CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0078
FOR
AMADOR COUNTY
FOR OPERATION OF
BUENA VISTA LANDFILL MUNICIPAL SOLID WASTE LANDFILL

Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements Order No. R5-2003-0078

A. REQUIRED MONITORING REPORTS

Report	Due
1. Groundwater Monitoring (Section D.1)	**See Table I**
2. Annual Monitoring Summary Report	**Annually**
3. (Order No. R5-2003-0078, F.6.)	
4. Unsaturated Zone Monitoring (Section D.2)	**See Table II**
5. Leachate Monitoring (Section D.3)	**See Table III**
6. Surface Water Monitoring (Section D.4)	**See Table IV**
7. Evaluation Monitoring (Section D.5)	**As necessary**
8. Solid Waste Monitoring (Section D.6)	**As necessary**
9. Class II Surface Impoundment Monitoring (Section D.7)	**As necessary**
10. Groundwater Extraction Trench (Section D.8)	**As necessary**
11. Corrective Action Status Report (Section D.9)	**As necessary**
12. Facility Monitoring (Section D.10)	**As necessary**
13. Response to a Release (Standard Provisions and Reporting Requirements)	**As necessary**

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2003-0078 and 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 waste discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in F. Reporting Requirements, of Order No. R5-2003-0078.

Field and laboratory tests shall be reported in each monitoring report. Semiannual, and annual monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

Sampling Frequency	Reporting Frequency	Reporting Periods End	Report Date Due
Semiannually	Semiannually	30 June	**31 July**
		31 December	**31 January**
Annually	Annually	31 December	**31 January**
5-year	5-year	31 December	next report due on **31 January 2006**

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 F. Reporting Requirements, of Order No. R5-2003-0078, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

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

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a 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).

   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

The constituents of concern 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. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program.

a. **Monitoring Parameters**

Monitoring parameters are constituents of concern 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 I through V for the specified monitored medium.

3. Concentration Limits

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

a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or

b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

Provision K26h of Waste Discharge Requirements Order Number R5-2003-0078 defines an additional lists of constituents that require additional sampling and analysis to updating as well as establishing new concentration limits. The following concentration limits have been established for the units at this site as defined in §20390 of Title 27:

Constituent of Concern	Water Quality Standard
Chloride	20 mg/L
Iron	0.27 mg/l
Constituent of Concern	Water Quality Standard
Chloride	20 mg/L
Iron	0.27 mg/l
Nitrate	0.34 mg/L
Total Dissolved Solids	200 mg/l
Taste and Odor	Ground waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.
Bacteria	Coliform organisms over any seven-day period shall be less than 2.2/100 ml.
Non-naturally occuring Compounds	Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. The limit shall be defined as the detection limit of the analytical method used

4. Point of Compliance

The point of compliance for the water standard 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. The following are points of compliance:

- Closed Phase I Waste Management Unit: Groundwater Extraction Trench and the monitoring points required in Section E(2) and clarified in K23 of WDR Order No R5-2003-0078;
- Phase II: MW4A, MW5S and MW16;

- Phase III: An updated monitoring system as required in Section E(2) and clarified in Provision K(d) of WDR Order No R5-2003-0078;
- Class II Surface Impoundment: Currently MW21 is the downgradient well. Additional wells will be added as data collected in forthcoming monitoring events warrants the addition of more wells.

5. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements at which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for detection monitoring shall be the following (Attachment 2):

Surface Water:	S-1, S-2, and S-3.
Groundwater:	MW1, MW13, MW11, MW9 (background), MW14 (background), MW15, MW20 (previously MWUA), Groundwater Extraction Trench
Vadose Zone:	Phase II: Four lysimeters L4-L7 Phase III: Four lysimeters L8-L11 Class II Surface Impoundment: P1 and P2

6. Corrective Action Monitoring Points

In conjunction with the corrective action measures (i.e. the groundwater extraction trench and the landfill gas extraction system), the following monitoring points shall be used to evaluate the effectiveness of the corrective action measure and compliance with the Water Quality Protection Standard. The monitoring points for corrective action monitoring shall be the following:

Groundwater: MW-3A, MW-3B, MW-10, and MW-7
Groundwater Extraction Trench: Effluent Discharge Point.
Vadose Zone Monitoring Points as specified in Provision K25 of WDR Order No. R5-2003-0078.

7. 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 detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification E.2 and E.4 of Waste Discharge Requirements, Order No. R5-2003-0078. 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 I through IV.

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

The Discharger may, with the approval of the Executive Officer, 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. Groundwater

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection 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 I.

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. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system, for monitoring Phase II and Phase III liner system and the landfill gas extraction system, that complies with the applicable provisions of §20415 and §20420 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 II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

The pan lysimeters 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.

3. Leachate Monitoring

All Unit leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).

Leachate which seeps to the surface from the Unit shall be sampled and analyzed for the constituents listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day).

4. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415 and §20420 of Title 27 and has been approved by the Executive Officer.

For all monitoring points and background monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table IV every five years. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

5. Evaluation Monitoring

The Discharger shall collect and analyze all data necessary to assess the nature and extent of a release from any waste management unit. This assessment shall include a determination of the spatial distribution and concentration of each COC throughout the zone affected by the release. In conjunction with the assessment the discharger shall monitor groundwater, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the release. Based on the data collected the discharger shall submit an engineering feasibility study for corrective action required pursuant to §20420 of Title 27.

For each monitored medium, all Monitoring Points assigned to evaluation monitoring, and all Background Monitoring points shall be monitored semi-annually for the Monitoring Parameters listed in this Program.

For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Groundwater sampling shall also include an accurate determination of the groundwater surface elevation and field parameters (pH, temperature, electrical conductivity, turbidity) for that Monitoring Point or Background Monitoring Point. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the groundwater gradient/direction analyses required. For each monitored groundwater body, the Discharger shall measure the water level in each well and determine groundwater gradient and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective groundwater body. Groundwater elevations for all background and downgradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. This information shall be included in the semiannual monitoring reports.

Statistical or non-statistical analysis should be performed as soon as the monitoring data are available.

The Discharger has conducted evaluation monitoring for VOCs and elevated concentrations of several inorganics were detected in MW1, MW10 and MW11 adjacent to the Close Phase I WMU. The County has installed a landfill gas extraction system; reconditioning the final cover on the closed Phase I WMU; and modifying the current groundwater extraction trench as source control measures for the release.

6. Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class II landfill waste management units (WMUs) on a monthly basis and report to the Board on a semi-annual basis.

Parameter	Report in Units	Frequency of Measurement
Quantity discharged	Cubic yards	Quarterly
	Tons	Quarterly
Type of material discharged	-	Quarterly
Source(s) of material discharged	-	Quarterly
Minimum elevation of discharge	Feet M.S.L.	Quarterly
Capacity of WMU cell remaining	Percent	Annually

7. Class II Surface Impoundment Monitoring

All liquid waste discharged into the class II surface impoundment shall be monitored and reported to the Board with the semi-annual report:

Parameter	Report in Units of	Frequency of Measurement
Volume discharged - Leachate - Other Liquids - Extracted groundwater - Gas Condensate - Stormwater	Gallons	Weekly
Freeboard	Inches	Weekly
Capacity Remaining	Percent	Weekly
Capacity Remaining	Gallons	Weekly

8. Groundwater Extraction Trench

The following maintenance reports, described in the operations and maintenance manual for the groundwater extraction trench shall be reported to the Board with the semi-annual report.

