REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION

Final Supplemental Environmental Impact Report

Volume II: Response to Comments and Appendices

SCH No. 1991033042

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Prepared for
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CHAPTER 6

COMMENTS AND RESPONSES

6.1 INTRODUCTION TO THE COMMENTS AND RESPONSES

After completion of a draft environmental impact report (Draft EIR), the California Environmental Quality Act (CEQA) requires the Lead Agency to consult with and obtain comments from public agencies that have legal jurisdiction with respect to the proposed project, and to provide the general public with opportunities to comment on the Draft EIR. CEQA also requires the Lead Agency to respond to significant environmental issues raised in the review and consultation process. The Lead Agency for the Redwood Landfill Solid Waste Facilities Permit Revision Subsequent EIR is the Marin County Environmental Health Services Division, acting as the Local Enforcement Agency (LEA).

The Redwood Landfill Solid Waste Facilities Permit Draft Subsequent Environmental Impact Report (DSEIR) (SCH# 1991033042) was released for public review and comment in July 2003. Marin County circulated the DSEIR for review by public agencies, interested parties, and organizations for a 90-day public comment period, extending the initially scheduled 45-day comment period an additional 45 days. The extended comment period closed October 14, 2003. During the comment period, the Planning Commission held a Public Hearing on July 28 to take public comment on the DSEIR; the Public Hearing was continued twice, to August 18, and September 22. The County received about 700 written and oral comments on the DSEIR.

This chapter contains all comments received during the comment period on the DSEIR, as well as responses to these comments. Section 6.2 presents a list of those who commented on the DSEIR. The list is divided into government agencies, organizations, and individuals.

Several issues were addressed by multiple commenters. "Master Responses," which consolidate information on these subjects to ensure a more comprehensive response, are presented in Section 6.3. Section 6.4 contains copies of all comment letters received and responses to the comments. Each comment letter is assigned a letter code, from A through OOO, and each comment is numbered in the margin of the comment letter. Responses to the comments follow the letter. The comments and responses are referenced using this alphanumeric system. For example the first comment from the first letter, from the State Clearinghouse, is designated A-1, as is the response to it. Testimony from the three public hearings is designated PPP and follows the comment letters.

6.2 LIST OF COMMENTERS

REDWOOD LANDFILL SWFP REVISIONS DSEIR
LIST OF COMMENTERS

Category	Letter Number	Company	Name
State Agencies	A	State Clearinghouse	
	B	Bay Area Air Quality Mgmt Dist	Barry Young, Principal A.Q. Engineer
	C	California Integrated Waste Mgmt Board	Diana Post, Specialist
	D	California Regional Water Quality Control Board	Alan Friedman, Water Control Engineer
	E	Caltrans District 4	Timothy Sable, District Chief
Federal Agency	F	FAA-Western Pacific Airports Div.	Barry Franklin, Env Plan Specialist
Local Agencies	G	Marin County EHS	Cynthia Barnard
Public Officials	H	City of Novato	Michael De Giorgio, Mayor
	I	County Planning Commissioner	Steve C. Thompson
	J	County Planning Commissioner	Steve C. Thompson
Interested Groups	K	Remy, Thomas, Moose & Manley, LLP (Project Sponsor Attorney)	James G. Moose
	L	Community Clean Water Institute	Michael Sandler, Program Coordinator
	M	League of Women Voters of Marin	Margaret Jones, President
	N	Marin Audubon Society	Barbara Salzman
	O	Marin Conservation League	Jana Haehl, President
	P	Marin Conservation League	Jana Haehl, President
	Q	No Wetlands Landfill Expansion Committee	Don Urban
	R	No Wetlands Landfill Expansion Committee	Don Urban
	S	No Wetlands Landfill Expansion Committee	Don Urban
	T	Northern CA Environmental Defense Center	Kimberly Burr, Attorney
	U	Northern CA Environmental Defense Center	Kimberly Burr, Attorney
	V	Northern California Recycling Assoc.	Heidi Melander, President
	W	Save the Bay	David Lewis, Executive Director
	X	Sierra Club Marin Group	Robert Wrubel, Co-Chair Conservation
	Y	Sustainable Novato	Harry J. Moore, CAO
	Z	WaterKeepers	David Yearsley, Petaluma Riverkeeper
	AA	WaterKeepers	Sejal Choksi, Program Attorney
Interested Individuals	BB		Nancy Andrews
	CC		Madelyn Baran
	DD		Dr. Rosario Carr-Casanova
	EE		Dr. Rosario Carr-Casanova
Interested	FF		Dr. Rosario Carr-Casanova

REDWOOD LANDFILL SWFP REVISIONS DSEIR
LIST OF COMMENTERS

Category	Letter Number	Company	Name
Individuals (cont.)			
	GG		Christopher Gilkerson
	HH		Christopher Gilkerson
	II		Robert Koch
	JJ		Robert Koch
	KK		Martin J. Lawler
	LL		Richard Levy, Ph.D.
	MM		Richard Levy, Ph.D.
	NN		Richard Levy, Ph.D.
	OO		Richard Levy, Ph.D.
	PP		Arlene & Edward Mulligan
	QQ		Cari Pace
	RR		Jamie Pike
	SS		Molly D. Roth
	TT		Molly D. Roth
	UU		Molly D. Roth
	VV		Claire Savona
	WW		Margaret Schaub
	XX		Robert T. Shaw, Jr.
	YY		Edward L. Spencer, MD
	ZZ		Edward L. Spencer, MD
	AAA		Nancy Spencer
	BBB		Don Urban
	CCC		Don Urban
	DDD		Don Urban
	EEE		Don Urban
	FFF		Jack Watson
	GGG		Jack Watson
	HHH		Jack Watson
	III		Leslie Decker Weber
	JJJ		George Whyte Jr.
	KKK		David M. Witter
	LLL		Lawrence S. Witter
	MMM		Leigh Ann Witter
	NNN		Leigh Ann Witter
	OOO		Catherine Yee

6.3 MASTER RESPONSES

6.3 MASTER RESPONSES

MASTER RESPONSE 1: REQUIRED FIVE-FOOT SEPARATION

As discussed in Impact 3.4.6 in the DSEIR, California Code of Regulations Title 27, §20240 states that a landfill must have a minimum separation of five feet between the underlying groundwater and the base of the landfill, unless an engineered alternative is accepted by the RWQCB. This requirement applies both to newer landfill units (i.e., those constructed after the regulations took effect), and to those that were operating, or had received all permits necessary for construction and operation, on or before November 27, 1984. These older landfill units, which include all of Redwood Landfill except for Area G, are defined as "existing" landfills in the regulations (§20080 (d)). Title 27 allows for an engineered alternative if the minimum five-foot separation between the landfill and the underlying groundwater is not possible or would be prohibitively expensive to provide, and if the alternative would be equally protective of the environment. The DSEIR analysis concludes, based on a review of the applicant's geotechnical background studies (Treadwell and Rollo, 2002), that the proposed perimeter LCRS design, in combination with the natural properties of the Bay Mud underlying the site, together meet the requirements of an engineered alternative to the five-foot separation requirement for the older portion of the landfill. (The design of Area G has previously received regulatory approval as a Class III waste unit, having been evaluated in the 1994 FEIR. The approved design for Area G includes an engineered alternative to the five-foot separation requirement. Because the applicant has now withdrawn their proposal to operate Area G as a Class II unit [see Master Response 6], no further analysis of Area G is required in this EIR.) Several commenters on the DSEIR expressed concern that Redwood Landfill has not achieved, and does not propose to achieve, a five-foot separation of refuse from groundwater (as described in the DSEIR, groundwater has in fact intruded into the lower portions of the landfill), that the proposed landfill design has not been shown to be an engineered alternative to the five-foot separation requirement, and that the project may compromise ground and surface water quality.

Considerable work has been performed by the applicant since 1989 to evaluate the hyrdrogeological conditions at the site, and to develop a plan for protecting groundwater and surface water quality while continuing to operate and expand the landfill. As discussed in the above-referenced section of the DSEIR, the applicant filed an exemption request (Geosyntec, 1998) with the RWQCB to enable continued operation of the landfill without the five-foot separation of refuse from groundwater, based on studies showing that the Bay Mud underlying the landfill prevents transmission of leachate into groundwater, and that the perimeter LCRS, when completed, would prevent build-up of leachate within the landfill, and prevent lateral migration of leachate beyond the landfill footprint. The applicant's position, therefore, is that the landfill can be operated in a manner that is equally protective of water quality, without maintaining the five-foot separation. In the 1995 WDRs, the RWQCB included construction of a leachate collection and removal system as described in the Redwood Landfill's 1992 Leachate Management Plan Report as one of the specifications (Specification B.8). However, in a 1999 letter to EHS, the RWQCB explained that the RWQCB considered the construction of an

independent leachate and removal system as described in the 1992 Leachate Management Plan that was approved in WDR Order 95-110 to be a corrective action and that it did "not constitute an engineered alternative to compliance with Subtitle D requirements" (Friedman, 1999). The RWQCB's comment on the five-foot separation issue (Comment D-8), restates the agency's position that the LCRS, as described in the DSEIR, is a corrective action to prevent lateral leachate seepage, and that this already-implemented LCRS design has not been approved as an engineered alternative to the five-foot separation requirement.

To provide an engineered alternative for the older portions of the landfill that is acceptable to the RWQCB and consistent with the requirements of CCR Title 27, §20080, the applicant needs to demonstrate that the five-foot separation between waste and underlying groundwater is not possible or prohibitively expensive to provide, and that the proposed alternative (i.e., the revised perimeter LCRS design, in conjunction with the properties of the native Bay Mud below the site) is equally protective of groundwater quality by preventing the migration of leachate offsite (both lateral and downward migration).

Redwood Landfill has maintained since the early 1990s, at least, that the five-foot separation requirement is infeasible to obtain due to the low elevation of the base of the landfill, much of which is below sea level, and the high water table in the area, which is tidally influenced. In order to achieve a five-foot separation between refuse and groundwater, it would be necessary either to excavate all emplaced waste, and build up the level of the base of the landfill several feet, or to install a subdrain system. A Subtitle D–compliant liner would have to be installed over the entire landfill area. Alternatively, the applicant could pump groundwater from beneath the landfill in an attempt to lower the water table and achieve the five-foot separation. The first alternative would involve removal and then replacement of about 14 million cubic yards of waste and cover material. This would be an extremely expensive undertaking that would likely cause numerous environmental impacts. The second alternative is technically infeasible, due to the extremely low porosity and permeability of the Bay Mud beneath the landfill.

A description of the proposed engineered alternative is provided in Section 2.5.3 (pg. 2-31) of the DSEIR. This Master Response provides additional information on the proposed engineered alternative, including new information provided by the applicant and actions taken by the RWQCB, and addresses various concerns raised in comments on the DSEIR.

PROPOSED ENGINEERED ALTERNATIVE

The proposed engineered alternative analyzed in the DSEIR consists of a perimeter leachate cutoff and collection system and the native Bay Mud underlying the site that would together protect against the migration of leachate laterally or vertically offsite (see Mitigation Measure 3.4.6 in the DSEIR). As described and analyzed in the DSEIR, the leachate collection and recovery system (LCRS) would include a gravel-filled trench that is lined with a collection pipe and graded to sumps (depressions or pits in the bottom of the trench). The trench would extend to the lower elevation of refuse placement and would be keyed into the Bay Mud approximately 1 to 3 feet (to approximately elevation –5.5 feet). The trench would provide a barrier to lateral

leachate migration by intercepting leachate before it can migrate offsite. This system was designed to maintain a hydraulic gradient along the perimeter of the site that would ensure that the preferential direction of flow, both of leachate from within the landfill and of groundwater from outside the landfill, is toward the LCRS trench. This gradient would be maintained with the use of sumps and pumps. Intercepted leachate would flow by gravity within the trench to the sumps and then would be pumped to storage facilities or to the leachate vaporator.

Since publication of the DSEIR, the applicant has worked with the County and with the RWQCB to address continuing concerns expressed by these two agencies and by several commenters regarding the effectiveness of the proposed LCRS design in protecting ground and surface water quality and in preventing the build-up of leachate within the refuse mass (see Impacts 3.4.7, 3.4.8, and 3.5.12). The applicant has now proposed modifying the LCRS design to include use of existing and future landfill gas extraction wells for simultaneous extraction of leachate from the interior of the landfill area. This modification to the LCRS is further discussed below in this master response and in Master Response 13.

With this revision to the LCRS design, the proposed engineered alternative to the five-foot separation requirement consists of the following elements:

- A perimeter leachate collection trench;
- Use of landfill gas wells for leachate extraction from the interior of the site;
- The low permeability of the Bay Mud underlying the site.

The primary issues to be considered for the proposed engineered alternative include the following:

- the permeability of the underlying Bay Mud and its ability to prevent leachate from migrating downward into the underlying geologic units and groundwater aquifer;
- the anticipated direction of leachate flow with consideration of the natural hydraulic gradient of the groundwater and the hydraulic gradient or gradients produced by pumping from the perimeter trench and landfill gas wells;
- settlement of Bay Mud during landfilling and after landfilling operations have ceased, and its effect on leachate extraction;
- The effectiveness of the LCRS in removing leachate from the landfill and preventing its lateral migration offsite.

The effectiveness of the LCRS is further discussed in Master Response 13, below. The following discussion addresses the issues related to the Bay Mud underlying the site.

PERMEABILITY OF BAY MUD

The Bay Mud is a fine-grained geologic unit of low permeability. Such units are generally referred to as aquitards (a geologic unit that retards the flow of groundwater to units above or

below it). As described in the Joint Technical Document (GeoSyntec, 1998), the underlying Bay Mud has relatively low permeability (less than 10^{-6} cm/s) and the thickness of the deposit ranges from 7 to 45 feet within the landfill's footprint. The applicant's studies of substrate conditions at the site indicate that the thickness and low permeability of the Bay Mud would prevent the downward migration of leachate into the underlying geologic units and their respective groundwater aquifers. As discussed in the DSEIR (e.g., p. 3.4-4), the Bay Mud contains intermittent lenses of sand and silty sand channel deposits. These discontinuous sand and silty zones have much higher hydraulic conductivity than the Bay Mud (MET and Sanifill, 1995). HLA completed an extensive field investigation program at the site in 1990 and all the significant channel deposits at the landfill are believed to have been identified (MET and Sanifill, 1995).

DIRECTION OF GROUNDWATER FLOW

Based on the hydrologic information presented in several reports prepared for the applicant by Harding Lawson Associates (HLA, 1990a and 1994), with the perimeter trench LCRS in place, the predominant direction of the groundwater gradient within the Bay Mud will be radial outward from the center of the landfill. Groundwater flow in the Bay Mud is upward toward the refuse in the center of the landfill and outward toward the LCRS trench system along the perimeter of the site.

The predominant direction of the groundwater gradient within the alluvial deposits underlying the Bay Mud is upward due to artesian conditions likely caused by the hydraulic head generated from the nearby mountains (e.g. Mt. Burdell). Groundwater monitoring wells located within the alluvial deposits show a piezometric head elevation ranging from +2 to +6 feet (HLA, 1992).

Leachate flowing towards the edge of the landfill through the refuse or along the Bay Mud/refuse interface would be intercepted by and collected in the perimeter drainage trench. As leachate is collected and removed through the LCRS, the preferential flow of the leachate for the entire site would be towards the perimeter trench (GeoSyntec, 1998). MET (1995a) has shown that groundwater outboard of the LCRS trench also has a preferential flow towards the LCRS rather than towards the adjacent waterway, since pumping would maintain leachate and groundwater in the trench at a lower elevation than the surrounding groundwater.

SETTLEMENT

Total settlement of the Bay Mud over the life of the landfill is estimated to vary from 6 to 9 feet around the perimeter of the landfill and 10 to 15 feet in the central portion (see Master Response 7). Settlement estimates based on the revised refuse placement and grading plans were not provided by the applicant, presumably because the proposed final height of the landfill is to remain the same. While the proposed steeper side slopes will cause the areas beneath the slopes to have a greater amount of settlement, settlement will likely be within the range predicted by HLA. Post-closure settlement of the Bay Mud is estimated to be approximately 0.5 to 1 foot around the perimeter of the landfill and 3 to 4 feet in the central portion of the landfill.

ROLE OF THE LCRS IN PREVENTING DOWNWARD LEACHATE MIGRATION

With the LCRS design described and evaluated in the DSEIR, the applicant maintained that leachate would flow towards the edge of the landfill through the refuse or along the Bay Mud/refuse interface to the LCRS. The proposed LCRS design included a gravel-filled trench keyed into the Bay Mud approximately 1 to 3 feet to Elevation –5.5 feet, mean sea level (msl). However, the results of settlement analyses described above indicate differential settlement up to nine feet may occur between the central portion and the perimeter of the landfill. Because of this differential in settlement, the Bay Mud/refuse boundary in the central portion of the landfill will be at a lower elevation than the LCRS and perimeter Bay Mud/refuse boundary. It is likely, therefore, that as the Bay Mud settles, there will be a permanent "pool" of leachate, up to 9.5 feet deep, above the Bay Mud/refuse interface, and below the elevation of the LCRS trench, and that this pool would be deeper in the middle of the landfill and shallower near the perimeter. The applicant's recent proposal to add leachate extraction from the interior of the landfill to the LCRS design would not substantially affect this pooling of leachate, as the applicant is proposing to maintain leachate at a level of +1 foot MSL within the interior of the landfill.

The applicant's geotechnical studies suggest, however, that environmental conditions would prevent the downward migration of leachate into the underlying native Bay Mud and offsite groundwater, even if it is unable to flow to the LCRS perimeter trench or interior extraction wells, for the following reasons:

1) The process of consolidation of the Bay Mud from the placement of the refuse loads generates an upward hydraulic gradient, as the water being squeezed out of the Bay Mud flows upward toward the Bay Mud/refuse boundary. (See Master Response 7 for additional information regarding consolidation).

2) The artesian condition of the alluvial deposits underlying the Bay Mud (described in HLA [1992]) acts as a hydraulic barrier to the overlying aqueous media.

3) The relatively impermeable Bay Mud deposit prevents leachate from flowing into the underlying soils and groundwater.

4) The perimeter trench and interior extraction wells will create cones of depression in the hydraulic gradient, ensuring that the flow of liquid within the landfill mass is toward the extraction wells and the perimeter trench.

CONCLUSION

Based on the forgoing analysis, the conclusion in Impact 3.4.6 in the DSEIR is confirmed, that is, that the LCRS (as now modified) in combination with the low permeability of the underlying Bay Mud and the upward hydraulic gradient caused by natural artesian pressure and consolidation of the Bay Mud, together constitute an acceptable engineered alternative to the requirement to maintain a five-foot separation between groundwater and the base of the landfill. However, a final determination of the adequacy of this design as an engineered alternative must be made by the

RWQCB after submission by the applicant of a complete design package. Mitigation Measure 3.4.6 is therefore revised as follows:

Mitigation Measures Proposed by the Project

Mitigation Measure 3.4.6: The applicant has proposed a leachate collection and removal system (LCRS) as an engineered alternative to the Title 27 requirement of a minimum separation of five feet between waste and groundwater (GeoSyntec, 1998). According to the applicant, the cost to modify the landfill to meet the five-foot separation requirement would be too great; thus the applicant has filed an exemption request with the RWQCB (GeoSyntec, 1998). Title 27 provides for consideration of engineering alternatives if the minimum five-foot separation between the landfill and underlying groundwater is not possible or would be prohibitively expensive to provide. As described in the Joint Technical Document (GeoSyntec, 1998), the underlying Bay Mud has relatively low permeability (less than 10^{-6} cm/s) and the thickness of the Bay Mud deposit ranges from 7 to 45 feet within the landfill's footprint. Given the thickness of the Bay Mud, its low permeability, and the preferential flow direction of the leachate along the refuse-Bay Mud interface, significant migration of leachate below the site would not occur. The landfill's LCRS (described in greater detail below, under Impact 3.4.7) would intercept leachate flowing along the refuse-Bay Mud interface, and the leachate would be pumped to the onsite leachate pond.

The results of a study on a perimeter LCRS and its effect on leachate migration (MET and Sanifill, 1995a) indicate the preferential flow of the leachate for the entire site would be towards the perimeter LCRS. Therefore, because the LCRS prevents the contamination of the underlying groundwater by directing the leachate flow away from the underlying groundwater, the design can be considered an adequate engineered alternative to the five feet separation requirement (Treadwell & Rollo, 2002). <u>Final determination of the adequacy of the applicant's design as an engineered alternative will be made by the RWQCB after the applicant submits a complete design packet.</u>

MASTER RESPONSE 2: 11.5 ACRE AREA

The applicant proposes as a part of the project to leave in place the 11.5 acres of waste in the southwestern part of the landfill property, rather than to excavate the material and re-bury it in the permitted portion of the landfill as previously planned. This refuse was placed in the 1950s and 1960s (Roycroft, 2001), before the SWRCB promulgated its first regulations for waste discharges to land in 1972 (SWRC, 2003) and before the currently permitted landfill footprint was defined. A subsurface investigation of the area (discussed under DSEIR Impact 3.4.11) found that this waste primarily consists of soil and inert materials such as crushed concrete and glass. This refuse unit is estimated to be approximately 65,000 cubic yards in volume, and currently is covered by two to six feet of soil. Part of the unit underlies a landfill roadway that is to be paved (Roycroft, 2001).

The applicant has produced a revised Preliminary Closure Plan and Preliminary Post-closure Maintenance Plan for this area (GeoSyntec, 1998), as discussed in Impact 3.4.11. Mitigation Measure 3.4.11a requires the applicant to prepare a Final Closure and Post-closure Maintenance Plan for this unit, as required under Title 27, Chapter 3, Subchapter 5. Subchapter 5 includes, at §20950, SWRCB closure and post-closure maintenance standards that apply to all waste management units. Mitigation Measure 3.4.11a also requires that the Closure and Post Closure Maintenance Plan demonstrate that the soils underlying the refuse meet performance standards for containing waste and preventing degradation of groundwater. If this plan is not acceptable to the Regional Water Quality Control Board and the Local Enforcement Agency, then the applicant will be required to excavate the material and place it in the permitted landfill (Mitigation Measure 3.4.11c). Mitigation Measure 3.4.11b requires the applicant to continue to monitor groundwater around the site, and if necessary, remediate any groundwater contamination that has the potential to migrate off-site.

The effects of leaving this refuse in place were not previously evaluated, which is why this proposal is considered part of the current project. Before the 1994 FEIR was completed, RLI informed the LEA that RLI intended to excavate the refuse and remove it to the permitted landfill footprint. Therefore, the 1994 FEIR did not address the effects of leaving the refuse in place (Marin County, 1999). The plan to move the waste also is reflected in the current WDRs (Order No. 95-110, Provision C-6), which require RLI to "remove and relocate any wastes which are discharged at this site in violation of these requirements."

Two groundwater monitoring wells are located down-gradient of this refuse unit. Monitoring to date has shown no evidence that this refuse is adversely impacting groundwater. The applicant has now proposed leaving the refuse in place, on the basis of these monitoring results. However, the RWQCB has indicated (in comments on the DSEIR and other consultations with the County) that the applicant has not provided sufficient information to the Board to establish that leaving the refuse in place would not adversely impact groundwater. Mitigation Measures 3.4.11a addresses the RWQCB's need for additional information before the revised Closure and Post Closure Maintenance Plan could be approved and the current WDRs revised to reflect this change.

Because the Final Closure and Post Closure Maintenance Plan requires discretionary approval subject to CEQA review, and because the impacts of the excavation of the refuse unit, if required, could have other environmental impacts, the DSEIR text (pages 3.4-45-46) is hereby revised as follows:

> **Mitigation Measure 3.4.11a:** Prior to landfill closure, the applicant shall prepare and submit for approval to the RWQCB and the LEA a final Closure and Post-Closure Maintenance plan for this waste unit as required under Title 27, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance. The Closure and Post-Closure Maintenance ~~p~~Plan shall demonstrate that the proposed alternative final cover design and existing base underlying the waste unit, in conjunction with post-closure monitoring, will continue to isolate the waste in the 11.5-acre unit and prevent the degradation of groundwater.
>
> The closure and post-closure plan shall demonstrate that the proposed alternative final cover will continue to isolate the waste in this unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards. This measure is consistent with Title 27 §21090, which provides that the RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards.
>
> The closure and post-closure plan also shall demonstrate that the proposed alternative liner (i.e., the materials underlying the waste unit) will meet the performance criteria for containing waste and preventing the degradation of waters of the state required under Title 27 §20310. The description of the proposed alternative liner will include information on the geologic unit(s) (including thicknesses thereof) underlying the refuse across the 11.5-acre unit. Technical data from extensive groundwater monitoring and Hydrologic Evaluation of Landfill Performance (HELP) model results may be necessary to demonstrate to the RWQCB that no significant groundwater impact will result from the proposed alternative final cover and liner.
>
> Pursuant to CEQA Guidelines, the revised Closure and Post-Closure Maintenance Plan will be subject to additional review under CEQA prior to approval.

In the meantime, prior to submittal and agency approval of the final Closure, Post-Closure Maintenance Plan for this area, the following measures shall be implemented:

> **Mitigation Measure 3.4.11b:** The applicant shall continue to implement the existing groundwater monitoring program for this area. If leachate is detected by the monitoring program, the applicant will implement appropriate measures to prevent the off-site release of such leachate. Such measures may include installation of an extraction well, pumping the detected leachate plume at a rate sufficient to prevent its release off-site, and disposing of the collected leachate at the 11-acre leachate pond. (Because this 11.5-acre waste unit does not have an LCRS trench system, remedial actions here would necessarily be different from those identified for the permitted landfill footprint under 3.4.7d, above.)
>
> **Mitigation Measure 3.4.11c:** If the RWQCB or LEA ~~finds~~ determine that the applicant's ~~proposed~~revised Closure and Post-Closure Maintenance Plan for this

waste unit is inadequate to protect groundwater quality, then the applicant shall excavate the refuse as previously proposed and dispose of it within the permitted landfill footprint. The estimated 65,000 cubic yards of refuse is equivalent to approximately 5 percent of the air space consumed annually, assuming the waste acceptance rate proposed under the project, or about 15 days' worth of landfill space.

Mitigation Measure 3.4.11d: Without mitigation, excavation of 65,000 cubic yards of refuse would have adverse impacts on air quality due to dust and equipment emissions. If Mitigation Measure 3.4.11c is required, it shall be implemented in conjunction with Mitigation Measures 3.2.1a-c, identified in this EIR, to reduce impacts of fugitive dust from construction activities, and in conjunction with Mitigation Measures 3.2.2a-e, to reduce impacts associated with equipment and truck emissions of criteria air pollutants.

Level of Significance After Mitigation

Implementation of Mitigation Measure 3.4.11a in conjunction with Mitigation Measure 3.4.11b would reduce the impact of leaving the 11.5-acre waste unit in place to a less-than-significant level if the Closure and Post-Closure Plan for this unit is determined by the RWQCB and LEA to adequately protect groundwater quality. If the RWQCB or LEA find that the applicant's proposed final Closure and Post-Closure Maintenance Plan for this area is inadequate, implementation of Mitigation Measure 3.4.11c in conjunction with Mitigation Measure 3.4.11d would reduce this impact to a less-than significant level.

MASTER RESPONSE 3: ACCESS BRIDGE

Several commenters requested that the FEIR contain updated information on the planned improvement of the intersection of Sanitary Landfill Road and U.S. 101. This improvement is to include a grade-separated roadway over U.S. 101 (access bridge) and properly engineered on and off ramps to enable vehicle traffic entering and leaving the landfill to do so without crossing highway traffic and posing a safety risk. Several commenters noted that the DSEIR analysis assumes that the access bridge, which was the subject of a separate EIR (Marin County Community Development Agency, 2002), will be constructed prior to project approval, and that therefore the project will not pose an increased traffic safety hazard (Impact 3.10.4 on pages 3.10-11 and 3.10-12 of the DSEIR).

Since publication of the DSEIR the applicant has worked with the County and with Caltrans to obtain necessary permits for constructing the access bridge and began construction in spring 2005 (the bulk of construction commencing in early June). The bridge is expected to be completed in spring 2006.

MASTER RESPONSE 4: ACME LANDFILL SLOPE FAILURE

Numerous commenters refer to a slope failure, either at the "Contra Costa Landfill" or at Acme Landfill in Martinez, Contra Costa County, and suggest that similar conditions to those at Redwood landfill prevailed at that landfill and contributed to the failure. Communications with the Contra Costa County Environmental Health Service, the LEA for Contra Costa County, revealed that no slope failures have occurred recently at any landfill in Contra Costa County. However, a slope failure did occur at the Acme Landfill in October, 1978.

A search of the Acme Landfill file at Contra Costa County Environmental Health, the LEA for that landfill, indicates that the landfill failure occurred on or about October 21, 1978. The failure was in the form of a landslide along the eastern face of the landfill. Large fissures and scarps appeared on this face, and there was vertical displacement of a portion of the fill. A bulge formed at the toe of the slope and extended beyond the landfill's perimeter levee. The toe bulge displaced a 400-foot section of the Central Contra Costa County Sanitary District effluent pipe approximately 30 feet horizontally and 10 to 15 feet vertically, and caused a partial breach of the pipe, resulting in a spill of sewage effluent into Pacheco Slough. The landfill failure exposed decomposing garbage within the fill, causing emission of gasses and foul odors and resulting in numerous complaints from neighbors.

At the time, Acme Landfill was operating without a Solid Waste Facility Permit. On December 18, 1978, the Contra Costa County Health Department and Enforcement Agency, acting in concert with the State Solid Waste Management Board (the predecessor agency to the Integrated Waste Management Board) issued a Cease and Desist order, requiring Acme Landfill to remediate the problems caused by the landfill failure and also to address chronic ongoing operations problems, including the landfill's failure to apply daily cover material to the working face. Eventually, Acme Landfill repaired the failure and came into compliance with the State Minimum Standards for Solid Waste Handling and Disposal.

The landfill failure is explained in a 1983 EIR/EIS for a proposed expansion of the Acme Landfill:

> "Bay Mud is weak but gains strength when its water is gradually dissipated. In 1978, too rapid loading of the mud in a wastefill sloped at roughly 3:1 (horizontal to vertical) on the Acme facility caused a slope failure in the landfill, and its foundation. A mud wave ("toe bulge") formed at the toe of the failure that laterally displaced and uplifted the CCCSD [Central Contra Costa Sanitary District] outfall sewer line. As a result, the sewer outfall line was relocated to an alignment roughly paralleling the eastern face of the present fill area on the 125-acre parcel." (Acme Landfill Expansion, Final Environmental Impact Report/Environmental Impact Statement. Prepared for the U.S. Army Corps of Engineers, San Francisco District, and the Contra Costa County Planning Department, by Torrey and Torrey Inc., June, 1983. Quote on page 54).

The EIR/EIS notes (ibid, p. 60) the continuing hazard posed by Bay Mud settlement and potential slope failure, and identifies as a mitigation measure the establishment and enforcement of setbacks from the edge of the landfill to protect utilities, pipelines, and levees. Also, to address

concerns regarding settlement of the underlying Bay Mud, the document specifies the regular monitoring of levee height and maintenance as needed to maintain flood protection.

A published geotechnical engineering paper on the Acme Landfill failure by Mitchell (1992) indicates that the landfill was sited over soft compressible Bay Mud deposits with significant interbedded peat deposits. The failure occurred within the underlying Bay Mud/peat deposits. No geotechnical monitoring equipment appears to have been installed for monitoring purposes until after the failure occurred. The conditions leading up to the failure were not addressed; and therefore, the cause of the failure was not provided. Based on this paper, the subsurface conditions at Acme Landfill had a significantly greater amount of peat material than encountered in the borings performed at Redwood Landfill. Peat is considered to be a relatively undesirable material (significantly worse than Bay Mud) to construct upon because of its organic nature, its tendency to settle, and its relatively low strength and strength potential when loaded.

Documents in the LEA's Acme Landfill file indicate that Harding Lawson Associates (HLA) was engaged as an engineering consultant by Acme Landfill at the time of the failure. However, no documents could be found to indicate whether this area of the landfill had been designed by HLA (Acme Landfill, like Redwood, has been in operation since the 1950s). A reference to an HLA document in the EIR/EIS cited above that apparently provided a geotechnical analysis of the slope failure could not be located in the file, at HLA's office, or at Acme Landfill itself. HLA has in the past done engineering work for Redwood Landfill, but is not the engineer for the currently proposed project.

The project that is the subject of the current SEIR proposes to increase maximum slope angle from 4:1 to 3:1, which is the same as the angle of the slope that failed at the Acme Landfill. There are other similarities between Acme Landfill and Redwood Landfill, including their age and their locations adjacent to marshlands. However, there are significant differences between the sites that largely override these similarities. The most important difference is the nature of the foundation soils. While Redwood is underlain mostly by soft, compressible clay soil, Acme is underlain mostly by peat, which has very different strength properties. The Revised Fill Sequencing Plan is intended to ensure that sufficient time is allowed for consolidation of the underlying Bay Mud, so that the foundation material gains enough strength to support the steeper slopes and prevent a slope failure. Geotechnical monitoring of the fill is intended to provide a mechanism for early detection of slope instability, and to enable corrective action before a failure occurs. Please also see Master Response 22.

Acme Landfill is still in operation as a permitted landfill, and apparently has not suffered subsequent slope failures.

MASTER RESPONSE 5: TRAFFIC LOS ON U.S. 101

A number of commenters raised concerns about the proposed project's effect on traffic conditions on U.S. Highway 101, and the Draft Subsequent EIR's assessment of potential impacts. Specific concerns include the effect of project-generated increases in daily and peak-hour traffic volumes on traffic flow and traffic safety, and how well the acceleration and deceleration lanes constructed as part of the proposed grade-separated access connection between the landfill's access road and southbound Highway 101 would accommodate the project's additional vehicle trips.

As described on p. 3.10-3 of the DSEIR, the baseline setting for project site access (and the basis for the DSEIR's analysis of potential traffic impacts) reflects the proposed construction of a grade-separated access connection between the landfill's access road and southbound U.S. Highway 101, and the project sponsor's commitment to the grade-separated access being in-place prior to approval of the proposed Solid Waste Facilities Permit (SWFP). If for any reason the access road project were not completed, additional traffic safety analysis would be required to provide adequate access before the revised SWFP could be approved. That is, the number of vehicle trips generated by the Redwood Landfill could not increase above the level currently allowed under the 1995 SWFP and the 1999 Stipulated Notice and Order.

Standard traffic analysis practice for EIRs is to focus on periods of the day when the highest (peak) combination of existing and project traffic volumes occur; the number of daily trips generated is relevant to air quality analyses, but is presented only for information purposes with respect to traffic analyses. As described on pp. 3.10-3 and 3.10-4 of the DSEIR, the highest hourly volume for the Redwood Landfill occurs during the morning hours, with traffic generally evenly spread across the hours from 6:00 a.m. to 2:00 p.m.; there is minimal traffic during other hours, with little if any during the p.m. peak commute period. As such, it is the a.m. peak-hour traffic flow conditions on southbound (peak-direction) Highway 101 that are relevant to the DSEIR analysis. As described on p. 3.10-6 of the DSEIR, the current a.m. peak-hour level of service (based on comparing the density of traffic volumes to the capacity of the roadway) on the segment of southbound Highway 101 at Sanitary Landfill Road is LOS E. Under project conditions, an increase of about 130 vehicle trips would be generated during the a.m. peak hour (see p. 3.10-8 of the DSEIR); the estimate of net new traffic generation represents the maximum increase in traffic (i.e., inclusive of seasonal construction traffic). Based on the distribution of site-generated traffic, the proposed project would add 55 vehicles to southbound Highway 101 during the a.m. peak hour (see p. 3.10-9 of the DSEIR). Those 55 vehicles would represent an increase of about 1.5 percent in the southbound traffic volumes, which falls within the daily fluctuation of traffic volumes, and as such would not be noticeable by the average driver. The percent increase in traffic volume on southbound Highway 101 also would be less than the two-percent threshold of significance established for the DSEIR, and the project impact would be less than significant.

As stated on p. 3.10-3 of the DSEIR, the grade-separated access connection between the landfill's access road and southbound U.S. 101 would have deceleration and acceleration lanes that would be constructed to meet Caltrans standards. Caltrans standards take physical characteristics

(e.g., roadway grade) and traffic characteristics (e.g., the mix of vehicle types that would use the roadway) into account when deceleration and acceleration lanes are designed and built. The DSEIR's significance criterion for potential traffic safety impacts is that the impact would be significant if the project-generated increase in traffic would cause the accident rate to be higher than the existing accident rate. The proposed project would neither change the physical characteristics of the street network surrounding the site nor generate traffic that is incompatible with existing traffic patterns. On that basis, the rate of accidents would not increase as a result of the project, and the project impact would be less than significant.[1]

[1] It is noted that the new grade-separated access connection between the landfill's access road and southbound Highway 101, which will reduce the number of accidents (and more importantly the severity of accidents) by eliminating the existing traffic conflicts between left turns across Highway 101 and mainline traffic on Highway 101, is not part of the proposed revisions to the SWFP.

MASTER RESPONSE 6: RECLASSIFICATION OF AREA G AS A CLASS II UNIT

WITHDRAWAL OF PROPOSAL TO RECLASSIFY AREA G

One of the project components evaluated in the DSEIR was the applicant's proposal to reclassify "Area G" as a Class II waste unit. As discussed in the DSEIR Project Description, the landfill currently is permitted as a Class III landfill. Class III landfills may accept only nonhazardous waste for disposal, unless specific exceptions are allowed by the RWQCB. (See the discussion below for more on waste unit classification and terminology.) Under terms of its current SWFP and WDRs, Redwood Landfill is permitted to accept for disposal 20 TPD of certain designated wastes that meet specified waste acceptance criteria. Class II landfills have more stringent siting criteria and liner requirements, and the reclassification of Area G would have opened the possibility that RLI could be permitted to accept designated wastes not currently accepted, or designated wastes with higher concentrations of chemical constituents than those currently accepted. In conjunction with the proposed reclassification of Area G as a Class II unit, RLI had proposed to accept unspecified liquid and/or solid wastes, including municipal solid wastes, sludges, petroleum- or chemically-contaminated soils, or other designated wastes exceeding the constituent concentrations identified in the landfill's existing WDRs, and to increase the acceptance rate for such designated wastes from a maximum of 20 TPD to an average of 200 TPD and maximum of 500 TPD. Since publication of the DSEIR, RLI has withdrawn its proposal to reclassify Area G as a Class II unit, and now plans to use Area G as a Class III unit (Moose, 2003; Meserve, 2004). RLI has retained its proposal to increase the average daily tonnage of designated waste from 20 to 200 TPD and has decreased the proposed peak daily rate from 500 TPD to 200 (i.e., the revised proposal is for a peak and average acceptance rate of 200 TPD). RLI also has revised its proposal with regard to the type of designated waste to be accepted, now proposing that the designated waste to be accepted would meet the same waste acceptance criteria for designated wastes identified in the landfill's current WDRs (Specification B.5) (Meserve, 2004). According to the revised proposal, the designated wastes would be accepted for disposal at the Class III landfill, including but not limited to Area G.

BACKGROUND ON THE AREA G EXPANSION

The expansion of the landfill to include Area G as part of the *Class III* landfill was evaluated in the 1994 FEIR. Although Area G was included as part of the permitted 210-acre Class III disposal area in the 1995 SWFP, the RWQCB required additional information for its permitting purposes. The RWQCB determined that placement of waste in Area G constituted a lateral expansion that was therefore required to meet federal Subtitle D and CCR Title 27 minimum design criteria for Class III landfills. Specification B.6 of Redwood Landfill's current WDRs (Order 95-110, issued May 24, 1995) states:

> Lateral landfill expansion may be considered upon submittal of a Report of Waste Discharge, along with the appropriate fees, which includes technical designs for a composite liner and LCRS and demonstrates that the facility meets the siting criteria for a

Class III municipal solid waste facility in compliance with requirements of Subtitle D and Chapter 15.

On April 7, 1997 RLI submitted the Report of Waste Discharge (ROWD) for Area G to the RWQCB and the LEA. In the ROWD RLI proposes, with some ambiguity, that Area G be used as a Class II unit. The cover letter for the ROWD for Area G states that the liner and LCRS meet siting criteria for a Class III MSW landfill. However, the ROWD itself includes text suggesting that Area G would be used as a Class II cell for the disposal of designated waste. This ambiguity is pointed out in the County's 1998 Permit Review Report (Marin County, 1998). Subsequent documents, the Project Description (USA Waste, 1998) and the Joint Technical Document (GeoSyntec, 1998), prepared by the applicant and submitted in March 1998 for the project evaluated in this SEIR, explicitly propose to use Area G as a Class II cell.

AREA G LINER

As noted, RLI has withdrawn its proposal to reclassify Area G as a Class II landfill after the DSEIR was published. One commenter, who was aware that the reclassification proposal had been withdrawn, nevertheless expressed concern that because Area G has an "elaborate liner," the landfill operator would be tempted to "use it," presumably as a Class II waste unit, or for disposal of more potentially-hazardous wastes than the non-hazardous municipal solid waste currently permitted at Redwood Landfill. As discussed above, the RWQCB determined that the expansion of the landfill footprint to include Area G as part of the Class III landfill, which was evaluated in the 1994 FEIR, constituted a lateral expansion under state and federal regulations and thus was subject to Subtitle D requirements and state minimum standards for new or expanded Class III landfills. As discussed above, in Specification B6 of the current WDRs, the RWQCB requires a composite liner and LCRS as a condition of approving the unit as a Class III unit. Therefore, the liner and LCRS constructed at Area G is not more "elaborate" than that typically required of modern MSW landfills. (Due to the location of this landfill in an area with high groundwater, the liner and LCRS for Area G must also be approved by the RWQCB as an "engineered alternative" to the required 5-foot separation between waste and groundwater; the requirement for 5 feet of separation or an engineered alternative applies to Class III as well as Class II landfills.) The RWQCB has approved Area G as a Class III landfill and construction of the unit is underway (Elias, 2005).

TERMINOLOGY: WASTE AND CONTAINMENT UNIT CLASSIFICATION

In expressing concern about the proposal to reclassify Area G as a Class II landfill and increase the rate of acceptance of designated wastes, many commenters expressed concern about and opposition to the landfill's acceptance of "toxic" waste or "semi-hazardous" waste and also used these terms to refer to the proposed reclassification of Area G. The project applicant also has described waste previously proposed to be disposed in Area G as "semi-hazardous." State regulations and state agencies charged with overseeing waste disposal in California use specific terminology, used in this EIR, to classify wastes and the landfill units designed to contain them;

this terminology is summarized in this subsection. Information provided below is based primarily on regulations in CCR Title 23 (Division 2, Chapter 15) and Title 27 (Division 2), and on "Introduction: Classification of Wastes and Landfills," in the SWCRB report, *Review of Practices to Ensure Exclusion of Prohibited Wastes from Landfills without Appropriate Containment* (June 2003).

The SWRCB has established a tiered waste classification system for hazardous and solid waste which ranks wastes according to the risk of impairment to water quality. From highest to lowest perceived threat to water quality, the four classes are: hazardous waste, designated waste, non-hazardous solid waste, and inert waste. The SWRCB similarly classifies the landfills where hazardous and solid waste are disposed according to the level of protection the landfills provide for water quality, based on siting and containment features. The four types of landfill are Class I, Class II, Class III, and Unclassified. Class I landfills are regulated by the state Department of Toxic Substance Control (DTSC), while Class II and Class III landfills are regulated by the SWRCB and the CIWMB.

The four classes of waste and four classes of landfills of the tiered SWRCB system correlate as follows: "hazardous waste" is primarily disposed at Class I landfills. In general, a waste is classified as hazardous under state and federal laws and regulations if it exhibits one of the four characteristics (and is not otherwise excluded or exempted from being so classified): toxicity, ignitability, corrosivity, and reactivity. (Thus, toxicity is not the only characteristic for which a waste may be classified as hazardous.) "Designated waste" presents a lower threat to water quality than waste required to be disposed in a Class I landfill. Designated waste is defined as including (1) hazardous waste that is not required to be disposed at Class I landfills, and (2) non-hazardous waste posing a greater threat to water quality than non-hazardous solid waste.[2] Designated waste is primarily disposed at Class II landfills. In general, waste that may be considered for acceptance at a Class II landfill would be materials that fall below the hazardous waste threshold limits for reactivity, corrosivity, ignitability, and toxicity, as well as chemical concentration limits (both Total Threshold Limit Concentration [TTLC] and Soluble Threshold Limit Concentration [STLC] values) established in CCR Title 22, Division 4.5, Chapter 11, Article 3 (Characteristics of Hazardous Waste). "Non-hazardous solid waste" is disposed at Class III landfills. Non-hazardous solid waste is generally considered to be "garbage" that individuals generate, and also is called municipal solid waste (MSW). However, the threat to water quality of MSW has been shown to be greater than previously thought, and SWRCB requires greater containment features than the original classification anticipated. "Inert waste" poses the lowest threat to water quality, because it can contain only minimal putrescible waste. (Putrescible wastes create acids that leach out metals.) Inert waste can be disposed at Unclassified landfills, which have the least containment features. All landfills may also accept wastes having a lower threat to water quality than the waste the landfill was designed to contain (SWRCB, 2003).

Redwood Landfill. As described in DSEIR Chapter 2, Project Description, Redwood Landfill currently is permitted as a Class III landfill. In addition to nonhazardous solid waste, the terms of

[2] Based on §13173 of the California Water Code, which is the definition of designated waste cited in Title 27.

the landfill's current WDRs and SWFP allow the landfill to accept dewatered non-hazardous sludge (generally containing at least 20 percent solids) and up to 20 tons per day of designated wastes other than sludge, including incinerator ash, grit and grease, storm drain cleanings, nonhazardous holding tank pumpings from food processing facilities, treated wood (e.g., telephone and power poles, pier docks), dredge and fill material, triple-rinsed chemical containers, and petroleum-contaminated soils that are permitted under waste acceptance criteria approved by the RWQCB.

PROPOSED RECEIPT OF DESIGNATED WASTE

As noted above, while RLI has withdrawn the proposal to reclassify Area G as a Class II unit and the proposal to receive designated wastes exceeding the constituent concentrations identified in the landfill's existing WDRs; RLI has retained the proposal to increase the average and peak daily tonnage of designated waste from 20 to 200 TPD. According to the revised proposal, the landfill would accept only designated wastes that are currently permitted under the landfill's WDRs and that would meet the waste acceptance criteria in the WDRs. The designated waste would be disposed at the Class III landfill, including but not limited to Area G.

According to RLI, waste handling practices currently in place would continue to be implemented. RLI screens all designated waste according to the acceptance criteria in the WDRs. Dewatered nonhazardous sludge, petroleum-contaminated soil, incinerator ash, nonhazardous holding tank pumpings from food processing plants, and dredged sediments are routinely tested before acceptance (Meserve, 2004). Manifests provided by generators that certify the source and characteristics for grit and grease and storm drain cleanings are reviewed by RLI's Environmental Manager, who determines if chemical testing is needed to demonstrate that it is non-hazardous (Meserve, 2004). Incinerator ash meeting the landfill's waste acceptance criteria is required to be wet and wrapped by the generators prior to delivery to the landfill, and is delivered to the working face for disposal (Meserve, 2004).

RLI does not believe that the acceptance of the proposed additional designated waste would (1) increase air quality emissions or toxic air contaminants beyond threshold limits, because the designated wastes would be accepted only for disposal, or (2) pose additional risk to groundwater, because the Bay Mud underlying the landfill forms an adequate geologic barrier to prevent the offsite migration of leachate and contaminants and the integrity of the Bay Mud barrier would not be affected by the increase in designated waste (Meserve 2004). RLI contends that the leachate collection system would intercept and collect leachate that infiltrates from the designated waste (Meserve, 2004.

However, this line of reasoning seems to ignore the SWRCB's tiered waste classification system, which ranks wastes according to the risk of impairment to water quality (as described above), and the different classifications of waste management units according to the level of protection the landfills provide for water quality, based on siting and containment features. As noted above, designated waste is defined as including hazardous waste that is not required to be disposed at a Class I landfill and non-hazardous waste that poses a greater threat to water quality than non-

hazardous solid waste. CCR Title 27 has more stringent siting and unit construction criteria for Class II units than it does for Class III, and as noted above, designated waste is primarily disposed at Class II landfills. As is the case with Redwood Landfill, Class III landfills may be permitted to accept a limited or incidental amount of designated waste if permitted to do so by the relevant regulatory agencies (e.g., the LEA, RWQCB and/or BAAQMD). However, as discussed, Redwood landfill is an unlined landfill (albeit one underlain by low permeability Bay Mud) that does not currently meet state prescriptive standards for a Class III landfill in terms of liner design and separation of waste from groundwater, and the applicant has provided no new information on the containment attributes of the landfill to justify the acceptance of the proposed ten-fold increase in designated waste..

