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California Regional Water Quality Control Board Central Valley Region

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30 June 2006

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NOTICE OF ADOPTION
OF
WASTE DISCHARGE REQUIREMENTS
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
FOR
OPERATION OF CLASS II SURFACE IMPOUNDMENTS
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

Waste Discharge Requirements (WDRs) Order No. R5-2006-0075 for the California Department of Corrections and Rehabilitation was adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 23 June 2006 Board Meeting.

In order to conserve paper and reduce mailing costs, a paper copy of the order has been sent only to the Discharger. Interested parties are advised that the full text of this order is available on the Regional Board's web site at http://www.waterboards.ca.gov/rwqcb5/adopted_orders. Anyone without access to the Internet who needs a paper copy of the order can obtain one by calling Regional Board staff.

If you have any questions regarding your new WDRs, please call me at (916) 464-4626.

VICTOR J. IZZO
Senior Engineering Geologist
San Joaquin River Watershed – Title 27 Unit

Enclosures - Adopted Waste Discharge Requirements
Standard Provisions and Reporting Requirements

cc list see second page

California Environmental Protection Agency

cc w/o enc: Mr. Joe Mello , Division of Water Quality, SWRCB, Sacramento
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Office of Drinking Water, Department of Health Services, Sacramento
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Sacramento
Susan Hancock, Branch Chief, CA Department of Corrections, Sacramento
Mr. Jeffrey Palumbo, Correctional Plant Manager, Deuel Vocational Institution,
Tracy
Mr. Thomas Kalkman, Carollo Engineers, Walnut Creek
The Modesto Bee, Modesto
The Stockton Record, Stockton

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0075

WASTE DISCHARGE REQUIREMENTS
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
FOR
OPERATION OF CLASS II SURFACE IMPOUNDMENTS
DEUEL VOCATIONAL INSTITUTION
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The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. The California Department of Corrections and Rehabilitation (hereafter Discharger) proposes to construct and operate a reverse osmosis water treatment plant at the Deuel Vocational Institution. The facility is located east of the City of Tracy in San Joaquin County in Section 20, T2S, R6E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference.
2. The proposed facility will treat groundwater at the Deuel Vocational Institution (DVI) with a reverse osmosis plant, brine concentrator and four evaporation basins to be used for brine discharge. The treatment facility and the evaporation ponds are shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Number 239-120-01.
3. On 24 October 2005, the Discharger submitted a Report of Waste Discharge (RWD) for the brine evaporation basins. Revisions to the RWD were provided on 30 January 2006 and a final RWD was submitted on 11 April 2006. The information in the RWD has been used in writing these waste discharge requirements (WDRs). The RWD contains the applicable information required in Title 27, California Code of Regulations (CCR), Chapter 4, Subchapter 3, Article 4.
4. This Order classifies the four brine evaporation basins as Class II surface impoundments in accordance with Title 27, CCR Section 20005, et seq. (Title 27).
5. The average brine flow to the surface impoundments will be 4 gallons per minute or approximately 5,600 gallons per day (gpd) resulting in about 2 million gallons of wastewater per year. The approximate area of each surface impoundment is 0.85 acres. The maximum capacity of each surface impoundment while maintaining the required two-foot freeboard is approximately 1.0 million gallons. The Discharger submitted a water balance demonstrating adequate capacity at a flow of 5,600 gpd.
6. During scheduled maintenance and emergency situations, the reverse osmosis plant may be operated while bypassing the brine concentrator. The un-concentrated brine will be directly discharged to the evaporation basins. After the maintenance or emergency ends, this water

will be removed from the evaporation basins, treated by the reverse osmosis plant or brine concentrator, and the brine returned to the basins, thus maintaining the 5,600 gpd monthly average flow rate..

WASTE AND UNIT CLASSIFICATIONS

7. The wastewater consists of concentrated brine from the reverse osmosis water treatment plant. The brine waste characteristics were developed based on feed water quality, RO treatment removal, finished water quality goals and the resulting mass balance. The estimated concentrations are as follows:

Parameter	Concentration ¹	Units
Total Dissolved Solids	313,600	mg/L
Aluminum	7.56	mg/L
Iron	33.6	mg/L
Manganese	58.8	mg/L
Boron	84	mg/L
Calcium	33,600	mg/L
Magnesium	18,200	mg/L
Sodium	39,738	mg/L
Potassium	1,106	mg/L
Barium	21	mg/L
Strontium	1,092	mg/L
Sulfate	30,040	mg/L
Chloride	154,000	mg/L
Total Silica	6,440	mg/L

¹ These are estimated concentrations and the Discharger is required to monitor the waste brine once the treatment plant is operational. Once additional data is received, the waste characteristics may change and the Monitoring and Reporting Program may be revised.

8. Designated waste is defined in Title 27, Section 20210, as a nonhazardous waste which consists of, or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality standards, or which could cause degradation of waters of the state.
9. The discharge poses a significant threat to water quality. Therefore, the discharge is a designated waste and, as such, must be discharged to a Class II surface impoundment as required by Title 27.

SITE DESCRIPTION

10. The estimated hydraulic conductivity of the native soils underlying the surface impoundments is estimated at 1×10^{-7} cm/sec.

11. Segment Number 7 of the Great Valley Fault is the closest Holocene fault and is located approximately 9.1 miles southwest of the facility. The maximum moment magnitude seismic event along this fault is 6.7 on the Richter scale. The peak ground acceleration on rock at the site for the maximum credible earthquake is 0.29 g.
12. Land use within 1,000 feet of the facility is predominantly agriculture.
13. The facility receives an average of 9.94 inches of precipitation per year as measured at the Tracy Carbona Station. The mean pan evaporation is 97.41 inches per year as measured at the Tracy Pumping Plant.
14. The 1000-year, 24-hour precipitation event is estimated to be 9.97 inches, based on the Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.
15. 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 060299 0730 B. In order to mitigate potential washout of the surface impoundments in the event of a 100-year flood event, the ponds will be constructed within a 16-foot fill pad and the tops of the surface impoundment berms will be at an elevation 2-feet above the 100-year floodplain.

SURFACE AND GROUND WATER CONDITIONS

16. 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, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
17. Surface drainage is toward the San Joaquin River in the Sacramento San Joaquin Delta Hydrologic Area (544.00).
18. 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.
19. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal supply, agricultural supply, industrial service supply and industrial process supply.

20. In May 2005, a geotechnical investigation was performed in the proposed location of the surface impoundments. Four borings were drilled and first groundwater ranged from 3.4 to 5.0 feet below the native ground surface (bgs).
21. The Discharger has not collected any shallow groundwater data. Prior to the discharge of waste to the surface impoundments, the Discharger is required to install groundwater monitoring wells and provide water quality protection standards that are based upon a minimum of one year of groundwater data collection.
22. There are 94 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. The Discharger operates three groundwater supply wells, Well No. 4, Well No. 5 and Well No. 6. Well No. 4 (State ID No. 3910800-002) is drilled to 490 feet bgs, Well No. 5 (State ID No. 3910900-003) is drilled to 500 feet bgs and Well No. 6 (State ID No. 3910800-004) is drilled to 615 feet bgs.
23. Monitoring data gathered for the onsite supply wells indicates groundwater quality has total dissolved solids (TDS) concentrations ranging between 840 to 2200 mg/l.
24. The predicted direction of groundwater flow is toward the east to northeast.
25. The Discharger proposes to install a minimum of three groundwater monitoring wells. Once a true groundwater gradient for the shallow groundwater zone is determined, the Discharger may be required to install additional groundwater monitoring wells such that the detection monitoring system is in compliance with Title 27.

WASTE MANAGEMENT DESIGN

26. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The engineered alternative consists of the following from the top down:
 - a. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
 - b. A geonet drainage layer, as a leachate collection and removal system (LCRS).
 - c. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
 - d. A geonet drainage layer as a vadose zone monitoring system.
 - e. A tertiary 60-mil thick HDPE geomembrane.
27. Side slope liners are proposed to be constructed of the same materials and in the same sequence and manner as the bottom liner system. The liner subgrade will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the geomembrane, and certified in accordance with this Order and the approved CQA Plan.

