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California
Environmental
Protection
Agency

Integrated
Waste
Management
Board

8800 Cal Center Dr.
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CTO-076/0292

Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

Mr. Tayseer Mahmoud
California Environmental Protection Agency
Department of Toxic Substances Control
Office of Military Facilities
Southern California Operations
245 W. Broadway, Suite 350
Long Beach, California 90802-4444

Subject: Applicable or Relevant and Appropriate Requirements (ARARs) for
El Toro Marine Corps Air Station (MCAS), Operable Units (OUs)
2B and 2C, Orange County, California

Dear Mr. Mahmoud:

In response to your request, staff of the California Integrated Waste Management Board (Board) has reviewed the following documents:

- ▶ Cover letter dated August 7, 1996;
- ▶ Project Description and List of Remedial Alternatives;
- ▶ ARARs Q's and A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers; and
- ▶ MCAS El Toro Potential ARARs for OU-2B, Site 2.

As a result of review, Board staff have compiled the following comments listed below. Board staff comments have been divided into four categories : ARARs, Landfill Gas Monitoring, Landfill Waste Consolidation, Waste Extent Delineation, and Postclosure Land Use.

ARARs

Based on a review of the available information, and previous site visits, it appears that the Sites 2 and 17 (OU-2B), and Sites 3 and 5 (OU-2C) meet the definition of solid waste disposal site pursuant to Public Resources Code Section 40122. Therefore, these sites are subject to the Minimum Standards for Solid Waste Handling and Disposal. A general description of these ARARs is provided below.

The Board has the following statutory and regulatory authority:

- ▶ Statutory authority: The Integrated Waste Management Act of 1989, as embodied in Public Resources Code (PRC) Section 40000 *et seq.*



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- ▶ Regulatory authority: Title 14, California Code of Regulations (14 CCR), Division 7 California Integrated Waste Management Board.

Pursuant to PRC Sections 43021 and 43509, the Board has adopted regulations that include substantive standards for the design, operation, maintenance, closure, and ultimate reuse of solid waste disposal sites. These regulations are primarily contained in the 14 CCR, Division 7, Chapter 3 Minimum Standards for Solid Waste Handling and Disposal, Articles 7.1-7.8 Disposal Site Standards.

The enclosed tables provide 14 CCR ARARs for closure, postclosure maintenance, consolidation and ultimate postclosure land use of solid waste disposal sites. These ARARs are being submitted pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 (d) and the National Contingency Plan.

In addition to the tables, we have included a copy of Board's Local Enforcement Agency Advisory discussing the subject of clean closure which may be used as a guidance document for consolidation or removal activities.

Landfill Gas Monitoring

As previously indicated during Remedial Investigation (RI) report review (Board letter of June 3, 1996), only a limited landfill gas investigation had been conducted (this applies to all four sites). The results of this preliminary investigation indicate that the sites listed above may have low gas generation potential. However, because of a very limited extent of the landfill gas survey conducted as a part of the RI, there is not enough evidence to exempt these sites from landfill gas monitoring requirements. Thus, either a Title 14 California Code of Regulations (14 CCR) landfill gas monitoring network must be established for each of the sites or an in depth landfill gas generation potential survey must be conducted to obtain a formal exemption from landfill gas monitoring requirements.

To conduct an adequate landfill gas survey and possibly obtain an exemption from the landfill gas monitoring and control requirements of 14 CCR, the following elements must be included: internal static pressure measurements, sampling for landfill gas in the interior of the disposal area, and analyzing for natural and trace gases. We have provided general guidance on how to characterize landfill decomposition gases (see attachment "Landfill Gas Investigation Procedures"). Alternative investigation procedures may be proposed.

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Landfill Waste Consolidation

As it has been mentioned during the subsequent meetings, a partial waste excavation and relocation are being considered for OU-2B Site 2. This alternative should be included in the list of closure options for this site. As it has been previously indicated, the attached tables address waste consolidation under 14 CCR requirements.

Waste Extent Delineation

Before any design for final cover may be submitted, a field exploration program should be implemented in order to minimize the actual closure area. Such program can be coordinated with the landfill gas survey in order to minimize any associated expenses.