Parameter	Report in Units of	Frequency of Measurement
Pump Status	On/Off	Weekly
Pump Operation	Hours of Operation	Weekly
Pump Test	———	Annually

9. Corrective Action Status Report

According to §20430(h) of Title 27, the Discharger shall submit in writing, on a semi-annual basis, the status, and effectiveness of all corrective action programs.

10. 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 Order No. R5-2003-0078. Any necessary construction, maintenance, or repairs shall be completed by **1 November.** By **31 January** of each year, the Discharger shall submit within the annual report a description of 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, including photographs of the problem and the repairs.

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

Ordered by:_____
THOMAS R. PINKOS,
Executive Officer

_____
(Date)

hfh:

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	^{o}C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS

Parameter	Units	Frequency
Monitoring Parameters		
Volatile Organic Compounds (USEPA Method TO-14)	µg/cm^3	Semiannual
Methane	%	Semiannual

PAN LYSIMETERS (or other vadose zone monitoring device)

Parameter	Units	Frequency
Field Parameters		
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years

Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE III

LEACHATE DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Total Flow	Gallons	Monthly
Flow Rate	Gallons/Day	Monthly
Electrical Conductivity	µmhos/cm	Monthly
pH	pH units	Monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE IV

SURFACE WATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	^{o}C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Chloride	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE V

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- l ,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 V

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-Trichloethane (Methylchloroforrn)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

1,2-Dibromo-3-chloropropane (DBCP)

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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

Toluene

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

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

o-Cresol (2-methylphenol)

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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

Kepone

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate

sym-Trinitrobenzene

Chlorophenoxy Herbicides:

USEPA Method 8l51A
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141A
Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Ethion
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0078

OPERATION, DETECTION MONITORING, AND CORRECTIVE ACTION
WASTE DISCHARGE REQUIREMENTS
FOR
AMADOR COUNTY

BUENA VISTA MUNICIPAL SOLID WASTE LANDFILL FACILITY
AMADOR COUNTY

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

1. The County of Amador (hereafter Discharger) owns the municipal solid waste Buena Vista Landfill. Amador Disposal Services, Inc. a subsidiary of Waste Connections, Inc. , operates the Buena Vista Landfill under a contract with Amador County. In addition, Sweet Pea Septic Services Inc. currently operates a septage solids removal system at the facility. The facility is 3 miles south of Ione and one-half mile north of Buena Vista, in Section 7, T5N, R10E, MDB&M, as shown in Attachment A. The facility is 262-acres and is comprised of Assessor's Parcels No. 12-04-040, through 12-04-046 of which 145 acres are on the east side of Buena Vista Road where the closed and active landfill units are located. The facility was previously regulated by Waste Discharge Requirements Order No. 5-00-169 in conformance with Title 27, of California Code of Regulations (CCR).

2. These Waste Discharge Requirements have been prepared to prescribe the closure requirements for the Phase II and Phase III WMUs. In addition, these WDRs also lay out the corrective action program implemented by the Discharger to remove volatile organic compounds from the vadose zone as well as from the groundwater beneath WMU I.

3. The waste management facility consists of an inactive 16-acre Class III municipal solid waste landfill, (Phase I); an active 6-acre (Phase II) and 7-acre (Phase III) Class II waste management units; and a 1.3 million gallon Class II surface impoundment that contains leachate from the leachate collection and removal system (LCRS) of Phase II and Phase III, and the discharge from the Phase I groundwater extraction trench. Prior to 15 April 2002, the Class II Surface Impoundment also accepted septage water (i.e., septage from which solids have been removed) from Amador and Calaveras counties.

4. The waste management units (WMUs) at the Buena Vista Landfill are described in the following table:

TABLE I
Waste Management Unit Description

Unit	Title 27 Classification	Volume	Description of Liner Components	Status
Phase I	Class III	680,000 cu yards	Unlined and no LCRS. The final cover consists of a two-foot foundation layer, overlain by a one-foot $1x10^{-6}$ cm/sec low hydraulic conductivity layer, and covered by a 6-inch vegetative cover.	Filled and closed. Final cap constructed in 1995
Phase II	Class II	600,000 cu yards	The base of the unit has a two-foot thick layer of compacted clay, overlain by the LCRS, which is a 1-foot thick blanket of gravel with inclusive perforated piping for leachate collection. The LCRS drains to the west-southwest. The eastern edge of the Phase II WMU consists of a near vertical cut slope. This slope is lined with a scrim-reinforced, spray-on 100-mil thick liner, manufactured by Liquid Boot, Inc. The backslope along the eastern end of the unit is lined with an 80-mil thick high-density polyethylene liner (HDPE) overlain by a geonet, a 10-once per square foot geotextile fabric, and a two-foot thick operations layer. The unit's lowest elevation is 25 feet below the natural ground surface. Four lysimeters were installed under the compacted clay liner.	At capacity
Phase III	Class II	500,000 cu yards	The base of the unit consists of one-foot of compacted clay, which was verified to have a permeability of 2.0×10^{-8} cm/sec. Overlying the clay liner is a 60-mil HDPE geomembrane. Above the HDPE liner is a 16 ounce per square yard nonwoven geotextile, which protects the geomembrane from the abrasion of the 1-foot, 1.2 cm/sec gravel drainage layer. The unit's lowest elevation is 25 feet below the natural ground surface. Four borehole lysimeters were installed under the compacted clay liner.	Operating, near capacity
Surface Impoundment	Class II	1.3 mil. Gallons (measured at 30 inches of freeboard)	The base of the surface impoundment consists of a 2 ft. low permeability soil layer (K_S 1 x 10^{-6} cm/sec) overlain by the leachate collection and recovery system which is covered by a 45-mil Hypalon 3-Ply, geotextile.	Operating

5. On 16 June 2000, the Board issued Order No. 5-00-169, in which the facility was classified as a Class II and III waste disposal site for the discharge of designated and municipal solid wastes in accordance with the regulations in effect when the order was issued.

SITE DESCRIPTION

6. This site is situated at the base of the Sierra Nevada Foothills along the eastern margin of the San Joaquin Valley with elevations ranging from 370 to 440 feet above mean sea level (MSL).

7. Land within 1,000 feet east of the facility is used for firework manufacturing and testing. The land 1000 feet north and to the west has been mined for clay. Open vegetated space extends along the southern boundary for 1000 feet.

8. Surface soils consist of stiff silty clays with traces of sand that mantle unconformably the Ione Formation.

9. The fluvial-deltaic soils of the Eocene Ione Formation underlie the facility. The stratum dips gently westward and consists of intercalated kaolinitic clays, silts, and sands with minor amounts of gravels. The coefficient of permeability (hydraulic conductivity) of the intercalated layers displayed values ranging from $2x10^{-8}$ and $1.9x10^{-3}$ cm/sec based on the Clay Borrow Area Evaluation Study that used ASTM Standard D2434 "Permeability of Granular Soils" for the laboratory method.

10. There are no known Holocene faults within 1,000 feet of the facility. The closest fault is the Bear Mountains Fault Zone that is considered part of the Foothills Fault System. The maximum credible earthquake peak horizontal acceleration for Buena Vista landfill is 0.43 g generated from a magnitude 6.5 earthquake along the Foothill Fault System.