28. The ponds will be constructed with an inboard slope of 3 to 4:1 and outboard slopes of 2:1. The berm width at the crest will be approximately 20 feet. To protect the liners, a soil layer approximately 2 to 4 foot thick will be placed over the liner system.
29. The depth to shallow groundwater ranges from 3.4 to 5.0 feet bgs, measured during the geotechnical study performed in May 2005. Title 27, CCR Section 20240(c) requires a minimum separation of five feet between waste and the highest anticipated groundwater elevation. To mitigate the five foot separation requirement, the Discharger has proposed to construct the surface impoundments within 16 feet of fill, with the bottom elevation of each surface impoundment five feet above natural grade.
30. Each surface impoundment will have a geonet LCRS blanket across the entire area of each base. Prior to construction the Discharger is required to submit additional design information for the LCRS sump design and a fail safe mechanism that will assure that the sumps will not overflow with leachate.
31. The Discharger proposes to install a pan lysimeter (geonet blanket) under the entire area of the base of each surface impoundment that will serve as an engineered alternative to the prescriptive unsaturated zone monitoring system requirements of Title 27, CCR Section 20415(d).
32. Title 27 CCR Section 20080(b) allows the Regional Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative, 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 Title 27 CCR 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 liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 CCR Section 20080(b)(2). For this facility, the Discharger was not required to repeat the engineered alternative demonstration, which had been made for other facilities. There are no significant differences in the characteristics of already approved engineered alternative liners and the liner system proposed for the Deuel Vocational Institution.
33. Section 13360(a)(1) of the California Water Code allows the Regional Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirement orders for the discharge of waste at solid waste disposal facilities.
34. Construction may proceed only after all applicable construction quality assurance plans have been approved.

CEQA AND OTHER CONSIDERATIONS

35. The State of California Department of Corrections and Rehabilitation certified the final Negative Declaration for the reverse osmosis plant and evaporation basins on 4 May 2005 and filed a Notice of Determination on 5 May 2005 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (Title 14 CCR Section 15000 et seq.).
36. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*; and
 - b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.
37. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The monitoring and reporting program required by this Order and the attached "Monitoring and Reporting Program No. R5-2006-0075" 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

38. 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.
39. The Regional 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.
40. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that the 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 Title 23, California Code of Regulations, Section 2510 et seq.
2. The discharge of solid or liquid waste or leachate 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.
2. Discharge of waste to any Class II surface impoundment is prohibited until the following tasks are completed and approved by Regional Board staff:
 - a. Installation of a background groundwater monitoring system.
 - b. Establishment of background groundwater quality through at least one year of monitoring (a minimum of 8 samples is required to develop statistical values for inorganic monitoring parameters).
 - c. Submittal of a Water Quality Protection Standard Report.
 - d. Submittal of a plan for a groundwater quality monitoring system.
 - e. Installation of an approved groundwater quality monitoring system.
 - f. Establishment of Financial Assurance funds for corrective action, unit closure and post-closure maintenance.

B. DISCHARGE SPECIFICATIONS

General Specifications

1. Wastes shall only be discharged into, and shall be confined to, the waste management units (WMUs) specifically designed for their containment.
2. Prior to the discharge of waste to a WMU, all wells within 500 feet the WMUs 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 Regional Board and to the State Department of Water Resources.

Protection From Storm Events

3. Waste management units shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.
4. Precipitation and drainage control systems shall be designed, constructed and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions.
5. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.

Class II Surface Impoundment

6. The monthly average flow to the Class II Surface Impoundments shall not exceed 5,600 gpd.
7. Both the bottom liner and side slope liners of the Class II surface impoundments shall be constructed in accordance with the following engineered alternative that is comprised, in ascending order, of the following:
 - a. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
 - b. A geonet drainage layer, as a leachate collection and removal system (LCRS).
 - c. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
 - d. A geonet drainage layer as a vadose zone monitoring system.
 - e. A tertiary 60-mil thick HDPE geomembrane.
8. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the

protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Regional Board.

9. The unsaturated zone monitoring system shall be capable of measuring both saturated and unsaturated flows that may occur as a result of a release from the WMU.
10. Each surface impoundment and related containment structures shall be constructed and maintained to prevent inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year annual wet season precipitation without using the required two feet of freeboard.
11. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the surface impoundments.
12. Materials used to construct the 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.
13. Each LCRS 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 depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation.
14. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
15. 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.
16. Leachate removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.
17. Leachate generation by each waste containment unit LCRS shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, then the Discharger shall immediately cease the discharge of waste, excluding leachate, to the waste management unit and shall notify the Regional Board in writing within **seven days**. Notification shall include a timetable for a remedial action to repair the containment structures or other action necessary to reduce leachate production.

18. If leachate is detected in the vadose zone monitoring system of a surface impoundment (indicating a leak in the containment structures) the Discharger shall:
 - a. Immediately cease discharge of waste, excluding leachate to the surface impoundment, until the leaks can be found and repaired.
 - b. Verbally notify the Regional Board that the containment structures have failed within 72 hours.
 - c. Submit written notification of the release to the Regional Board within seven days, the notification should include a time schedule to repair the containment structures.
 - d. The discharge of wastes to the surface impoundment shall not resume until the Regional Board has determined that repairs to the liners are complete and there is no further threat to water quality.
19. Solids that accumulate in the 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 Regional Board staff for review. Before any disposal of this sediment, the Discharger must obtain concurrence on the disposal method from Regional Board staff.
20. Construction shall proceed only after all applicable construction quality assurance plans have been approved.

Class II Surface Impoundment Closure

21. The closure of each surface impoundment shall be under the direct supervision of a California registered civil engineer or certified engineering geologist.
22. At closure of each surface impoundment, all residual wastes, including liquids, sludges, precipitates, settled solids, liner materials, and adjacent natural geologic materials contaminated by wastes, shall be completely removed and discharged to a waste management unit approved by Regional Board staff. If after reasonable attempts, the Discharger demonstrates the removal of all remaining contamination is infeasible, the surface impoundment shall be closed as a landfill.

C. RECEIVING WATER LIMITATIONS

Water Quality Protection Standards

The concentrations of Constituents of Concern in waters passing through the Points of Compliance shall not exceed the Concentration Limits established pursuant to Monitoring and Reporting Program No. R5-2006-0075, which is attached to and made part of this Order.

D. FINANCIAL ASSURANCE

1. The Discharger shall, by **30 April of each year**, submit for review and approval, plans with detailed cost estimates and a demonstration of assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the waste management unit. The Discharger shall provide the assurances of financial responsibility to the Regional Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Regional Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation. The financial assurance fund for corrective action shall be established **prior to discharging waste to the surface impoundment**.
2. The Discharger shall, by **30 April of each year**, submit for review and approval, plans with detailed cost estimates and a demonstration of assurances of financial responsibility to ensure closure and post-closure maintenance of each waste management unit in accordance with its approved closure and post-closure maintenance plans. The Discharger shall provide the assurances of financial responsibility to the Regional Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Regional Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation. The financial assurance fund for closure and post-closure maintenance shall be established **prior to discharging waste to the surface impoundment**.

E. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated September 2003, which are hereby incorporated into this Order. 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. The Discharger shall comply with Monitoring and Reporting Program No. R5-2006-0075, 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 the post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2006-0075 is a violation of these waste discharge requirements.
3. 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 Board and of the State Water Board, copies of these records shall be sent to the Regional Board.
4. The Discharger shall provide proof to the Regional Board **within sixty days after completing final closure** that the deed to the surface impoundment 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 liquid wastes.
 - b. Land use options for the parcel are restricted in accordance with the post-closure land uses set forth in the post-closure plan and in WDRs for the surface impoundment.
 - c. In the event that the Discharger defaults on carrying out either the post-closure maintenance plan or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
5. The Regional Board will review this Order periodically and may revise requirements when necessary.
6. 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 Regional Board.
7. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by a registered professional:
 - a. By **1 August 2006** the Discharger shall submit a Groundwater Monitoring Well Installation Workplan. The Workplan shall describe the proposed background and detection monitoring well locations. At a minimum, the Workplan shall include all items as listed on Attachment C, *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports*. Attachment C is attached hereto and made part of this Order by reference.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2006-0075
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
OPERATION OF CLASS II SURFACE IMPOUNDMENTS
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

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- b. By **1 November 2006**, the Discharger shall submit a *Sampling and Analysis Plan and a Groundwater Monitoring Well Installation Report* that includes all items listed in Section 2 of Attachment C.
- c. Within **60 days** before the construction of the surface impoundments, the Discharger shall submit final construction and design plans for the surface impoundment.
- d. Within **45 days** of discharging waste into the surface impoundments, the Discharger shall submit a background groundwater characterization report and Water Quality Protection Standard (WQPS) report. The items that shall be included in the WQPS report are outlined in Section B of MRP Order No. R5-2006-0075.
- e. Within **60 days** after completing construction, a final Construction Quality Assurance Plan shall be submitted. The Plan shall be in accordance with Title 27 CCR Section 20324 and shall demonstrate that the surface impoundments were constructed in accordance with the approved construction plans.
- f. Within **60 days** after completing construction, the Discharger shall submit the professionally surveyed bottom elevations of the constructed surface impoundments.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 23 June 2006.