The extent of the waste should be established through exploratory trenches and borings at frequencies sufficient to precisely delineate the actual extent of the waste area. Such determination will help minimize the costs related to final cover installation and postclosure maintenance and maximize the area of native ground surrounding the landfill for purpose of postclosure land development. Additionally, by establishing the waste extent, a more effective landfill gas monitoring system can be constructed.

Because the interface between the refuse fill and native ground usually experiences the most extensive effects of landfill differential settlement (final cover cracking), knowledge of its location may help optimize postclosure monitoring and pinpoint future problem areas.

Postclosure Land Use

It is Board staff's understanding that institutional controls and land use restrictions will be implemented for these solid waste disposal sites. If there is a change in the land use, staff must be notified by the site owner pursuant to California Code of Regulations, Title 14, Section 17796. This requirement is not a land use restriction, it is set forth to ensure that development on solid waste disposal sites is conducted in manner that will ensure the protection of public health and safety and the environment.

Mr. Tayseer Mahmoud
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Should you have any questions regarding this matter, please call me at
(916) 255-1195.

Sincerely,



Peter M. Janicki
Closure and Remediation South
Permitting and Enforcement Division

Enclosures: "Landfill Gas Investigation Procedures" (one page)

Table, "State ARARs for Solid Waste Disposal Site Closure and
Postclosure Maintenance" (two pages)

Table, "State ARARs for Solid Waste Disposal Site Excavation
and Consolidation" (four pages)

LEA Advisory, "Clean Closure" (three pages)

Landfill Gas Investigation Procedures

To obtain a representative sample of the landfill gas, approximately five samples should be collected per ten acres of disposal site. Characterization wells should be spaced evenly or in hot spots as determined by a surface emissions screening. Wells should be sealed at least six feet from the bottom of the landfill cover to prevent air intrusion and extend to 75 percent of the depth of the waste or to the ground water, whichever is less. For shallow landfills (15 feet or less), the well should be screened the entire length below the seal. Screw joints should be used to prevent sample contamination. The annular space should be back filled with pea gravel or coarse sand which will allow unhindered gas flow without plugging the probe screen slots. The well head should be equipped with appropriate valve and fittings to seal the well while not in use, to perform static pressure tests, and to attach pump and sampling equipment. Fittings should be fusion welded or screwed with teflon tape to prevent leaking.

Prior to sampling a gas probe, the static pressure of the probe should be measured using a magnehelic pressure gage or other comparable device having a sensitivity of 0.2 inches of water column or less. If the static pressure of the probe is within ± 1.0 inches of water column from ambient pressure, gas instruments may be connected directly to the probe to determine combustible gas concentration after purging two probe volumes.

To sample the landfill gas, if the static pressure of the probe is greater than ± 1.0 inch of water column from ambient pressure, two well volumes should be purged, then samples drawn into a Tedlar bag and immediately tested for methane concentrations with a combustible gas indicator. An additional sample should be drawn into an evacuated stainless steel canister (Summa canister) and analyzed for natural gasses by ASTM method D-1945 and trace gases by EPA Method TO-14 with detection limits for vinyl chloride and benzene of no greater than 0.5 ppb. During the sampling event, the following ambient data should be documented: weather conditions within 72 hours of the sampling event, temperature, and barometric pressure. Sampling should be repeated quarterly for a period of one year.

To ensure that the appropriate samples are taken and sample integrity has been preserved, a monitoring and quality assurance plan should be developed and approved prior to sampling. All health and safety precautions should be addressed in the sampling plan and adhered to during sampling.

