

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0142

WASTE DISCHARGE REQUIREMENTS  
FOR  
CITY OF LINCOLN  
LINCOLN LANDFILL  
CLASS III LANDFILL  
POST-CLOSURE MAINTENANCE  
AND CORRECTIVE ACTION  
PLACER COUNTY

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

1. The City of Lincoln, hereafter referred to as the “Discharger”, owns and operates the Lincoln Landfill, a unlined Class III landfill about 0.4 miles east of the City of Lincoln at the intersection of Virginiatown and Hungry Hollow Roads. The site covers 6.3 acres is in the southeast ¼ of Section 11, T12N, R6E, MDB&M, corresponding to Assessor’s Parcel No. 21-231-19, as shown in Attachment A: Location Map, which is incorporated herein and made part of this Order.
2. The landfill operated from 1952 through 1976 accepting about 45 cubic yards of waste per day, five days per week. Waste was disposed of in unlined trenches and burned to reduce its volume. There were six trenches, as shown in Attachment B: Site Map, which is incorporated herein and made part of this Order. The total volume of the trenches was about 22,000 cubic yards. The landfill ceased accepting wastes in 1976 and was closed in 1993 with a low hydraulic conductivity clay cover.
3. Effective 18 July 1997, the water quality regulations for Class II and Class III disposal facilities formerly contained in Chapter 15, Title 23, California Code of Regulations (CCR), and the solid waste regulations formerly in Title 14, CCR, were consolidated into Chapters 1 through 7, Subdivision 1, Division 2, Title 27, CCR (Title 27). Title 27 regulations apply to this facility. The landfill is exempt from federal Subtitle D regulations since it ceased accepting wastes prior to prior to the 9 October 1991 federal deadline per 40 Code of Federal Regulations, Part 258.1(c).
4. Previous Waste Discharge Requirements (WDRs) Order No. 91-059, issued prior to landfill closure, no longer adequately describes the facility.

**WASTES AND UNIT CLASSIFICATION**

5. The landfill accepted wastes, including municipal solid wastes, defined as “inert” or “nonhazardous” under Sections 20230 and 20220 of Title 27, respectively. Since the landfill ceased accepting these wastes prior to 27 November 1984, it is an existing, inactive reclassified Class III waste management unit under Section 20080(d) of Title 27.

6. The results of a site assessment conducted in 1990 indicated that that no hazardous waste was present at the site and that the site qualified for a Solid Waste Assessment Test (SWAT) exemption pursuant to Section 13273 of the California Water Code. The Executive Officer issued the SWAT exemption on 30 January 1990.

### **DESCRIPTION OF THE SITE**

7. The site is in low rolling Sierra Nevada foothill terrain at an average elevation of about 200 feet above mean sea level (MSL).
8. Land within 1000 feet of the facility is used for low density housing and livestock grazing.
9. The site is about 600 feet from the Auburn Ravine to the south.

### **GEOLOGY**

10. The soil underlying the site consists of an upper layer of weathered granite alluvium composed primarily of clay pan and hardpan, including silt and silty sand. Underlying the upper layer, from a depth of about 10 to 44 feet below ground surface (bgs), is a zone of highly weathered, highly fractured decomposed granite. The granite becomes less weathered with depth and is generally solid bedrock beneath 44 feet bgs.
11. There are no active faults in the project area. The nearest active fault is the Cleveland Hills fault approximately 40 miles north of the site, which caused the Oroville Earthquake in 1975. The Oroville earthquake registered a 5.7 magnitude on the Richter scale.

### **SURFACE AND STORM WATER**

12. Surface drainage at the site is to Auburn Ravine, a tributary to the Sacramento River.
13. The site is in the Pleasant Grove Sub-area of the Coon-American Hydrologic Area of the Valley American Hydrologic Unit in the Sacramento Hydrologic Basin Planning Area (as depicted on the interagency hydrologic maps prepared by the Department of Water Resources in August 1986).
14. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

15. The beneficial uses of these surface waters are domestic, municipal, agricultural, and industrial supply; ground water recharge; recreation; esthetics enjoyment; navigation; fresh water replenishment; and preservation and enhancement of fish, wildlife and other aquatic resources.
16. The facility receives an average of 22 inches of precipitation per year. The mean evaporation for this facility is 51 inches per year. Based on these data, average annual net evaporation at the facility is 29 inches.
17. The 100-year, 24-hour precipitation event for the facility is 4.8 inches.
18. The facility is not within a 100-year floodplain.
19. The Discharger conducts surface water monitoring at two locations in Auburn Ravine, one upstream (AR-E) and the other down stream (AR-W) of the landfill (see Attachment B: Site Map). The Discharger also monitors storm water runoff from the site under the General Industrial Storm Water Permit.

### **GROUNDWATER**

20. The beneficial uses of ground water are domestic, municipal, agricultural and industrial supply.
21. A survey of Department of Water Resources records conducted by the Discharger indicates that there are 42 domestic wells within a one-half mile radius of the landfill and three domestic wells within 1,000 feet of the landfill. None of these wells are down gradient of the landfill.
22. Quarterly groundwater monitoring data indicates that the seasonal average depth to groundwater varies from about 13 to 22 feet below ground surface (bgs) site wide and seasonally up to about four feet. The uppermost aquifer occurs in the weathered bedrock soil between the overlying hardpan and underlying bedrock. The seasonal average groundwater elevation is about 194 feet MSL on the upgradient perimeter of the site and 180 feet MSL on the down gradient perimeter of the site. The gradient is about 0.038 ft/ft to the south/southeast. Available slug test data indicates hydraulic conductivities ranging from 0.2 to 1.2 ft/day. Deeper groundwater flows through fractures in the underlying bedrock.

23. Groundwater elevation data and historical landfill information indicates that there may be less than the minimum five feet of separation between groundwater and landfill wastes required under Section 20240(c). The monitoring and reporting program in these WDRs requires that the Discharger monitor groundwater separation. The WDRs require that the Discharger propose and implement appropriate corrective measures where necessary to maintain adequate separation between wastes and groundwater. See Provision 11.

### **Monitoring**

24. A Solid Waste Assessment Test (SWAT) exemption assessment conducted in 1989 showed the presence of low concentrations of certain volatile organic compounds (VOCs) in the groundwater down gradient of the landfill. The detected VOCs included 1,2-Dichloroethane at 2.0 µg/L and trans-1,3-Dichloropropene at 0.9 µg/L. Previous WDRs did not require VOC monitoring, however, and there is limited historical VOC monitoring data for the site. Groundwater samples collected during the Fourth Quarter 1999 were non-detect for VOCs in all wells. These WDRs require that the Discharge monitor for VOCs semiannually for at least two semesters and, if detected, semiannually thereafter.
25. There are currently six onsite ground water monitoring wells at the site, including two upgradient wells (MWs-2 and 6), one side gradient well (MW-3), and three point of compliance wells (MWs-1, 4 and 5). In addition, there is one offsite well (MW-7) about 250 feet down gradient of the landfill.
26. Elevated concentrations of inorganic constituents have also been historically detected in groundwater down gradient of the site. For example, the concentration of total dissolved solids and chloride have averaged about 2,200 mg/L and 220 mg/L in down gradient compliance wells. Similar concentrations of these constituents have been detected offsite in well MW-7. Upgradient concentrations of these constituents average about 400 mg/L and 15 mg/L. The full extent of the inorganic constituent plume has not yet been defined. Time series plots of the monitoring data do not indicate any significant decline in the concentration of inorganic constituents in the plume since landfill closure in 1993.