Based on the applicant's revised proposal, DSEIR Impact 3.4.10 analysis is revised, as follows, and the revised impact to groundwater is mitigated to a less-than-significant level by Mitigation Measure 3.4.10b:

Impact 3.4.10: The proposed increase in the acceptance rate for designated waste ~~use of Area G as a Class II landfill~~ could result in groundwater contamination from escaping ~~Class II~~ leachate and waste. (Significant)

~~In general, Class II landfills accept certain waste materials that are not acceptable in Class III landfills. Class II landfills have more stringent environmental controls necessary for safe disposal of certain designated wastes for which Class III facilities are inadequate. These controls include more stringent criteria and higher-standard liner systems. As a part of the project, RLI proposes to use Area G, which is currently permitted as part of the Class III landfill, as a Class II landfill. The applicant proposes to accept for disposal in Area G municipal solid wastes, sludges, petroleum or chemically contaminated soils, or other designated wastes that exceed the constituent concentrations identified in item B.5 of the existing Waste Discharge Requirements (see Appendix B) or that require, by regulations or private contract, the disposal of such waste into a composite lined waste management unit, but not including friable asbestos or petroleum-contaminated soils that exceed 50 parts per million of volatile compounds. The applicant proposes to accept up to 1,000 tons per day peak and 500 tons per day average of petroleum contaminated soil, and up to 500 tons per day peak and 200 tons per day average of other designated wastes (see Table 2-2 in the Project Description).~~

~~Compared with leachate typically produced in a Class III landfill, use of Area G as a Class II cell could generate leachate containing more diverse and more highly concentrated inorganic and organic chemicals, potentially including industrial solvents, heavy metals, aromatic hydrocarbons and polychlorinated biphenyls (PCBs). If not managed and controlled, leachate from this area could migrate laterally away from the cell to adversely impact surface and groundwater sources to an extent requiring active remediation, especially if it was to enter a surface water body such as San Antonio Creek. As noted in Chapter 2, Project Description, this change of use would require a revision of the Waste Discharge Requirements, as well as the Solid Waste Facilities Permit, to re-classify Area G as a Class II waste management unit. Redwood Landfill has prepared and submitted to the RWQCB a design for using Area G as a Class II waste~~

~~management unit (GeoSyntec, 1997). The Area G design was developed to isolate waste from the surrounding environment, including the existing disposal area, and provides for the containment, collection, and removal of leachate. The design of the landfill containment system for Area G includes the following elements:~~

~~In floor areas, a composite liner and leachate collection and removal system (LCRS) consisting of the following components, from subgrade up:~~

- ~~6-inch minimum thickness capillary break/underdrain system. The capillary break/underdrain system would consist of a blanket layer of crushed and processed concrete, quarried granular material or equivalent, encapsulated by a an 8-ounce-per-square-yard geotextile filter layer, and 6-inch diameter high density polyethylene (HDPE) perforated collection piping and granular bedding material;~~
- ~~24-inch minimum thickness compacted clay liner(CCL) with a hydraulic conductivity of 1x10-7 centimeters per second or less, which would act as the secondary liner in the composite liner system;~~
- ~~80-mil (80 thousandths of an inch) thick double-sided textured HDPE geomembrane (GeoSyntec, 2001);~~
- ~~8-ounces-per-square-yard geotextile cushion layer to protect the HDPE geomembrane;~~
- ~~12-inch minimum thickness LCRS consisting of a blanket layer of granular material and 6-inch diameter HDPE perforated collection piping;~~
- ~~8-ounces-per-square-yard geotextile filter layer overlying the LCRS to prevent clogging of the drainage material by migration of fines from above; and~~
- ~~12-inch minimum thickness operations layer to protect the containment system during future waste placement.~~

~~In side slopes, the composite liner and LCRS are similar to that of the floor area, with the exception that the 6-inch minimum thickness capillary break/underdrain system is replaced with a geocomposite capillary break/underdrain system.~~

~~The underdrain system would act as the perimeter LCRS in Area G and provide a mechanism for relieving pore pressures and consolidation water developed due to the loading of the waste mass as landfill development progresses. Since the Area G underdrain will be constructed to depths similar to those used in the perimeter LCRS design (i.e., Elevation -4 feet), and the sub-drain will be "keyed" into native Bay Mud or clean fill soils below the Area G liner, a complete barrier to outward migration of leachate from the existing disposal areas will be created (Treadwell & Rollo, 2002). This sub-drain system will also serve as an engineered alternative to the regulatory requirement to maintain a minimum separation of five feet between the underlying groundwater and the base of the landfill, as allowed by Title 27, §20240. Interior cell sumps are designed to collect the leachate within the lined Class II Area G cell. Two interior sumps will drain the LCRS and pump the leachate via HDPE force mains to the proposed leachate vaporator system to be located at the landfill flare facility.~~

~~Interior cell sumps are designed to collect the leachate within the lined Class II Area G cell. Two interior sumps will drain the LCRS and pump the leachate via HDPE force mains to a leachate vaporator system located at the landfill flare facility (Treadwell & Rollo, 2002).~~

~~In conclusion, the applicant's design for Area G appears to meet the regulatory requirements for a liner system, LCRS, and separation of groundwater for a Class II waste disposal unit. In general, Class II waste disposal units may receive any materials that fall below the hazardous waste threshold limits for reactivity, corrosivity, ignitability, and toxicity, as well as chemical concentration limits (both Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC) values) established in Title 22, Division 4.5, Chapter 11, Article 3 (Characteristics of Hazardous Waste) of the California Code of Regulations. However, the applicant has not specifically proposed specific waste types nor chemical concentration limits for materials placed in Area G. Furthermore, the Regional Water Quality Control Board must make the final determination on the suitability of the applicant's proposed design for Area G, including the acceptability of the subdrain system as an engineered alternative to the requirement to maintain a five-foot separation between groundwater and the base of the landfill, and the ability of the design to protect groundwater quality. Until these determinations are made, the proposed reclassification of Area G as a Class II waste unit poses the potential for contamination of groundwater under the site, and so has the potential to cause a significant environmental impact.~~

Redwood Landfill currently is permitted to accept up to 20 tons per day of designated waste other than sludge, including incinerator ash, grit and grease, storm drain cleanings, nonhazardous holding tank pumpings from food processing facilities, treated wood (e.g., telephone and power poles, pier docks), dredge and fill material, triple-rinsed chemical containers, and petroleum-contaminated soils that meet waste acceptance criteria for maximum chemical constituent concentrations as permitted by the RWQCB. Designated waste is defined as including hazardous waste that is not required to be disposed at a Class I landfill and non-hazardous waste that poses a greater threat to water quality than ordinary non-hazardous solid waste. Designated waste primarily is disposed at Class II landfills, which have more stringent siting and unit construction criteria under CCR Title 27 than do Class III units; however, as is the case at Redwood Landfill, Class III landfills may accept a limited or incidental amount of designated waste if permitted to do so by the relevant regulatory agencies (i.e., the LEA, RWQCB and/or BAAQMD). Given that Redwood landfill is an unlined landfill (albeit one underlain by low permeability Bay Mud) that does not currently meet state prescriptive standards for a Class II or Class III landfill in terms of liner design and separation of waste from groundwater, and that the applicant has provided no new information on the containment attributes of the landfill that would justify the acceptance of a ten-fold increase in designated waste, the proposed acceptance of 200 TPD of designated waste at Redwood landfill could pose a substantial risk to groundwater quality, or in the event of a leak or spill of leachate, to surface water quality. This would be a significant impact.

Mitigation Measures Proposed as Part of the Project

Mitigation Measure 3.4.10a: The applicant has ~~committed to~~ constructed ~~a liner and~~ a perimeter trench LCRS and has agreed to augment the leachate collection system by pumping from wells located in the interior of the landfill (see Mitigation Measure 3.4.7g).

~~in Area G that complies with applicable state and federal regulations governing Class II waste disposal facilities, including an engineered alternative to the requirement to maintain five feet of separation between groundwater and the base of the landfill~~.

Mitigation Measures Identified in This Report

Mitigation Measure 3.4.10b: Maintain receipt of designated waste at currently permitted levels. ~~Prior to issuance of a reviseand revised Waste Discharge Requirements, the applicant shall submit a detailed list of material types and chemical concentration limits of wastes proposed for placement in Area G to Marin County Environmental Health Services and the Regional Water Quality Control Board~~.

Mitigation Measure 3.4.10c: ~~If the Regional Water Quality Control Board finds that the applicant's proposed design for Area G is not adequate for protecting groundwater quality from the material types and chemical concentrations proposed for placement therein (as per Mitigation Measure 3.4.10b), Regional Board staff may suggest to the applicant modifications to their proposal, including modifications to the design of Area G, and lower constituent concentration limits or elimination of certain material types for placement in Area G. The Regional Water Quality Control Board may then re-consider a revised proposal.~~ The applicant could construct a cell that meets Title 27 prescriptive standards for a Class II cell and seek to permit it as such, and, if the cell was so permitted, seek to change the quantity of designated waste received.

~~**Mitigation Measure 3.4.10d:** If the Regional Water Quality Control Board finds that the applicant's proposed design for Area G is adequate for protecting groundwater quality from the material types and chemical concentrations proposed for placement therein (as per Mitigation Measure 3.4.10b), the Regional Board shall provide evidence of this finding, along with any necessary conditions, to the Marin County Local Enforcement Agency (LEA). The LEA will then prepare revisions to the Solid Waste Facilities Permit that incorporate these conditions.~~

~~**Mitigation Measure 3.4.10e:** If the Regional Water Quality Control Board is unable to conclude, based on information provided by the applicant, that the proposed design for Area G is suitable for use of this unit as a Class II waste disposal unit, then further consideration of use of Area G as a Class II waste disposal unit will require further environmental review under CEQA after submission of a sufficiently complete proposal by the applicant.~~

Level of Significance with Mitigation

~~Implementation of~~ Mitigation Measure 3.4.10a, in conjunction with either Mitigation Measures 3.4.10b~~,~~ or 3.4.10c~~, and 3.4.10d~~ would ~~result in a reduction in this impact to a less-than significant level, if the Regional Water Quality Control Board finds that the applicant's design is adequate to protect groundwater quality from the waste material types and chemical concentrations proposed by the applicant for disposal in Area G. However, if the Regional Water Quality Control Board is unable to make such a finding, then further environmental review may be required, as per Mitigation Measure 3.4.10e. In either case, the~~ reduce this impact ~~would be reduced~~ to a less-than-significant level.

MASTER RESPONSE 7: BAY MUD STRENGTH AND SETTLEMENT

Bay Mud strength and settlement are discussed in Impact 3.4.2 and Impact 3.4.3 in the DSEIR. This Master Response provides additional information on the properties of Bay Mud, and on the applicant's proposed approach to constructing the landfill on Bay Mud.

At the site, the refuse and levee fill deposits are underlain by Bay Mud. The Bay Mud at the landfill consists of high plasticity clay and silt that contain varying amounts of organic material, sand, and shells. The thickness of the Bay Mud generally varies throughout the site from 5 to 56 feet (except for a four-acre area formerly used for a pond in the northwest portion of the site, which has no natural Bay Mud, and the southwestern corner of the site where the thickness of Bay Mud ranges between 0 to 15 feet). Within the landfill's footprint, the Bay Mud thickness ranges from 7 to 45 feet. (The former four-acre pond area consists of bedrock that had been quarried to approximately -30 feet MSL and was subsequently lined with compacted Bay Mud to elevations ranging from 8 feet to -14 feet MSL; refuse has since been placed over this liner.)

BAY MUD STRENGTH

The primary geotechnical issue regarding the proposed changes to Redwood Landfill, especially increased rate of fill and steeper side slopes, is maintaining landfill stability, which is a function of the strength of the underlying Bay Mud. Based on laboratory tests, the Bay Mud is currently not strong enough to support the proposed final landfill grades. However, through the process of consolidation, the Bay Mud is able to gain strength if the loads are placed in incremental amounts over time.

Consolidation is the process of reducing pore space within clay and silt deposits through the addition of loads. As overburden loads are incrementally placed and allowed to consolidate, the soil mass reduces in volume by reducing pore space and subsequently increases its soil mass strength. As the Bay Mud gains strength under a given stage of refuse fill, addition load (i.e. more refuse) can be supported. The benefits of time-dependent strength gain of soft foundation soils used to build high fills over soft soils is a construction method referred to as "staged construction."

By increasing the strength of the underlying Bay Mud through proper staged construction and by adequately monitoring the progress of strength increase through geotechnical monitoring (see below), mud waves or failures within the Bay Mud layer can be avoided.

Since 1992, the landfill operation and fill sequencing have generally followed the fill sequencing plan presented in a report by HLA (1992). Based on new geotechnical data gathered by continuing monitoring and new analysis, and through study of sequencing that was based on adjusted operational planning, GeoSyntec proposed an update to the fill sequencing plan (GeoSyntec, 1997).

Modeling this consolidation and strength gain process is the key analytical element in the development of the revised fill sequencing plan based on the staged construction concept. The baseline strength of the Bay Mud was determined by GeoSyntec through published geotechnical literature, previous geotechnical investigations performed by others, the results of their own geotechnical investigations, and geotechnical laboratory testing. Based on the results of the information obtained, GeoSyntec developed an undrained shear strength relationship for normally consolidated Bay Mud and used the relationship in a finite element computer program (GeoFEAP) to evaluate the gain in shear strength of the Bay Mud by consolidation for the incremental or staged refuse loading scenario. The undrained shear strength of the Bay Mud was then used in limit-equilibrium analyses to evaluate stability of the waste slope. To check the validity of their assumptions and the results of their calculations, GeoSyntec developed a geotechnical monitoring program, described below, to be implemented throughout the life of the landfill.

SETTLEMENT

Total settlement of the Bay Mud over the life of the landfill is estimated to vary from 6 to 9 feet around the perimeter of the landfill and 10 to 15 feet in the central portion (HLA, 1992). Post closure settlements of the Bay Mud were estimated to be approximately 0.5 to 1 foot around the perimeter of the landfill and 3 to 4 feet in the central portion of the landfill. The rate of settlement was a critical element in determining the fill sequencing plan. Once the proposed final elevation of the landfill was reached, primary and secondary consolidation would continue for some time after final placement. The time required to complete primary and secondary consolidation after final grades were reached was not provided in the final geotechnical engineering report for the fill sequencing plan (GeoSyntec, 1998).

According to RLI, the amount of secondary compression of the Bay Mud would be insignificant compared to primary consolidation of Bay Mud and waste settlement, and the effects of secondary compression were appropriately not considered in past geotechnical studies (Meserve, 2004). RLI also has noted that theoretical consolidation models predict that neither primary consolidation nor secondary compression is ever “complete” after application of a load. In practice, however, it is common to define a percentage at which practically all the consolidation is complete and then estimate the time until that portion is complete. Considering two cross sections analyzed in the Revised Fill Sequencing plan (GeoSyntec 1997) with a Bay Mud thickness ranging from 10 to 45 feet, RLI estimates that 95 percent of primary consolidation could be expected between 4 and 85 years, respectively, after load placement. According to RLI, the variability of consolidation time at Redwood Landfill is further complicated because waste fill loads would be placed incrementally in different areas over the life of the landfill, instead of all at once. RLI notes that waste placement began in 1958 in some areas, and will continue, based on current site life estimates, in other areas for several decades. Therefore, at the time of closure the amount of time after closure to reach 95 percent of total primary consolidation caused by the final lift of waste and the weight of the cover would vary from location to location over the landfill. However, the time would be in the aforementioned range of 4 to 85 years (Meserve, 2004).

Public comments on the DSEIR have expressed concerns that differential settlement of the Bay Mud has the potential to manifest itself at the surface of the landfill by causing cracks in the levee and/or in the landfill's final cover and damaging the LCRS. Damage to underground collection pipes of the LCRS will likely be limited because the high density polyethylene (HDPE) pipes are relatively strong and flexible. Furthermore, cracks within the HDPE piping should not appreciably reduce the effectiveness of the perforated pipes. If monitoring of the landfill during regular site reconnaissance reveals evidence of differential settlement, the following mitigation will be performed, as stated in Mitigation Measure 3.4.3 in the DSEIR:

- regrading of area where levee or final cover shows cracking
- pipe replacement/repair if LCRS or landfill gas collection system is damaged.

As discussed in Impact 3.4.2, the landfill's geotechnical engineers will further analyze settlement as landfill development continues and additional information on Bay Mud consolidation rates is assessed. In addition, the applicant has stated that the final closure plan (which has not been prepared to date) will provide estimates of post-closure settlement and anticipated impacts on surface water drainage.

GEOTECHNICAL MONITORING

Geotechnical monitoring is critical to the proposed revised fill sequencing plan because the results of the monitoring data gathered will verify the assumptions used to determine the strength, strength gain, and rate of consolidation, and allow for modifications of the fill rate if the assumptions do not bear out. If assumptions are not borne out, the monitoring results will be used to provide the basis for a reduced rate of fill. Based upon results of finite element and limit equilibrium analyses, the applicant developed an observational approach to monitor the stability of the refuse fill at the site (DSEIR Mitigation Measure 3.4.1) and developed criteria to assess future remedial action, if required. The observational approach consists of the installation, monitoring, and data reduction of inclinometers and piezometers. Criteria were developed for both the inclinometers and piezometers. The objectives of the criteria are as follows:

- to provide advance warning of potential instability during refuse placement through inclinometer monitoring;
- to confirm that sufficient consolidation has occurred following refuse placement to allow placement of the next lift of refuse through piezometer monitoring.

If measured deformations or excess pore pressure for foundation soils exceed the criteria set by GeoSyntec (GeoSyntec, 1997), refuse placement will cease. If the results of geotechnical monitoring indicate an increasing rate of slope deformation or excess pore pressure generation, one or more of the following measures will be required, as stated in Mitigation Measure 3.4.2c in the DSEIR:

- remove refuse in critical areas to reduce the driving force of the slope

- construct a toe-berm or install piles at the toe of the slope to provide resistance to slope movement
- implement other engineering measure(s) to reduce the rate of deformation and prevent slope instability.

If geotechnical monitoring results indicate that Bay Mud strength gain is less than anticipated, the fill sequencing plan may need to be modified to slow the rate of fill (Mitigation Measure 3.4.2d in the DSEIR). Additional geotechnical investigations of the underlying refuse and Bay Mud strengths may be required to compare the anticipated strengths with the actual strengths. If fill rates change, the criteria to provide advance warning of potential slope instability or consolidation progress will need to be modified by the applicant. As stated in DSEIR Mitigation Measure 3.4.2d, any modification to fill sequencing plan, which would include any modification of the monitoring criteria, shall be reported to the LEA and the RWQCB.

The frequency for monitoring and reporting of Bay Mud consolidation, strength gain, and slope deformation/stability occurs quarterly (Meserve 2004). The current SWFP Mitigation Monitoring Program (SWFP Attachment B) indicates that the geotechnical monitoring is conducted quarterly. The third paragraph of Mitigation Measure 3.4.2a (a mitigation measure proposed as part of the project, DSEIR page 3.4-23) is hereby modified to clarify geotechnical monitoring and reporting frequency, as follows. (New language is underlined; deleted language is indicated by ~~strikethrough~~ text.)

> GeoSyntec provides quantitative criteria to evaluate when the results of the inclinometers and piezometers indicate a slope failure may occur and filling should stop. These criteria, shown in Table 3.4-4, are based on the ratio of vertical and lateral deformations as provided by inclinometer readings and the rate of excess pore pressure generation for refuse placed as provided by piezometers. The ~~frequency of~~ monitoring and reporting that is included in the geotechnical monitoring program shall occur quarterly, unless the RWQCB or the LEA determines that more frequent monitoring is needed, and will follow ~~that~~ the frequency indicated in the WDRs and/or the SWFP.

Past monitoring has been performed by the applicant's geotechnical consultants with the results of the monitoring provided to the LEA. Unless changes in the monitoring are required by the LEA, the applicant's consultants should continue this monitoring program, with the results provided to the LEA for review. This is common and accepted practice at most landfills in California. Arranging for a third party oversight of the monitoring to eliminate a perceived influence of the monitoring results by the applicant's consultants should only be required if the data collection methods and analyses are suspect. As indicated in Mitigation Measure 3.4.2b, the applicant shall submit a copy of completed geotechnical monitoring reports to the LEA and the RWQCB, as appropriate. As noted above, Mitigation Measure 3.4.2d states that the LEA and RWCQB shall be informed of any modifications to the fill sequencing plan.

Based on the information provided above and discussed in the DSEIR, no further mitigation measures are required other than those provided in the DSEIR.

MASTER RESPONSE 8: WASTE IMPORT MITIGATION FEES

Mitigation Measure 3.6.4b in the DSEIR states, in part:

> The County will consider the enactment of an ordinance that would impose a mitigation fee on waste imported to Redwood Landfill from areas of California outside Marin County. The mitigation fee will be used to develop additional landfill capacity, to develop diversion programs, and to offset other project impacts, including significant, unavoidable air quality impacts

Several commenters, notably members of the Marin County Planning Commission, requested further information on the legality of imposing a waste import mitigation fee on wastes delivered to Redwood Landfill from outside the County. This issue is also the topic of a comment by the applicant (Comment K-47), which expresses their legal opinion of limitations on the applicability of such a fee.

Subsequent to close of comments, Marin County Counsel has further researched this issue and has confirmed their opinion, expressed at the Planning Commission Public Hearings on August 18, 2003 and September 22, 2003, that imposition of a waste import mitigation fee is within the police powers of the County. Therefore, Mitigation Measure 3.6.4b is deemed to be a feasible and effective means of mitigating the effects of increased receipt of waste from outside Marin County, and this measure shall be pursued in the event that the project is approved.

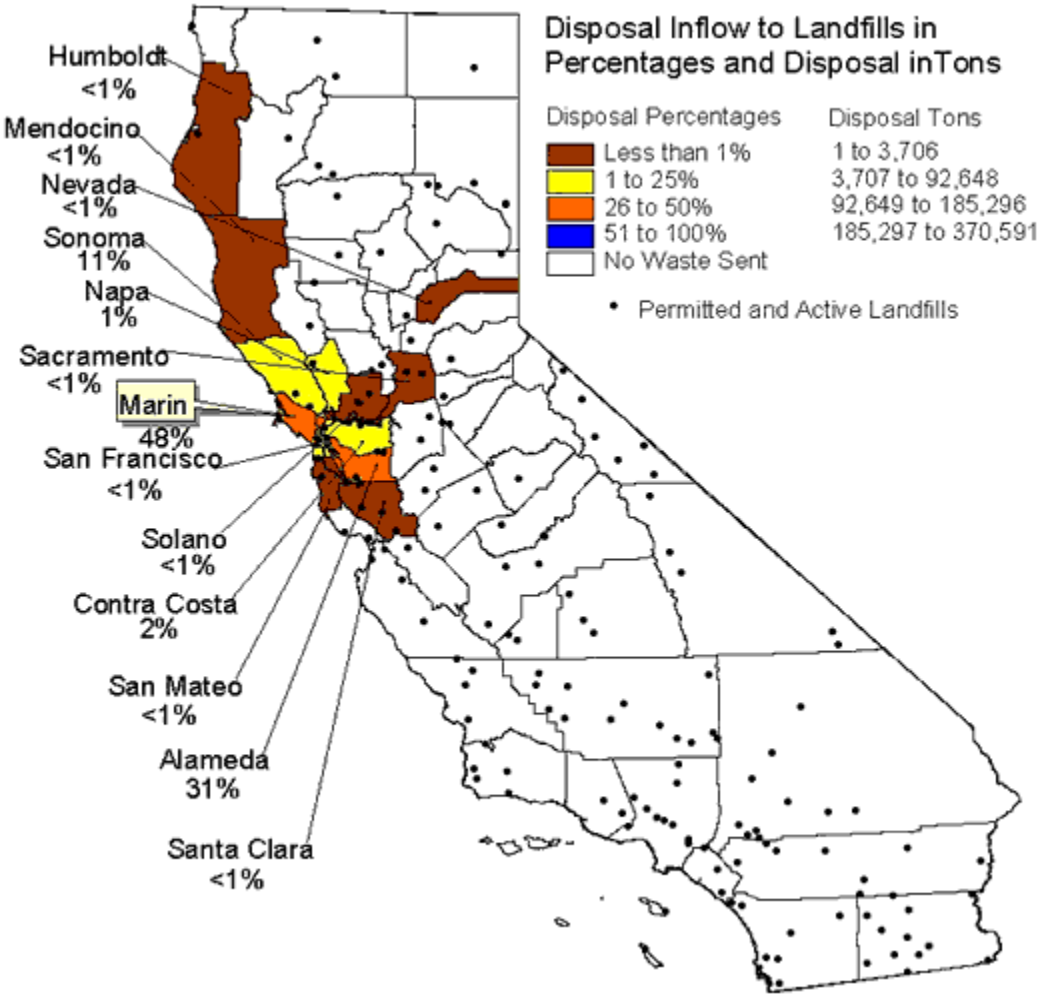
As of publication of this FSEIR, the Marin County Board of Supervisors has begun exploration of an ordinance that would impose such a fee.

MASTER RESPONSE 9: CURRENT WASTE RECEIPTS AND ORIGIN OF WASTE RECEIVED AT REDWOOD LANDFILL

Several commenters requested additional information on the current volume and origin of waste receipts at the Redwood Landfill, including sludge; on current volume of traffic hauling waste from outside the County; and on the quantity of waste produced within Marin County itself. This response provides details of information available from Marin County and the California Integrated Waste Management Board (CIWMB). The State of California tracks disposed waste volume in two different ways. The CIWMB, in cooperation with each county in the state, administers a state-wide Disposal Reporting System, which tracks, compiles, and reports the origins and quantities of disposed waste and materials used as alternative daily cover (ADC). The State Board of Equalization, which collects fees on each ton of waste disposed in landfills, maintains records of the amount of waste disposed at each permitted landfill in the state. The Marin County Department of Public Works collects data on landfilled waste origin and volume from Redwood Landfill, and reports this to the CIWMB. The County also tracks other details of waste receipts.

Figure MR9-1 is a map that was downloaded from the CIWMB website that shows the origin of waste being disposed within Marin County in 2002. Redwood Landfill is the only landfill currently permitted to accept waste in the County, so all of this material was disposed at Redwood Landfill. The total amount of waste disposed at Redwood Landfill in 2002 was 370,591 tons, plus 73,880 tons of ADC consisting of sludge and greenwaste, as shown in Figure MR9-3. Figure MR9-1 indicates that most of the out-of-County waste disposed at Redwood Landfill is from Alameda and Sonoma counties. In 2002, out-of-County waste accounted for about 52 percent of waste disposed at Redwood Landfill, or about 193,000 tons. Assuming that most of this material arrived in large trucks with an average payload of 20 tons, this would amount to about 9,600 truck round trips, or an average of about 30 per operating day. According to the CIWMB, in 2003 waste disposed at Redwood Landfill decreased to 358,976 tons, of which about 47 percent came from outside of Marin County. In 2003, Redwood received an additional 94,781 tons of waste materials that were used as alternative daily cover, of which about half originated from outside Marin County. The great majority of ADC material from outside Marin came from Napa, San Francisco, and Sonoma counties. Using the same assumptions for truck payloads, this would amount to about 1,832 truck round trips, or an average of about 6 per operating day.

Table MR9-1 shows the origin of sludge received at Redwood Landfill from outside Marin County in 2002 and disposed or used as ADC. This does not include sludge used for composting. Sludge was received from six counties other than Marin in 2002, with the majority coming from Sonoma and San Francisco. In 2001 a total of 45,273 tons of sludge were received, of which 7,953 tons were used in the co-composting operation (Roycroft, 2002). No information was available on the place of origin of the material used for co-composting.



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SOURCE: CIWMB (http://www.ciwmb.ca.gov/LGCentral/Summaries/21/2002/Inflow.htm, accessed 11-12-04)

Figure MR9-1
Origin of Wastes Disposed at Redwood Landfill, 2002

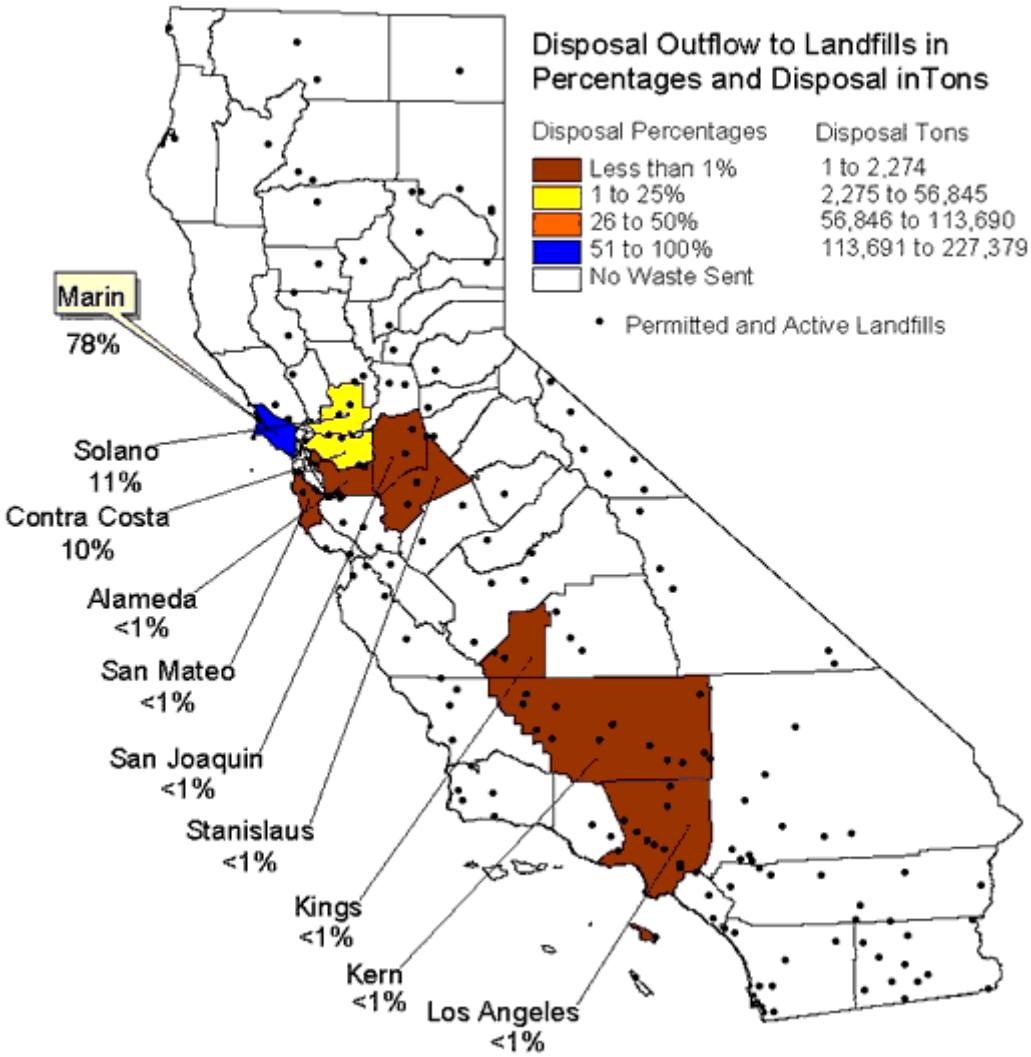
TABLE MR9-1
OUT-OF-COUNTY SLUDGE DISPOSED AND USED AS ADC AT REDWOOD LANDFILL, 2002

County	Jurisdiction	Total Disposed	Total ADC
Alameda	Union City	178.87	29.88
Alameda County Subtotal		**178.87**	**29.88**
Contra Costa	Unincorporated	2,089.41	422.94
Contra Costa County Subtotal		**2,089.41**	**422.94**
Nevada	Nevada	496.71	83.32
Nevada County Subtotal		**496.71**	**83.32**
San Francisco	San Francisco	0.00	9,621.83
San Francisco Subtotal		**0.00**	**9,621.83**
San Mateo	San Mateo	171.17	20.35
San Mateo County Subtotal		**171.17**	**20.35**
Sonoma	Petaluma	2,054.49	402.43
Sonoma	Santa Rosa	3,805.29	581.07
Sonoma	Unincorporated	6,140.05	1,178.41
Sonoma County Subtotal		**11,999.83**	**2,161.91**
GRAND TOTAL		**14,935.98**	**12,340.24**

NOTE: data is reported in wet tons.

SOURCE: Marin County Department of Public Works

Figure MR9-2 shows the disposition of waste generated in Marin County in 2002, and Table MR9-2 shows the particular landfills and counties where Marin County waste was disposed in 2003. In 2003, 17.5 percent of the County's waste, or approximately 40,000 tons, was disposed in other counties, as compared to 21 percent in 2002 and 14 percent in 2001. In 2001, 2002, and 2003, Contra Costa and Solano Counties were the largest recipients of Marin County waste.



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SOURCE: CIWMB (http://www.ciwmb.ca.gov/LGCentral/Summaries/21/2002/Outflow.htm , accessed 11-12-04)

Figure MR9-2
Destination of Waste Generated in Marin County, 2002

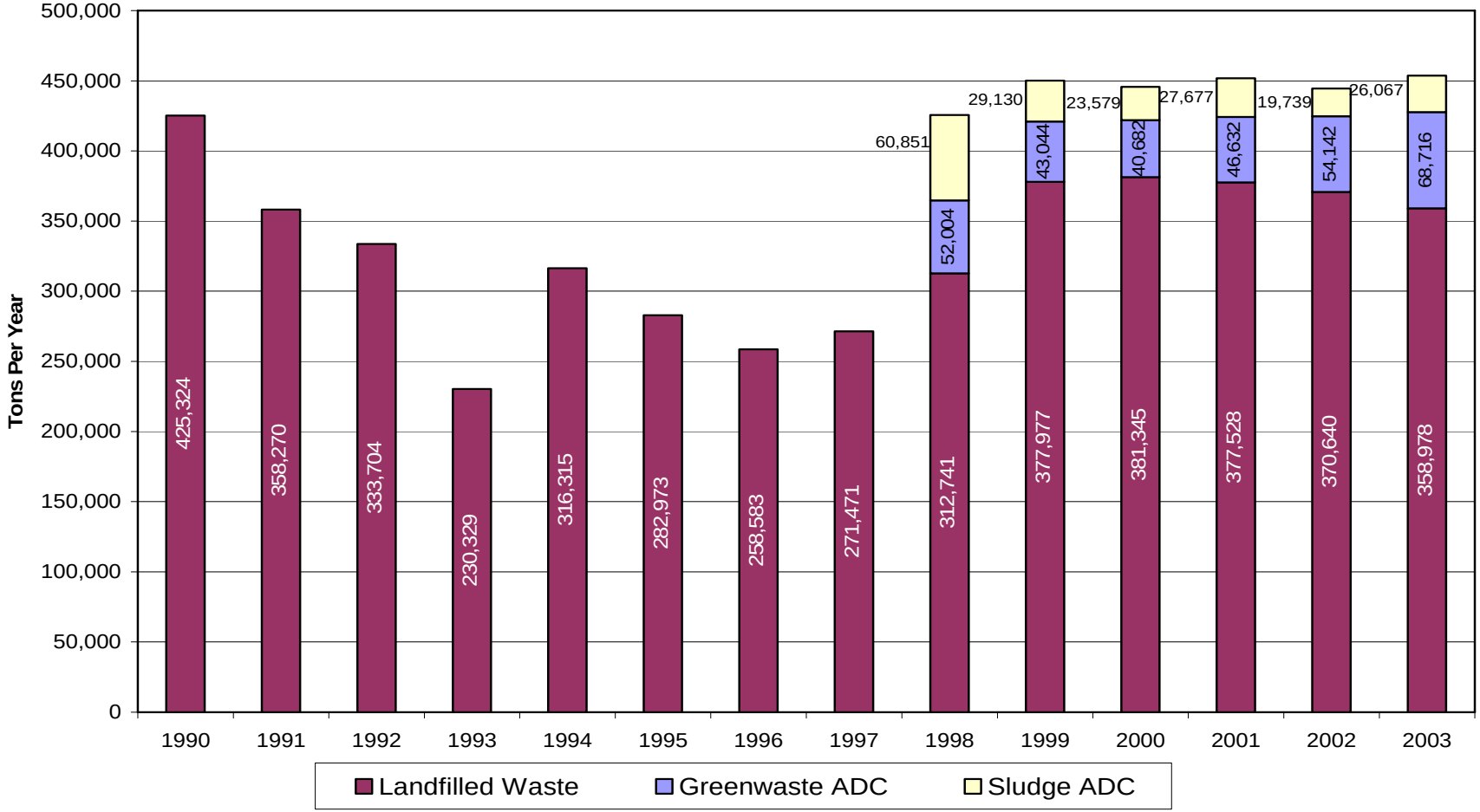
TABLE MR9-2
DESTINATION OF WASTE GENERATED IN MARIN COUNTY, 2003

Facility Name (County)	SWIS[1] Number	In-state Disposal	Exported Out-of-State	Total Disposal	ADC Amount
Redwood Sanitary Landfill (Marin County Hazardous and Solid Waste Management Authority)	21-AA-0001	188,708	0	188,708	47,733
West Contra Costa Landfill (West Contra Costa Integrated Waste Management Authority)	07-AA-0001	24,161	0	24,161	76
Potrero Hills Landfill (Solano)	48-AA-0075	12,245	0	12,245	3
Keller Canyon Landfill (Contra Costa)	07-AA-0032	2,416	0	2,416	0
B - J Dropbox Sanitary Landfill (Solano)	48-AA-0002	375	0	375	0
Altamont Landfill – Resource Recv`ry (Alameda)	01-AA-0009	253	0	253	7
Azusa Land Reclamation Co, Inc (Los Angeles)	19-AA-0013	253	0	253	0
Vasco Road Sanitary Landfill (Alameda)	01-AA-0010	99	0	99	0
Hillside Class 111 Disposal Site (San Mateo)	41-AA-0008	89	0	89	0
Forward, Inc (San Joaquin)	39-AA-0015	85	0	85	0
Arvin Sanitary Landfill (Kern)	15-AA-0050	39	0	39	0
Ox Mountain Sanitary Landfill (San Mateo)	41-AA-0002	28	0	28	3
Bakersfield S.L.F. (BENA) (Kern)	15-AA-0273	23	0	23	0
Pacheco Pass Sanitary Landfill (Santa Clara)	43-AA-0004	5	0	5	0
Covanta Stanislaus, Inc. (Stanislaus County Regional Solid Waste Planning Agency)	50-AA-0009	3	0	3	0
CWMI – B18 Nonhazardous Codisposal (Kings Waste and Recycling Authority)	16-AA-0023	2	0	2	0
Foothill Sanitary Landfill (San Joaquin)	39-AA-0004	2	0	2	0
Totals (Tons)		228,786	0	228,786	47,822

[1] The Solid Waste Information System (SWIS) is a database of solid waste facilities maintained by the California Integrated Waste Management Board.

SOURCE: CIWMB Disposal Reporting System (http://www.ciwmb.ca.gov/LGCentral/DRS/Reports

Figure MR9-3
Redwood Landfill: Disposed Waste, 1990-2003



Source: CIWMB (http://www.ciwmb.ca.gov/Landfills/tonnage)

MASTER RESPONSE 10: FACILITY LOCATION NEXT TO WETLAND

Several commenters have made the point that if the landfill were being sited today, it would not be permitted in its current location. It is correct that the current location of the landfill does not meet existing federal, state, or Marin County siting criteria. The landfill was sited and issued a use permit at its present location in the 1950's. The first regulations for waste discharges to land were not promulgated by the State Water Resources Control Board (SWRCB) until 1972. Regulations requiring new landfills to evaluate siting conditions were adopted in 1984. Other regulations adopted at the time to help safeguard the environment, including a tiered landfill classification system (establishing certain requirements depending on the type of waste received) and groundwater monitoring requirements to detect off-site releases, apply to landfills existing at that time as well as new ones. The DSEIR identifies measures to reduce potential impacts of landfill operations on the environment, including potential impacts on wetland plant and animal species discussed in Section 3.3, Biological Resources and on surface waters, discussed in Section 3.5, Hydrology and Water Quality. These mitigation measures would be incorporated into revised permits if the project were approved.

As discussed in DSEIR Chapter 5, Alternatives to the Project, the impacts of siting and operating a new landfill elsewhere in the County (the off-site alternative) would probably result in more impacts on biological resources than the proposed project at its current location. The DSEIR also considered several alternatives that include reduction of the proposed increase in daily waste receipts coupled with some increase in capacity, which would extend site life at the current location. One of these, the Mitigated Alternative, was identified as environmentally superior to the project and the other alternatives that were considered.

Regarding other Bay-front landfills that are still operating, please refer to the response to Comment L-3.

MASTER RESPONSE 11: HEALTH RISK ASSESSMENT

There were several comments concerning the methodology that was used in the DSEIR to assess health risks from the proposed project, asking why a screening approach was used. As stated in the DSEIR, the methods that were used are consistent with methods established by the Office of Environmental Health Hazard Assessment (OEHHA), an office of the California EPA. In this approach, the release of any toxic substances from the project that might cause health impacts at offsite receptors was included in the analysis. Given the types of sources and the configuration of the proposed project, it was determined that the release of toxic air contaminants (TACs) into the air and exposure by inhalation would be the principal pathway, by far, that could cause health impacts.

When doing the analysis, several steps were carried out in the DSEIR to assess health risks from the project, and these included:

- Estimating TAC emissions from the various project-related sources;
- Conducting a dispersion modeling analysis to estimate off-site concentrations (exposure levels) of TACs;
- Applying toxicity factors to the estimated concentrations for the various TAC species;
- Estimating incremental health risks at off-site receptors by summing contributions from the various carcinogens at a given receptor; and
- Applying mitigation measures to sources that are predicted to cause significant incremental health risks.

The DSEIR states that TAC emissions from the proposed project were estimated by speciating the criteria pollutant emissions which are reported in the Air Quality Section of the DSEIR. This was done, because individual TACs are part of criteria pollutant emissions. For diesel PM, emissions were estimated by using the estimated PM exhaust emissions that are reported in the Air Quality Section. TAC emissions from the sources were then input to an EPA dispersion model to calculate offsite concentrations.

Consistent with OEHHA guidance, a screening modeling approach was used. Several comments asked why a more detailed modeling approach was not carried out. Detailed modeling requires meteorological data that are representative of the site. In such an exercise, a continuous record of at least one year of meteorological data would be needed. Since there are no meteorological data representative of the site, a screening model was used. In a screening model, hypothetical meteorological data are used in the EPA model SCREEN3 to calculate offsite concentrations. The DEIR acknowledges that the use of hypothetical meteorological data in a screening model tends to over-predict concentrations, mainly because the meteorological conditions in the hypothetical data set are conservative. This is required when site specific data are not available, so that any impacts would not be under-predicted.

Unlike the analysis for criteria air pollutants, only incremental risks are evaluated. In criteria pollutant analyses, background levels are added to the increment to compute a total concentration, and this total is compared to an ambient air standard. For TACs that are carcinogens, usually only a small part of a total cancer risk at a receptor is due to TAC emissions from a project, and over a lifetime, the risk of contracting cancer from all sources and by all pathways are in the hundreds of thousands in a million. As a result, only the increment from a project is judged against a significance threshold, and background risks are usually not included to assess the significance of impacts for carcinogens.

Since the DSEIR has been published, several factors have caused the predicted health risks from the project to change. Many of these factors are also related to the Air Quality analysis, and are addressed in Master Response 16. These changes relate to changes in emissions of some sources of criteria pollutants, leading to changes in estimated emissions of TACs. The changes in criteria pollutant emissions are described in detail in Master Response 16, and those sources that also affect emissions of TACs and consequent and health risks are described briefly in this Master Response.

The DSEIR identified the incremental cancer risks for the various sources related to the proposed project. It points out that the largest contributors to cancer risk are from the diesel exhaust from trucks traveling to the site and from diesel off-road equipment that are operating on-site. The screening model predicted that the incremental cancer risk from on-road trucks was estimated to be about 4.8 in a million. Under the screening approach, this incremental cancer risk was added to the incremental cancer risk predicted for other sources of carcinogens, such as diesel emissions from the on-site equipment (about 24 in a million), and risks from other sources related to the project (less than one in a million) to predict a total incremental risk of about 30 in a million.

The revised air quality analysis, as described in Master Response 16, reported reductions in predicted emissions of criteria pollutants. Since these sources of criteria pollutants include TACs, the TAC emissions would also be reduced. The two categories of sources that would result in the greatest change in predicted impacts are diesel emissions from the onroad trucks and diesel emissions from the off-road equipment that is operated on-site. As stated in the Air Quality Analysis, these predicted reductions would occur for several reasons. For on-road trucks, the main reduction in diesel PM emissions would occur, because a new CARB model, EMFAC2002, was used to estimate emissions. This model has more accurate algorithms for predicting future emissions from on-road trucks, mainly because it factors in the Federal and State regulations that will reduce emissions from new trucks in the future. This change would result in a reduction of diesel emissions from onroad trucks related to the project by about 53%, and the corresponding incremental cancer risk is predicted to drop from 4.8 in a million to 2.4 in a million.

For the onsite diesel equipment, emissions of diesel exhaust are expected to be reduced by about 25%, due mainly to proposed changes in daily activity levels at the site. The incremental cancer risk from this source is predicted to drop from 24 in a million to 18 in a million. The combined effect of these changes would be to reduce the predicted off-site incremental cancer risk from 30 in a million to about 20 in a million. As such, the predicted maximum incremental cancer risk is

still predicted to exceed the significance threshold of 10 in a million. It should be emphasized that the predicted health risks using the screening approach prescribed by the State Regulatory Agencies, are conservatively high in order to protect public health. Actual impacts are probably much lower.

Impact 3.2.8 and Mitigation Measures 3.2.8c and 3.2.8d in the Air Quality Analysis have been modified to reflect the changes discussed above. The same conclusions reached in the DSEIR regarding this impact remain valid, that is, that Impact 3.2.8 is significant, but that Mitigation Measures 3.2.8c and 3.2.8d would reduce this impact to a less-than-significant level.

MASTER RESPONSE 12: LANDFILL CAPACITY AND CURRENT VOLUME OF LANDFILL

Several commenters requested additional information and clarification on the current volume of waste already in-place in the landfill, and the total allowable volume of the landfill under its current permits. Some of the confusion regarding this matter stems from an assertion by the applicant in comments at the Marin County Planning Commission Public Hearing that the current permitted volume of the landfill is 25 million cubic yards, not 19.1 million as stated in the DSEIR.

The Solid Waste Facility Permit (SWFP), issued in 1995, and based on the 1994 FEIR and background documents submitted by Redwood Landfill, states that the landfill's maximum volume is 19.1 million cubic yards. A review of these background documents, including the 1995 Report of Disposal Site Information (RDSI) prepared by Redwood Landfill, states that the net landfill volume is 19.1 million cubic yards. This figure includes waste and daily cover, but does not include final cover. In the 1995 RDSI and in the SWFP, the stated area of the landfill is 210 acres (although the RDSI also presents other figures for the landfill footprint, and the applicant is now requesting that the footprint acreage figure be revised; see discussion in response to comments D-1 and D-3), the maximum height is 166 feet, including final cover, and the depth of the final cover was to be four feet. Four feet of final cover over an area of 210 acres has a volume of approximately 1.355 million cubic yards (this is a rough calculation that does not take into consideration the geometry of the landfill's side slopes and sloped top deck). Adding this to the 19.1 million cubic yards for volume of waste and daily cover, the total capacity of the existing permitted landfill is approximately 20.455 million cubic yards.

A letter from the applicant dated October 18, 2004, states that the volume of waste in-place at the landfill is 13.9 million cubic yards, as of May 14, 2004. This is the date of the last actual measurement of in-place volume. Landfill volume is measured by taking aerial photographs of the site, developing a contour map from the aerial photographs, and then, using either manual or computer-assisted measurements, calculating the volume of the contours. The maximum height of the landfill as of the date of the last aerial photography was 70.9 feet above mean sea level (using the 1929 National Geodetic Vertical Datum) at a point in the northern portion of the landfill. Typically, operators measure their landfills every one or two years.

Table MR12-1 summarizes the current permitted volume and remaining capacity of the Redwood Landfill.

Regarding remaining site life, and projected site life under the project, please refer to Master Response 21. Regarding current rate of waste acceptance and waste origins, please refer to Master Response 9.

TABLE MR12-1
SUMMARY OF CURRENTLY PERMITTED LANDFILL VOLUME

Total Volume	**20.455 Million Cubic Yards (includes a 4-foot final cover)**
Net Volume (waste plus daily cover)	19.1 Million Cubic Yards
In-place Volume (as of May 14, 2004)	13.9 Million Cubic Yards
Net Remaining Volume	5.2 Million Cubic Yards
Net Remaining Effective Volume (factors-in predicted future settlement of waste and Bay Mud)	9.312 Million Cubic Yards
Landfill Footprint	210 Acres
Maximum Landfill Height	166 feet above mean sea level
Current Maximum Landfill Height (as of May 14, 2004)	70.9 feet above mean sea level

SOURCE: 1995 SWFP, 1995 RDSI, Khany, 2004

MASTER RESPONSE 13: LCRS EFFECTIVENESS AND MANAGEMENT

The effectiveness of the landfill's LCRS in preventing the offsite discharge of leachate is evaluated in Impact 3.4.7 and the adequacy of LCRS capacity is evaluated in Impact 3.4.8 in Section 3.4, Geology Soils, and Seismicity, of the DSEIR. The applicant's geotechnical analysis and the DSEIR evaluation took into account changes to the previously evaluated and approved LCRS design. Several changes to the LCRS evaluated in the DSEIR have been implemented since publication of the DSEIR, including completion of the LCRS perimeter trench and the initiation of leachate pumping from the interior of the landfill. This master response provides an update on these changes and augments the discussion of issues and facilities related to the effectiveness and capacity of the LCRS presented in the DSEIR. Please refer to Master Response 14 regarding the facility's detection monitoring program and Master Response 1 regarding the Title 27 requirement of either a 5-foot separation between waste and groundwater or an approved engineered alternative to this requirement.