State ARARs for Solid Waste Disposal Site Closure and Postclosure Maintenance

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17766 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Emergency Response Plan (ERP): potential emergency conditions that may exceed the design of the site and could endanger the public health or environment must be anticipated. Response procedures for these conditions must be addressed in the RDRA plans.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17767 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Security at Closed Sites: all points of access to the site must be restricted, except permitted entry points. All monitoring, control, and recovery systems shall be protected from unauthorized access.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17773 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Cover: the design and construction of the final cover must meet specific prescriptive standards of 23 CCR 2581(a). These include minimum thickness and quality of the construction material. If the prescriptive standard is not feasible then an engineered alternative that meets the performance goals (i.e. limiting infiltration, controlling gas emissions, compatibility with waste) can be proposed.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17774 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Construction Quality Assurance (CQA): a CQA program must be designed and implemented. It must include specific parameters (and for some components specific testing methods) for each component of the final cover.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17776 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Grades: the final grades for the covered landfill must meet grading standards provided in 23 CCR 2581, they must be appropriate to control runoff and erosion.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17777 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Site Face: the design of the final site face must provide for the integrity of the final cover both under static and dynamic conditions.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17778 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Drainage: the design of the final cover must control runoff and runoff produced by a 100 year 24 hour storm event and must be prepared according to CQA requirements.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17779 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Slope Protection and Erosion Control: the design and construction of the slopes must protect the integrity of the final cover and minimize soil erosion.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17781 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Leachate Control During Closure and Post Closure: leachate must be monitored, collected, treated, and discarded appropriately.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760. The state does not intend that subsurface leachate monitoring and collecting systems need to be added to existing landfills unless leachate production and/or accumulation is evident.	For closing sites

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State ARARs for Solid Waste Disposal Site Closure and Postclosure Maintenance

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17783 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Gas Monitoring and Control During Closure and Post Closure: Landfill gases must be collected and analyzed; the concentration of combustible gas at the landfill boundary must be 5% or less, trace gases must not be at levels that cause adverse health or environmental impacts.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17788 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Post Closure Maintenance: the landfill must be maintained and monitored for no less than 30 years following closure.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17796 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Post Closure Land Use: Site Closure Design shall show one or more proposed uses of the closed site or show development that is compatible with open space. Changes in postclosure land use must be approved by the appropriate State agency prior to implementation.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43500	14 CCR 18262.3 Chapter 5, Article 3.4 Closure and Postclosure Maintenance Plans	Relevant and Appropriate	Provides the content requirements for closure plans for solid waste disposal sites.	Applies to solid waste disposal sites that received waste after January 1, 1988. Relevant and appropriate for closing sites that did not receive waste after January 1, 1988.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43500	14 CCR 18265.3 Chapter 5, Article 3.4 Closure and Postclosure Maintenance Plans	Relevant and Appropriate	Provides the content requirements for postclosure maintenance plans for solid waste disposal sites.	Applies to solid waste disposal sites that received waste after January 1, 1988. Relevant and appropriate for closing sites that did not receive waste after January 1, 1988.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43500	14 CCR 18275 Chapter 5, Article 3.4 Postclosure Maintenance Plans	Relevant and Appropriate	Provides the content requirements to obtain certification that the solid waste disposal sites has closed pursuant to state standards.	Applies to solid waste disposal sites that received waste after January 1, 1988. Relevant and appropriate for closing sites that did not receive waste after January 1, 1988.	For closing sites

14 CCR - California Code of Regulations, Title 14 ARAR - applicable or relevant and appropriate requirement ROD - Record of Decision RJA/RA - remedial design/remedial action

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State ARARs for Solid Waste Disposal Site Excavation and Consolidation

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17636 Chapter 3, Article 7.3 Disposal Site Records	Applicable	Weight/Volume Records: the weight or volume of waste accepted must be determined to an accuracy of $\pm 10\%$	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17637 Chapter 3, Article 7.3 Disposal Site Records	Applicable	Subsurface Records: the length and depth of any cut(s) made in natural terrain where fill will be placed and the depth to groundwater must be determined and documented.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17658 Chapter 3, Article 7.4 Disposal Site Improvements	Applicable	Site Security: the perimeter of the landfill must be secured either through barriers or topographic constraints to discourage unauthorized entry.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17659 Chapter 3, Article 7.4 Disposal Site Improvements	Applicable	Access Roads: landfill roads must be reasonably smooth to minimize dust and tracking of materials onto public roads.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17676 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Confined Unloading: Requires limiting unloading area, controlling windblown materials, and deposition at toe of fill.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17677 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Spreading and Compacting: Requires spreading and compacting of refuse in layers.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17678 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Slopes and Cuts: The slope of the working face shall be maintained at a ratio which will allow effective compaction of the wastes. The depth of cuts and slopes of trench sides shall not exceed specified horizontal to vertical ratios.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17680 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Stockpiling: Requires stockpiled cover material and unacceptable native materials to be placed so as not to cause problems or interference with site operations.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites

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State ARARs for Solid Waste Disposal Site Excavation and Consolidation

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17684 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Intermediate Cover: Requires cover on fill where no additional refuse will be deposited within 180 days	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17686 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Scavenging: Scavenging is prohibited.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17687 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Salvaging Permitted: Salvaging is permitted in a planned and controlled manner.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17688 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Volume Reduction and Energy Recovery: Volume reduction and energy recovery are permitted in planned and controlled manners.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17689 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Processing Area: Processing area shall be confined to greatest degree practicable.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17690 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Storage of Salvage: Salvage material must be safely isolated for storage.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17691 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Removal: Storage time for salvage materials shall be limited to a safe duration.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17692 Chapter 3, Article 7.5 Disposal Site Operations	Applicable	Non-Salvageable Items: Items capable of impairing public health shall not be salvaged without approval by the agency.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites

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State ARARs for Solid Waste Disposal Site Excavation and Consolidation

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17701 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Nuisance Control. Each site shall be operated and maintained so as not to create a public nuisance.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17704 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Leachate Control. The operator shall take adequate steps to monitor, collect, treat, and effectively dispose of leachates.	The state does not intend that subsurface leachate monitoring and collection systems need to be installed at existing sites unless there is evidence of leachate production and/or accumulation. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17705 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Gas Control. Landfill gas control may be required based on the monitoring results.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17706 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Dust Control. The operator shall take adequate measures to minimize the creation of dust.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17707 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Vector and Bird Control. The operator shall take adequate measures to control or prevent the propagation, harborage, or attraction of flies, rodents, or other vectors, and to minimize bird problems.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17708 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Drainage And Erosion Control. Adequate drainage shall be provided. Effects of erosion shall be promptly repaired and steps taken to prevent further occurrence.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17709 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Contact with Water. No solid waste shall be deposited in direct contact with surface water.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40302, 43020, 43021 and 43030	14 CCR 17710 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Grading of Fill Surface. Covered surfaces of the disposal area shall be graded to promote run-off and prevent ponding, accounting for future settlement.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites

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State ARARs for Solid Waste Disposal Site Excavation and Consolidation

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17711 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Litter Control: Litter and loose materials shall be routinely collected and disposed of properly.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17713 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Odor Control: The disposal site shall not be a source of odor nuisances.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17741 Chapter 3, Article 7.6 Disposal Site Controls	Applicable	Burning Wastes: Burning wastes shall be extinguished.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation and excavation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 18012 Chapter 5, Article 3.2 Reports of Facility Information	Relevant and Appropriate	Report of Disposal Site Information: The planning and procedural requirements necessary to assure that solid waste is handled and disposed in manners that protect public health and safety and the environment must be conducted.	Applies to operating solid waste disposal sites as defined by Public Resources Code Section 40122	For consolidation sites

14 CCR - California Code of Regulations, Title 14 ARAR - applicable or relevant and appropriate requirement ROD - Record of Decision RTRCA - remedial design/remedial action

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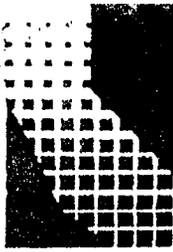
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INTEGRATED
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BOARD

No. 16 September 26, 1994

CLEAN CLOSURE

To All Local Enforcement Agencies

What is "Clean Closure"?

Clean closure of a solid waste disposal site refers to the complete removal of all waste and waste residuals, including contaminated soils. A clean closure is generally defined as being successful when waste materials and residuals are removed to a point where remaining contaminant concentrations are at or below background levels or clean up levels established by the relevant regulatory agencies. Clean closure is an alternative to more conventional closure methods (closure with waste in place) described in Title 14, California Code of Regulations (14 CCR), Division 7, Chapter 3, Article 7.8, and 23 CCR, Division 3, Chapter 15, Article 8. Clean closure may also be considered a remedial action or a step in a remedial action in some cases.

The California Integrated Waste Management Board (Board) has not adopted regulations specifically concerning clean closure. However, the Board's Closure and Remediation Branch has developed a set of guidelines for Board and Local Enforcement Agency (LEA) staff to follow when overseeing a clean closure. The following guidelines should not be construed as regulations. These guidelines, however, are consistent with existing law and regulations and are intended to ensure that public health and safety and the environment are protected from pollution due to the disposal of solid waste. These guidelines are also intended to provide a basis to allow Board and LEA staff of varying background and expertise to deal with clean closure issues in a consistent manner.