### **Corrective Action**

27. In a 22 February 2000 letter, Regional Board staff previously requested that the Discharger prepare and submit a Corrective Action Plan (CAP) and Engineering Feasibility Study (EFS) for corrective action of groundwater impacts at the site. The Discharger has not yet completed this report due to difficulties in obtaining permission from an adjacent property owner for offsite access to sample surface water in Auburn Ravine. These WDRs include a time schedule for completing and submitting the CAP/EFS.

28. The monitoring and reporting program requires that the Discharger perform corrective action monitoring to assess the scope of the release, delineate the extent of the plume and monitor the progress of corrective action.

### **Data Analysis Methods**

29. Section 13360(a)(1) of the California Water Code allows the Regional Board to specify requirements to protect underground or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
30. Sections 20415(e)(8) and (9) of Title 27 provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with §20415(b)(1)(B)(2 - 4) of Title 27. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data. The Regional Board may specify a non-statistical data analysis method pursuant to Section 20080(a)(1) of Title 27. Data analysis requirements for non-statistical analysis of detection monitoring data are contained in Monitoring Specifications E.19 through E.22 herein.
31. The Discharger has not yet proposed data analysis methods for background and corrective action monitoring. These WDRs require that the Discharger submit a technical report describing the statistical and non-statistical data analysis methods proposed for background and corrective action monitoring, in accordance with the monitoring specifications herein and Section 20415(e)(7) of Title 27.
32. For naturally-occurring constituents generally detected in background (i.e. at least 10% of the data from background samples equal or exceed their respective MDL) the monitoring specifications herein require that the Discharger use a statistical data analysis method while for organic COCs and inorganic constituents not generally detected in background (i.e., less than 10% of the data from background samples equal or exceed their respective MDL), the monitoring specifications herein require that the Discharger use a non-statistical data analysis method.

### **LANDFILL CLOSURE**

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

34. The landfill was closed in 1993 in accordance with a 1992 Final Closure Plan (FCP). A low permeability cover meeting the prescriptive requirements of Chapter 15 (now Title 27) was constructed over the entire six-acre site area, including the disposal trenches. The cover design is as follows:
- Foundation Layer – Two feet of compacted soil
  - Low hydraulic Conductivity Layer – one foot of compacted clay ( $k \leq 1 \times 10^{-6}$  cm/sec)
  - Erosion Resistant Layer – One foot of clean vegetative cover soil
  - Vegetative Cover – native grass mix

The foundation layer was constructed using the upper two feet of existing landfill cover soil (approximately 15,000 cubic yards). The soil was scarified, graded, moisture-conditioned, and compacted to specifications, and materials not acceptable for foundation material, such as cobbles and waste, were removed as part of construction quality assurance (CQA). Approximately 8,000 cubic yards of imported Lincoln clay was used for the low hydraulic conductivity layer and compacted to a maximum permeability of  $1 \times 10^{-6}$  cm/sec. A test pad was first constructed and a double ring infiltrometer test performed in accordance with ASTM D 3385-88 as part of field CQA. Approximately 8,000 cubic yards of imported soil was placed as the erosion-resistant layer and hydroseeded.

35. The landfill crest is in the northern portion of the site at an elevation of 212 feet MSL. From the crest area, the landfill slopes gently to the southwest, south and southeast at about a three percent grade. The steepest side slope is the southern side slope which is graded at about 3.5H:1V. Since the cover slopes are not steeper than 3H:1V and do not contain a geosynthetic component, and since the Discharger completed closure prior to July 18, 1997, the Discharger is not required to submit a Section 21750(f)(5) technical report demonstrating the stability for cover slopes. See Sections 21090(a) and 20310(g).
36. Storm water runoff from the landfill flows to a drainage swales along the southern perimeter of the site which feed a main drainage swale to Auburn Ravine. Runoff from the eastern portion of the landfill is first captured in a perimeter ditch which empties into a swale southeast of the landfill. The remainder of the cover drains by direct sheet flow to swales along the south and southwest perimeter of the landfill. The upstream portion of the main drainage swale was filled-in by the landfill.

### **COST ESTIMATES AND FINANCIAL ASSURANCES**

37. The Final Closure and Post-Closure Maintenance Plan includes cost estimates for post-closure maintenance and monitoring based on 1992 projections. These WDRs require that the Discharger update these cost estimates to reflect current projections and estimated costs of corrective action monitoring (see Provision 10). The WDRs also require that the Corrective Action Plan/Engineering Feasibility Study (CAP/EFS) include cost estimates for implementing corrective action and conducting corrective action monitoring.

38. The Discharger is not required to demonstrate financial assurances for post-closure maintenance to the California Integrated Waste Management Board since the landfill ceased operations prior to January 1, 1988, per Section 22210(b) of Title 27. The Discharger is also not required to demonstrate financial assurances for corrective action, since pursuant to Section 22220(b), the landfill ceased operations prior to July 1, 1991.

### **CEQA AND OTHER LEGAL REFERENCES**

39. The City of Lincoln City Council approved a resolution certifying a final negative declaration for the facility on 27 October 27 1992 and filed a Notice of Determination for the project with the State of California Office of Planning and Research (OPR) on 11 December 1992, in accordance with the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). The document incorporated the Final Closure Plan as approved by the Regional Board.
40. The action to revise the WDRs is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR Section 15301 for existing facilities.
41. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. R5-2003-0142 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.
42. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
  - b. Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
  - c. *The Porter-Cologne Water Quality Control Act - Division 7, California Water Code. Water Quality (with additions and amendments effective January 1, 2002).*

### **PROCEDURAL REQUIREMENTS**

43. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
44. The Regional Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
45. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
46. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at [http://www.swrcb.ca.gov/water\\_laws/index.html](http://www.swrcb.ca.gov/water_laws/index.html) and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 91-059 is rescinded, and that the City of Lincoln, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of new or additional waste at this facility is prohibited.
2. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
3. The discharge of treated or untreated wastewater, groundwater, or storm water runoff to any surface water or any surface water drainage course is prohibited without an NPDES permit authorizing the discharge.



4. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
5. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.

**B. DISCHARGE SPECIFICATIONS**

1. The discharge shall remain within the designated disposal area at all times.
2. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
3. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater per Section 20240(c) of Title 27.
4. The disposal area shall be protected from any washout or erosion of wastes or covering material, and from inundation, which could occur as a result of floods having a predicted frequency of once in 100 years.
5. Storm water runoff from the facility shall be discharged in accordance with Monitoring and Reporting Program No. R5-2003-0142 and applicable storm water regulations.

**C. CLOSURE SPECIFICATIONS**

**Landfill Cover**

1. The Discharger shall comply with this section (C. Closure Specifications) and the “Closure and Post-Closure Specifications” in Section IX, Standard Provisions and Reporting Requirements (April 2000), as applicable to post-closure maintenance and monitoring.
2. The cover grade shall not be less than three percent in any area.

3. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be protected from erosion, or shall be maintained to prevent such erosion (see Section 21090(b)(2), Title 27).
4. The final cover shall be designed, graded, constructed and maintained to prevent to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping.
5. The landfill cover shall be graded and maintained to promote lateral runoff of precipitation and to prevent ponding.
6. All final cover slopes shall be designed and constructed to withstand a maximum probable earthquake.
7. The erosion-resistant layer shall be maintained with native or other suitable vegetation so as to provide effective erosion resistance. Vegetative cover shall be:
  - a. Resistant to foreseeable adverse environmental factors (e.g., climate, disease, and pests);
  - b. Tolerant of the vegetative layer's soil conditions (e.g., the presence of landfill gas);
  - c. Rapidly of germinating and have a high percentage of surface coverage;
  - d. Sufficiently persistent and self-propagating to prevent surface erosion; and
  - e. Compatible and harmonize with the proposed post-closure land use.
8. The closed landfill shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.
9. The Discharger may propose changes to the cover design after construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed cover system results in the protection of water quality equal to or greater than the design prescribed by this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design may need to be approved by the Regional Board.

### **Protection From Storm Events**

10. Precipitation and drainage control systems shall be operated to convey peak flows from a 100-year, 24-hour storm event.
11. Annually, prior to the anticipated rainfall period, all necessary storm water controls, including runoff diversion channels, shall be in place to prevent:

- a. Erosion of the landfill cover,
- b. Sedimentation and clogging of storm drains, and
- c. Flooding of the site.

**D. FACILITY SPECIFICATIONS**

1. The Discharger shall immediately notify the Regional Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
2. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements. All storm water controls, including drainage facilities, shall be maintained so that they function effectively during precipitation events.
3. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

**E. MONITORING SPECIFICATIONS**

1. The Discharger shall conduct groundwater and surface water monitoring, as specified in Monitoring and Reporting Program (MRP) No. R5-2003-0142. Groundwater monitoring shall include background monitoring and corrective action monitoring. Background monitoring shall be conducted for the purpose of establishing concentration limits as part of the Water Quality Protection Standard per Section 20400(a) of Title 27. Corrective action monitoring shall be conducted for the purpose of assessing the nature and extent of the release (Section 20425(a)(2)), designing corrective action measures (Section 20425(a)(2)), and for assessing the progress of corrective action measures (Section 20430(d)).
2. The Discharger shall provide Regional Board staff a minimum of **one-week** notification prior to commencing any field activities related to the installation, non-routine repair, or abandonment of monitoring devices. The Discharger shall also provide Regional Board staff with a sampling schedule at least 48 hours prior to initiation of each detection, evaluation, or corrective action monitoring event conducted pursuant to MRP No. R5-2003-0142.

3. The Discharger shall comply with the Water Quality Protection Standard as specified in MRP No. R5-2003-0142 and the Standard Provisions.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed concentration limits established in accordance with MRP No. R5-2003-0142.
5. The Discharger shall have a Sampling and Analysis Plan (SAP) which includes the following:
  - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures; Sample quality assurance/quality control (QA/QC) procedures; and
  - d. Chain of Custody control.

The SAP shall further comply with Specifications E.6 through E.14 herein.

6. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.
7. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) *Methods for the Analysis of Organics in Water and Wastewater* (USEPA 600 Series), (2) *Test Methods for Evaluating Solid Waste* (SW-846, latest edition), and (3) *Methods for Chemical Analysis of Water and Wastes* (USEPA 600/4-79-020), and in accordance with the approved SAP.
8. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
9. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., “trace” or “ND”) in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.

10. **“Trace” results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
11. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
12. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent’s actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
13. **Unknown chromatographic** peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
14. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.

## **MONITORING DATA ANALYSIS**

### **Background Monitoring**

15. For each monitoring parameter and COC, the Discharger shall develop and implement data analysis methods for monitoring of groundwater and surface water, as specified in Monitoring Specification 1. The method (or methods) used shall be as specified in Section 20415 (e)(8), and shall be consistent with the performance standards specified in Section 20415(e)(9) and sampling standards specified in Section 20415(e)(12). The monitoring data analysis methods shall be documented in a certified technical report prepared in accordance with Section 20415(e)(7) of Title 27 and submitted to this Regional Board in accordance with Provision 9 of these WDRs.
16. In accordance with Section 20415(e)(10), the discharger shall determine the background value for each COC and Monitoring Parameter specified in the WDRs for each media (i.e. ground water and surface water), as follows:
  - a. By Reference to Historical Data — a procedure for determining a background value for each constituent or parameter that does not display appreciable variation; or
  - b. By Using a Formula/Procedure — 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 data analysis method for that constituent or parameter.

Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The data analysis methods for background monitoring shall be documented in the technical report required under Monitoring Specification E.15 herein.

### **Corrective Action Monitoring**

#### Statistical Method

17. For naturally-occurring constituents for which at least 10% of the data from background samples equal or exceed their respective MDL, the Discharger shall use one of the following statistical data analysis methods in corrective action monitoring for assessing the nature of the release:
  - a. One of the allowable statistical data analysis methods described in Section 20415(e)(8);
  - b. An alternative statistical method, provided that such method meets the performance standards of Section 20415(e)(9) and is approved by the Executive Officer.

The Discharger may amend or revise the statistical procedure used for data analysis or propose another procedure in lieu of the current procedure in accordance with Section 20415(e)(8)(e). Any proposed changes to the alternative data analysis procedure subsequent to the adoption of these WDRs shall be submitted for review and approval by the Executive Officer. The scope of any changes may include the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or down gradient sample shall be reported and flagged for easy reference by Regional Board staff.

18. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Section 20415(e)(7) of Title 27 that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Section 20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or down gradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

#### Non-Statistical Method

19. The Discharger shall use a non-statistical test method (per Section 20415(e)(8)) in corrective action monitoring for assessing the nature of the release where it is impractical to conduct a statistical analysis (i.e. VOCs and certain dissolved metals, where less than 10% of the data from background samples equal or exceed their respective MDL). Each qualifying constituent at a monitoring point shall be determined based on either:
  - a. The data from a single sample for that constituent, taken during that reporting period from that monitoring point; or
  - b. The data from the sample which contains the largest number of qualifying constituents, where several independent samples have been analyzed for that constituent at a given monitoring point.

The sampling protocol to be used with this method shall satisfy the sampling performance standards of 20415(e)(12)(A). The technical report required under Monitoring Specification E.15 shall include this demonstration.

20. The specified non-statistical method shall, at a minimum, include the following criteria (or triggers) for determining whether a new constituent of the release is tentatively-indicated:
  - a. The data contains one qualifying VOC or other non-naturally occurring COC that equals or exceeds its PQL; or
  - b. The data contains two or more qualifying VOCs and/or other non-naturally occurring COCs that equal or exceed their MDLs; or
  - c. The data contains one naturally occurring monitoring parameter or COC not generally present in background which equals or exceeds its PQL.
21. If a new constituent of the release is tentatively indicated by the non-statistical procedure, the Discharger shall implement a verification procedure consisting of two discreet retests, as follows:
  - a. If the same tentatively-indicated nonstatistical monitoring parameter or COC is detected above its MDL in either of the retest samples, it will be considered sufficient evidence that the constituent is present and is a component of the release.
  - b. If the same tentatively-indicated nonstatistical monitoring parameter or COC is not detected above its MDL in either of the retest samples, it will be assumed that the tentative indication of the constituent was a Type I error.