PAMELA C. CREEDON, Executive Officer

VJI: 4/25/2006

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2006-0075
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
FOR
OPERATION OF CLASS II SURFACE IMPOUNDMENTS
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. R5-2006-0075. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated September 2003, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. 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. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in a digital format.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Field and laboratory tests shall be reported in the quarterly monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Board.

B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES

1. Semiannual Groundwater, Vadose Zone and Leachate Monitoring Reports

Each Semiannual monitoring report shall include all water quality data and observation collected during the reporting period and submitted per the **Reporting Due Dates** in Section B.6. of this Monitoring and Reporting Program. At a minimum, the sampling and data collection in Tables 1 through 4 of this Monitoring and Reporting Program,

Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported.

2. Annual Monitoring Summary Report

The Discharger shall submit an Annual Monitoring Summary Report to the Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B. of the *“Reports to be Filed with the Board.”*

3. Facility Monitoring Report

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 damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section XII.S. of Standard Provisions and Reporting Requirements (2003).

4. Response to a Release

If the Discharger determines that there is significant statistical evidence of a release (i.e. the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified), the Discharger shall immediately notify the Board verbally as to the Monitoring Point(s) and constituent(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement Response to Release section of the Standard Provisions and Reporting Requirements (2003).

5. Water Quality Protection Standard Report

Any proposed changes in a statistical method or concentration limits for a constituent of concern or monitoring parameter a Water Quality Protection Standard Report shall be submitted and include the information required in Section C.1. of this Monitoring Reporting Program. Any changes to Water Quality Protection Standards shall be approved by the Executive Officer in a Revised Monitoring and Reporting Program.

6. Submittal Dates

Semiannual Groundwater, Unsaturated Zone and Leachate Monitoring Reports

Reporting Type	Sampling Frequency and Data Reported	Reporting Period	Report Date Due
Semiannually	Daily, Weekly, Monthly, Quarterly and Semiannually	1 January – 30 June 1 July – 31 December	31 July 31 January

Annual Monitoring Summary Report	31 January
Facility Monitoring Report	15 November
Response to a Release	as necessary
Water Quality Protection Standard Report	as required in Order No.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

Prior to discharging waste to the Class II surface impoundments, the Discharger shall submit a Water Quality Protection Standard (WQPS) Report for review and approval. The WQPS Report shall include limits for all the parameters listed on Table I.

For each waste management unit (Unit), the WQPS shall consist of all constituents of concern (Title 27 Section 20395), the concentration limit for each constituent of concern (Title 27 Section 20400), the point of compliance (Title 27 Section 20405), and all water quality monitoring points (Title 27 Section 20164) for each monitored medium.

The water quality protection standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points.

The WQPS Report shall:

- a. Identify all distinct bodies of surface and ground water that could be affected in the event of a release from a 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 surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

The WQPS Report 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.

2. Constituents of Concern (COC)

The COCs include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit.

a. Monitoring Parameters

Monitoring parameters are COCs that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables 1 through 5 for the specified monitored medium.

3. Concentration Limits

For a naturally occurring COCs, the concentration limit for each shall be determined as follows:

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

4. Point of Compliance

The point of compliance for the WQPS at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

5. Compliance Period

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

D. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements (2003). Detection monitoring for a new facility or a new Unit shall be installed, operational, and one year of monitoring data collected **prior to** the discharge of wastes. A minimum of 8 samples should be used to develop background concentrations for monitoring parameters. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables 1 through 5.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table II.

The Discharger may, upon approval, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Surface Impoundments

Surface impoundment samples shall be collected in a convenient location at least 50 feet from the influent structure. Liquids in the surface impoundments shall be monitored/sampled for the parameters as listed in Table 1.

Table 1 - Surface Impoundment Monitoring

Table 1 - Surface Impoundment Monitoring		
<u>Field Parameter</u>	<u>Units</u>	<u>Frequency</u>
Flow Rate	gallons per month	Monthly
Remaining Capacity	gallons	Monthly
Freeboard	±0.1	Weekly
Temperature	°C	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	pH number	Quarterly
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate – Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Iron	mg/L	Quarterly
Barium	mg/L	Quarterly
Strontium	mg/L	Quarterly
Aluminum	mg/L	Quarterly
Manganese	mg/L	Quarterly
Boron	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260, see Table I)	µg/L	Annually

2. Groundwater

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 of Title 27 in accordance with a Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted 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.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table 2.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot.

Table 2 - Groundwater Monitoring		
<u>Field Parameter</u>	<u>Units</u>	<u>Frequency</u>
Groundwater Elevation	±0.01 ft., MSL	Quarterly
Temperature	°C	Semiannually
Specific Conductance	µmhos/cm	Semiannually
pH	pH number	Semiannually
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Semiannually
Chloride	mg/L	Semiannually
Carbonate	mg/L	Semiannually
Bicarbonate	mg/L	Semiannually
Nitrate – Nitrogen	mg/L	Semiannually
Sulfate	mg/L	Semiannually
Calcium	mg/L	Semiannually
Magnesium	mg/L	Semiannually
Potassium	mg/L	Semiannually
Sodium	mg/L	Semiannually
Iron	mg/L	Semiannually
Barium	mg/L	Semiannually
Strontium	mg/L	Semiannually
Aluminum	mg/L	Semiannually
Manganese	mg/L	Semiannually
Boron	mg/L	Semiannually
Volatile Organic Compounds (USEPA Method 8260, see Table I)	µg/L	Annually

3. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 of Title 27 in accordance with a monitoring plan approved by the Executive Officer. 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.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table 3. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point.

The pan lysimeter shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

Table 3- Unsaturated Zone Monitoring		
<u>Field Parameter</u>	<u>Units</u>	<u>Frequency</u>
Flow rate	gallons/month	Monthly
Temperature	°C	Semiannually
Specific Conductance	µmhos/cm	Semiannually
pH	pH number	Semiannually
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Semiannually
Chloride	mg/L	Semiannually
Carbonate	mg/L	Semiannually
Bicarbonate	mg/L	Semiannually
Nitrate – Nitrogen	mg/L	Semiannually
Sulfate	mg/L	Semiannually
Calcium	mg/L	Semiannually
Magnesium	mg/L	Semiannually
Potassium	mg/L	Semiannually
Sodium	mg/L	Semiannually
Iron	mg/L	Semiannually
Barium	mg/L	Semiannually
Strontium	mg/L	Semiannually
Aluminum	mg/L	Semiannually
Manganese	mg/L	Semiannually
Boron	µg/L	Semiannually
Volatile Organic Compounds (USEPA Method 8260, see Table I)		Annually

4. Leachate Monitoring

The LCRS sump shall be inspected quarterly for leachate. Upon detection of leachate in a previously dry LCRS, the Discharger shall immediately collect a grab sample of the leachate and shall continue to collect grab samples of the leachate at the following frequencies thereafter. The LCRS shall be sampled and analyzed for the following:

Table 4 – LCRS Sampling		
<u>Field Parameter</u>	<u>Units</u>	<u>Frequency</u>
Flow rate	gallons/month	Monthly
Temperature	°C	Semiannually
Specific Conductance	µmhos/cm	Semiannually
pH	pH number	Semiannually
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Semiannually
Chloride	mg/L	Semiannually
Carbonate	mg/L	Semiannually
Bicarbonate	mg/L	Semiannually
Nitrate – Nitrogen	mg/L	Semiannually
Sulfate	mg/L	Semiannually
Calcium	mg/L	Semiannually
Magnesium	mg/L	Semiannually
Potassium	mg/L	Semiannually
Sodium	mg/L	Semiannually
Iron	mg/L	Semiannually
Barium	mg/L	Semiannually
Strontium	mg/L	Semiannually
Aluminum	mg/L	Semiannually
Manganese	mg/L	Semiannually
Boron	mg/L	Semiannually
Volatile Organic Compounds (USEPA Method 8260, see Table I)	µg/L	Annually

5. Facility Monitoring

a. 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 damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section F.4.f. of Standard Provisions and Reporting Requirements. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs,. The report shall include photographs before and after the repairs.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

MMW: 4/10/06

TABLE I

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260B

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene

TABLE I
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Hexachloroethane
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

INFORMATION SHEET

ORDER NO. R5-2006-0075

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

On 25 April 2003, the Regional Board adopted Waste Discharge Requirement Order No. R5-2003-0065, NPDES No. CA0078093, prescribing waste discharge requirements for the Department of Corrections and Rehabilitation (hereafter Discharger) for the discharge of treated effluent from the Deuel Vocational Institution (DVI) wastewater treatment plant to the Deuel Drain in San Joaquin County. DVI is located east of the City of Tracy in San Joaquin County in Section 20, T2S, R6E, MDB&M. Because of the high concentration of total dissolved solids (TDS) in the supply wells, treated wastewater from the wastewater treatment plant continually exceeds the NPDES permit limits. In addition, the supply water exceeds drinking water standards set forth by the California Department of Health Services (DHS). The Regional Board adopted Cease and Desist Order (CDO) No. R5-2003-0066 to address the TDS exceedances.