COMPLETION OF THE LCRS TRENCH

The DSEIR analysis (Impact 3.4.7) noted that the perimeter LCRS had not yet been completed at Areas E and F of the landfill, and Mitigation Measure 3.4.7e requires completion of the LCRS prior to the placement of wastes in these two areas. Since publication of the DSEIR, RLI has completed the perimeter trench LCRS. The trench now surrounds the entire perimeter of the permitted landfill footprint, with the exception of Area G, which has a separate LCRS, and thus theoretically provides a complete hydraulic barrier to the off-site migration of leachate.

However, as constructed, the LCRS trench does not entirely conform to the LCRS that was formerly proposed by the applicant and described and analyzed in the DSEIR. As described in the DSEIR (p. 2-32) (and constructed at Areas B, C, and D), the revised LCRS design consists of a perimeter trench keyed into Bay Mud. (Refer to the DSEIR Project Description for a description of the other components of the LCRS.) The principal difference between the LCRS recently completed at Area E and that described in the DSEIR is that the trench bordering Area E is not entirely keyed into Bay Mud. Portions of this trench section are keyed into Bay Mud, but because waste fill in this area is deeper than the trench's design depth of elevation -5.5 feet MSL, the trench primarily is keyed into what the applicant describes as a transitional zone between waste and Bay Mud (Meserve, 2004). As described in the DSEIR (p. 3.4-30), keying the trench into the low-permeability Bay Mud was considered an important factor in the ability of the LCRS to prevent offsite leachate migration. Also as described, analysis conducted by MET and Sanifill in 1995 showed that there was a preferential flow of leachate toward the perimeter trench, and a preferential flow of the near-surface water from the outboard side of the LCRS toward the trench. In meetings following completion of the section of Area E trench, RLI and RWQCB staff concluded that the fact the trench was not keyed into Bay Mud would not impair LCRS function as long as there was a hydraulic gradient toward the trench, which would be achieved by maintaining a maximum -1 foot MSL elevation of fluid within the trench (Meserve, 2004). A hydraulic barrier would be achieved because the leachate level within the landfill mass and the

groundwater elevation outside the perimeter trench are both higher than -1 foot MSL; therefore, the hydraulic gradient of leachate from within the landfill and groundwater and leachate from beyond the trench will be toward the trench. Maintaining the prescribed fluid level in the trench will create an area of lower pressure, toward which liquid will flow from all directions. Thus, even without keying the LCRS into Bay Mud, maintenance of a hydraulic gradient toward the trench will prevent lateral migration of leachate off-site. RLI's geotechnical engineers, GeoSyntec, Inc., are producing an evaluation study to demonstrate that keying into Bay Mud is not necessary for the trench to perform effectively (Meserve, 2004). In addition, Mitigation Measure 3.4.7 has been revised herein to include performance standards addressing this issue, as discussed below in this Master Response.

USE OF LANDFILL GAS WELLS FOR LEACHATE EXTRACTION

In response to concerns expressed by the RWQCB regarding the effectiveness of the LCRS in removing leachate from the center of the landfill, RLI has commenced a program of extracting leachate via existing and future landfill gas wells located in the interior of the landfill. The purpose of the pumping program is to ensure that a leachate mound does not build up in the interior of the landfill and to reduce the possibility that leachate could migrate off-site and impact groundwater or surface water quality. A leachate mound is created when leachate levels in the interior of the landfill are significantly higher than around the perimeter of the site. The potential for a leachate mound to cause instability of the landfill is addressed in Impact 3.4.12 in the DSEIR. The addition of the interior extraction wells could also produce an inward hydraulic gradient (i.e., toward the landfill center), if the leachate level in the interior of the landfill is lower than the level at the perimeter.

Clarifications to Impact 3.4.7 address the updated LCRS trench information and the previously identified Mitigation Measure 3.4.7e is revised to add specific provisions for pumping leachate and monitoring. The third and fourth paragraphs of the Impact 3.4.7 (paragraphs two and three of DSEIR page 3.4-30) discussion are modified as follows:

> Subsequent to issuance of the 1995 SWFP, a LCRS trench (independent of the perimeter levee system) was constructed along Areas B and C in 1995 and Area D in 1996. ~~A LCRS is still needed at Areas E, F, and G. For the remaining areas RLI also proposes to construct a LCRS trench, independent of levee construction or reconstruction.~~ The final sections of Areas E and F were completed in 2003 and 2004; these also were constructed independent of levee construction or reconstruction. According to GeoSyntec (1998), new perimeter levee/cutoff wall construction is not required to maintain stability. (The potential impacts of the proposed project, including with the revised LCRS design, on landfill stability are evaluated under Impacts 3.4.1 and 3.4.2, above.)
>
> To provide a barrier to offsite leachate migration, the LCRS is typically keyed approximately 1 to 3 feet (to Elevation –5.5 feet) into the low permeability Bay Mud. The LCRS includes a gravel-filled trench ….

To incorporate the above clarification and add specific provisions for leachate pumping and monitoring, Mitigation Measure 3.4.7e is revised as follows:

Mitigation Measure 3.4.7e: ~~Prior to the placement of wastes at Areas E and F, t~~The applicant ~~shall~~ has completed installation of the ~~at these areas a~~ LCRS at Areas E and F. ~~as was installed at Areas B, C, and D~~.

~~Although "installation and continuous operation of a perimeter LCRS around the landfill" is listed as one of the activities performed to manage leachate in Chapter 5, Existing Facility, of the Joint Technical Document (GeoSyntec, 1998), no LCRS is currently in place in Areas E, F, or G. The applicant has proposed a separate LCRS for Area G in conjunction with the proposal to use Area G as a Class II unit (discussed under Impact 3.4.10). If waste were placed in Areas E or F without a LCRS, leachate generation would be a significant impact. Ensuring that the LCRS is in place prior to waste placement at Areas E or F would ensure that this impact at these areas would be less than significant.~~

To further limit the potential for significant leachate accumulation in the landfill, RLI shall undertake a leachate pumping program in coordination with the RWQCB whereby leachate is initially extracted from up to 13 existing landfill gas wells in the interior of the landfill. The pumping shall be selectively monitored for pumping times, rates and recovery to determine well productivity and effectiveness for use in future additions to the pumping program. Chemistry tests on pumped liquids will be selectively conducted to determine the source of gas well liquid in order to differentiate between leachate and groundwater.

Additional dual leachate/gas collection wells shall be installed to the base of the landfill or to sea level, whichever is higher, and shall be equipped with leachate extraction pumps. The number and spacing of leachate extraction wells shall be augmented each year until a consistent decrease in leachate volume can be empirically verified and is sufficient to achieve the long-term objective of removing the leachate mound.

Empirical verification of initial leachate volume reduction and verification that an appropriate number of wells and pumps have been installed shall be provided to the RWQCB and shall include the satisfaction of the following performance criteria:

1) Demonstrate, using a refined water balance model approved by the RWQCB, that the leachate extraction rate exceeds the leachate generation rate; and

2) Demonstrate a measurable and quantifiable decrease in leachate volume within the landfill using leachate elevation measurements from either monitoring wells or landfill gas extraction wells located in the interior of the landfill.

Once it has been established that the leachate collection and removal system size and pumping rate is sufficient to reduce the leachate volume, the system shall be maintained and operated such that leachate volume is steadily reduced. Leachate levels shall be reduced to a sustainable level over a period of 5 years. The achievement of the sustainable level shall be empirically verified by the achievement of at least one of the following three performance criteria:

1) Demonstrate that the piezometric head in the basal (laterally continuous) leachate is no greater than 1 ft MSL;

2) Demonstrate that the extracted leachate is chemically indistinguishable from the groundwater in the vicinity of the landfill; or

3) Demonstrate that an inward gradient has been achieved such that leachate flows from the perimeter of the landfill towards the center of the landfill.

The performance criteria evaluations shall account for seasonal fluctuations and be capable of demonstrating performance achievement on a year-to-year basis.

In addition, Mitigation Measure 3.4.12b (DSEIR pp. 3.4-46 - 3.4-47), addressing potential stability issues related to a leachate mound, is revised as follows:

Mitigation Measure 3.4.12b: If quarterly measurements of leachate elevations in leachate wells indicate that buildup is occurring, the results of geotechnical monitoring required under Impact 3.4.2 shall be evaluated to assess the effect of the leachate mound on slope stability. The assessment shall be conducted under the supervision of the geotechnical engineer familiar with landfill operations and the behavior of the underlying Bay Mud, as specified in Mitigation Measure 3.4.2b. If the geotechnical assessment determines that the leachate elevation ~~uplift pressure~~ needs to be reduced to maintain landfill stability, RLI will immediately undertake steps to reduce the height of the leachate mound ~~shall be reduced~~. Measures that could be taken to reduce the height of the mound include (1) increasing the rate of leachate removal by adjusting the settings on the automatic pumps in the perimeter trench sumps and in the landfill gas/leachate extraction wells to commence operation at lower leachate levels, and (2) ~~utilizing temporary pumps placed either within the LCRS sump or installed within the landfill where the leachate mound is observed to increase leachate volume removal~~ implementation of Mitigation Measure 3.4.7e.

LCRS CAPACITY

As described under Impact 3.4.8 of the DSEIR, the maximum anticipated rates of leachate flow to the LCRS during the life of the facility according to a 1995 MET/Sanifill study range from 3 to 6 gallons per minute (gpm) during operations, with generation rates four or five times this possible for one or two months per year, and ultimately zero following landfill closure. However, as also discussed, a previous report by CH2MHill (1992) indicates significantly greater leachate generation rates of 25 to 70 gpm during landfill operation, and 15 to 35 gpm following landfill closure. More recently, Kleinfelder (2003) utilized the actual amount of leachate that RLI reported pumping out of the LCRS perimeter trenches in 2002, approximately 13 million gallons, for the design of the LCRS at Areas D, E and F. This amount corresponds to approximately 25 gpm. Kleinfelder notes that this reported amount is consistent with CH2MHill's 1992 Leachate Management Plan, and states that the difference between the actual leachate generation rate (25 gpm) and the flow rate of 3 to 6 gpm predicted by the MET/Sanifill study is a function of many variables and the assumptions made in the MET/Sanifill model (Kleinfelder, 2003). The reported use of leachate for dust control of 8.12 million gallons per year (DSEIR page 3.4-35), which corresponds to approximately 15 gpm, also is consistent with the higher leachate generation rate predicted in the CH2MHill plan.

As described in DSEIR (page 3.4-35 to 3.4-36), RLI employs a number of management strategies for containing and utilizing leachate generated at the site, including use of leachate for dust control (pursuant to RWQCB requirements), evaporation of leachate in a landfill-gas powered vaporator (which has a capacity to evaporate approximately 2.6 million gallons per year), and use of an 11-acre leachate impoundment (which has a capacity of approximate 15 to 18 million gallons). A component of the project evaluated in this SEIR is RLI's proposal also to use leachate that tests "clean" for composting quench water (refer to DSEIR Impact 3.5.5), which would use additional leachate. RLI currently is in the process of developing a water balance model that will incorporate actual leachate generation rates based on data collected at the landfill. The water balance model will be submitted to the RWQCB for approval as specified in Mitigation Measure 3.4.7g, performance criteria (1), above.

Mitigation Measure 3.4.8c requires RLI to update its Leachate Management Plan, which currently consists of parts of several plans and studies. The measure specifies that the plan shall be consistent with all aspects of the proposed project and mitigation measures identified in the SEIR, and that it utilize actual flow rates from the operation of the LCRS to date. To clarify the discrepancy between reported use of leachate and actual flow rates and the MET-Sanifill leachate production estimates referenced the JTD, and to ensure the LCRS has adequate capacity to contain or manage the leachate generated at the site, Mitigation Measure 3.4.8c is hereby revised as follows:

> **Mitigation Measure 3.4.8c:** RLI shall update their Leachate Management Plan so that, at a minimum, a single Leachate Management Plan serves as the current plan for the landfill. The plan shall be consistent with all aspects of the applicant's proposed project and with mitigation measures identified in this SEIR, including the currently-proposed LCRS design, management practices to limit leachate production and manage the leachate that is generated, the most current leachate flow rates based on the proposed LCRS design, the most recent and comprehensive leachate generation studies, ~~and the much larger capacity provided by the proposed landfill geometry,~~ and empirical data of actual leachate flow rates since installation of the LCRS. The Plan shall demonstrate that the LCRS components and leachate impoundment(s) provide adequate capacity as required under 27 CCR §20340 (i.e., twice the maximum daily volume anticipated), including adequate conveyance and storage capacity during the wettest months of the year. (The MET/Sanifill analysis [1995a] indicated that seasonal flow rates may be as much as 4 to 5 times the calculated values for long-term and short-term flows, for one or two months each year.)
>
> The updated plan shall address and remedy the current situation in which a 1992 study and plan is cited for leachate management practices and the LCRS design (but not for the leachate flow rates it presents), a 1995 study is cited for leachate flow rates, although these ~~cited leachate flow~~ rates are ~~based on the currently permitted landfill geometry and fill sequencing, rather than the proposed landfill geometry and fill sequencing (as well as on refined alternatives to the 1992 LCRS design),~~ inconsistent with reported actual use, and estimates of the quantity of leachate expected to be utilized or consumed by various landfill facilities and activities are not provided in a discussion of system capacity, if at all. In demonstrating that adequate leachate capacity exists to prevent the off-site discharge of leachate, the updated plan shall include a complete water balance model that shows ~~diagram and/or a clearly written text presentation showing~~ quantitatively (using both actual

flow rates from operation of the LCRS to date, as well as estimated projections) the amount of leachate that is expected to be generated and how it is managed to prevent any off-site discharges. The water balance model ~~demonstration of capacity~~ shall include any elements that are expected by the applicant to be considered by permitting agencies in their assessment of the leachate system's capacity (e.g., the anticipated quantities of leachate to be used for dust control and quench water [if approved], and the basis for such estimates, if these are to be considered in the assessment of system capacity).

The Leachate Management Plan shall incorporate elements of the report required by Mitigation Measure 3.5.4 (concerning composting contact water) to ensure that the plan also addresses leachate generated by the expanded composting operations.

The updated Leachate Management Plan shall be submitted to the LEA and RWQCB prior to project approval.

RLI shall review annually and if necessary revise the updated Leachate Management Plan, including the water balance model, taking into consideration monitoring results that RLI collects and presents quarterly to the RWQCB and the LEA. This monitoring data shall include the amount of leachate extracted from the landfill, the elevation of leachate within monitoring and extraction wells, and the disposition of collected leachate. RLI shall present the results of the annual review and any revisions to the RWQCB for approval, with a copy sent to the LEA.

In addition, the implementation of Mitigation Measure 3.4.7f, updating the landfill's Leachate Facilities Leak and Spill Contingency Plan, will help ensure that adequate capacity exists in the event of a leak in the existing pond.

Implementation of Measures 3.4.8a through 3.4.8c in conjunction with Measure 3.4.7f would ensure the facility has adequate containment and management capacity to properly manage leachate and contact water generated at the site.

LEAK DETECTION AND RESPONSE

If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter levee, the applicant would follow the prescriptions contained in California Code of Regulations (CCR) Title 27. Title 27, §20420, Detection Monitoring Program, establishes procedures to follow if a release is indicated (§20420 [j-m]). §20385, Required Programs, requires the applicant to institute an Evaluation Monitoring Program if such a program is triggered. An evaluation monitoring program would be triggered "whenever there is a measurably significant [as defined in CCR Title 27] evidence of a release" and "whenever there is significant physical evidence of a release." §20425 specifies the information that must be collected in an evaluation monitoring program. A corrective action program must then be developed and submitted for approval by the RWQCB pursuant to §20385(4), Corrective Action. The landfill operator is required to obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the [disposal] unit, pursuant to §20380(b). For more information on groundwater and surface water monitoring at the site, please refer to Master Response 14.

Mitigation Measure 3.4.7d of the DSEIR addresses detection of leachate outside the perimeter LCRS. This mitigation measure is revised in this FSEIR for consistency with Title 27 requirements and in response to comment K-46, as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> **Mitigation Measure 3.4.7d:** If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter LCRS ~~levee~~, RLI shall follow Title 27 CCR regulations (e.g., §20385 et seq.) and work with the RWQCB in the development of an Evaluation Monitoring Plan and/or an Engineering Feasibility Study to determine the appropriate site specific methods for evaluating the scope of the release, its mitigation, and subsequent monitoring program or corrective action program pursuant to 27 CCR §20385 and §20430. The ~~the~~ following contingency ~~plan will~~ measures may be appropriate and would be implemented if needed and in coordination with RWQCB requirements.
>
> - ~~Containment will involve i~~Installation of a geosynthetic membrane across the length of a trench constructed in the targeted zone along the site perimeter to contain the release. The geosynthetic barrier would reduce the rate of off-site migration of the release while also reducing groundwater inflow to the collection system.
>
> - ~~The release will be collected~~Collection of the leachate by installing a French drain in the trench. A sump in the trench would be pumped to prevent hydraulic head buildup up-gradient of the containment barrier.

MASTER RESPONSE 14: GROUNDWATER AND SURFACE WATER QUALITY MONITORING

A number of commenters inquired about surface water and/or groundwater quality monitoring at the site, including whether monitoring occurs and if so how regularly, and what monitoring indicates with respect to the effectiveness of the site's environmental controls and compliance with water quality standards. Both surface water and groundwater quality monitoring programs are in place at the site. The groundwater monitoring program focuses on the detection of offsite discharge of leachate, as well as leachate elevations within the landfill, and the surface water monitoring program focuses on storm water discharges. In response to comments and inquiries about water quality monitoring at the site, this master response describes the existing monitoring programs and summarizes findings of recent semiannual and annual groundwater monitoring reports. This information supplements the discussion of applicable regulations, permit requirements and current practices pertaining to groundwater and surface waters, and project impacts to water quality and mitigation measures, presented in DSEIR sections 3.4 and 3.5.

REQUIRED MONITORING AND REPORTING PROGRAMS

CCR Title 27 §20380, et seq., establishes water quality monitoring and response requirements for all landfills (and other waste management units). These monitoring requirements apply during the active life of the landfill and the site's post-closure maintenance period. The basic required program is a "detection monitoring program" designed to detect evidence of any off-site release of leachate. (Other programs, including evaluation monitoring and corrective action, are triggered when there is evidence that a release may have or has occurred.) Title 27 specifies that the RWQCB shall establish a water quality protection standard for the detection monitoring program in a facility's Waste Discharge Requirements (WDRs). The protection standard identifies constituents of concern (COC), concentration limits, and points of compliance. Title 27 §20400 specifies that the concentration limit will be equal to the background value of that constituent (except in the case of a corrective action program, where a limit greater than background values may be established, as allowed in Title 27 regulations). Title 27 §20415(e)(4) specifies quality assurance/quality control (QA/QC) requirements for monitoring programs, including (1) the use of consistent sampling and analytic procedures designed to ensure that monitoring results provide a reliable indication of water quality and (2) provision of a detailed description of the procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, and chain of custody control.

The discharge monitoring program required in Redwood Landfill's WDRs (Order 95-110) specifies sampling and analytic methods to be used; standard observations that are required for (1) receiving waters, (2) the perimeter of the waste unit, and (3) the waste unit itself; records to be maintained; and reporting requirements. For surface water monitoring, the WDRs specify that sampling, analyses, and observations are to be conducted pursuant to the site's General Industrial (National Pollutant Discharge Elimination System - NPDES) Stormwater Permit.

GROUNDWATER MONITORING

The Discharge Monitoring Program required in Redwood Landfill's WDRs requires groundwater monitoring in the three hydrostratigraphic units at the site – Bay Mud, refuse and alluvium – and specifies the frequency of sampling and the parameters (constituents) for which samples are to be tested. Detection monitoring parameters are selected based on their persistence in site leachate, mobility, and detectibility. (That is, the concentration ranges of the parameter constituents in leachate must be clearly distinct from concentrations at which they occur in natural groundwater.) Leachate levels in the refuse unit also are monitored and reported.

The monitoring wells and monitoring frequency specified in the Discharge Monitoring Program and the current network of monitoring wells, according to RLI's most recent groundwater monitoring report (SCS Engineers, 2004), are shown in Table MR 14-1. The location of the current well network is shown in **Figure MR 14-1**. As the table indicates, since issuance of WDR Order 95-110 in 1995, some wells listed in the WDR monitoring program have been decommissioned (closed); some of these have been replaced by new wells. An alluvial well (MWH-25) located in the landfill's former "Northern section," just north San Antonio Creek, was closed when that parcel was sold; a replacement well (MWH-25R) was installed in 2001 on the existing landfill property just south of San Antonio Creek (SCS Engineers, 2004). Numerous leachate monitoring wells that were identified in WDR Order 95-110 subsequently have been closed (see Table MR14-1), apparently due to the progression of landfill operations into the areas where the wells were located. Leachate wells 2GR-1 and 2GR-5R (which apparently succeeded wells GR-1 and GR-5R listed in the WDRs) were decommissioned in June 2001 and replaced, per the request of the RWQCB, in October 2002 by wells GR-9R GR-10R, and GR-11.

According to the semiannual and annual monitoring reports at the site, the monitoring program occasionally reveals differences between background values for constituents of concern and the tested samples. Such difference may, but do not necessarily, indicate that a release from the landfill has occurred, and state regulations (Title 27, § 20415[e][7]) provide for specific retesting procedures to verify that there is evidence of a release from a waste unit. Conclusions of recent monitoring program reports submitted to the RWQCB are summarized here. A summary of a recent reevaluation of the groundwater monitoring parameters follows the report summaries.

Second Semiannual and Annual 2002 Monitoring Report. Leachate and groundwater monitoring in the second half of 2002 detected trace concentrations of 1,2-dibromoethane (0.06 µg/L) at MWH-24 (MACTEC, Inc., 2003). As presented in the Waste Management letter dated February 23, 2003, and indicated in Table 5 of the First Semiannual Monitoring Report for 2003, this detection was not verified by resampling of MWH-24, which took place in January 2003 (SCS, 2003). In addition, an unverified exceedance of total iron was detected in well MWH-25. The resample did not verify the initial exceedance of iron in this well and report authors suspected that fluctuating iron concentrations were caused by the sampling method; changes to the sampling methodology were proposed to address the issue (MACTEC, Inc., 2003). As discussed below under Re-Evaluation of Groundwater Monitoring Parameters, background levels of the inorganic parameters used at Redwood (including iron) can be highly variable due to

TABLE MR14-1
GROUNDWATER MONITORING POINTS, REDWOOD LANDILL

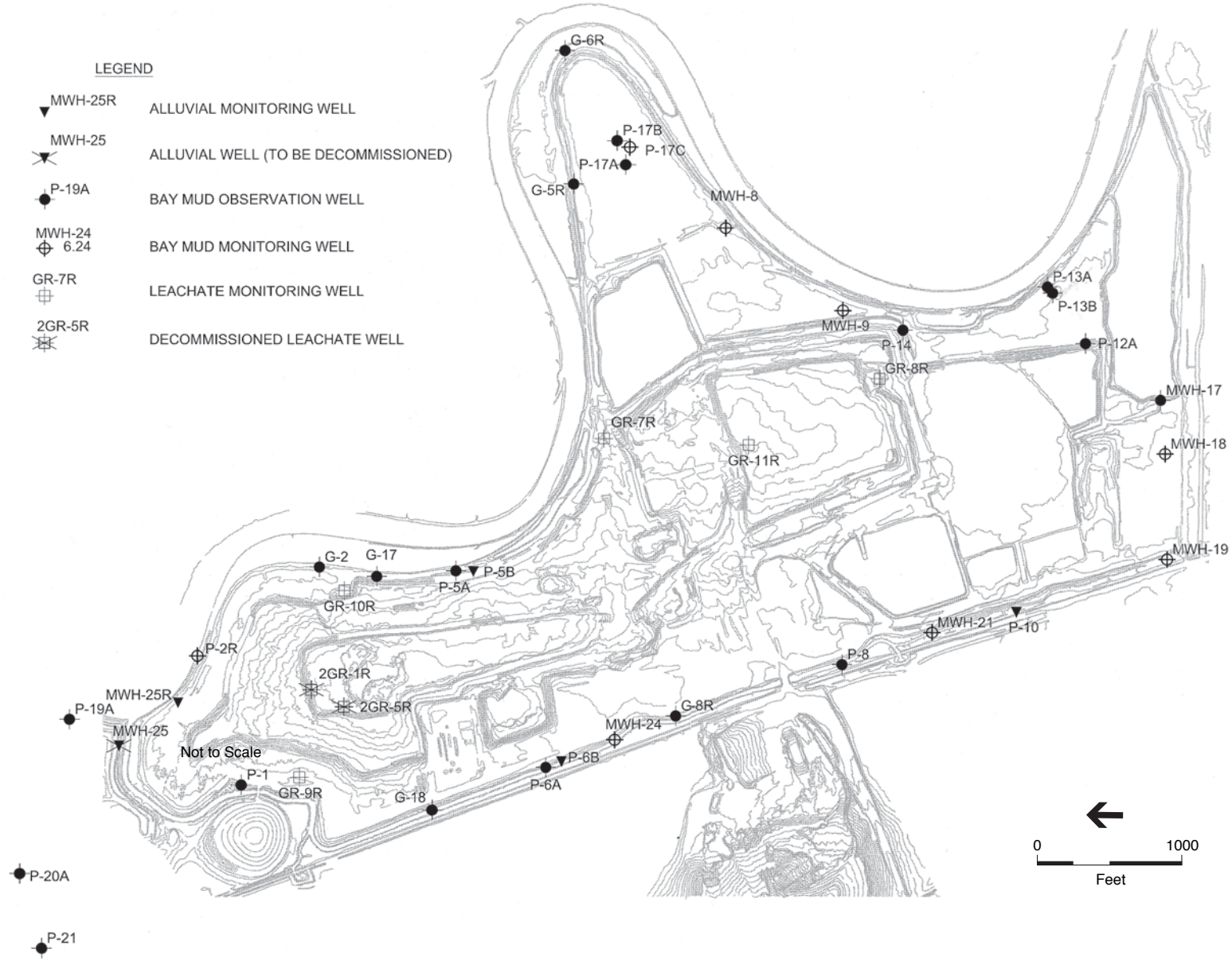
Well Name (Identified in WDRs)	Well Name (January 2004 Report)	Monitored Unit	Monitoring Frequency
Bay Mud (Channel Deposit) Wells			
P2	P-2R	Bay Mud	Semi-annual
MWH-18	(same)	Bay Mud	Semi-annual
P-17C	(same)	Bay Mud	Semi-annual
MWH-08	(same)	Bay Mud	Quarterly (background) → Semi-annual [a]
MWH-09	(same)	Bay Mud	Quarterly (background) → Semi-annual [a]
MWH-1	(same)	Bay Mud	Quarterly (background) → Semi-annual [a]
MWH-21	(same)	Bay Mud	Quarterly (background) → Semi-annual [a]
MWH-24	(same)	Bay Mud	Quarterly (background) → Semi-annual [a]
Alluvial Wells			
P-5B	(same)	Alluvium	Semi-annual[b]
P-6B	(same)	Alluvium	Semi-Annual[b]
P-10	(same)	Alluvium	Semi-Annual[b]
MWH-25	MWH-25R	Alluvium	Semi-Annual [a,b]
Leachate Wells			
GR-1R	(decommissioned)	Refuse	See Note
GR-2R	(decommissioned)	Refuse	See Note
GR-3R	(decommissioned)	Refuse	See Note
GR-4R	(decommissioned)	Refuse	See Note
GR-5R	(decommissioned)	Refuse	See Note
GR-6R	(decommissioned)	Refuse	See Note
GR-7R	(same)	Refuse	See Note
GR-8R	(same)	Refuse	See Note
	GR-9R	Refuse	See Note
	GR-10R	Refuse	See Note
	GR-11R	Refuse	See Note

NOTE: WDR Order 95-110 requires two leachate wells to be sampled for constituents of concern annually, with the monitoring stations rotating each year; the rotation is described in the facility's "Proposed Monitoring and Reporting Program (HLA, 1994). The facility operator is required to obtain leachate elevations quarterly and report them semi-annually, with the groundwater monitoring reports.

[a] A minimum of eight independent samples from each new monitoring well must be collected and analyzed during the first two years of well operation, at quarterly intervals, to provide background information.

[b] Monitoring frequency for the alluvial wells is specified in Order 95-110 as Bi-Annual (meaning biennial [every 2 years])**;** the RWQCB revised the frequency to semi-annual (i.e., two times per year) in 2001.

SOURCE: Regional Water Quality Control Board, 1995; MACTEC, 2003, SCS Engineers, 2004.



SOURCE: SCS Engineers, 2003

Figure MR 14-1

Groundwater Monitoring Well Locations

the complex geochemical and biological environment within and around San Francisco Bay. The Second Semiannual and Annual 2002 Monitoring Report concluded that the results of the monitoring program during the Second Semiannual and Annual 2002 monitoring periods suggested no indications of a release from the landfill. The report also concluded that non-statistical trend graphs did not indicate increasing trends for any inorganic detection monitoring parameters or volatile organic compounds (VOCs) (MACTEC, Inc., 2003). The laboratory analysis was conducted by STL Denver, a part of Severn Trent Laboratories, Inc.

First Semiannual Groundwater Monitoring Report 2003. Leachate and groundwater monitoring in the first half of 2003 detected carbon disulfide, a VOC, at MWH-09. A data quality review for VOCs confirmed the carbon disulfide detection, and Waste Management notified the RWQCB of the detection verbally and in writing. The detection was verified when the well was resampled. The monitoring report states that previous monitoring reports have noted that carbon disulfide is a naturally-occurring substance that has been detected sporadically during previous monitoring events, and the topic previously has been discussed with RWQCB. In this instance, during the resampling process in July 2003, the well's bladder pump ceased to operate. When it was removed, the pump and well casings were found to be "coated with a black, jell-like material of apparent biological origin (most likely bacterial)." The pump was cleaned, rinsed in purified water, and replaced in the well. This information was summarized in an Optional Demonstration Report (ODR) submitted to the RWQCB about the carbon disulfide detection. The ODR concluded that carbon disulfide is a naturally occurring compound in marsh-like environments and is not an indication of a release from the landfill unit The ODR recommended the redevelopment of well MWH-9 prior to the Second Semiannual 2003 sampling event. No other VOCs were detected at this or any of the monitored wells. No other indications of a statistical increase in the groundwater results of the First Semiannual 2003 monitoring period were identified (SCS Engineers, 2003). The laboratory analysis was conducted by STL Denver.

Second Semiannual and Annual Groundwater Monitoring Report 2003. The second semiannual 2003 monitoring report identified an initial indication of statistical increase for total iron at wells MWH-24 and MWH-25R. A data quality review was requested from the project laboratory. In addition, carbon disulfide at 1.1 µg/L was detected in the sample from well MWH-18. No other VOCs were detected in this sampling event, and no other indications of a statistical or other increase were identified in the groundwater results from the 2003 monitoring period (SCS Engineers, 2004). The laboratory analysis was conducted by STL Denver.

To date, neither evaluation monitoring nor corrective action have been triggered by results of the water quality monitoring programs at the site. (Evaluation monitoring would be triggered if there was a "measurably significant" evidence of a release during a detection monitoring program, or if there was significant physical evidence of a release, such as unexplained volumetric changes in surface impoundments. Corrective action would be required to remediate a release from a waste unit to ensure that the landfill operator achieves compliance with the water standard adopted for the waste unit.)

REEVALUATION OF GROUNDWATER MONITORING PARAMETERS

Detection monitoring parameters were recently reevaluated by RLI and changes were recommended to the RWQCB to enhance the effectiveness of Redwood Landfill's monitoring program and/or to reduce the potential for false positive monitoring results (GeoChem Applications, 2004a). The selection of effective inorganic monitoring parameters is particularly challenging in a marine/estuarine environment such as the one in which Redwood Landfill is located because, in general, the degree of mineralization and associated monitoring parameter concentrations that occur naturally far exceed concentrations found in leachate (GeoChem Applications, 2004a). Groundwater monitoring parameters currently used at Redwood Landfill for leak detection include volatile organic compounds (VOCs), total iron, total Kjeldahl nitrogen (TKN) and total organic carbon (TOC). These are used because typically there is a pronounced difference between background (i.e. naturally occurring) concentrations in groundwater and concentrations found in leachate. Iron, TKN, and TOC are analyzed statistically to identify differences between concentrations found in groundwater and in leachate. Only VOCs do not require statistical analysis because VOCs are man-made and therefore the background concentration in groundwater is assumed to be zero: any detection of a VOC at a concentration above its reporting limit is investigated as a potential indication of a release (GeoChem Applications, 2004a).

The use of iron, ammonia, (i.e., TKN) and TOC at the Redwood Landfill site is problematic, however. Because these constituents are sensitive to reduction and oxidation (redox) reactions and are involved in many biochemical reactions, there is greater variability of these constituents in a dynamic environment such as San Francisco Bay and the underlying Bay Mud than in a more static biogeochemical system. The San Francisco Bay environment is both geochemically and biologically complex. The Bay is surrounded by a highly varied and variable ecological and geochemical transition zone. This transition zone includes zones of fresh water intermingled with salt water and zones where reducing conditions prevail interspersed with areas where oxidizing conditions prevail. Changes in the transition zone can also occur temporally: some areas dominated by oxidizing conditions may experience periods dominated by reducing conditions. Therefore, data used for statistical analysis of background concentrations often may not fully characterize the actual concentration dynamics of the groundwater system being monitored, or, in some cases, the statistics may not be able to accommodate the complexity of the data resulting from the different processes that interact within the groundwater system (GeoChem Applications, 2004a).

Because the inorganic parameters that typically show the greatest concentration contrast between leachate and groundwater (e.g., iron, TKN and TOC) are subjected to geochemical and biological processes that limit the reliability of statistical analysis, GeoChem Applications concluded that there appears to be no inorganic or water quality parameter likely to provide a reliable indication of a leachate release to groundwater. The evaluation also noted that, while most wells typically show an obvious contrast between barium levels in leachate, compared to that in groundwater samples, the use of barium as an indicator also is problematic at Redwood Landfill. This is because a sulfur reaction commonly observed at Redwood Landfill, the transition from sulfate to

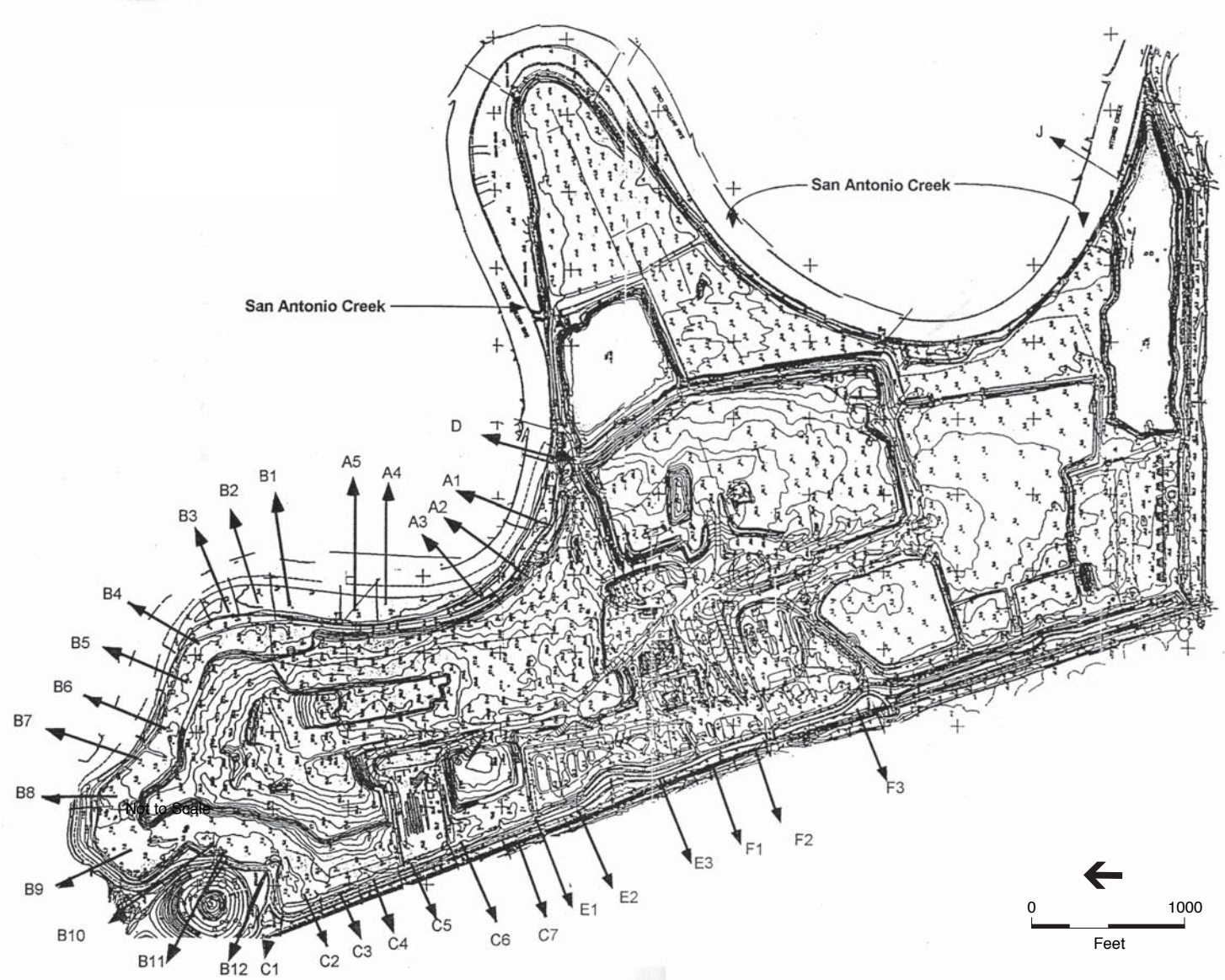
sulfide, could significantly affect natural concentrations of barium (GeoChem Applications, 2004a).

Due to the foregoing challenges to comparing current monitoring parameters in leachate with background levels that can be found in groundwater, the report author recommended that major cations (magnesium calcium, sodium potassium and barium) and anions, (bicarbonate sulfate, and chloride) be routinely analyzed in conjunction with the current set of monitoring parameters. Other investigations at Redwood landfill (GeoChem Applications, 2004b) have demonstrated that ratios of cations and anions can be significantly different between some leachate samples and groundwater at the site. The report cautions that using anions and cations as rigid indicators could be problematic, but that such monitoring could augment the current monitoring program and assist RLI's ability to identify potential release or troubleshoot false positives. The report also recommended that leachate samples and fluid samples collected from the existing and future LCRS be included in the monitoring analysis (GeoChem Applications, 2004a).

SURFACE WATER MONITORING

As discussed in DSEIR Section 3.5 and noted above, Redwood Landfill operates under the provisions of a National Pollutant Discharge Elimination System (NPDES) General Industrial Storm Water Permit. WDR Order 95-110 specifies that surface water monitoring at the site is to be conducted under the requirements of this permit. The General Permit authorizes storm water and authorized non-storm water discharges from facilities covered by the storm water permit. Redwood Landfill's storm water discharge locations are shown in **Figure MR 14-2**. As discussed in DSEIR Section 3.5, only runoff that has not contacted waste or compost is discharged from the site. Facilities covered by the General Permit are required to meet all applicable provisions of the Clean Water Act, including use of best available technology (BAT) to control pollutant discharges and best conventional technology (BCT) to prevent and reduce pollutants, as well as any more stringent controls necessary to meet water quality standards. The General Permit establishes discharge prohibitions and effluent and receiving water limitations. Facility operators must prepare, retain on site, and implement a Storm Water Pollution Prevention Plan (SWPPP), and develop and implement a monitoring program.

The objectives of the monitoring program are to (1) demonstrate compliance with the General Permit; (2) aid in the implementation of the SWPPP; and (3) measure the effectiveness of the BATs and BCTs in reducing or preventing pollutants in the storm water discharges and



SOURCE: GeoSyntec Consultants, 1998

Figure MR 14-2
Stormwater Discharge Locations

authorized non-storm water discharges. The monitoring program requires facility operators to perform visual observations of storm water discharges and to collect and analyze samples of storm water discharges. Facility operators are required to collect storm water samples during the first hour of discharge from the first storm event of the wet season and during at least one other storm event in the wet season. The program specifies that all storm water discharge locations must be sampled. The analysis must include pH, total suspended solids, total organic carbon, specific conductance, toxic chemicals, and other analytic parameters contained in the General Permit for specific industrial sectors; total suspended solids and iron are the parameters specified for landfills and land application sites. Facility operators are required to submit an annual report by July 1 of each year to the executive officer of the RWQCB. No other surface water quality monitoring is conducted at the site. The purpose of the detection monitoring program discussed above is to identify any release before it reaches San Antonio Creek or any of the other waterways and sloughs near the site.

Please refer to Master Response 13 regarding changes to Mitigation Measure 3.4.7d, which addresses containment response if leachate is detected outside the LCRS.

MASTER RESPONSE 15: ODORS

The intent of this master response is to consolidate information on odors at Redwood Landfill contained in the DSEIR and to address specific comments received on the DSEIR related to odors. This master response includes a discussion of the following: the odor analysis in the DSEIR; Bay Area Air Quality Management District (BAAQMD) odor regulations; a continuous odor monitoring system proposed by commenters; and, information on filing an odor complaint with the BAAQMD.

SUMMARY OF THE ODOR ANALYSIS IN THE DSEIR

DSEIR pages 3.2-19 through 3.2-21 discuss odors and the odor complaint history associated with Redwood Landfill. This discussion includes information on confirmed and unconfirmed odor complaints registered with the BAAQMD between 1997 and 2001. The decrease in the number of odor complaints since 1999 may be attributed to the cessation of the practice of broadcast air-drying of sludge (though air drying of sludge is proposed to resume at a reduced rate for a limited time under the project) a well as the change in management of the landfill and implementation of a new odor control and mitigation program for sludge handling operations.

Many of the comments regarding odors were specifically concerned about odors emanating from sludge handling practices at Redwood Landfill. As described more fully on DSEIR pages 2-24 and 2-25, RLI proposes to accept a reduced quantity of sludge, and to handle it by the following methods:

1) Air drying, for two consecutive spring seasons following permitting of the process, with no further air drying after that time. Air drying would be used to deplete RLI's existing stockpile of wet sludge, which is contained in the Main Sludge Impoundment. Air-dried sludge would be used as ADC. Air drying is accomplished by broadcast spreading and turning for approximately 3-4 days until the sludge reaches 50 percent solids. Air drying is proposed at the rate of about 3,000 wet tons per day (600 dry tons) for the period from late April through June, a period of typically dry weather when winds are favorable to avoid potential odor problems. Also, in order to control odors, RLI proposes to apply a potassium permanganate solution to the surface of the material when it is drying, and to apply an odor counteractant liquid as a vapor phase spray in the sludge drying area. RLI also proposes to use other unspecified odor control technologies in the future.

2) Direct disposal of wet sludge in the Class III disposal area consistent with current RWQCB approvals.

3) Mixing of wet sludge with soil, ground green waste, and/or ground wood waste for use as ADC.

4) Composting of wet sludge with green waste and other materials (also known as co-composting).

Beginning in approximately 1998, RLI discontinued spreading sludge over larger drying areas around the site. Instead, RLI uses a 10-acre section of the 34-acre pond for air drying sludge. The

current practice includes using either a box scraper or a mudcat (wide track) bulldozer to breach the berm within the 34-acre pond and to spread the sludge over the smaller drying area. Again, these air drying practices would occur for only two consecutive spring seasons following permitting of the process, with no further air drying after that time. DSEIR Mitigation Measure 3.2.10b limits the amount of sewage sludge to be air dried each day to less than 1,800 wet tons (360 dry tons) per day to limit volatile organic compound (VOC) emissions from air drying. This measure could also have some benefits in reducing odors from air drying. Also, as described on DSEIR page 3.2-20, the landfill operator sprays the surface of air-drying sludge with potassium permanganate solution to control odor. RLI has also installed a vapor phase odor counteractant system around its southern boundary. This system can provide continuous odor control when required. The proposed project would result in the continued use of these odor control measures related to air drying.

As described on DSEIR page 3.2-20, the applicant controls odors from composting activities by maintaining windrows in a manner that optimizes the composting process (e.g., proper aeration, moisture content, temperature, and carbon to nitrogen ratio). Portable lines connected to the perimeter vapor phase odor counteractant system are utilized when necessary at the composting/co-composting facility. Other topical odor control products are also used on windrows when necessary to control odors.

DSEIR Impacts 3.2.9 and 3.2.10 address odors related to activities at Redwood Landfill. More specifically, Impacts 3.2.9 and 3.2.10 address the proximity of sensitive receptors to the landfill, the BAAQMD's significance criteria linked to odor complaints, and changes in operations at Redwood Landfill that could affect odors related to the site. The project applicant does not propose to modify any of the odor control mechanisms that are currently in place. The use of potassium permanganate in sludge drying and the vapor phase counteractant system along the southern boundary of the site, and the project applicant's management of the site to minimize odors appear to have helped minimize odor complaints. Completion of an Odor Impact Minimization Plan, as required by Title 14 CCR §17863.4, which requires preparation and submittal of an Odor Impact Minimization Plan to the LEA, is identified in DSEIR Mitigation Measure 3.2.9b.

Further, RLI has greatly reduced the volume of its daily receipts of sludge, all of which is managed as it is received at the landfill through the co-composting windrow process, direct disposal, or by being mixed with soil, green waste or wood waste and used as ADC. With its current proposal, RLI has dropped the daily intake of sludge from the currently permitted average daily receipt of 550 tons per day to 232 tons per day, and a peak daily receipt decrease from a currently permitted amount of 1,000 tons per day to 232 tons per day.

The DSEIR concluded that the proposed operational changes, along with continuing use of proactive odor management strategies, will ensure that odors continue to be controlled to a less-than-significant level regardless of the overall increase in material acceptance at the landfill.

SUMMARY OF BAAQMD ODOR REGULATIONS

Several commenters requested specific information on concentration limits and BAAQMD regulations that pertain to odors at Redwood Landfill. The following information is provided to clarify BAAQMD odor regulations.

BAAQMD Regulations 7-101 and 7-102 place general limitations on emissions of odorous substances. BAAQMD Regulation 7, Odorous Substances, also has emission limitations and dilution rate requirements for various odorous pollutants, such as hydrogen sulfide, dimethylsulfide, ammonia, mercaptans, phenols, trimethylamine and other odorous compounds. This regulation applies when the BAAQMD receives validated odor complaints from 10 or more complainants in a 90-day period.

The District's standards with respect to odors are set forth in the following sections of Regulation 7:

7-301 **General Limits on Odorous Substances.** A person shall not discharge any odorous substance which remains odorous after dilution with odor-free air as specified in Table 1.

TABLE 1
DILUTION RATES

Elevation of Emission Point Above Grade in Meters (Feet)	Dilution Rate (Volumes of odor-free air per volume of source sample)
< 9 (30)	1,000
9 to 18 (30 to 60)	3,000
18 to 30 (60 to 100)	9,000
30 to 55 (100 to 180)	30,000
> 55 (180)	50,000

* Odor-free air is defined as air that has been passed through a drying agent followed by two successive beds of activated carbon.

7-302 **Limit on Odorous Substances at or Beyond Property Line.** A person shall not discharge any odorous substance which causes the ambient air at or beyond the property line of such person to be odorous and to remain odorous after dilution with four parts of odor-free air.

7-303 **Limit on Odorous Compounds.** A person shall not discharge concentrations of odorous compounds in excess of those specified in Table 2.

TABLE 2
MAXIMUM ALLOWABLE EMISSION CONCENTRATIONS (ppm)

Compound or Family of Compounds	Type A Emission Point	Type B Emission Point
Dimethylsulfide	0.1	0.05
Ammonia	5,000	2,500
Mercaptans	0.2	0.1
Phenolic compounds	5.0	2.5
Trimethylamine	0.02	0.02

* Type "A" emission points are defined as being located in a stack, whereas type "B" emission points include any sample point not qualifying as a type "A" emission point.

It should also be noted that Rule 9, Regulation 1, Sulfur Dioxide and Rule 2, Hydrogen Sulfide also set forth maximum allowable emission concentrations.

