

ARTICLES 5 AND 10 OF CHAPTER 15

(Effective July 1, 1991)

NOTE: The newly-promulgated versions of Articles 5 and 10 contained herein replace their respective 1984 versions in Chapter 15.

ARTICLE 5. WATER QUALITY MONITORING AND RESPONSE PROGRAMS FOR WASTE MANAGEMENT UNITS.

2550.0. Applicability.

(a) The regulations in this article apply to owners or operators of facilities that treat, store, or dispose of waste at waste management units. The owner or operator of a surface impoundment, waste pile, landfill, or land treatment unit that receives or has received waste (hereinafter referred to as "waste management units") that is subject to this subchapter, pursuant to Article 1 of this subchapter, shall comply with the provisions of this article for purposes of detecting, characterizing, and responding to releases to ground water, surface water, or the unsaturated zone. Additionally, notwithstanding any other provision of Article 1 of this subchapter, the provisions of this article apply to all waste management units that received hazardous waste between July 26, 1982, and December 8, 1984.

(b) Waste discharge requirements shall contain a provision which requires the discharger to obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the waste management unit and, for Class I units, for initiating and completing all corrective action required pursuant to Subsection (c) of this section and Section 2550.12 of this article. The discharger shall obtain financial assurance meeting the requirements of this subsection in accordance with the following schedule:

(1) all waste management units to which waste has not been discharged as of July 1, 1991, shall obtain financial assurances prior to discharging waste;

(2) waste management units in the following categories shall obtain financial assurance within six months after July 1, 1991:

(A) Class II and Class III units to which waste has been discharged since December 8, 1984;

(B) Class II and Class III units for which the regional board has required corrective actions, pursuant to Subsection 2510(g) of this subchapter; and

(C) Class I units that received hazardous waste after July 26, 1982.

(c) Dischargers seeking waste discharge requirements for treatment, storage or disposal of hazardous waste at a facility shall comply with the provisions of Section 2550.12 of this article for all areas at the facility, other than waste management units, from which hazardous wastes (or hazardous constituents) have migrated, regardless of the time at which waste was discharged.

(d) The regulations under this article apply during the active life of the waste management unit and the closure period of the unit. After closure of the waste management unit, the regulations in this article apply during the post-closure maintenance period of the waste management unit and during any compliance period under Section 2550.6 of this article, unless:

(1) the waste management unit has been in compliance with the water quality protection standard for a period of three consecutive years; and

(2) all waste, waste residues, contaminated containment system components, contaminated subsoils, and all other contaminated materials are removed or decontaminated at closure.

(e) For purposes of this article, Subsections 2510(b) and (c) of Article 1 of this subchapter do not apply.

(f) For waste management units which are operating, or have received all permits necessary for construction or operation on or before July 1, 1991, the discharger shall propose monitoring programs which comply with the provisions of this article and submit these proposed programs to the regional board. Owners or operators of Class I units shall make this submittal within six months of July 1, 1991, and the regional board shall revise the waste discharge requirements to implement the provisions of this article within one year of submittal. Owners or operators of Class II or Class III waste management units shall make this submittal within one calendar year of July 1, 1991, and the regional board shall revise all waste discharge requirements to implement the provisions of this article within two years of submittal. The discharger shall begin any necessary construction within 30 days of regional board approval of the proposed programs and shall implement the approved monitoring programs according to a schedule of compliance established by the regional board.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13267, Water Code.

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2550.1. Required programs.

(a) A discharger subject to this article shall conduct a monitoring and response program, approved by the regional board, for each waste management unit at the facility as follows.

(1) The discharger shall institute a detection monitoring program under Section 2550.8 of this article except as required under Subsections (a)(2), (a)(3), and (a)(4) of this section;

(2) The discharger shall institute an evaluation monitoring program under Section 2550.9 of this article whenever there is statistically significant evidence of a release, pursuant to Subsections 2550.8(g) or (i) of this article, from the waste management unit during a detection monitoring program;

(3) The discharger shall institute an evaluation monitoring program under Section 2550.9 of this article whenever there is significant physical evidence of a release from the waste management unit. Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, and unexplained water table mounding beneath or adjacent to the waste management unit and any other change to the environment that could reasonably be expected to be the result of a release from the waste management unit; and

(4) The discharger shall institute a corrective action program under Section 2550.10 of this article when the regional board determines pursuant to Section 2550.9 of this article that the assessment of the nature and extent of the release and the design of a Corrective Action Program have been satisfactorily completed and the regional board approves the application for an amended report of waste discharge for corrective action submitted by the discharger during an evaluation monitoring program pursuant to Subsection 2550.9(d) of this article.

(b) The regional board shall specify in the waste discharge requirements the specific type or types of monitoring programs required and the specific elements of each monitoring and response program. For each waste management unit, the regional board shall require one or more of the programs identified in Subsection (a) of this section that is appropriate for the prevailing state of containment at the waste management unit and shall specify the circumstances under which each of the programs will be required. In deciding whether to require the discharger

to be prepared to institute a particular program, the regional board shall consider the potential adverse effects on human health or the environment that might occur before final administrative action on an amended report of waste discharge to incorporate such a program could be taken.

(c) In conjunction with an evaluation monitoring program or a corrective action program, the discharger shall continue to conduct a detection monitoring program under Section 2550.8 of this article as necessary to provide the best assurance of the detection of subsequent releases from the waste management unit

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304 Water Code.

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2550.2. Water Quality Protection Standard.

(a) For each waste management unit, the regional board shall establish a water quality protection standard in the waste discharge requirements. This water quality protection standard shall consist of the list of constituents of concern under Section 2550.3 of this article, the concentration limits under Section 2550.4 of this article, and the point of compliance and all monitoring points under Section 2550.5 of this article. This water quality protection standard shall apply during the active life of the waste management unit, the closure period, the post-closure maintenance period, and during any compliance period under Section 2550.6 of this article.

(b) If a discharger is conducting a detection monitoring program in conjunction with an evaluation or corrective action program for a waste management unit pursuant to Section 2550.1(c) of this article, the regional board may establish separate water quality protection standards for each program.

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2550.3. Constituents Of Concern.

For each waste management unit, the regional board shall specify in the waste discharge requirements the constituents of concern to which the water quality protection standard of Section 2550.2 of this article applies. Constituents of concern are the waste

constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.

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2550.4. Concentration limits.

(a) For each constituent of concern specified pursuant to Section 2550.3 of this article, the discharger shall propose one of the following for each medium (including ground water, surface water, and the unsaturated zone) monitored pursuant to Section 2550.7 of this article:

(1) a concentration limit not to exceed the background value of that constituent as determined pursuant to Subsection 2550.7(e)(11)(A) of this article;

(2) that the waste discharge requirements include a statement that, at any given time, the concentration limit for that constituent will be equal to the background value of that constituent, as determined pursuant to Subsection 2550.7(e)(11)(B) of this article; or

(3) a concentration limit greater than background established pursuant to this section for a corrective action program.

(b) The regional board shall review the proposed concentration limits and statements and shall approve, modify, or disapprove each proposed limit and each proposed statement. Upon final approval by the regional board, each concentration limit and each statement shall be specified in waste discharge requirements. The regional board shall approve more than one concentration limit for different monitoring points in the same medium only if:

(1) more than one background condition exists within a particular medium;

(2) the statistical method approved for a constituent uses intra-well comparisons procedures; or

(3) concentration limits greater than background have been established for a corrective action program at the monitoring points in the zone affected by a release from the waste management unit.

(c) For a corrective action program, the regional board shall establish a concentration limit for a constituent of concern that is greater than the background value of that constituent only if the regional board finds that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded. In making this finding, the regional board shall consider the factors specified in Subsection (d) of this section, the results of the engineering feasibility study submitted pursuant to Subsection 2550.9(c) of this article, data submitted by the discharger pursuant to Subsection 2550.9(d)(2) of this article to support the proposed concentration limit greater than background, public testimony on the proposal, and any additional data obtained during the evaluation monitoring program.

(d) In establishing a concentration limit greater than background for a constituent of concern, the regional board shall consider the following factors:

(1) potential adverse effects on ground water quality and beneficial uses, considering:

(A) the physical and chemical characteristics of the waste in the waste management unit;

(B) the hydrogeological characteristics of the facility and surrounding land;

(C) the quantity of ground water and the direction of ground water flow;

(D) the proximity and withdrawal rates of ground water users;

(E) the current and potential future uses of ground water in the area;

(F) the existing quality of ground water, including other sources of contamination or pollution and their cumulative impact on the ground water quality;

(G) the potential for health risks caused by human exposure to waste constituents;

(H) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(I) the persistence and permanence of the potential adverse effects; and

(2) potential adverse effects on surface water quality and beneficial uses, considering:

(A) the volume and physical and chemical characteristics of the waste in the waste management unit;

(B) the hydrogeological characteristics of the facility and surrounding land;

(C) the quantity and quality of ground water and the direction of ground water flow;

(D) the patterns of precipitation in the region;

(E) the proximity of the waste management unit to surface waters;

(F) the current and potential future uses of surface waters in the area;

(G) the existing quality of surface water including other sources of contamination or pollution and the cumulative impact on surface water quality;

(H) the potential for health risks caused by human exposure to waste constituents;

(I) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(J) the persistence and permanence of the potential adverse effects.