The Discharger proposes to construct a groundwater treatment plant that will comply with the CDO adopted by the Regional Board and meet the DHS's drinking water standards. Groundwater from the onsite supply wells will be treated via reverse osmosis. The waste from the reverse osmosis plant will be reduced in a brine concentrator and discharged to four lined evaporation basins. This Order classifies the four brine evaporation basins as Class II surface impoundments in accordance with Title 27, CCR Section 20005, et seq. (Title 27).

The concentrated brine from the reverse osmosis water treatment plant is a designated waste. The brine waste characteristics were developed based on feed water quality, RO treatment removal, finished water quality goals and the resulting mass balance. The brine characteristics are as follows:

Parameter	Concentration	Units
Total Dissolved Solids	313,600	mg/L
Aluminum	7.56	mg/L
Iron	33.6	mg/L
Manganese	58.8	mg/L
Boron	84	mg/L
Calcium	33,600	mg/L
Magnesium	18,200	mg/L
Sodium	39,738	mg/L
Potassium	1,106	mg/L
Barium	21	mg/L
Strontium	1,092	mg/L
Sulfate	30,040	mg/L
Chloride	154,000	mg/L
Total Silica	6,440	mg/L

These are estimated concentrations and the Discharger is required to monitor the waste brine once the treatment plant is constructed and operating. Once additional data is received, the waste characteristics may change and the Monitoring and Reporting Program may be revised.

Monitoring data gathered for the onsite supply wells indicates that deeper groundwater has TDS concentrations ranging between 840 to 2200 mg/l. The predicted direction of groundwater flow is toward the east to northeast.

Background shallow groundwater characterization is unknown. Prior to discharge to the surface impoundments, the Discharger shall, at a minimum, perform groundwater monitoring for one year and submit a Water Quality Protection Standard Report.

The Discharger proposes to install a minimum of three groundwater monitoring wells. Once a true groundwater gradient for the shallow groundwater zone is determined, the Discharger may be required to install additional groundwater monitoring wells such that the detection monitoring system is in compliance with Title 27.

The depth to shallow groundwater ranges from 3.4 to 5.0 feet below grade surface, measured during the geotechnical study performed in May 2005. Title 27, CCR Section 20240(c) requires a minimum separation of five foot between waste and the highest anticipated groundwater elevation. To mitigate the five foot separation requirement, the Discharger has proposed to construct the surface impoundments within a 16-foot fill pad, with the bottom elevation of each surface impoundment five feet above natural grade.

The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The engineered alternative consists of the following from the top down:

- a. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
- b. A geonet drainage layer, as a leachate collection and removal system (LCRS).
- c. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
- d. A geonet drainage layer as a vadose zone monitoring system.
- e. A tertiary 60-mil thick HDPE geomembrane.

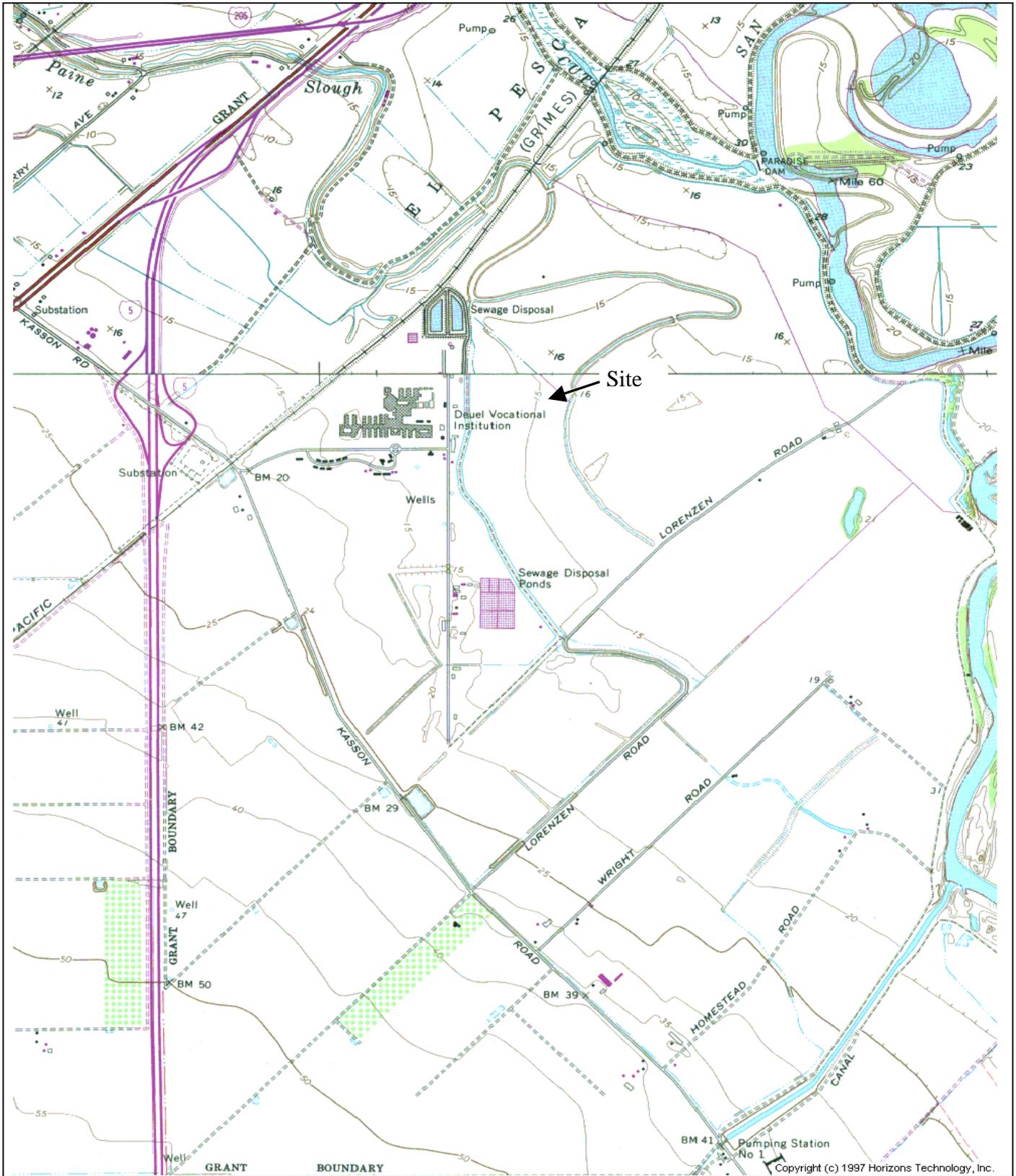
The waste management facility is within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060299 0730 B. In order to mitigate potential washout of the surface impoundments in the event of a 100-year flood event, the ponds will be constructed within a 16-foot fill pad and the berms will be constructed two-feet above the 100-year flood elevation.

INFORMATION SHEET, ORDER NO. R5-2006-0075
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
OPERATION OF CLASS II SURFACE IMPOUNDMENTS
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

-3-

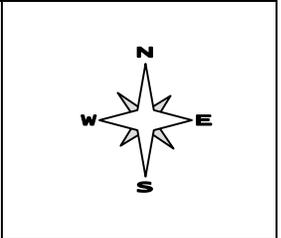
Surface drainage is toward the San Joaquin River.