The BAAQMD measures compliance with these standards in two ways. To determine compliance with Section 7-301 and 7-302 standards, the Air District collects samples and uses an evaluation procedure that includes use of an odor panel. The evaluation apparatus for samples consists of a dynamic olfactometer (variable dilution device) which accepts a field sample, dilutes it with odor-free air and conducts it to an inhalation mask. Three subjects, selected by the Air District, are seated out-of-sight of the evaluation apparatus and fitted with the inhalation masks. The subjects are selected in accordance with procedures approved by the Air District that are designed to eliminate prospective subjects who have olfactory sensitivity deemed by the Air District to be unduly sensitive or insensitive at the time of the test. A signal lamp and a signal switch are in front of each subject. The subjects are given 20 presentations, each of 5 second duration and spaced 10 seconds apart. Half of the presentations are a diluted field sample, and half consist only of odor-free air; the samples are given in random order. If the subject can detect any odor, he responds by pressing his signal switch. A diluted sample is deemed odorous if during this odor evaluation at least two of the three subjects give negative responses to at least 8 of the 10 odor-free or "blank" presentations and affirmative responses to at least 8 of the 10 sample presentations. Samples deemed to be odorous in accordance with this evaluation procedure analysis are deemed to be in violation of the general limits established in Sections 7-301 and 7-302.

Compliance with Section 7-303 is based on the laboratory analysis of samples taken at the site following the BAAQMD's adopted Manual of Procedures. Samples exceeding the limits set forth in Table 2 or in Rule 9, Regulation 1, Sulfur Dioxide or Rule 2, Hydrogen Sulfide are deemed to be in violation of the general limits established in Sections 7-301 and 7-302.

CONTINUOUS ODOR MONITORING SYSTEM

Several commenters have requested that a permanent odor monitoring system be installed at Redwood Landfill. However, reliable continuous monitoring systems such as those recommended by commenters are not available. Furthermore, odor measurement is very subjective as human sensitivities to odors vary greatly. Use of an odor panel, such as that used by the BAAQMD (see discussion above), is the most often practiced method of detecting and determining odor violations. For these reasons, installation of an odor monitoring system is not considered feasible.

FILING AN ODOR COMPLAINT WITH BAAQMD

Several commenters requested information on how to report an odor complaint and the effectiveness of odor complaint investigations.

The BAAQMD is the primary agency responsible for regulating odors at Redwood Landfill. The BAAQMD receives approximately 3,000 air pollution complaints regarding stationary sources every year from the public, nearly 1,700 of these complaints are odor-related. Satisfactory resolution of these complaints is of prime importance to the District and one of the more difficult responsibilities of District staff. Responding to complaints from the public takes precedence over all other duties assigned to District inspectors, other than addressing a violation already in progress.

Every complaint registered with the District is investigated individually by an investigator/inspector from BAAQMD's Compliance & Enforcement Division. Whenever possible, complainants are contacted in person unless they specifically request otherwise. The names and addresses of complainants are confidential and are divulged to no one but District staff, except where required in matters pending before the court. District inspectors prepare a written report for each complaint investigation and this information is entered into the Air District's data bank, where a record is maintained.

During regular business hours, to the extent possible, complaints are dispatched to an inspector as soon as they are received and in no case later than 30 minutes after receipt, which insures a prompt and timely investigation while the event is in progress.

When complaints are dispatched, BAAQMD inspectors proceed directly to the area of the suspected source to determine the cause of the complaint. There, inspectors attempt to ascertain the specific origin of the emissions and whether or not a violation of Air District regulations has occurred. If so, enforcement action is taken.

A Notice of Violation (NOV) is a formal record of the BAAQMD staff's conclusion that a violation of state law regarding air quality or a District regulation has occurred. An NOV may result in monetary penalties, or, in serious cases, civil or criminal prosecution. In most cases, an NOV is settled by taking corrective action and paying a penalty. Corrective actions related to Redwood Landfill could include ceasing operations, changing material handling practices or

quantities accepted, use of additional odor controls, or other measures. NOVs are resolved through the BAAQMD's Mutual Settlement Program and Legal Division.

The recent odor complaints at Redwood Landfill have not warranted enforcement or corrective action by the BAAQMD.

The BAAQMD offers the following tips when making an odor complaint:

1. Complaints should be made as soon as possible after detecting an odor.

2. When filing an odor complaint, a good description is very helpful, especially in situations where the odor is gone by the time an inspector is able to respond. Complainants are encouraged to try to associate the odor with something familiar to most people such as rotten eggs, rotten cabbage, sweet or sour chemicals, burned gunpowder, burning pot handles, garlic, acid, chlorine or asphalt. Some other useful descriptors are oily, musty, metallic, pungent, light or heavy.

3. Additional helpful information includes whether the odor is fleeting but recurring or constant for long periods. It is also helpful to know how long the problem has been experienced.

4. It is also important to call in an additional complaint on each day that the problem is observed.

Complaints can be filed by calling the BAAQMD 24-hour toll-free complaint hotline at 1-800-334-ODOR (6367). Additional information is also publicly available on the District's website at http://www.baaqmd.gov/enf/complaints.asp. The public is encouraged to contact the District's Public Information Office at 415-749-4900 with concerns regarding the odor complaint process.

If during an investigation of odor complaints associated with Redwood Landfill, the odors are determined to be linked to the composting/co-composting operations, District staff will report the complaint to the LEA for enforcement, as required by law.

The text of Mitigation Measure 3.2.9b in this FSEIR has been revised to require that the project applicant notify the BAAQMD Compliance & Enforcement Division and County LEA staff of any complaints registered with the landfill, and that the project applicant shall provide BAAQMD odor complaint contact information to complainants upon receipt of their call.

MASTER RESPONSE 16: AIR EMISSIONS

The following Master Response separately addresses comments received on air quality monitoring data related to Redwood Landfill and also the calculation of baseline and project-related criteria air pollutant emissions.

AIR QUALITY MONITORING DATA

The California Air Resources Board (CARB) and the Bay Area Air Quality Management District (BAAQMD) operate a network of 36 air quality monitoring stations throughout the San Francisco Bay Area Air Basin. CARB uses data collected at these stations and other stations throughout the state to designate areas as attainment, nonattainment, or unclassified with respect to the state standards for criteria air pollutants.

DSEIR Table 3.2-2 includes data from the San Rafael monitoring station located roughly 15 miles south of the site. The table below summarizes monitoring data for the same time period from the San Pablo and Vallejo air pollutant monitoring stations. The San Pablo monitoring data represents data from the station located on El Portal just over 15 miles southeast of the site. The Vallejo station is located on Tuolumne Street about 17 miles east of the site.

Data from these monitoring stations, in addition to the data from the San Rafael monitoring station included in the DSEIR, provide general air quality data that can be useful in characterizing air quality in the region. It is not practical nor the intent of CARB or the BAAQMD to site continuous criteria air pollutant monitoring stations at individual locations such as Redwood Landfill.

For clarity, the second sentence in the third full paragraph on DSEIR page 3.2-10 has been revised as follows; these changes are reflected in the text of the FSEIR:

> Data collected at this station is considered to be generally representative of air quality ~~at the project site~~ <u>in the region surrounding the project site</u>.

CRITERIA AIR POLLUTANT EMISSIONS CALCULATIONS

The baseline and project-related air quality emissions estimates were revisited in this FSEIR based on comments received on the DSEIR and new information provided by the project applicant regarding average day and peak day material receipts. Largely, the revisions to the proposed project made subsequent to the DSEIR included reducing peak daily material receipt quantities to quantities that were equivalent to the average daily receipts (see Master Response 17). The revised emissions estimates were based on the revised quantities shown in FSEIR Table 2-2 of Chapter 2, Project Description, and the revised trip generation information shown in FSEIR Table 3.10-4 in Section 3.10, Transportation and Traffic. The detailed calculations are included in Appendix D to this FSEIR. The text of Section 3.2, Air Quality, of this FSEIR has been revised to reflect the changes described herein.

SAN PABLO AND VALLEJO POLLUTANT SUMMARY (1997-2001)

Pollutant	State Standard[b]	Monitoring Data by Year 1997	1998	1999	2000	2001
San Pablo						
Ozone (O_3):						
Highest 1-hr. average, ppm[a]	0.09	**0.11**	0.07	**0.10**	0.08	0.09
Number of exceedances		1	0	1	0	0
Carbon Monoxide (CO):						
Highest 1-hr. average, ppm	20	4	4	4	3	2
Number of exceedances		0	0	0	0	0
Highest 8-hr. average, ppm	9.0	2.3	2.4	2.4	1.9	1.4
Number of exceedances		0	0	0	0	0
Particulate Matter (PM-10):						
Highest 24-hr. average, $\mu g/m^3$	50	46	32	NA	NA	NA
Exceedances/Samples[c]		0/40	0/30			
Annual Geometric Mean, $\mu g/m^3$	30	16	17			
Vallejo						
Ozone (O_3):						
Highest 1-hr. average, ppm[a]	0.09	**0.10**	**0.12**	**0.11**	0.08	0.09
Number of exceedances		1	3	4	0	0
Carbon Monoxide (CO):						
Highest 1-hr. average, ppm	20	7	7	7	7	6
Number of exceedances		0	0	0	0	0
Highest 8-hr. average, ppm	9.0	4.9	5.3	5.5	5.1	4.1
Number of exceedances		0	0	0	0	0
Particulate Matter (PM-10):						
Highest 24-hr. average, $\mu g/m^3$	50	**85**	**71**	**84**	**53**	**86**
Exceedances/Samples[c]		3/61	1/61	3/60	1/61	3/61
Annual Geometric Mean, $\mu g/m^3$	30	16	15	NA	13	17

[a] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[b] State standard, not to be exceeded.
[c] PM-10 is usually measured every sixth day (rather than continuously like the other pollutants). "Exceedances/ samples" indicates the number of exceedances of the state standard that occurred in a given year and the total number of samples that were taken that year.

NA = Data not available.

NOTE: Values shown in **bold** type exceed the applicable standard.

SOURCE: California Air Resources Board (CARB), www.arb.ca.gov/adam, 2004.

For this FSEIR, the criteria air pollutant emissions estimates for the following sources were revisited:

- On-Road Vehicles;
- Off-Road Equipment;
- Composting/Co-Composting;
- Fugitive Dust from Landfill Operations;
- Sludge as ADC and Disposed; and,
- Sludge Air Drying.

Emissions from construction activities, fugitive landfill gas[3], and flare emissions were unaffected by the revisions to the proposed project. Emissions impacts specifically related to redesignation of Area G as a Class II cell have been deleted.

With respect to on-road vehicle emissions, baseline and project emissions estimates were recalculated for this FSEIR using composite vehicle emission factors derived from CARB's EMFAC 2002 v2.2 model (rather than the EMFAC 2001 model used in the DSEIR). EMFAC 2002 v2.2 is the current model used to derive emission factors for estimating emissions from on-road vehicles. The on-road vehicle emissions estimates also reflect the revised trip information provided by the applicant subsequent to DSEIR publication that reflects new information regarding average day and peak day material receipts. The revised baseline and project-related increases in criteria air pollutant emissions from on-road vehicles are shown in revised Tables 3.2-4 and 3.2-6, respectively. While the project-related increase in emissions decreased substantially from that presented in the DSEIR, the net increase in on-road vehicle emissions of NO_x alone would continue to exceed the BAAQMD thresholds of significance and would remain significant. Therefore, the conclusion with respect to the significant increase in NO_x from on-road vehicles is unchanged from that presented in the DSEIR.

The off-road equipment emissions were revised to reflect the reduced peak daily material receipts (from 6,230 tons per day to 4,324 tons per day) proposed by the project applicant subsequent to DSEIR publication. Similar to the analysis conducted for the DSEIR, to estimate the increase in off-road equipment emissions, it was assumed that daily equipment use would increase proportionally to the increase in peak daily material receipts. The revised baseline and project-related increases in criteria air pollutant emissions from off-road equipment use are shown in revised Tables 3.2-4 and 3.2-6, respectively. The project-related increase in emissions from off-road equipment decreased substantially from that in the DSEIR; the net increase in NO_x emissions decreased from 156 pounds per day in the DSEIR to an estimated increase of 118 pounds per day, which is, however, still above the BAAQMD threshold of significance.

The combined net increase in NO_x emissions from the increased off-road equipment use and on-road vehicle travel would be reduced from the 507 pounds per day found in the DSEIR to an amount of 241 pounds per day over baseline conditions. The combined emissions from these sources would exceed the BAAQMD thresholds of significance. Therefore, the conclusion with

[3] Revised landfill life expectancy estimates (see Table MR-21-1 in Master Response 21) would have a minor effect on the calculations of fugitive landfill gas emissions, but not enough to change the conclusions of the analysis. Therefore, the calculations shown in Appendix D7 in Volume 1 are unchanged from the DSEIR.

TABLE 3.2-4
ESTIMATED REDWOOD LANDFILL BASELINE EMISSIONS

Emission Source	Emissions (pounds per day)				
	CO	ROG	NO_X	PM-10	So_X
Fugitive Landfill Gas[a]	--	118	--	--	--
Flare Emissions	--	7	--	--	--
Composting/Co-Composting	--	171	--	--	--
Sludge accepted for Disposal	--	38	--	--	--
Sludge Handling[b]	--	24	--	--	--
Off-Road Equipment	19	7	115	3	--
Fugitive Dust	--	--	--	817	--
On-Road Vehicles	158	7	76	16	1
TOTAL	**177**	**372**	**191**	**836**	**1**

[a] Reflects fugitive landfill gas emissions emitted directly to the atmosphere.
[b] Based on emissions factor for VOCs for N-Viro process with emissions controls for 500 wet tons per day, as specified in the 1994 FEIR.

respect to the significant increase in NO_x from on-road vehicles and off-road equipment use is unchanged from that presented in the DSEIR.

The composting/co-composting emissions in the DSEIR were calculated based on the annual throughput of greenwaste/woodwaste, biosolids, and food waste feed stocks. The annual throughput was estimated based on the average permitted amount of material versus peak permitted material, so there were no changes in emissions resulting from the project applicant's proposed revisions to material receipts. However, the emissions estimates were revised to reflect that ROG is a subset of the CIWMB Total Non-Methane Hydrocarbons factor for green/wood waste composting. The CIWMB factor used to estimate green/wood waste composting emissions was adjusted to reflect 39 percent ROG in the Total Non-Methane Hydrocarbons. The revised baseline and project-related increases in criteria air pollutant emissions from composting/co-composting activities at Redwood Landfill are shown in revised Tables 3.2-4 and 3.2-6, respectively. The proposed increase in composting feedstock would continue to exceed the BAAQMD thresholds of significance for ROG.

Estimating fugitive dust emissions at landfills is complicated. The fugitive dust emissions estimates for Redwood Landfill were revised for this FSEIR to reflect the reduced peak daily receipts proposed by the project applicant subsequent to DSEIR publication and to reflect current methodologies used by BAAQMD staff in its permitting at the landfill. BAAQMD fugitive dust

TABLE 3.2-6
INCREASES IN EMISSIONS OF CRITERIA AIR POLLUTANTS FROM THE PROJECT
(Without Mitigation Measures)

Emission Source	Impact	Emissions (pounds per day)			
		CO	ROG	NO_x	PM-10
Construction Activities	3.2.1				NQ
On-Road Vehicles	3.2.2	207	6	**123**	16
Off-Road Equipment	3.2.2	20	7	**118**	3
Fugitive Dust from LF operations	3.2.4				**375**
Fugitive Landfill Gas	3.2.5		12		--
Flare Emissions[a]	3.2.5	NQ	1	NQ	NQ
Composting/Co-Composting	3.2.6	--	**105**	--	--
Sludge as ADC and Disposed	3.2.7		-18		
Sludge Air Drying	3.2.10	--	**150**	--	
Designated waste disposal in Area G[a]	3.2.13	--	NQ	NQ	NQ
TOTAL QUANTIFIED EMISSIONS		227	**262**	**242**	**394**
BAAQMD Significance Criteria		550	80	80	80
Countywide Total[b]		246,400	44,420	37,400	15,740
Quantified Project Emissions as a % of Countywide Emissions		0.09%	0.59%	0.65%	2.50%

Key:
NQ = Not Quantified
Bolded values are in excess of applicable standard.

[a] Landfill gas flare and other combustion emissions, and designated waste emissions, could not be quantified due to insufficient information from the applicant.
[b] Countywide emissions totals were obtained from CARB's 2001 Estimated Annual Average Emissions Inventory for Marin County, available on CARB's website at www.arb.ca.gov.

SOURCE: Environmental Science Associates, California Air Resources Board

emission estimates and calculation sheets used by the BAAQMD in permitting at Redwood Landfill were obtained for use in estimating fugitive dust emissions for this FSEIR. The revised fugitive dust emissions estimates were based entirely on published emission factors and methodologies from the U.S. EPA's *AP-42: Compilation of Air Pollutant Emission Factor*s document. The following table shows the fugitive dust source and corresponding AP-42

section(s) that were used to refine the FSEIR fugitive dust emissions estimates for baseline and project conditions.

Fugitive Dust Source	U.S. EPA AP-42 Section(s) (published date)
Off-Site Vehicle Travel on Gravel Surfaces	13.2.2 Unpaved Roads (12/03)
Off-Site Vehicle Travel on Dirt Surfaces	13.2.2 Unpaved Roads (12/03)
Off-Site Vehicle Travel on Paved Surfaces	13.2.1 Paved Roads (12/03)
On-Site Vehicle Travel on Dirt Surfaces	13.2.2 Unpaved Roads (12/03)
Waste Handling	11.9 Western Surface Coal Mining (10/98) 13.2.3 Heavy Construction Operations (1/95) 13.2.4 Aggregate Handling and Storage Piles (1/95)
Wind Erosion	13.2.5 Wind Erosion (1/95)

The revised baseline fugitive dust emissions estimates are shown in Table 3.2-4 and are included in Table D-5 in Appendix D of this FSEIR. The increase in project-related fugitive dust emissions shown in Table 3.2-6 reflects the incremental increase in daily waste receipts and proportional increases in vehicle miles traveled on gravel, dirt and paved surfaces related to increased vehicle trips, on-site vehicle use and waste handling activities. The emissions estimates shown in Table 3.2-6 reflect ongoing implementation of control measures (i.e., watering). Mitigation Measure 3.2.4 would ensure that existing control measures continue to be implemented and that the project applicant would continue to work with the LEA and BAAQMD to control dust at the site. The revised emissions estimates predict that the project-related net increase in fugitive dust emissions would be lower than shown in the DSEIR, but the impact would still remain significant.

The baseline and project-related increases in air pollutant emissions of criteria air pollutants from sludge handling practices have also been revisited. The emissions estimates and text of the FSEIR have been revised to reflect the increased average day and reduced peak day biosolids receipts proposed by the applicant subsequent to DSEIR publication. The baseline emissions estimates were also modified to reflect a lower tonnage limit for sludge receipts under the current permit, based on a reinterpretation of permit conditions. In this reinterpretation, the permitted volume of daily sludge receipts is reduced by the amount of material that may be received for composting; in other words, composted materials are accepted at a rate not in addition to sludge receipts, but rather are to be substituted for sludge receipts. As shown in Table MR17-1, permitted sludge receipts for purposes other than composting are 424 tons per day average and 455 tons per day peak. Using these figures, the baseline for sludge handling is lower than appeared in the DSEIR. However, the project, with its reduction in biosolids receipts, would result in a net decrease in ROG emissions associated with sludge disposal and use as ADC.

While the new information provided by the project applicant regarding average day and peak day material receipts reduced the net increase in emissions from the various sources (in some cases quite substantially), the project would still result in emissions of criteria air pollutants that exceed BAAQMD thresholds of significance. The re-analysis of emissions does not affect the

conclusions presented in the DSEIR. Some changes to the text and mitigation measures have been made to the DSEIR for clarity or in response to specific comments raised on the DSEIR. These changes are reflected in the text of Section 3.2, Air Quality, of this FSEIR.

MASTER RESPONSE 17: PROJECT CHANGES SINCE PUBLICATION OF THE DRAFT SEIR

Since publication of the DSEIR, the applicant has made several changes in their proposal. These changes are detailed in Comment Letter K, and in subsequent correspondence between the applicant, Marin County, and the Regional Water Quality Control Board (RWQCB), including a revised application for Solid Waste Facilities Permit. This Master Response provides details of the proposed project changes.

1. AREA G

The applicant has removed their proposal to reclassify Area G as a Class II waste cell; instead, Area G would be developed as a Class III cell, consistent with the current SWFP. More detail is provided in Master Response 6.

2. VARIOUS CHANGES IN REQUESTED LIMITS ON DAILY INTAKE OF WASTES

The applicant has made several changes to the proposed limits on daily intake of various types of waste. The differences between the former proposal (that which was evaluated in the DSEIR) and the proposed revisions are shown in Table MR17-1. Table MR17-1 also provides the currently permitted waste volumes, as per the original Table 2-2 that was published in the DSEIR. Overall, the applicant is now proposing a slight increase in the average daily amount of waste materials that could be received at the landfill, but a substantial decrease in the peak amount. These changes primarily affect the air quality analysis. See Master Response 16 for changes in the EIR analysis.

The following summarizes the applicant's changes to the proposed maximum daily waste volumes. Note that all "changes" described compare the "revised proposal," with the former proposal, which was described and analyzed in the DSEIR):

Landfilled Waste:

- the former proposal for the average daily quantity of non-hazardous Class III waste was 1,350 tons. The applicant has revised the proposal to enable them to accept up to 1,850 tons of this material type per day, an increase of 500 tons per day. The revised peak amount would also be 1,850 tons, or 50 tons per day less than the formerly proposed peak;

- the revised proposal includes an increase in the average daily receipt of non-hazardous sludge (Class B biosolids) for disposal, from the formerly proposed average of 71 tons per day to 100 tons per day. The peak would decline from the formerly proposed 160 tons per day to 100 tons per day;

- receipt of Class II petroleum-contaminated soil not meeting RWQCB criteria, formerly proposed at the rate of 500 tons per day average and 1,000 tons per day peak, is eliminated in the revised proposal;

- other designated wastes, including PC soils meeting the RWQCB criteria, would remain at 200 tons per day average, as was formerly proposed, but the peak would decrease from the formerly proposed rate of 500 tons per day to a revised rate of 200 tons per day. The applicant has clarified that the types of designated waste proposed to be received at the landfill would be the same as categories of designated waste currently permitted in the facility's SWFP and WDRs and would meet waste acceptance criteria specified in the current WDRs. Specifically, such materials include dewatered nonhazardous sludge; incinerator ash, grit and grease, storm drain cleanings, nonhazardous holding tank pumpings, treated wood (e.g., telephone and power poles, pier docks), dredge and fill material, and triple rinsed containers.

- The former proposal, as evaluated in the DSEIR, was for a total *average* for landfilled waste of 2,121 tons per day. The revised figure is 2,150 tons per day. The *peak* for all landfilled waste would decrease under the revised proposal from the formerly proposed figure of 3,560 tons per day to 2,150 tons per day, a decrease of 1,410 tons per day.

Recycled, Reused, Composted Waste and Cover Material:

- non-hazardous materials for recycling or re-use, not including materials for composting, would remain at 10 tons per day average in the revised proposal, though the peak would decline from the former proposal of 20 tons per day to 10 tons per day.

- receipt of materials for composting, including greenwaste, wood waste, biosolids, and food waste, would remain at 514 tons per day average, as in the former proposal, though the peak would decline from 945 tons per day to 514 tons per day, a decline of 431 tons.

- the average daily amount of materials received for use as cover material, including PC soil, clean soil, and biosolids, would increase by 3 tons per day under the revised proposal, from the formerly proposed rate of 1,187 tons per day, to 1,190 tons per day. The peak amount of these materials would decline from the formerly proposed rate of 1,706 tons per day to the revised rate of 1,650 tons per day, a decrease of 56 tons per day.

- the total amount of recyclable, reusable, and compostable material, and material used for cover, would increase by 3 tons per day average under the revised proposal, compared to the former proposal, from 1,711 tons per day to 1,714 tons per day. The peak amount of these materials would decrease by 497 tons per day.

Totals:

- The total amount of biosolids received would increase in the revised proposal by 32 tons per day average compared to the formerly proposed figure of 200 tons per day, to 232 tons. The peak amount of biosolids would decline by 219 tons, from 451 tons per day to 232 tons per day.

- The total average daily receipt of all materials received under the revised proposal would increase by 32 tons per day compared to the former proposal, but the peak amount would decline under the revised proposal by 1,907 tons per day.

3. TRAFFIC

Because of the decrease in peak daily tonnage, the peak daily vehicle trip generation would also decline, in comparison with the proposal evaluated in the DSEIR:

- a decline in the maximum number of vehicles carrying waste, from the figure of 1,680 vehicle trips per day (VTD) described and evaluated in the DSEIR, to 1,080 VTD under the revised proposal;
- other vehicles, including employees, visitors, and deliveries, would decrease from the formerly proposed figure of 120 VTD to a revised figure of 100 VTD;
- construction traffic (seasonal) would remain at 200 VTD, as in the former proposal evaluated in the DSEIR;
- total proposed traffic would decrease from 2,000 VTD, as evaluated in the DSEIR, to 1,380 VTD under the revised proposal.

The DSEIR did not identify any significant traffic impacts of the proposal then being analyzed. Because the applicant's revisions to requested peak daily vehicles accessing the landfill would decrease landfill traffic volumes, there would be no affect on the conclusions of traffic analysis in the DSEIR. Master Response 16 provides a revised analysis of traffic-related air emissions.

4. CONSTRUCTION MATERIALS

The applicant requests in Comment K-16 that the FEIR clarify that receipt of materials for construction is not included in the daily tonnage limits. This would include soil for construction of the perimeter levees and roadways, and for "other projects."

5. LCRS

In correspondence with the RWQCB subsequent to the close of comments, as well as in their comment letter (Comment Letter K), the applicant has agreed to changes to the design and operation of the LCRS. These include use of existing and future landfill gas wells in the interior of the landfill for extraction of leachate; establishment of performance criteria to determine LCRS effectiveness; and the proposal to key sections of the perimeter LCRS trench into refuse, rather than into Bay Mud. These changes are detailed and evaluated in Master Response 13.

TABLE MR17-1
CHANGES TO PROPOSED TYPES AND QUANTITIES OF MATERIALS (TONS PER DAY)

	Currently Permitted		Formerly Proposed		Revised Proposal		Change in Proposal	
Material Type	Average	Peak Day	Average	Peak Day	Average	Peak Day	Average	Peak Day
Landfilled								
Non-hazardous Class III waste	**N/S**	1,270	**1,350**	1,900	1,350	1,350	100	-550
"Class III waste to replace previous Class II waste proposal"	N/S	N/S	N/S	N/S	500	500	500	500
Subtotal: Non-Hazardous Class III Waste	N/S	1,270	**1,350**	**1,900**	**1,850**	**1,850**	**500**	**-50**
Non-hazardous sludge (Class B biosolids) for direct disposal or to main impoundment	N/S	N/S	71	160	100	100	29	-60
Class II Petroleum contaminated soil (not meeting RWQCB criteria)	N/S	N/S	500	1,000	0	0	-500	-1,000
Other designated wastes (including PC soil meeting RWQCB waste acceptance criteria) /1/	N/S	20	200	500	200	200	0	-300
Total Landfilled Waste	**N/S**	**1,290**	**2,121**	**3,560**	**2,150**	**2,150**	29	-1,410
Recycable. Reusable, Compostable								
Non-hazardous separated or commingled materials (not including green/yard/wood waste, PC soils, or clean soils)	10	10	10	20	10	10	0	-10
Compostable								
Green/yard/wood waste (includes material for composting and ADC)	42	238	400	700	400	400	0	-300
Biosolids (Class B) (for composting)	84	307	82	185	82	82	0	-103
Food Waste	-	-	32	60	32	32	0	-28
Subtotal: Compostable	126	545	514	945	514	514	0	-431
Materials used for interim, daily, and alternative daily cover								
Petroleum Contaminated (PC) soil meeting RWQCB criteria (for ADC)	N/S	N/S	640	800	640	800	0	0
Clean soil (for cover)	N/S	N/S	500	800	500	800	0	0
Biosolids (Class B) (for ADC)	424	455	47	106	50	50	3	-56
Subtotal Cover Materials	N/S	455	1,187	1,706	1,190	1,650	3	-56
Total Recyclable, Reusable, Compostable, Cover	**560**	**1,010**	**1,711**	**2,671**	**1,714**	**2,174**	**3**	**-497**
TOTAL	**N/A**	**2,300**	**3,832**	**6,231**	**3,864**	**4,324**	**32**	**-1,907**
Total biosolids (Class B) for all purposes - Full and Registration Tier SWFPs - (for comparison) /2/	**550**	**1,000**	**200**	**451**	**232**	**232**	**32**	**-219**

Key: N/A: Not applicable; N/S: Not specified in permits
Note: Some totals may not sum due to rounding.
/1/ The applicant is requesting no change in the types of designated waste that would be accepted.
/2/ The current Registration Tier Composting Permit allows use of a portion of the biosolids permitted under the current SWFP for co-composting. The Registration Tier Composting Permit does not provide an entitlement to increase the overall volume of material accepted at the landfill. Therefore, the amount of material permitted for composting is subtracted from the permitted average and peak levels of sludge receipts.

MASTER RESPONSE 18: APPLICANT'S RECORD OF COMPLIANCE

The current environmental review process and completion of the EIR is part of the process to evaluate changes to site operations and activities that the County determined were not covered by the existing SWFP, in order to ensure that the facility operates in compliance with its permits.

In the fall of 1996 EHS, in its capacity as LEA, identified significant changes in operations at the landfill that were not recognized in the 1995 SWFP and had not received environmental review. EHS wrote the applicant requesting RLI to submit an application to revise its SWFP. Permit revisions require discretionary approvals and thus are subject to environmental review under CEQA. RLI disagreed with the County's view of changes that had occurred at the site, and EHS, the County Community Development Department, County Counsel, and RLI subsequently were involved in a series of communications and meetings over the next two years, culminating in agreement, in November 1997, that an Initial Study type of review of the changes was needed to determine whether further CEQA analysis would be required. The Initial Study also evaluated future changes proposed by the applicant and presented in the applicant's Project Description and application to revise the SWFP, dated March 31, 1998. The initial study type review was completed at the end of 1999. This EIR analyzes the existing and proposed elements identified in the IS as warranting additional environmental review.

The purpose of the EIR is to identify potential impacts of activities and landfill design features not covered in the previous EIR, and to identify measures to mitigate the significant impacts. In addition to modifications proposed by the applicant, the project evaluated in the DSEIR includes practices already in place at the landfill that have not previously received environmental review; these are clearly described in Chapter 2, Project Description. As also described in the EIR, upon completion of the EIR process, the LEA will determine whether or not to approve the project. If the project is approved, the SWFP will be revised to incorporate changes at the site, along with measures required to mitigate impacts of these changes.

Several commenters questioned whether the various regulatory agencies have sufficient authority to enforce permit provisions. The LEA and the CIWMB have broad regulatory authority over landfill operations, including authority to undertake several types of enforcement actions. Statutory authority for LEA enforcement is contained in Public Resources Code [PRC] Section 43209, and CCR, Title 14, §18081 (c) and §18084. LEA enforcement policies and procedures are detailed in a CIWMB publication, *LEA Enforcement Advisory/Board Enforcement Policy,* published as LEA Advisory #38, March 17, 1997. The following discussion is based on this publication

The LEA inspects solid waste facilities periodically. Most landfills, including Redwood Landfill, are inspected monthly. At the conclusion of each inspection, the LEA issues an inspection report noting any violations (violations of permit conditions or state minimum standards) as well as any areas of concern – issues that may become violations. Upon identification of a violation, the LEA may also issue a separate Notice of Violation, underscoring the seriousness of the violation,

stating or requesting a work plan to correct the violation, and informing the facility operator of the consequences of not correcting the violation.

The CIWMB and the LEAs maintain the Inventory of Solid Waste Facilities that Violate State Minimum Standards. Notification of a violation for two consecutive months will result in the CIWMB issuing the facility a 90-day Notice of Intent to place the facility in the Inventory, if the violation is not corrected. Once a facility is included in the Inventory, the LEA prepares a Compliance Schedule which is meant to ensure that diligent progress will be made to bring the facility into compliance in a timely fashion. The Compliance Schedule may stand alone, or may be issued as part of a Notice and Order. If the owner or operator of the facility fails to comply with the Compliance Schedule, the LEA is required to issue a Notice and Order, essentially a demand on the facility to correct violations or to face consequences, which may include civil penalties, seeking a court injunction, or revoking the facility's permit. LEAs may also work with the facility owner and operator to develop and agree to a Stipulated Notice and Order, to which the facility owner is signatory, which spells out the terms and schedule for correction of the violation, and which, like a Notice and Order, spells out the consequences of non-compliance. LEAs are required to coordinate where appropriate with other agencies with regulatory authority over solid waste facilities, in enforcement actions and in developing corrections.

As stated in the DSEIR (Chapter 2, Project Description, page 2-31) in 1999 the LEA issued a Stipulated Notice and Order to Redwood Landfill. The landfill had been consistently exceeding its permitted level of incoming traffic to the facility. The Stipulated Notice and Order allows RLI to exceed the number of vehicle trips permitted in the 1995 SWFP, until such time as a new SWFP is issued. The Stipulated Notice and Order allows an additional 64 vehicle trips per day (32 vehicles in and 32 vehicles out) above the permitted 830 vehicle trips per day, provided they are limited to private and small commercial self-haulers.

PRC §44015 and California Code of Regulation (CCR) Title 27, §21640 set the requirement that any Solid Waste Facility Permit (permit) issued or revised shall be reviewed at least once every five years. The requirements for the 5-Year Permit Review are detailed by the CIWMB on their website (http://www.ciwmb.ca.gov/PermitToolbox/CheckItems/PermitReview/default.htm#FullPermit) and summarized below.

The purpose of the 5-Year Permit Review is to document any changes in design and operation since the permit was issued, or since the permit was last revised or reviewed. The permit review should especially note any significant or unauthorized changes that are planned or have occurred at the facility.

The facility operator is required to submit a Solid Waste Facility Permit Application at least 150 days before the permit is due for review. The application for permit review should:

- Identify any proposed changes in design and operation; and
- Include updated amendments to the Report of Facility Information (RFI); and

- For disposal sites only, include an estimate of the remaining site life and capacity. Also, Title 27, §21875 requires any amendments to the closure and post-closure maintenance plans to be submitted with the permit review.

Depending on the LEA's findings and conclusions, there are four possible directives that can be given to the operator/applicant as a result of the 5-Year Review, as shown in Table MR18-1.

TABLE MR18-1
RESULTS OF 5-YEAR PERMIT REVIEWS

LEA Conclusion(s)	Directives to Operator
Minor changes in design and operation that meet the findings of Title 27 §21665(c),	Submit an application for a RFI amendment
Change in operator or land owner.	Submit owner/operator change notification as specified by Title 27 §21630 and LEA Advisory No. 47.
Significant changes in design or operation, or other changes that can not be addressed through an RFI amendment - Title 27 §21665(c).	Submit an application for a revised permit.
	Conduct initial study to determine if additional CEQA is necessary.
	Submit new or amended closure plan per Title 27, §21875.
	Prepare and process a full permit.
No changes in design or operation; changes in the terms and conditions are not necessary.	LEA can reissue permit with a new cover page.

The Marin County EHS (the LEA for Marin County) last completed a 5-Year Review for Redwood Landfill on December 10, 2003. The 5-Year Review presents many of the same findings identified in the prior 5-Year Review in 1998, including the proposed and already-implemented changes to landfill design and operation that are the subject of the current SEIR. The applicant did not file an application to the LEA for a Permit Review Report, as required. An application would have noted any aspects of landfill design or operation that did not conform with current permits. However, as discussed in the Project Description of the DSEIR, these include construction of the perimeter LCRS without integrated levee construction; air drying of sludge; and abandonment of the N-Viro process for sludge processing.

In summary, the Marin County LEA has adequate statutory authority to enforce the landfill's permit conditions, and has been diligently regulating landfill activities. The current EIR is part of the lengthy process to review the landfill's existing permit, The LEA is defining the parameters of a revised permit and is deciding whether to issue a revised permit to the landfill as opposed to a new permit.

MASTER RESPONSE 19: DEVELOPMENT OF REDWOOD LANDFILL AS A REGIONAL LANDFILL

Several commenters noted that the applicant's proposal would enable Redwood Landfill to become more of a regional waste disposal facility, and several questioned why the applicant would select this facility for expansion. The DSEIR discusses this issue (Chapter 1, Summary, page 1-10).

As detailed in Master Response 9, a significant portion of the waste currently received at Redwood Landfill originates outside Marin County. The applicant's revised proposal (see Master Response 17) would significantly reduce maximum daily receipt of sludge, but would significantly increase daily receipt of non-hazardous municipal solid waste and designated waste other than sludge. The applicant also proposes to increase the maximum daily receipt of materials for composting by a factor of about 4.

Figure MR 9-2, in Master Response 9, shows that, in 2002, about 78 percent of the solid waste generated in Marin County was disposed at Redwood Landfill. Since future expansion of waste generation in Marin County is predicted to be modest, it stands to reason that most of the additional proposed capacity would be, or could be, used for disposal and processing of waste from outside the County.

Since the adoption of federal minimum standards for landfill design under the Resource Conservation and Recovery Act in the early 1990's (known as Subtitle D), many landfills across the region and across the country that have been unable to meet the new standards have closed. In addition, new landfills and lateral expansions of existing landfills must be built with Subtitle D compliant liners and leachate collection systems, which add significantly to the cost of landfill construction. In order to cover these costs and to operate competitively, landfills require a sufficient intake of waste to achieve an economy of scale. In addition, several recent U.S. Supreme Court rulings have upheld transport and disposal of waste as items of interstate commerce, meaning that most restrictions on the free flow of waste across state boundaries are contrary to the U.S. Constitution. Thus, there has been a trend in the waste management industry away from small landfills located within or close to the communities they serve, and accepting mostly or exclusively local wastes, toward fewer, larger landfills with greater daily waste volumes, that accept waste from a wide geographic area; landfills in general have become regional facilities and they have become major capital assets of waste management companies.

Redwood Landfill does not have a Subtitle D compliant liner system, except in the newly-constructed Area G. Instead, the landfill relies on the low permeability of the underlying Bay Mud to contain leachate and prevent contamination of groundwater (see Master Response 1). This may allow Redwood Landfill to operate at a lower cost than landfills with a Subtitle D liner, since the capital cost of a liner was not necessary (except in Area G). While economic analysis is beyond the scope of this EIR, reduced capital and operating costs may have provided some economic incentive to the applicant for the proposed increase in the scale of operations at Redwood Landfill. The project would also increase the daily intake of wastes and the overall

capacity of the landfill, and increase the life expectancy of the facility, thus enabling the applicant to realize greater revenues over a longer period of time. It should be noted, as well, that Alameda County recently approved a scaled-back alternative to a proposal by Waste Management to expand overall capacity and permitted daily volumes at the Altamont Landfill; an expansion of Redwood Landfill's capacity and daily allowable waste intake, as is being proposed, substantially increases Waste Management's waste disposal capacity in the greater San Francisco Bay Area.

MASTER RESPONSE 20: DETAILS ON MITIGATED ALTERNATIVE

Several comments express support for the Mitigated Alternative, which is presented in Chapter 5 of the DSEIR. Several commenters note that the Mitigated Alternative is more consistent than the project with Marin County's Interim Sustainability Principles, which are being used to guide development of the updated Countywide Plan (General Plan) (see response to Comment V-4). This Master Response provides more detail on the Mitigated Alternative and includes additional analysis of the ability of this Alternative to reduce or eliminate the significant unavoidable impacts of the project.

Table MR 20-1 presents the tonnage limits for various material types under the Mitigated Alternative, and compares these to current permit conditions and to the applicant's revised proposal (see Master Response 17). To summarize, the Mitigated Alternative would allow for no increase in the receipt of municipal solid waste above the currently-permitted level of 1,270 tons per day. Neither would this alternative allow for an increase in designated wastes above the currently-permitted level of 20 tons per day. There would be no change in the types of designated wastes that could be received at the facility. Receipt of Class B biosolids for disposal would be capped at 100 tons per day, which is consistent with the applicant's revised proposal, and a substantial reduction compared to currently permitted biosolids receipts. Receipt of Class B biosolids for co-composting would be capped at 80 tons per day, and receipt of this material for use as ADC would be limited to 50 tons per day. Total biosolids receipts for all purposes would be limited to 230 tons per day.

The Mitigated Alternative would allow for a modest increase in the scale of the permitted co-composting operation. Average daily receipt of green, yard, and wood waste would increase from the currently permitted 42 tons per day to 60 tons per day, and food waste would be added as an allowable feedstock, limited to 30 tons per day. As previously mentioned, biosolids for the co-composting operation would be limited to 80 tons per day. Total receipt of materials for the co-composting operation, including biosolids, would be 170 tons per day.

The Mitigated Alternative includes a substantial increase in the facility's capacity to recover materials for recycling. The current permit, and the applicant's revised proposal, both limit acceptance of materials for recycling at 10 tons per day. The Mitigated Alternative would require Redwood to develop systems for recovering materials from mixed and source-separated loads, focusing on debris boxes and self-haul loads, and to allow for acceptance of up to 400 tons per day for this purpose. It is anticipated that the recovery system would include separate tipping areas for clean recyclable materials, including rock, concrete and other inert materials; mattresses, other bulky items, and carpet; salvaged lumber and building materials; roofing materials, and other materials. The recovery system would also include manual and mechanical sorting of construction and demolition loads and other loads for recovery of a variety of materials. Facilities of this sort are capable of recovering around 75 percent of incoming materials. It is likely that many of the loads from which materials would be recovered would be redirected from the disposal area. Unrecoverable residues from the recycling operations would be disposed in the landfill, and would count against the facility's daily tonnage limit. In addition, bins for recycling

TABLE MR20-1
MITIGATED ALTERNATIVE DETAILS (TONS PER DAY)

	Revised Currently Permitted		Refined Mitigated Alternative		Applicant's Revised Proposal	
Material Type	**Average**	**Peak Day**	**Average**	**Peak Day**	**Average**	**Peak Day**
Landfilled						
Non-hazardous Class III waste	**N/S**	1,270	1,270	1,270	1,350	1,350
"Class III waste to replace previous Class II waste proposal"	N/S	N/S	N/S	N/S	500	500
Subtotal: Non-Hazardous Class III Waste	N/S	1,270	**1,270**	**1,270**	**1,850**	**1,850**
Non-hazardous sludge (Class B biosolids) for direct disposal or to main impoundment (for current permit, see below)	N/S	N/S	100	100	100	100
Class II Petroleum contaminated soil (not meeting RWQCB criteria)	N/S	N/S	0	0	0	0
Other designated wastes (including PC soil meeting RWQCB waste acceptance criteria) /1/	N/S	20	20	20	200	200
Total Landfilled Waste	**N/S**	**1,29**	**1,390**	**1,390**	**2,150**	**2,150**
Recycable. Reusable, Compostable						
Non-hazardous separated or commingled materials (not including green/yard/wood waste, PC soils, or clean soils) for Recycling	10	10	400	400	10	10
Compostable						
Green/yard/wood waste (includes material for composting and ADC)	42	238	60	60	400	400
Biosolids (Class B) (for composting)	84	307	80	80	82	82
Food Waste	-	-	30	30	32	32
Subtotal: Compostable	126	545	170	170	514	514
Materials used for interim, daily, and alternative daily cover						
Petroleum Contaminated (PC) soil meeting RWQCB criteria (for ADC)	N/S	N/S	500	500	640	800
Clean soil (for cover)	0	0	Not Counted in Tonnage		500	800
Biosolids (Class B) (for ADC)	424	455	50	50	50	50
Subtotal Cover Materials	424	455	550	550	1,190	1,650
Total Recyclable, Reusable, Compostable, and Cover Material	**560**	**1,010**	**1,120**	**1,120**	**1,714**	**2,174**
TOTAL	**N/A**	**2,300**	**2,510**	**2,510**	**3,864**	**4,324**
				109%		
Total biosolids (Class B) for all purposes - Full and Registration Tier SWFPs	**550**	**1,000**	**230**	**230**	**232**	**232**

Key: N/A: Not applicable; N/S: Not specified in permits
Note: Some totals may not sum due to rounding.
/1/Types of designated waste are the same as in the current SWFP.

of cardboard and other paper grades, glass, metal, plastic containers and other basic recycled commodities would be placed before the scalehouse, so that customers could reduce the weight and volume of their loads prior to paying and entering the tipping area.

Petroleum contaminated soils meeting the acceptance criteria contained in the current Waste Discharge Requirements for the facility would be acceptable up to 500 tons per day for use as landfill cover material, if this use is approved by the RWQCB and BAAQMD. Bioremediation of petroleum contaminated soils is required before these soils could be used as landfill cover

material. Clean soil for cover would not have a limit, but trucks hauling clean soil for cover would be included in the count of vehicles allowed to enter the site each day.

The Mitigated Alternative includes the implementation of all mitigation measures specified in the analysis of the proposed project, including the imposition of a waste import mitigation fee (see Master Response 8).

In addition to waste handling and disposal, the landfill would maximize its capabilities for energy production. This would include implementation of installation of the landfill gas-fired electrical generators (see Mitigation Measure 3.9.3b). Further, the landfill would be encouraged to develop renewable energy generation capacity, including photovoltaic and wind power. Because the Mitigated Alternative restricts the size of the composting operation and reduces the space required for handling of biosolids, space should be available at the site for development of renewable energy facilities. Further environmental review of renewable energy facilities would be required after specifications and plans are developed for this aspect of the Mitigated Alternative.

Vehicles entering the facility would be limited to 612 vehicles per day for vehicles carrying waste or construction materials (1,024 one-way trips), plus another 50 vehicles per day (100 one-way trips) for vehicles not carrying waste or construction materials to accommodate employees, site visitors, and non-material deliveries. The total number of vehicles allowed to enter the facility each day would be 712, compared to the 415 currently permitted and the 690 in the applicant's revised proposal. The Mitigated Alternative proposes allowing more vehicles into the facility each day than the applicant's revised proposal in order to accommodate a relatively large number of smaller loads destined for the recycling facilities.

The analysis of proposed project air emissions was repeated for the Mitigated Alternative, with the results indicated in Table MR20-2 (see also calculations in Appendix D). Compared with the revised project (see revised Table 3.2-6 in Master Response 16), the Mitigated Alternative would substantially reduce the emission of criteria air pollutants, and would reduce the combined increase in NOx to below the significance threshold. This reduction is based primarily on the decrease, relative to the revised project, of receipt of wastes for disposal and composting, and related heavy vehicle emissions. Though more vehicles would be allowed, the analysis assumes that a greater proportion of incoming vehicles would be small trucks and passenger vehicles that have much lower emissions than medium and heavy duty trucks. The Mitigated Alternative also includes implementation of all of the mitigation measures specified in the Chapter 3 of the FSEIR; several of these would further reduce the emission of criteria air pollutants. However, it is likely that ROG and PM10 emissions would each remain more than 80 pounds per day above baseline levels, and would therefore remain significant. Therefore, while this alternative does have the ability to reduce or eliminate many of the project's impacts, including a substantial reduction in the severity of air quality impacts, significant and unavoidable air quality impacts are likely to remain. The reduction in the severity of these impacts, and this alternative's greater compatibility with County plans and policies, including the Interim Sustainability Principles, serve as a basis for confirming that this is the Environmentally Superior Alternative, and may serve as a basis for overriding considerations for the adoption of the Mitigated Alternative in lieu of the proposed project.

TABLE MR20-2
MITIGATED ALTERNATIVE AIR QUALITY EMISSIONS

	Existing 2001 Emissions (pounds per day)				**Mitigated Alternative 2005 Emissions (pounds per day)**				**Net Increase Emissions (pounds per day)**			
Emission Source	**CO**	**ROG**	**NOx**	**PM-10**	**CO**	**ROG**	**NOx**	**PM-10**	**CO**	**ROG**	**NOx**	**PM-10**
Construction Activities				NQ				NQ				NQ
On-Road Vehicles	158	7	76	16	285	10	123	27	127	3	47	11
Off-Road Equipment	19	7	115	3	23	8	135	3	4	2	20	0
Fugitive Dust from LF Operations	-	-	-	817				1,082				**265**
Fugitive Landfill Gas	-	118	-	-		130				12		
Flare Emissions	-	7	-	-		8				1		
Composting/Co-Composting	-	171	-	-		213				42		
Sludge as ADC and Disposed	-	38	-	-		21				(18)		
Sludge Air Drying	-	24	-	-		102				78		
Designated waste disposal in Area G		NQ	NQ	NQ		NQ	NQ	NQ		NQ	NQ	NQ
TOTAL QUANTIFIED EMISSIONS	177	373	191	835	308	492	258	1,112	131	**119**	67	**277**
BAAQMD Significance Criteria									550	80	80	80
Countywide Total									246,400	44,420	37,400	15,740
Quantified Project Emissions as a % of Countywide Emissions									0.05%	0.27%	0.18%	1.76%

MASTER RESPONSE 21: SITE LIFE

Several commenters requested clarification regarding the remaining site life of the facility, both under its current permits and under the project. The DSEIR, in Appendix A, presented several different scenarios, based on various background documents (with conflicting information) to present a range of estimates of potential site life, both under the project and under the facility's current permits.