11. The closest automated rainfall monitoring station, Camp Pardee, is approximately five miles southeast of the site at an elevation of 658 feet above MSL. This site receives an average of 21.6 inches of precipitation per year as measured at the Station from October 1927 to January 2000. The mean evaporation for this facility is 60 inches per year (also measured at the Camp Pardee Station from 1930-1979.) with an average annual net evaporation of 40 inches per year.

12. The 100-year, 24-hour storm event, for this site is 3.94 inches and the 1,000-year, 24-hour storm event is 5.97 inches as calculated from the California Department of Water Resources Bulletin No. 195 - Camp Pardee Station.

13. The waste management facility is not within a 100-year floodplain, as determined from the Federal Flood Insurance Map, Community Panel No. 39 and 44.

WASTE AND SITE CLASSIFICATION

14. For operations in 2002, the Discharger disposal rate for municipal solid waste averaged 6382 tons per quarter. The Discharger currently discharges both designated and municipal solid waste at this landfill, which are defined in §20210 and §20164 of Title 27, respectively. The landfill also accepts nonhazardous solid wastes, as referred to in the Code of Federal Regulations, Title 40, Part 258.2.

15. Three liquid streams are currently discharged into the Class II surface impoundment. As reported for 2002, the waste streams are in order of decreasing average monthly volumes: 33,423 gallons from the groundwater extraction trench; approximately 8431gallons of leachate from the Phase II and III WMUs LCRS; and 8,581 gallons from the sump beneath the Class II surface impoundment.

SURFACE AND GROUND WATER CONDITIONS

16. The Fourth Edition of the Basin Plan for the Sacramento and San Joaquin River Basins designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

17. The landfill is on the eastern margin of the northern San Joaquin Valley. The beneficial uses of these surface waters are domestic, municipal, agricultural, and industrial supply, ground water recharge, recreation, aesthetic enjoyment, fresh water replenishment and habitat, spawning, wildlife habitat and the preservation and enhancement of fish, wildlife, and other aquatic resources.

18. Surface water drainage from the site flows to two unnamed ephemeral streams. The majority of surface water drainage is diverted to a pond near the southern property boundary. This pond (hereafter runoff holding pond) is unlined and has a total capacity of approximately nine acre-feet (2.93 million gallons). Overflow from the pond is to a south-flowing stream tributary to Jackson Creek, approximately 3,500 feet south of the property boundary. Jackson Creek is tributary to Dry Creek, thence to the Cosumnes and Mokelumne Rivers.

19. The designated beneficial uses of the groundwater, as specified in the Fourth Edition of the Basin Plan for the Sacramento and San Joaquin River Basins, are domestic, municipal, agricultural, and industrial supply.

20. The first encountered groundwater is about 24 to 34 feet below the native ground surface. Groundwater elevations range from 383 to 335 feet MSL in MW1 and MW19, respectively. The groundwater is semiconfined with localized perched zones. The depth to groundwater fluctuates seasonally as much as 4 feet.

21. The direction of groundwater flow is toward the west-southwest. However, a groundwater mound exists, beneath the eastern limit of the closed Class III Phase I WMU. Jacobson Helgoth Consultants Corporation reported that the groundwater gradient between MW13 and MW16, during the 4th Quarter monitoring event, at approximately 0.031 feet per foot. Applying geotechnical data provided by Vector Engineering with a soil porosity of 0.28, the average groundwater velocity beneath the facility is 0.76 feet per year.

GROUNDWATER MONITORING

22. The following sixteen groundwater-monitoring wells were installed at various times during the development and expansion of the facility (see Attachment B). Table 2 provides the geographic coordinates and elevations of the system wells.

TABLE 2
GEOGRAPHICAL POSITION OF GROUNDWATER MONITORING WELLS

Well ID	Northing	Easting	Top of Casing Elevation	Top of Screen Elevation
MW1	N1874839.5826	E6874353.3671	421.16	371.16
MW3A	N1875206.4453	E6873132.7367	366.40	346.90
MW3B	N1875218.8535	E6873125.1782	366.68	318.68
MW4A	N1874762.5430	E6873323.1109	375.50	341.50
MW5	N1874336.7608	E6873403.3796	360.63	305.63
MW5S	N1874338.3991	E6873367.7695	363.02	348.02
MW7	N1875148.6379	E6872837.4148	360.36	305.36
MW9	N1875928.1461	E6873534.6547	375.41	320.41
MW10	N1875378.4391	E6873099.3295	368.84	353.84
MW11	N1875523.0318	E6873995.0133	387.70	363.70
MW13	N1874855.1969	E6873997.4618	393.59	360.59
MW14	N1874871.7253	E6874674.2937	428.29	363.29
MW15	N1874239.2513	E6873967.0133	405.69	350.69
MW16	N1874597.6988	E6873342.3824	375.90	335.90
MW20	N1875195.2391	E6874536.5195	432.05	402.05
MW21	N1874362.3691	E6874602.0195	422.01	384.01

23. The detection monitoring system wells that were installed for the closed Phase I WMU include the following: MW1, MW11, and MW13. Due to the proximity to the waste, and depth of completion, the groundwater extraction trench serves as the point of compliance along the western extent of the WMU.

24. Phase II and Phase III WMUs share a common detection monitoring system. The monitoring wells that meet the intent of a Monitoring Point along the Point of Compliance include monitoring well MW4, MW16, and now MW5S. Monitoring well MW5 was replaced in September 2002 by MW5S to comply with §20415(b) of Title 27.

25. Monitoring well MW21 has been installed adjacent to the Class II Surface Impoundment's as the implementation of a detection monitoring system as required by §20415(b) of Title 27. Additional wells may be required depending on the physical and chemical data collected during the subsequent monitoring events. .

26. Monitoring well MW14 analytical data, from May 1995 through December 2000, indicates background groundwater quality has an electrical conductivity (EC) ranging between 59.2 and 76.1 micromhos/cm, with total dissolved solids (TDS) ranging between 80 and 140 mg/l.

27. At this landfill, volatile organic compounds (VOCs) have been detected in groundwater. These detections demonstrate that this landfill has had a release. VOCs are the primary

waste constituents from the landfill detected in groundwater (see Finding No 32). Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a Unit.

28. Sections 20415(e)(8) and (9) of Title 27 provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with §20415(b)(1)(B)2 through 4 of Title 27. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

29. The Board may specify a non-statistical data analysis method pursuant to §20080(a)(1) of Title 27. Section 13360(a)(1) of the California Water Code allows the Board to specify requirements to protect underground or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

30. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.

31. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit, as defined in Section 3 of the Monitoring and Reporting Program. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

GROUNDWATER DEGRADATION

32. Historically the following volatile organic compounds have been detected in groundwater samples: 1,1-dichloroethane, benzene, chloroethane, methyl tert-butyl ether, cis-1,2-dichloroethene, 1,2dichloroethane, methylene chloride, naphthalene, 1,2,3-trichlorobenzene, tetrachloroethene, trichloroethene, 1,1-dichloroethene, 1,4-dichlorobenzene, dichlorofluormethane, trichlorofluormethane, xylene, and vinyl chloride.

33. Water quality protection standards that comply with §20385, §20395, §20400, and §20415 have not been established for this site.