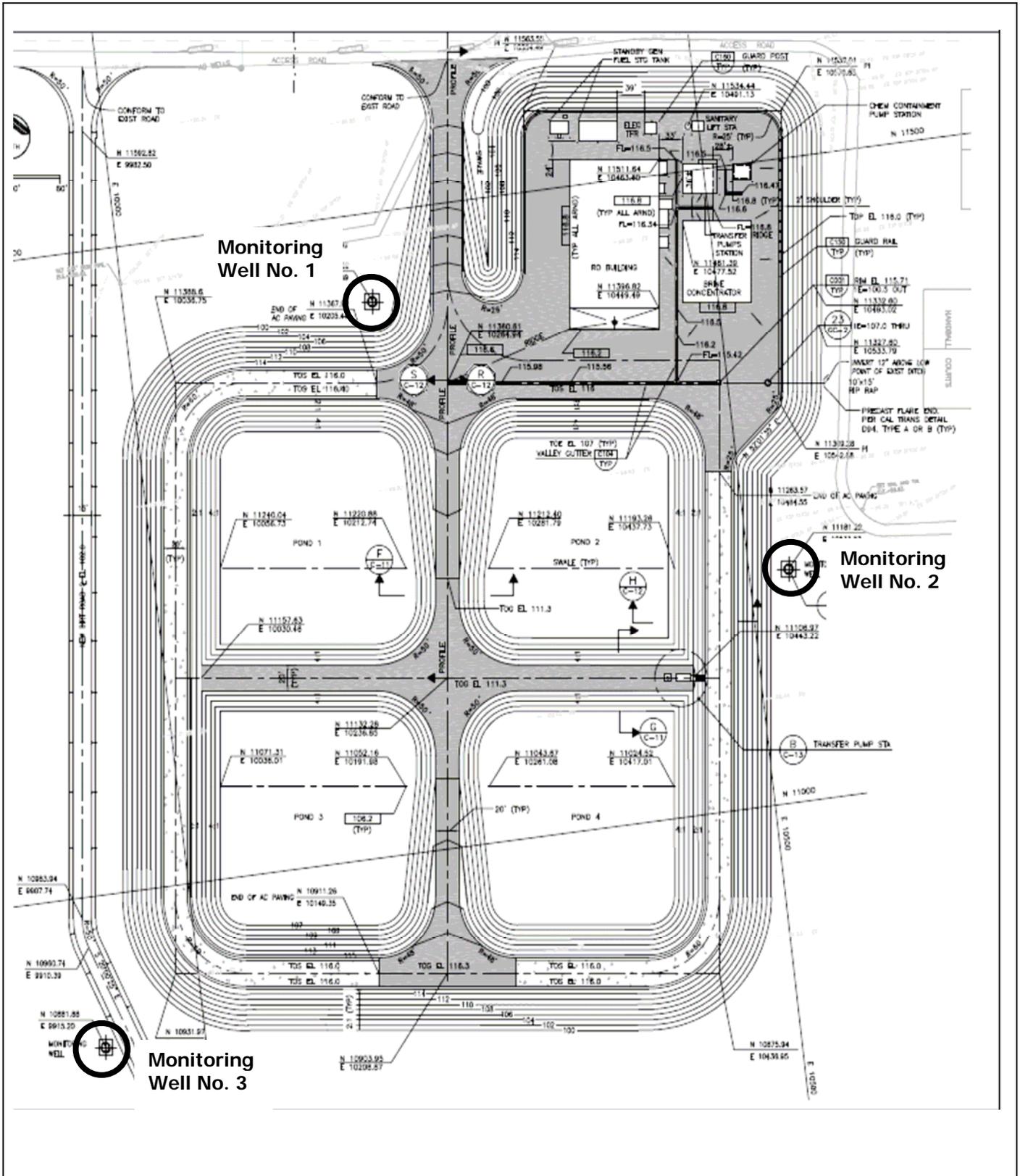
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 TOPOGRAPHIC MAP
 7.5 MINUTE QUAD

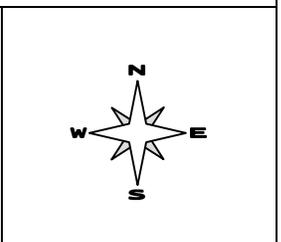
SITE LOCATION MAP
 California Department of Corrections
 Deuel Vocational Institution
 San Joaquin County





Drawing Reference:
Carollo Engineers

SITE MAP
California Department of Corrections
Deuel Vocational Institution
San Joaquin County



ATTACHMENT C

MONITORING WELL WORKPLAN AND MONITORING WELL
INSTALLATION REPORT REQUIREMENTS
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY, ORDER NO. R5-2006-0075

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report, which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan

A. General Information:

- Purpose of well installation project
- Copies of County Well Construction Permits (to be submitted after workplan review)
- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan
- Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details:

- Describe drilling technique
- Sampling intervals, and logging methods

C. Monitoring Well Design:

- Casing diameter and centralizer spacing (if needed)
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of proposed well construction details
- Type of well cap, bottom cap either screw on or secured with stainless steel screws
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. Well Development:

- Method of development to be used
- Method of determining when development is complete
- Parameters to be monitored during development
- Method of development water storage and disposal

E. Well Survey:

Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Describe what well features will be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)
Vertical accuracy shall be to at least 0.01 foot

F. Well Sampling:

Minimum time after development before sampling (48 hours)
Well purging method and amount of purge water
Sample containers, collection method, and preservation method
Table describing sample volumes, sample containers, preservation agents, and hold times
QA/QC procedures

G. Water Level Measurement:

The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.01 foot.
Method and time of water level measurement shall be specified.

H. Proposed time schedule for work.

SECTION 2 – Groundwater Sampling and Analysis Plan

A. General Information:

Site Location
Monitoring well locations
Monitoring well construction details including elevation, well depth, casing material and size, and screen interval
Equipment decontamination procedures
Health and safety plan
Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Water Level Measurement:

Ground surface elevation at each monitoring well shall be within 0.01 foot.
Method and time of water level measurement shall be specified
Water level in well shall be allowed to equilibrate prior to measuring the depth to water

C. Well Sampling:

Well purging method and amount of purge water, purge water storage
Sample containers, collection method, and preservation method
Table describing sample volumes, sample containers, preservation agents, and hold times
Identification of analytical laboratory
Chain of custody procedures
QA/QC procedures

D. Proposed time schedule for work.

SECTION 3 - Monitoring Well Installation Report

A. Well Construction:

- Number and depth of wells drilled
- Date(s) wells drilled and completed
- Description of drilling and construction
- Scaled map of facility site features including monitoring wells, buildings, storage ponds, waste piles, etc.
- A well construction diagram for each well must be included in the report, and must contain the following details:

- Drilling Contractor and driller name
- Depth of open hole (same as total depth drilled if no caving occurs)
- Method and materials of grouting excess borehole
- Footage of hole collapsed
- Length of slotted casing installed
- Depth of bottom of casing
- Depth to top of sand pack
- Thickness of sand pack
- Depth to top of bentonite seal
- Thickness of bentonite seal
- Thickness of concrete grout
- Boring diameter
- Casing diameter
- Casing material
- Size of perforations
- Well elevation at top of casing
- Stabilized depth to groundwater
- Date of water level measurement
- Monitoring well number
- Date drilled
- Location

B. Well Development:

- Date(s) of development of each well
- Method of development
- Volume of water purged from well
- How well development completion was determined
- Method of effluent disposal
- Field notes from well development should be included in report.

C. Well Survey:

- Identify the coordinate system or reference points
- Survey the well casing with the cap removed (horizontal and vertical coordinates)
- Registered Engineer or Licensed Surveyor's report and field notes in appendix
- Describe the measuring points (i.e. ground surface, top of casing, etc.)
- Tabular survey data

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INDUSTRIAL FACILITIES
For Title 27 (27CCR §20005 et seq.)
September 2003

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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

SEPTEMBER 2003

I. APPLICABILITY

- A. These Standard Provisions and Reporting Requirements are applicable to class II surface impoundments, waste piles, and land treatment units that are regulated pursuant to the provisions of Title 27 of the California Code of Regulations, §20005 et seq. (27 CCR or Title 27).
- B. “Order,” as used throughout this document, means the Waste Discharge Requirements to which these Standard Provisions and Reporting Requirements are incorporated.
- C. 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.
- D. 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.
- E. If there is any conflicting or contradictory language between the Waste Discharge Requirements (WDRs), the Monitoring and Reporting Program (MRP), or the Standard Provisions and Reporting Requirements (SPRR), then language in the WDRs shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.
- F. Unless otherwise stated, all terms are as defined in §13050 of the California Water Code (CWC) and in §20164 of Title 27.

II. TERMS AND CONDITIONS

- A. 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 Regional Board or the State Water Resources Control 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 these waste discharge requirements and the California Water Code, which can result in the imposition of civil monetary liability [CWC §13350(a)]

- B. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [CWC §13381]:
 - 1. Violation of any term or condition contained in this Order;
 - 2. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - 3. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - 4. A material change in the character, location, or volume of discharge.
- C. 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, or other appropriate joint technical document, with the Regional Water Quality Control Board (hereafter Board) [CWC §13260(c) and §13264(a)]. A material change includes, but is not limited to, the following:
 - 1. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - 2. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment); or
 - 3. A change in the type of waste being accepted for disposal.
- D. Representatives of the 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 [CWC §13267(c)].
- E. The Board will review this Order periodically and will revise these waste discharge requirements when necessary [CWC §13263(e) and 27 CCR §21720(b)].
- F. 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 Board [CWC §13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

- G. 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 [CWC §13263(g)].