The scope of the laboratory analysis for the nonstatistical retest of monitoring parameters or COCs shall address only those constituents detected in the sample which initiated the retest. Therefore, the list of “qualifying constituents” for use in the retest shall consist of those constituents which provided the original indication at that monitoring point. If the retest meets either triggering condition in either of the two retest samples, the retest shall have validated the original indication.

22. Data analysis shall include an evaluation of water chemistry by appropriate methods (i.e. Menn-Kendall, ion balance, piper diagram, stiff diagram etc.) and trend analysis to monitor the progress of corrective action.

#### **F. REPORTING REQUIREMENTS**

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Regional Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the



nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

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

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
  - b. Date, time, and manner of sampling;
  - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
  - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
  - e. Calculation of results; and
  - f. Results of analyses, and the MDL and PQL for each analysis.
3. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.
  4. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
    - a. For each monitoring point and background monitoring point addressed by the report, a description of:
      - 1) The time of water level measurement;

- 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
  - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
  - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
  - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
  - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
  - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
  - f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall include:
    - 1) For the Unit:
      - a) Evidence of ponded water at any point on the facility (show affected area on map);
      - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
      - c) Evidence of erosion and/or of day-lighted refuse.
    - 2) Along the perimeter of the Unit:

- a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
  - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
  - c) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
  - b) Discoloration and turbidity - description of color, source, and size of affected area;
  - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
  - d) Evidence of water uses - presence of water-associated wildlife;
  - e) Flow rate; and
  - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.
5. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Board **within seven days**, containing at least the following information:
- a. A map showing the location(s) of seepage;
  - b. An estimate of the flow rate;
  - c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
  - d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and
  - e. Corrective measures underway or proposed, and corresponding time schedule.

6. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Board covering the reporting period of the previous monitoring year. This report shall contain:
  - a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot down gradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the reporting periods for the year shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Regional Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [§20420(h)], in that this facilitates periodic review by the Regional Board.
  - c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
  - d. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
  - e. An evaluation of the effectiveness of the leachate monitoring/control facilities.

**G. PROVISIONS:**

1. The Discharger shall maintain a copy of this Order and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2003-0142, which is attached to and made part of this order. A violation of the MRP is a violation of these waste discharge requirements.

3. The Discharger shall comply with the *Standard Provisions and Reporting Requirements* (Standard Provisions), dated April 2000, which are hereby incorporated into this Order. The Standard Provisions contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
4. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with Monitoring and Reporting Program No. R5-2003-0142, as required by Section 13750 through 13755 of the California Water Code.
5. The Discharger shall immediately notify the Regional Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste containment facilities or of precipitation and drainage control structures.
6. The Discharger shall maintain waste containment facilities, the landfill final cover, precipitation and drainage controls, monitoring wells, and shall continue to monitor ground water and surface waters per Monitoring and Reporting Program No. R5-2003-0142 throughout the post-closure maintenance period.
7. The post-closure maintenance period shall continue until the Regional Board verifies that remaining waste in the landfill will not threaten water quality.
8. The owners of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged wastes during the closure and post-closure maintenance period of the landfill and during subsequent use of the property for other purposes.
9. **On or before 31 December 2003**, the Discharger shall submit for approval by the Executive Officer a technical report which describes statistical and non-statistical data analysis methods proposed for background and corrective action monitoring, in accordance with Monitoring Specification E.15 herein and Section 20415(e)(7) of Title 27.
10. **On or before 31 December 2003**, the Discharger shall submit updated cost estimates for post-closure maintenance and monitoring as an amendment to the Final Closure and Post-Closure Maintenance Plan.

11. The Discharger shall develop and implement a Corrective Action Plan (CAP) and Engineering Feasibility Study for groundwater corrective action and monitoring which meets the requirements of Section 20430 of Title 27. The CAP shall include the following parts:
- a. An evaluation monitoring plan to assess the nature and extent of the release consistent with the MRP
  - b. An evaluation as to the source of the impact, transport mechanisms and migration pathways
  - c. An evaluation as to the effectiveness of landfill closure as a corrective action
  - d. A discussion of corrective action needs and options.
  - e. Proposed corrective action measures, as necessary:
    - Source control,
    - Adequate separation from groundwater
    - Groundwater cleanup
  - f. A monitoring plan to monitor the progress of corrective action measures consistent with the MRP
  - g. Cost estimates for implementing additional corrective action, including monitoring
  - h. An implementation schedule.

The CAP/EFS shall be submitted and implemented in phases consistent with the following schedule:

	<b>Item</b>	<b>Due Date</b>
<b>Phase I: Evaluation Monitoring</b>		
a.	Submit Item 11.a - work plan to delineate nature and extent of plume	20 November 2003
b.	Install and sample additional wells	31 May 2004
c.	Assess nature and extent of the release per MRP, submit report	15 July 2004
<b>Phase II: Corrective Action Measures</b>		
d.	Complete CAP and EFS (Items 11.b through 11.h) and submit as Amended Report of Waste Discharge	15 July 2004
e.	Install corrective action facilities and implement further corrective action per CAP.	15 July 2005
f.	Submit Corrective Action Monitoring and Progress Reports	Semiannually per MRP

12. All reports and transmittal letters shall be signed by persons identified below:
- a. For a corporation: by a principal executive officer of at least the level of senior vice-president.

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

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
13. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
14. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger’s violations of the Order.
15. The Discharger shall notify the Regional Board in writing of any proposed change in ownership or responsibility for construction or operation of the landfill. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity’s full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the

Regional Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.11 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Board.

16. The Discharger shall also notify the Regional Board of any proposed land use or closure plan changes. This notification shall be given 90 days prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these waste discharge requirements.
17. The Regional Board will review this Order periodically and will revise these requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 September 2003.

original signed by

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THOMAS R. PINKOS, Executive Officer

AMENDED

JDM:9/5/03



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0142

MONITORING AND REPORTING PROGRAM  
CITY OF LINCOLN  
LINCOLN LANDFILL  
A CLASS III LANDFILL  
POST-CLOSURE MAINTENANCE  
AND CORRECTIVE ACTION  
PLACER COUNTY

The Lincoln Landfill is a former municipal solid waste burn dump. The landfill ceased accepting wastes in 1976 and was closed in 1993 with a low permeability clay cover. The facility is an existing, inactive Class III landfill under Title 27, Section 20080(d). A Solid Waste Assessment Test (SWAT) exemption assessment conducted in 1989 showed the presence of low concentrations of certain volatile organic compounds (VOCs) and elevated concentrations of certain inorganic monitoring parameters in the groundwater down gradient of the landfill. Limited VOC-monitoring data gathered since the initial assessment indicates that the groundwater may no longer contain VOCs at detectable levels. Significantly elevated concentrations of inorganic constituents continue to be detected in the groundwater, however, including total dissolved solids (TDS) at about 2,200 mg/L and Chloride at about 220 mg/L. Background concentrations of these constituents average about 400 mg/L and 15 mg/L, respectively. There are currently six onsite and one offsite ground water monitoring wells. Monitoring results from the offsite well show that the plume of inorganic constituents extends offsite toward Auburn Ravine. The full extent of the plume has not yet been defined.