34. In March 1987, pursuant to AB 2535, the Discharger submitted their Solid Waste Assessment Test (SWAT) report for the site that indicated that leachate from the closed Phase I WMU had impacted groundwater. The Dischargers September 1988 Verification Monitoring Report concluded that volatile organic compounds as well as inorganic compounds were detectable 600 feet downgradient of the landfill. However, geophysical techniques were used for these interpretations rather than a direct sampling of the groundwater itself. Currently there is no known volatile organic compound plume down gradient of monitoring well MW7.

35. During the 25 August 2000 site inspection, Staff observed that a nonpermitted septage discharge had occurred into unlined ponds near the septic treatment plant, adjacent to the closed Phase I WMU (see Attachment B). The discharger as normal operating procedure for the facility had accepted the practice of discharging to the ponds.

36. On 28 August 2000, Staff returned to the facility to sample the liquid within the unlined pond. The pond walls were encrusted with dried, raw septage, along with nondecomposable waste associated with septic tanks. The liquid in the ponds were sampled and shipped to a California Certified laboratory under proper chain of custody protocol for analysis. The laboratory results show elevated levels of several constituents within these unlined ponds. For example, Total Dissolved Solids and Chloride exceed the Agricultural Water Quality Goal of 450 mg/l and 106 mg/l, respectively. Total Dissolved Solids was reported at 2200 mg/l, which is 4.8 times the regulatory limit, while Chloride was reported at 570 mg/l, which is 5.3 times the regulatory limit. Bicarbonate exceeded the Freshwater Aquatic Life Criteria of 20 mg/l. It was reported at 1300 mg/l, which exceeds the regulatory limit by 65 times. In addition, the discharged septage water in the pond had elevated levels of Nickel and Lead. Nickel, which was reported at 41 ug/l, exceeds the California Public Health Goal as a Drinking Water Level of 1.0 ug/l. Lead exceeded the Maximum Contaminant Level for drinking water of 15 ug/l, with a reported level of 21 ug/l. Furthermore, the results from the Volatile Organic Compound test had detectable levels of 1,4-Dichlorobenzene at 18 ug/l.

37. Cleanup and Abatement Order 5-00-711 was issued on 4 October 2000 to order the Discharger to immediate remove the waste from the unlined pond, and evaluate and cleanup any threat to water quality. During the evaluation monitoring well MWUA was installed and sampled. The groundwater analysis data showed total chromium and hexavalent chromium were reported at 66 ug/l and 180 ug/l, respectively. Each of these concentrations exceeds the California Primary Maximum Contaminant Level of 50 ug/l for total chromium. By 3 May 2001, all of the wastewater, sludge, berms and transfer piping had been removed from the unlined ponds, thus eliminating this threat to water quality. Results from the second round of sampling at MWUA were non-detect for the referenced parameters.

38. During the 2001 quarterly groundwater-sampling events, dichlorofluormethane was detected in Monitoring Wells MW1 and MW11 at 20 ug/l and 15 ug/l, respectively. These were the highest concentration ever detected in these wells. Consequently, on 27 September 2001, Staff notified the Discharger by letter that there was "measurably significant" evidence of a release of dichlorofluormethane in monitoring wells MW1 and MW11. Groundwater monitoring during the second quarter event, showed that dichlorofluormethane was detected

in MW13 at 4.2 ug/l. Staff again notified the Discharger, on 17 November 2001, by letter that there was "measurably significant" evidence of a release of dichlorofluormethane had been detected in monitoring well MW13.

39. An evaluation monitoring report was submitted by the Discharger on 5 March 2002 in response to the two notifications of releases (27 September and 17 November 2001). This report concluded that landfill gases from the unlined Phase I WMU are the source of the volatile organic compounds in groundwater. The Discharger has installed a landfill gas extraction system into the closed unit as a corrective action measure. As mandated by §20410(b) of Title 27, with the initiation of a new evaluation-monitoring program for the closed Phase I WMU, the compliance period for groundwater restarts for the unit. Section 20410(a) defines the compliance period as the number of years equal to the active life of the Unit plus the closure period.

40. Section 20430(e) requires the Regional Board set a schedule for the initiation and completion of the correction action measures.

41. As reported in the 2001 annual monitoring report, methylene chloride showed an increasing trend in concentration in monitoring wells MW1, MW11, and MW13. During the fourth quarter 2001 monitoring event, methylene chloride was reported as 2.7 ug/l, 3.1 ug/l and 4.9 ug/l for MW1, MW13, and MW11, respectively. All three of these concentrations exceed the California Environmental Protection Agency Cancer Potency Factor as Drinking Water that is set at 2.5 ug/l.

CORRECTIVE ACTION PROGRAM

Groundwater Extraction Trench

42. In November 1992, the Discharger installed a groundwater extraction trench, downgradient of the northwestern portion of the landfill. For the entire length, the trench is keyed into low permeable sediments. It is constructed two-feet wide and to a depth ranging from 17 to 34 feet bgs. A sump was installed approximately 110-feet from the south end of the trench. The trench is filled with ¾-inch washed gravel to a depth of 10-feet bgs. A geotextile layer overlays the gravel. From the geotextile layer to the ground surface, native soil was used for backfill. The impermeable geomembrane that was proposed for the downgradient trench wall, as a requirement of § 20320(e) of Title 27 for cut-off walls, was not installed.

43. According to The Dischargers September 1988 Verification Monitoring Report that describes the design of the system "Well 3A should go dry if the trench is successful". As reported in the Dischargers monitoring reports, Monitoring Well MW3A has never been void of groundwater. During the first quarter of 2002, the discharger conducted a performance test on the extraction trench. While pumping the trench at 12 gallons per minute for 18 hours (approximately 18,000 gallons), the trench was dewatered. Influence of the pumping was measured in MW3A (0.4 feet) and MW10 (0.15 feet). After three days of recovery, at a rate of 1 gallon/minute, approximately 5,500 gallons of groundwater recharged the trench. In order to facilitate additional wetted depth by the replacement of the pump, the Discharger has

lowered the sump by 10 feet in an effort to improve the trench performance. For 2002, the extraction trench discharged 401,080 gallons (33,432 gallons/month average) of groundwater into the Class II Surface Impoundment.

Landfill Gas Extraction System

44. The Discharger's January 1995 Closure Plan recommends that an active landfill gas extraction system be installed in response to the release of volatile organic vapors documented in the March 1987 SWAT report. In the 5 March 2002 amended report of waste discharge, the Discharger presented the design for a landfill gas extraction system as a corrective action measure associated with the detected release of volatile organic vapors in MW1, MW10 and MW11. The Discharger's 12 June 2002 Phase II and Phase III Closure Plan indicates that 13 active landfill gas extraction wells will also be installed and manifolded to the Phase I flare unit.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

45. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).

46. Resolution No. 93-62 also allows the Board to consider the approval of engineered alternatives to the prescriptive standard.

47. Section 20080(b) of Title 27 allows the Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with §20080(c)(1) and (2), the Discharger shall 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 §20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger shall also demonstrate that the proposed engineered alternative cover and liner system(s) are 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 §20080(b)(2) of Title 27.

48. Section 13360(a)(1) of the California Water Code allows the Board to specify the design, type of construction, and/or particular manner in which compliance shall be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.

49. The Discharger proposes a cover system for Phase II and III which will be designed, constructed, and operated to minimize the infiltration of water into the waste during closure, and the postclosure maintenance period in accordance with the criteria set forth in Title 27 for a Class II landfill, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.