III. GENERAL PROVISIONS

- A. The discharge shall neither cause nor contribute to the contamination, degradation, or **pollution of ground water** via the release of waste constituents in either liquid or gaseous phase.
- B. The discharge shall neither cause nor contribute to any **surface water pollution**, contamination, or nuisance, including, but not limited to:
1. floating, suspended, or deposited macroscopic particulate matter or foam;
 2. increases in bottom deposits or aquatic growth;
 3. an adverse change in temperature, turbidity, or apparent color beyond natural background levels;
 4. the creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin;
 5. the introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.
- C. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit (WMU) if such waste constituents could migrate to waters of the State—in either the liquid or the gaseous phase—and cause **a condition of contamination, pollution, degradation, or nuisance**.
- D. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, pollution, degradation, or nuisance to occur, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in the Monitoring and Reporting Program.

- E. The discharger shall take **all reasonable steps to minimize any adverse impact** to the waters of the state resulting from noncompliance with this Order. (“Order,” as used throughout this document, means the Waste Discharge Requirements). Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
- F. 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 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 [27 CCR §21710(c)(1)].
- G. The Discharger shall notify the 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 Board approval following authorization for closure pursuant to the site Notification of Closure [27 CCR §21710(a)(4)].
- H. The Discharger shall maintain legible records of the volume and type of each waste discharged at each WMU or portion of a WMU, 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 Resources Control Board or Regional 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 Resources Control Board or Regional 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 Regional Board [27 CCR §21720(f)].
- I. 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 WMU, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
1. require a higher level of containment than provided by the unit; or
 2. are ‘restricted wastes’; or
 3. impair the integrity of containment structures;
- is prohibited [27 CCR §20200(b)].

IV. FINANCIAL ASSURANCE PROVISIONS

- A. 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 WMU [27 CCR §20380(b) and §22222].
- B. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified WMU in accordance with an approved closure and post-closure maintenance plan [27 CCR §20950(f) and §22207(a)].

V. DISCHARGE SPECIFICATIONS

- A. 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 WMU and whether or not the wastes are required to be managed as a hazardous waste [27 CCR §20200(c)] or designated waste [27 CCR §20210].
- B. All WMUs shall be designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [27 CCR §20240(c)], including the capillary fringe.
- C. The Discharger shall submit operation plans describing those WMU operations which could affect water quality, including, but not limited to [27 CCR §21760(b)]:
 - 1. A description of proposed treatment, storage, and disposal methods;
 - 2. Contingency plans for the failure or breakdown of waste handling facilities or containment systems, including notice or any such failure, or any detection of waste or leachate in monitoring facilities, to the Board, local governments, and water users downgradient of the WMU(s); and
 - 3. A description of inspection and maintenance programs which will be undertaken regularly during disposal operations and the post-closure maintenance period.
- D. Leachate collected from a WMU shall be discharged to the WMU from which it came, or discharged to an appropriate WMU in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [27 CCR §20200(d) and §20340(g)].

VI. FACILITY SPECIFICATIONS

- A. Surface and subsurface drainage from outside of a WMU shall be diverted from the WMU [27 CCR §20365(e)].
- B. The Discharger shall promptly notify the Board of any slope failure occurring at a WMU. Any failure which threatens the integrity of containment features or the WMU shall be promptly corrected in accordance with an approved method [27 CCR §21710(c)(2)].

VII. CONSTRUCTION SPECIFICATIONS

- A. 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. WMUs shall receive a final inspection and approval of the construction by Board staff before use of the WMU commences [27 CCR §20310(e)].
- B. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a WMU's containment features or monitoring systems shall be approved by a registered civil engineer or a certified engineering geologist [27 CCR §21710(d)].
- C. 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 [27 CCR §20320(a)].
- D. WMUs 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 [27 CCR §20365(a)].
- E. All WMUs shall be designed to withstand the maximum probable earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [27 CCR §20370(a)].
- F. New WMUs and expansions of existing Class II WMUs shall have a 200 foot setback from any known Holocene fault [27 CCR §20250(d)].
- G. Liners shall be designed and constructed to contain the fluid, including gas, waste, and leachate [27 CCR §20330(a)].

- H. 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 [27 CCR §20320(c)].
- I. 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 [27 CCR §20320(b)].
- J. A test pad for each barrier layer and 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 [27 CCR §20324(g)(1)(A)].
- K. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control any gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [27 CCR §20324(i)(1)].
- L. Leachate collection and removal systems are required for Class II surface impoundments [27 CCR §20340(a)].
- M. All new WMUs or lateral expansions of existing WMUs that require a leachate collection and removal system shall have a blanket-type leachate collection and removal system that covers the bottom of the WMU and extends as far up the sides as possible. The leachate collection and removal system shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the WMU [27 CCR §20340(e)].
- N. The leachate collection and removal system shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the WMU [27 CCR §20340(b)].
- O. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the WMU and during the post-closure maintenance period. The systems 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 [27 CCR §20340(d)].

- P. Leachate Collection and Removal Systems shall be designed and constructed to ensure that there is no buildup of hydraulic head on the liner. The depth of fluid in the collection sump shall be kept at the minimum needed to ensure efficient pump operation [27 CCR §20340(c)]
- Q. 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 [27 CCR §20323] and approved by the Executive Officer.
- R. The Construction Quality Assurance (CQA) program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [27 CCR §20324(b)(2)].

VIII. REPORTING REQUIREMENTS

A. General Requirements

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 Board by telephone** at (916) 255-3000 as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within two weeks. The written notification shall state the nature, time and cause of **noncompliance**, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. The Discharger shall **immediately notify the Board** of any **evidence of a release**, or 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 of precipitation and drainage control structures.
3. The discharger shall **mail a copy of each** monitoring **report** and any other reports required by this Order to:

California Regional Water Quality Control Board
Central Valley Region
11029 Sun Center Drive #200
Rancho Cordova, CA 95670 (or the current address if the office relocates)

4. 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 for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board Executive Officer.

Such records shall show the following for each sample:

- a. Identity of sample and of 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.

Such records shall also include legible records of the volume and type of each waste discharged at each WMU and the manner and location of discharge. These waste discharge records shall be maintained at the facility until the beginning of the post-closure maintenance period, at which time copies of these records shall be sent to the Board.

5. **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;
 - i. the authorization is made in writing by a person described in a, b, or c of this provision;
 - ii. 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 WMU, 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
- iii. the written authorization is submitted to the Board.

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.”

6. In reporting the monitoring data, 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 lack thereof.
7. Unless otherwise required in the Monitoring and Reporting Program, monthly **monitoring reports shall be submitted** to the Board by the 15th day of the month following the month in which the samples were taken or observations made, and quarterly, semiannual, and annual monitoring reports shall be submitted to the Board by the 15th day of the month following the calendar quarter in which the samples were taken or observations made.
8. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board.

B. Reports to be Filed with the Board

1. A transmittal **letter** explaining the essential points in each report shall accompany each report. Such a letter shall include a discussion of any violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the Discharger has previously submitted a detailed time schedule for correcting the violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal.

2. Each monitoring report (e.g., Detection Monitoring Report, Constituents of Concern 5-Year Report) shall include a **compliance evaluation summary**. The summary shall contain at least:
 - a. For each monitored ground water body, a description and graphical presentation of the gradient and direction of **ground water flow** under/around the WMU, based upon water level elevations taken during the collection of the water quality data submitted in the report.
 - b. For each monitoring well addressed by the report, a description of the method and time of water level measurement, of the type of pump used for **purg**ing and the placement of the pump in the well, and of the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water).
 - c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the type of pump—or other device—used and its placement for **sampling**, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations).
 - d. For each monitoring well addressed by the report, a description of how the well was **purg**ed to remove all portions of the water that was in the well bore while the sample was being taken.
 - e. A **map or aerial photograph** showing the locations of observation stations, Monitoring Points, and Background Monitoring Points.
 - f. **Laboratory** statements of results of all analyses evaluating compliance with requirements.
 - g. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
 - h. A summary and certification of completion of all Standard Observations for the WMU, for the perimeter of the WMU, and for the receiving waters.

- i. The quantity and types of wastes discharged and the locations in the WMU where waste has been placed since submittal of the last such report.
3. The Discharger shall report by telephone concerning any **seepage from the disposal area** immediately after it is discovered. A written report shall be filed with the Board within seven days, containing at least the following information:
 - a. a map showing the location(s) of seepage;
 - b. an estimate of the flow rate;
 - c. a description of the nature of the discharge (e.g., all pertinent observations and analyses); and
 - d. corrective measures underway or proposed, and corresponding time schedule.See **RESPONSE TO A RELEASE** below.
4. The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the reporting period previous monitoring year. This report shall contain:
 - a. For each Monitoring Point and Background Monitoring Point, submit in **graphical format** the laboratory analytical data 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. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month Reporting Periods, presented in tabular form as well as on 3.50" **computer diskettes**, either in MS-DOS/ASCII format or in another file format acceptable to Board staff. Data sets too large to fit on a single 2 MB diskette may be submitted on disk in a commonly available compressed format (e.g. PKZIP or NORTON BACKUP). The Board regards the submittal of data in hard copy and on diskette as "...the form necessary for..." statistical analysis (§20420(h)), in that this facilitates periodic review by the Board's statistical consultant.