Since publication of the DSEIR, the applicant has provided additional information on site life, including revised factors for waste density, an estimate of future settlement of waste and the underlying Bay Mud, and current volume of waste in-place (GeoSyntec, 2003, Khany, 2004), all of which are important considerations in calculating site life. The applicant has also provided their own revised estimates of site life, both under the project and under current permits. Using the new factors provided by the applicant, the EIR preparer, Environmental Science Associates (ESA), prepared revised site life estimates and Treadwell and Rollo, a geotechnical engineering firm and subcontractor to ESA,, reviewed and confirmed as reasonable the revised site life estimates. These are provided below, along with the factors used in the calculations. The site life estimates differ only slightly from the revised estimates provided by the applicant: ESA estimates that from the date of the last measurement of in-place landfill volume (May, 2004), the landfill has a minimum of 20.5 years of remaining life under its current permits, and a minimum of 33.2 years under the project. The earliest closure dates would be 2024 under the current permit, and 2037 under the project. The applicant's revised proposal (see Master Response 17) does not affect the estimate of site life under the project.

These estimates are considerably longer than those used in the DSEIR (Appendix A and Impact 3.6.7 in Section 3.6, Land Use and Planning). The reasons that the new estimates are longer – and more reliable – is because they take into account more recent information on existing waste volume, remaining capacity, waste density, waste settlement, and Bay Mud settlement. Impact 3.6.7 is revised as follows:

> **Impact 3.6.7: The project would increase the rate of fill of the landfill, which could result in a conflict with Summary Plan Goal 13 and Siting Element Goal 1, which require the County to assure 15 years of disposal capacity. (Less than Significant)**
>
> The Siting Element and Summary Plan for Marin County and its Cities require that Marin County assure 15 years of disposal capacity. As these documents were adopted in 1995, they explicitly require that the County assure disposal capacity through the year 2010. Maintenance of 15 years of landfill capacity (a planning requirement which is also reflected in state statutes – PRC §41700 et seq.) may however be taken as a general goal and policy. The Landfill Site Life Calculations table included in ~~Appendix A~~ Master Response 21 (Table MR21-1) indicates that, under current permit conditions, Redwood Landfill could reach capacity as early as the year 2024 ~~2016 (Scenario 1 in the Table). This is considerably sooner than site life calculations presented in the 1995 Siting Element (also shown in the Appendix A table, Scenario 4), which predicted that the landfill would reach~~

~~capacity in 2025. The main difference in the calculations is the anticipated rate of fill, which has increased substantially since publication of the Siting Element. The Appendix A table~~ Table MR21-1 also includes site life calculations for the landfill under project conditions~~. Two projections are shown: that produced by the applicant (Scenario 3), and another that was produced as a part of this EIR analysis (Scenario 2). The applicant's site life projections for the landfill, if the project were to be approved, predict that the landfill would reach capacity in the year 2051. Calculations conducted for this EIR, however, predict a much earlier closure date of 2024,~~ which indicate that the earliest closure date under the project would be the year 2037. ~~if the landfill accepts waste materials for disposal at the maximum proposed rate.~~[4] ~~The applicant uses an erroneous density factor in their calculations of 3,760 pounds per cubic yard for landfilled waste, which is much higher than can be achieved in a sanitary landfill, and which explains much of the difference.~~ Since the project would extend the life of the landfill by at least ~~8~~ 13 years, and would result in greater than 15 years of capacity for Marin County and its cities, this impact is less than significant, and requires no mitigation.

Mitigation: None required.

[4] ESA's calculations assume that Area G would be available for disposal of both designated waste and ordinary municipal solid waste.

Table MR 21-1: Site Life Calculations: Permitted and Proposed Final Grades for Redwood Landfill

Based on assumptions stated in memo text and on information contained in GeoSyntec letter dated 12/2/03
Information on current site volume provided by Waste Management, October 18, 2004
Prepared by Dan Sicular 12/22/03
Revised by Dan Sicular 11/11/04

	Permitted	Proposed	Notes/Source
Area of landfill footprint in acres	210.0	222.5	Autocad drawings indicate permitted footprint is 212.2
Area of landfill footprint in square feet	9,147,600	9,692,100	
Depth of final cover	4	3	
Volume of final cover - cubic feet (assumes planar surface)	36,590,400	29,076,300	
In cubic yards	1,355,200	1,076,900	
Net Airspace (waste plus daily cover -- without final cover)	19,100,000	33,697,100	Permitted net volume as stated in SWFP and 1995 R
Total Airspace (includes final cover)	20,455,200	34,774,000	Proposed volume from Geosyntec 12/2/03 p. 2
In-place Volume as of 5/14/04	13,900,000	13,900,000	Khany, 2004
Total Remaining Airspace (incl. final cover)	6,555,200	20,874,000	
Net Remaining Airspace (waste plus daily cover)	5,200,000	19,797,100	
Airspace (ft3) gained by settlement of Bay Mud @ 6.5 ft	59,459,400	62,998,650	Geosyntec letter states 6-7 ft average settlement
In cubic yards	2,202,200	2,333,283	
Airspace gained by 10% settlement of net volume (yds3)	1,910,000	3,369,710	10% figure from GeoSyntec letter
Total airspace gained by settlement	4,112,200	5,702,993	
Effective Net Airspace of Landfill	23,212,200	39,400,093	Includes airspace gained from settlement
Effective Remaining Net Airspace of Landfill	9,312,200	25,500,093	Includes airspace gained from settlement
Tons of waste per cubic yard	0.87	0.87	Per Geosyntec 12/2/03 letter p. 4, includes cover mat
In pounds per cubic yard	1,740	1,740	
In pounds per cubic foot	64	64	Within industry standards, according to Craig Hall
Effective Remaining Net Airspace -- tons	8,101,614	22,185,081	
Maximum tons waste per day	1,270	2,150	
Maximum tons waste per year (311 operating days)	394,970	668,650	
Minimum remaining site life (years)	**20.5**	**33.2**	
Earliest Possible Closure Date	**2024**	**2037**	

SOURCE: GeoSyntec, 2003; Khany, 2004, ESA; Treadwell and Rollo

MASTER RESPONSE 22: STATIC AND DYNAMIC SLOPE STABILITY

Several commenters had questions or concerns regarding the stability of the landfill, and the possibility that the proposed changes to the landfill design might result in a less stable structure, with consequently increased potential for environmental impacts. This Master Response augments the discussion of landfill stability presented in Impact 3.4.1 and Impact 3.4.2 of the DSEIR.

STATIC SLOPE STABILITY

Static slope stability refers to the stability of the landfill given the static forces of gravity and settlement. Static slope stability is a factor of the material strengths of the fill and soils that make up the landfill and the materials beneath it, as well as slope steepness and benching. The subsurface materials at the Redwood Landfill include old levees, new levees, refuse/cover soil, and Bay Mud. As described in Impact 3.4.2 in the DSEIR, the primary considerations for static slope stability for the proposed changes to the design of Redwood Landfill are the rate of refuse placement, the Bay Mud strength, and the strength of the refuse itself.

The ability to design a stable mound of refuse on top of Bay Mud is based on the understanding and modeling of the behavior of the Bay Mud. Under loading from refuse placement, excess pore pressures will be generated in the Bay Mud underlying the landfill. Consolidation of the Bay Mud occurs as the excess pore pressure dissipates. The results of consolidation are settlement and gain in shear strength of the Bay Mud. The gain in shear strength allows additional refuse to be placed while maintaining adequate stability. Modeling this consolidation and strength gain process is the key analytical element in development of a fill sequencing plan for the landfill, and for determining the stability of a given landfill mass, height, and slope steepness.

The fill sequencing plan being proposed by the applicant was designed by GeoSyntec (Geosyntec, 1998). HLA (1992) previously provided a fill sequencing plan that was approved by the regulatory agencies and was incorporated in the Solid Waste Facilities Permit (SWFP) (1995) and is the currently approved fill sequencing plan.

To develop the currently approved fill sequencing plan, HLA performed the following steps:

- Established baseline strengths of the Bay Mud prior to refuse placement. The baseline strength profile was based on published literature, past geotechnical investigation, their own geotechnical investigations, geotechnical laboratory testing, and site specific empirical observation that provided strength values of Bay Mud.

- Performed consolidation analyses using the computer program TCON to determine effective stresses of the Bay Mud for use at the commencement of subsequent stages of refuse placement.

- Calculated Bay Mud strength for next refuse stage using calculated effective stresses and baseline Bay Mud strength profile from previous steps. The design Bay Mud strength for

the next refuse stage was proportional to the gain in effective vertical stress of the Bay Mud.

- Evaluated stability of a given refuse filling stage using calculated Bay Mud strengths to determine fill slope height and setback. The stability of the fill slope was evaluated using limit equilibrium analyses.

Subsequent to the issuance of Redwood Landfill's Solid Waste Facilities Permit in 1995, the applicant investigated whether additional refuse fill volume could be achieved if a more sophisticated modeling of the Bay Mud's strength and strength gain was performed. GeoSyntec was retained to provide the geotechnical engineering analyses. The methodology used by GeoSyntec (1997) to develop the proposed revised fill sequencing plan was an iterative process involving the following:

- Conducted finite element analyses using the GeoFEAP computer program to evaluate the pore pressure, deformation, and stress generation in Bay Mud due to refuse placement. GeoFEAP uses the Cam-Clay soil model in its computer program.

- Calculated Bay Mud strength. The design Bay Mud strength profile is similar to the one used by HLA and was based on published literature, results of geotechnical investigations performed by GeoSyntec and others, and geotechnical laboratory test data. The design Bay Mud strength is proportional to the gain in effective vertical stress of the Bay Mud.

- Evaluated stability of a given refuse stage using calculated Bay Mud strengths to determine fill slope height and setback. The stability of the fill slope was evaluated using limit equilibrium analyses.

The main difference between the methodologies used by HLA and GeoSyntec in developing their respective fill sequencing plans is the evaluation of stress generation in the Bay Mud due to refuse placement and consolidation. HLA calculated the effective stress in Bay Mud using conventional geotechnical relationships based on consolidation properties derived from laboratory tests and back-calculated values. GeoSyntec employed the modified Cam-Clay model included in the finite element program, GeoFEAP, to model the behavior of the Bay Mud. The modified Cam-Clay model was selected because it has been shown in previous studies to model accurately the consolidation behavior of Bay Mud. GeoFEAP is a general purpose finite element program for geotechnical problems. GeoFEAP has the capabilities to model stress-strain behavior of Bay Mud and has the ability to simulate sequential embankment construction.

GeoSyntec performed static slope stability analysis for the refuse fill and final cover design using the computer program PCSTABL5 (GeoSyntec, 1997 and 1998). In the revised fill sequencing plan, each fill stage was designed to accommodate stability requirements. Minimum static stability requirements for short-term and long-term conditions are factors of safety of 1.3 and 1.5, respectively.

Although finite element modeling and stability analyses were performed to assess the integrity of the proposed slopes and revised fill sequencing plan, the site will be monitored for slope

instability and Bay Mud strength gain through the applicant's geotechnical monitoring program as described in Master Response 7.

DYNAMIC STABILITY

Dynamic stability refers to the ability of a structure to withstand the forces produced by a seismic event. As discussed on page 3.4-5 and presented on Figure 3.4-1 of the DSEIR, there are no known active faults within the project site. Therefore, the potential for surface rupture of a fault at the site is considered very low.

State regulations governing waste disposal facilities (CCR Title 27, §20370 and §21750 [f]), (GeoSyntec, 1998) establish minimum performance standards to prevent displacements due to static and dynamic forces. For Class II and Class III landfills, the design seismic events are the Maximum Credible Earthquake (MCE) and the Maximum Probable Earthquake (MPE), respectively. The MCE is the more critical of the two design seismic events.

As described in Impact 3.4.1 in the DSEIR, Redwood Landfill's currently permitted design is based on a seismic exposure evaluation for the site performed by HLA (1992). The design earthquake for the site is the MCE, which is a moment magnitude 7.0 event on the Healdsburg-Rogers Creek Fault. The short-term design event has a peak horizontal ground acceleration (PHGA) on bedrock of 0.25g with 50-year mean recurrence interval (50 percent in 25 years). The long-term design event has a PHGA on bedrock of 0.58g with a 475-year mean recurrence interval (10 percent in 50 years).

In designing the proposed changes to the landfill, GeoSyntec performed a supplemental seismic hazard analysis to evaluate the potentially more damaging far-field event with lower PHGA, but larger magnitude. For the short-term event, GeoSyntec used the MPE on the San Andreas Fault with a moment magnitude 7.5 and a PHGA of 0.20g. For the long-term event, GeoSyntec adopted the MCE on the San Andreas Fault with a moment magnitude 8.0 and a PHGA of 0.33g. The mean recurrence intervals for the short-term and long-term events are 50-years and 475-years, respectively.

Newmark seismic deformation analyses were performed to evaluate seismically-induced permanent displacement. Newmark analyses consisted of the following steps:

- Compute the horizontal equivalent acceleration (HEA) time history along the base of the potential failure mass, including using SHAKE, a computer program, to assess the amplification of ground motions within the soil deposits overlying the bedrock.
- Compute the yield acceleration for the specified potential sliding mass. The yield acceleration is the seismic coefficient applied to the potential sliding mass that results in a factor of safety of 1.0 for the potential failure mass.
- Use computer code based on integration procedure to calculate seismically induced permanent displacement from the HEA time history and yield acceleration for the potential failure mass.

Computed maximum, seismically-induced displacements for short-term conditions were on the order of 12 inches, and for long-term conditions were on the order of 2.5 inches.

Based on a review of the results of the engineering analyses performed by the applicant's geotechnical engineers, the geotechnical engineering firm conducting the review on behalf of the County for this EIR concluded that the analysis presented in the DSEIR is correct and no additional mitigation measures, other than those stated in the DSEIR, are required (Treadwell and Rollo, 2004).

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6.4 COMMENTS AND RESPONSES ON ENVIRONMENTAL ISSUES

Comment Letter A

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
Governor

Tal Finney
Interim Director

RECEIVED

2003 DEC 29 P 12:33

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

October 15, 2003

Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive
Room 308
San Rafael, CA 94903

Subject: Redwood Landfill, Inc. Access Bridge
SCH#: 1991033042

Dear Tim Haddad:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on October 14, 2003, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

A-1

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
(916)445-0613 FAX(916)323-3018 www.opr.ca.gov

Comment Letter A

Document Details Report
State Clearinghouse Data Base

SCH#	**1991033042**
Project Title	Redwood Landfill, Inc. Access Bridge
Lead Agency	Marin County

Type	EIR Draft EIR
Description	Revised Solid Waste Facilities Permit to include following permit changes: sludge management practices, alternative daily cover, increase composting volume, leachate management, increase waste receipts, traffic, design capacity, waste classification, landfill life, gas control, and waste containment units.

Lead Agency Contact

Name	Tim Haddad		
Agency	Marin County Community Development Agency		
Phone	415-499-6269	***Fax***	
email			
Address	3501 Civic Center Drive Room 308		
City	San Rafael	***State*** CA	***Zip*** 94903

Project Location

County	Marin			
City	Novato			
Region				
Cross Streets				
Parcel No.	125-160-13			
Township		***Range***	***Section***	***Base***

Proximity to:

Highways	101
Airports	Gnoss Field
Railways	NW Pacific
Waterways	San Antonio Creek/Petaluma River
Schools	Petaluma Academy
Land Use	Present Use: Land fill BFC-A-60 (Bayfront Conservation-Agriculture, 1 unit/60 acres) AGI-Agriculture (1 unit/30-60 acres) Bayfront Conservation overlay

Project Issues	Aesthetic/Visual; Air Quality; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Noise; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Water Quality; Wetland/Riparian; Wildlife; Cumulative Effects
Reviewing Agencies	Resources Agency; Department of Conservation; Department of Fish and Game, Region 3; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 2; Integrated Waste Management Board; Air Resources Board, Major Industrial Projects; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 4; Native American Heritage Commission

Date Received 07/15/2003 ***Start of Review*** 07/15/2003 ***End of Review*** 10/14/2003

Note: Blanks in data fields result from insufficient information provided by lead agency.

A. STATE CLEARINGHOUSE (GOVERNOR'S OFFICE OF PLANNING AND RESEARCH)

A-1. Comment noted. The Governor's Office of Planning and Research (OPR) acknowledges that the County of Marin has complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to CEQA. Please note that although the Subject line of this letter incorrectly refers to the landfill access bridge project, the description on the attached 'Document Details Report" confirms that OPR received the Redwood Landfill Solid Waste Facilities Permit Revision project DSEIR. When the Notice of Preparation was sent to OPR in 2000, the project was similarly misidentified; in response to the misidentified NOP notice, OPR issued a memo, dated July 13, 2000, to correctly identify the project.

Comment Letter B

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ALAMEDA COUNTY
Roberta Cooper
Scott Haggerty
(Chairperson)
Nate Miley
Shelia Young

CONTRA COSTA COUNTY
Mark DeSaulnier
Mark Ross
Gayle Uilkema
(Secretary)

MARIN COUNTY
Harold C. Brown, Jr.

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
Willie Brown, Jr.
Chris Daly
Jake McGoldrick

SAN MATEO COUNTY
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Marland Townsend
(Vice-Chairperson)

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Liz Kniss
Patrick Kwok
Julia Miller
Dena Mossar

SOLANO COUNTY
John F. Silva

SONOMA COUNTY
Tim Smith
Pamela Torliatt

William C. Norton
EXECUTIVE
OFFICER/APCO

October 16, 2003

Mr. Tim Haddad
Environmental Coordinator
Marin County Environmental Health Services
3501 Civic Center Drive, Room 236
San Rafael, CA 94903

RE: Redwood Landfill Solid Waste Facilities Permit Revision DEIR (SCH No. 1991033042)

Dear Mr. Haddad:

Thank you for the opportunity to comment on the Draft EIR for the Redwood Landfill Solid Waste Facilities Permit Revision. We apologize for missing the October 14, 2003 comment deadline, but please consider the following comments. Per my discussion with Suzan Brewer, of your office, I am faxing this comment letter to you and will follow it up with a hardcopy in the mail.

Comment 1: On page 1-21 of the Draft EIR under Mitigation Measure 3.2.2c, the Draft EIR states that the project applicant shall retard the injection timing on all diesel-powered equipment to minimize NOx emissions. Please be aware that although "retarding the injection timing" will decrease NOx emissions, it will also increase diesel PM emissions. B-1

Comment 2: On page 1-26 of the Draft EIR under Mitigation Measure 3.2.8d, the Draft EIR states that the diesel PM emissions from on-road vehicles can be reduced through implementation of Mitigation Measure 3.2.2c, and/or the use of particulate traps on fleet vehicles. This statement is incorrect. We recommend that the words "through implementation of Mitigation Measure 3.2.2c" be deleted based on the reason stated above in Comment 1. B-2

Also, because diesel particulate matter has been labeled a Toxic Air Contaminant (TAC) by the California Air Resources Board, we encourage the owner/operator to investigate and consider strategies to control the particulate matter emissions from trucks associated with the project including, but not limited to: the use of diesel oxidation catalysts, the use of catalyzed diesel particulate filters, the use of lower emission fuels, and/or measures to reduce engine idling. B-3

Comment 3: Before beginning construction on the project, the owner/operator of the proposed project must file an application for an Authority to Construct with the Bay Area Air Quality Management District (BAAQMD). This will allow the B-4

Comment Letter B

owner/operator to make any required design changes, while still in the planning stage. An Authority to Construct will be issued by the BAAQMD, only after our engineers review the equipment design for the proposed project and determine if it is capable of complying with air quality laws. A Permit to Operate will be issued after the project is built and compliance is demonstrated. Both the Authority to Construct and the Permit to Operate are issued under the same permit application. B-4

Permit application forms and other application information are available on the Permits page of our website at www.baaqmd.gov. Specific questions about permitting a landfill facility should be directed to Carol Allen, who is currently assigned to handle the permitting of this facility. Ms. Allen can be contacted at (415) 749-4702 or at callen@baaqmd.gov.

Please call me at (415) 749-4721 with any questions on these comments.

Very truly yours,

Barry G. Young

Barry G. Young
Principal Air Quality Engineer

B. BAY AREA AIR QUALITY MANAGEMENT DISTRICT

B-1. The commenter is correct that Mitigation 3.2.2c addresses only NO_x emissions and not diesel PM emissions. Mitigation Measure 3.2.2c has been deleted in this FEIR per discussions with Air District staff regarding the effectiveness of this measure and the resultant increase in diesel particulate matter that can be caused by its implementation (Barry Young, Principal Air Quality Engineer, meeting, January 29, 2004).

B-2. See response to comment B-1 regarding Measure 3.2.2c. The requested text change to 3.2.8d also has been made in this FEIR.

B-3. Mitigation Measure 3.2.8d is revised in this FEIR to include only "the use of particulate traps on fleet vehicles."

B-4. Comment noted.

Comment Letter C

California Integrated Waste Management Board

Linda Moulton-Patterson, Chair
1001 I Street • Sacramento, California 95814 • (916) 341-6000
Mailing Address: P. O. Box 4025, Sacramento, CA 95812-4025
www.ciwmb.ca.gov

Gray Davis
Governor

Winston H. Hickox
Secretary for Environmental Protection

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY

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October 14, 2003

Tim Haddad
Marin County Community Development Department
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Subject: SCH No. 1991033042, Draft Subsequent Environmental Impact Report Permit Revision for the Redwood Sanitary Landfill, Solid Waste Facility Permit No. 21-AA-0001, Marin County.

Dear Mr. Haddad:

The California Integrated Waste Management Board (CIWMB or Board) environmental review (ER) staff has reviewed the Draft Subsequent Environmental Impact Report (DSEIR), cited above. In order to assist the Lead Agency in preparation of a Final Subsequent Environmental Impact Report (FSEIR) that will be adequate for the proposed project(s), ER staff has prepared the following analysis and overview.

CIWMB CALIFORNIA ENVIRONMENTAL QUALITY ACT REVIEW PROCESS

CIWMB ER staff must evaluate and recommend whether the proposed environmental document (ED) is adequate for use in the permitting process. The ED must clearly describe the proposed project in sufficient detail for ER staff to understand and evaluate all potential environmental impacts, proposed mitigation measures, and findings for the proposed project as presented by the Lead Agency. C-1

When the proposed Solid Waste Facility Permit (SWFP or permit) is received by the Board, ER staff will evaluate whether the final ED, cited as evidence of California Environmental Quality Act (CEQA) compliance by the Local Enforcement Agency (LEA), supports the requested specifications, and conditions of the SWFP. ER will then staff make a recommendation to the Board regarding the

adequacy of the CEQA document for SWFP concurrence purposes. Board members will make the final determination of whether or not to concur in issuance of the SWFP. C-1

DRAFT SEIR PROJECT DESCRIPTION

CIWMB ER staff have reviewed the DSEIR for the permit revision and changes at Redwood Sanitary Landfill (RSL) and based on this document, submit the following project description. If the project description varies substantially from the project as understood by the Lead Agency, ER staff requests that the Lead Agency include or correct any significant differences in the FSEIR, and notify ER staff prior to certification of the FSEIR by the Lead Agency.

Redwood Sanitary Landfill, Inc., a wholly owned subsidiary of USA Waste of California, in association with Waste Management, Inc., has applied to the Marin County Environmental Health Services Division (EHS) for a Revised Solid Waste Facilities Permit for continuation and expansion of the existing 420-acre landfill site.

Marin County Community Development Department acting as Lead Agency, has prepared and circulated a DSEIR in order to comply with CEQA, and to provide information to and solicit consultation with responsible agencies in the approval of existing and proposed physical and operational changes at Redwood Sanitary Landfill. Some existing physical and operational changes, not covered under existing permits and approvals, have taken place since the facility's current SWFP was issued in 1995.

Redwood Sanitary Landfill, Inc., operates a Class II & III sanitary landfill located 4 miles north of the City of Novato, and just east of U.S. 101, in Marin County. The RSL property, accessed by a private road from U.S. 101, is approximately 600 acres in size and consists of a 180-acre northern area and a 420-acre southern area. Waste disposal activities are dedicated to the 420-acre southern area. RSL is the principal landfill serving Marin County. The RSL site has been in operation and accepting waste since 1958. The site has operated under a SWFP since 1978 issued by Environmental Health Services (EHS) with concurrence of the previous regulatory agency, The California Waste Management Board. In 1990, RSL applied to the EHS for a SWFP to incorporate the changes that had occurred since 1978. An EIR was prepared, the final EIR was certified by the County in 1994, and a revised SWFP was issued by the EHS and concurred upon by the CIWMB in 1995. C-2

When the existing SWFP was issued in 1995, approximately 210 acres of the 420 acres had been filled and approval was given to reach 166 feet in height at the southern portion and 125 feet in height at the northern portion of the fill area. The remaining 210 acres of the site are used for infrastructure, sludge storage and processing, leachate storage, storm water storage, composting, scale-house activities, administration, recycling activities, gas control, leachate vaporization, various leasehold activities and maintenance structures.

Since issuance of the 1995 SWFP, changes to the operation and facility have been implemented, and new changes are proposed. Proposed permit changes include sludge management practices, alternative daily cover, increase composting volume, leachate management, increase waste receipts, traffic increases, design capacity increase, waste classification, extension of landfill life, gas control, and waste containment units reclassified as class II for receipt of some semi-hazardous wastes.

Existing SWFP:

The facility is currently permitted for solid waste disposal per the June 28, 1995, SWFP under the following limitations:

Types of waste permitted for receipt:			Class III Non-Hazardous Solid Waste		
Peak daily waste tonnage permitted:			2300 Tons/day (tpd) of MSW, 1000 tpd of sludge		
Permitted traffic volume			415 vehicles per day (vpd).		
Maximum height of landfill			166 feet above mean sea level (MSL).		
Permitted disposal footprint area			210 acres		
Total permitted site			420 acres		
Estimated closure date			2039		
Hours of operation:	General Public	Commercial	Sludge Haulers	Operations	Office
M-F	7 am to 3 pm	12 am to 3 pm	24 hours/day 7 days/week	8 pm to 4:30 pm (next day)	8 am to 5 pm
Saturday	8 am to 3:30 pm	12 am to 3:30 pm	24 hours/day 7 days/week	8 pm to 4:30 pm (next day)	Closed

PROPOSED CHANGES

Landfill Design and Capacity C-2

Increase in Total Capacity of Landfill

Increase the total capacity of the landfill from 19.1 million cubic yards to 34.6245 million cubic yards (total landfill volume) that will be achieved by changes made in the landfill's contours and slope, but not to the height or the footprint of the landfill. (A minor adjustment to the alignment and location of the toe of the final waste fill slope is proposed to ensure stability and accommodate the redesigned perimeter system).

Landfill Final Contour and Slope

A proposed modification of the landfill's final contours will result in a steeper-sided, more massive fill structure that will increase the landfill's capacity. The applicant proposes to increase the landfill's slopes from the currently permitted maximum of a 4:1 slope to a 3:1 slope. Bench widths will decrease from the currently permitted widths of 25-100 feet to 25 feet and the bench intervals will increase from 15 feet to 50 feet.

Conversion of Area G

The applicant proposes to use the 14.5-acre portion known as "Area G" of the landfill, which is currently permitted as part of the Class III landfill, to a Class II waste management unit. This would require a revision of both the SWFP and the WDRs to reclassify Area G as a Class II waste

management unit and to allow disposal of certain waste materials that are not acceptable in Class III landfills. The applicant has stated that construction of Area G for use as a landfill will begin under the terms of the existing permit and that no designated waste requiring disposal in a Class II cell will be deposited in Area G prior to project approval. The design of Area G includes the installation of a geo-synthetic membrane/clay liner and leachate collection and removal system.

Waste Operations

Quantity and Type of Materials Received

The applicant proposes the following changes in the quantity and type of materials that could be received at the landfill:

- An increase in the peak and daily average receipt (DAR) of solid waste,
- A decrease in peak and DAR of non-hazardous sludge (Class B bio-solids),
- Acceptance of municipal solid waste, sludge, petroleum or chemically contaminated soils,
- Increase in the peak daily receipt for recyclable materials, and addition of food waste for composting,
- Increase in the amount of petroleum contaminated soil meeting the RWQCB's contaminant concentration criteria for disposal in the Class III landfill, and clean soil.

Materials for Alternative Daily Cover (ADC) C-2

The applicant proposes using the following materials as ADC:

- Green waste/wood waste
- Dried sludge
- Wet sludge mixed with soil.
- Wet sludge mixed with green waste
- Compost

RSL's current practices, which would be continued under the proposed project and was approved by the LEA until the permit is revised, involve mixing air-dried sludge; wet sludge mixed with soil and wet sludge mixed with shredded green material as ADC.

Sludge Processing

RSL proposes to accept a reduced quantity of sludge, and to process it by the following methods:

- In order to deplete the existing stockpile of wet sludge at the site, RSL proposes air-drying for two consecutive spring seasons following the permitting process, with no further air-drying after that time. The air-dried sludge would be used as ADC;
- Direct disposal of wet sludge in the Class III disposal area (consistent with RWQCB approvals);
- Mixing of wet sludge with soil, ground green waste, and/or ground wood waste for use as ADC;
- Composting of wet sludge with green waste and other materials.

Sludge accepted at the site and not immediately processed by direct disposal, used as ADC, or co-composted would be placed temporarily in the Main Sludge Impoundment area, as is the current practice.

Compost Facility Operations

Current Registration Permit

Site Capacity (feedstock/green waste/bio-solids)	10,000 cubic yards on site at any time
Peak Loading (up to 950 cy/d green waste, 350 cy/d bio-solids)	1,300 cubic yards per day of feedstock
Annual Loading	87,000 cubic yards of feedstock
Facility Size	50 acres
Operating Area	15 acres
Traffic – Incoming Waste	5 vehicles per day
Traffic Outgoing Waste	15 vehicles per day
Hours/Days of operation	M-F: 6 am to 9 pm Sat.: 7 am to 4 pm

Proposed Changes

C-2

- Proposal to relocate the current composting facility within the footprint from Area C to Area D as shown in Figure 2-7 of the DSEIR.
- Use areas outside of the permitted landfill footprint for windrow composting and co-composting. Proposed areas include Fields 1-5 in and near the Oxbow area (approximately 46 acres) and approximately 29 acres of the Main Sludge Impoundment.
- During the dry season, composting activities will be conducted on native soil (not on lined pads).
- Fields 1 and 2 are proposed for year-round use. Fields 3, 4 and 5 are to be used during the dry season only (Areas identified in Figure 2-3).
- Increase peak and average daily receipts of green waste to a maximum of 700 tons per day (tpd), and wood waste to a maximum of 400 tpd.
- Include co-composting process.
- The addition of food waste as composting feedstock (60 peak tons per day/average of 32 tons per day).
- Decrease in the peak receipt of Class B bio-solids for co-composting from 350 cubic yards per day (307 tons) to 211 cubic yards (185 tons) per day, and decrease in the average daily receipt from 99 cubic yards (84 tons per day) to 93 cubic yards (82 tons) per day.
- Use of additives and amendments, including sawdust, bark fines, and peat moss at a maximum rate of 80,000 cubic yards (20,000 tons per year). This would amount to receipt of 77 tpd of these materials that will also increase truck traffic at the site.
- Use water from the leachate impoundment for wetting windrows.
- Use vapor-phase-odor system to control odors.
- Routing water that has contacted composting and co-composting material and/or sludge, to the storm water impoundment.

There will be no change in the hours or days of operations.

Changes in Equipment Used on Site

A diesel waste tipper not considered in the 1994 EIR will be addressed for air quality and noise impacts from increased tonnages.

Increase in Allowable Number of Vehicles

Increase in the allowable number of vehicle trips as follows:

Existing SWFP
Permitted Traffic Volume: 415 vpd
Incoming Waste Materials: 410 vpd
Outgoing Materials from Material Recovery Operations: 5 vpd
(Traffic from construction or employees not specified or included in these totals.)

Proposed Changes
Table 3.10-4 in the DSEIR lists the proposed traffic numbers as follows:
Vehicles Carrying Waste: 840
Employees, Visitors, Deliveries: 60 C-2
Construction Traffic: 100
Total Proposed Vehicles Per Day: 1000

Environmental Controls

Changes to Perimeter Levee and Leachate Control System

Height of perimeter levee will be increased from the current 6 to 9 feet above mean sea level (msl), to a minimum of 9 feet above msl around the entire landfill. The crest of the levee will be widened from the current width of approximately 4 feet, to a minimum of 10 feet. Slopes will be 2:1 or flatter as dictated by applicant's slope stability analysis. The changes in the levee system are intended to improve the leachate collection and removal system (LCRS) for the facility. The DSEIR contains analysis as to the significant impacts related to the re-designed LCRS's potential effects on landfill stability, potential for failure of landfill slopes, potential lateral migration of the landfill mass and of leachate, and the likelihood of flooding.

Changes in Surface Water Management

RSL proposes two changes to it's current management of surface water which include changes made to the gradient and benching of the landfill's side slopes, will affect velocity and conveyance of storm water, and management of water that has been exposed to sludge, compost, and co-compost will be improved. The applicant proposes to direct any contact water through a series of open ditches to the 18-acre Storm Water Impoundment area located on the southern edge of the site. Water would be directed to the Storm Water Impoundment area only if tested clean, otherwise the water would be directed to the leachate collection pond.

Landfill Gas Management

In anticipation of the increased generation of landfill gas (LFG) expected to result from the proposed project, a 40-foot tall flare facility has been constructed adjacent to the southwest corner of Area G. A leachate vaporator system has also been installed in the same area. The DSEIR analyzes for the potential air quality and public health impacts of the leachate vaporator system, as well as the potential air quality, water quality, visual, and public health effects of the LFG management system.

Landfill Cover Design

RSL proposes to alter the design of the final landfill. The design that was previously evaluated in the 1994 FEIR consisted of:

- Two-foot thick foundation layer,
- Barrier/drainage layer consisting of a one-foot thick layer of compacted, low-permeability soil,
- Flexible membrane liner overlying the low-permeability soil layer,
- One-foot thick soil layer for supporting vegetation

Proposed changes include the final cover design from a foot thick cover to a three-foot thick cover designed to have the performance characteristics of the previous design. The primary change would occur in the barrier/drainage layer, where the previously proposed one-foot layer of compacted, low-permeability soil would be replaced by a minimum 40-mil thick geo-membrane and either a synthetic geo-textile or geo-composite drainage net, or a naturally permeable soil such as sand. C-2

Remediation of 11.5-Acre Un-permitted Waste Disposal Area

The un-permitted 11.5-acre buried waste/refuse area that is located in the southwestern corner of the property, outside of the footprint, was originally proposed for excavations of the buried refuse for placement in the landfill. This area is not served with a leachate collection system or a landfill-gas management system, and the material presently covering the refuse is not an approved final cover material. RSL now proposes to leave this material in place and cover it with a final cover.

Facility Infrastructure

Relocation of Administrative and Ancillary Facilities

RSL proposes to relocate the landfill's administrative office, maintenance facilities, and ancillary facilities to the former Cascade Forest Products building and site located in the southwest corner of the property (Figure 2-7 of the DSEIR).

CIWMB ER STAFF COMMENTS

To assist ER staff analysis and evaluation of this project, and aid in the determination of the adequacy of the DSEIR and related CEQA document(s), we request that the following comments and questions be addressed and included in the FSEIR prior to certification by the lead agency. If these questions

have already been addressed in an existing document (e.g. Report of Facility Information, Closure Plans and previous environmental documents), please indicate the document, page number(s) and section(s), and incorporate this information into the FSEIR prior to certification. Please note that the final evaluation regarding the adequacy of the environmental document cited for CIWMB permit purposes, will only be determined after the proposed permit is received, and compared to the final version of the SEIR.

Increase in Tonnage

Provisions in the design and operation of the facility that assure compliance with Solid Waste Regulations should be described in the environmental document and Joint Technical Document (JTD) in order to indicate the ability of the facility to meet State Minimum Standards for environmental protection. Again, if RSL plans to receive any waste from outside of Marin County, the final environmental document must contain the locations where waste will be traveling from, and a detailed analysis of, and mitigation for, all possible associated impacts from the receipt of this waste. C-3

Odors and Air Quality

Composting putrescible feedstock using the open aerated static pile (ASP) method creates potentially significant odor problems when not properly managed. The open ASP method can develop pockets of high moisture content that causes significant odor problems when the oxygen supply has been deprived, and the indigenous microorganisms' metabolism starts the anaerobic digestion of organic material. Additional measures must be taken to mitigate this potential for odor generation (e.g. backup equipment, additional bulking agent, etc.). There are a number of residences located directly east of the RSL facility. Although there has been a reduction in the number of odor complaints at the facility in recent years due to the decrease in certain activities (such as the air-drying of sludge), the proposed increases in waste and the addition of putrescible materials being composted at RSL's site could greatly increase the possibility of odor impacts to nearby residents and businesses. C-4

New Compost Regulations California Code of Regulations (CCR) Title 14, Section 17863.4(a); Odor Impact Minimization Plan (OIMP) requires all compostable material handling operations and facilities to prepare, implement, and maintain a site-specific OIMP. A complete plan will be a required submittal to the LEA along with the Enforcement Agency Notification and permit application. The entire text for the regulations can be viewed at: http://www.ciwmb.ca.gov/Regulations/Title14/ch31.htm#article3 C-5

The project site is in a "non-attainment" region for ozone. The Bay Area Air Quality Management District (BAAQMD) is responsible for prioritizing facilities that emit air toxics. C-6

Changes in Facility Design/Overburden Impacts

Implementation of the proposed changes to facility design would appear to allow additional waste over existing waste cells. This additional waste could result in overburden impacts to landfill gas and leachate production, migration, and containment systems that should be considered prior to implementation of the project. Section 3.4, page 21 of the DSEIR appears to contain a referral to a C-7

Section 17750[f], Title 27 of the California Code of Regulations. This citation may be incorrect. If so, please review and correct this in the FSEIR prior to certification. C-7

Climatic Effects and Leachate Production

It should be indicated in the FSEIR how the facility has coped, and plans to cope with leachate production in very high rainfall events, as well as very high rainfall years. Please include in the FSEIR backup provisions that will be in place in the event of excessive leachate production caused by high storm events/years. C-8

Onsite Water, Wastewater, and Surface Drainage

Marin County has a history of heavy precipitation during certain times of the year. Redwood Sanitary Landfill is situated in an environmentally sensitive area, and within close proximity to San Antonio Creek, a main tributary to the Petaluma River. It should be indicated in the FSEIR how the facility plans to cope with runoff to San Antonio Creek and the surrounding area during high rainfall events. C-9

The FSEIR must also include a drainage plan including detailed maps, which identifies all paved and exposed surfaces. The plan should identify surface runoff, including, but not limited to all creeks, rivers, and/or diversion channels in areas adjacent to the project area. The location and permeability of any proposed diversion berm(s) that redirect flow away from/around the facilities, and any drainage basins to keep drainage on-site should be indicated. The FSEIR should include a discussion of the state and/or local regulatory requirements of both onsite water and wastewater disposal and how the facility will comply with those provisions. C-10

Litter

The area where the RSL site is located can be very windy. There has been a history of problems with litter at the site. The proposed increase in tonnage, especially MSW, could result in a substantial increase in litter at the site, especially in the tipping area. The FSEIR should include all measures that will be taken to reduce the impact of this problem to a less than significant level. C-11

Vector and Bird Control

CCR Title 14, Section 17410.4 states: "The operator shall take adequate steps to control or prevent the propagation, harborage and attraction of flies, rodents, or other vectors, and animals, and to minimize bird attraction". The proposed increase in waste at the facility could greatly increase the number of birds to the vicinity, and may create hazards to aircraft arriving and leaving nearby Gnoss Field Airport to the south of RSL. The proposed receipt of putrescible wastes will also increase the numbers of vectors to the area. The FSEIR should include detailed mitigations designed to reduce the numbers of birds and vectors to the facility to an acceptable and safe level. C-12

Equipment

The FSEIR should provide a detailed and complete analysis of all equipment at the site current or proposed (due to the increase in tonnage), and any mitigation measures necessary to lessen the impacts from this equipment such as (but not limited to) noise, air quality, and maintenance. C-13

Biological Resources

A Biological Survey and Assessment of the site and surrounding area is essential to the development of feasible mitigation measures that are required to be included in an SEIR. The FSEIR should address all measures taken under CCR Title 14 Section 15086 to ensure that the proper levels of consultation has been performed regarding any threatened or endangered species on or near the RSL site, or that may be affected by impacts from the site. C-14

Alternate Daily Cover (ADC)

The RSL proposes to use ADC that contains dried sludge; wet sludge mixed with soil, or wet sludge mixed with green waste as a component. Please refer to entire text of CCR Title 27, Section 20690 (a-b) Alternative Daily Cover that states in part that no public contact is allowed for ADC that contains these components. The DSEIR does not provide details regarding whether these issues in the following regulations were addressed, including the percent of landfill area that sludge-containing ADC will be used, and any mitigation to protect the public from contact with any ADC containing these components. C-15

11.5-Acre Waste Disposal Area

All waste disposal areas to be closed, including the 11.5-acre waste disposal area at RSL, must meet the requirements of the Closure and Post-Closure Maintenance regulations and requirements of CCR Title 27 Section 20950: General Closure and Post-Closure Maintenance Standards Applicable to Waste Management Units (Units) for Solid Waste. Section 20950 states in part; "Dischargers who are implementing final closure of a new or existing classified solid waste management unit (Unit), or are implementing complete final closure of a portion of a solid waste landfill...shall comply with the provisions of this article. ... Discharger shall carry out both mandatory closure...and normal closure (e.g., at the end of the active life of the Unit) in accordance with a closure and post-closure plan". C-16

For technical assistance, please contact Mike Wochnick of the Remediation, Closure, and Technical Services Branch at (916) 341-6328, or e-mail at mwochnic@ciwmb.ca.gov.

Relocation of Administrative and Ancillary Facilities

The primary concern for structures located or built on, or near, fill areas is the prevention of landfill gas migration into the structures. All on-site construction within 1,000 feet of the boundary of any disposal area shall be designed and constructed with a design that will prevent gas migration into the building, unless an exemption has been issued. The FSEIR should detail the location of all proposed structures on-site, especially in relation to covered waste/fill areas, how will the structures be designed to prevent gas infiltration, and, if gas sensors will be used to ensure protection from gas migration. C-17

The following regulations may apply to the proposed project: CCR Title 27, Section 21190(g) Post Closure Land Use, and Sections 20919 – 20921 Gas Monitoring and Control at Active and Closed Disposal Sites. These regulations may apply to the proposed project if located on or near fill/covered waste areas. For technical assistance, please contact Mike Wochnick of the Remediation, Closure, and Technical Services Branch at (916) 341-6328, or e-mail at mwochnic@ciwmb.ca.gov. Please see complete text of all current regulations on our website: http://www.ciwmb.ca.gov/Regulations/ C-17

Traffic

The DSEIR does not contain sufficient maps and/or diagrams reflecting on-site traffic patterns and signage at RSL for the proposed project. For the Board to concur on any future SWFP for the facility, the following information must be included in the FSEIR, and should be re-circulated for public review and comment: C-18

- **Maps and/or diagrams of all on-site roads, loading/unloading areas, parking areas, intersections, and the location of all roads in relation to all the components of RSL,** C-19
- Detailed maps to scale and/or diagrams of all impacted off-site intersections, signs, traffic signals, off-ramps to and from the facility, any new or modified roads utilized by the facility, on and off-ramps and roads to and from the proposed access bridge, and median slip lanes (length or distance of each), C-20
- Copies of/reference to adequate reports or studies supporting proposed traffic increase, C-21
- Mitigation measures for all traffic related impacts. C-22

The FSEIR must support via analysis, visual aides and mitigation measures, all proposed changes from traffic related to the increase in tonnage and other proposed changes at the facility. Impacts from changes in on-site traffic flow due to the increase in receipt of additional waste, and construction traffic impacts from design changes to the facility should be analyzed and all possible impacts mitigated to a less than significant level. Traffic reports and analysis in the FSEIR should reflect impacts from *peak* daily throughput tonnage, and associated vehicle volumes. In addition, if the RSL will be receiving waste from outside Marin County, the FSEIR must also include analysis for impacts from this to roads and highways, dust, noise, traffic, and detailed mitigation measures proposed to offset these impacts. C-23

In order to evaluate if the environmental document will support the proposed request for a traffic increase in the SWFP, the FSEIR must provide detailed traffic impact analysis based on *peak* daily total of the proposed 1000 vehicles per day, in order to properly gauge all possible impacts from this increase. C-24

Redwood Sanitary Landfill Access Bridge Project

The statistical data, analysis, and mitigations in the DSEIR for the proposed project, were all, or in part, based on the completion of the proposed Redwood Sanitary Landfill Access Bridge (SCH No. 1991033042). The DSEIR states that without the completion of the Redwood Sanitary Landfill Access Bridge, that no component of the project as is currently proposed, will be implemented. It is the similar opinion of ER staff, that the proposed project, without the mitigation of the completed Redwood C-25

Sanitary Landfill Bridge for use by landfill trucks and other vehicles, would result in significant impacts that could not be mitigated to an acceptable level. Please note that when the Board considers the proposed revised SWFP, *all* mitigation measures will be reviewed and must be implemented, *and in place,* before the Board can concur with the proposed permit for an increase in tonnage. The FSEIR should include the expected completion date for the bridge, and when it will be available for use by landfill vehicles and trucks. C-25

The DSEIR refers to a proposed "grade-separated access connection" between the landfill's access road and southbound U.S. 101. It is ER staff's understanding that the term "grade-separated access connection" refers to the "Redwood Sanitary Landfill Access Bridge" project (SCH No. 1991033042). This discrepancy should be corrected and clarified in the FSEIR.

Composting Facility

The DSEIR states that RSL's proposes to conduct a larger-scale composting operation, which will be operating under a separate Compostable Materials Handling Facility Permit. The FSEIR must identify the proposed peak daily throughput tonnages for both the organic waste fraction and the bulking agent fraction to the facility. C-26 The conversion factor(s) that will be used to convert the mass of one ton of compost feedstock material(s) to the volume of cubic yards should be provided. The types and numbers of the different types of vehicles that will access the composting area daily, and the associated tonnages that each vehicle type may transport, should be identified and correlated with all other on-site facility operation(s) for traffic, dust and other impacts. C-27

The DSEIR states that "*Use of additives and amendments, including sawdust, bark fines, and peat moss at a maximum rate of 80,000 cubic yards (20,000 tons per year). This would amount to receipt of 77 tpd of these materials that will also increase truck traffic at the site.* " C-28
Please note that 77 tons per day equals a total of 28,105 tons per year, not the stated 20,000 tons per year. Please correct this in the FSEIR prior to re-circulation.

The FSEIR should contain analysis of issues germane to the acceptance of food wastes. This should include but not be limited to:

- Additional equipment that will be required to handle the increase and change in type of feedstock, C-29
- How the relatively high moisture content of the food wastes will affect the microbial decomposition process and the performance of existing grinders, trommel screens and other equipment,
- Additional maintenance proposed to prevent equipment failure, C-30
- Source, method of collection, and transportation of the post consumer food waste, and C-31
- Proposed feedstock quantity and percentage (by weight) of putrescible food waste and "green waste".

As food wastes are highly putrescible, the FSEIR should contain proposed contingencies to process this material without exceeding the proposed maximum of 48 hours before processing, in the event of equipment breakdown and what will be done with the material if it cannot be processed within 48 hours. C-32

Please be aware that the CIWMB has revised the regulations pertaining to composting facilities and the permitting process. ER staff recommends that the Lead Agency review the revised Compost Facility regulations located on our website at: http://www.ciwmb.ca.gov/RuleArchive/2003/CompMaterial/. C-33

As stated above, a complete Odor Impact Minimization Plan will be a required submittal to the enforcement agency along with the Enforcement Agency Notification and/or permit application. The entire text for the proposed regulations can be viewed at: http://www.ciwmb.ca.gov/Regulations/Title14/ch31.htm#article3 C-34

Please refer to the following regulations that may apply to the proposed project: CCR Title 14, Sections 17865 Composting Operation and Facility Siting and Design Standards; CCR Title 27, Sections 20919 – 20921 Gas Monitoring and Control at Active and Closed Disposal Sites; and CCR Title 27, Section 21190(g) Post-Closure Land Use. The complete text of all current regulations is available on our website: http://www.ciwmb.ca.gov/Regulations/ C-35

The FSEIR should describe if the final composting product will be marketed for public use and if so, how compliance with Composting Operations Regulatory Requirements, Environmental Health Standards CCR Title 14, Sections 17868.1 – 17868.4 would be met for the compost product from the proposed facility. In order to ensure safe, acceptable levels of pathogens in the final compost product, the FSEIR should explain in detail the sampling method, and the frequency of sampling, that will be performed. In addition, please provide details as to the potential markets for the final composted product, and what will be done with product that does not meet minimum standards for marketing. C-36

Sudden Oak Death

California is currently undergoing an epidemic of a plant pathogen that is highly destructive to native oaks and other hardwoods (Phytophthara ramorum). Marin County is considered an infected county. The pathogen produces a spore stage that typically remains in a resting state during unfavorable environmental conditions, and germinates when conditions are favorable. Spores are spread via soil, water, and infested host material, and their spread is favored by wet conditions. Phytophthora has been recovered from rainwater trapped below coast live oak stem infections and from soil collected around infected coast live oaks. The pathogen is viable for a period of time on dead wood.