(e) In no event shall a concentration limit greater than background established under this section for a constituent of concern exceed the lowest concentration that the discharger demonstrates and the regional board finds is technologically and economically achievable. No provision of this section shall be taken to allow a concentration limit greater than background, for a constituent of concern, to exceed the maximum concentration that would be allowed under other applicable statutes or regulations (e.g., Maximum Concentration Limits established under the federal Safe Drinking Water Act [P.L.93-523, codified as Subchapter XII of the Public Health Service Act at 42 USC 300f, et. seq.; regulations establishing MCL's are located in 40 CFR Part 141, Subpart B], etc.).

(f) For ground water, in evaluating risk pursuant to Subsection (d) of this section to any biological receptor, the risk shall be evaluated as if exposure would occur at the point of compliance.

(g) Proposals for concentration limits greater than background shall include a demonstration that the aggregate of hazardous constituents in the environment will not result in excessive exposure to a sensitive biological receptor. In the absence of scientifically valid data to the contrary, theoretical risks from chemicals associated with the release from the waste management unit shall be considered additive across all media of exposure, and shall be considered additive for all chemicals having similar toxicological effects or having carcinogenic effects.

(h) A concentration limit greater than background may only be applied during corrective action, or during detection monitoring following corrective action, at monitoring points at which statistically significant evidence of the release has been determined.

(i) When a detection monitoring program incorporating a concentration limit greater than background is reinstated after a corrective action program has been terminated, each concentration limit greater than background shall be re-evaluated during each review of waste discharge requirements or at least every five years. If the regional board, upon re-evaluation, determines that the concentration of a constituent of concern in ground water, surface water, or the unsaturated zone is lower than its

associated concentration limit by a statistically significant amount, the concentration limit for that constituent shall be lowered to reflect current water quality.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.

2550.5. Monitoring Points and the Point of Compliance.

(a) For each waste management unit, the regional board shall specify in the waste discharge requirements the point of compliance at which the water quality protection standard of Section 2550.2 of this article applies. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit. For each waste management unit, the regional board shall specify monitoring points at the point of compliance and additional monitoring points at locations determined pursuant to Section 2550.7 of this article at which the water quality protection standard under Section 2550.2 of this article applies and at which monitoring shall be conducted.

(b) If the facility contains contiguous waste management units and monitoring along a shared boundary would impair the integrity of a containment or structural feature of any of the units, the point of compliance may be located at the hydraulically downgradient limit of an area described by an imaginary line along the outer boundary of the contiguous waste management units. This provision only applies to contiguous waste management units that have operated or have received all permits necessary for construction and operation before July 1, 1991.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.

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2550.6. Compliance Period.

(a) The regional board shall specify in waste discharge requirements a compliance period for each waste management unit. The compliance period is the number of years equal to the active life of the waste management unit (including any waste management activity prior to the adoption of the waste discharge requirements) plus the closure period. The compliance period is the minimum period of time during which the discharger shall conduct a water quality monitoring program subsequent to a release from the unit.

(b) The compliance period begins anew each time the discharger initiates an evaluation monitoring program meeting the requirements of Section 2550.9 of this article.

(c) If the discharger is engaged in a corrective action program at the scheduled end of the compliance period specified under Subsection (a) of this section, the compliance period shall be extended until the discharger can demonstrate that the waste management unit has been in continuous compliance with its water quality protection standard of Section 2550.2 of this article for a period of three consecutive years.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.

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2550.7. General Water Quality Monitoring and System Requirements.

(a) The discharger shall comply with the requirements of this section for any water quality monitoring program developed to satisfy Sections 2550.8, 2550.9, or 2550.10 of this article.

(b) Ground Water Monitoring System.

(1) Except as provided under Subsection (e)(3) of this section, the discharger shall establish a ground water monitoring system for each waste management unit. This ground water monitoring system shall include:

(A) for all monitoring and response programs, a sufficient number of background monitoring points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the waste management unit;

(B) for a detection monitoring program under Section 2550.8 of this article:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the point of compliance and to allow for the detection of a release from the waste management unit;

2. a sufficient number of monitoring points installed at additional locations and depths to yield ground water samples from the uppermost aquifer to provide the best assurance of the earliest possible detection of a release from the waste management unit;

3. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to Subsections (b)(1)(B)1. and (b)(1)(B)2. of this section to provide the best assurance of the earliest possible detection of a release from the waste management unit;

4. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from zones of perched water to

provide the best assurance of the earliest possible detection of a release from the waste management unit; and

5. monitoring point locations and depths that include the zone(s) of highest hydraulic conductivity in each ground water body monitored pursuant to this subsection.

(C) for an evaluation monitoring program under Section 2550.9 of this article:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the point of compliance and at other locations in the uppermost aquifer to provide the data needed to evaluate changes in water quality due to the release from the waste management unit;

2. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to Subsection (b)(1)(C)1. of this section to provide the data needed to evaluate changes in water quality due to the release from the waste management unit; and

3. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from zones of perched water to provide the data needed to evaluate changes in water quality due to the release from the waste management unit; and

(D) for a corrective action program under Section 2550.10 of this article:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the point of compliance and at other locations in the uppermost aquifer to provide the data needed to evaluate the effectiveness of the corrective action program;

2. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to Subsection (b)(1)(D)1. of this section to provide the data needed

to evaluate the effectiveness of the corrective action program;
and

3. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield ground water samples from zones of perched water to provide the data needed to evaluate the effectiveness of the corrective action program.

(2) The ground water monitoring system may include background monitoring points that are not hydraulically upgradient of the waste management unit if the discharger demonstrates to the satisfaction of the regional board that sampling at other monitoring points will provide samples that are representative of the background quality of ground water or are more representative than those provided by the upgradient monitoring points.

(3) Copies of drillers' logs which the Department of Water Resources requires to be submitted pursuant to Section 13751 of the California Water Code shall be submitted to the regional board.

(4) All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport.

(5) The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative ground water samples.

(6) For each monitoring well, the annular space (i.e., the space between the bore hole and well casing) above and below the sampling interval shall be appropriately sealed to prevent entry of contaminants from the ground surface, entry of contaminants from the unsaturated zone, cross contamination between portions of the zone of saturation, and contamination of samples.

(7) All monitoring wells shall be adequately developed to enable collection of representative ground water samples.

(c) Surface Water Monitoring Systems.

(1) The discharger shall establish a surface water monitoring system to monitor each surface water body that could be affected by a release from the waste management unit.

(2) Each surface water monitoring system shall include:

(A) a sufficient number of background monitoring points established at appropriate locations and depths to yield samples from each surface water body that represent the quality of surface water that has not been affected by a release from the waste management unit;

(B) for a detection monitoring program under Section 2550.8 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield samples from each surface water body that provide the best assurance of the earliest possible detection of a release from the waste management unit;

(C) for an evaluation monitoring program under Section 2550.9 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield samples from each surface water body that provide the data to evaluate changes in water quality due to the release from the waste management unit; and

(D) for a corrective action program under Section 2550.10 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield samples from each surface water body that provide the data to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program.

(d) Unsaturated Zone Monitoring System.

(1) Except as otherwise provided in Subsection (d)(5) of this section, the discharger shall establish an unsaturated zone monitoring system for each waste management unit.

(2) The unsaturated zone monitoring system shall include:

(A) a sufficient number of background monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that

represent the quality of soil-pore liquid that has not been affected by a release from the waste management unit;

(B) for a detection monitoring program under Section 2550.8 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that provide the best assurance of the earliest possible detection of a release from the waste management unit;

(C) for an evaluation monitoring program under Section 2550.9 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that provide the data to evaluate changes in water quality due to the release from the waste management unit; and

(D) for a corrective action program under Section 2550.10 of this article, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that provide the data to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program.

(3) Background monitoring points shall be installed at a background plot having soil characteristics similar to those of the soil underlying the waste management unit.

(4) Liquid recovery types of unsaturated zone monitoring (e.g., the use of lysimeters) are required unless the discharger demonstrates to the satisfaction of the regional board that such methods of unsaturated zone monitoring cannot provide an indication of a release from the waste management unit. The regional board shall require complimentary or alternative (non-liquid recovery) types of unsaturated zone monitoring to provide the best assurance of the earliest possible detection of a release from the waste management unit.

(5) Unsaturated zone monitoring is required at all new waste management units unless the discharger demonstrates to the satisfaction of the regional board that there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existent at that waste management unit. For a waste management unit that has operated or has received all permits necessary for construction and operation before July 1, 1991, unsaturated zone monitoring is required unless the discharger demonstrates to the satisfaction of the regional board

that either there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existent at that waste management unit or that installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures.

(e) General Monitoring Requirements.

(1) All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer.

(2) All monitoring wells and all other borings drilled to satisfy the requirements of this article shall be logged during drilling under the direct supervision of a registered geologist. These logs shall be submitted to the regional board upon completion of drilling.

(A) Soil shall be described in the geologic log according to the Unified Soil Classification System as presented in Geotechnical Branch Training Manuals No. 4, 5, and 6, published by the United States Bureau of Reclamation in January of 1986 (available from Bureau of Reclamation, Engineering and Research Center, Attention: Code D-7923-A, P.O. Box 25007, Denver, Colorado 80225).