- c. 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.
- d. A **map** showing the area and elevations in which filling has been completed during the previous calendar year.
- e. A **written** summary of the monitoring results, indicating any changes made or observed since the previous annual report.
- f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

IX. PROVISIONS FOR MONITORING

A. General

1. The discharger shall maintain a **written sampling and analysis plan** sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the discharger shall be familiar with the sampling and analysis plan.
2. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and regularly **calibrated** to ensure their continued accuracy.
3. The discharger shall construct or abandon all **monitoring wells** to meet or exceed the standards stated in the State Department of Water Resources Bulletin 74-81 and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.
4. All sample analyses shall be conducted at a **laboratory accredited** for such analyses by the State Department of Health Services. The **Quality Assurance-Quality Control Program** must conform to EPA guidelines (e.g., "Laboratory Documentation Requirements for Data Validation," January 1990, USEPA Region 9) or to procedures approved by the Board.
5. The director **of the laboratory** whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.
6. Unless samples are from water supply wells or unless otherwise specified by Board staff, all ground water samples to be analyzed for **metals** shall be field-filtered. Filtration methods shall minimize the

entrainment of air into the sample (by using, for example, in-line pressure filtration).

B. Sampling and Analytical Methods

1. 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 the Executive Officer approves a longer time period, 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.
2. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
3. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
4. **"Trace" results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied by both the estimated MDL and PQL values for that analytical run.
5. **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.

6. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
7. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
8. 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 qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
9. 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 §20415(e)(7) of Title 27 that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to §20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and

used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

10. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.
11. The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Board staff.
12. 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. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. 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*:
 - i. The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - ii. The data contains one or more analyte that equals or exceeds its PQL.

- b. **Discrete Retest** [Title 27 CCR Section 20415(e)(8)(E)]:
 - i. In the event that the Discharger concludes (pursuant to paragraph 12.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Regional 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.
 - ii. For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
 - a. **Immediately** notify the Regional Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
 - b. Comply with ¶14, below if any constituent or constituents were verified to be present.
 - iii. Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.
13. If the Executive Officer determines, after reviewing the submitted report in 12.b. above, that the detected constituent most likely originated from the WMU(s), the Discharger shall **immediately** implement the requirements of X. Response To A Release, C. Release Has Been Verified, contained in the Standard Provisions and Reporting Requirements (September 2003).
14. If the Discharger determines that there is measurably significant evidence of a release from the WMU at any monitoring point, the Discharger shall **immediately** implement the requirements of **X. Response To A Release, C. Release Has Been Verified**, contained in the Standard Provisions and Reporting Requirements.

X. RESPONSE TO A RELEASE

A. Monitoring Point Evidence of a Release

1. If the Discharger determines that there is “measurably significant” evidence of a release from the WMU (i.e. the initial statistical comparison or nonstatistical comparison indicates, for any constituent of concern or monitoring parameter, that a release is tentatively identified), the Discharger shall [27 CCR §20420(j)]:
 - a. **Notification** — **immediately notify Board staff verbally** of the finding and **provide** written notification by certified mail **within seven days** of such determination. The notification shall, for each affected monitoring point, identify the monitoring parameters and constituents of concern that have indicated “measurably significant” evidence of a release from the WMU [27 CCR §20420(j)(1)];
 - b. **Retest Optional** — can immediately initiate the verification (retest) procedure pre-approved by the Board [pursuant to §20415(e)(8)(E) of Title 27] to verify that there is “measurably significant” evidence of a release from the WMU for a parameter or constituent which has indicated a release at a monitoring point [27 CCR §20420(j)(2)]; and
 - c. **Next Step** — immediately following detection of a release [or after completing the retest pursuant to b) above and confirming the existence of a release], shall comply with the requirements of C. (Release Has Been Verified) below [27 CCR §20420(j)(3)].

B. Physical Evidence of a Release

If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall notify the Board **by certified mail within 7 days** of such determination, and within 90 days shall submit an amended report of waste discharge to make any appropriate changes to the detection monitoring program [27 CCR §20420(1)(1) & (2)].

C. Release Has Been Verified

1. If the detection was made based upon sampling and analysis for monitoring parameters, **immediately** sample all monitoring points in the affected medium at that WMU and determine the concentration of all constituents of concern. Because this constituent of concern scan does not involve statistical testing, the Discharger need collect and analyze

only a single water sample from each monitoring point in the affected medium [27 CCR §20420(k)(1)].

2. The Discharger, **within 90 days** of determining “measurably significant” evidence of a release, shall submit an amended report of waste discharge to establish an evaluation monitoring program meeting the requirements of §20425 of Title 27 [27 CCR §20420(k)(5)].
3. The Discharger, **within 180 days** of determining “measurably significant” evidence of a release, shall submit to the Board an initial engineering feasibility study for a corrective action program necessary to meet the requirements of §20430 of Title 27. At a minimum, the 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 [27 CCR §20420(k)(6)].
4. If the Discharger determines that there is “measurably significant” evidence of a release from the WMU at any monitoring point, the Discharger may demonstrate that a source other than the WMU 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 §20420(k)(7) of Title 27 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 of §20420(k)(6) & (7) of Title 27 unless the demonstration successfully shows that a source other than the WMU 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 making this demonstration, the Discharger shall notify the Board by certified mail of the intent to make the demonstration **within seven days** of determining “measurably significant” evidence of a release. The report shall be submitted to the Board **within 90 days** of determining “measurably significant” evidence of a release demonstrating that a source other than the WMU caused the evidence [27 CCR §20420(k)(7)].
5. The Discharger, **within 90 days** of establishing an Evaluation Monitoring Program, shall conduct an evaluation monitoring program used to assess the nature and extent of the release from the WMU and to design a corrective action program meeting the requirements of §20430 of Title 27. At a minimum, an evaluation monitoring program for a WMU shall include:

- a. An assessment of the nature and extent of the release from the WMU. This assessment shall include a determination of the special distribution and concentration of each constituent of concern throughout the zone affected by the release. The Discharger shall submit this assessment to the Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(b)].
- b. Update the initial engineering feasibility study for corrective action based on the data collected to delineate the release and from the ongoing monitoring program. The Discharger shall submit this updated engineering feasibility study to the Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(c)].
- c. Submit an amended report of waste discharge to establish a corrective action program meeting the requirements of §20430 of Title 27 based on the data collected to delineate the release and on the updated engineering feasibility study. The Discharger shall submit this report to the Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(d)].

D. Release Beyond Facility Boundary

1. Any time the discharger concludes that a release from the WMU has proceeded beyond the facility boundary, the discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).
2. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the discharger's current knowledge of the nature and extent of the release.
3. Subsequent to initial notification, the discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
4. Each time the discharger sends a notification to Affected Persons, the discharger shall provide the Board, within seven days of sending such notification, with both a copy of the notification and a current mailing list of Affected Persons.

XI. STANDARD CONDITIONS

A. Supervision and Certification

1. All WMUs shall be **designed and constructed** under the direct supervision of 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, and performance goals of Title 27 prior to waste discharge.
2. Designs of WMUs shall include a **Construction Quality Assurance Plan**, which shall:
 - a. be submitted for review and approval by the Board prior to construction;
 - b. demonstrate that the WMU has been constructed according to the specifications and plans as approved by the Board; and
 - c. provide quality control on the materials and construction practices used to construct the WMU and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.
3. **Closure** of each WMU shall be performed under the direct supervision of a California registered civil engineer or California certified engineering geologist.

B. Operations

1. The discharger shall maintain in **good working order** and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
2. For any **electrically** operated equipment at the site, the **failure** of which could cause loss of control or containment of waste materials, or violation of this Order, the discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.
3. 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 the Order.
4. The discharge shall remain within the designated disposal area at all times.

5. By the effective date of waste discharge requirements, the discharger shall have a plan for preventing and controlling **accidental discharges**, and for minimizing the effect of such events. This plan shall:
 - a. Identify the possible sources of accidental loss or leakage of wastes from each waste storage, treatment, or disposal unit.
 - b. Evaluate the effectiveness of present WMUs and operational procedures, and identify needed changes or contingency plans.
 - c. Predict the effectiveness of the proposed changes in waste management facilities and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

The Board, after review of the plan, may establish conditions that it deems necessary to control leakage and minimize its effects.