The task of moving green waste to and from the site could cause impacts if loads are not well covered. Composting facilities can act as dispersal centers for diseases such as this one if appropriate measures are not instituted. If material from an infected county is brought to a composting facility, it may then be transferred to uninfected areas through local sales of compost products. Federal and State regulations restrict the movement of plant materials in infected areas and recent changes to Title 7 Code of Federal Regulations part 301 (Sections 301-92 through 92-10) specifically address Phytophthara ramorum. C-37

The DSEIR did not include an analysis of this issue. Mitigation measures should be developed, or the project revised to avoid impacts. Mitigations should include, but not be limited to:

- Disinfecting equipment that are used to cut or chip diseased trees,
- No transporting of diseased wood or chips to areas that are free of disease,

- Green waste and other transport vehicles should be thoroughly washed with a high-pressure spray of any woody material or other debris after load removal, especially before traveling to uninfected areas,
- After working in an area with diseased plant material, workers should remove or wash-off accumulations of soil and mud from shoes, boots, vehicles, heavy equipment etc, before traveling to an area that is free of disease. C-37
- Composting of infested host material should be done in a manner consistent with current guidelines for minimum composting temperature and duration.

For further information on this, please see The California Oak Mortality Task Force's website: http://www.suddenoakdeath.org/

Herbicidal Clopyralid

The active ingredient (Clopyralid) is found in several herbicide products used to control weeds in lawns, agricultural crops, and rangeland, and does not break down easily during the composting process. If the final composting product contains sufficient amounts of Clopyralid, it may be toxic if applied to certain broadleaf ornamentals and vegetables including sunflowers, beans, peas, tomatoes, and potatoes. Clopyralid exhibits low toxicity to animals, including humans. The CIWMB is responsible for regulating the composting facilities that could be affected by Clopyralid-containing feedstock, yet has no regulatory authority regarding pesticides in general, or pesticide contamination in composting feedstock. For this reason, CIWMB staff have been working closely with the Department of Pesticide Regulation (DPR) to investigate this problem, and assess potential solutions. The CIWMB Waste Prevention & Market Development Division is currently addressing issues concerning this herbicide, and its impact on composting in California. For more information please contact: Brian Larimore, telephone: (916) 341-6579 or email: blarimor@ciwmb.ca.gov. C-38

Closure Plan

The DSEIR should describe if the changes in the landfill design, capacity, and estimated closure date require revision of the Preliminary and/or Final Closure and Post-closure Maintenance Plan, and if so, whether the FSEIR will be used for that approval. Please note the CIWMB has revised the regulations concerning closure and post-closure maintenance. The revised regulations will require the preliminary closure plan to be approved before the issuance of a revised SWFP. For a full text of these regulations see the Rulemaking Archives on our website: http://www.ciwmb.ca.gov/RuleArchive/2003/Closure/ C-39

Statement of Overriding Considerations

The Board will be required to concur on the issuance of any SWFP for a new solid waste facility or for a revision of a SWFP for an existing facility. In order to assist the Board during a SWFP process, please provide ER staff with a copy of any Statement(s) of Overriding Consideration(s) (SOC) for environmental impacts that cannot be mitigated in the SEIR. C-40

Cumulative Impacts

CCR Title 14, Section 15130 states that the SEIR shall "discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in Section 15065(c)". The FSEIR should identify potentially significant cumulative impacts resulting from the proposed project, and any combined projects within the project vicinity as well as those incremental impacts resulting from the proposed project's implementation. C-41

ALTERNATIVES TO THE PROPOSED PROJECT

If proposed today as a new facility in California, Redwood Sanitary Landfill would not have been located in such an environmentally sensitive wetland as it is now situated. The unfortunate location of the facility has resulted in serious concerns in the areas of traffic, air quality, plant and animal habitat, and impacts to subsurface and surface water. Despite mitigation measures proposed to offset potential impacts as a result of the proposed increases in traffic, waste, and landfill capacity, further serious impacts may still occur if the proposed project is implemented in full. C-42

Due to impacts to public health and safety that currently exist from RSL traffic crossing US 101, it is clear that the completion of the Redwood Sanitary Landfill Access Bridge (SCH # 1991033042) is essential, regardless of any increases in traffic and/or waste at the facility. C-43

Because of the location of Redwood Sanitary Landfill, and the concerns from the community, environmental groups and other regulatory agencies, ER staff would like to take this opportunity to strongly encourage the project sponsor to seriously consider implementation and/or integration of the environmentally superior "Mitigated Alternative" to the proposed project, as outlined in the DSEIR. Adoption or integration of this alternative, all or in part, may help to reduce the significant impacts from the proposed project, as it is currently defined. C-44

MITIGATION REPORTING OR MONITORING PROGRAM (MRMP)

As required by Public Resources Code (PRC) Section 21081.6, the Lead Agency should submit a MRMP at the time of local certification of the FSEIR. This should identify the environmental impacts associated with the proposed project, identify mitigation measures to reduce impacts to a less than significant level, identify agencies responsible for ensuring the implementation of the proposed mitigations, and specify a monitoring/tracking mechanism. PRC Section 21080 (c)(2) requires that mitigation measures "...avoid the effects or mitigate the effects to the point where clearly no significant effect on the environment would occur." The MRMP is required to be made a condition of project approval. C-45

Recent changes to Section 21081.6(b) require that "A public agency shall provide the measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures." The MRMP should indicate that agencies designated to enforce mitigation measures in the SEIR, have reviewed the MRMP, and have agreed that they have the authority and means to accomplish the designated enforcement responsibilities.

Comment Letter C

CONCUSION

ER staff requests that prior to certification, the revised DSEIR be re-circulated through the State Clearinghouse as required by CCR Title 14, Section 15205(a), and that the CIWMB be noticed two weeks in advance of the date, time, and location of any public hearings regarding the project proposal. If you have any questions regarding these comments, please contact me via telephone: (916) 341-6727 or email at dpost@ciwmb.ca.gov. C-46

Sincerely,

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C. CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

C-1. The County acknowledges the CIWMB's process for environmental review and concurrence in the issuance of a solid waste facilities permit.

C-2. There are minor discrepancies between the project description presented in this comment and the project description contained in the DSEIR. In addition, since publication of the DSEIR, the applicant has requested several changes to the proposed project. These changes are detailed in Master Response 17.

C-3. There are frequent references in the DSEIR to the State Minimum Standards. The Joint Technical Document (JTD), dated 1998, and which is one of the principal background documents for the DSEIR, also makes frequent reference to the State Minimum Standards. Regarding the origin of wastes arriving at the landfill if the project is approved, the applicant has not stated the origin of additional materials, nor are they required to by statute or regulation. The project's effects on regional air quality and traffic are analyzed in the DSEIR based on projected truck traffic volume, direction from which trucks would be traveling to the site, and estimated average trip distance. Regarding current and recent origin of wastes arriving at the facility, please refer to Master Response 8.

C-4. Comment noted. See response to comment C-5, below. However, please note that there are no residences located immediately to the east of the facility. The eastern boundary of the facility is formed by San Antonio Creek. East of San Antonio Creek is the Petaluma River and Petaluma Marsh. There are several agricultural operations, and perhaps a few residences, located east of the Marsh, along the Lakeville Highway, about 1.5 miles east of the eastern border of the facility. The Buck Center is located about 1.5 miles southwest of the facility. The Rush Creek neighborhood of Novato is located about 2 miles south of the facility.

C-5. Comment noted. Compliance with Title 14 CCR § 17863.4, which requires preparation and submittal of an Odor Impact Minimization Plan to the LEA, is identified in DSEIR Mitigation Measure 3.2.9b.

C-6. Comment noted. The San Francisco Bay Area Air Basin's attainment status with respect to federal and State standards for ozone and other criteria air pollutants is discussed on DSEIR pages 3.2-4 and 3.2-7, respectively.

C-7. Additional weight of the landfill as it pertains to landfill gas, leachate production, migration, and containment systems are discussed in Impacts 3.2.5, 3.4.2, 3.4.3, and 3.4.8.

The reference to Title 27 regulations should be CCR Title 27, § 20370 and § 21750[f]. In response to this comment, the second line of the last paragraph on DSEIR page 3.4-21 is

revised as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> The landfill slopes have been designed to comply with applicable state regulations governing waste disposal facilities (CCR Title 27, §20370 and §~~17~~21750[f]).

C-8. Mitigation Measure 3.4.7f requires the applicant to update their Leachate Facilities Leak or Spill Contingency Plan to accommodated proposed project changes and, specifically, to include contingency measures to prevent the off-site release of leachate during high rainfall events. Measure 3.4.7f specifically requires RLI to find alternatives to the part of its 1995 Leachate Spill and Contingency Plan that indicated that pumping directly into San Antonio Creek, if the leachate tests clean, was the most effective contingency measure to quickly evacuate the leachate pond.

Leachate generation and the potential need for greater leachate containment capacity as a result of the project also is addressed in Impact 3.4.8, which has been revised in this FEIR; please refer to Master Response 13. The DSEIR discussion (page 3.4-35) points out that although RLI's 2000 SWPPP states that "operations have been modified to … provide more capacity in other impoundments," no information had been provided to indicate that other leachate impoundments had been constructed. Other measures undertaken by RLI to prevent the overtopping of the leachate pond such as occurred in 1998 include construction of a leachate vaporator and the proposal (evaluated in this EIR) to use leachate that tests "clean" as composting quench water. The 2003 SWPPP (dated July 2003, the month the DSEIR was published and not seen by EIR preparers prior to DSEIR publication) includes modified language stating that "operations have been modified ... to provide for more capacity other than impoundments on site, and to burn leachate through the use of a vaporator" (RLI, 2003). It is not clear to what the reference to capacity provisions other than impoundments refers. Both the 2000 and 2003 SWPPPs note that since the leachate pond capacity was exceeded in the winter of 1998, the facility has made operational changes to generate less leachate and (as noted) that a vaporator is currently used to burn leachate, in addition to the use of leachate for dust control, which has occurred since 1995. The 2003 SWPPP also indicates that portions of the 34-acre main sludge impoundment are available as backup for contact water storage. Mitigation Measure 3.4.8c, as revised in this FEIR (see Master Response 13) requires RLI to update its Leachate Management Plan to be consistent with all aspects of the proposed project (which includes a substantial increase in the area used for composting operations, where a substantial increase in contact water (leachate) would be generated), and to include the most current leachate flow rates taking into account the proposed LCRS design and empirical data of actual leachate flow rates. The measure requires RLI to demonstrate that sufficient leachate capacity exists to prevent the off-site discharge of leachate, including estimates of the amount of leachate to be generated and the amount of leachate to be used for dust control and quench water (if the latter measure is approved), if these elements are considered in the capacity assessment. Measure 3.4.8c requires the updated plan to demonstrate that adequate conveyance and storage capacity exists as required

under 27 CCR § 20340, including during the wettest months of the year. Both updated plans must be submitted to the RWQCB and the LEA prior to project approval. Please also see Master Response 13.

C-9. DSEIR Section 3.5, Hydrology and Water Quality, describes the current surface water drainage system and, because the project included the reclassification of Area G as a Class II landfill, Impact 3.5.9 addresses the adequacy of the drainage system to accommodate 1,000-year, 24-hour precipitation event required for Class II landfills. Since publication of the DSEIR, the applicant has withdrawn its proposal to reclassify Area G as a Class II unit (discussed in Master Response 6). As a Class III landfill, Redwood is required under Title 27 to have precipitation and drainage facilities capable of accommodating the 100-year, 24-hour precipitation event, as it is now. As discussed under Impact 3.5.9, background documents provided by the applicant state that permanent and major temporary diversion and drainage facilities will be designed to accommodate flows from the 100-year, 24-hour duration storm. Text has been revised in this FEIR as required to reflect changes the applicant has made to the project since the DSEIR was published; this includes the discussion under Impact 3.5.9.

In response to this comment and to emphasize that standards required under Title 27 are met, Mitigation Measure 3.5.9 is revised as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> **Mitigation Measure 3.5.9:** The applicant shall produce and present to the ~~LEA and~~ RWQCB for approval a report demonstrating that sufficient capacity exists in the precipitation and drainage control facilities ~~affecting or affected by Area G~~ to accommodate the 1,00~~0~~-year 24-hour precipitation event as required by Title 27. A copy of the report shall also be provided to the LEA. The report shall include information about the anticipated elevation of flows in San Antonio Creek during the 100-year flood; if existing and any new discharge outlets to San Antonio Creek are below this elevation, such drains shall be equipped with flap gates to prevent flood waters from entering the outlets, as two existing drains are equipped to prevent flood tides from entering. ~~Approval of use of this area as a Class II unit shall be conditioned, in part, upon submittal and approval that this standard has been met.~~ The final engineering design specifications for the permanent and major temporary drainage facilities capable of meeting the requirements specified in Title 27, Table 4.1 shall be developed by a registered engineer and shall include drainage facilities for all areas of the landfill property. These specifications shall become part of the project.

C-10. Subsequent to publication of the DSEIR, the applicant provided a Concept Plan of Future Conditions (Meserve, 2004, Exhibit D**)** that shows areas proposed to be paved. The figure indicates that approximately 7.2 acres would be paved for a composting pad at Field 2, as would the 10-acre administrative facilities area (excepting the site of the existing buildings, which would be converted to administration facilities) and the entrance road. According to RLI the total area of on-site roads to be covered with gravel is approximately 204,000 square feet or 4.7 acres. This includes the landfill perimeter road (12,000 feet long by 12 feet wide, 144,000 square feet), the leachate perimeter road

(2,600 feet long by 15 feet wide, 39,000 square feet) and the road to the south of the administrative offices (1,400 feet long by 15 feet wide**,** 21,000 square feet) . Most of the paved area around the administrative offices is already constructed; however, RLI plans to extend the paved area eastward and construct a paved service road encircling the administrative area. The runoff from the existing paved area currently flows eastward via a center swale and curb and gutter, which discharges to a grass-lined drainage ditch and flows to a retention pond and is then pumped to the storm water impoundment. RLI anticipates that runoff from the new paved area would be collected and conveyed in a similar manner to the storm water impoundment (Meserve, 2004). DSEIR Section 3.5 describes on-site drainage (pp. 3.5-5 - 3.5-6); no change is proposed for wastewater disposal. Also please refer to the response to comment C-9, including revisions to Mitigation Measure 3.5.9 regarding site drainage.

C-11. DSEIR Impact 3.1.6 addresses the potential impact of litter caused by the project and identifies mitigation measures to reduce the impact to a less-than significant level.

C-12. DSEIR Impact 3.6.2 addresses the conflict between potential bird attraction to the site and operations at Gnoss Field. Vectors are addressed in DSEIR Section 3.8, Public Health and Safety. Impact 3.8.6 includes detailed mitigation measures to reduce the potential impact to less-than-significant.

C-13. Please refer to Table D-4 in Appendix D of the DSEIR, which includes an equipment list. The noise and air quality effects of increased equipment use are analyzed in Sections 3.7 and 3.2 of the DSEIR, respectively.

C-14. Site visits were conducted on February 5 and February 22, 2001, and April 8, 2003 by staff and (for Quality Control) by supervisory biologists from Environmental Science Associates. The purpose of the visits was to characterize wildlife habitat and vegetative communities, survey for special status plants and animals, and list incidental species of animals observed. Per CCR Title 14 Section 15086, comments on the Draft EIR were solicited from the responsible agencies.

C-15. In 1995 RLI conducted a demonstration project for the proposed use of ADC, as described in DSEIR Chapter 2, Project Description, pursuant to approvals by from the LEA, the CIWMB, and the RWQCB. In September 1996, following the demonstration project, RLI was granted interim, conditioned approval by the LEA for the continued use of dried biosolids, wet biosolids mixed with soil, and wet biosolids mixed with shredded green material as ADC. To prevent public contact with sludge or mixed ADC containing sludge for its current operation, RLI has implemented the following procedures (Khany, 2005):

- The mixing of sludge and shredded green material for ADC takes place on a pad equipped with a leachate containment system located at the former N-Viro processing facility. Shredded green material to be mixed with sludge for ADC is delivered to the mixing pad from the staging/grinding area utilizing site dump

trucks. Sludges to be used for the mixed ADC are delivered directly to a designated area on the mixing pad. The materials are mixed using a loader, which blends the material to a uniform consistency by turning.

- The mixed ADC is loaded from the mixing pad into site dump trucks and delivered to the daily working face.
- The ADC is applied on the working face, where it is spread evenly over the day's refuse and compacted using site tractors, away from the public disposal pad. The public disposal pad is made up of compacted broken concrete with earthen material applied on top to create a hard level surface to accommodate disposal activity. The pad itself is not covered with the ADC material and is kept clean at all times, keeping the public from coming into contact with the ADC.
- Typically, each day the new waste stream is placed directly on top of the previous day's ADC, limiting the potential employee contact with the applied ADC. In all areas where disposal activities are not currently taking place soil, rather than ADC, is used as interim cover (as required by site permits and state regulations) eliminating the issue of public/employee contact in these areas.

For the continued use of ADC, including ADC containing sludge, RLI would continue practices and procedures currently followed to prevent public contact with sludge or sludge derived materials, as required by Title 27 Section 20690.

C-16. Please refer to Master Response 2 regarding closure and post-closure maintenance of the 11.5 acre area.

C-17. As described in Chapter 2, Project Description, (pp. 2-39-2-40) the administration offices would be relocated to an existing structure used until recently by the Cascade Forest Products company. The construction of that facility for use as an administration building was considered in the 1994 FEIR; later RLI decided to use it for the Cascade Forest Products operation as discussed in DSEIR Chapter 2. Hazards related to landfill gas migration are discussed in DSEIR Section 3.8, Public Health and Safety, and the potential impacts of landfill gas at the relocated administration office is addressed in Impact 3.8.4.

C-18. The project site is an existing facility. Onsite signage and traffic flow patterns are considered part of landfill operations needed to efficiently run the facility; evaluation of these aspects of the site is not necessary for the environmental review document. The graphical presentation of information, in support of the textual descriptions, in the DSEIR is consistent with the level of analysis appropriate for the proposed project.

C-19. See response to Comment C-18.

C-20. See response to Comment C-18 regarding the graphical presentation of information in the DSEIR. The DSEIR provides adequate textual descriptions of roadway system that

currently serves the facility, and the modified road system that would serve the facility under project conditions.

C-21. The analysis of potential transportation-related impacts associated with traffic increases related to the proposed changes to the Solid Waste Facility Permit is fully contained in Section 3.10 (Transportation and Traffic) of the DSEIR; no separate report/study was prepared. The DSEIR section provides references to sources of information/data used in the analysis, and that information/data is on-file with the Marin County Community Development Department and is available for review upon request.

C-22. Mitigation measures are identified in the DSEIR for all significant impacts.

C-23. See response to Comment C-21 regarding the DSEIR's analysis of impacts of the project-generated increases in traffic volumes to and from the facility. See response to Comment C-18 regarding assessment of onsite traffic flow in the DSEIR. As described on pages 3.10-7 and 3.10-8 of the DSEIR, as proposed by the project applicant, a maximum of 900 vehicles per day would be permitted to enter the landfill on a regular basis, and in addition up to 100 construction vehicles per day on a seasonal or occasional basis. However, to ensure that potential impacts are not underestimated, impact determination will be made on the basis of the maximum (peak) increase in traffic (i.e., inclusive of seasonal construction traffic); see Master Response 17 for a description of the revised proposed change to the maximum allowable increase in traffic volumes traveling to and from the facility. See response to Comment C-22 regarding mitigation measures for traffic-related impacts. The current landfill receives waste from outside Marin County, and is expected to do so in the future. The distribution of vehicle trips north and south of the landfill site was assumed to be similar to current patterns.

C-24. The DSEIR analysis of potential transportation-related impacts was based on 1,000 vehicles per day. The effect on traffic flow conditions would be caused by the increase in traffic flow above the existing permitted number of vehicles, and it was that increase that served to determine impacts.

C-25. The commenter is correct in assuming that the term "grade-separated access connection" refers to the "Redwood Sanitary Landfill Access Bridge" project that was the subject of a recent, separate EIR. The comment regarding the need to implement this project prior to consideration of approval of the current project is noted. Please refer to Master Response 3 for updated information on the completion schedule for the access bridge.

C-26. Proposed average and peak tonnages for materials that will be directed to the composting operation are detailed in Table 2-2 of the DSEIR. Please refer also to Master Response 17 regarding changes in the project description and revised Chapter 2 of this FEIR. Conversion factors appear in the footnotes to Table 2-2.

C-27. Assumed types and numbers of vehicles for all proposed operations are included in Table D-1 in Appendix D of the DSEIR.

C-28. The basis used for the calculations in question is 260 operating days per year (5 days per week).

C-29. The proposed revisions to the existing co-composting facility are discussed in the DSEIR, pages 2-25 through 2-30. Additional information is available in the applicant's Report of Composting Site Information (Geosyntec, 1998, Appendix N) Potential impacts and mitigation measures related to the proposed changes in the composting facility are discussed in Chapter 3 of the DSEIR, including Impacts 3.2.6, 3.2.7, 3.2.9, 3.4.13, 3.5.3, 3.5.4, 3.5.5, 3.5.6, 3.5.8, 3.6.2, 3.7.3, 3.8.2, 3.8.3, 3.8.5, 3.9.1, 3.9.2.

C-30. Please see response to Comment C-29, above.

C-31. Please see response to Comment C-26, above.

C-32. Mitigation Measure 3.2.9b of the DSEIR requires the project applicant to formulate an Odor Impact Minimization Plan in accordance with Title 14 CCR § 17863.4. Since publication of the DSEIR the applicant has provided the County with the facility's Odor Impact Minimization Plan, which responds to each requirement specified in §17863.4 (a) and (b), including a description of design considerations and operating procedures for minimizing odor, including storage practices and contingency plans. The contingency plan addresses equipment, water, and power issues, and personnel issues as follows: broken equipment will be repaired by an on-site mechanic or contract mechanic, and if equipment cannot be repaired in a timely manner, RLI will rent or borrow from a sister company replacement equipment; a 3,000-gallon water truck is maintained on site; equipment used is fueled by diesel, which is stored on site in a 10,000-gallon fuel storage tank; and landfill personnel will provide assistance in the event or an emergency or [if] instructed to call 911.

C-33. The recently-adopted revisions to CCR Title 14 regarding compostable materials handling operations and facilities regulatory requirements (§17850 et seq.) are reviewed and discussed in the DESIR (pages 2-25 through 2-30) and in the impact analysis.

C-34. Please refer to response to Comment C-5.

C-35. All referenced sections of the CCR were reviewed in preparation of the DSEIR.

C-36. Chapter 3.1 of CCR Title 14 (commencing with §17868.1) sets standards for pathogen reduction in the composting process, and maximum acceptable metal concentrations and pathogen densities in finished compost, and also establishes standards for sampling methods and frequency. Adherence to these regulatory requirements is considered adequate to ensure that finished compost will not pose a threat to public health and safety.

C-37. The California County Agricultural Commissioners are the enforcement agents for state and federal regulations concerning *Phytophthora ramorum*. They are responsible for regulatory certification, inspection and other enforcement activities within the counties. In the infested counties, regulated activities include greenwaste disposal, firewood sale and distribution, biomass and landfill facilities, utility line clearing, and survey and inspection for nurseries.

The concerns of the commenter were discussed with the Marin County Agricultural Commissioner's office, who confirmed the seriousness of the *Phytophthora* infestation in Marin County and the need to take precautions to prevent composting operations from becoming a center for spread of the pathogen. To address this concern, the Agricultural Commissioner's office will likely take action to regulate the proposed expanded composting operation, if the project is approved. This action is described in the following impact statement which is added to Section 3.3 (Biological Resources) in the FEIR (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

Impact 3.3.10: The proposed expanded composting operation could become a means for transmission of the pathogen that causes Sudden Oak Death. (Less than Significant)

Sudden Oak Death is a forest disease caused by the plant pathogen *Phytophthora ramorum*. This pathogen has caused widespread dieback of tanoak and several oak species (coast live oak, California black oak, Shreve's oak, and canyon live oak) in California's central and northern coastal counties. It has also been found to infect the leaves and twigs of numerous other plants species. While many of these foliar hosts, such as California bay laurel and *Rhododendron* species, do not die from the disease, they do play a key role in the spread of *P. ramorum*, acting as a breeding ground for innoculum, which may then be spread through wind-driven rain, water, plant material, or human activity.

State (State Miscellaneous Ruling 3700) and federal (7 CFR Part 301) regulations prohibit the transport of plant material from within an infected county to an area outside of the quarantine area. The quarantine area consists of the counties with confirmed cases of the disease, as shown in Figure 3.3.1. An exception to this prohibition is possible, if a party wishing to ship materials outside the quarantine area enters into a Compliance Agreement with the County Agricultural Commissioner.

Composting facilities can act as dispersal centers for Sudden Oak Death and other plant diseases, if infected plant material is shipped from the facility to an area where the disease has not yet occurred. However, the composting process itself, which must meet state regulatory standards (CCR Title 14, Section 17868.3) for pathogen reduction by subjecting all parts of the composting pile to a minimum temperature for a minimum period of time has been shown to kill *Phytophthora ramorum* (Garbelotto and Paswater, 2003). Therefore, properly composted and handled material leaving the site in an uncontaminated vehicle would not be a source of the disease.

The Marin County Agricultural Commissioner's office has in the recent past entered into discussions with Redwood Landfill, but at the current time the existing composting facility does not ship materials outside of the quarantine area; the majority of compostable material is currently used as alternative daily cover and for other purposes at the landfill, such as erosion control, so does not leave the site. The Agricultural Commissioner has therefore determined that at this time a Compliance Agreement is not needed (Ventura, 2004). The project, however, would greatly expand the permitted volume of material composted. The applicant could begin shipping more compost or other plant materials greater distances, which could increase the possibility of spreading Sudden Oak Death.

Redwood Landfill Solid Waste Facilities Permit Revision EIR / 200238 ■

SOURCE: California Oak Mortality Task Force (http://www.suddenoakdeath.org; accessed 11/17/04)

Figure 3.3.1
Sudden Oak Death in California

If the project is approved, the Marin County Agricultural Commissioner has stated that they would enter into a Compliance Agreement with the Landfill to ensure that the composting operation does not become a spreading center for Sudden Oak Death.

The compliance agreement would require restrictions on the area to which compost and other plant material is shipped, as well as operations and practices, such as sterilizing or washing equipment, vehicles, and clothing and preventing finished compost coming into contact with uncomposted material, to prevent cross-contamination of material.

Because of the existing regulatory structure for preventing the spread of Sudden Oak Death, including the ability and intent of the County Agricultural Commissioner to enter into and enforce a Compliance Agreement with Redwood Landfill, this impact is considered less than significant.

Mitigation Measures: None required.

References:

Garbelotto, Matteo, and Pat Paswater, 2003, "Composting as a control for sudden oak death disease." BioCycle, Vol. 44, N. 2, p. 53.

Ventura, Susan, Marin County Agricultural Commissioner's Office, personal communication (telephone) with Dan Sicular, Environmental Science Associates, November 17, 2004.

No comments on the DSEIR were received from the Marin County Agricultural Commissioner. However, it is assumed that the Marin County Agricultural Commissioner will impose requirements and restrictions on the existing and proposed composting operation in order to prevent the further spread of Sudden Oak Death disease.

C-38. The information provided by the commenter on this issue is appreciated. It is assumed that any solutions to this issue developed by the CIWMB and DPR will apply to future operations composting operations at Redwood Landfill, whether or not the current project is approved.

C-39. The applicant's Joint Technical Document (Geosyntec, 1998) includes a revised Preliminary Closure Plan and revised Preliminary Post-Closure Maintenance Plan. The project elements that relate directly or indirectly to landfill closure and post-closure maintenance include the proposed increases in daily waste receipts; revisions to the fill sequencing plan; proposed changes to the LCRS design, and the proposal to leave in-place waste buried in the 11.5 acre southern area of the landfill. All of these project aspects are evaluated in the EIR.

C-40. Comment noted.

C-41. Section 4.2 in Chapter 4 of the DSEIR discusses cumulative impacts.

C-42. The DSEIR identifies numerous, potentially significant project impacts.

C-43. Comment noted. Please refer to response to comment C-25, and also Master Response 3

C-44. Comment noted. The DSEIR identifies the Mitigated Alternative as the Environmentally Superior Alternative.

C-45. A draft MMRP is presented in Appendix H of the DSEIR. The MMRP will be revised as necessary prior to consideration of project approval.

C-46. The commenter has not identified any grounds for recirculation of a revised DSEIR.

Comment Letter D

California Regional Water Quality Control Board
San Francisco Bay Region

Winston H. Hickox
Secretary for Environmental Protection

Internet Address: http://www.swrcb.ca.gov/rwqcb2
1515 Clay Street, Suite 1400, Oakland, California 94612
Phone (510) 622-2300 • FAX (510) 622-2460

Gray Davis
Governor

DATE: October 14, 2003
File No. 2159.5065 (ADF)

2003 OCT 15 A 11:40
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGY
RECEIVED

Tim Haddad
Marin County Planning Division
3501 Civic Center Dr. #308
San Rafael, CA 94903-4157

SUBJECT: Draft Subsequent EIR
Redwood Landfill, Novato

Dear Mr. Haddad:

These are our comments on the Draft Subsequent EIR for the Redwood Landfill, dated July 2003. The EIR is required because there are numerous physical and operational changes to the landfill since their Solid Waste Facility Permit (SWFP) and Final EIR (FEIR) were adopted.

EXISTING FOOTPRINT?

The EIR needs to clearly define the extent of the "existing footprint" of the landfill. Title 27, Section 20164 defines this as the area covered by waste at the date that the landfill fell under Federal Subtitle D regulations, which is October 9, 1993. Pursuant to SWRCB Resolution No. 93-62, the portions of an active landfill outside of the "existing footprint" must have a composite liner. Since the EIR does not define the "existing footprint," we cannot determine if there are portions of the landfill that should be composite lined, as they lie outside of the "existing footprint." For instance, Areas C and E of the landfill (which historically contained the composting facility and the auto wrecking yard) seem to lie outside of the "existing footprint," yet the EIR states that that "filling in Area E subsequently commenced for a short time." If true, this filling violates Title 27. Future filling in Area F (which currently contains the administrative facilities), along with any other portions of the landfilling outside of the "existing footprint," will likewise need to be in composite lined cells. D-1

The EIR also widely uses the term "footprint," without stating whether this refers to the "existing footprint." This should be clarified. D-2 Lastly, the areal extent of the landfill footprint is not clearly stated in the EIR. The 1994 FEIR and SWFP state the footprint is 210 acres, but the EIR says it is actually 223 acres. This too should be clarified in the EIR. D-3

Comment Letter D

CHANGES TO LANDFILL FINAL TOE

In many instances, the EIR incorrectly states that an increase in the final waste volume will **not** be achieved by changing or expanding the landfill's footprint (a term which again is undefined). This assertion is contradicted on page 2-13, which states that there will be changes to the footprint at the toe of the final waste fill slope. This change is necessitated by the "need to ensure stability and accommodate the redesigned perimeter LCRS system." A map clearly showing this change should be included in the EIR, and statements asserting that no footprint change is proposed must be removed. D-4

LANDFILL LIFE

The calculations, in Appendix A of the EIR, of the final landfill life under various scenarios need to be reviewed. Scenario 3 uses an unrealistic in-place density of refuse, leading to an inflated final landfill closure date. D-5

SLOPE STABILITY

The EIR should clarify the current status of the landfill slope stability analyses. The landfill proposes to nearly double the final waste volume from 19 million to about 35 million cubic yards by increasing the landfill slopes, and by decreasing the width and frequency of the side slope benches. The static and dynamic stability of this change was studied in the landfill's 1998 fill-sequence plan, and more recently, was critically reviewed by the County's consultant (Treadwell & Rollo). The landfill's consultant (Geosyntec) in turn answered the comments from Treadwell & Rollo. D-6

The EIR should summarize the Treadwell & Rollo's comments and the subsequent responses, and contain a statement that the County is satisfied that all slope stability concerns were resolved. The EIR should consider whether further slope stability analysis of the final waste expansion is needed, as the Area G design required the addition of synthetic fibers to the clay layer to increase the stability of the clay/HDPE interface. This indicates a potential deficiency of the previous slope stability calculations.

PERIMETER LEVEE & LCRS

The EIR needs to give a justification for why the perimeter levee reconstruction has been dropped. Both the landfill's FEIR and SWFP recommended that the perimeter levee be reconstructed in conjunction with the building of a perimeter leachate extraction system. This was done for Area A of the landfill, however the perimeter extraction system alone was built in Areas B – D, without the perimeter levee reconstruction. The landfill is now now in the process of extending the perimeter leachate system, again without any levee improvements. D-7

FIVE-FOOT SEPARATION

Despite a Board staff quote to the contrary, the EIR states (page 3.4-29) that the perimeter LCRS serves as an engineered alternative to the Title 27, Section 20240 requirement of a five foot separation from groundwater beneath the landfill. This is not correct. We repeat that the perimeter system is merely a corrective action mechanism to deal with lateral leachate seepage. The EIR should state that for the landfill to meet the mandated separation, the landfill will either need to physically provide increased separation, or to install, as in Area G, an underdrain. D-8

LEACHATE HANDLING

In several places, the EIR states that the perimeter leachate collection and recovery system (LCRS) serves to collect all of the leachate generated within the landfill. The EIR should note that this is a claim that Board staff feel is currently unproven, and for which we have already requested supporting information from the landfill. The system is not currently complete, and will not be until at least next year. Even following completion, there are divergent estimates as to the current volume of leachate generation (the 1995 MET analysis states it is 3 – 6 GPM; the 1992 CH2MHILL study came up with 25 to 70 GPM). There are no current models of the effectiveness of the leachate system. This, coupled by what appears to be a sizeable buildup or mounding of leachate in the landfill, raises doubts as to whether all leachate is collected. Also, the proposed increase in future waste acceptance may lead to increases in leachate generation and even reduced collection efficiency. We therefore concur with the EIR that an updated leachate management plan is needed. D-9

UNPERMITTED WASTE AREA

The EIR gives insufficient information to conclude that the unpermitted 11.5-acre waste area can be closed in place. Additional information should be presented to show whether there are any adverse water quality impacts to leaving this waste in place. D-10

COMPOST

The EIR gives insufficient information to justify the claim that future composting, in dry weather, may take place on native materials (unlined areas). Board's staff feel that composting should only take place on appropriately lined areas with stormwater controls. Such an area is currently under construction at the landfill. We do concur with the EIR that the runoff from compost areas cannot be routed to the stormwater ponds. D-11

SEISMIC

The EIR does not state if the landfill design was based on effects other than the peak horizontal ground acceleration on bedrock, such as the landfill's frequency response, or if the duration of shaking was considered. The EIR does not state whether there would be D-12

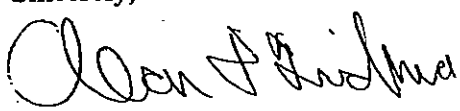
amplification of earthquake shaking though the bay mud underneath the landfill, or what impacts might be expected through liquefaction under the landfill. The EIR states that up to a 12" displacement is expected in the bay mud, but no discussion of the effects of such a displacement on the Area G, and future lined cells, is given. The EIR also notes that differential settlement of the landfill is likely, but no estimate of the extent and effects of this settlement are presented, nor is the extent to which the revised fill-sequencing plan can mitigate against this settlement is presented. D-12

CONVERTING AREA G TO A CLASS II CELL

Board staff have been told separately that the proposal to use the Area G lined cell for Class II waste disposal has been dropped. Therefore all references to this being a Class II cell, and all references to designated waste acceptance and disposal, need to be removed from the EIR. D-13 The description of the Area G liner system (on page 2-19) also needs to be updated to reflect that an 80-mil HDPE liner was installed, and that a liner was installed as a cutoff between the Area G cell and the existing landfill. D-14

We thank you for this opportunity to comment on this document. If you should have any questions, please feel free to contact me at (510) 622-2347, or by E-mail at adf@rb2.swrcb.ca.gov.

Sincerely,



Alan D. Friedman
Water Resource
Control Engineer

Cc: Cynthia Barnard, County Health
Joe Mello, SWRCB
Don Urban

D. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SAN FRANCISCO BAY REGION

D-1. The DSEIR defines the use in the document of the term "landfill footprint" on page 2-10, as the "approximately 223-acre area that is permitted for disposal," with a footnote (footnote 2) that points out the discrepancy between this acreage and that shown in the SWFP (210 acres). (Regarding the differences in acreage, please refer to the response to comment D-3.) The landfill footprint is shown on Figure 2-3, Existing Site Plan, and Figure 2-7, Proposed Site Plan, of the DSEIR. As shown in Figures 2-3 and 2-7 of the DSEIR, all the lettered areas (A through G) are within the existing and proposed landfill footprint. Waste has been placed at all of the areas that were inside the landfill footprint prior to the previous EIR analysis (1994) which included Areas A through E. The 1994 EIR evaluated the then-proposed lateral expansion of the landfill footprint from approximately 195 to 210 acres. The only area that had not previously been used for waste disposal was Area G, which had been used as a sludge impoundment. Consequently, following issuance of the 1995 SWFP, the RWQCB determined that Area G was subject to Subtitle D liner requirements and requested RLI to prepare a Report of Waste Discharge for Area G. (For more on the background of Area G including Subtitle D liner requirements, please refer to Master Response 6.) During the recent completion of the perimeter LCRS trench, the construction crew encountered buried waste along the perimeter of the disposal footprint, confirming other site information that, with the exception of Area G, the 222.5-acre footprint, the disposal footprint had been used for waste placement prior to adoption of Subtitle D and SWRCB Resolution 93-62. Disposal footprint, landfill footprint, and existing footprint are interchangeable terms as used in the DSEIR, and refer to footprint shown in DSEIR figures 2-3 and 2-7. The landfill property including areas outside the disposal footprint, such as the Oxbow area and the site of the former Cascade Forest Products facility, is generally referred to as the landfill property.

D-2. Please refer to the response to Comment D-1.

D-3. The existing and proposed physical and operational modifications at Redwood Landfill that had not been reviewed in the 1994 FEIR and are the subject of this SEIR were first the subject of a County technical review and initial study type review (Marin County, 1999a, 1999b) as stated in the DSEIR Introduction. The purpose of the County's two initial reviews was to determine the scope of changes that should be evaluated as a project in the SEIR. Among other findings, the technical review identified several aspects of the facility or its operations that had changed in "minor technical ways and should be incorporated into a revised Solid Waste Facility Permit, but do not warrant further environmental review" (Marin County, 1999a). The reference to a 222.5-acre landfill footprint for the current project, instead of a 210-acre footprint, was identified as one such change. The technical review analysis concluded that the SWFP should be revised to include the most recent recalculation of the disposal footprint of 222.5 acres, but that this constituted a minor technical change and further environmental review was not recommended (Marin County 1999a). The LEA also concurs that the footprint for

purposes of the permit revision application currently under environmental is 222.5 acres (Barnard, 2004). According to the LEA, the increase in footprint acreage from 210 acres (as shown in the current SWFP) to 222.5 acres is a result of the change in the LCRS that was implemented subsequent to the previous EIR evaluation and issuance of the SWFP (Barnard, 2005). Although the LEA considers this increase to be a lateral expansion, the LEA also has pointed out that the 222.5-acre area is "within the 'Subtitle D Footprint,' that is, within the limit of waste placement as of the effective date of Subtitle D" (Barnard, 2004).

Given that the area included within the 222.5-acre disposal footprint is within the limit of waste placement, that the increase resulted from the revised LCRS, which is evaluated as a project component in this SEIR, and that no evidence has been presented over the course of the DSEIR preparation and review period to suggest that excluding the increase in footprint acreage per se from the SEIR analysis was inappropriate, the recommendation of the initial study and technical review appears to have been confirmed.

In conjunction with this discussion of the change in the footprint acreage, it is important to address a misunderstanding that has arisen from references to different disposal area acreages in some of Redwood Landfill's background documents. Some background documents, such as the facility's Report of Disposal Site Information (RDSI) (HLA, 1994), have used several different acreages with reference to the disposal area, which has contributed to some speculation about the bases for the acreages presented. In a July 2004 letter to the County (Meserve, 2004), the applicant proposed that the reference to three different acreages, 195, 210, and 220, in the facility's 1994 RDSI, together with the 1994 EIR, "reflect an evolving landfill footprint and active waste placement on at least 222.5 acres." In September 2004 the LEA clarified the three different acreages referenced in the 1994 RDSI, and stated that there "was no understanding by the LEA that the there would be a 'flexible and evolving' footprint" (Barnard, 2004). In the September 2004 letter, the LEA explained that the acreage figures in the RDSI "represent the approximations at the time of the existing and [then-]proposed conditions of the site, based upon the design of the LCRS and perimeter levee accepted and permitted by the LEA in its 1995 SWFP. The 195 acre figure is the footprint without Area G (Area G was evaluated as a lateral expansion in the 1994 FEIR), the 210 acre number was the footprint including Area G, and the 220-acre figure represents the footprint with Area G *and* the area containing waste outside the footprint boundary which was originally proposed to be excavated and deposited into the landfill. (Redwood subsequently proposed to close in place the refuse outside the main waste impoundment, and this proposal is one of the project elements evaluated in this SEIR.)

In conclusion, as the foregoing discussion indicates, both the LEA and RLI (as indicated in the Joint Technical Document [Geosyntec, 1998], 2004 letter to the County [Meserve 2004], and other project documents) agree that the disposal footprint considered in the current SEIR and for the proposed SWFP revision is 222.5 acres.

D-4. Regarding the definition of and changes to the landfill footprint, please refer to the responses to comments D-1 and D-3, respectively. As indicated in the response to comment D-3, according to the LEA, the change in footprint acreage is attributable to the change in the LCRS and perimeter levee design and implementation since the SWFP was issued. The adjustments to the landfill toe described on DSEIR page 2-13 are not inconsistent with the LEA's contention that the expanded acreage is a consequence of the redesigned perimeter LCRS. The County's Initial Study Type Review (Marin County, 1999b) evaluated the proposed increase in landfill capacity and indicated the proposed increase in capacity was attributable to the proposed changes in the landfill profile (i.e., the increase in landfill slope) and fill sequencing. This characterization is consistent with the applicant's Joint Technical Document (GeoSyntec, 1998). Both the increase in slope and revised fill sequencing were determined in the Initial Study to require additional environmental review and are included as project elements evaluated in this DSEIR. Please also see Master Response 12 regarding landfill capacity and current volume.

D-5. As indicated in the Appendix A table, Scenario 3 represents the Proposed Project Conditions, and uses data provided by the applicant in its proposal. The County agrees that this scenario uses unrealistic density for in-place refuse. The DSEIR points out in the discussion of site life calculations under impact 3.6.7 on page 3.6-19, that the applicant used erroneous density factors in its site life calculations. For updated site life projections, please see Master Response 12.

D-6. Preliminary documentation provided by the applicant did not provide all the information needed to evaluate the slope stability analysis conducted by the applicant's geotechnical consultants, as the commenter points out. In response to requests, the applicant provided the County additional geotechnical information prior to publication of the DSEIR. The information initially provided and supplemented in response to requests by the County's geotechnical reviewer (Treadwell & Rollo), and Treadwell & Rollo's analysis of this information, provided the basis for the DSEIR analysis and conclusions regarding slope stability. In addition, please see Master Response 22, regarding slope stability.

D-7. The change in the perimeter levee is considered to be an element of the current project because it differs from the integrated LCRS-perimeter levee design that was previously evaluated and approved. The changes described by the commenter are presented in the Project Description (page 2-32). As also noted on DSEIR page 2-32, the applicant plans to increase the height and width of the portion of the perimeter levee that was not reconstructed as part of an integrated LCRS-levee system. According to the applicant's Joint Technical Document (GeoSyntec, 1998), stability studies conducted subsequent to the approval of the integrated LCRS-levee design indicated that the integrated LCRS-levee design was not needed to provide landfill stability as had been assumed previously. The DSEIR evaluated the seismic and static stability of the proposed landfill design with the revised LCRS (see Impacts 3.4.1 and 3.4.2, respectively, in Section 3.4 Geology, Soils and Seismicity), the effectiveness of the revised LCRS system for managing leachate (see Impact 3.4.7), and the susceptibility of areas outside the landfill footprint

(which currently are in the floodplain) to flooding (see Impact 3.5.6). Mitigation Measure 3.5.6 identified in the DSEIR requires the applicant to complete the planned elevation and widening of the perimeter levee to protect areas that are currently located in the 100-year floodplain prior to implementation of any proposed operations in those areas. Also refer to Master Response 13.

D-8. Please refer to Master Response 1.

D-9 Please refer to Master Response 13.

D-10. Please refer to Master Response 2.

D-11. The DSEIR does not claim that future composting may take place on native materials. Because this has been proposed by the applicant, it is described as a proposed project element in Chapter 2, Project Description. Mitigation Measure 3.5.3b states that for all composting operations outside the landfill footprint, including any operations in the area currently known as the main sludge impoundment, pads used for both wet weather and dry weather operations must meet permeability specifications established by the RWQCB, and that the applicant shall provide documentation to the RWQCB of site-specific studies documenting that areas proposed to be used for composting meet RWQCB specifications throughout the proposed area.

D-12. The seismic analysis described under Impact 3.4.1 took into account the underlying materials, including the underlying Bay Mud and the alluvium beneath the Bay Mud, and any amplifying effects earthquake shaking would have on Bay Mud. The design earthquake used to evaluate seismic stability includes its duration. Clay such as the underlying Bay Mud and the alluvium beneath the Bay Mud (which is predominantly stiff clay) are not susceptible to liquefaction. Regulations require the containment facility to withstand the design seismic event. While some landfills have been designed to experience (and accommodate) more than 12 inches of deformation and some less, a design that anticipates up to 12 inches of displacement is not uncommon, and the Area G liner is designed to accommodate the 12-inch displacement. Impact 3.4.3 addresses differential settlement and identifies measures to reduce impacts to a less-than-significant level.

D-13. Please refer to Master Response 6.

D-14. The County appreciates this clarification about the Area G liner. However, the referenced section of the DSEIR pertains to the proposal to reclassify Area G as a Class II landfill. Since publication of the DSEIR the applicant has withdrawn this proposal and, therefore, this section of the Project Description has been deleted (please refer to the revised Project Description, Chapter 2 of this FEIR, and Master Response 17, Project Changes).

Comment Letter E

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
(510) 286-4454 TDD

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MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Flex your power!
Be energy efficient!

September 22, 2003

MRN-101-25.44
MRN101324
SCH 1991033042

Mr. Tim Haddad
Marin County
Community Development Department
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Redwood Landfill, Inc. Revised Solid Waste Facilities Permit – Draft Subsequent Environmental Impact Report (DSEIR)

Thank you for continuing to include the California Department of Transportation (Department) in the environmental review process for the proposed project. We have reviewed the DSEIR and have the following comments to offer:

1. The project proposes to increase the landfill's capacity, which will create an increase in truck trips traveling to and from the landfill on U.S. 101.

   The project applicant agreed to pay for construction of a new access road and bridge that would mitigate traffic impacts and improve safety at the landfill's access to and from U.S. 101 at Sanitary Landfill Road. The access road and bridge project is currently in the design phase and is tentatively scheduled to be constructed from April 2004 to December 2004. E-1

   The DSEIR assumes that the access road and bridge will be built prior to implementation of the proposed landfill expansion. We recommend that the use permit for expansion of the landfill operations not be approved until the grade-separated access road and bridge has been built and accepted by the Department. However, if the County decides to allow landfill operations to be expanded prior to these access modifications, other alternative mitigation measures should be provided to reduce the significant adverse traffic impacts, and improve safety at this location.

Comment Letter E

2. Please explain what type of quantitative measure was used in determining the level of significance for traffic safety implied in the following statement on Page 3.10-3: "The unavoidable safety impacts identified in the 1994 FEIR would be reduced to a less than significant level by the proposed new access connection." We recommend revising this statement to say, "The proposed new grade-separated access road and bridge would enhance traffic safety at the access to the Redwood Landfill site." E-2

3. The section titled "Highway 101 Roadway Level of Service" on pages 3.10-6 and 3.10-7, as well as Impact 3.10.1 on page 3.10-9 indicate that the segment of U.S. 101 at Sanitary Landfill Road currently operates at LOS E during the AM peak hour. However, the section titled "Significance Criteria" on page 3.10-7 states that this segment of U.S. 101 currently operates at LOS F. Please explain this discrepancy. E-3

4. Although Impact 3.10.1 states that the LOS would not be affected by the additional 55 trips, this section of U.S. 101 currently operates at or very close to its capacity. Any increase in traffic, as proposed, could result in additional delays for southbound U.S. 101 motorists. How will the proposed project mitigate this impact? E-4

We look forward to receiving a response to our comments at least ten days prior to certification of the EIR pursuant to Section 21092.5(a) of the CEQA.