(B) Rock shall be described in the geologic log in a manner appropriate for the purpose of the investigation.

(C) Where possible, the depth and thickness of saturated zones shall be recorded in the geologic log.

(3) If a facility contains contiguous waste management units, separate ground water monitoring systems are not required for each such unit if the discharger demonstrates to the satisfaction of the regional board that the water quality monitoring program for each unit will enable the earliest possible detection and measurement of a release from that unit.

(4) The water quality monitoring program shall include consistent sampling and analytical procedures that are designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points. At a minimum, the program shall include a detailed description of the procedures and techniques for:

(A) sample collection (e.g., purging techniques, sampling equipment, and decontamination of sampling equipment);

- (B) sample preservation and shipment;
- (C) analytical procedures; and
- (D) chain of custody control.

(5) The water quality monitoring program shall include appropriate sampling and analytical methods for ground water, surface water, and the unsaturated zone that accurately measure the concentration of each constituent of concern and the concentration or value of each monitoring parameter.

(6) For each waste management unit, the discharger shall collect all data necessary for selecting the appropriate statistical methods pursuant to Subsections (e)(7), (e)(8), and (e)(9) of this section and for establishing the background values specified pursuant to Subsection (e)(11) of this section. At a minimum, this data shall include analytical data obtained during quarterly sampling of all background monitoring points for a period of one year, including the times of expected highest and lowest annual elevations of the ground water surface. For a new waste management unit, this data shall be collected before wastes are discharged at the unit and background soil-pore liquid data shall be collected from beneath the unit before the unit is constructed.

(7) Based on data collected pursuant to Subsection (e)(6) of this section, the discharger shall propose one of the statistical methods specified in Subsection (e)(8) of this section for each constituent of concern and for each monitoring parameter. These methods, upon approval by the regional board, shall be specified in the waste discharge requirements and shall be used in evaluating water quality monitoring data. The specifications for each statistical method shall include a detailed description of the criteria to be used for determining statistically significant evidence of any release from the waste management unit and for determining compliance with the water quality protection standard. Each statistical test specified for a particular constituent of concern or monitoring parameter shall be conducted separately for that constituent of concern or monitoring parameter at each monitoring point. Where practical quantitation limits are used in any of the following statistical methods to comply with Subsection (e)(9)(E) of this section, the practical quantitation limit shall be proposed by the discharger for approval by the regional board. The discharger shall demonstrate that use of the proposed statistical methods will

comply with the performance standards outlined in Subsection (e)(9) of this section.

(8) The discharger shall propose one of the following statistical methods:

(A) a parametric analysis of variance (ANOVA) followed in all instances by a multiple comparisons procedure to identify statistically significant evidence of a release from the waste management unit. The method shall include estimation and testing of the contrasts between each monitoring point's mean and the background mean value for each constituent or parameter;

(B) an ANOVA based on ranks followed in all instances by a multiple comparisons procedure to identify statistically significant evidence of a release from the waste management unit. The method shall include estimation and testing of the contrasts between each monitoring point's median and the background median values for each constituent of concern or monitoring parameter;

(C) a tolerance or prediction interval procedure in which an interval for each constituent of concern or monitoring parameter is established from the distribution of the background data, and the value for each constituent of concern or monitoring parameter at each monitoring point is compared to the upper tolerance or prediction limit;

(D) a control chart approach that gives control limits for each constituent of concern or monitoring parameter; or

(E) any statistical test method submitted by the discharger for approval by the regional board including, but not limited to, any statistical method which includes a procedure to verify that there is statistically significant evidence of a release from the waste management unit. If the statistical test method includes a verification procedure, this procedure shall include either a single "composite" retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two "discrete" retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release). The verification procedure shall comply with the following requirements in addition to the statistical performance standards under Subsection (e)(9) of this section:

1. if the verification procedure consists of discrete retests, rejection of the null hypothesis for any one of the retests shall be considered confirmation of significant evidence of a release;

2. the number of additional samples collected and analyzed for use in the verification procedure shall be appropriate for the form of statistical test specified in the waste discharge requirements for that constituent of concern or monitoring parameter pursuant to Subsection (e)(7) of this section. The number of additional samples shall be greater than or equal to the number of samples specified in the waste discharge requirements for that constituent or parameter pursuant to Subsection (e)(12)(A) of this section;

3. if resampling at the interval identified for use in the initial statistical test pursuant to Subsection (e)(12)(B) of this section would cause the entire resampling effort to take longer than 30 days, the sampling interval for use in the verification procedure shall be reduced to ensure that all samples are collected and submitted for laboratory analysis within 30 calendar days from the time that the discharger determines statistically significant evidence of a release pursuant to Subsection 2550.8(g) or (i) of this article;

4. for a verification procedure containing a composite retest, the statistical verification procedure shall be based on all data obtained from the initial sampling event combined with all data obtained during the resampling event. For a verification procedure containing discrete retests, each retest shall analyze data obtained during its respective resampling event(s) and no data shall be shared between retests;

5. the Type I error for statistical methods employing a retest procedure shall be as follows:

a. for a verification procedure containing a composite retest, the statistical test method used shall be the same as the method used in the initial statistical comparison, except that the statistical test used in the verification procedure shall be conducted at a Type I error rate of no less than 0.05 for both the experiment-wise analysis (if any) and the individual monitoring point comparisons. Therefore, if a control chart approach is used to evaluate water quality monitoring data, the upper limit on an X-Bar or R-Chart must be set at no more than 1.645 standard deviations of the statistic plotted for a one-

sided statistical comparison or at no more than 1.96 standard deviations of the statistic plotted for a two-sided statistical comparison;

b. For a verification procedure containing discrete retests, the statistical test method used shall be the same as the method used in the initial statistical comparison. Notwithstanding any provision of Subsection (e)(9) of this section, the critical value for the tests shall be chosen so that the Type I error rate for all individual monitoring point comparisons is the same, whether for an initial test or for a retest, and is equal-to-or-greater-than either

$$(1 - [0.95]^{1/[M \cdot W \cdot S]})^{0.5} * (1/R)^{0.5} \quad \text{or} \\ 1 - (0.99)^{1/S},$$

whichever is larger, where: M = the number of monitoring parameters; W = the number of monitoring points at the waste management unit; S = the number of times that suites of monitoring data from the waste management unit are subjected to initial statistical analysis within a period of six months (i.e., $S \geq 1$); and R = the number of discrete retests that are to be conducted at a monitoring point whose initial statistical analysis for a given constituent of concern or monitoring parameter has indicated the presence of a release (i.e., $R \geq 2$);

6. the discharger shall report to the regional board by certified mail the results of both the initial statistical test and the results of the verification procedure, as well as all concentration data collected for use in these tests within seven days of the last laboratory analysis of the samples collected for the verification procedure; and

7. the verification procedure shall only be performed for the constituent(s) which has shown statistically significant evidence of a release, and shall be performed for those monitoring points at which a release is indicated.

(9) Each statistical method chosen under Subsection 2550.7(e)(7) of this article for specification in the waste discharge requirements shall comply with the following performance standards for each six-month period:

(A) the statistical method used to evaluate water quality monitoring data shall be appropriate for the distribution of the constituent of concern or monitoring parameter to which it is applied and shall be the least likely of the appropriate methods to fail to identify a release from the waste management unit. If the distribution of a constituent of concern or monitoring parameter is shown by the discharger to be inappropriate for a normal theory test, then the data shall be either transformed so that the distribution of the transformed data is appropriate for a normal theory test or a distribution-free theory test shall be used. If the distributions for the constituents of concern or monitoring parameters differ, more than one statistical method may be needed;

(B) if an individual monitoring point comparison procedure is used to compare an individual monitoring point constituent concentration or monitoring parameter value with a concentration limit in the water quality protection standard or with a background monitoring parameter value, the test shall be done at a Type I error rate no less than 0.01. If a multiple comparisons procedure is used, the Type I experiment-wise error rate shall be no less than 0.05; however, a Type I error rate of no less than 0.01 for individual monitoring point comparisons shall be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts;

(C) if a control chart approach is used to evaluate water quality monitoring data, the specific type of control chart and its associated statistical parameter values (e.g., the upper control limit) shall be proposed by the discharger and submitted for approval by the regional board. The regional board may approve the procedure only if it finds the procedure to be protective of human health and the environment. Any control charting procedure must have a false-positive rate of no less than 1 percent for each monitoring point charted (e.g., upper control limits on X-bar or R-Charts used only once every six months must be set at no more than 2.327 standard deviations of the statistic plotted for a one-sided statistical comparison or at no more than 2.576 standard deviations of the statistic plotted for a two-sided statistical comparison);

(D) if a tolerance interval or a prediction interval is used to evaluate water quality monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain shall be proposed by the discharger and submitted for approval by the regional board. The regional board may approve the parameters only if it finds these statistical parameters to be protective of human health and

the environment. These statistical parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentrations or values for each constituent of concern or monitoring parameter. The coverage of any tolerance interval used shall be no more than 95 percent and the confidence coefficient shall be no more than 95 percent for a six-month period. Prediction intervals shall be constructed with an experiment-wise error rate of no less than 5 percent and an individual monitoring point error rate of no less than 1 percent;

(E) the statistical method shall account for data below the practical quantitation limit with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit approved by the regional board pursuant to Subsection (e)(7) of this section 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 waste discharge requirements for routine laboratory operating conditions that are available to the facility. The regional board shall consider the practical quantitation limits listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations (Appendix IX) for guidance when specifying limits of precision and accuracy in the waste discharge requirements;

(F) if necessary, the statistical methods shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data; and

(G) any quality control procedure that is approved by the regional board for application to water quality data from downgradient monitoring points for a monitored medium shall also be applied to all newly-acquired background data from that medium. Any newly-acquired background monitoring datum that is rejected by an approved quality control procedure shall be maintained in the facility record but shall be excluded from use in statistical comparisons with downgradient water quality data.