What Sites are Candidates for Clean Closure?

Clean closure may be an appropriate alternative for permitted, illegal, or abandoned solid waste disposal sites. Clean closure may also be an appropriate action for sites which closed prior to the current closure regulations, but which are facing a change in land use which may threaten the integrity of the closed site or pose a threat to public health and safety and the environment. Also, clean closure may be an appropriate part of a remedial action for previously closed sites which have developed environmental problems. Sites that generally lend themselves to clean closure include, but are not limited to:

- Small landfills and burn dumps;
- Non-hazardous woodwaste disposal sites;
- Solid and liquid waste treatment and/or processing units; and
- Sites where the cost of clean closure would be less than or equal to the costs of long term monitoring and postclosure maintenance of the site.

What are the Benefits of Clean Closure?

A properly performed clean closure ensures that waste materials and residuals are removed and disposed of in a safe and environmentally sound manner. In addition, clean closing a disposal site can create several advantages for an owner/operator. If done properly, the clean closure of an entire

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Advisory notes are designed to guide and assist Local Enforcement Agencies and are not intended to supersede statute or regulation. All Local Enforcement Agency (LEA) representatives are encouraged to contact the LEA Branch at (916) 255-2287 to address a specific topic.

waste management unit (e.g., a landfill cell or contiguous group of cells) would eliminate the need for the following for that unit: (1) 30 years or more of postclosure maintenance; (2) potential future corrective actions; and (3) Board and LEA inspections of the site. While the clean closure of an illegal disposal site eliminates the necessity for LEA and Board staff inspections, in some areas, particularly rural areas where the use of such sites by local residents has become habitual, continued or even increased inspections may be needed temporarily to prevent reactivation of the illegal disposal site. By clean closing, an owner/operator may also increase the possible postclosure land uses for the site. Furthermore, clean closure plans are typically less involved than conventional closure plans. However, the owner/operator will have to evaluate the potential costs and benefits of clean closure versus those of a conventional closure on a site-by-site basis to determine the viability of this option.

What Does the Clean Closure Process Involve?

The clean closure of a solid waste disposal site is a multiple step process. The steps may include, but are not limited to:

1. Site characterization;
2. Clean closure plan preparation;
3. Review and approval;
4. The actual clean closure; and
5. Verification and approval of the clean closure.

Who Evaluates Clean Closure Proposals?

Adequate advance notification of the appropriate regulatory agencies (Board, Regional Water Quality Control Board [RWQCB], LEA, and in some cases the Air Pollution Control District [APCD] and/or Department of Toxic Substances Control [DTSC] or other agencies as necessary) is necessary to allow review and approval of any proposals as well as observation of the site prior to, during, and after clean closure to verify that the site has been properly clean closed. For clean closures of permitted solid waste disposal sites and those which are subject to 14 CCR, Division 7, Chapter 5, Article 3.4, the review and approval process for clean closure plans is the same as that for conventional closure plans and is described in 14 CCR, Division 7, Chapter 5, Article 3.4. For other sites, the position of coordinating agency for the review and the timeline for the submittal and review of documents by the various agencies should be agreed upon by the agencies at the beginning of each project. The timely submittal of appropriate documentation (e.g., site characterization studies or clean closure plans) allows the approving agencies an opportunity to review and comment on the proposed clean closure prior to the actual clean closure of the site. Failure to involve all of the regulatory agencies early in the clean closure process may lead to lack of final approval of the clean closure of the site and the application of the regulatory requirements described below.

The Board (Closure and Remediation Branch), RWQCB, and LEA must each make a final determination that a solid waste disposal site has been properly clean closed. The determination that a site has been successfully clean closed implies that the potential threats to public health and safety and the environment due to the disposal of solid waste at the site have been mitigated by the clean closure. An owner/operator must provide to these agencies an adequate characterization of the site

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and satisfactory evidence that all waste and waste residuals were removed and properly disposed of. If these agencies determine a clean closure was not properly completed, 14 CCR, Division 7, Chapter 3, Article 7.8, and 23 CCR, Division 3, Chapter 15, may apply to the site. If the site was operating on or after January 1, 1988, 14 CCR Division 7, Chapter 5, Articles 3.4 and 3.5 will most likely also apply.