Closed Phase I Waste Management Units

50. Phase 1 WMU is an unlined Class III landfill consisting of eight individual cells covering 16 acres that were filled from 1973 to 1991. Phase I operated without a vadose monitoring system or a leachate recovery and collection system. This unit was filled by the trench and fill method, with cell dimensions approximately 300 by 100 and extending 25 feet below original ground surface.

51. Depth to groundwater measurements in the adjacent monitoring wells MW3A (13.07 ft bgs), MW10 (17.09 ft bgs) and MW11 (17.67 ft bgs) for the fourth quarter 2002 monitoring event indicates that the bottom of the landfill waste is below the water table. The groundwater extraction trench will be operated such that groundwater will be lowered below the landfill waste at the Closed Phase I WMU.

52. Phase I final cover was completed on 29 August 1995. A common engineered cap consisting of two feet of compacted soil mixed with cogeneration-ash and dewatered sludge, overlain by a one-foot thick layer of compacted clay, and a 6-inch cover was placed over the entire unit. The cap was repaired and brought into compliance with the performance standards for final covers in §20950(a)(2)(A)(1) of Title 27 on 13 November 2002.

Phase II and Phase III Waste Management Units

53. Phase II, which began accepting waste in 1990, covers 6 acres and has been designated and operated as a Class II landfill. The base has a two-foot thick layer of compacted clay, overlain by a 12-inch thick blanket type gravel LCRS, with inclusive perforated piping for leachate collection. The eastern edge of the WMU consists of a near vertical cut slope lined with a scrim-reinforced, spray-on 100 mil thick liner. The backslope along the eastern end of the WMU is lined with an 80-mil thick high-density polyethylene (HDPE), a HDPE geonet, filter fabric and a two-foot thick soil operations layer. The greatest depth in the WMU is 25 feet below the natural ground surface. Four lysimeters L4-L7 were installed under the compacted clay liner. The construction quality assurance (CQA) for Phase II's liner system was certified by California Certified Engineering Geologist No.1532.

54. Phase III WMU is a Class II landfill covering 7 acres that began accepting waste in 1994. Phase II and Phase III side slope synthetic liners were tied-in so that the panels overlapped in a shingled manner. The base has a two foot thick compacted clay liner of not less than 1 x 10^{-6} cm/sec hydraulic conductivity on the floor and slope, a 60 mil HDPE geomembrane was installed in direct contact with the clay liner, overlain by a 12-inch thick blanket type gravel leachate collection and removal system. A geocomposite drain layer has been placed above the HDPE liner on the floor areas. The slope sections are overlain by a nonwoven geotextile filter layer and then by a 12-inch operations layer. Four lysimeters L8-L11 were installed under the compacted clay liner.

55. The CQA for Phase III's two-foot thick compacted clay liner, the 60 mil HDPE geomembrane, and leachate collection gravel layer was certified by Registered Professional Civil Engineer No. 47477. However, installation of the geotextile filter layer and the

operations layer was inspected and approved by the County's Solid Waste Technician. No registered civil engineer or certified engineering geologist certified the installation, which is required by §20324(b)(2) of Title 27.

56. While Phase II and Phase III were constructed at different times, their LCRS share a common sump. Phase II system consists of a 1-foot thick blanket of gravel LCRS, with inclusive perforated piping for leachate collection and three lateral trunk lines. Phase III consists of a 1-foot, 1.2 cm/sec gravel drainage layer with inclusive perforated piping with four lateral trunk lines sandwiched between nonwoven geotextile. The volume of the combined LCRS system for Phase II and Phase III, assuming a 25 percent effective porosity and a one-foot uniform gravel layer, would be approximately 1,059,000 million gallons.

57. During November 2001, the Discharger performed seven separate performance tests on the LCRS individual lateral trunk lines. Once the slug of water was introduced into the lateral, it was allowed time to flow through the system and then its return volume was measured in the systems sump. Recovery volumes ranged from 80 to 98 percent, which indicates that the LCRS is functioning.

58. Phase II is at capacity and is blanketed by interim cover. Phase III is within eighteen months of capacity. Because of their shared LCRS system and other liner components, these WMUs shall be closed under a common final cover designed and installed in compliance with Title 27. Section 21780(c)(3) requires that the Discharger submit a final closure plan within two years of closure. A closure plan for Phase II and Phase III was submitted on 12 June 2002.

Phase II and Phase III Cover Design

59. On 12 June 2002 the Discharger submitted their final closure plan for Phase II and Phase III WMUs. The final cover for Phase II and Phase III will include the following layers (from bottom to top):

    1) Two Feet compacted foundation layer;

    2) 40-mil textured low hydraulic conductivity HDPE layer;

    3) Double-sided geocomposite drainage layer; and

    4) Two feet of topsoil that is capable of supporting vegetation.

60. The maximum final grades proposed for closure are 3:1 (horizontal:vertical), with a maximum slope height of 58 feet (from toe to crest of slope). The top deck of the cells will be graded at a maximum inclination of three percent.

61. The final landfill slope does not include a fifteen-foot wide bench and represents an engineered alternative to §21090(a) of Title 27. The engineered alternative is based upon:

    a. The 3:1 final slope is considerably flatter than the 1.75:1 slope allowed in § 21090(a) of Title 27.

b. Access is such, that the maintenance equipment will be able to access the slope without an intermediate bench.

c. The stormwater drainage system has been designed to minimize sheet flow and limit erosion of the final slope.

62. Final cover analysis indicate that the static factor of safety that includes a double-sided geotextile were on the order of 1.8 to 2.3. The overall landfill factor of safety under pseudostatic conditions was calculated to be 1.6.

63. The design and stability of the Phase II and Phase III final cover were certified by California Certified Engineering Geologist No.1371.

Class II Surface Impoundment

64. The Class II surface impoundment was constructed in 1992 with 1.3 million gallon capacity at 30-inches of freeboard. The base consists of a two-foot thick layer of compacted clay, overlain by a synthetic liner: LCRS consisting of a 0.22 inch thick geocomposite drainage layer and gravel filled collection trench to a 1,000 gallon sump. Overlying the LCRS is the primary synthetic liner composed of 45 mil Hypalon. Two lysimeters P1-P2 were installed under the compacted liner.

ABOVEGROUND FUEL TANK

65. The Discharger maintains an aboveground, 10,620-gallon, #2-diesel, storage tank that is surrounded by an 11,085-gallon secondary containment wall (Attachment B). This tank is regulated by the Aboveground Storage of Petroleum Act under Chapter 6.67, of the Health and Safety Code, Sections 25270 through 25270.13.

CEQA AND OTHER CONSIDERATIONS

66. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code §21000, et seq., and the CEQA guidelines, in accordance with Title 14, CCR, §15301.

67. This order implements:

a. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;

b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;

c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and

d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993.

PROCEDURAL REQUIREMENTS

68. 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.

69. The Board has notified the Discharger and interested agencies and persons of its intention to revise the waste discharge requirements for this facility.

70. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED, pursuant to §13263 and §13267 of the California Water Code, that Order No. 5-00-169 is rescinded, and that Amador County, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted there under, 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, §2510 et seq., and 'designated waste' is as defined in Title 27. If hazardous waste is discharged illegally into the working cell, it must be removed forthwith.

2. Ground waters shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of § 64443 of Title 22 of the CCRs.

3. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.

4. The discharge of waste to a closed Unit is prohibited.

5. The discharge of waste shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.

6. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

7. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.