(10) Based on the data collected pursuant to Subsection (e)(6) of this section and the statistical methods proposed under Subsection (e)(7) of this section, the discharger shall propose and justify the use of a procedure for determining a background value for each constituent of concern and for each monitoring parameter specified in the waste discharge requirements. These procedures shall be proposed for ground water, surface water, and the unsaturated zone. The discharger

shall propose one of the following for approval by the regional board:

(A) a procedure for determining a background value for each constituent or parameter that does not display appreciable variation; or

(B) a procedure for establishing and updating a background value for a constituent or parameter to reflect changes in the background water quality if the use of contemporaneous or pooled data provides the greatest power to the statistical method for that constituent or parameter.

(11) Upon approval of the procedures for determining background values, proposed pursuant to Subsection (e)(10) of this section, the regional board shall specify in the waste discharge requirements one of the following for each constituent of concern and for each monitoring parameter:

(A) a background value established by the discharger using the procedure proposed pursuant to Subsection (e)(10)(A) of this section; or

(B) a detailed description of the procedure to be used by the discharger for establishing and updating a background value as proposed pursuant to Subsection (e)(10)(B) of this section.

(12) For each constituent of concern and monitoring parameter listed in the waste discharge requirements, the discharger shall propose, for approval by the regional board, the sampling methods to be used to establish background values and the sampling methods to be used for monitoring pursuant to this article. Upon approval by the regional board, sampling methods consistent with the following shall be specified in waste discharge requirements:

(A) the number and kinds of samples collected shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that:

1. for a detection monitoring program, a release from the waste management unit will be detected;

2. for an evaluation monitoring program, changes in water quality due to a release from the waste management unit will be recognized; and

3. for a corrective action program, compliance with the water quality protection standard and effectiveness of the corrective action program will be determined; and

(B) the sampling method (including the sampling frequency and the interval of time between successive samples) shall be appropriate for the medium from which samples are taken (e.g., ground water, surface water, and soil-pore liquid). For ground water, sampling shall be scheduled to include the times of expected highest and lowest elevations of the potentiometric surface. The sampling method shall assure, to the greatest extent possible, that independent samples are obtained. In addition to any pre-sampling purge prescribed in the sampling and analysis plan, ground water monitoring wells shall be purged immediately after sampling is completed in order to remove all residual water that was in the well bore during the sampling event so as to assure the independence of samples from successive sampling events. The volume of well water to be withdrawn from the well bore for the post-sampling purge shall be determined by the same method used to determine adequate pre-sampling purging. The sampling method selected shall include either:

1. a sequence of at least four samples collected at least semi-annually from each monitoring point and background monitoring point and statistical analysis carried out at least semi-annually. The regional board shall require more frequent sampling and statistical analysis where necessary to protect human health or the environment; or

2. not less than one sample collected quarterly from each monitoring point and background monitoring point and statistical analysis performed at least quarterly.

(13) The ground water portion of the monitoring program shall include an accurate determination of the ground water surface elevation and field parameters (temperature, electrical conductivity, turbidity, and pH) at each well each time ground water is sampled.

(14) The discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit these graphs to the regional board at least once annually, except that graphs are not required for constituents for which no new data has been collected since the previous graph submittal. Graphs shall be at a scale appropriate to show trends or variations in water quality. All graphs for a given constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. Unless the discharger receives written approval from the regional board to use an alternate procedure that more effectively illustrates trends or variations in the data, each graph shall represent data from one monitoring point or background monitoring point and one constituent of concern or monitoring parameter.

(15) In addition to the water quality sampling conducted pursuant to the requirements of this article, the discharger shall measure the water level in each well and determine ground water flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored pursuant to Subsection (b)(1) of this section at least quarterly, including the times of expected highest and lowest elevations of the water levels in the wells.

(16) Water quality monitoring data collected in accordance with this article, including actual values of constituents and parameters, shall be maintained in the facility operating record. The regional board shall specify in the waste discharge requirements when the data shall be submitted for review.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.
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2550.8. Detection Monitoring Program.

(a) A discharger required, pursuant to Section 2550.1 of this article, to establish a detection monitoring program for a waste management unit shall, at a minimum, comply with the requirements of this section for that unit.

(b) The discharger shall install water quality monitoring systems that are appropriate for detection monitoring and that comply with the provisions of Section 2550.7 of this article.

(c) The discharger shall establish a background value pursuant to Subsection 2550.7(e)(11) of this article for each monitoring parameter specified pursuant to Subsection (e) of this section and for each constituent of concern under Section 2550.3 of this article.

(d) The regional board shall specify the water quality protection standard under Section 2550.2 of this article in the waste discharge requirements.

(e) The discharger shall propose for approval by the regional board a list of monitoring parameters for each medium (ground water, surface water, and the unsaturated zone) to be monitored pursuant to Section 2550.7 of this article. The list for each medium shall include those physical parameters, hazardous constituents, waste constituents, and reaction products that provide a reliable indication of a release from the waste management unit to that medium. The regional board shall specify each list of monitoring parameters in the waste discharge requirements after considering the following factors:

(1) the types, quantities, and concentrations of constituents in wastes managed at the waste management unit;

(2) the expected or demonstrated correlation between the proposed monitoring parameters and the constituents of concern specified for the unit under Section 2550.3 of this article;

(3) the mobility, stability, and persistence of waste constituents or their reaction products;

(4) the detectability of physical parameters, waste constituents, and reaction products; and

(5) the background values and the coefficients of variation of proposed monitoring parameters in ground water, surface water, and the unsaturated zone.

(f) The discharger shall monitor for the monitoring parameters listed in the waste discharge requirements pursuant to Subsection (e) of this section. The regional board shall specify the frequencies for collecting samples and conducting statistical analyses, pursuant to Subsection 2550.7(e)(12) of this article.

(g) In addition to monitoring for the monitoring parameters specified pursuant to Subsection (e) of this section, the discharger shall periodically monitor for all constituents of concern specified in the waste discharge requirements and determine whether there is statistically significant evidence of a release for any constituent of concern using the statistical procedure specified pursuant to Subsection 2550.7(e)(7) of this article. The regional board shall specify in waste discharge requirements the frequencies and locations for monitoring

pursuant to this subsection after considering the degree of certainty associated with the expected or demonstrated correlation between values for monitoring parameters and values for the constituents of concern. Monitoring pursuant to this subsection shall be conducted at least every five years.

(h) The discharger shall maintain a record of water quality analytical data as measured and in a form necessary for the determination of statistical significance pursuant to Subsections (g) and (i) of this section.

(i) For each monitoring point, the discharger shall determine whether there is statistically significant evidence of a release from the waste management unit for any monitoring parameter specified in the waste discharge requirements pursuant to Subsection (e) of this section at a frequency specified pursuant to Subsection (f) of this section.

(1) In determining whether statistically significant evidence of a release from the waste management unit exists, the discharger shall use the method(s) specified in the waste discharge requirements pursuant to Subsection 2550.7(e)(7) of this article. This method(s) shall be used to compare data collected at the monitoring point(s) with the background water quality data.

(2) The discharger shall determine whether there is statistically significant evidence of a release from the waste management unit at each monitoring point within a reasonable period of time after completion of sampling. The regional board shall specify in the waste discharge requirements what period of time is reasonable after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of samples.

(3) The provisions of this section shall not preclude the regional board from making an independent finding that there is statistically significant evidence of a release from the waste management unit. If the regional board makes such a finding, the discharger shall comply with the provisions of this section that are required in response to statistically significant evidence of a release from the waste management unit.

(j) If the discharger determines pursuant to Subsection (g) or (i) of this section that there is evidence of a release from the waste management unit, the discharger:

(1) shall immediately notify regional board staff verbally of the finding and shall provide written notification by certified mail within seven days of such determination. The notification shall, for each affected monitoring point, identify the monitoring parameters and constituents of concern that have indicated statistically significant evidence of a release from the waste management unit; and

(2) may immediately initiate the verification procedure pre-approved by the regional board, pursuant to Subsection 2550.7(e)(8)(E) of this article, to verify that there is statistically significant evidence of a release from the waste management unit for a parameter or constituent which has indicated a release at a monitoring point.