Pursuant to Section 20080(g) of Title 27, the Discharger shall maintain water quality monitoring systems for detection and corrective action monitoring, including background monitoring. Compliance with this MRP is ordered by Waste Discharge Requirements (WDRs) Order No. R5-2003-0142.

**A. SUMMARY OF MONITORING & REPORTING FREQUENCIES**

**Table A**

<b>Section</b>	<b>Reporting</b>	<b>Frequency</b>
B.	1. Semiannual Report	Semiannually
	2. Annual Summary Report	Annually
	3. Constituents of Concern Report	Every 5 years
C.	Water Quality Protection Standard Report	Update as necessary
	<b>Monitoring</b>	<b>Frequency</b>
D.	Leachate Monitoring	Quarterly
E.	Groundwater Monitoring:	
	1. Elevation and Gradient	Quarterly
	2. Background & Corrective Action Monitoring	Semiannually
	3. Constituents of Concern	Every 5 years

F.	Surface Water Monitoring:	
	1. Storm Water	Semiannually
	2. Corrective Action Monitoring	Semiannually
G.	Facility Monitoring:	
	1. Standard Observations	Semiannually
	2. Maintenance Inspections	Monthly
	3. Storm Water Control Inspections	Within 7 Days After Storm
	4. Site Winterization	Annual

## B. REPORTING

### 1. Semiannual Reports

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required under Order No. R5-2003-0142 and the Standard Provisions and Reporting Requirements (April 2000). Reports shall be submitted **semiannually**. Each semiannual monitoring report shall include the following information:

- a. A tabular summary of well information from the installation logs, including well name, top-of-casing elevation, total depth, depths/elevations of screened interval, and the soil type(s) over the screened interval.
- b. The results of groundwater elevation monitoring.
- c. Tabular summaries of corrective action monitoring data showing sampling dates, well, constituents, concentrations, concentration limit, and units. The data shall be presented so as to clearly show historical concentrations at each well. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period.
- d. Contaminant contour maps of representative corrective action monitoring data, showing the estimated extent of the contaminant plume.
- e. Plots, graphical summaries and a narrative discussion of the results of corrective action monitoring, as specified in Section E.3 herein.
- f. A compliance evaluation summary for the monitoring period.
- g. Field and laboratory tests sheets.
- h. An electronic copy of the data in a digital format acceptable to the Executive Officer.

The first semiannual monitoring report for each year shall include a copy of the Sampling and Analysis Plan (SAP) required under WDR Monitoring Specification E.5.

### 2. Annual Monitoring Summary Report

An Annual Monitoring Summary Report (Annual Report) shall also be prepared and submitted in accordance with this section of the MRP and Reporting Requirement F.6 of the WDRs. The report shall summarize the detection and corrective action monitoring results for the prior year and include a discussion of compliance with the WDRs and the Water Quality Protection Standard. The report shall contain both tabular

and graphical summaries of the prior year's monitoring data, including time series plots of historical monitoring data for each monitoring parameter/COC. For corrective action monitoring data, the report shall also include the following:

- a. A summary of the results of trend analysis performed on each constituent of the release during the prior year
- b. A summary of the results of water chemistry analysis of water quality data collected during the prior year, including illustrative graphs and plots (I.e. Stiff diagrams, Trilinear plots, etc).
- c. Contaminant contour maps for representative constituents (i.e. TDS and Chloride) constructed as part of semiannual reporting during the prior year and a discussion as to whether the size of the plume has increased, decreased, or remained the same since the previous monitoring year.

The Annual Report shall be included in the second semiannual report for each year.

Reports which do not comply with the above-required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. The Semi-annual and Annual Monitoring Summary Reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

Report	Reporting Period Ends	Date Report Due
Semiannual	30 June	<b>31 July</b>
Semiannual	31 December	<b>31 January</b>
Annual	31 December	<b>31 January</b>

**c. WATER QUALITY PROTECTION STANDARD (Section 20390)**

The Water Quality Protection Standard (WQPS) shall consist of all Constituents of Concern, Concentration Limits for each constituent of concern, Monitoring Points, Point of Compliance, and the Compliance Period.

**1. Constituents of Concern (Section 20395 of Title 27)**

The constituents of concern (COCs) for the landfill shall be as follows:

Constituents of Concern	Units	Test Method
Field Parameters:		See Attachment D
General Minerals:		See Attachment D
Inorganics (dissolved)	µg/L	See Attachment D
Volatile Organic Compounds	µg/L	USEPA Method 8260B
Semi-Volatile Organic Compounds	µg/L	USEPA Method 8270
Organophosphorus Pesticides	µg/L	USEPA Method 8141A
Chlorinated Herbicides	µg/L	USEPA Method 8151
Organochlorine Pesticides	µg/L	USEPA Method 8081A
Polychlorinated Biphenols (PCBs)	µg/L	USEPA Method 8082

**2. Concentration Limits (Section 20400)**

- a. For COCs for which at least 10% of the data from background samples equal or exceed their respective MDL, the Concentration limits shall be determined using one of the statistical procedures described in Section 20415(e)(8)(a-d) of Title 27 and Monitoring Specifications 17 and 18 of the WDRs, if appropriate for the data, or an alternative statistical method approved by the Executive Officer per Section 20415(e)(8)(e).
- b. For COCs for which less than 10% of the data from background samples equal or exceed their respective MDL (i.e. VOCs and certain dissolved inorganics), the concentration limit shall be non-detect.

The data analysis methods used for developing concentration limits shall be specified in the Section 20415(e)(7) technical report required under Provision 9 of the WDRs.

**3. Monitoring Points (Section 20405)**

The monitoring points for groundwater and surface water monitoring shall be as listed in Tables E.3 and F.1 herein. The monitoring points for groundwater corrective action monitoring shall be as listed in Table E.3 herein.

**4. Point of Compliance (Section 20405)**

The point of compliance (POC) for the water standard is a vertical surface located at the hydraulically down gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. The POC wells shall be MWs-1, 3, 4, 5 and any future shallow wells installed along the down gradient or side gradient perimeter of the landfill.

**5. Compliance Period (Section 20410)**

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

**D. LEACHATE MONITORING**

The Discharger shall monitor the landfill for leachate seeps as part of semiannual standard observations. Any leachate seeps observed during these inspections or at any other time shall be sampled and analyzed for the constituents of concern listed in Table C herein. Reporting shall be conducted in accordance with Reporting Requirement F.5 of the WDRs.

**E. GROUNDWATER MONITORING**

**1. Groundwater Elevation Monitoring (Section 20415(e)(13))**

The groundwater surface elevation (in feet and hundredths, MSL) in all wells and piezometers shall be measured on a **quarterly** basis. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters may be used to fulfill this requirement. Groundwater elevations for all upgradient and down gradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. The results of groundwater elevation monitoring shall be displayed on a water table contour map and/or groundwater flow net for the site and included in each monitoring report. The Discharger shall use the groundwater elevation monitoring data to determine the following:

1. The groundwater flow velocity
2. The gradient direction in the upper aquifer, and in any additional zone of saturation monitored pursuant to this MRP
3. Times of highest and lowest elevations of the water levels in the wells
4. Separation of groundwater from the lowest point of the unit

The results of these determinations shall be included in the semi-annual reports.

