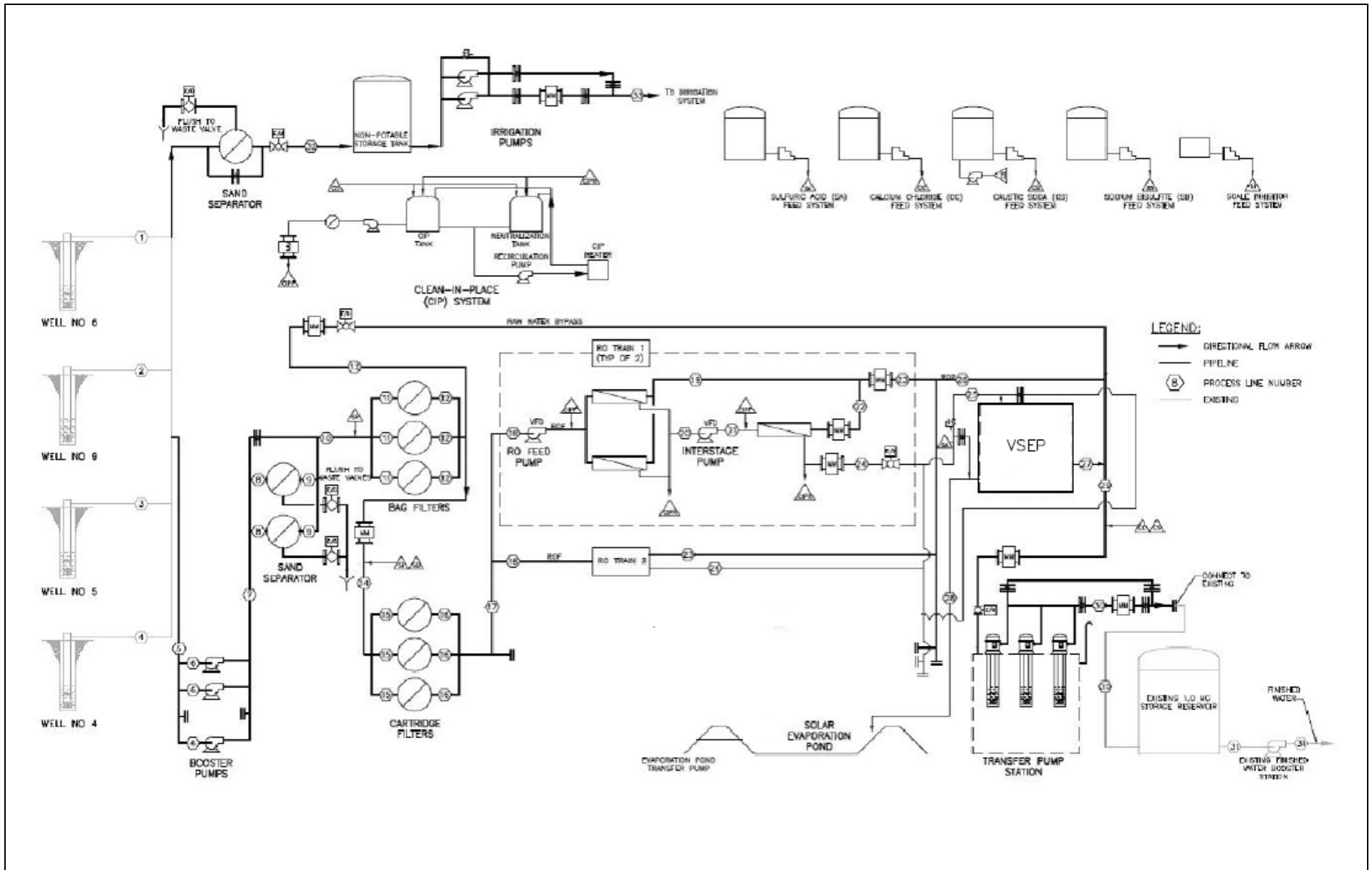


Explanation

- Existing monitoring wells (Fugro, 2007)
- New monitoring wells (Amec Foster Wheeler, 2016)
- Proposed monitoring well locations
- Planned LCRS sump and lysimeter locations
- Approximate Limits of Proposed Impoundment Expansion
- Planned LCRS leachate sump and lysimeter monitoring points
- Existing LCRS sump and pan lysimeter sampling locations
- Existing LCRS leachate sump and lysimeter monitoring points