(k) If a verification procedure, performed pursuant to Subsection (j)(2) of this section, confirms that there is statistically significant evidence of a release from the waste management unit or if the discharger does not resample the discharger shall perform the following:

(1) immediately sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all constituents of concern;

(2) at Class I waste management units, immediately sample all monitoring points for that waste management unit in the affected medium (ground water, surface water, or the unsaturated zone) and determine whether constituents in the list of Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations (Appendix IX) are present, and if so, in what concentration(s);

(3) for any Appendix IX constituents found at a monitoring point for a Class I waste management unit, pursuant to Subsection (k)(2) of this section, that are not found in comparable concentrations to those exhibited at the background monitoring points for that waste management unit and that are not specified in the list of constituents of concern for that unit, the discharger may resample within one month and repeat the analysis for those constituents. Any constituent detected in both analyses shall be added to the list of constituents of concern specified in the waste discharge requirements for evaluation monitoring. If the discharger does not resample for the constituents found pursuant to Subsection (k)(2) of this section, each constituent found during the initial analysis shall be added to the list of constituents of concern specified in the

waste discharge requirements for evaluation monitoring unless the discharger can demonstrate to the satisfaction of the regional board that the concentration at which the constituent is found at the monitoring point is comparable to the concentration it exhibits at the background monitoring points for that unit;

(4) for each Appendix IX constituent added to the list of constituents of concern for a Class I waste management unit pursuant to Subsection (k)(3) of this section, the discharger shall:

(A) collect all data necessary for establishing the background concentration for that constituent and for selecting an appropriate statistical procedure pursuant to Subsection 2550.7(e)(6) of this article;

(B) propose an appropriate statistical procedure pursuant to Subsection 2550.7(e)(7) of this article;

(C) propose a procedure to establish the background concentration for that constituent pursuant to Subsection 2550.7(e)(10) of this article; and

(D) establish the background concentration pursuant to Subsection 2550.7(e)(11) of this article;

(5) within 90 days of determining statistically significant evidence of a release, submit to the regional board an amended report of waste discharge to establish an evaluation monitoring program meeting the provisions of Section 2550.9 of this article. The report shall include the following information:

(A) the maximum concentration of each constituent of concern at each monitoring point as determined during the most recent sampling events, and for Class I waste management units only, an identification of the concentration of each Appendix IX constituent at each monitoring point for that unit in the affected medium (ground water, surface water, or the unsaturated zone);

(B) any proposed changes to the water quality monitoring systems at the waste management unit necessary to meet the provisions of Section 2550.9 of this article;

(C) any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods, or statistical methods used at the waste management unit necessary to meet the provisions of Section 2550.9 of this article; and

(D) a detailed description of the measures to be taken by the discharger to assess the nature and extent of the release from the waste management unit;

(6) within 180 days of determining statistically evidence of a release, submit to the regional board an engineering feasibility study for a corrective action program necessary to meet the requirements of Section 2550.10 of this article. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern; and

(7) if the discharger determines, pursuant to Subsections (g) or (i) of this section, that there is statistically significant evidence of a release from the waste management unit at any monitoring point, the discharger may demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in the ground water, surface water, or the unsaturated zone. The discharger may make a demonstration pursuant to this subsection in addition to or in lieu of submitting both an amended report of waste discharge pursuant to Subsection (k)(5) of this section and an engineering feasibility study pursuant to Subsection (k)(6) of this section; however, the discharger is not relieved of the requirements specified in Subsections (k)(5) and (k)(6) of this section unless the demonstration made pursuant to this subsection successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone. In making a demonstration pursuant to this subsection, the discharger shall:

(A) within seven days of determining statistically significant evidence of a release, notify the regional board by certified mail that the discharger intends to make a demonstration pursuant to this subsection;

(B) within 90 days of determining statistically significant evidence of a release, submit a report to the regional board that demonstrates that a source other than the waste management unit caused the evidence, or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone;

(C) within 90 days of determining statistically significant evidence of a release, submit to the regional board an amended report of waste discharge to make any appropriate changes to the detection monitoring program; and

(D) continue to monitor in accordance with the detection monitoring program established pursuant to this section.

(1) If the discharger determines that there is significant physical evidence of a release as described in Subsection 2550.1(a)(3) of this article or that the detection monitoring program does not satisfy the requirements of this section, the discharger shall:

(1) notify the regional board by certified mail within 7 days of such determination; and

(2) within 90 days of such determination, submit an amended report of waste discharge to make any appropriate changes to the program.

(m) Any time the regional board determines that the detection monitoring program does not satisfy the requirements of this section the regional board shall send written notification of such determination to the discharger by certified mail, return receipt requested; the discharger shall, within 90 days after receipt of such notification by the regional board, submit an amended report of waste discharge to make any appropriate changes to the program.

(n) For any Class I waste management unit for which a detection monitoring program is established after the successful completion of a corrective action program pursuant to Subsection 2550.10(g) of this article:

(1) the regional board shall include in the list of monitoring parameters for each medium (ground water, surface water, and the unsaturated zone) all hazardous constituents that

have been detected in that medium due to a release from that waste management unit; and

(2) the discharger shall analyze samples from all ground water monitoring points at the point of compliance for that waste management unit and determine the concentration of each constituent contained in Appendix IX at least annually during any remaining years of the compliance period. If the discharger finds either an Appendix IX constituent at a concentration above the concentration limit established in the waste discharge requirements for that constituent or one that is not already identified in the waste discharge requirements as a monitoring parameter, the discharger may resample within one month of the original sample and repeat the analysis for those constituents. If the discharger does not resample or if the resampling confirms that the concentration limit for a constituent has been exceeded or that a new constituent is present:

(A) the discharger shall report the concentration of these constituents to the regional board within seven days of the latest analysis;

(B) the regional board shall add each such constituent to the list of monitoring parameters that are specified in the waste discharge requirements for ground water, unless the discharger demonstrates to the satisfaction of the regional board that the concentration of that constituent at the monitoring point is comparable to the concentration it exhibits at the background monitoring points for that unit; and

(C) if a constituent is added to the list of monitoring parameters, pursuant to Subsection (n)(2)(B) of this section, the discharger shall immediately collect samples and conduct statistical tests for each monitoring parameter to determine whether there is statistically significant evidence of a release from the unit.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code.

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2550.9. Evaluation Monitoring Program.

(a) A discharger required pursuant to Section 2550.1 of this article to establish an evaluation monitoring program for a waste management unit shall, at a minimum, comply with the requirements of this section for that unit. The evaluation monitoring program shall be used to assess the nature and extent of the release from the waste management unit and to design a

corrective action program meeting the requirements of Section 2550.10 of this article.

(b) The discharger shall collect and analyze all data necessary to assess the nature and extent of the release from the waste management unit. This assessment shall include a determination of the spacial distribution and concentration of each constituent of concern throughout the zone affected by the release. The discharger shall complete and submit this assessment within 90 days of establishing an evaluation monitoring program.

(c) Based on the data collected pursuant to Subsections (b) and (e) of this section, the discharger shall update the engineering feasibility study for corrective action required pursuant to Subsection 2550.8(k)(6) of this article. The discharger shall submit this engineering feasibility study to the regional board within 90 days of establishing an evaluation monitoring program.

(d) Based on the data collected pursuant Subsection (b) of this section and on the engineering feasibility study submitted pursuant to Subsection (c) of this section, the discharger shall submit an amended report of waste discharge to establish a corrective action program meeting the requirements of Section 2550.10 of this article. The discharger shall submit this report to the regional board within 90 days of establishing an evaluation monitoring program. This report shall at a minimum include the following information:

(1) a detailed assessment of the nature and extent of the release from the waste management unit;

(2) a proposed water quality protection standard, including any proposed concentration limits greater than background under Section 2550.4 of this article, and all data necessary to justify each such limit;

(3) a detailed description of proposed corrective action measures that will be taken to achieve compliance with the water quality protection standard proposed for a corrective action program; and

(4) a plan for a water quality monitoring program that will demonstrate the effectiveness of the proposed corrective action.

(e) In conjunction with the assessment conducted pursuant to Subsection (b) of this section, and while awaiting final approval of the amended report of waste discharge, submitted pursuant to Subsection (d) of this section, the discharger shall monitor ground water, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the release from the waste management unit. In conducting this monitoring, the discharger shall comply with the following requirements:

(1) the discharger shall install water quality monitoring systems that are appropriate for evaluation monitoring and that comply with the provisions of Section 2550.7 of this article. These water quality monitoring systems may include all or part of existing monitoring systems;

(2) the discharger shall propose for approval by the regional board a list of monitoring parameters for each medium (ground water, surface water, and the unsaturated zone) to be monitored pursuant to Section 2550.7 of this article. The list for each medium shall include all hazardous constituents that have been detected in that medium and those physical parameters, waste constituents, and reaction products that provide a reliable indication of changes in water quality resulting from any release from the waste management unit to that medium. The regional board shall specify each list of monitoring parameters in the waste discharge requirements after considering the following factors:

(A) the types, quantities, and concentrations of constituents in wastes managed at the waste management unit;

(B) information that demonstrates, to the satisfaction of the regional board, a sufficient correlation between the proposed monitoring parameters and the constituents of concern specified for the unit;

(C) the mobility, stability, and persistence of waste constituents or their reaction products;

(D) the detectability of physical parameters, waste constituents, and reaction products; and

(E) the background values and the coefficients of variation of proposed monitoring parameters in ground water, surface water, and the unsaturated zone;

(3) the discharger shall monitor for the monitoring parameters listed in the waste discharge requirements pursuant to Subsection (e)(2) of this section. The regional board shall specify in the waste discharge requirements the frequencies for collecting samples and for conducting statistical analyses pursuant to Subsection 2550.7(e)(12) of this article to evaluate changes in water quality due to the release from the waste management unit;