B. DISCHARGE SPECIFICATIONS

1. Wastes shall only be discharged into, and shall be confined to, the WMUs specifically designed for their containment.

2. Prior to the discharge of waste to a WMU, all wells within 500 feet of the unit shall have sanitary seals or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.

3. For the Class II surface Impoundment and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required 2 feet of freeboard.

4. 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.

5. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the WMUs and the post-closure maintenance period.

6. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation.

7. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.

8. 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.

9. Leachate removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.

10. All collected leachate from Phase II and III shall be discharged directly to the Class II Surface Impoundment or it can only be returned to the Unit(s) from which it came.

11. Any collected landfill gas condensate shall only be discharged directly to the Class II Surface Impoundment.

12. Leachate generation by a surface impoundment to the primary LCRS shall not exceed design requirements. If leachate generation exceeds this value, then the Discharger shall immediately cease the discharge of waste, excluding leachate, to the impoundment and shall notify the Board in writing within seven days. Notification shall include a timetable for remedial action to repair the upper liner to the impoundment or other action necessary to reduce leachate production.

13. If leachate is detected in the vadose zone monitoring system of the Class II surface impoundment indicating a leak in the containment structures the Discharger shall:

    a. Immediately cease discharge of waste, excluding leachate and extracted groundwater to the surface impoundment until the leaks can be found and repaired;

    b. Report to the RWQCB that the containment structures have failed within 72 hours;

    c. Submit written notification of the release to the RWQCB within seven days, the notification should include a time schedule to repair the containment structures; and

    d. Discharge of wastes to the surface impoundment will not resume until the RWQCB has determined that repairs to the liners are complete and there is no further threat to water quality.

14. Solids that accumulate in the Class II surface impoundment 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 Board staff for review.

15. Leachate generation by a 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 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.

C. FACILITY SPECIFICATIONS

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

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

3. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, and construction. At no time shall extracted groundwater or liquid within the Class II Surface Impoundment may be applied as dust control.

4. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

5. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

7. The Discharger shall maintain a *Storm Water Pollution Prevention Plan* and *Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03 DWQ, or retain all storm water on-site. All run-on/run-off must be maintained free of obstructions such that they perform at the design capacity.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for new Units and expansions of existing Units, that include the following:

    a. A Construction Quality Assurance Plan meeting the requirements of §20324 of Title 27;

    b. A geotechnical evaluation of the area soils, evaluating their use as the base layer;

    c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with §20415(d) of Title 27; and

d. A Liner Performance Appraisal for all containment structures that compares the liner system prescriptive standards as meeting the performance standard outlined in Title 27.

2. Both the bottom liner and side slope liner of all new Units and lateral expansion areas of existing Units shall be constructed in accordance with one of the following composite liner design or of equivalent performance:

   a. The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of 1×10^{-7} cm/sec or less and has a minimum relative compaction of 90%. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, shall be a synthetic flexible membrane component that shall be at least 40-mil thick (or at least 60-mil thick if composed of high density polyethylene [HDPE]), which is immediately overlain with a leachate collection and removal system. A soil operations layer shall be placed above the leachate collection and removal system.

3. 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 Board.

4. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.

5. Construction shall proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.

6. Following the completion of construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in §20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.

7. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.

8. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of 3 gallons per minute (see Finding No. 57) by the Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

9. Closure shall not proceed in the absence of closure waste discharge requirements.

E. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval a groundwater detection monitoring program demonstrating compliance with Title 27 for any Unit expansion.

2. For each WMU, the Discharger shall maintain a detection monitoring system in compliance with §20385, §20415, and §20420 of Title 27 and Code of Federal Regulations, Title 40, Volume 17, Subpart E for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. R5-2003-0078.

3. A detection monitoring program for any new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [27 CCR §20415(e)(6)].

4. The Discharger shall provide Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.

5. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2003-0078, and the Standard Provisions and Reporting Requirements, dated April 2000.

6. The Water Quality Protection Standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The presence of non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.

7. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits submitted as a requirement of Provision K26 of this Order.

8. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2003-0078 and §20415(e) of Title 27.

9. 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.

10. Specific methods of collection and analysis shall 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.

11. 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.

12. The **methods of analysis and the detection limits** used shall 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.

13. **"Trace" results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.

14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable**

concentration associated with a 99% reliability of a nonzero result. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and 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.

17. 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.

18. 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".

19. The Discharger has proposed using an intrawell statistical analysis for identifying a release of the inorganic constituents of concern in accordance with §20415(e)(8)(E) of Title 27 . If the analysis shows an increase in concentrations, interwell statistics will be run to confirm the trend of a release. Upon adoption of this order, 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.

20. The Discharger shall use the following nonstatistical method for the VOC_{water} and $VOC_{spg\ (Soil\ Pore\ Gas)}$ Monitoring Parameters and for all Constituents of Concern which are not amenable to the statistical tests above (i.e., less than 10% of the data from background samples that equal or exceed their respective MDL). Each qualifying constituent at a monitoring point shall be determined based on either:

    a. The data from a single sample for that constituent, taken during that reporting period from that monitoring point; or

    b. The data from the sample which contains the largest number of qualifying constituents, where several independent samples have been analyzed for that constituent at a given monitoring point.

    c. 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.

21. The method shall be implemented as follows:

    a. *For the Volatile Organic Compounds Monitoring Parameter For Water Samples [VOC_{water}]:* For any given monitoring point, the VOC_{water} Monitoring Parameter is a composite parameter addressing all "qualifying VOCs" (in this case, VOCs that are detected in less than 10% of background samples).

    The Discharger shall conduct verification testing (see Detection Monitoring Specifications E.21. and E.23 below, as appropriate) to determine whether a release of VOC_{water} Monitoring Parameter has occurred if the data for any monitoring point meets either of the following triggering conditions:

    a. The data contains two or more qualifying VOCs that equal or exceed their respective MDLs; or

    b. The data contains one qualifying VOC that equals or exceeds its PQL.

    c. *For the Volatile Organic Compounds Monitoring Parameter For Soil Pore Gas Samples [VOC_{spg}]:* the VOC_{spg} Monitoring Parameter is a composite parameter for soil pore gas addressing all "qualifying VOCs" detectable using either GC or GC/MS analysis for at least a ten liter sample of soil pore gas (e.g., collected in a vacuum canister). It involves the same scope of VOCs as does the VOC_{water} Monitoring Parameter. For the VOC_{spg} test, "qualifying

VOCs" consist of all those VOCs which are detectable in less than 10% of background soil pore gas samples.

The Discharger shall conduct verification testing (see Detection Monitoring Specifications E.22. and E.23 below, as appropriate) to determine whether a release of VOC_{spg} Monitoring Parameter has occurred if the data for any monitoring point meets either of the following triggering conditions:

a. The data contains two or more qualifying VOCs that equal or exceed their respective MDLs; or

b. The data contains one qualifying VOC that equals or exceeds its PQL.

c. *For Constituents of Concern:* For five-yearly testing of all Constituents of Concern (COCs), the "qualifying constituents" consist of COCs that are detected in less than 10% of applicable background samples.

The Discharger shall conduct verification testing (see Detection Monitoring Specifications E.22. and E.23 below, as appropriate) to determine whether a release of COCs has occurred if the data for any monitoring point meets either of the following triggering conditions:

a. The data contains two or more qualifying constituents that equal or exceed their respective MDLs; or

b. The data contains one qualifying constituent that equals or exceeds its PQL.