What Information Should be Provided in Clean Closure Proposals?

The minimum components of a clean closure plan should include, but not be limited to:

- Site characterization;
- Excavation and material management;
- Confirmation of waste and degraded material removal; and
- Postclosure maintenance and land use.

The plan should be prepared by a registered civil engineer, a certified engineering geologist, or other qualified person depending on the complexity of the site. The owner /operator should submit all information regarding clean closure proposals, including clean closure plans, to all of the appropriate regulatory agencies.

SITE CHARACTERIZATION

The site characterization phase of the clean closure process is probably the most critical phase as it will determine the suitability of the site for clean closure. A complete site characterization will define the extent and character of the wastes present and the levels and extent of any contamination due to the disposal of waste at the site. A complete site characterization may prevent unplanned for and expensive surprises after the actual clean closure process has been initiated. Depending upon the complexity of the site, it may be necessary or advisable to involve the regulatory agencies prior to or during the site characterization process to ensure that an adequate characterization is performed.

- For sites with known or suspected environmental problems, site characterization may occur under an enforcement order by one or more regulatory agencies who may require submittal of a workplan prior to the site characterization.
- For complicated sites, it may be beneficial to submit the results of the site characterization study to the regulatory agencies for review prior to development of the clean closure plan rather than as part of the clean closure plan.
- For relatively uncomplicated sites, it may be adequate to submit the results of the site characterization with the clean closure plan for review.

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The owner/operator should supply the following information regarding the site:

- Name and legal description of the site.
- Description of the historical development of the site.
- Name of legal owner/operator, including title, address, and telephone number.
- Map showing the assessor's parcel number, site plot plan, and parcel map including: legal boundaries of the site and adjacent land use, location of existing and proposed footprint of refuse/waste, location of all structures within a 1000-foot radius of the site, including all existing and proposed (if any) environmental monitoring, collection, and control systems.
- A description of all refuse/waste materials encountered at the site including how the waste was generated and the method of disposal used. Provide type of waste, volume, and dimensions of each disposal area at the site. Include any chemical characterization of the waste if available or if requested by the regulatory agencies.
- If burning of waste occurred at the site, a chemical characterization of the ash.
- Sampling results identifying background levels of the constituents of concern.
- A description of the character and extent of any soil or ground water contamination discovered during the site characterization study.
- A description of the geology and soils at the site.
- A description of the occurrence of surface water on and adjacent to the site and an estimate of the depth to ground water at the site.
- A description of all existing and proposed environmental monitoring, collection, and control systems for the site as required by the regulatory agencies.
- Information on the occurrence and character of ground water as required by the RWQCB. This information may include but not be limited to:

A description of the occurrence and character of ground water on and adjacent to the site.

A detailed geologic map of the site with cross sections showing the relationships between the refuse/waste and geologic units and ground water levels.

A conceptual hydrogeologic model for the site.

EXCAVATION AND MATERIAL MANAGEMENT

Excavation and removal of solid waste may be considered a project under the California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA). An environmental document or appropriate exemption under CEQA or NEPA may have to be secured and submitted as part of the clean closure plan prior to approval. All applicable federal, state, and local permits (e.g., grading permits, Fish & Game approvals, OSHA reviews, etc.) should be obtained prior to any excavation.

The owner/operator should supply the following information regarding the site and the proposed clean closure:

- Identification of health and safety issues regarding the proposed site activities and a detailed protocol indicating what measures will be taken to ensure protection of the public health and safety and the environment.
- A plan to evaluate and dispose of any hazardous waste encountered during the clean closure operations.
- An excavation plan.
- A description of the sequence of excavation operations including the proposed removal rate and timeframe for the excavation operation.
- A description of the protocol to be followed in monitoring, collecting and controlling leachate, ground and surface water and landfill gas.
- A description of the proposed sampling and testing protocols for verification of clean closure.
- A description of the transport and fate and/or final disposition of the waste materials and residuals that will be excavated from the site.
- A drainage and winterization plan (when applicable).
- Any mitigation measures as called for in any necessary CEQA or NEPA document.
- Financial assurance for the project as necessary.