(4) in addition to monitoring for the monitoring parameters specified pursuant to Subsection (e)(2) of this section, the discharger shall periodically monitor for all constituents of concern specified in the waste discharge requirements and evaluate changes in water quality due to the release from the waste management unit. The regional board shall specify the frequencies for monitoring pursuant to this subsection after considering the degree of certainty associated with the demonstrated correlation between values for monitoring parameters and values for the constituents of concern;

(5) the discharger shall conduct water quality monitoring for each monitoring parameter and each constituent of concern in accordance with Subsection 2550.7(e)(12) of this article. The discharger shall maintain a record of water quality analytical data as measured and in a form necessary for the evaluation of changes in water quality due to a release from the waste management unit;

(6) only for Class I waste management units, the discharger shall analyze samples from all monitoring points in the affected medium for all constituents contained in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations (Appendix IX) at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s). If the discharger finds Appendix IX constituents in the ground water, surface water, or the unsaturated zone that are not already identified in the waste discharge requirements as constituents of concern, the discharger may resample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the discharger shall report the concentration of these additional constituents to the regional board by certified mail within seven days after the completion of the second analysis and the regional board shall add them to the list of constituents of concern specified in the waste discharge requirements unless the discharger demonstrates to the satisfaction of the regional board that the constituent is not reasonably expected to be in or derived from waste in the waste

management unit. If the discharger does not resample, then the discharger shall report the concentrations of these additional constituents to the regional board by certified mail within seven days after completion of the initial analysis and the regional board shall add them to the list of constituents of concern specified in the waste discharge requirements unless the discharger demonstrates to the satisfaction of the regional board that the constituent is not reasonably expected to be in or derived from waste in the waste management unit; and

(7) while awaiting final approval of an amended report of waste discharge to establish a corrective action program, the discharger shall evaluate all water quality data obtained pursuant to Subsection (e) of this section with respect to the design criteria for the corrective action program. If the evaluation indicates that the plan for corrective action is insufficient, the discharger shall:

(A) notify the regional board by certified mail within 7 days of such determination; and

(B) within 90 days of such determination, submit for approval by the regional board any appropriate changes to the amended report of waste discharge.

(f) The discharger may demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation, or by natural variation in ground water, surface water, or the unsaturated zone. Upon a successful demonstration the regional board shall specify that the discharger shall reinstitute a detection monitoring program meeting the requirements of Section 2550.8 of this article. In making a demonstration under this subsection, the discharger shall:

(1) notify the regional board by certified mail that the discharger intends to make a demonstration pursuant to this subsection;

(2) submit a report to the regional board that demonstrates that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone;

(3) submit to the regional board an amended report of waste discharge to reinstitute a detection monitoring program for the unit. This report shall propose all appropriate changes to the monitoring program; and

(4) continue to monitor in accordance with the evaluation monitoring program established pursuant to this section.

(g) The regional board shall require interim corrective action measures where necessary to protect human health or the environment.

(h) If the discharger determines that the evaluation monitoring program does not satisfy the requirements of this section, the discharger shall, within 90 days, submit an amended report of waste discharge to make any appropriate changes to the program.

(i) Any time the regional board determines that the evaluation monitoring program does not satisfy the requirements of this section, the regional board shall send written notification of such determination to the discharger by certified mail, return receipt requested. The discharger shall, within 90 days of such notification by the regional board, submit an amended report of waste discharge to make appropriate changes to the program.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304 Water Code.

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2550.10. Corrective Action Program.

(a) A discharger required pursuant to Section 2550.1 of this article to establish a corrective action program for a waste management unit shall, at a minimum, comply with the requirements of this section for that unit.

(b) The discharger shall take corrective action to remediate releases from the waste management unit and to ensure that the waste management unit achieves compliance with the water quality protection standard under Section 2550.2 of this article. The regional board shall specify the water quality protection standard for corrective action in the waste discharge requirements.

(c) The discharger shall implement corrective action measures that ensure that constituents of concern achieve their respective concentration limits at all monitoring points and throughout the zone affected by the release, including any portions thereof that extend beyond the facility boundary, by removing the waste constituents or treating them in place. The discharger shall take other action approved by the regional board to prevent noncompliance with those limits due to a continued or subsequent release from the waste management unit, including but not limited to, source control. The waste discharge requirements shall specify the specific measures that will be taken.

(d) In conjunction with the corrective action measures, the discharger shall establish and implement a water quality monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for an evaluation monitoring program under Section 2550.9 of this article, and shall be effective in determining compliance with the water quality protection standard under Section 2550.2 of this article and in determining the success of the corrective action measures pursuant to Subsection (c) of this section.

(e) Corrective action measures taken pursuant to this section shall be initiated and completed by the discharger within a period of time specified by the regional board in the waste discharge requirements.

(f) Corrective action measures taken pursuant to Subsection (c) of this section may be terminated when the discharger demonstrates to the satisfaction of the regional board that the concentrations of all constituents of concern are reduced to levels below their respective concentration limits.

(g) After suspending the corrective action measures, pursuant to Subsection (f) of this section, the waste management unit shall remain in the Corrective Action Program until an approved Detection Monitoring Program meeting the requirements of Section 2550.8 of this article has been incorporated into waste discharge requirements and until the discharger demonstrates to the satisfaction of the regional board that the waste management unit is in compliance with the water quality protection standard. This demonstration shall be based on the following criteria and requirements:

(1) The concentration of each constituent of concern in each sample from each monitoring point in the Corrective Action Program for the waste management unit must have remained at or

below its respective concentration limit during a proof period of at least one year, beginning immediately after the suspension of corrective action measures; and

(2) The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of no less than eight sampling events per year per monitoring point.

(h) The discharger shall report, in writing, to the regional board on the effectiveness of the corrective action program. The discharger shall submit these reports at least semi-annually. More frequent reporting shall be required by the regional board as necessary to ensure the protection of human health or the environment.

(i) If the discharger determines that the corrective action program does not satisfy the provisions of this section, the discharger shall, within 90 days of making the determination, submit an amended report of waste discharge to make appropriate changes to the program.

(j) Any time the regional board determines that the corrective action program does not satisfy the requirements of this section, the discharger shall, within 90 days of receiving written notification of such determination by the regional board, submit an amended report of waste discharge to make appropriate changes to the program.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304, Water Code.

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**2550.11. Unsaturated Zone Monitoring and Response Provisions
for Land Treatment Units.**

(a) A discharger required pursuant to the provisions of this article to conduct unsaturated zone monitoring at a land treatment unit shall comply with the unsaturated zone monitoring and response provisions of this section in conjunction with all other unsaturated zone monitoring and response provisions of this article.

(b) The discharger shall monitor the soil and soil-pore liquid to determine whether constituents of concern migrate out of the treatment zone.

(c) The regional board shall specify the monitoring parameters and constituents of concern to be monitored in the waste discharge requirements. The monitoring parameters to be monitored are those specified pursuant to Subsection 2550.8(e) of this article for detection monitoring and Subsection 2550.9(e)(2) of this article for evaluation monitoring. The constituents of concern to be monitored are those specified in the water quality protection standard specified for each monitoring and response program. The constituents of concern to be monitored shall include the constituents, including hazardous constituents, that must be degraded, transformed, or immobilized in the treatment zone of the land treatment unit.

(d) Only for Class I waste management units, the regional board may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified under Subsection (c) of this section. PHCs are hazardous constituents contained in the wastes to be applied at the unit that are the most difficult to treat considering the combined effects of degradation, transformation, and immobilization. The regional board may establish PHCs if the regional board finds based on waste analyses, treatment demonstrations, or other data that effective degradation, transformation, or immobilization of the PHCs will assure treatment at at least equivalent levels for the other hazardous constituents in the wastes.

(e) The discharger shall install an unsaturated zone monitoring system that includes soil monitoring using soil cores and soil-pore liquid monitoring using appropriate devices such as lysimeters capable of acquiring soil-pore liquid samples. The unsaturated zone monitoring system shall consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that:

(1) represent the quality of background soil-pore liquid quality and the chemical makeup of soil that has not been affected by a release from the treatment zone; and

(2) indicate the quality of soil-pore liquid and the chemical makeup of the soil below the treatment zone.

(f) The discharger shall establish a background value for each monitoring parameter and each constituent of concern to be monitored under Subsection (c) of this section. The discharger shall propose, for approval by the regional board, the background values for each monitoring parameter and each constituent of concern or the procedures to be used to calculate the background values according to the provisions of Subsection 2550.7(e)(10) of

this article. The regional board shall specify the background values or procedures in waste discharge requirements according to Subsection 2550.7(e)(11) of this article.

(g) Background soil values may be based on a one-time sampling at a background plot having characteristics similar to those of the treatment zone. For new land treatment units, background soil values shall include data from sampling at the proposed plot for the unit.

(h) Background soil-pore liquid values shall be based on at least quarterly sampling for one year at a background plot having characteristics similar to those of the treatment zone. For new land treatment units, background soil-pore liquid values shall include data from sampling at the proposed plot for the unit.

(i) The discharger shall express all background values in a form necessary for the determination of statistically significant increases pursuant to Subsection (n) of this section.

(j) In taking samples used in the determination of all background values, the discharger shall use an unsaturated zone monitoring system that complies with Subsection (e)(1) of this section.