6. WMU **gases** shall be adequately vented, removed from WMU, or otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, or the impairment of beneficial uses of water due to migration through the vadose (unsaturated) zone.
7. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
8. Surface impoundments 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 waterline.
9. Leachate removed from a surface impoundment LCRS shall be discharged to the impoundment from which it originated.
10. Solids which accumulate in a surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for the 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 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 the Board for review. The solids may be discharged to the Class III landfill units only if the Board determines that they qualify for classification as “nonhazardous solid waste” or “inert waste.”
11. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

C. **Siting**

1. WMUs shall be designed, constructed, and operated to prevent inundation or washout due to floods with a 100-year return period.

Class II surface impoundments and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required two feet of freeboard.

2. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes, and shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

D. **Closure**

1. Closed WMUs shall be provided with at least two **permanent monuments**, installed by a licensed land surveyor or by a registered civil engineer authorized to perform land surveying, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.
2. 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.

E. **Post-Closure**

1. The post-closure maintenance period shall continue until the Board determines that remaining wastes in all WMUs will not threaten water quality.
2. The owner of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the WMUs and during subsequent use of the property for other purposes.

XII. DEFINITIONS

Unless otherwise stated, all terms are as defined in Chapter 2, Division 7, of the California Water Code (Section 13050 et seq.), in Article 2, Chapter 2, Division 2, Title 27 of the California Code of Regulations (27 CCR §20005 et seq.), and in Section 258.2, and elsewhere in Part 258, Title 40 of the Code of Federal Regulations.

The following additional definitions apply to the Order:

- A. “**Affected Persons**” means all individuals who either own or occupy land outside the boundaries of the parcel upon which the WMU is located that has been or may be affected by the **release** of leachate or waste constituents (in gas or liquid phase) from a WMU.
- B. “**Background Monitoring Point**” means a device (e.g., well) or location (e.g., a specific point along a lakeshore), upgradient or sidegradient from the WMU, or as otherwise approved by the Executive Officer, where water quality samples are taken that are not affected by any release from the WMU and that are used as a basis of comparison against samples taken from downgradient Monitoring Points.
- C. “**Composite liner**” means a liner that consists of two or more components, which include a Synthetic Liner in direct and uniform contact with an underlying layer of prepared, low-permeability soil such that the net permeability of the resulting combination is significantly less than would be expected by reference to the permeability of the individual components layers.
- D. Unless otherwise specified, “**composite sample**” means a combination of individual samples either collected over a specified sampling period or collected over an area at one time (synoptically):
 - 1. at equal time intervals,
 - 2. at varying time intervals so that each sample represents an equal portion of the media to be sampled.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results. “**Constituents of Concern (COC)**” means those constituents which are likely to be in the waste in the WMU or which are likely to be derived from waste constituents in the event of a release.

- E. “**Daily maximum concentration**” means the highest measurement made on any single discrete sample or composite sample.
- F. “**Grab sample**” means a discrete sample collected in less than 15 minutes.

- G. **“Matrix effect”** means any change in the method detection limit or practical quantitation limit for a given analyte as a result of the presence of other constituents - either of natural origin or introduced **by** humans as a result of a release or spill - that are present in the sample of water or soil-pore gas being analyzed.
- H. **“Method detection limit (MDL)”** means the lowest constituent concentration associated with a 99% reliability of a “non-zero” analytical result. The MDL shall reflect the detection capabilities of the specific analytical procedure and equipment used by the laboratory. MDLs reported by the laboratory shall not simply be restated from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs are expected to closely agree with published USEPA MDLs. If the lab suspects that, due to matrix or other effects, the detection limit for a particular analytical run differs significantly from the laboratory-derived MDL, the results should be flagged accordingly, along with an estimate of the detection limit achieved.
- I. **“Monitoring Parameters”** means the short list of constituents and parameters used for the majority of monitoring activity at a given WMU. Monitoring for the short list of Monitoring Parameters constitutes “indirect monitoring,” in that the results are used to indicate indirectly the success or failure of adequate containment for the longer list of Constituents of Concern.
- J. **“Monitored Media”** means those water-, solid-, or gas-bearing media that are monitored pursuant to the Monitoring and Reporting Program. The Monitored Media may include:
1. Ground water in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the WMU could be detected, and in any perched zones underlying the WMU,
 2. Any bodies of surface water that could be measurably affected by a release,
 3. Soil pore liquid beneath and/or adjacent to the WMU, and
 4. Soil pore gas beneath and/or adjacent to the WMU.
- K. **“Monitoring Point”** means a device (e.g., well) or location (e.g., a specific point along a lakeshore), downgradient from the WMU and that is assigned in this Order, at which samples are collected for the purpose of detecting a release by comparison with samples collected at Background Monitoring Points.
- L. **“Monthly average concentration”** means the arithmetic mean of measurements made during the month.

- M. **“Monthly average discharge”** means the total discharge by volume during a calendar month divided by the number of days in the month that the facility was discharging (e.g. gallons per day, cubic feet per day).

Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges divided by the number of days during the month when the measurements were made.

- N. **“Order,”** as used throughout this document, means the Waste Discharge Requirements. The Monitoring and Reporting Program and Standard Provisions and Reporting Requirements are incorporated by reference into the Waste Discharge Requirements.

- O. **“Practical quantitation limit (PQL)”** means the lowest constituent concentration at which a numerical concentration can be assigned with reasonable certainty that its value 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. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply be restated from U.S. EPA analytical method manuals. In relatively interference-free water, laboratory-derived PQLs are expected to closely agree with published U. S. EPA PQLs. If the lab suspects that, due to matrix or other effects, the quantitation limit for a particular analytical run differs significantly from the laboratory-derived PQL, the results should be flagged accordingly, along with an estimate of the quantitation limit achieved.

- P. **“Reporting Period”** means the time interval during which samples are collected and analyzed, and the results then reported to the Board, to comply with a specified monitoring and reporting frequency. The maximum reporting period for analysis of all Constituents of Concern is five years; for Monitoring Parameters it is six months (generally, Spring/Summer = April 1 to September 30, and Fall/Winter = October 1 to March 31). The Reporting Period for the Annual Summary Report extends from April 1 of the previous year to March 31 of the current year. The due date for the submittal of any given report will be 15 days after the end of its Reporting Period, unless otherwise stated.

- Q. **“Receiving Waters”** refers to any surface or ground water which actually or potentially receives waste constituents, leachate, or surface or ground waters which come in contact with waste materials or contaminated soils.

- R. **“Sample size”:**

1. For Monitoring Points, means the number of data points obtained from a given Monitoring Point during a given Reporting Period used for

carrying out the statistical or non-statistical analysis of a given analyte during a given Reporting Period; or

2. For Background Monitoring Points, means the number of new and existing data points collected under §20415(e)(11 and 12) from all applicable Background Monitoring Points in a given monitored medium—used to collectively represent the background concentration and variability of a given analyte in carrying out statistical or non-statistical analysis of that analyte during a given Reporting Period.

S. “Standard Observations” means:

1. For Receiving Waters:
 - a. Floating and suspended materials of waste origin: presence or absence, source, and size of affected area;
 - b. Discoloration and turbidity: description of color, source, and size of affected area;
 - c. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
 - d. Evidence of water uses: presence of water-associated wildlife;
 - e. Flow rate; and
 - f. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of observation;
2. Along the perimeter of the WMU:
 - a. Evidence of liquid leaving or entering the WMU, estimated size of affected area, and flow rate (show affected area on map);
 - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and
 - c. Evidence of erosion and/or of daylighted refuse.
3. For the WMU:
 - a. Evidence of ponded water at any point on the waste management facility (show affected area on map);
 - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
 - c. Evidence of erosion and/or of daylighted refuse; and

T. “Standard Analysis and Measurements” means:

1. Turbidity, in NTU;
2. Water elevation to the nearest 1/100th foot above mean sea level; and

3. Sampling and statistical/non-statistical analysis of the Monitoring Parameters.
 - U. “**Synthetic Liner**” means a layer of flexible, man-made material that is installed in accordance with the standard of the industry over an area of land prior to the discharge of waste there.
 - V. “**VOC_{water}**” (Volatile Organics Monitoring Parameter for Water) means the composite monitoring parameter encompassing all VOCs that are detectable in less than ten percent of applicable background samples from a monitored water-bearing medium (e.g., the unsaturated zone, the uppermost aquifer, a zone of perched ground water, or a surface water body). This parameter is analyzed via the non-statistical analytical method described elsewhere in this Order to identify a release to waters of the state of VOCs whose presence in background water is detected too infrequently to allow statistical analysis.
 - W. “**VOC_{spg}**” (Volatile Organics Monitoring Parameter for Soil Pore Gas) means Monitoring Parameters addressing all volatile organic constituents detectable in a sample of soil pore gas.
 - X. “**Volatile organic constituents (VOCs)**” means the suite of organic constituents having a high vapor pressure. The term includes at least the 47 organic constituents listed in Appendix I to 40 CFR Part 258.