**2. Background Monitoring (Section 20415(b)(1)(A))**

The Discharger shall install and operate a sufficient number of Background Monitoring Points 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 Unit per Section 20415(b)(1)(A) of Title 27. The background monitoring points for groundwater monitoring shall be MWs-2 and 6, as shown in Attachment B: Site Map.

**3. Corrective Action Monitoring (Sections 20425 and 20430)**

The Discharger shall install and operate a groundwater corrective action monitoring system for the purpose of assessing the nature and extent of the release and monitoring the progress of corrective action. The corrective action monitoring points shall be as follows (see Attachment B: Site Map):

**Table E.3 – Corrective Action Monitoring Locations**

<b>Well</b>	<b>Location</b>	<b>Well Screen</b>
MWs-2, 6	Upgradient perimeter	Uppermost Aquifer
MWs-1, 4, 5	Down gradient perimeter	Uppermost Aquifer
MW-3	Side Gradient perimeter	Uppermost Aquifer
MW-7	Offsite, down gradient	Uppermost Aquifer

The corrective action monitoring locations shall also include future wells installed to delineate the nature and extent of the release and monitor the progress of corrective action.

The corrective action monitoring schedule shall be as follows:

**Table E.4 – Corrective Action Monitoring Schedule**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Approach</u>	<u>Data Analysis Method</u>
<b>Field Parameters</b>				
Specific Conductance	µMhos/cm	Semiannually		---
pH	pH units	Semiannually	---	---
Temperature	°C	Semiannually	---	---
Turbidity	NTU	Semiannually	---	---
<b>Monitoring Parameters</b>				
TDS	mg/L	Semiannually	Intrawell	Statistical, Graphical
Total Alkalinity	meq/L	Semiannually	Intrawell	Statistical, Graphical
Major Anions	mg/L	Semiannually	Intrawell	Statistical, Graphical
Major Cations	mg/L	Semiannually	Intrawell	Statistical, Graphical
VOCs (see Attachment C) <sup>1</sup>	µg/L	Semiannually	Intrawell	Non-Statistical
<b>Constituents of Concern</b> <sup>2</sup>		Every 5	Interwell &	Statistical & Non-
See Table C & Attachment D		years	Intrawell	Statistical

1. Semiannual monitoring for VOCs may be discontinued if not detected in groundwater during the Second Half 2003 and First Half 2004 semiannual monitoring events conducted under this Order. Five-year COC monitoring for VOCs is still required, however.
2. The first COC monitoring event shall be conducted in the First Half 2004. Subsequent five-year COC monitoring events may be limited to point of compliance wells.

A sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Collection and analysis of samples shall be in accordance with procedures set forth in the Sampling and Analysis Plan required under Monitoring Specification E.5 of the WDRs. Samples shall be analyzed for the above monitoring parameters in accordance with the methods and frequency specified in the above table.

Analysis of corrective action monitoring data shall, at a minimum, include the following:

- a. Evaluation of the Nature of the Release:
  - Statistical and/or non-statistical comparisons with background data to identify constituents
  - Water chemistry analysis by appropriate methods (i.e. ion balance, piper diagram, stiff diagram etc.).
  - Contaminant contour maps for representative constituents of the release.

- b. Evaluation of Effectiveness of Corrective Action
  - Trend analysis for each constituent using appropriate statistical and graphical methods (i.e.Menn-Kendall).
  - Contaminant contour maps for representative constituents of the release.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Monitoring Summary Report, as specified under Reporting B.2, above. The semiannual monitoring report shall also include a discussion of the progress of corrective action toward returning to compliance with the Water Quality Protection Standard, as specified in Section 20430(h) of Title 27.

**F. SURFACE WATER MONITORING (Section 20415(c))**

**1. Storm Water**

The discharger shall monitor storm water runoff from the site under the State Water Resources Control Board General Industrial Storm Water Permit (Water Quality Order No. 97-03-DW). The storm water monitoring locations shall be as follows (see Attachment B: Site Map):

**Table F.1: Monitoring Locations**

SW-1	Perimeter ditch - upstream	Background
SW-2	Perimeter ditch - downstream	Landfill Runoff

Storm water sampling at monitoring points SW-1 and SW-2 shall be conducted during or shortly after storm events when storm water is flowing in the storm water conveyances. If there is no discharge from the site during the monitoring period, or the Discharger is not able to obtain samples of the discharge, the Discharger shall state such facts and circumstances in the monitoring report.

**2. Surface Water – Corrective Action Monitoring**

The Discharger shall conduct surface water monitoring in Auburn Ravine for the purpose of monitoring any potential impacts resulting from hydraulic communication with groundwater. The monitoring locations shall be as follows (see Attachment B: Site Map):

AR-E	Auburn Ravine (upstream)	Background Monitoring
AR-W	Auburn Ravine (downstream)	Evaluation Monitoring

Surface water monitoring shall be conducted semiannually for the field and monitoring parameters specified in Table E.4, with the addition of Total Suspended Solids as a field parameter. Five-year COC monitoring shall not be required for surface water. If

monitoring indicates that surface water in Auburn Ravine has been impacted by the existing release to groundwater, the Discharger shall propose additional monitoring locations to delineate the extent of the impact and design corrective measures in accordance with Sections 20425 and 20430 of Title 27. As with groundwater monitoring, surface water monitoring may be discontinued for VOCs if not detected at either monitoring point (including background) after completion of two semiannual sampling events.

## **G. FACILITY MONITORING**

### Standard Observations & Ordinary Maintenance

1. Standard Observations shall be performed on a **semiannual** basis and shall include those elements identified in Reporting Requirement F.4.f of the WDRs. Standard Observations of receiving water shall include Auburn Ravine between monitoring locations AR-E and AR-W. Each monitoring report shall include a summary and certification of completion of all Standard Observations. Necessary repairs shall be completed within 30 days of each inspection. Field logs of these inspections and documentation of the repairs shall be included in each monitoring report. In accordance with the FCP, the Discharger shall conduct **monthly** inspections of the landfill to identify the need for maintenance and repairs.

### Storm Water Controls & Site Winterization

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

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility for the purpose of winterizing the site. The inspection shall identify any damage to the landfill cover, grade, precipitation and drainage controls, access roads and other landfill facilities. Any necessary construction, maintenance, or repairs to these facilities shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit a report describing the results of the winterization inspection and the repair measures implemented, including photographs of the problem and the repairs.