Should you require further information or have any questions regarding this letter, please call Maija Cottle of my staff at (510) 286-5737.

Sincerely,

Timothy C. Sable

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

E. CALIFORNIA DEPARTMENT OF TRANSPORTATION

E-1. As stated in the DSEIR Chapter 2, Project Description, the analyses presented in the DSEIR assume that the access road and bridge will be built prior to project implementation; please also refer to Master Response 3.

E-2. The 1994 FEIR identified a significant impact based on the significance criteria identified in the FEIR, and identified several alternative measures to alleviate the impact. Construction of the access bridge was one of the measures identified to reduce the impact to a less-than-significant level. At the time the 1994 FEIR was published, this and the alternative measures were dismissed as infeasible. Therefore, the 1994 EIR concluded the impact was significant and unavoidable. Now, however, various obstacles that previously rendered the access bridge infeasible have been overcome, and construction is scheduled to commence (please refer to Master Response 3). Thus, the statement cited in this comment accurately reflects the relationship between construction of the bridge and the previously identified impact and mitigation measure, and a revision to the text is not needed.

E-3. The statements cited by the commenter are not inconsistent because they refer to different aspects of traffic flow conditions (i.e., level of service) on Highway 101. Text on pages 3.10-6 and 3.10-9 is describing level of service (LOS) in the southbound direction during the a.m. peak hour, which is LOS E. The text under Significance Criteria on page 3.10-7 is referring to the worst level of service condition, which is LOS F in the northbound direction during the p.m. peak hour. The latter characterization is also presented in the DSEIR description of “Highway 101 Roadway Level of Service” (see Footnote 6 on page 3.10-6).

E-4. Please refer to Master Response 5.

Comment Letter F

U.S Department
of Transportation

Federal Aviation
Administration

Western-Pacific Region
Airports Division
San Francisco Airports District Office

831 Mitten Road, Suite 210
Burlingame, CA 94010-1300

RECEIVED
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MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

August 8, 2003

Marin County Community Development Agency
Attn: Mr. Tim Haddad, Environmental Coordinator
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4177

Dear Mr. Haddad:

Re: Draft Subsequent Environmental Impact Report for Redwood Landfill Solid Waste Facilities Permit Division, San Rafael, Marin County, CA

Thank you for notifying our office of the preparaton of a Draft Environmental Impact Report (DEIR) for the proposed Redwood Landfill Solid Waste Facilities Permit Division. We have reviewed the project location for potential impacts to Federal Aviation Administration (FAA) programs related to aviation safety and efficiency for the Gnoss Field Airport (DVO).

The proposed project may effect FAA funded Airport Improvement Program (AIP) projects that would take place at Gnoss Field (DVO) Airport. Although the DEIR addresses potential impacts and mitigation measure, to offset those impacts as shown in Section 3.6.2 in the DEIR, the FAA SFADO recommends contacting DVO in regards to compatible land use. This recommendation is to ensure that the appropriate coordination is completed as it relates to aviation safety and/or efficiency on DVO operations. F-1

If you have any questions you may contact the undersigned at (650) 876-2795.

Sincerely,

Barry Franklin

Barry Franklin
Environmental Planning Specialist

Cc: Dept. of Transportation Aeronautics Division, Sandy Hesnard

F. U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION

F-1. Comment noted. The County Community Development Department and Airport Land Use Commission will coordinate with the FAA on land use issues.

Comment Letter G

COUNTY OF MARIN
ENVIRONMENTAL HEALTH SERVICES

Community Development Agency

3501 Civic Center Drive, Rm 236
San Rafael, CA 94903
(415) 499-6907 FAX (415) 507-4120
www.co.marin.ca.us/ehs

September 25, 2003

Tim Haddad
Environmental Coordinator
Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

RE: LEA comments on Draft Subsequent Environmental Impact Report

Dear Tim:

LEA staff offers the following comments regarding concerns associated with the future relocation of the truck scales and gatehouse:

The draft document does not address the relocation of the gatehouse and truck scales. The previous FEIR for *Redwood Landfill Solid Waste Facilities Permit Expansion Project* only recorded the following regarding this issue: ..."*and relocation of the gatehouse and truck scales by February 2000*" (Page 2-37). The phrase was referenced with other anticipated relocation milestones.

The Joint Technical Document (March 27, 1998) submitted as part of Redwood's application package for the Solid Waste Facility Permit revision has only one reference to the truck scales. It reads as follows: "*These scales are planned to be relocated near the new administration area in approximately 2005 – 2008*" (Page 5-52). G-1

There is nothing in the new environmental study addressing the exact location proposed for the relocation of the gatehouse and truck scales. It is not known what type of construction will be anticipated. There is no reference as to proposed traffic patterns for on-site receipt of vehicles and their payload. Environmental considerations, if any, associated with the relocation are not evaluated.

Thank you for the opportunity to comment on the project.

Sincerely,

Cynthia Barnard

Cynthia P. Barnard (M.J.)
Senior Environmental Health Specialist

cc: Philip Smith, Chief EHS

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2003 SEP 25 A 8:54
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

G. COUNTY OF MARIN ENVIRONMENTAL HEALTH SERVICES

G-1. Since publication of the DSEIR the applicant has provided the County with a "concept plan for future conditions" that includes a schematic layout of the relocated administration area (Meserve, 2004, Exhibit D).

As noted in the response to Comment C-18, the project is an existing facility and in general onsite signage and traffic flow patterns are considered part of landfill operations needed to efficiently run the facility; therefore evaluation of these aspects of the site is not necessary for the environmental review document. In addition, the Initial Study Type Review conducted by the County prior to preparation of the DSEIR considered the relocation of the administration offices and ancillary facilities to the Cascade Forest Products Building, noted that this had been evaluated in the 1994 FEIR, and concluded that the relocation of the administration facilities did not require further consideration. However, in addition to the aforementioned figure, the applicant also has provided a description of anticipated traffic flow (Meserve, 2004). Incoming trucks would proceed southward from the landfill entrance and turn left into the scale/scale house area. After being weighed the loaded trucks would exit northward from the area, turn right onto the paved south perimeter access road, and then access the landfill via a graveled road on the south face of the landfill, in the vicinity of Areas D and G. To exit the landfill, empty trucks would proceed back down the graveled and paved access roads at the southern end of the landfill, through the scale area to be weighed a second time, and then would exit the landfill via the paved entrance road (Meserve, 2004).

Since publication of the DSEIR, the applicant also has provided additional information about the relocation of the truck scales. RLI plans to raise the grade in the area of the scales and scale house from its current elevation of 0 to +2 feet above mean sea level (msl) to +9 feet msl. This would involve placement of approximately 120,000 cubic yards of fill. The area would be paved with asphalt concrete underlain by Class 2 Aggregate Base. The truck scales would be elevated approximately 2 to 3 feet above the pavement surface. To prevent the scales from settling, they would be supported on a pile foundation system that extends into non-compressible sediments below the Bay Mud. The scale house would be a small one-story structure similar to the existing scale house (Meserve, 2004). Prior to the roadway and scale area construction, RLI will need to produce detailed engineering studies, including geotechnical studies, as part of their complete application package; this package will be reviewed by the LEA and the RWQCB.

Comment Letter H

THE CITY OF
NOVATO
CALIFORNIA

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Novato, CA 94945
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Mayor
Michael Di Giorgio
Mayor Pro Tem
Pat Eklund
Councilmembers
Carole Dillon-Knutson
John Mani
Bernard Meyers

City Manager
Roderick J. Wood

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2003 DEC 12 A 11: 11

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

September 22, 2003

Marin County Board of Supervisors
Marin County Planning Commission
3501 Civic Center Drive
San Rafael, CA 94903-4157

Re: Redwood Landfill Solid Waste Facility Permit Revision and Draft Subsequent EIR

Dear Board Members and Commissioners,

The City of Novato appreciates the opportunity to comment on the Redwood Landfill Solid Waste Facility Permit Revision request and the Draft Supplemental EIR for the project. On September 15, 2003, the City Council of the City of Novato received public testimony, discussed the proposed project extensively and voted unanimously to oppose approval of expansion of the solid waste facility.

This letter summarizes the City Council's concerns with expansion of the facility, and provides comments on the Draft SEIR. H-1

City Concerns with the Proposed Project

The City of Novato appreciates the Planning Commission and Board of Supervisors consideration of the City's comments since the proposed project will potentially affect this City more than any other community in Marin County. The City opposes approval of expansion of the facility for numerous reasons;

1. The existing facility is located on diked and drained bay wetlands. In addition, the site is nearly surrounded by natural and man made sloughs. It is not appropriate to expand waste disposal operations in such an environmentally sensitive area. There are numerous potential environmental impacts from such an expansion that would directly impact the sensitive habitat. In addition, any catastrophic failure of the facility or mitigation measures (e.g. seismic event or leachate leakage) may not be mitigable because the sloughs and wetlands are so close to the site. Such a catestrophic event could have significant impacts on the bay. H-2

2. According to the Draft SEIR, there is currently adequate capacity to serve the waste disposal needs of Marin County. The increase in daily capacity (amount of material accepted per day) would shift the character of the facility to that of a more regional waste disposal facility. Therefore, much of the requested additional daily capacity would enable the facility to accept more waste from other jurisdictions in the Bay Area and potentially beyond. There H-3

is no benefit to Marin County or the City of Novato in an expansion of daily capacity, as that may ultimately shorten the life of the facility. H-3

3. The proposed expansion will increase air quality impacts due to on-site operations and traffic accessing the site. The pollutants include toxic emissions and odors which impact neighboring residents. The applicant is proposing to increase air drying of sludge materials, an activity that is believed to be a primary contributor to odor problems from the facility. The Draft SEIR found that some of the impacts from toxic materials are not mitigable to the level of insignificance. Since the proposed project will not benefit Marin County, the City does not believe there is a basis for making findings of overriding considerations. H-4

4. The City questions the findings that the additional 1170 vehicle trips that will be generated to and from the facility will not create traffic impacts. Even assuming the construction of the new on/off ramps to service the facility the additional vehicle trips will impact traffic congestion on Highway 101 which is already at level of service E. Normal Caltrans deceleration/acceleration lanes may not be adequate for heavily loaded, under-powered garbage trucks, adding to backups on the freeway. H-5

5. The increase in overall capacity of the facility will multiply the possibility of failure of impact containment measures or project mitigation measures. The steepened slope of the landfill will increase the possibility of erosion and will increase the possibility of slope failure in a seismic event. The increased weight of the landfill will add to the compression and distortion of the bay soil under the landfill, adding to the possibility of failure of the leachate containment layer. H-6

6. Both public testimony and discussions in the Draft SEIR raise concerns that the facility operator has a very poor record of complying with permit restrictions and operational requirements. This record casts serious doubt on future compliance with mitigation measures or with any permit restrictions that may be placed on operation of the landfill. The City does not believe it is appropriate to approve expanded operations for an activity with a known record of noncompliance, especially in an environmentally sensitive area. H-7

7. It is the City's understanding that the request for approval to allow toxic materials to be deposited at the facility has been withdrawn. Should this not be the case, the City would comment on concerns regarding that aspect of the proposal. H-8

Comments on the Draft Environmental Impact Report

1. The City believes that a number of the impacts that could result from catastrophic failure have not been adequately analyzed. The impacts of leachate containment failure are a significant concern because of the adjacency of sloughs and wetlands and the lack of physical separation between the containment system and these water bodies. The concern is magnified by the failure of a containment system in a Contra Costa County waste disposal facility, clear evidence that such failures can and do occur. Should the Redwood Landfill H-9

containment system fail pollutants would quickly be dispersed into the entire bay with the potential for massive habitat damage. H-9

2. Several mitigation measures call for development of plans to address potential impacts. For example, Mitigation Measure 3.4.1c calls for development of a Post Earthquake Inspection and Corrective Action Plan. This Plan is a significant mitigation measure because of its relationship to the perimeter levees, groundwater wells and leachate containment. This Plan, and other plans with significant safety/environmental implications, should be developed as part of the SEIR. H-10

3. Similarly, plans such as the Odor Impact Minimization Plan should be developed as part of the SEIR to ensure their adequacy to address the potential impacts. Mitigation measures should include a sophisticated odor monitoring system since the City believes that neither the County nor other responsible agencies have adequate staff to monitor this impact. H-11

4. All monitoring systems should be scientifically designed, permanent facilities with the capability to continuously monitor potential impacts. These systems should include air quality and water quality monitoring. H-12

5. Construction of the new freeway intersection is the responsibility of the project applicant. No new project approval should be granted until this measure has been completed. In conjunction with construction of the off ramp, access rights to adjoining parcels should be controlled to ensure that additional development potential is not created. H-13 H-14

6. The City questions whether the proposed limit on the increase in open air sludge drying (Mitigation Measure 3.2.10b) lowers this impact to a level of insignificance, given the high level of public concern over the current impacts of this practice. The purchase of emissions credits (Mitigation Measure 3.2.10c) to allow even more sludge drying is not appropriate because this would allow even greater impacts. H-15

Please feel free to contact David Wallace, Planning Manager, at 415-897-4307 to discuss or clarify any of these comments.

Sincerely,

Michael Di Giorgio
Mayor

cc: Council members
Rod Wood, City Manager
Harry Graves, Community Development Director

I:dw\Redwwod LF LTR

H. HON. MICHAEL DIGIORGIO, MAYOR, CITY OF NOVATO

H-1. Comment noted.

H-2. Please see Master Response 10.

H-3. Comment noted. Please refer to Master Response 19

H-4. Comment noted.

H-5. Please refer to Master Response 5

H-6. Please refer to Master Responses 7, 13, and 22

H-7. Please refer to Master Response 18

H-8. Please refer to Master Responses 6 and 17.

H-9. Impacts 3.4.1 and 3.4.2 in DSEIR Section 3.4, Geology, Soils and Seismicity, address the potential for landfill slope failure due to seismic or static forces, respectively, and identify measures to reduce potential impacts related to slope failure to a less-than-significant level. Please also refer to Master Response 22, regarding landfill slope stability, and Master Response 13, regarding the effectiveness of the leachate collection and removal system. Impact 3.5.1 of DSEIR Section 3.5, Hydrology and Water Quality, addresses the potential impact of landfill slope failure on nearby surface waters. Regarding the potential failure of the leachate impoundment, CCR Title 27 § 20320 establishes general criteria for all containment structures and § 20375 establishes special requirements for surface impoundments. Regarding the failure of Acme Landfill in Contra Costa County, refer to Master Response 4.

H-10. The DSEIR analyzes the seismic stability of the landfill (Impact 3.4.1) and RLI currently has a Post Earthquake Inspection and Corrective Action Plan in place, as discussed under Impact 3.4.1. Mitigation Measures 3.4.1c is appropriate as it includes performance standards to ensure that the updated Post Earthquake Inspection and Corrective Action Plan contains the appropriate revisions and requires that the plan be submitted to the RWQCB for approval and become part of the project. Therefore no changes to this measure are needed.

H-11. Since publication of the DSEIR the applicant has provided to the County an Odor Impact Minimization Plan for the composting operation in accordance with Title 14 CCR § 17863.4. 14 CCR § 17863.4(e) provides that the LEA will use the plan to determine whether or not the facility is following procedures established by the operator, and may issue a Notice and Order (pursuant to 27 CCR § 18304) to require the operator to either comply with the plan or revise it. In addition, if the plan is being followed but odor impacts are still occurring, the LEA may issue a Notice and Order to require the operator

to take additional reasonable and feasible steps to minimize odors. Please also refer to Master Response 15.

H-12. The water quality monitoring system is designed to meet specifications of Title 27 and the facility's Waste Discharge Requirements. Leachate monitoring wells in the waste unit need to be relocated periodically as refuse placement proceeds across the landfill footprint. Please also refer to Master Response 14. Regarding air quality monitoring, please refer to Master Response 16.

H-13. Please refer to Master Response 3.

H-14. Construction of the new access bridge was the subject of a Supplemental EIR, which was completed in June, 2002. That EIR evaluated the growth-inducing potential of the access bridge and concluded that the project, "…will not stimulate growth in landfill business nor will it remove an existing obstacle to development of surrounding rural lands. The proposed overcrossing and access connector road is gated and will only provide access to the landfill. Furthermore, the proposed access connector road is currently needed to handle existing levels of traffic at the landfill…." (Redwood Landfill Inc., Interim Access Road Improvements. Final Supplemental Environmental Impact Report, prepared for Marin County Community Development Agency by John Roberto Associates, June 2002. SCH# 1991033042).

H-15. See response to comment J-7, below.

Comment Letter I

Planning Commission notes re: DSEIR 1991033042
Steve C Thompson
September 15, 2003

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2003 SEP 22 P 3:55

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

General comments:

The WM history of agreement to earlier plans followed by alternative actions without permit authority – or by no action consistent with County requests of 1978, 1994, 1995, 1998 and 1999 – casts considerable doubt on the intentions of WM. There is little reason to conclude that conditions will be met in the future without more active regulatory oversight of the operations of Waste Management. I-1

There is reason to plan for the future of the Redwood Landfill site in the instance where the facility is sold or the current owner is no longer financially able to operate the facility for Marin's residents.

There is also a general problem with the concept that with wind patterns in Northern Marin to be prevailing from the Northwest that measurements of air quality are in any way reliable when taken 15 miles South of the site. Sampling Southeast of the site or at the site would be more representative of impacts from the site. I-2

Mandatory recycling and composting rather than landfilling is needed. I-3

Imposing mitigation fees for out of county waste disposal at Redwood Landfill will increase the life of the landfill [but reduce WM's business plan]. Those fees should be carefully managed through the Environmental Health Department and the Planning Department. I-4

While Class II material is no longer planned at Area G, only careful regulation will control the use of that area. The temptation to utilize the elaborate liner there will be considerable. I would expect pressure from the management for the investment to be put to use – even if Marin limits the disposal there. I-5

When construction work is underway without permits, the work must be stopped until the permit process is complete. I-6

Specifics:

3.2.10b [1-28]: VOC emissions permitted at 24 #/day rising to 104 #/day is based on 1,800 wet tons sludge [360 dry tons] when WM's plan is for 100 tons /day. How are these numbers affected? I-7

3.4.1c: There is no system of detection of failure in the lining of the Class II, Area G liner. There is no possibility of repair or correction to any defect or "tear" in the lining at Area G. Could there have been a monitoring system? How would a fail-safe system be designed? I-8

3.4.4b: The storm water impoundment for settlement of suspended sediments has been eclipsed by Area G. What is the capacity needed and where will it be built now that Area G is changed? I-9

Comment Letter I

3.4.4c: What is the final landfill closure plan? What are future uses? How can a natural landscape be developed for that end use? What is the effect of the new plastic membrane at the sloped edges when planting is anticipated? There is only about 12" cover over the membrane. I-10

3.4.7a: The use of collected leachate for dust control on roads and intermediate covers is on its face – absurd. It serves to concentrate the particulate material in the leachate and brews an even more potent "super leachate". This is the reverse of the purpose of the leachate collection system and should be disallowed. I-11

3.4.7c: The temporary leachate storage pond in the oxbow area should be constructed as if permanent to protect adjacent waterways and wetlands. Capacity should be calculated and a safe collection area created and maintained. I-12

3.4.7f[1]: How can areas be used for both composting, co-composting and available for Class II leachate impoundments? If leachate were mixed with composting materials, it would all become landfill again. I-13

3.5.4: This report identifies the potential for a 100 year storm to be 8% in one discussion and 35% in another. What is the difference and which should be used? I-14

3.5.6: The analysis includes an "assumption" which should be instead a "requirement" re: the perimeter levee. I-15

3.5.9: Another reference to the 1000 year 24 hour event and its probability 0.8% vs 3.5%. I-16

3.6.4b: Mitigation fees collected should be managed by a third party so that no on-site development would take place through WM. I-17

3.9.3b: Where is the factor "75%" of collected LFG derived? When factors are to be assumed, the source and reasoning must be available. I-18

Chapter 2: Increase in landfill capacity should be used exclusively to offset the need for future additional landfill sites. A stable level of consumption of the landfill should be established and then monitored by EHD for this purpose. I-19

Figure 2-7: The oxbow area should be shown with a reinforced levee / containment system if leachate is to be placed there. I-20

Page 2-21: There are now new permitted and proposed types and quantities of materials proposed by the applicant WM. I-21

Table 2-2 should be replaced with the new table generated by the applicant and approved by EHD. I-22

Page 2-24: PC soils are proposed to increase from 20 tons/day to 640 tons/day. This is a 32 x magnitude increase!! This is an unacceptable level. I-23

Comment Letter I

Page 2-24: Sludge processing is an odor problem. Acceptance of sludge should be programmed to decrease to 0. Why was the N-Viro process stipulated in 1994 never implimented? I-24

Page 2-25: The alternative potassium permanganate solution is an inherent danger to the health of employees and residents within wind range of the site. This a rapid strong oxidizer which in contact with biological material [living or dead] will destroy the material practically on contact. Lungs would be permanently damaged. I-25

Page 2-30: Vapor phase odor counteractant systems do not remove odors at the source, they merely mask one odor with another. There must be better controls. I-26

Page 2-37: The thin 12" layer "final cover" prohibits the planting of most landscaping unless the geomembrane can accept root penetrations. The long term appearance of the site as an unnatural geometric mound would be permanent unless major landscape elements can be designed into the final ecology of the site. I-27

Fifure 3.2-1: There is no explanation of the Stability Class Distribution table at left. There is no mention of frequency or duration of winds [at Petaluma airport] and none for the site at all. Why are data from Gnoss not included in the report? I-28

Page 3.2-10: Data collected 15 miles away and out of the prevailing wind pattern are certainly not to be "considered to be representative of air quality at the project site". Perhaps Greenpoint, Blackpoint, Vallejo or Richmond would be more representative in the Northwesterly wind pattern. I-29

Page 3.2-14: The "75%" factor is again stated but not verified. With 25% escaping to the atmosphere and proposed increases because of capacity increases predicted, this may be a wild assumption without scientific validation. Remember also that all the other gasses will increase with capacity increases and they are not even quantified. More validated data and assumptions are needed. I-30

Table 3.2-4: The basis for all the entries in this table seems to be the assumed 7lb / day ROG not combusted by a 98% assumed efficient flare system. How many assumptions can be stacked up with any accuracy remaining? Non scientific methods produce imaginary data. I-31

Page 3.2-16: ROG's estimates vary by over 213%. This brings to question which figure is used and why an estimate is accepted and why another is rejected. Do we throw out data for reasons unknown or should the data develop as an average? One source is 27% of another? Which, why, how much? None of these numbers appear to be realistic or reliable. I-32

Page 3.2-17: If sludge VOC's were to be lowered by 90% and odors by 95%, how do the reduced amounts of sludge accepted impact these goals? Why is SWFP data preferred? I-33

Comment Letter I

Page 3.2-18: VOC rates from 8.55 #/day/ton to 1.3 #/day/ton – that's a 660% difference. What is valid? I-34

Table 3.2-5: There is no mention of the response time to complaints. There is no location given for the complainants. There is no mention of what actions were implemented after complaints were filed. This table shows a 600%, 500% and 600% of BAAQMD "significant" odor impacts in various years. I-35

Table 3.2-6 and Table 3.2-4 combine to show total Co = 225, ROG = 892, Nox = 763 and PM-10 = 812. These tables could be consolidated for simplicity. I-36

Page 3.2-32: The difference between 75% and 90% collection efficiency is an enormous range. 1,800cfm now, 6,325cf [with 4,549cfm collected] increasing to 7,549cfm [with 5,662cfm collected]. An entirely new system of converting gasses to electricity is required as part of this application. There is no system to handle the increase gas disposal required. More information should be developed regarding the "other" gasses, their quantities, qualities and combustibility [how clean do these gasses burn?]. I-37

Page 3.2.34: The significance of CO2, Nox, Sox and PM-10 are missing from the EIR. Their significance is unknown. What is an EIR for? I-38

Table 3.2-7: Update to current altered request for approval from WM. I-39

Page 3.2-40: How are statistics developed and used? Why are any incidents of cancer risk tolerated? Who has set 10 patients out of a million exposures as the threshold of significance? I-40

Page 3.4-2: With Bay Mud thickness increasing as you move East on the site, what is the hazard of the Eastern slopes of landfill? Loma Creata 1989 caused considerable structural damage near SFO from "mud wave" action near the shore. Seismic forces were magnified through translational movements through the Bay Mud there. How will this greatly surcharged site survive such an event? What is learned from the "blow out" in the Acme Landfill, Martinez, 1978? If the only solution to failure is to close a site, what happens to the County and residents in the area? Perhaps a bond should be in place to allow corrective measures to be executed. I-41

Page 3.4-10: If settlement over the life of the landfill proceeds, how and where does it reach equilibrium and stop it's compaction – or does it continue to settle in smaller and smaller increments years after the landfill is complete? Usually these Bay Mud settlements are just translations of the material into a rolling "bulge" or a concentric rippling beyond the edges of the "pile". The principle is that fluids do not compress – but just move. What happens to the adjacent wetlands and waterways when the perimeter follows the interior settlements of 10-15 feet with edge settlements of 6-9 ft? Waterways could be permanently altered to the detriment of the ecosystem. I-42

Comment Letter I

Page 3.4-29: [3.4.7] A demonstrated effective fail safe system must be developed to prevent leachate from migrating off-site. Ecosystems would be permanently affected. I-43

Table 3.4-5: Explain why all the values in this table are repetitions of the same factors? I-44

Figure 3.6-1: Please locate map elements accurately. The Olompali park is inaccurate. I-45

Table 3.6-2: The five objectives out of compliance with Marin County Integrated Waste Management Plan Goals, Policies and Objectives must be totally reconciled by WM. I-46

Figure 3.7-1: Kudos on the noise analysis. This is in agreement with the best analysis of noise factors. I-47

Table 5-1: Suggest removing Project Objective 3. It's a business plan. I-48

I. STEVE C. THOMPSON, PLANNING COMMISSIONER

I-1. Please refer to Master Response 18.

I-2. Please refer to Master Response 16.

I-3. Comment noted. The DSEIR addresses compliance with the Countywide Integrated Waste Management Plan in Section 3.6, Land Use and Planning.

I-4. Comment noted. Please refer to Master Response 8.

I-5. Please refer to Master Response 6.

I-6. Comment noted.

I-7. The applicant proposed accepting only 200 tons per day average of sludge (but please refer to project changes described in Master Response 17; the proposal has been revised to 232 tons per day average and peak of sludge acceptance), but is also proposing to air dry approximately 3,000 wet tons (600 dry tons) per day of sludge that is currently stored in the main sludge impoundment, in order to deplete and eventually eliminate long-term sludge storage. See pages 2-24 through 2-25 of the DSEIR.

I-8. The basis for the commenter's statement that there is no system for detecting a failure of the Area G liner or for monitoring Area G is unclear. At the time RLI proposed to use Area G for waste disposal (the SWFP Expansion Project evaluated in the 1994 FEIR), the RWQCB determined that use of Area G for waste disposal constituted a lateral expansion, since waste had not previously been placed in this area. Therefore, unlike the rest of the permitted disposal area, Area G is required to meet federal Subtitle D requirements and state CCR Title 27 minimum design criteria for new landfills. (As a pre-existing landfill when the Subtitle D regulations were adopted, the rest of the disposal footprint is not required to meet all the standards required of new landfills, although it must meet performance criteria.) DSEIR Chapter 2 (pp. 2-19-2-20) describes the composite liner system, LCRS, and sub-drain that underlies the Area G liner. There is no reason that, with this design, a failure of the liner would not be detected, or that the post-earthquake inspection plan would not apply to all areas of the landfill, including Area G. Please refer to Master Response 14 for a description of the detection monitoring program required under CCR Title 27 and to Master Response 6 regarding RLI's withdrawal of its proposal to reclassify Area G as a Class II landfill.

I-9. The 1.5-acre stormwater impoundment in Area G was decommissioned several years ago According to RLI's updated SWPPP, dated July 16, 2003, there currently is a 0.5-acre stormwater pond in the vicinity of Area G. However, because this area is to be developed as a disposal cell, the pond is temporary. As discussed on DSEIR page 3.5-6, stormwater is either directed to the 18-acre stormwater impoundment located at the southern end of the site or conveyed directly offsite to San Antonio Creek or surrounding sloughs.

I-10. The California Code of Regulations (Title 27, § 21090 (a) (3)) prescribes the composition, depth, and landscaping of the uppermost soil cover layer on closed landfills, as follows:

(A) Closed landfills shall be provided with an uppermost cover layer consisting of either:

1. Erosion-Resistance Via a Vegetative Layer — a vegetative layer consisting of not less than one foot of soil which:

   a. contains no waste (including leachate);

   b. is placed on top of all portions of the low-hydraulic-conductivity layer described in (a)(2);

   c. is capable of sustaining native, or other suitable, plant growth;

   d. is initially planted — and is later replanted as needed to provide effective erosion resistance — with native or other suitable vegetation having a rooting depth not exceeding the depth to the top of the low-hydraulic-conductivity layer described in (a)(2). For any proposed vegetative cover, the discharger shall propose a species mix which harmonizes with the proposed post-closure land use, and which requires as little long-term maintenance as feasible by virtue of its tolerance of the vegetative layer's soil conditions (e.g., the presence of landfill gas), its resistant to foreseeable adverse environmental factors (e.g., climate, disease, and pests), its rapidity of germination and growth, its persistence and ease of self-propagation, its high percentage of surface coverage (sufficient to prevent surface erosion), and its minimal need for irrigation and maintenance; and

   e. by virtue of its composition, its maintained vegetation density, and its finished-and-maintained grade, will be resistant to foreseeable erosion effects by wind-scour, raindrop impact, and runoff; or

2. Mechanically Erosion-Resistant Layer — an erosion- and ultraviolet light-resistant layer which, by virtue of its composition and finished-and-maintained grade, resists foreseeable erosion effects by wind-scour, raindrop impact, and runoff (e.g., a 1-foot thick layer of cobbles, the interstices of which are filled with gravel).

I-11. The use of leachate for dust control is an existing practice approved by the RWQCB in 1994, and subject to specific conditions (RWQCB, 1994). As noted in Mitigation Measure 3.4.7a, it is one of the existing leachate management practices at the landfill that are assumed to be continued with the project. According to conditions of RWQCB approval, only leachate from the leachate impoundment may be used; the leachate from the impoundment is tested quarterly and may be used for dust control only if it tests "clean." Testing clean, according to the approval, means that organic compounds in the leachate are at non-detectable levels per EPA Method 8260 and inorganic compounds are at lower than background levels. The approval also limits the rate at which the leachate may be applied such that it will evaporate and no unnecessary spraying occurs (RWQCB,

1994). Leachate pond water has met the testing criteria since testing began in 1995 (Redwood Landfill, Inc., 2003).

I-12. As identified on DSEIR page 3.4-30, Mitigation Measures 3.4-7a through 3.4-7c are measures proposed by the applicant as part of the project. Because the analysis indicated these were not sufficient to reduce impact 3.4-7 to a less than significant level, the DSEIR identified additional measures. Mitigation Measure 3.4-7f, identified in the EIR, requires RLI to update its Leachate Facilities Leak or Spill Contingency Plan to ensure that adequate capacity exists for leak or spill contingencies. Mitigation Measure 3.4.8c requires the applicant to demonstrate that sufficient leachate capacity exists.

I-13. The commenter makes the same point made in Mitigation Measure 3.4.7f. Mitigation Measure 3.4.7f requires the applicant to specify the exact locations for proposed different uses and activities in the fields of the Oxbow or to otherwise clarify the apparent contradiction regarding proposed uses of this area.

I-14. The source of the commenter's references to 8 percent and 35 percent is unclear. The DSEIR defines the 100-year storm at footnote 4 on page 3.5-3: the 100-year storm (or flood event) is the storm (or flood event) that has a 1 percent chance of occurring in any given year. Title 27 requires that drainage control structures for Class III landfills be capable of handling flows of a 100-year storm.

I-15. Consistent with this comment, the DSEIR (Mitigation Measure 3.5.6, first paragraph) specifically requires that the applicant complete the planned increase in the height of the perimeter levee that encompasses the entire landfill site (i.e. the approximately 380 acres of the 420-acre Southern Area currently located within levees), prior to implementation of any project elements located outside the permitted landfill footprint. The stated assumption (Mitigation Measure 3.5.6, second paragraph), that this action was part of RLI's planned activities for the existing facilities, does not change the requirement that it be implemented before other project elements outside the landfill footprint are implemented.

I-16. The source of the commenter's references to 0.8 percent and 3.5 percent is unclear. The 1,000-year storm is the storm event that has a 0.1 percent probability of occurring in any given year. CCR Title 27, § 20365 and Table 4.1 (§ 20320-20377), requires that precipitation and drainage control facilities of Class II landfills be capable of handling flows of a 1,000-year, 24-hour storm and that precipitation and drainage control facilities of Class III landfills be capable of handling flows of a 100-year storm, 24-hour storm. Impact 3.5.9 points out that the applicant's background documents indicate that drainage facilities are designed to accommodate flows of the 100-year storm event, even though the project included the proposal to reclassify Area G as a Class II unit. Since publication of the DSEIR the applicant has withdrawn its request to reclassify Area G as a Class II unit (as discussed in Master Response 6). As a Class III landfill, Redwood would be required to have drainage facilities to control a 100-year 24-hour storm.

I-17. Please refer to Master Response 8.

I-18. The collection efficiency of a landfill gas collection system typically ranges from 60 to 85 percent, with an average collection efficiency of 75 percent. When site-specific landfill gas collection efficiencies are not available, the U.S. EPA recommends using the 75 percent average (U.S. EPA, *Compilation of Air Pollutant Emission Factors, AP-42, Section 2.4 Municipal Solid Waste Landfills*, November 1998). A 75 percent landfill gas recovery rate is used by the Air District for the purposes of estimating landfill gas emissions and for permitting purposes at Redwood Landfill (Carol Allen, Senior Air Quality Engineer, meeting, January 29, 2004).

I-19. Please refer to Master Response 21.

I-20. Figure 2-7 is the proposed site plan provided by the applicant (with minor modifications to clarify the location of the landfill footprint and areas within it). Construction of the perimeter levee prior to implementation of any project components outside the landfill footprint is a mitigation measure identified in the DSEIR (Measure 3.5.6).

I-21. Comment noted; please refer to Master Response 17.

I-22. Please refer to Master Response 17 regarding changes to the project since the DSEIR was published, and to FEIR Chapter 2 for a revised Table 2-2.

I-23. The effects of accepting the increased amount of petroleum contaminated soils is analyzed in the DSEIR, in Impact 3.2.14 on page 3.2-48.

I-24. Odors from sludge processing are discussed in Impact 3.2.9 and 3.2.10 in the DSEIR. Please refer to Comments K-14 and K-15, and responses to these comments, for further discussion of the abandonment of the N-Viro process.

I-25. The Material Safety Data Sheet for potassium permanganate available from one supplier of the chemical (Carolina Biological Supply Company – found at http://www.carolina.com/stcms/acrobat/stc_msds/POM_MSDS/Potassium%20Permanganate.pdf) includes the following information:

Hazardous Identification

Emergency Overview: Contact with combustible material may cause fire. Harmful if swallowed. Keep out of reach of children.
Potential Health Effects:
Eyes: May cause irritation
Skin: May cause irritation
Ingestion: May cause gastrointestinal discomfort
Inhalation: May cause irritation to respiratory tract

Special Protection Information

Respiratory Protection (Specify Type): None needed under normal conditions of use with adequate ventilation. NIOSH approved equipment should be worn if PELS are exceeded.
Ventilation: Local Exhaust: Yes
Mechanical (General): Yes
Special: No
Other: No
Protective Gloves: Rubber, neoprene, PVC, or equivalent
Eye Protection: Splash proof chemical safety goggles should be worn at all times.
Other Protective Clothing or Equipment: Lab coat, eye wash, and safety shower.

This suggests that potassium permanganate can be applied safely when proper precautions are taken, and that this substance does not pose a health or safety threat to wildlife or humans off-site.

I-26. The vapor phase odor counteractant system described on DSEIR page 2-30 and called out in this comment is just one of several methods used in controlling odors at Redwood Landfill. Several of the other odor control mechanisms employed at Redwood Landfill are discussed on DSEIR pages 3.2-19 and 3.2-20 and also in Master Response 15. The current odor control mechanisms, which would continue to be implemented as part of the project, have been effective in reducing odors in recent years, as evidenced by written comments and oral testimony received on the DSEIR and a significant decline in odor complaints registered with the BAAQMD (see DSEIR Table 3.2-5).

I-27. Vegetation with deep, penetrating roots, such as trees, are inappropriate, and are proscribed in the state's landfill closure regulations for use on closed landfills, as they can damage the engineered cover, the purpose of which is to seal out moisture and seal in gasses. See response to comment I-10.

I-28. Stability class is based on wind, incoming solar radiation (sun angle) and cloud cover. The higher the stability class, the more readily a pollutant is dispersed. The following table defines the six stability classes shown on DSEIR Figure 3.2-1:

Stability Class Descriptions

A	Extremely Unstable
B	Unstable
C	Slightly Unstable
D	Neutral
E	Slightly Stable
F	Stable

Figure 3.2-1 shows the percentage of time each of the stability class ratings occur on an annual basis at the Petaluma Airport. Figure 3.2-1 also shows the wind speed distribution by direction and the percentage of time wind is blowing from each direction. The average wind speed at the Petaluma Airport (shown as 6.3 knots in Figure 3.2-1) is

roughly equivalent to 7.2 miles per hour. The purpose of including Figure 3.2-1 was to provide general wind data for the area from readily available public sources.

Wind direction and speed are not monitored on a regular basis at Gnoss Field. However, a wind study was conducted by Cortright & Seibold at Gnoss Field between January 1986 and January 1987 to: 1) collect accurate and up-to-date wind direction and velocity information for the Airport master planning study that was being conducted; and 2) to provide the Airport Manager with real-time wind information that could be provided over the unicom frequency to pilots. During the year in which wind conditions were monitored, average hourly winds speed were greater than 10 knots (11.5 mph) just 8 percent of the time, while peak hourly winds speeds were greater than 10 knots 45 percent of the time. Consistent with the Petaluma Airport, data from the Gnoss Field wind study shows that winds are predominantly out of the northwest. The data from Gnoss Field on the whole is consistent with that presented in the DSEIR for Petaluma Airport.

Reference: Cortright & Seibold, *Gnoss Field Wind Study, January 1986- January 1987*, no date.

I-29. Please refer to Master Response 16.

I-30. Please refer to the response to comment I-18 above. It is unclear what the commenter is referring to with respect to "all the other gases." It may be that the commenter is making reference to the 25 percent of the landfill gas that is not collected and directed to the landfill gas collection system, but rather is emitted directly to the atmosphere. The unrecovered portion of the landfill gas is referred to as fugitive landfill gas in the DSEIR. If this is the case, baseline fugitive ROG emissions are discussed and quantified on DSEIR page 3.2-14 and shown in DSEIR Table 3.2-4. DSEIR Impact 3.2.5 discusses fugitive landfill gas emissions related to the project and the net increase from baseline conditions are shown in DSEIR Table 3.2-6.

I-31. It is unclear what the commenter is referring to with respect to all entries in DSEIR Table 3.2-4 being based on "the assumed 7 pounds/day not combusted by a 98 percent assumed efficient flare system." The ROG flare emissions shown in DSEIR Table 3.2-4 reflect the uncontrolled flare emissions only. The 98 percent destruction efficiency assumed for the flare system is that which is required in the current Permit to Operate for the flare system by the BAAQMD, as specified in BAAQMD Regulation 8, Rule 34.

I-32. Research on emissions from composting/co-composting facilities has been fairly limited. The DSEIR acknowledges this fact and includes a summary of information that is available from early studies conducted by the South Coast Air Quality Management District and the California Integrated Waste Management Board. The purpose of the DSEIR is to inform the public and decision makers regarding potential impacts associated with the proposed project. In this case, the DSEIR discloses that existing and proposed

composting/co-composting activities may be a significant source of ROG emissions. Site-specific information is not available for the windrows at Redwood Landfill, but collection of such data is identified as part of Mitigation Measure 3.2.6b. Regardless of whether the SCAQMD or CIWMB factor is used to estimate composting emissions, the increase in emissions resulting from project implementation is significant when compared with the BAAQMD significance threshold of 80 pounds per day.

Refer also to Master Response 16 regarding air emissions calculations in this FEIR.

I-33. The comment is referring to text that summarizes the findings of the 1994 FEIR and 1995 SWFP in the 3rd full paragraph on DSEIR page 3.2-17, which references the N-Viro process that was never implemented. The comment does not appear to address the adequacy of the analysis in the DSEIR.

I-34. As discussed in the 4th full paragraph on DSEIR page 3.2-1, the design, operations, and environmental controls described in the 1995 Solid Waste Facilities Permit and other current permits, based on the 1994 FEIR, as well as other applicable permits that have undergone separate environmental review, constitute the baseline against which potential impacts of the project were measured in the DSEIR. As such, the emission factor used to estimate emissions from sludge processing used in the 1994 FEIR was used to estimate the baseline for VOC emissions from sludge treatment in the DSEIR.

I-35. Refer to Master Response 15 regarding the BAAQMD's response time to complaints and a discussion of the confidentiality of information on complainants (such as location). The response time to complaints is not shown in DSEIR Table 3.2-15, because the BAAQMD did not include this information in their response to the request for information on past odor complaints. However, as discussed in Master Response 15, during normal business hours and to the extent possible, complaints are dispatched to a BAAQMD inspector as soon as they are received and in no case later than 30 minutes after receipt. During inspections, inspectors attempt to ascertain the specific origin of the emissions and whether or not a violation of Air District regulations has occurred. If so, enforcement action is taken.

A Notice of Violation (NOV) is a formal record of the BAAQMD staff's conclusion that a violation of state law regarding air quality or a District regulation has occurred. An NOV may result in monetary penalties, or, in serious cases, civil or criminal prosecution. In most cases, an NOV is settled by taking corrective action and paying a penalty. Corrective actions related to Redwood Landfill could include ceasing operations, changing material handling practices or quantities accepted, use of additional odor controls, or other measures. NOVs are resolved through the BAAQMD's Mutual Settlement Program and Legal Division.

The recent odor complaints at Redwood Landfill have not warranted enforcement or corrective action by the BAAQMD.

I-36. DSEIR Tables 3.2-4 and 3.2-6 are not intended to be additive. Table 3.2-4 shows the estimated Redwood Landfill baseline emissions, whereas Table 3.2-6 shows the net increase in emissions of criteria air pollutants that would result if the project were implemented, as required by CEQA. It is incorrect to combine the values from Tables 3.2-4 and 3.2-6.

I-37. The proposed project includes the construction and use of landfill-gas fired engines that would burn landfill gas to generate electricity. In 2002 RLI applied to the BAAQMD and was granted Authority to Construct three landfill-gas-fueled power generation engines; however, the Authority to Construct expired in July 2004. The applicant now plans to construct one or more power generation engines capable of producing a total of four to five megawatts of power (Meserve 2005). Refer to DSEIR pages 2-36 and 3.2-33, as well as the revised Project Description (Chapter 2) of this FEIR and revised Mitigation Measures 3.2.5c and 3.2.5e (Section 3.2 of this FEIR) regarding these units. Also, as acknowledged on DSEIR page 3.2-13 the "development of the landfill gas collection system at Redwood Landfill occurs as filling of the landfill progresses." The flare that is in place at the landfill is capable of accommodating a landfill gas flow rate of up to 4,250 cfm, but is currently permitted to operate at a maximum flow rate of 4,000 cfm. The permitted throughput of the leachate vaporator is 167 cfm. And, finally, the proposed power generation engines will have the capacity to burn landfill gas at an as-yet unspecified rate, but would have the capacity to generate four to five megawatts of electricity. (The former proposal, evaluated in the DSEIR, was to install three engines that would burn landfill gas at the rate of 482 cfm; together, these power-generating units would have the capacity to accommodate up to 1,446 cfm and produce about 4 megawatts of power.) The combined LFG system, including flare, vaporator and power generation engines, would have the capacity to accommodate the LFG projected to be collected by the LFG system. Mitigation Measures 3.2.5d and 3.2.5e would ensure that the proposed power generating units are installed and that the permit limits for the flare are revised to accommodate worst case peak gas emissions.

It is unclear what the "other" gasses referenced in the last sentence of this comment are referring to. It can be inferred that the commenter is referencing fugitive landfill gas that remains untreated and escapes to the atmosphere. Fugitive landfill gas emissions of ROG are estimated in the DSEIR and included in the baseline emissions shown in Table 3.2-4 and also in Table 3.2-6, which shows increases of emissions of criteria air pollutants from the project. The toxic air contaminant components of the fugitive landfill gas (i.e., benzene) are addressed in DSEIR Impact 3.2-8 and further discussed in Master Response 11.

I-38. Refer to response to comment K-65.

I-39. It is assumed that the commenter is requesting up-to-date information on the status of the applicant's Title V permit application. As such, please refer to the response to comment K-61.

I-40. The statistics related to contracting cancer, as referred to in the comment, pertain to the incremental risk of contracting cancer if one is exposed to TACs emissions released from the Project. Page 3.2-39 in the DSEIR describes the rationale for selecting 10 in a million as a significance threshold, and it references several regulations that use 10 in a million. The increment of 10 in a million can be compared to the overall risk of contracting cancer in a lifetime, which is estimated by the U.S. Center for Disease Control (CDC) as being 40, or 400,000 in a million.

I-41. The stability of the proposed landfill is discussed in DSEIR Section 3.4. The analysis takes into account the landfill's location on Bay Mud, and discusses the stability of the proposed landfill design under both dynamic and static forces (e.g., earthquakes and gravity, respectively). Please refer to Impacts 3.4.1 and 3.4.2. As shown in Table 3.4-4 (page 3.4-23), the Bay Mud monitoring criteria varies depending the thickness of the Bay Mud (less than or greater than 20 feet). The effects of potential differential settlement of the Bay Mud is discussed in Impact 3.4.3. Please also refer to Master Response 7, regarding Bay Mud Strength and Settlement, and Master Response 4, regarding Acme Landfill.

I-42. Regarding Bay Mud settlement, please refer to Master Response 7. The comment's reference to detrimental effects to the adjacent marsh from Bay Mud consolidation apparently refers to the potential for leachate within the Bay Mud to be discharged off site. The effectiveness of the facility's leachate collection and removal system is discussed in DSEIR Section 3.4. Please also refer to Master Responses 1 and 13.

I-43. Please refer to Master Response 13.

I-44. Table 3.4.5 in the DSEIR presents the minimum required shear strength of the various components of the cover system for a minimum static factor of safety of 1.5 and 1.0 foot or less permanent seismic displacement during a design earthquake event. The table, which was presented originally in a report prepared by GeoSyntec (1998), presents the information both for internal shear strength and interface shear strength. The table appears repetitive because GeoSyntec assumed that the shear strength parameters are the same for internal and interface strengths. According to the County's geotechnical consultant (Treadwell & Rollo) these sheer strength parameters are appropriate.

I-45. DSEIR Figure 3.6-1 is based on maps of the project area (Maps 1.3 and 1.3a, both entitled North Novato Land Use Policy Map) in the Community Development Element of the Marin Countywide Plan (as indicated by the source information provided in Figure 3.6-1). The location of Olompali park in Figure 3.6-1 is as shown in Map 1.3.

I-46. Conflict with Integrated Waste Management Plan goals is discussed in Impact 3.6.4, 3.6.5, 3.6.6, and 3.6.7 in the DSEIR (pages 3.6-16 through 3.6-19).

I-47. Comment noted and appreciated.

I-48. CEQA requires an analysis of the ability of alternatives analyzed in an EIR to satisfy project objectives. Since the applicant is a private business entity, it is understandable that its objectives, as enumerated in DSEIR Table 5-1, would include improving the economic performance of its facility.

Comment Letter J

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2003 OCT 14 P 2:09

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Planning Commission notes re: DSEIR 19910333042
Steve C Thompson
October 11, 2003

Continuing comments:

General issue:

Leachate from the fill material is a closed system of collecting and consolidating contaminants. Globally, these contaminants are not removed from the environment. In one case they are diluted with water – either from the waste, from ground water sources, mixed with rain or infiltrated with Bay waters – collected in the settlement pond[s], allowed to evaporate. The sediment [laden with concentrations of the contaminating elements] is not periodically removed to a safer site. The sediment is not properly disposed through oxidation [burning] because then the contaminants are "state changed" from Mercury, Cadmium and Selenium to Mercuric oxide, Cadmium oxide and Selenium oxide among all the other elements that may be present. These "state changed" compounds may be more stable or less and they may be more poisonous in the atmosphere than they were is suspension in the leachate. J-1

A better engineered design would be to create alternate leachate sedimentation ponds so that sedimentation, evaporation and removal of contaminating sediments could be collected and removed from the site.