CONFIRMATION OF REFUSE/WASTE AND DEGRADED MATERIAL REMOVAL

The following activities should be planned for and implemented:

- Observation and documentation of removal of refuse/waste.
- Documentation verifying the final disposition of all refuse/waste materials.
- Adequate sampling must be performed after excavation to verify the removal of all waste materials and residuals, including interpretation of the test results by a qualified professional.
- Prepare and submit a map with a letter certifying that the constituents of concern concentration levels in the target media are either at or below the clean up limits established for the project.
- Submit a report documenting the activities which have occurred and verifying completion of clean closure to the appropriate regulatory agencies.
- Indicate on the site deed and/or title that the project was completed and where it was located.
- If the constituents of concern clean up level has not been met and further excavation is deemed not practical, develop and implement a remedial action plan for the site.
- If the site cannot be clean closed then closure and postclosure maintenance plans should be developed and submitted for review and approval, prior to implementation.

POSTCLOSURE MAINTENANCE AND LAND USE

One of the advantages of clean closing a solid waste disposal site is that a postclosure maintenance plan should not be needed if the entire site has been successfully clean closed. A

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description of the proposed postclosure land use should include:

- The proposed postclosure land use for the site.
- If the clean closure was part of a remedial action, describe any postclosure maintenance activities needed to comply with the implementation of the remedial action plan.
- If the clean closure was not successful, a postclosure maintenance plan and a financial assurance mechanism for postclosure maintenance are needed and should be included with the verification report.

These guidelines are intended to provide useful direction for the clean closure of a variety of site types and site conditions. In some instances, certain portions of the information outlined above may not be applicable to a given site or the level of detail necessary may vary due to site conditions. However, it is necessary for all of the regulatory agencies involved to agree on what information is and is not necessary, and the level of detail required, to allow the owner/operator to prepare the necessary documents and to carry out a clean closure that can be approved by all of the agencies.

Additional Information

If you have any questions regarding clean closure, please contact the Closure and Remediation Branch staff person assigned to your jurisdiction for assistance.

Sincerely,



Douglas Okumura, Deputy Director
Permitting and Enforcement Division

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- (LEA Advisory # 1, Oct. 6, 1992. Asbestos Containing Waste Disposal)
 (LEA Advisory # 2, Feb. 17, 1993. 1992 Legislation Impacts Existing Waste Programs)
 (LEA Advisory # 3, June 10, 1993. Site Investigation Process for Investigating Closed, Illegal, and Abandoned Disposal Site's)
 (LEA Advisory # 4, Sept. 23, 1993. Permitting of Fuel Contaminated Soils Treatment/Processing Facilities)
 (LEA Advisory # 5, Dec. 15, 1993. Use of Non Hazardous Contaminated Soil as Daily Cover)
 (LEA Advisory # 6, Dec. 16, 1993. Aspergillus, Aspergillosis, and Composting Operations in California)
 (LEA Advisory # 7, Dec. 30, 1993. Subtitle D Questions and Answers)
 (LEA Advisory # 8, June 24, 1994. General Guidance for Implementing AB 1220 in the Regulation of Solid Waste Disposal Sites.
 REVISED)
 (LEA Advisory # 9, Feb. 10, 1994. Solid Waste Ranking System User Guide: Site Investigation Process (SIP) Part II)
 (LEA Advisory # 10, Mar. 17, 1994. Procedural Change in Approving Alternative Cover Demonstration Projects Using Geosynthetic Blankets)
 (LEA Advisory # 11, Mar. 24, 1994. Metallic Discards Management)
 (LEA Advisory # 12, Mar. 29, 1994. Permitting of Non-Traditional Facilities)
 (LEA Advisory # 13, May 17, 1994. Wood Waste Landfills)
 (LEA Advisory # 14, May 25, 1994. Revised Policy and Procedures for Maintaining the Inventory of Solid Waste Facilities Which Violate State Minimum Standards)
 (LEA Advisory # 15, June 8, 1994. Completion of Solid Waste Information System Inspection Reports for Disposal Sites and Transfer Stations)