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

Ordered by: original signed by  
THOMAS R. PINKOS, Executive Officer

5 September 2003  
(Date)

Attachments  
JDM:9/5/03

## INFORMATION SHEET

ORDER NO. R5-2003-0142  
CITY OF LINCOLN  
LINCOLN LANDFILL  
PLACER COUNTY

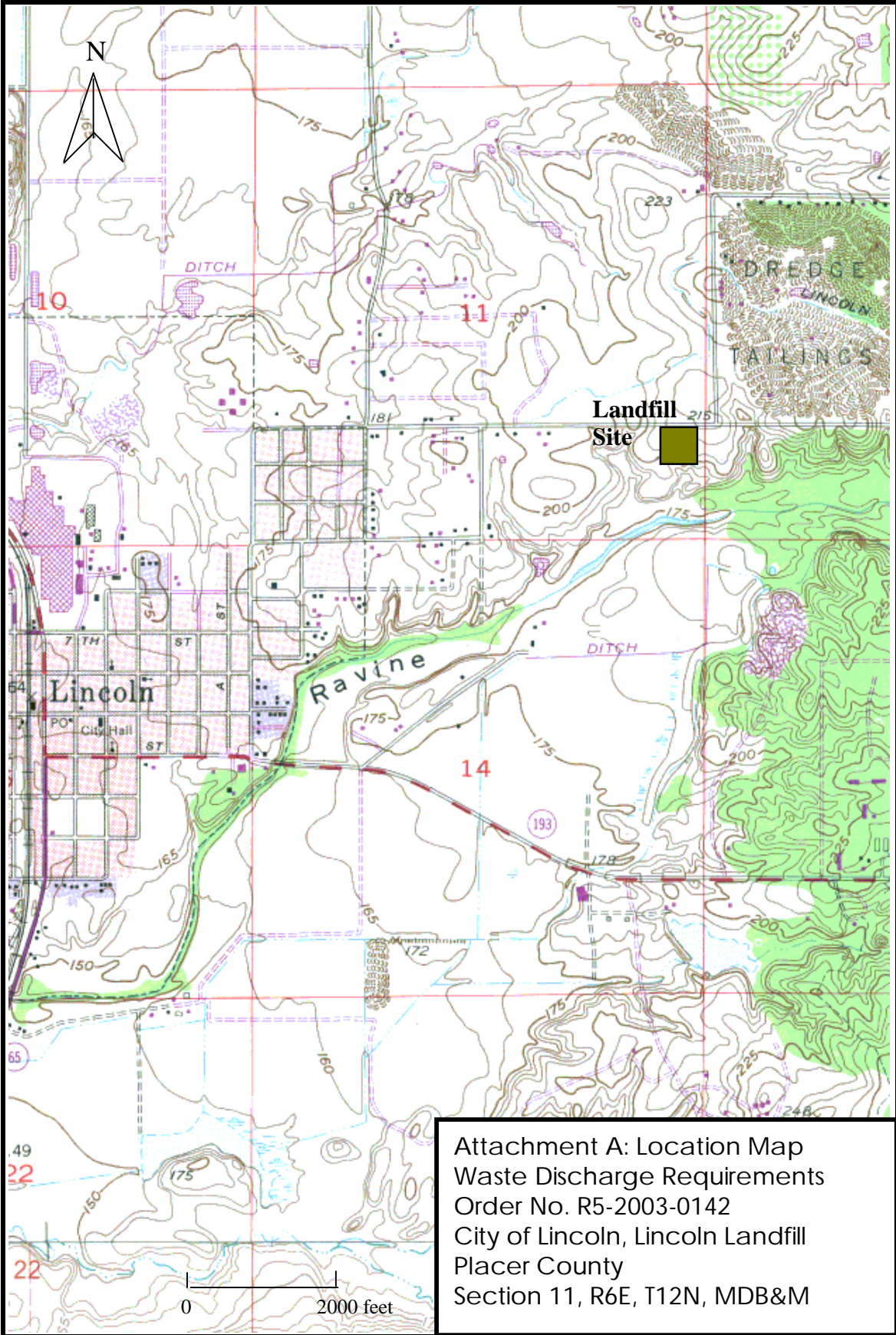
The Lincoln Landfill is a former municipal solid waste burn dump on a 6.3-acre site. The landfill is unlined and is a Class III landfill under Title 27. The landfill operated from 1952 through 1976 accepting on average 45 cubic yards of waste per day, including municipal solid waste, five days per week. Between 1973 and 1976 disposal was limited to lawn and garden trimmings. Waste was disposed of in unlined trenches and burned to reduce its volume. There were six trenches, ranging from 15 to 20 feet in depth and 2,000 to 5,900 cubic yards in capacity. The total landfill disposal capacity was about 22,000 cubic yards. The filled area comprises less than one-half of the site area. In 1993, the landfill was closed with a low permeability prescriptive clay cover in accordance with Title 27 regulations.

The uppermost aquifer occurs in the weathered granite soil between at depths ranging from 13 to 22 feet below ground surface (bgs). Deeper groundwater occurs in fractures in underlying granite bedrock. A site assessment conducted in 1989 showed the presence of low concentrations of certain volatile organic compounds (VOCs) and elevated concentrations of certain inorganic monitoring parameters in shallow groundwater down gradient of the landfill. Limited VOC-monitoring data gathered since the initial assessment indicates that the groundwater may no longer contain VOCs at detectable levels. Elevated concentrations of inorganic constituents continue to be detected in groundwater, however, including total dissolved solids (TDS, about 2,200 mg/L) and Chloride (about 220 mg/L). Background concentrations of these constituents average about 400 mg/L and 15 mg/L, respectively. There are currently six onsite ground water monitoring wells and one offsite ground water monitoring well. Monitoring results from the offsite well show that the plume of inorganic constituents extends offsite toward Auburn Ravine. The full extent of the plume has not yet been defined.

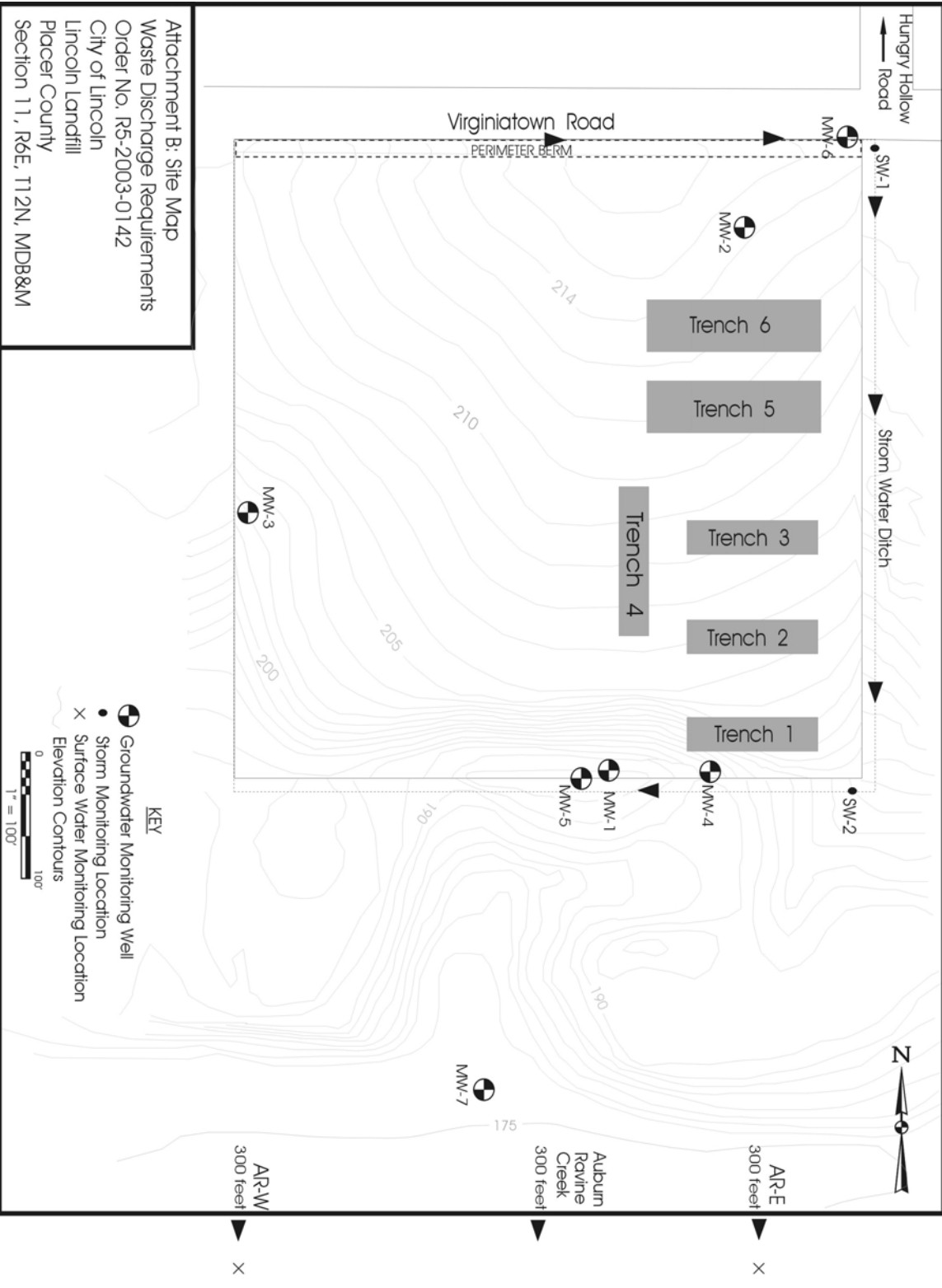
This Order includes a schedule requiring the Discharger to completed assessment of the release and submit a Corrective Action Plan and Engineering Feasibility Study for groundwater corrective action and monitoring. Surface drainage is to Auburn Ravine about 600 feet south of the landfill. Auburn Ravine is a tributary to the Sacramento River.