(k) The discharger shall conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The regional board shall specify the frequency and timing of soil and soil-pore liquid monitoring in the waste discharge requirements after considering all other monitoring provisions of this article, the frequency, timing, and rate of waste application, the soil permeability, and the maximum anticipated rate of migration. The discharger shall express the results of soil and soil-pore liquid monitoring in a form necessary for the determination of statistically significant increases pursuant to Subsection (n) of this section.

(1) The discharger shall propose, for approval by the regional board, consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore liquid quality and the chemical makeup of the soil below the treatment zone. At a minimum, the discharger shall implement the approved procedures and techniques for:

- (1) sample collection;
- (2) sample preservation and shipment;

- (3) analytical procedures; and
- (4) chain of custody control.

(m) The discharger shall determine whether there is a statistically significant increase below the treatment zone using a statistical method that provides reasonable confidence that migration from the treatment zone will be identified. The discharger shall propose each statistical method in accordance with the provisions of this subsection and pursuant to the provisions of Subsection 2550.7(e)(7) of this article. The regional board shall specify each statistical method pursuant to Subsection 2550.7(e)(7) of this article that the regional board finds:

(1) is appropriate for the distribution of the data used to establish background values; and

(2) provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.

(n) The discharger shall determine whether there is a statistically significant change over background values for each monitoring parameter and each constituent of concern to be monitored below the treatment zone each time the discharger conducts soil monitoring and soil-pore liquid monitoring under Subsection (k) of this section.

(o) In determining whether a statistically significant increase has occurred, the discharger shall compare the value of each parameter or constituent, as determined pursuant to Subsection (n) of this section, to the background value for that parameter or constituent according to the statistical procedure specified in the waste discharge requirements pursuant to this section.

(p) The discharger shall determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The regional board shall specify this time period in the waste discharge requirements after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.

(q) If the discharger determines pursuant to Subsection (n) of this section, that there has been a statistically significant increase in the value of a hazardous constituent below the treatment zone the discharger shall:

(1) report to the regional board describing the full extent of the dischargers findings, including the identification of all constituents that have shown a statistically significant increase, within 72 hours of making such a determination; and

(2) submit written notification of this finding to the regional board within seven days of making such a determination.

(r) Upon receiving notice pursuant to Subsection (q) of this section or upon the independent confirmation by the regional board, the regional board shall order the discharger to cease operating the land treatment unit. The discharger shall not resume operating the land treatment unit and shall close the land treatment unit unless one of the following actions is taken:

(1) the discharger completes appropriate removal or remedial actions to the satisfaction of the regional board and the discharger submits to the regional board and the board approves, an amended report of waste discharge to modify the operating practices at the unit to maximize the success of degradation, immobilization, or transformation processes in the treatment zone; or

(2) the discharger completes appropriate removal or remedial actions, submits to the regional board and the board approves, an amended report of waste discharge to modify the operating practices at the unit to maximize the success of degradation, immobilization, or transformation processes in the treatment zone, and equips the land treatment unit with liners, and a leachate collection and removal system that satisfy the provisions of Sections 2542 and 2543 of Article 4 of this subchapter.

(s) All actions taken by a discharger pursuant to Subsections (r)(1) or (r)(2) of this section shall be completed within a time period specified by the regional board, which shall not exceed 18 months after the regional board receives notice pursuant to Subsection (q)(1) of this section. If the actions are not completed within this time period, the land treatment unit shall be closed, unless granted an extension by the regional

board due to exceptional circumstances beyond the control of the discharger.

(t) If the discharger determines pursuant to Subsection (n) of this section that there is a statistically significant increase of hazardous constituents below the treatment zone, the discharger may demonstrate that the increase resulted from an error in sampling, analysis, or evaluation. While the discharger may make a demonstration pursuant to this subsection in addition to or in lieu of the requirements of Subsection (r)(1) or (r)(2) of this section, the discharger is not relieved of the requirements of Subsections (r) and (s) of this section unless the demonstration made pursuant to this subsection successfully shows that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration pursuant to this subsection, the discharger shall:

(1) notify the regional board of this finding in writing within seven days of determining a statistically significant increase beneath the treatment zone that the discharger intends to make a demonstration pursuant to this subsection;

(2) within 90 days of such determination, submit a report to the regional board demonstrating that the increase resulted from error in sampling, analysis, or evaluation;

(3) within 90 days of such determination, submit to the regional board an amended report of waste discharge to make any appropriate changes to the unsaturated zone monitoring program for the land treatment unit; and

(4) continue to monitor in accordance with the unsaturated zone monitoring program established pursuant to this section.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304, Water Code.

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2550.12. Corrective Action Where Hazardous Waste Has Been Discharged At Areas Other Than Waste Management Units.

(a) A discharger seeking waste discharge requirements for the treatment, storage or disposal of hazardous waste shall institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any area at the facility other than a

waste management unit regardless of the time waste was discharged at such an area.

(b) A program of corrective action required under Subsection (a) of this section shall be incorporated into an enforcement order under Chapter 5, commencing with Section 13300, of Division 7 of the Water Code, or into the waste discharge requirements and the program shall contain time schedules for implementation and completion of such corrective action. A discharger required to undertake corrective action under this section shall provide assurances of financial responsibility for completing such corrective action.

(c) The discharger shall implement corrective actions beyond the facility property boundary where necessary to protect human health or the environment.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304, Water Code.

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Article 10. Definitions

2600. Statutory Definitions.

Except as otherwise indicated in this article, definitions of terms used in this subchapter shall be those set forth in Division 7 (commencing with Section 13000) of the Water Code, or Chapter 6.5 of Division 20 of the Health and Safety Code (commencing with Section 25100).

2601. Technical Definitions.

"Active life" means the period during which wastes are being discharged to a waste management unit. The active life continues until final closure of the waste management unit has been initiated pursuant to Article 8 of this subchapter. For surface impoundments, the active life includes any time when the impoundment contains liquid, including waste and leachate.

"Affected medium" means any medium (e.g., ground water, surface water, or the unsaturated zone) that has been affected by a release from a waste management unit.

"Aquifer" means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

"Attitude" means the orientation in space of a geologic structural feature or structural element.

"Background" means the concentrations or measures of constituents or parameters in water or soil that has not been affected by waste constituents or leachate from the waste management unit being monitored.

"Background monitoring point" means a well, device, or location specified in the waste discharge requirements at which monitoring for background water quality or background soil quality is conducted.

"Background plot" means an area adjacent to a waste management unit used for land treatment that can reasonably be expected to have the same, or similar soil conditions as were present at the waste management unit prior to discharges of waste.

"Best management practices" means a practice, or combination of practices, that is the most effective and feasible means of controlling pollution generated by nonpoint sources for the attainment of water quality objectives.

"Containment structure" means an artificial feature installed to contain waste constituents or leachate.

"Contaminated materials" means materials that contain waste constituents, or leachate.

"Control chart" means a graphical method for evaluating whether a process is or is not in a state of statistical control.

"Cover" means a membrane or earthen layer placed over the closed portion of a waste management unit.

"Cross-contamination" means a condition created when a drill hole, boring, or improperly-constructed well forms a pathway for fluid movement between a saturated zone which contains pollutants and a formerly separated saturated zone containing uncontaminated ground water.

"Cutoff wall" means a subsurface barrier to lateral fluid movement which extends from in-place natural geologic materials with the required permeability to ground surface.

"Decomposable waste" means waste which, under suitable natural conditions, can be transformed through biological and chemical processes into compounds which do not impair the quality of waters of the state. Incomplete decomposition, may result in some water quality degradation (e.g., hardness, taste, odor, etc.).

"Dedicated" means a waste management unit which is used exclusively for discharges of particular wastes.

"Dendritic" means a subdrain system that is arranged in a branching pattern.

"Dewatered sludge" means residual semi-solid waste from which free liquid has been evaporated, or otherwise removed.

"Discharger" means any person who discharges waste which could affect the quality of waters of the state, and includes any person who owns a waste management unit or who is responsible for the operation of a waste management unit. When referring to dischargers of hazardous waste, the terms "discharge" and "waste" in this definition have the same meaning as they would have under the definitions for these terms provided in Section 66260.10 of Chapter 11 of Division 4.5 of Title 22, CCR, effective July 1, 1991.

"Electrical conductivity" means the relative ability of water to conduct electrical current. It depends on the ion concentration of and can be used to approximate the total filterable residue (total dissolved solids) in the water.

"Excess exposure" means that, for an organism exposed to a release from a waste management unit, the combined effect of all hazardous constituents in the organism's environment is such that the organism will suffer some measureable adverse effect on health or reproductive success, which is partly or wholly attributable to the release.

"External hydrogeologic forces" means seasonal and other fluctuations in ground water levels, and any other hydraulic condition which could cause a change in the hydraulic stress on a containment structure.

"Facility" - see "waste management facility".

"Facility wastewater" means all wastewater, from whatever source, produced at a confined animal facility.

"Floodplain" means the land area which is subject to flooding in any year from any source.

"Freeboard" means the vertical distance between the lowest point along the top of a surface impoundment dike, berm, levee, or other similar feature and the surface of the liquid contained therein.