22. **Non-Statistical Method Retest**. A non-statistical test method may be used by the Discharger to analyze the monitoring data for which it is impractical to conduct a statistical analysis. A non-statistical test method shall include a procedure to verify that there is "measurably significant" evidence of a release from the Unit. For the VOC_{water}, VOC_{spg}, and nonstatistical COC test, the Discharger shall use a discrete retest consisting of two new samples from each indicating monitoring point. The Discharger shall conduct the retest for the standard non-statistical method as follows:

a. **For VOC_{water} and VOC_{spg}**. Because the VOC composite Monitoring Parameter (for water or soil pore gas) is a single parameter which addresses an entire family of constituents likely to be present in any landfill release, **the scope of the laboratory analysis for each of the two retest samples shall include all VOCs detectable in that retest sample**. Therefore, a confirming retest, in accordance with Detection Monitoring Specification E.20.a. and b., above, for either triggering condition in either of the two retest samples, shall have validated the original indication even if the detected constituents in the confirming retest sample(s) differs from those detected in the sample which initiated the retest.

b. **For Constituents of Concern**. Because all Constituents of Concern that are jointly addressed in the non-statistical test above, remain as individual Constituents of Concern, **the scope of the laboratory analysis for the non-statistical retest of Constituents of Concern shall address only those constituents detected in the sample which initiated the retest**. Therefore, the list of "qualifying constituents" for use in the retest, under Detection Monitoring Specification E.20.c., shall consist of those constituents which provided the original indication at that monitoring point. If the retest meets either triggering condition in either of the two retest samples, the retest shall have validated the original indication.

23. **Response to Detection in Background of VOCs** (or any other constituent which is not naturally in the background and thus is not amenable to statistical analysis):

a. Any time the laboratory analysis of a sample from a background monitoring point, sampled for VOCs, shows either:

i. Two or more VOCs at or above their respective MDL; or

ii. One VOC at or above its respective PQL.

Then the Discharger shall:

b. **Immediately** notify the Board by phone;

c. Follow up with written notification by certified mail **within seven days**;

d. Obtain **two** new independent VOC samples from that background monitoring point; and

e. Send such samples for laboratory analysis of all detectable VOCs **within thirty days**.

f. If either or both the new samples validates the presence of VOC(s), using the above criteria, the Discharger shall:

g. **Immediately** notify the Board about the VOC(s) verified to be present at that background monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and

h. If the Discharger believes that the VOC(s) in background is from a source other than the Unit, then:

i. **Within seven days** of determining "measurably significant" evidence of a release, submit to the Board by certified mail a Notification of Intent to make such a demonstration pursuant to §20420(k)(7) of Title 27; and

ii. **Within 90 days** of determining "measurably significant" evidence of a release, submit a report to the Board that demonstrates that a source other than the Unit caused the evidence, or that the evidence resulted from error in sampling, analysis or evaluation, or from natural variation in groundwater, surface water, or the unsaturated zone.

i. If the Executive Officer determines, after reviewing the submitted report(s), that the VOC(s) detected originated from a source other than the Unit(s), the Executive Officer will make appropriate changes to the monitoring program.

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

F. REPORTING 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 appropriate Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the postclosure period.

Such legible records shall show the following for each sample:

a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

b. Date, time, and manner of sampling;

c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;

e. Calculation of results; and

f. Results of analyses, and the MDL and PQL for each analysis.

3. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.

4. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:

    a. For each monitoring point and background monitoring point addressed by the report, a description of:

        i. The time of water level measurement;

        ii. The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

        iii. 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; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;

        iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and

        v. A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.

    b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

    c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.

    d. Laboratory statements of results of all analyses evaluating compliance with requirements.

    e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.

f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall include:

i. For the Unit:

1. Evidence of ponded water at any point on the facility (show affected area on map);

2. Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

3. Evidence of erosion and/or of day-lighted refuse.

ii. Along the perimeter of the Unit:

1. Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);

2. Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

3. Evidence of erosion and/or of day-lighted refuse.

iii. For receiving waters:

1. Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;

2. Discoloration and turbidity - description of color, source, and size of affected area;

3. Evidence of odors - presence or absence, characterization, source, and distance of travel from source;

4. Evidence of water uses - presence of water-associated wildlife;

5. Flow rate; and

6. Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.

iv. The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.

1. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report

shall be filed with the Board **within seven days**, containing at least the following information:

a. A map showing the location(s) of seepage;

b. An estimate of the flow rate;

c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);

d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Board; and

e. Corrective measures underway or proposed, and corresponding time schedule.

5. The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the reporting period of the previous monitoring year. This report shall contain:

   a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. 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, shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [§20420(h)], in that this facilitates periodic review by the Board.

   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 and a comparison to final closure design contours.

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.

G. SUPERVISION AND CERTIFICATION OF CONSTRUCTION

1. All containment structures 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 and performance goals of Title 27 prior to waste discharge or completion of final closure.

H. PROTECTION FROM STORM EVENTS

1. WMUs shall be designed, constructed, and operated to prevent inundation or washout due to floods with a 100-year return period. WMUs and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under 100-year, 24-hour precipitation conditions.

2. Precipitation and drainage control systems shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under a 24-hour, 25-year precipitation conditions, as required in §258.25 of Subtitle D.

3. Annually, prior to the anticipated rainy season, but no later than **1 November**, 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 and to prevent surface drainage from contacting or percolating through wastes. The Discharger shall submit an annual report within the annual monitoring report. to the Regional Board by **31 January** each year describing measures taken to comply with this specification

4. During the rainy season, a minimum of two-foot thickness of low permeability cover shall be maintained over all but the active disposal area of the landfill unit. The active disposal area shall be confined to the smallest area practicable, based on the anticipated quantity of waste discharge and other waste management facility operations.

I. LANDFILL CLOSURE SPECIFICATIONS

1. At closure, each unlined municipal solid waste landfill unit and each non- municipal solid waste landfill unit shall receive a final cover which is designed to function with minimum maintenance and consists, at a minimum, of a two-foot thick foundation layer which may contain waste materials, overlain by a one-foot thick clay cap, and finally by a one-foot thick vegetative soil layer. Each compositely lined municipal solid waste landfill unit shall receive a composite cap.

2. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness.

3. Closed landfill units shall be graded to at least a three-percent grade and maintained to prevent ponding.

4. 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.

5. Any closed landfill shall be provided with at least two permanent monuments, installed by a licensed land surveyor, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.

J. SURFACE IMPOUNDMENT CLOSURE SPECIFICATIONS

1. At closure of the surface impoundment, all residual wastes, including liquids, sludges, precipitates, settled solids, and liner materials and adjacent natural geologic materials contaminated by wastes shall be completely removed and discharged to a WMU approved by Board staff. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment shall be closed as a landfill pursuant to Landfill Closure Specifications J.1. through 5 above.

2. If a) residual wastes-are classified as non-hazardous pursuant to Title 22, CCR, Division 4, Chapter 30; b) containment features of the impoundment meet or exceed Class II landfill construction standards and performance goals as defined by Title 27, c) all liquid waste is removed or treated to eliminate free liquids, and d) residual moisture does not exceed the moisture-holding capacity of residual wastes (even under closure conditions), a surface impoundment may be closed as a landfill pursuant to Landfill Closure Specifications J.1. through 5 above, after compaction of the residual wastes.

K. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.

2. The Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.

3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0078, which is incorporated into and made part of this Order.

4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste

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

5. All reports and transmittal letters shall be signed by persons identified below:

    a. For a public agency: by either a principal executive officer or ranking elected or appointed official.

    b. A duly authorized representative of a person designated above if;

        i. The authorization is made in writing by a person described above 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 Unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

        iii. The written authorization is submitted to the Board.

    c. 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. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

7. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post closure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.

8. 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.

9. To assume ownership or operation under this Order, the succeeding owner or operator shall apply in writing to the Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request shall contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.5. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of §13267 of the California Water Code. Transfer of this Order shall be approved or disapproved by the Board.

10. The Discharger shall maintain financial assurance for corrective action as required by Title 27 California Code of Regulations, Division 2, Chapter 6. The Discharger shall conduct an annual review of the financial assurance for initiating and completing corrective action, and submit a report for Executive Officer review and approval. The assurances of financial responsibility shall name the Regional Board as beneficiary and 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.

11. The Discharger shall maintain financial assurance for closure and post closure maintenance as required by Title 27 California Code of Regulations, Division 2, Chapter 6. The Discharger shall conduct an annual review of the financial assurance for closure and post closure maintenance, and submit a report for Executive Officer review and approval. The assurances of financial responsibility shall provide that funds for closure and post closure maintenance shall name the Regional Board as beneficiary and 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.

12. The Discharger shall maintain a groundwater detection monitoring system for each of the facility's waste management units that meets the requirements in §20385, §20415(b) and §20420 of Title 27 and Code of Federal Regulations, Title 40, Volume 17, Subpart E.

13. The Discharger shall maintain all monitoring points such that their performance meets the standards in §20415(k)(4)(D) of Title 27.

14. The Discharger shall maintain all the facility's waste management's units final cover such that they meet the prescriptive standard for final covers in §20950(a)(2)(A)(1) of Title 27.

15. The Discharger shall prevent the infiltration of groundwater into the waste contained in the Closed Phase I unit.

16. The Discharger shall operate the groundwater extraction trench such that no groundwater, landfill gas, or leachate from the Closed Phase I WMU migrates past this corrective action measure.

17. The Discharger shall conduct an annual performance test on all LCRS systems at the facility.

18. The Discharger shall maintain a corrective action monitoring system, in compliance with §20415 of Title 27, to evaluate the continuous operational performance of the groundwater extraction trench.

19. The Discharger shall install and maintain a landfill gas extraction system for the closed Phase I WMU as a corrective action measure associated with the release of volatile organic compounds detected in MW1, MW11, and MW13.

20. The Discharger shall maintain a corrective action monitoring system, in compliance with §20415 of Title 27, to evaluate the continuous operational performance of the landfill gas extraction system.

21. The Discharger shall maintain the liquid level in the Class II surface Impoundment such that from 15 October to 15 April there is no less than 30-inches of freeboard, and from 15 April to 15 October the Class II surface Impoundment may maintain 24-inches of freeboard. An annual water balance shall be developed to maintain and prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required 2 feet of freeboard.

22. The Discharger shall implement all aspects of the operations plan such that fail-safe procedures on all discharge points into the Class II Surface Impoundment are monitored.

23. The Discharger shall install: a monitoring system for the surface impoundment that meets the requirements of §20385, §20415(b) and §20420 of Title 27.

24. In compliance with §20415 of Title 27, the Discharger shall install a sufficient number of monitoring points at appropriate locations and depths to yield ground water elevation data to evaluate the whether there is groundwater storage within the waste.

25. In compliance with §20415 of Title 27, the Discharger shall install a sufficient number of monitoring points at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that provide the data to evaluate the effectiveness of the landfill gas extraction system installed into the Closed Phase I WMU. Background Monitoring Points shall also be installed at a background plot having soil characteristics similar to those of the soil underlying the Unit.

26. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Description	Date
Monitoring System Installation Report in compliance with Title 27 that states that all components of the required monitoring systems, specified in Provisions K12, have been installed in compliance with Title 27 (see Attachment C). In addition, for the Corrective Action Monitoring systems, an evaluation of the performance of each corrective action measure is required.	1 July 2003
Complete the installation of the Closed Phase I WMU landfill gas extraction system in compliance with Title 27.	1 July 2003
Submit a landfill gas extraction system installation report in compliance with Title 27 that states that all components of the required monitoring system has been installed in compliance with Title 27 (see Attachment C) into the Closed Phase I WMU. In addition, for the landfill gas extraction system, an evaluation of the systems performance is required.	1 August 2003
Submit construction and design plans for Executive Officer review and approval. (see Construction Specification D.1)	Prior to construction
Submit a construction report upon completion of closure that demonstrates that construction was done in accordance with the approved construction plans for Executive Officer review and approval. (see Construction Specification D.6)	Prior to discharge
The Discharger shall submit the Annual Review of Financial Assurance for closure and post closure maintenance (see Provision K.11.)	30 April each year
Submit the results from the Annual Leachate Collection and Recovery System test.	15 January each year

Description	Date
Submit groundwater quality protection standards that complies with §20385, §20395, §20400, and §20415 of Title 27 for the following constituents of concern: ▪ Total Dissolved Solids ▪ Carbonate ▪ Bicarbonate ▪ Chloride ▪ Nitrate - Nitrogen ▪ Sulfate ▪ Calcium ▪ Magnesium ▪ Potassium ▪ Selenium ▪ Nickel ▪ Lead ▪ Arsenic ▪ Antimony ▪ Barium ▪ Beryllium ▪ Cadmium ▪ Chromium ▪ Cobalt ▪ Copper ▪ Iron ▪ Manganese ▪ Aluminum ▪ Zinc ▪ Thallium ▪ Silver	15 January 2004
No longer discharge any type of waste to WMUs Phase II or Phase III.	30 April 2004
Begin closure activities for WMUs Phase II and Phase III.	30 May 2004
Completion of closure activities for WMUs Phase II and Phase III.	30 November 2004

I, Thomas R. Pinkos, 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 24 April 2003.

_____
Thomas R. Pinkos, Executive Officer

hfh:

5/5/2003

ORDER NO. R5-2003-0078
ATTACHMENT C
ITEMS TO BE INCLUDED IN A MONITORING WELL INSTALLATION WORKPLAN AND A MONITORING WELL INSTALLATION REPORT OF RESULTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing the minimum listed information. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California.

I. MONITORING WELL INSTALLATION WORKPLAN

A. General Information:
- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan
- Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:
- Casing diameter
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of well construction
- Type of well cap
- 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
- Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point horizontal and vertical survey data is required.

G. Well Sampling:
- Minimum time after development before sampling (48 hours)

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

H. 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 0.1 foot. Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

II. MONITORING WELL INSTALLATION REPORT OF RESULTS

A. Well Construction:

Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
Approximate locations relative to facility site(s)
A well construction diagram for each well must be included in the report, and should contain
the following details:

Total depth drilled
Depth of open hole (same as total depth drilled if no caving occurs)
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
Sieve Analysis for each screen interval
Size of perforations
Filter Pack Size
Number of bags of sand
Duration that the filter pack was swabbed
Depth of tremie pipe when filter pack was installed
Well elevation at top of casing
Depth to ground water
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 Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:

Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Water level elevation(s)
Groundwater contour map