Drawing Reference:
 Dewberry Engineers, Inc.
 Amended ROWD
 30 January 2017

DETECTION MONITORING PROGRAM SAMPLING POINT LOCATIONS
 CA Department of Corrections and Rehabilitation.
 Deuel Vocational Institution, Class II Surface Impoundments
 San Joaquin County



Drawing Reference:
 Dewberry Engineers, Inc.
 ROWD, Figure 4
 September 2016

FUTURE WASTEWATER PRODUCTION PROCESS FLOW DIAGRAM
 CA Department of Corrections and Rehabilitation.
 Deuel Vocational Institution, Class II Surface Impoundments
 San Joaquin County

INFORMATION SHEET

ORDER R5-2017-0071
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
DEUEL VOCATIONAL INSTITUTION
CLASS II SURFACE IMPOUNDMENTS
CONSTRUCTION, OPERATION, CLOSURE, AND CORRECTIVE ACTION

CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION; DEUEL VOCATIONAL INSTITUTION CLASS II SURFACE IMPOUNDMENTS; SAN JOAQUIN COUNTY

The facility operates Class II surface impoundments regulated under authority given in Water Code section 13000 et seq.; and Title 27 section 20005 et seq. The facility is on a 760-acre property at 23500 Kasson Road, Tracy. The facility currently operates a reverse osmosis (RO) groundwater treatment plant that includes a brine concentrator system (BCS) and four evaporation ponds (Class II Surface Impoundments) that serves the CDCR vocational facility which includes inmate housing and supporting operations. The Discharger proposes to clean close the existing surface impoundments and replace them with four new 1.7-acre Class II surface impoundments. The Class II surface impoundments are used for containment of the discharge of hypersaline wastewater generated during the reverse osmosis and brine concentration process used in the production of potable drinking water. The primary constituents of concern in the wastewater are total dissolved solids which include chloride, sodium, sulfate, manganese, aluminum, and iron.

Following construction of the four 1.1-acre ponds in 2008, a leak in the secondary liner was discovered on 18 September 2014. In February 2015 the Discharger ceased discharging waste to the ponds. On 30 March 2015, Central Valley Water Board Executive Officer issued a Cleanup and Abatement Order (CAO) requiring the Discharger to develop a Long Term Compliance Implementation Report which included a schedule when the leaks in the primary and secondary liners would be repaired. In response to the CAO, on 30 September 2016, the Discharger submitted a Report of Waste Discharge (ROWD) to replace the ponds. The information in the ROWD and supporting documents contain information related to this revision of the WDRs including:

- Clean closure of the four existing 1.1-acre Class II surface impoundments;
- Reconstruction of the clean closed area into two new 1.7 acre Class II surface impoundments;
- Construction of two new 1.7 acre Class II surface impoundments;
- Installation of unsaturated zone and groundwater detection monitoring systems for the Class II surface impoundments; and
- Updates to financial assurances for closure and post closure maintenance costs.

VKJ

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
INDUSTRIAL FACILITIES REGULATED BY TITLE 27
(Title 27, § 20005 et seq.)

April 2016

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to Class II surface impoundments, waste piles, and land treatment units that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:

- a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
- a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].
5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is

made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].

8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. STANDARD PROHIBITIONS

1. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
 - a. require a higher level of containment than provided by the unit; or
 - b. are 'restricted wastes'; or
 - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].
2. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed waste management unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited, except within the treatment zone at a land treatment unit.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
4. The discharge shall remain within the designated disposal area at all times.
5. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
4. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
6. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
7. The Discharger shall maintain the depth of the fluid in the sump of each waste management unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).

8. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
9. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new Class II waste management units that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, and access to the LCRS for required annual testing.
 - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
 - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
 - d. Information about the seismic design of the proposed new waste management unit (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
 - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
 - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, sections 21760(b) and 20375(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have

been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].

4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].
5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the waste management unit foundation, final slopes, and containment systems under both static and dynamic conditions throughout the life of the unit [Title 27, § 21750(f)(5)].
10. New Class II Units, other than LTUs and expansions of existing Class II units, shall have a 200 foot setback from any known Holocene fault. [Title 27, § 20250(d)].
11. Liners shall be designed and constructed to contain the fluid, including waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].
14. A test pad for each barrier layer and any final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
16. The Discharger shall propose an electronic leak location survey of the top liner for any new waste management unit in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
17. Leachate collection and removal systems are required for Class II surface impoundments [Title 27, § 20340(a)].
18. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
19. Leachate collection and removal systems shall be designed and operated to function without clogging through the life of the waste management unit.
20. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].
21. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
22. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
23. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.

24. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new Class II waste management unit, construction of a final cover (for units closed as a landfill), or any other construction that requires Central Valley Water Board staff approval under this Order.
25. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new Class II waste management unit. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
26. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, future land use, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
2. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
3. The final cover of waste management units closed as a landfill shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
4. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
5. All final cover designs shall include a minimum 1-foot thick erosion resistant vegetative layer or a mechanically erosion-resistant layer [Title 27, § 21090(a)(3)(A)(1 & 2)].

6. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
7. The Discharger shall design storm water conveyance systems for Class II units that are closed as a landfill for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. Construction or repair of a final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
9. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that units that are closed as a landfill shall be maintained in accordance with an approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
10. The post-closure maintenance period for units closed as a landfill shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].
11. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, and any areas damaged by equipment operations [Title 27, § 21090(a)(4)(B)].
12. The Discharger shall repair any cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund (or provide other means) for closure to ensure closure of each Class II unit in accordance with an approved closure plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b) and § 22222].

I. STANDARD MONITORING SPECIFICATIONS

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that

monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new Class II waste management unit shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures;
 - d. Sample quality assurance/quality control (QA/QC) procedures;
 - e. Chain of Custody control; and
 - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.
9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively

interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)].
19. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
20. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].

21. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
22. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
23. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
24. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405).
25. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
26. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
27. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].
28. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
29. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].

30. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
31. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
32. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
33. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
34. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 20415(e)(13)].
35. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
36. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
37. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for determining "measurably significant" (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].
38. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether

there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.

39. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
40. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger's technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX, Article 19 to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
41. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).
42. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
43. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the

Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:

- a. Standard Monitoring Specification I.44 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
- b. Standard Monitoring Specification I.45 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

44. Verification Procedure for Analytes Detected in Less than 10% of

Background Samples. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
 - 2) The data contains one or more analyte that equals or exceeds its PQL.
- b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:
 - 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.44.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
 - 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more

analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

- a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
- b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
- c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

45. **Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.**
The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].
- b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].
 - 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph 1.45.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(8)(E)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests

(i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.45.b.1, above and shall:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

46. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

1. **Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.44 or I.45, then the Discharger shall:
 - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
 - b. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)].
 - c. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].
 - d. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the

waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].

- e. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.b is approved (the date is it established), the Discharger shall complete and submit the following:
 - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
 - ii) **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
 - iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.

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

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
 4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and leachate generated by discharged waste during the active life, closure, and any post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
 5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.
 6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost

estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].

7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

1. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

2. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
3. Precipitation on Class II waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
4. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
 - a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit.
 - b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities.
 - c. Prevent surface erosion through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.
 - d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
 - e. Take into account:
 - i) For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.
 - ii) For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.
 - iii) The possible effects of the waste management unit's drainage pattern on and by the regional watershed.
 - iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility.
 - f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

5. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].
6. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
7. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
8. Any drainage layer in a final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].