"Free liquid" means liquid which readily separates from the solid portions of waste under ambient temperature and pressure. Free liquids are not present when a 100 milliliter representative sample of the waste can be completely retained in a standard 400 micron conical paint filter for 5 minutes without loss of any portion of the waste from the bottom of the filter (or an equivalent test approved by DHS).

"Geologic materials" means in-place naturally occurring surface and subsurface rock and soil.

"Ground acceleration" means acceleration of earth particles caused by an earthquake.

"Ground rupture" means any structural disruption of the ground surface due to natural or man-made forces; e.g., faulting, landslides, subsidence.

"Ground water" means (for the purpose of this subchapter) water below the land surface that is at or above atmospheric pressure.

"Grout curtain" means a subsurface barrier to fluid movement, installed by injecting grout mixtures (such as cement, silicates, synthetic resins, etc.) to fill and seal fractures in rock.

"Hazardous constituent" means a constituent identified in Appendix VIII to Chapter 11 of Division 4.5 of Title 22, CCR, or an element, chemical compound, or mixture of compounds which is a component of a waste or leachate and which has a physical or chemical property that causes the waste or leachate to be identified as a hazardous waste by the California Department of Health Services.

"Head" or "hydraulic head" means the pressure exerted by fluid on a given area. It is caused by the height of the fluid surface above the area.

"Holocene fault" means a fault which is or has been active during the last 11,000 years.

"Inactive mining waste management unit" means any area containing mining wastes which is located at a present or former mining or milling site, and where all mining operations and discharges of mining waste ended and have not been resumed for 5 years, or more.

"Independent sample" means an individual sample of a monitored medium, obtained from a given monitoring point, that:

(1) does not contain a parcel of the medium that has been previously sampled at that monitoring point sufficient to cause a measurable effect in the analytical results; and

(2) has not been otherwise affected differently than any other individual sample or group of samples with which it will be compared.

In applying No. 1 above to ground water monitoring, the parcel of water of interest is the parcel of water that was in the well bore at the time of any previous sampling event.

"Indicator parameters" means measurable physical or chemical characteristics of water or soil-pore moisture which are used to detect the presence of waste constituents in water or soil-pore moisture, or the effects of waste constituents on waters of the state.

"Interim cover" means any cover other than the final cover. It includes daily cover and intermediate cover as defined in Title 14 of this code.

"Landfill" means a waste management unit at which waste is discharged in or on land for disposal. It does not include surface impoundment, waste pile, land treatment, or soil amendments.

"Land treatment unit" or "land treatment facility" means a waste management unit at which liquid and solid waste is discharged to, or incorporated into, soil for degradation, transformation, or immobilization within the treatment zone. Such units are disposal units if the waste will remain after closure.

"Leachate" means any liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. It includes any constituents extracted from the waste and dissolved or suspended in the fluid.

"Liner" means a continuous layer of natural or artificial material or a continuous membrane of artificial material installed beneath or on the sides of a waste management unit, which acts as a barrier to vertical or lateral fluid movement.

"Liquid waste" means any waste materials which are not spadable.

"Manure" means the accumulated moist animal excrement that does not undergo decomposition or drying as would occur on open grazing land or natural habitat. This definition shall include feces and urine which may be mixed with bedding materials, spilled feed, or soil.

"Maximum credible earthquake" means the maximum earthquake that appears capable of occurring under the presently known geologic framework. In determining the maximum credible earthquake, little regard is given to its probability of occurrence except that its likelihood of occurring is great enough to be of concern.

"Maximum probable earthquake" means the maximum earthquake that is likely to occur during a 100-year interval.

"Mining waste" means all waste materials (solid, semi-solid, and liquid) from the mining and processing of ores and minerals including soil, waste rock, and other forms of overburden as well as tailings, slag, and other processed mining wastes.

"Moisture-holding capacity" means the amount of liquid which can be held against gravity by waste materials without generating free liquid.

"Monitoring parameter" means one of the set of parameters specified in the waste discharge requirements for which monitoring is conducted. Monitoring parameters shall include physical parameters, waste constituents, reaction products, and hazardous constituents, that provide a reliable indication of a release from a waste management unit.

"Monitoring point" means 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.

"Operating" means waste management units which are currently receiving wastes. It includes temporarily idle units containing wastes and at which discharges of waste may resume.

"Peak stream flow" means the maximum expected flow of surface water at a waste management facility from a tributary watershed for a given recurrence interval.

"Perched ground water" means a body of unconfined ground water separated from the zone of saturation by a portion of the unsaturated zone. Such perched water may be either permanent or ephemeral.

"Permeability" means the ability of natural and artificial materials to transmit fluid.

"Physical parameter" means any measurable physical characteristic of a substance including, but not limited to, temperature, electrical conductivity, pH, and specific gravity.

"Point of compliance" means a vertical surface located at the hydraulically downgradient limit of a waste management unit that extends through the uppermost aquifer underlying the unit.

"Post-closure maintenance" means all activities undertaken at a closed waste management unit to maintain the integrity of containment features and to monitor compliance with applicable performance standards.

"Post-closure maintenance period" means the period after closure during which the waste could have an adverse effect on the quality of the waters of the state.

"Probable maximum precipitation" means the estimated amount of precipitation for a given duration, drainage area, and time of year, which approaches and approximates the maximum that is physically possible within the limits of contemporary hydrometeorological knowledge and techniques. There is virtually no risk of its being exceeded.

"P-value" means the smallest significance level for which the null hypothesis would be rejected, based on the data that was actually observed.

"Rapid geologic change" means alteration of the ground surface through such actions as landslides, subsidence, liquefaction, and faulting.

"R Chart (range chart)" means a control chart for evaluating the variability within a process in terms of the subgroup range R.

"Reconstruction" means modification to an existing waste management unit which entails costs amounting to 50 percent or more of the initial cost of the unit.

"Relative compaction" means the degree of compaction achieved, as a percentage of the laboratory compaction, in accordance with accepted civil engineering practices.

"Runoff" means any precipitation, leachate, or other liquid that drains from any part of a waste management unit.

"Runon" means any precipitation, leachate, or other liquid that drains onto any part of a waste management unit.

"Semi-solid waste" means waste containing less than 50 percent solids.

"Sensitive biological receptor of concern" means a member of any species of organism whose members are likely to be exposed to

a release from a waste management unit and experience some measurable adverse effect as a result of that exposure.

"Slope failure" means downward and outward movement of ground slopes (e.g., natural rock, soil, artificial fills, or continuations of these materials).

"Sludge" means residual solids and semi-solids from the treatment of water, wastewater, and other liquids. It does not include liquid effluent discharged from such treatment processes.

"Soil-pore liquid" means the liquid contained in openings between particles of soil in the unsaturated zone.

"Sorbent" means a substance which takes up and holds a liquid either by absorption or adsorption.

"Statistically significant" means a statistical test has a p-value that is small enough for the null hypothesis to be rejected.

"Storage" means the holding of waste for a temporary period, at the end of which, the waste is either treated or is discharged elsewhere.

"Storm" means the maximum precipitation for a given duration that is expected during the given recurrence interval.

"Surface impoundment" means a waste management unit which is a natural topographic depression, excavation, or diked area, and which is designed to contain liquid wastes or wastes containing free liquids, and which is not an injection well.

"Tailings pond" means an excavated or diked area and which is intended to contain liquid and solid wastes from mining and milling operations.

"Transmissivity" means the rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of the aquifer under a unit hydraulic gradient.

"Treatment" means any method, technique, or process designed to change the physical, chemical, or biological characteristics of waste so as to render it less harmful to the quality of the waters of the State, safer to handle, easier to contain or manage, including use as fuel, nutrient, or soil amendment.

"Treatment zone" means a soil area of the unsaturated zone of a land treatment unit within which constituents of concern are degraded, transformed, or immobilized.

"Underlying ground water", for the purposes of waste management unit siting criteria, includes water which rises above the zone of saturation due to capillary forces.

"Unified Soil Classification System" means the methods for soil identification and classification for construction purposes presented in Geotechnical Branch Training Manuals No. 4, 5, and 6, published by the United States Bureau of Reclamation in January of 1986, which is herein incorporated by reference (available from Bureau of Reclamation, Engineering and Research Center, Attention: Code D-7923-A, P.O. Box 25007, Denver, Colorado 80225).

"Unsaturated zone" means the zone between the ground surface and the regional water table or, in cases where the uppermost aquifer is confined, the zone between the ground surface and the top of the saturated portion of the confining layer.

"Uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer.

"Waste constituent" means a constituent that is reasonably expected to be in or derived from waste contained in a waste management unit.

"Waste management facility" or "facility" means the entire parcel of property at which waste discharge operations are conducted. Such a facility may include one or more waste management units.

"Waste management unit" means an area of land, or a portion of a waste management facility, at which waste is discharged. The term includes containment features and ancillary features for precipitation and drainage control and monitoring.

"Waste pile" means a waste management unit at which only noncontainerized, bulk, dry solid waste is discharged and piled on the land surface.

"X Bar chart" means a control chart for evaluating the process level or subgroup differences in terms of the subgroup average.

"Zone of saturation" means the subsurface zone extending downward from the base of the unsaturated zone in which the interstices are filled with water under pressure that is equal to or greater than atmospheric pressure. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

NOTE: Authority cited: Section 1058, Water Code, Reference: Section 13172, Water Code.

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