7 August 2003

JDM



Attachment A: Location Map  
Waste Discharge Requirements  
Order No. R5-2003-0142  
City of Lincoln, Lincoln Landfill  
Placer County  
Section 11, R6E, T12N, MDB&M



Attachment B: Site Map  
 Waste Discharge Requirements  
 Order No. R5-2003-0142  
 City of Lincoln  
 Lincoln Landfill  
 Placer County  
 Section 11, R6E, T12N, MDB&M

## ATTACHMENT C

### MONITORING PARAMETERS & APPROVED USEPA ANALYTICAL METHODS

<b>Field Parameters</b>	<b>USEPA Test Method</b>
pH	150.1
Specific conductance	2510
Temperature	2550
Turbidity	2130B
Total Suspended Solids (surface water only)	2540D
<b>General Minerals</b>	
Total Dissolved Solids (TDS)	2540C
Total Alkalinity	2310B
<u>Major Anions</u>	
Bicarbonate	2310B
Chloride	300 (anion scan)
Nitrate – Nitrogen	300 (anion scan)
Sulfates	300 (anion scan)
<u>Major Cations</u>	
Calcium	200.7 (trace method)
Magnesium	200.7 (trace method)
Potassium	200.7 (trace method)
Sodium	200.7 (trace method)

#### **Volatile Organic Compounds (VOCs) (by USEPA Method 8260B):**

Acetone  
Acetonitrile (Methyl cyanide)  
Acrolein  
Acrylonitrile  
Allyl chloride (3-Chloropropene)  
Benzene  
Bis(2-ethylhexyl) phthalate  
Bromochloromethane (Chlorobromomethane)  
Bromodichloromethane (Dibromochloromethane)  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Chloroprene  
Dibromochloromethane (Chlorodibromomethane)

**ATTACHMENT C (CON'T)**

1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Ethylbenzene  
Hexachlorobutadiene  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Isodrin  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl methacrylate  
Methyl tert-butyl ether (MTBE)  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)

**ATTACHMENT C (CON'T)**

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

## ATTACHMENT D

### CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

<b>Field Parameters</b>	<b>USEPA Test Method</b>
pH	150.1
Specific conductance	2510
Temperature	2550
Turbidity	2130B
Total Suspended Solids (surface water only)	2540D

<b>General Minerals</b>	<b>USEPA Test Method</b>
Total Dissolved Solids (TDS)	2540C
Total Alkalinity	2310B

<u>Major Anions</u>	
Bicarbonate	2310B
Chloride	300 (anion scan)
Nitrate – Nitrogen	300 (anion scan)
Sulfates	300 (anion scan)

<u>Major Cations</u>	
Calcium	200.7 (trace method)
Magnesium	200.7 (trace method)
Potassium	200.7 (trace method)
Sodium	200.7 (trace method)

<b>Dissolved Inorganics/Metals<sup>1</sup></b>	<b>USEPA Test Method</b>
Aluminum	200.7/6010
Antimony	200.7/6010
Arsenic	200.9/200.8
Barium	200.7/6010
Beryllium	200.7/6010
Cadmium	200.7/6010
Chromium	200.7/6010
Chromium VI <sup>+</sup>	7199/1636
Cobalt	200.7/6010
Copper	200.7/6010
Cyanide	335.4
Iron	200.7/6010
Lead	200.9/200.8
Manganese	200.7/6010
Mercury	200.9/1631
Molybdenum	200.7/6010
Nickel	200.9/200.8



**ATTACHMENT D (CON'T)**

Selenium	200.9/200.8
Silver	200.7/6010
Sulfide	4500-S
Thallium	200.7/6010
Tin	200.7/6010
Vanadium	200.7/6010
Zinc	200.7/6010

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1. All samples shall be field filtered prior to dissolved inorganics analysis.

**Volatile Organic Compounds (VOCs) (by USEPA Method 8260B):**

Acetone  
Acetonitrile (Methyl cyanide)  
Acrolein  
Acrylonitrile  
Allyl chloride (3-Chloropropene)  
Benzene  
Bis(2-ethylhexyl) phthalate  
Bromochloromethane (Chlorobromomethane)  
Bromodichloromethane (Dibromochloromethane)  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Chloroprene  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)

**ATTACHMENT D (CON'T)**

1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Ethylbenzene  
Hexachlorobutadiene  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Isodrin  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl methacrylate  
Methyl tert-butyl ether (MTBE)  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane, Methylchloroform  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

**ATTACHMENT D (CON'T)**

**Semivolatile Organic Compounds** (USEPA Method 8270 - base, neutral, & acid extractables):

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

**ATTACHMENT D (CON'T)**

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

**ATTACHMENT D (CON'T)**

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

**ATTACHMENT D (CON'T)**

Toxaphene  
1,2,4-Trichlorobenzene  
2,4,5-Trichlorophenol  
2,4,6-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**Organophosphorus Pesticides (USEPA Method 8141A):**

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Dimethoate  
Disulfoton  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate

**Chlorinated Herbicides (USEPA Method 8151):**

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

**Organochlorine Pesticides (USEPA Method 8081A)**

Aldrin  
BHCs  
Chlordane  
4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Dieldrin  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Heptachlor  
Heptachlor epoxide  
Lindane  
Methoxychlor  
Toxaphene

**ATTACHMENT D (CON'T)**

**Polychlorinated Biphenols (PCBs, USEPA Method 8082)**

PCB-1016

PCB-1221

PCB-1232

PCB-1242

PCB-1248

PCB-1254

PCB-1260