The alternative is that the contaminants are never removed – but only diluted over time and left to re-enter Bay waters or ground water. It now seems that everything that goes into the site is allowed to return to the environment around the site – although slowly, in diluted form.

Additional specifics:

3.2-36: Composting appears to create impacts above allowable thresholds. How can this be mitigated or avoided? J-2

3.2-37: There is no scientific rationale for the 90% reduction mentioned often in the report. J-3

3.2-40: There are only four carcinogens discussed. This would appear to be far too short a list. Inorganic carcinogens are abundant. J-4

3.2.8d-42: An applicant assertion regarding an confirmed complaint is not sufficient in an EIR. J-5

42: Complaint sources are not identified, included or verified.

43: How are mitigation measures enforced? [This would apply to all proposed mitigations.] J-6

Comment Letter J

3.2.10c: The environment in the area of the site will not benefit from the purchase of "emissions credits". Again, sewerage sludge appears as a problem to be avoided – not mitigated. J-7

3.2-46: More unavoidable impacts – certain material should be disallowed from the fill site. J-8

3.2.12-46: The 11.5 acre existing southwest landfill proposed to be removed and included in the permitted landfill did not happen. Why? Who placed that fill and when? What is the nature of the materials there? How is the environment protected from that fill now? Will removing that fill create impacts in the process of moving it? J-9

3.2-47: How are assertions [certificates] validated to limit friable asbestos or petroleum-contaminated soils exceeding 50ppm of volatile compounds? Are the contents of vehicles randomly tested? How are tests validated? What oversight is applied? [This also applies to 3.2.13a. J-10

3.4-3: [3.4-33; 3.2-34] In these sections, the leachate production is "computed" at 3-6 gpm [tapering to zero after closure] and later "determined to range from" 25-70gpm. This is a 2,300% difference. What can be determined from measurement of the existing leachate rates? The stated rate develop either 8,120,000 gal/yr or 13,100,000 to 36,800,000 gal/yr. The magnitude of this difference will not allow a one solution fits all arrangement. Engineering is needed. Precision is needed. These figures are not even close. What is the reality? J-11

3.4-14: Settlements predicted at 5% to 30% of fill height when taken into consideration of the 5ft minimum separation from anticipated ground water levels – together with Bay mud thickness increasing to the east, put in doubt predictions regarding "engineered containment structures". When Bay mud is compressed, it flows. The flow of the Bay mud may certainly create "waves" of material away from the compressing loads. This is where "engineered containment structures" are located. Add a seismic event and this would appear to create incalculable results. J-12

3.4-15 [3.4-20]: Post closure concern regarding repair of possible failures. What assurance is created without a bond? Insurance changes. Companies disappear, inflation occurs. What priority would a post seismic event repair be given to landfill pollution into the Bay? Bridges, highways, water systems, electrical grids – in short, all the safety essentials would have priority over a "toxic spill". J-13

3.4-22: "Peer review" is not carefully identified here and elsewhere in the report. The credibility of the engineering is not clear. Experts are not all equal. Disclosure is appropriate. J-14

3.4-23/24: Settlement predictions ranging from 5-30% [a 600% range] and a 1 ft cover system together with a seismic event would appear to allow breaks in the cover. What is available to repair breaks? What reinforcement is available to avoid these differential breaks? Peer review of these issues would be prudent. J-15

Comment Letter J

3.4-28: The "proposed perimeter leachate cutoff/collection system" was a "corrective action" – not an engineered alternative system. It is now proposed again as "an engineered alternative" to the Title 27 requirement of a 5 ft separation between waste and ground water. It cannot be both. It is either a corrective action or the 5ft separation must be made. J-16

3.4-29: Peer review of the 2002 "can be considered an adequate engineered alternative" finding would be advisable. Credibility is missing. J-17

3.4-30: A significant Bay mud wave from combined settlement compression and seismic activity could change the configuration of the keyed LCRS and levee allowing leachate into ground water. What engineered solutions are available? J-18

3.4.7c-31: What standards will RLI observations of "any noticeable changes" use before initiating repair procedures? Is leachate testing indicated at some point? What oversight is available? Public Works department staff? J-19

3.4-32: Leachate is again considered to be somewhat safe when sufficiently diluted is it allowed to flood into the Bay. Here is the issue of absolute containment vs. settlement, evaporation and removal again. Standards are assumed to be met when diluted leachate reaches a certain level. None of the contaminants have been removed or mitigated. The leachate should not be considered safe at any level of dilution. The contaminants go with the water unless they are removed from the site. J-20

3.4-34/35: If leachate is removed to a newly constructed leachate "vaporator", it would not be destroyed. It will be "state changed" and will be thrown into the atmosphere as oxides of Selenium, Mercury, Cadmium, etc. in states that may be more harmful or not. This is not an acceptable "destruction" of contaminates. There is evaporation and there is oxidation [burning]. There is no vaporator destruction. J-21

8,120,000 gal of leachate were used 2000-2001 for dust control. Compare these numbers with the total leachate produced each year. This appears to confirm the earlier estimates of 3-6gpm rates. Where did 6,000,000 gal of potable water come from for dust control in addition to the 8,120,000 gal leachate? J-22

3.4-36: Where is the source for 49,600,000 gal of "quench" water? With 8,120,000 gal of leachate in 2000-2001, where are 49,600,000 gal leachate coming from? Is this part of the dilution of leachate to make it qualify to standards? This is non-sense. J-23

3.4-37: Yes, the conflicting, inconsistent, missing or outdated information – makes certainty impossible. Mitigations, impacts and all are destined to be as uncertain as the information that made it into this report. Unacceptable. J-24

3.4-39: The 1 ft cover displacing from 5%- 30% of the fill height and struck by a seismic event will be moving many times the 1 ft predicted. This is too uncertain to be put forward as science by Environmental Science Associates. J-25

Comment Letter J

3.4-47:Infiltration of quench water [leachate] is unacceptable with no mitigation possible. This indicates that another composting operation is needed with no quench water infiltration potential. J-26

With the site operating as a perpetual reservoir of leachates including all the contaminates forever is not a good engineering solution to a dangerous problem. A second fail-safe leachate collection system would appear to be required. Multiple evaporative ponds with sedimentary removal from the site would appear to be mandated. No leachate or leachate sediment should be allowed to be oxidized on site. J-27

J. STEVE C. THOMPSON, PLANNING COMMISSIONER (SECOND COMMENT LETTER)

J-1. Leachate is managed and contained in the 11-acre pond as described in Impact 3.4.8. Based on the design, leachate should not return to the environment, but remain within the system onsite.

J-2. DSEIR page 3.2-6 identifies measures to mitigate significant ROG emissions associated composting. DSEIR page 3.2-7 concludes that these measures would reduce ROG emissions associated with composting operations alone to levels below BAAQMD significance thresholds, so the impact would be less than significant after mitigation. Impact 3.2.11 discusses that the combined or cumulative emissions associated with the project, including emissions from composting/co-composting operations, would exceed the BAAQMD thresholds for ROG, and would remain significant after mitigation.

J-3. DSEIR Mitigation Measure 3.2.6c and the text following the header "Level of Significance After Mitigation" for DSEIR Impact 3.2.6 discuss a collection and treatment system, such as an aerated static pile system with biofilters, that shall be designed to reduce ROG emissions from composting by 90 percent. The 90 percent reduction factor was derived from the South Coast Air Quality Management District Study and Technology Assessment for Proposed Rule 1133 as the assumed destruction efficiency for biofiltration. Refer also to response to comment K-81.

J-4. The comment states that there are only four carcinogens considered when assessing impacts from leachate in the composting part of the Project. As stated in the DSEIR, the substances that were included in the analysis were obtained from measurements taken at another composting facility and were scaled to this proposed operation. The main pathway that could lead to exposure at offsite receptors and health risks would be the air pathway due to evaporation of TACs from the leachate. This includes organic chemicals that are volatile and generally not soluble in the leachate. As noted, the four chemicals listed in the DSEIR were taken from measurements at another composting facility; no other volatile TACs were reported in the measurements. The inorganic chemicals referred to in this comment, although toxic, have very low vapor pressures and would not evaporate from the leachate (assuming they were present). These inorganic chemicals were not included in the DSEIR discussion of TAC emissions because they would not volatilize as TAC emissions and migrate offsite, and would not cause impacts.

J-5. The statement regarding the project applicant's assertion that the confirmed odor complaint in 2001 was not attributable to Redwood Landfill was included for informational purposes only and does not affect the conclusions of the DSEIR. The DSEIR considers this to be a confirmed complaint related to the landfill.

The number of confirmed and unconfirmed odor complaints registered with the BAAQMD, and a brief characterization of the types of odors observed, between 1997 and

2001 are identified in DSEIR Table 3.2-5, page 3.2-21. Carol Allen, Senior Air Quality Engineer with the BAAQMD's Permit Services Division, provided the results of a public records search in a fax transmittal dated August 19, 2002; this fax transmittal was used to compile the information in Table 3.2-5. Based on confidentiality limitations, BAAQMD staff are not permitted to release the name or origin information on complaints received in response to a public records search request. Confirmed complaints include those in which BAAQMD inspectors verified that an odor was present and traceable to the landfill. Unconfirmed complaints include those filed with the BAAQMD, but not verified by BAAQMD inspectors. In assessing the potential for significant odor impacts, BAAQMD recommends using information on both confirmed and unconfirmed odor complaints (see DSEIR page 3.2-23).

J-6. Responsibility for implementation, oversight, and verification of mitigation measures are described in the draft Mitigation Monitoring and Reporting Program, in Appendix H of the DSEIR. This plan will be revised to address project revisions and any revisions to mitigation measures identified in this FEIR prior to consideration of project approval.

J-7. ROG and NOx are ozone precursor emissions. Ozone is a regional air pollutant of concern because its precursors are transported and diffused by wind concurrently with ozone production. Ozone is not emitted directly into the atmosphere, but is a secondary pollutant produced in the atmosphere through a complex series of photochemical reactions involving hydrocarbons (ROG) and nitrogen oxides (NOx). ROG and NOx are not pollutants of concern at a local level, such as CO and PM-10.

J-8. Please refer to Master Responses 6 and 17 regarding project changes, including elimination of the proposal to designate Area G as a Class II waste unit. Please refer also to the Alternatives discussion in Chapter 5 of the DSEIR. Three of the alternatives, the No Project alternative, the Status Quo alternative, and the Mitigated Alternative, all provide greater restrictions on the type and quantity of material that could be accepted at the site, compared to the applicant's proposed project.

J-9. The 11.5 acre area is described in the Project Description (p. 2-38 of the DSEIR), and the proposed plan to leave it in place is analyzed in Impact 3.2.12 and Impact 3.8.4. Please refer to Master Response 2.

J-10. Please see the description of the landfill's existing Prohibited Waste Control Program on page 3.8-12 of the DSEIR

J-11. As stated in Mitigation Measure 3.4.8c, the applicant is required to update their Leachate Management Plan to address and remedy the discrepancy in the noted leachate generation rates. Please also see the response to Comment J-22.

J-12. Please refer to Master Response 1 and Master Response 7.

J-13. Landfills are required under state law (Public Resources Code [PRC] § 43509) to calculate, and periodically revise, cost estimates for closure and for post-closure maintenance, for as long as the solid waste placed in the landfill could have an adverse effect on the quality of the waters of the state, but not less than 30 years after closure unless all wastes are removed in accordance with federal and state law, and to place funds sufficient to meet these cost estimates in an irrevocable trust account until the landfill closes. Landfills are also required under state law to provide assurance of adequate financial ability to respond to personal injury claims and public or private property damage claims resulting from the operations of the disposal facility which occur before closure (PRC § 43040[a]).

J-14. As indicated in DSEIR Chapter 6, EIR Authors, Persons and Organizations Contacted, Treadwell & Rollo provided technical review of geotechnical impacts on behalf of the County for this EIR. In addition, the sentence that refers to peer review, cited in this comment, includes a citation "(Treadwell & Rollo, 2002)," which is listed in the reference section at the end of Section 3.4. The geotechnical peer review of several project elements is contained in a series of memos that have been bound together and are available for review at the Marin County Community Development Agency.

J-15. Seismic impacts on the landfill are addressed under Impact 3.4.1; the effects of static forces (e.g., gravity and settlement) are addressed under Impact 3.4.2, and differential settlement is addressed in DSEIR Impact 3.4.3. Mitigation Measure 3.4.3 would reduce the impact of differential settlement to a less-than-significant level.

J-16. Please refer to Master Response 1 regarding the engineered alternative system.

J-17. Please refer to the response to Comment J-14.

J-18. Please refer to Master Response 7, regarding the potential for a Bay Mud "wave," and Master Response 13, regarding the effectiveness of the LCRS.

J-19. The commenter's question about the standard of "any noticeable damage" is unclear. Visual inspections are an integral component of the monitoring programs required under the facility's Waste Discharge Requirements and NPDES General Industrial Storm Water Permit. Mitigation Measure 3.4.7c, proposed as part of the project, is based on the facility's Leachate Facilities Leak and Spill Contingency Plan, which was prepared and submitted to the RWQCB in accordance with the facility's Waste Discharge Requirements (Order 95-110). Mitigation Measure 3.4.7f requires that RLI update the Leachate Facilities Leak and Spill Contingency Plan. Regarding the water quality monitoring network at the site, which includes leachate monitoring wells, please refer to Master Response 14.

J-20. The basis for the commenter's suggestion that leachate would be allowed to "flood into the bay" is not clear, especially given the cited section and page. As discussed in

Section 3.5, Impact 3.5.3, the applicant proposed as part of the project to discharge composting and co-composting contact water (leachate) that tested "clean" (i.e., at or below background levels for tested constituents) to the stormwater impoundment, from which it could be discharged off-site. Assuming this is the issue to which the comment refers, please note that Mitigation Measure 3.5.3d requires that all contact water continue to be managed as leachate, separately from storm water, and retained or treated (i.e., burned in the leachate vaporator) on site. Measures 3.5.5a-b and 3.5.3b-d would ensure that any leachate used as composting quench water also would be retained on site.

J-21. The function of the vaporator is to reduce the liquid volume of the leachate. Any metals that may be contained in the leachate would not evaporate, but would be contained in the leachate residue. This residue would be disposed of in a secured landfill capable of receiving this material. Since metals would not be airborne in the vaporator, there would be no exposure to these TACs at offsite receptors. **(**It also is noted that at Redwood Landfill, the leachate used as dust control is tested quarterly, as discuss in DSEIR Section 3.5, and has tested "clean," meaning it is at or below background levels for tested constituents, since the testing program began [see Response I-11].)

J-22. The commenter points out that reported use of leachate (approximately 8 million gallons in the year 2000-2001) is greater than the most recent projections of leachate production presented in the facility's JTD, which is based on the 1995 MET-Sanifill design analysis for the LCRS (approximately 1.6 to 3.2 million gallons per year). Please refer to the LCRS Capacity discussion of Master Response 13.

Potable water at the site is provided by the North Marin Water District, as described on DSEIR page 3.9-2 of Section 3.9, Public Services, Utilities, and Energy.

J-23. As described in Chapter 2, Project Description (page 2-30, third bullet), the proposal to use leachate as composting quench water is one of the proposed changes to composting operations that are part of the project. As discussed on DSEIR page 3.4-36, the applicant has declined to estimate the amount of leachate (or other water) that would be needed or used for quench water. The source of the estimate that was used in the absence of more specific or recent information from the applicant, as stated on DSEIR page 3.4-36, is the estimate presented in the applicant's 1996 application for a registration permit for the composting and co-composting facility; the application indicated that 730 gallons of water per ton of product would be needed during the dry season, times 68,000 tons of product requiring quench water (i.e., greenwaste that is not co-composted with biosolids) produced during the dry season.

J-24. Mitigation Measure 3.4.8c addresses the issue of inconsistent, conflicting, outdated, and missing information on leachate generation and the leachate collection and recovery system.

J-25. Seismic stability is addressed in Impact 3.4.1 of the DSEIR. Please also refer to Master Response 22.

J-26. Mitigation Measure 3.4.13a addresses the issue of composting within the permitted landfill footprint in areas that provide low permeability pads (to prevent infiltration), and Mitigation Measure 3.4.13b requires the control, collection, and transmission of surface runoff from the composting areas to an on-site leachate impoundment. In conjunction with Mitigation Measure 3.4.13c, these measures would reduce the identified impact to a less-than-significant level.

J-27. Leachate sediments will remain onsite based on the LCRS design described in Impact 3.5.3. Mitigation Measure 3.2.5d requires RLI to operate and equip the LFG flare/leachate vaporator system as necessary to meet the BAAQMD emission limits specified in Redwood Landfill's Permit to Operate.

Comment Letter K

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AGENCY

October 13, 2003

Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Dr., Rm. 308
San Rafael, CA 94903

Re: Redwood Landfill Solid Waste facilities Permit Revision Draft Subsequent Environmental Impact Report

Dear Mr. Haddad:

This firm represents Redwood Landfill, Inc., ("Redwood") with respect to the pending solid waste facility ("SWF") permit revision for the Redwood Landfill operation. Redwood has asked us to review the Draft Subsequent Environmental Impact Report ("DSEIR") prepared for the project. We submit the following comments on behalf of Redwood.

I. GENERAL COMMENTS.

We recognize that considerable effort has been spent on this document, and appreciate those efforts. These comments focus on Redwood's concerns about the document; Redwood requests that the County address these concerns in the Final EIR.

A. Benefits of the Project.

Redwood would like to begin by highlighting some of the benefits of the proposed project. K-1

Comment Letter K

1. Project Will Enhance Recycling and Diversion Rates in the County.

Redwood currently provides approximately one-third of the total recycling in the County. About 50 percent of the waste received is diverted from disposal in the landfill and used for beneficial purposes. Redwood's diversion programs do not need to be subsidized to be economically sustainable. The diverted waste includes soil, concrete, asphalt, sludge, greenwaste and other recyclables. Greenwaste and sludge are used as composting feedstock and alternative daily cover ("ADC"), while the other materials are recycled and reused. The focus of Redwood's current proposal is to increase the receipt of recyclable, reusable, and compostable materials from a peak permitted rate of 555 tons per day ("tpd") to an average and peak rate of 1711 tpd, representing a 300 percent increase in the receipt of recyclable materials. K-1

These activities are integral to the County's compliance with AB 939 and the Multi-jurisdictional Source Reduction and Recycling Element of the Countywide Integrated Waste Management Plan, which requires that the County divert at least 50% of its waste from disposal. (Pub. Resources Code, § 41780, subd. (b).) Under the proposed project, Redwood would increase the amount of green/yard/wood waste to be composted, further contributing to recycling and source reduction in the County. Thus, Redwood continues to expand its long-term contribution to recycling and source reduction efforts in the County.

2. Project Meets County's Long Term Disposal Needs.

According to the state law, the County must have the capacity to meet its waste disposal needs for the next fifteen years. (Pub. Resources Code, 41260, subd. (a).) According to Redwood's calculations, under its current permit under present operating conditions, the landfill would reach capacity between 2020 and 2025.[1] Approval of the proposed project would add about 10 to 15 years to the life of the landfill. With the proposed project, Redwood will be able to provide needed capacity in Marin County without siting a new facility and without incurring the economic and environmental costs associated with development of a new landfill. K-2

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[1] / In reviewing relevant documents, Redwood has found that the information regarding site life was incorrect in the JTD. Additionally, Redwood believes that the calculations in the DSEIR are also incorrect. Therefore, Redwood is currently preparing revised site life calculations, which it will submit to the County within the next two weeks. K-2a

Comment Letter K

3. Redwood Has Responded to Concerns Regarding the Proposed Project.

In its original proposal, Redwood proposed to dispose of designated Class II semi-hazardous waste in a 14.5-acre area within the landfill footprint ("Area G"). (DSEIR, pp. 2-17, 2-21.) These wastes would have included municipal solid waste ("MSW"), sludges, petroleum-contaminated soils or other contaminated soils, or other designated wastes that exceed the requirements in item B.5 of the existing Waste Discharge Requirements ("WDRs"). In comments submitted on the DSEIR, residents expressed concerns regarding potential impacts associated with this aspect of the project. In response to these concerns, Redwood has withdrawn this aspect of the proposed project. Redwood now plans to instead fill Area G with Class III municipal solid waste.[2] K-3

Additionally, in response to concern about the increases in tons per day of accepted materials and the resulting air quality and other impacts analyzed in the DSEIR, Redwood now proposes significantly lower peak volumes of several waste types. Rather than seeking peak volumes that are greater than the average volumes, Redwood is now proposing peak tonnages that are in most cases the same as average tonnages. Overall, this reduction in peak permitted volumes reduces the amount of lanfilled waste at Redwood's from the 3560 tpd originally proposed to 2150 tpd. As a result, Redwood's proposed project as revised adjusts the individual waste types permitted under the existing SWF permit and adds a considerable amount of recycling, but only proposes a modest increase in the amount of landfilled waste to be accepted in a given day. (See Permitted and Proposed Types and Quantities of Materials, Revised Table 2-2, attached hereto as Exhibit A.) K-4

While the overall capacity of the landfill would remain the same as under the proposed project (34.6 million cubic yards), the reduction in daily peak rates would extend the life of the landfill and reduce the expected environmental impacts that would have occurred under the original approach. From conversations with County staff, Redwood understands that the EIR consultant will re-analyze the significance of all impacts affected by these reductions in the Final EIR. We believe that a particular benefit of this change in the project description will be reduced air quality impacts, perhaps to less than significant levels. K-5

4. A New Overpass Will Provide Safe Access to Redwood.

Over the years, there has been concern over the safety of access to the facility K-6

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[2] / Use of Area G for Class II MSW is proposed in the Mitigated Alternative. (DSEIR, p. 1-6.) K-3a

from Highway 101. In response to these concerns, Redwood began working with the County and Caltrans several years ago to solve the problem. In 2002, the County certified the EIR for the Redwood Landfill Access Road and Bridge Project, and that project is now in the design phase. Redwood has signed a Development Agreement with the County and Caltrans and has committed to funding 100 percent of the construction of the overpass at a cost of $7.2 million. Increased truck trips under the proposed project would not occur until after completion of the overpass project. With the new overpass, access to the landfill will be greatly improved. K-6

II. SPECIFIC COMMENTS

A. Areas of the EIR Needing Clarification

Redwood requests that the Final EIR clarify the following areas.

1. Revised Project Description

In response to public comments and information provided in the DSEIR, Redwood proposes a revised version of the project from differs from that originally submitted to the County. As noted above, Redwood no longer intends to dispose Class II semi-hazardous waste in Area G of the landfill. Thus, instead of disposing an average of 500 tpd of Class II waste, Redwood proposes to dispose that same quantity of non-hazardous Class III waste, making a total of an average rate of disposal of 1,850 tpd of Class III waste. (See Revised Table 2-2, Exhibit A.) Redwood also proposes that 1,850 tpd (rather than 1,900 tpd) be the peak permitted disposal rate for Class III waste, thus reducing the formerly proposed peak disposal rate for this material by 50 tpd. K-7

Redwood also proposes to reduce peak intakes of most other materials to proposed average rates. (See Revised Table 2-2, Exhibit A.) The only materials for which Redwood proposes peak rates that are higher than averages are for petroleum-contaminated ("PC") soil with very low contaminant levels that meets the RWQCB requirements for use as ADC and clean soil for daily cover. Thus, while average rates of acceptance for PC contaminated soil and clean soil would be 640 tpd and 500 tpd, respectively, peak permitted rates would be 800 tpd for each soil type.

2. Site Life

The DSEIR contains an inaccurate description of Redwood's expected site life. According to the DSEIR, Redwood would reach capacity in 2016 under its existing permits and in 2024 if the proposed project is approved. (DSEIR, p. 1-11.) These estimates, however, were apparently prepared assuming that the Redwood would accept K-8

the volumes significantly higher than the proposed average volumes for every operating day of the site life. As shown in Revised Table 2-2, average volumes are considerably less than peak permitted volumes. (See Revised Table 2-2, Exhibit A.)

Average daily volumes are actually a much more accurate basis from which to calculate the probable site life of a facility because they reflect actual conditions. Moreover, according to applicable regulations, site life estimate should be "based on the capacity of the site and the waste flow projections, and assumptions regarding the compaction density used in life expectancy calculations." (27 Cal.Code Regs., § 21600, subd. (b)(3)(C).) Notably, the regulations do not suggest the use of peak permitted volumes as a basis for estimating site life. With the proposed peak reductions discussed below, the expected site life of the facility under existing permits, using average daily volumes, would be some time between 2020 and 2025. K-8

Under the proposed project, with an increase in capacity from 25 million cubic yards to 34.6 million cubic yards, using the revised peak permitted rates, the life of the site life would be extended by an additional 10 to 15 years.[3] While Redwood acknowledges the need not to *overestimate* site life, Redwood believes using permitted tonnages that are significantly higher than the expected average tonnages under the proposed project grossly *underestimates* site life. Therefore, Redwood suggests that the Final EIR adopt a more practical approach based on estimated waste flow projections. As noted above in footnote 1, *infra*, Redwood will be submitting supplemental site life information to the County in the coming weeks in order to achieve clarification on this issue.

3. Incomplete Description of the Existing Leachate Collection and Removal System

According to the DSEIR, Redwood "commenced construction of a leachate collection and removal system (LCRS) around the perimeter of the landfill that varies from that specified in the facility's existing permits." (DSEIR, p. 1-14.) Moreover, the DSEIR points out that the LCRS system is not currently in place for areas E, F, or G. (DSEIR, p. 3.4-32.) There are good reasons, however, why the LRCS has been constructed in the manner it has; and Redwood is not in violation of permit terms. K-9

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[3] / The current capacity of the landfill is 25 million cubic yards, not 19.1 million cubic yards. Though the 1995 SWF permit lists a capacity of 19.1 million cubic yards, this number refers to capacity for MSW disposal only, and does not account for the volume of materials used as daily cover and final cover. Thus, the increase in capacity proposed by Redwood is actually 9.6 million cubic yards, not 15 million cubic yards. K-8a

The LRCS is not in place in areas E, F, or G because no material has been disposed in those areas. Thus, there is no need for the LRCS in those areas. The Final EIR should clarify that Redwood is in compliance with existing current permit conditions.

The discussion on page 2-32 regarding how the LCRS is constructed is also slightly inaccurate. Redwood suggests that the second sentence of the seccond paragraph on this page be modified to clarify the primary relevant feature of the LCRS (proposed changes are shown in italics): "These sections of the LCRS consist of a perimeter trench *extending to a minimum elevation of –5.5 feet, typically* keyed into Bay Mud, installation . . . ." The following explanation should also be added to the text after this sentence or as footnote on this page: *The trench in Areas B and C and most of Area D was keyed into Bay Mud. The trench in Area E and a 400-foot section of trench in Area D were recently completed in 2003 and are not keyed into Bay Mud because the waste fill in these areas is deeper than –5.5 feet. This has no impact on the function or effectiveness of the trench and exceeds the requirements of the site WDR's and the RWQCB-approved Leachate Management Plan (CH2MHill, 1992).* K-9

Additionally on page 3.4-30, to clarify the primary relevant feature of the LCRS, Redwood suggests modifying the first sentence of the third paragraph to read as follows: "To provide a barrier to offsite leachate migration, *the LCRS trench extends to an elevation of –5.5 feet and is pumped to maintain a maximum fluid elevation of –1 feet within the trench.*

4. <u>Odor Issues are Resolved.</u>

Certain comments submitted during the EIR scoping process expressed concern with potential odors generated by Redwood. Redwood includes the following information in order to explain better how odor problems occurred in the past, why they have not occurred recently, and why they will not occur under the proposed project.

Processing of biosolids or "sludge" at Redwood formerly took place by removing the sludge from a 34-acre impoundment with an excavator and loading into 10 to 20 yard spreading trucks. The spreading trucks would then transport the sludge to drying areas located around the site (fields 1-3 and the oxbow) and spread the sludge approximately two to three inches thick. The sludge would dry for a few days (depending on weather and the thickness required for harrowing). After the sludge dried to the point at which it consisted of at least 50 percent solids, it would be used as Alternative Daily Cover ("ADC") or disposed of in the landfill. Redwood believes it was this process of spreading sludge over large drying areas that led to odor complaints in the past. K-10

Beginning approximately 1998, Redwood Landfill discontinued spreading sludge over the large drying areas around the site. Redwood reduced the drying area to a small (two to three acre) section of the 34-acre pond. The berm within the 34-acre pond was breached and either a box scraper or a mudcat (wide track) bulldozer now pulls sludge out and spreads it in this small section of the 34-acre pond. After it reaches at least 50 percent solids, the sludge is used as ADC. K-11

Redwood has greatly reduced the volume of its daily receipts of sludge, all of which is managed as it is received at the landfill through the co-composting windrow process or by being mixed with green waste and used as ADC. In each of the past several years, Redwood has reduced the size of the drying area and has dropped the daily intake of sludge from 550 tons to less than 150 tons per day. K-12

As indicated in the DSEIR, only one odor complaint has been received in the last three years, and that complaint was not actually related to odors emanating from the landfill. The proposed project would further reduce the possibility that odor impacts would recur because Redwood proposes to significantly reduce the amount of sludge accepted for disposal and composting (see Revised Table 2-2, Exhibit A), and will dry the sludge over small, 2 to 3-acre areas. These operational changes, along with continuing use of proactive odor management strategies, will ensure that odors continue to be controlled. K-13

5. Redwood Appropriately Abandoned the N-Viro Process.

Redwood would also like to provide additional explanation regarding the abandonment of the N-Viro process for controlling volatile organic compound ("VOC") emissions and odor. The DSEIR explains that the N-Viro process was never fully implemented, but does not clearly explain the reasons why. (DSEIR, p. 2-24.) The N-Viro process that was required in Redwood's 1995 SWF permit was intended as a method to reduce VOC emissions from sludge so that it could be used as ADC. Later tests commissioned by Redwood showed, however, that more VOCs were emitted from the N-Viro process than from air drying. Thus, although the N-Viro process was required as a mitigation measure in the 1994 FEIR to reduce VOC emissions, it was ineffective and even counterproductive. (DSEIR, pp. 3.2-17 to 3.2-18.) Redwood has since received permission from the California Integrated Waste Management Board ("CIWMB") to deviate from the condition in the 1995 SWF permit requiring use of the N-Viro process. K-14 K-15

6. Vehicle Trips and Tonnage Limits for Construction Materials

Redwood would like the Final EIR to state clearly that materials needed for construction of landfill improvements (such as environmental controls) would continue to K-16

be exempt from the daily tonnage limitations, even though the vehicle traffic to bring construction materials to the site would not be exempt from the proposed traffic counts. In particular, very large quantities of soil will be needed for improvements to the landfill's perimeter levees, perimeter roadways, and other projects. Redwood has always had to import offsite soils for daily cover and construction projects; Redwood is aggressively pursuing offsite soils in order to preserve quarry resources and the hillside view shed that blocks views into the quarry and screens a portion of the landfill. K-16

Redwood requests that the County clarify these issues in the Final EIR so that the public may better understand Redwood's current operations and the proposed project. Furthermore, Redwood invites the County to contact Redwood with any questions that arise during the preparation of the Final EIR to ensure that the document is as accurate as possible.

C. The DSEIR Overstates Several Impacts.

1. Air Quality Impacts

In general, Redwood is concerned that the DSEIR overestimates air quality impacts because emissions estimates are based on peak permitted activity rather than the expected average level of activity. Now that Redwood has revised its project description so that peak permitted disposal rates are lowered, in most cases, to average expected disposal rates, there will be less difference between expected emissions under peak rates versus those that would occur under average disposal rates. For those material types for which peak rates are still greater than average rates (PC soil and clean soil), the County should consider including calculations of emissions for both peak and average rates, for purposes of full disclosure. In any case, Redwood believes that new analysis of the proposed project as modified will lead to fewer significant air quality impacts. K-17

The air quality analysis also omits any discussion of the current Title V permitting process underway with the Bay Area Air Quality Management District ("BAAQMD"). In particular, the DSEIR, in calculating air quality impacts, does not account for the measures that will be required in the pending Title V permit when it is issued. (See Review of Air Quality Section DSEIR by Patrick S. Sullivan ("Sullivan Memorandum"), attached hereto as Exhibit B, Comment 3.) Operations as allowed by the BAAQMD permit ought to be the baseline from which air impacts are calculated. This problem should be corrected in the Final EIR. K-18

a. Impact 3.2.2 – Criteria Pollutants from Equipment and Trucks

In reaching its conclusion that criteria air pollution impacts will be significant, the DSEIR assumes that peak traffic volumes will occur on a daily basis. As noted above, now that peaks are now in most cases lowered to the expected averages, emissions of criteria pollutants will be reduced and may fall below BAAQMD significance thresholds.

Redwood would also like to point out that the analysis in the DSEIR appears to overstate the likelihood of Redwood contributing to exceedance events. The City of San Rafael is the largest and most densely populated city in Marin County with the highest concentration of air pollutants. Nonetheless, even in San Rafael, exceedance of state standards is rare: ozone standards were exceeded slightly in only 2 one-hour periods over the past 5 years. (DSEIR, Table 3.2-2, p. 3.2-11.) Qualitatively, air quality in the vicinity of the landfill, fifteen miles from San Rafael, would be expected to be much better than in San Rafael because the area near the landfill has fewer emissions sources. Thus, it is unlikely that operations at Redwood would materially contribute to exceedance events. K-19

Furthermore, under the revised proposed project, the average landfill traffic would increase from 415 to 540 trips per day, representing an increase of 125 vehicle trips. (See Project Vehicle Trip Generation Figures, Revised Table 3.10-4, attached hereto as Exhibit C.) This represents a proposed increase of only about 30 percent. Additionally, off-road equipment use for all other activities besides disposal of MSW (which must be covered on a daily basis), will increase less than 30 percent because recycling and landfilling activities will be spread out among several days. Thus, expected emissions listed in Table 3.2-6 from off-road vehicles would be reduced considerably. K-20

Redwood believes that, if the Final EIR takes into consideration the factors described above, air quality impacts from the increase in landfill traffic and landfill operations will be shown to fall below the BAAQMD significance criteria. K-21

b. Impact 3.2.4 – Fugitive Dust

K-22

Redwood is proposing to increase its average receipt of landfilled waste by about 19 percent.[4] This change will result in a modest increase in traffic on temporary dirt

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[4] / As shown in Revised Table 2-2, the figure of 19 percent increase in landfilled waste is derived by comparing the currently permitted average receipt of 1,800 tpd (1,250 tpd of Class III waste and 550 tpd of sludge) with a proposed average receipt of 2,150 tpd (1350 tpd of Class III waste, 100 tpd of sludge, 500 tpd of Class III waste to replace the formerly proposed Class II semi-hazardous waste, and 200 tpd of other designated wastes). K-22a

roads over the landfill, creating only a minimal increase in additional dust generation. Most of the increase in truck traffic will be from a significant increase in the receipt of recyclable materials. Much of the recyclable material, particularly that which is compostable, will be delivered to processing areas on roadway surfaces paved with asphalt or gravel, so the impact from sources other than MSW disposal will also be minimal. Redwood requests that the Final EIR include revised figures in Table 3.2-6 to more accurately reflect probable increases in fugitive dust under the proposed project. K-22

Also as noted by Redwood's air quality consultant, calculations in the DSEIR do not use the most recent emissions factors for unpaved surfaces. (Sullivan Memorandum, Exhibit B, Comment 13.) Redwood requests that the County include in the Final EIR new calculations based on EPA's emissions factors. K-23

c. Impact 3.2.5 – Landfill Gas

This impact concludes that landfill gas ("LFG") emissions will increase due to the permit revisions. This conclusion is erroneous because landfill gas emissions would *not* increase as a result of the project. LFG emissions rates are primarily based on the surface area of the landfill and the effectiveness of LFG control equipment. While it is correct to say that the amount of landfill gas generated will increase with the increased waste volume, fugitive gas emissions would not necessarily increase. K-24

Fugitive gas emissions are those that escape primarily under pressure differentials through cracks or flaws in the daily or intermediate cover place over the waste. The surface area of the landfill is not increasing; nor will the pressure of the gas in the landfill be increasing, so fugitive gas emissions would not increase, even if more gas is actually generated within the waste enclosed within landfill cover. The extra volume of gas generated will be handled by the increased capacity of the gas collection system; and internal gas pressures will remain about the same as under present conditions. K-25

Additionally, Redwood is continuously expanding its gas system as waste is placed in new areas. The capital budget for gas system expansion in 2003 was $275,000, and in 2004 it will be $400,000. Similar capital outlays are anticipated in the future. If the capacity of the existing flare were exceeded, Redwood would either replace it or add a second flare. Recent source testing has demonstrated that Redwood is in full compliance with air quality regulations. K-26

For the reasons stated above, the Final EIR should identify impacts due to LFG emissions as less than significant after mitigation instead of significant and unavoidable. (See also Sullivan Memorandum, Exhibit B, Comments 7 and 14.) K-27

d. Impact 3.2.6 – ROG Emissions from Composting

With regard to reactive organic gas ("ROG") emissions, Redwood notes that the generation of ROG from composting operations is not currently well understood or quantifiable; therefore, identification of this impact is not well founded. As noted by Redwood's air quality consultant, the South Coast Air Quality Management District ("SCAQMD") methodology used in the DSEIR assumes that ROG is equal to volatile organic compounds ("VOCs") since ROG cannot be directly measured. (Sullivan Memorandum, Exhibit B, Comment 8.) Redwood suggests that the EPA AP-42 standard of 39 percent ROG would be more accurate. The DSEIR therefore considerably overstates likely ROG emissions. K-28

e. Impact 3.2.8 – Toxic Air Contaminant Emissions

From its review of the risk assessment methodology for toxic air contaminants ("TACs"), Redwood believes that the description of how the study was conducted is unclear and incomplete. (See Sullivan Memorandum, Exhibit B, Comments 9 and 17.) Redwood therefore requests that this discussion be expanded in the Final EIR to accurately describe how the risk assessment was conducted and to include a more detailed discussion of what is included in the risk assessment. Redwood would welcome the opportunity to provide the County with any information needed to make this discussion more complete. Furthermore, Redwood believes that, if the calculations are done properly, the risks would not likely rise above the level of significance. K-29

f. Impact Cumulative-2 – Air Pollutants

With regard to cumulative air quality impacts, Redwood would like to point out that disposal of waste at another location in or out of the County would generate similar cumulative air quality impacts in the region. In fact, without the proposed project, haul distances might well increase, thereby causing additional air quality impacts. Such considerations are proper in a cumulative impact analysis, in which a lead agency may appropriately consider "future without project" conditions with "future with project conditions" to identify the level of incremental emissions attributable to a proposed project. Redwood strongly suspects that, viewed in this context, the expansion of activities at Redwood Landfill would represent a net air quality benefit to the region. K-30

2. Water Quality Impacts

a. Impact 3.4.8 – Increased Leachate

The DSEIR incorrectly concludes that leachate generation would increase as a result of the proposed project. Leachate generation is a function of both the infiltration of rainfall through the daily and intermediate cover into landfilled waste and the infiltration of groundwater from the underlying bay mud. Thus, the rate of generation of leachate is based on the area of the cover and the footprint of the landfill only, and not the volume of waste between the cover and the foundation. It is possible that a larger volume of leachate could be stored within the larger volume of waste, but such a scenario is unlikely, since the LCRS will be operated at such a rate that leachate entering the system will be equal to the leachate pumped from the LCRS trench. Thus, there will be no increase in the generation of leachate as a result of the proposed project, and the EIR should not identify any significant impact due to increased leachate generation. K-31

D. Certain Mitigation Measures are Infeasible and/or Beyond the County's Jurisdiction.

1. Certain Mitigation Measures are Infeasible.

Redwood is concerned that a few of the mitigation measures proposed in the DSEIR are infeasible. "Feasible," for purposes of the California Environmental Quality Act ("CEQA"), means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." (Cal. Code of Regs., tit. 14, § 15364.) To the extent these measures are infeasible, they cannot be imposed in connection with the approval of Redwood's revised SWF permit.

2. The Jurisdiction of the County, Acting as Local Enforcement Agency, to Impose Air Quality Mitigation is Limited by Statute. K-32

In its review of the DSEIR, Redwood noted numerous detailed mitigation measures relating to regulation of air quality. Many of these measures, however, cannot lawfully be imposed by the County because, when acting solely in its role as the Local Enforcement Agency ("LEA") considering a revision to Redwood's SWF permit, the Environmental Health Services Division can only exercise those powers granted to it by statute. Since Redwood is not requesting any changes to its existing use permit issued by the County in 1958, the County is not acting pursuant to its general police powers, as it would be if it were considering changes to Redwood's land use permit. Moreover, CEQA does not give a public agency any regulatory powers not already found in other

sources of legal authority. (Pub. Resources Code, § 21004; CEQA Guidelines, § 15040, subd. (b); see also *Kenneth Mebane Ranches v. Superior Court* (1992) 10 Cal.App.4th 276, 291.) Thus, certain mitigation measures are beyond the authority of the County and cannot be required as part of the environmental review process for approval of revisions to Redwood's SWF permit.

The County's authority is explicitly derived from, and restricted by, provisions governing issuance of, and revisions to, SWF permits. The Public Resources Code explicitly defines the scope of authority wielded by CIWMB and its LEAs when approving modifications to a SWF permit. These provision are intended to eliminate "regulatory overlap, conflict, and duplication" amongst the various public entities regulating various aspects of landfills and similar facilities. (Pub. Resources Code, § 43101, subd. (a).) In 1993, former statutory provisions giving authority to LEAs to enforce regulations "pertaining to the minimum standards for solid waste disposal for the protection of air, water, and land from pollution and nuisance, and for the protection of public health" were deleted from the list of statutory duties of LEAs. (See Pub. Resources Code, § 43209.)

Public Resources Code section 43020, which governs CIWMB's adoption of regulations creating minimum standards for various kinds of waste facilities, states that CIWMB "shall not include any requirements that are already under the authority of [the California Air Resources Board] for the prevention of air pollution or of the [State Water Resources Control Board] for the prevention of water pollution."[5] (See also Pub. Resources Code, § 43021.) The regulations promulgated pursuant to this directive explicitly recognize these jurisdictional limits. "The purpose for the CIWMB standards in this subdivision is to protect public health and safety and the environment. The CIWMB standards in this chapter do not address air or water quality aspects of the environment that are regulated by other state or local agencies." (Cal. Code Regs., tit. 27, § 20005, subd. (b).) K-32

Given the LEA's lack of authority over air quality issues, Redwood questions the ability of the LEA to impose any mitigation for the air quality impacts of the project that are not specifically requested by the BAAQMD or appropriate for adoption by

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[5] The LEA's lack of jurisdiction over air quality is also evident from the list of factors CIWMB may consider in determining whether to concur or object to a SWF permit proposed by an LEA. The Public Resources Code limits the CIWMB consideration to whether a proposed permit is consistent with "state minimum standards" adopted by CIWMB pursuant to Public Resources Code section 43020" and other specific code provisions relating to solid waste disposal facilities. (Pub. Resources Code, § 44009, subds. (a), (c).) None of the provisions cross-referenced in section 44009 gives the CIWMB (and, by extension, the LEAs) authority over air quality issues at landfills.

BAAQMD. For the most part, however, Redwood can accept the mitigation measures relating to air quality as presented in the DSEIR. Thus, despite the County's lack of jurisdiction, Redwood is willing to voluntarily comply with most of the mitigation measures in the DSEIR. Thus, the mitigation measures discussed below are only those mitigation measures that Redwood believes are infeasible and/or unnecessary. As to these latter measures only, Redwood invokes its statutory right to resist an unwarranted attempt to exercise regulatory authority by the LEA. As to the other measures, Redwood agrees, in effect, to modify its project description to include them, thus avoiding any need dispute the County's legal authority. K-32

3. Mitigation Measures

a. Mitigation Measure 3.2.1c

As noted by Redwood's air consultant, the mitigation measures recommended for construction-related emissions of fugitive dust appear to be additive. (See Sullivan Memorandum, Exhibit B, Comment 10.) In other words, the text indicates that all of the individual mitigation measures must be implemented to achieve the required effect. Implementation of all of these measures at once may be economically infeasible, however, and would potentially be redundant. Instead, the proposed mitigation measures should only be required *as needed* to reduce fugitive dust to acceptable levels, using the visible emissions standard as a guide. (See Suggested Mitigation Measure Revisions, attached hereto as Exhibit D.)[6] In this way, unnecessary mitigation measures will not be performed when not appropriate or necessary (e.g., such as on a rainy day, on days of light construction activities, etc.). K-33

b. Mitigation Measures 3.2.2b-e

i. General Comments

Mitigation Measures 3.2.2b through 3.2.2e are not within the County's authority to impose. The California Air Resources Board ("CARB") is currently in the process of implementing a diesel particulate matter ("PM") reduction program that will, when adopted, include performance standards for reduction of diesel PM. During the control measure phase, specific statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles will be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions. K-34

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[6] / In Exhibit D, Redwood proposes the precise language that it hopes the County, acting as LEA, will see fit to adopt as part of the Final EIR. K-33a

Although the CARB diesel PM program is ongoing, existing regulations already mandate lower PM emissions from new on-road diesel-fueled vehicles. These regulations will require substantial reductions in PM and other emissions from on-road heavy-duty, diesel-fueled engines (e.g., refuse hauling vehicles) beginning with the 2004 model year. Additional more stringent standards will apply to engines starting in the 2007 model year because of state-level implementation of federal standards, resulting in PM emissions of less than 0.01 gm/bhp-hr for these types of engines. K-34

Off-road vehicles (e.g., landfill equipment) will come under more stringent regulation beginning with the 2005 model year. CARB is currently working on proposed regulations to include a PM reduction requirement, which would require PM emissions to be less than 0.02 gm/bhp-hr for these engine types. K-35

CARB staff recently began the public process of developing regulations for the control of PM emissions from in-use diesel-fueled engines. Currently, according to the Risk Reduction Plan, PM emissions from heavy-duty diesel engines are on the average approximately 0.1 grams (gm) per brake horsepower (bhp)-hour (hr) without controls. One of the first engine categories addressed by CARB under this regulation included the "refuse removal vehicles," which are defined as "all vehicles involved in the systematic administration of activities, which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, and disposal of solid waste." CARB has developed Proposed Refuse Removal Vehicle Rule Concepts (CARB, June 2001), which have already been subjected to public review and stakeholder meetings. This rule, once promulgated, would require the reduction of diesel PM emissions from all pre-2007 model year refuse removal vehicles to 0.01 gm/bhp-hr or 85 percent of existing levels. K-36

This extensive activity on the part of CARB with regard to decreasing emissions from equipment is indicative of the County's lack of jurisdiction in this matter. CARB may well require measures that are different from the very specific measures presented in the DSEIR, thus creating a situation where Redwood is asked to comply with conflicting standards. This problem can be avoided if, as the law contemplates, the County defers to the expertise of CARB to require reductions of criteria pollutant emissions.

ii. Specific Comments

Besides being beyond the County's authority as LEA, Mitigation Measures 3.2.2b through e are also infeasible at this time. Use of ultra-low sulfur fuel in combination with a fuel additive, as would be required by Mitigation Measure 3.2.2b, may be economically prohibitive because these products are not readily available on the open market. Federal mandated implementation of ultra low sulfur diesel is scheduled to start in August 2006. K-37

Redwood is already required as part of its existing Title V permit from BAAQMD to certify that it meets this standard. (Sullivan Memorandum, Exhibit B, Comment 12.) Thus, while Redwood may not be able to achieve reductions through the use of ultra-low sulfur fuels immediately, improvements will occur within the next few years. Similarly, fuel additives such as Puri-NOx have been shown to reduce emissions; however, these additives have not been developed to the point of practical commercial application. Use of Puri-NOx may also shorten engine life and void manufacturer's engine warranties. (Sullivan Memorandum, Exhibit B, Comment 12.) K-37

Retarding injection timing, as would be required by Mitigation Measure 3.2.2c, would only be appropriate if equipment performance is not significantly reduced. This measure could be counterproductive if the vehicles need to work more hours to accomplish the same task. K-38

Mitigation measure 3.2.2d states that replacement of "off road equipment" as it ages and requires replacement with new equipment would be expected to achieve a 37 percent reduction in NOx. While Redwood agrees that equipment will be replaced with cleaner-burning replacements as mandated by CARB, Redwood would like the County, acting as LEA, to clarify that this mitigation measure does not actually include a requirement that Redwood do anything other than purchase equipment available on the market. Additionally, Mitigation Measure 3.2.2d is duplicative of efforts already underway by CARB, which require cleaner burning fleet and off-road vehicles in 2004 and 2005, respectively. Lastly, this conversion of vehicle fleets to liquefied natural gas or compressed natural gas will likely result in much more significant reductions than discussed in the DSEIR, as older, more polluting vehicles would be converted as they are replaced. K-39

Mitigation Measure 3.2.2e would require that affiliates that haul waste to Redwood convert their collection fleets to vehicles that operate on alternative, low-emission vehicles or modify their vehicles so as to reduce NOx emissions. This measure is infeasible because Redwood cannot force its affiliates to convert their vehicles to meet this mitigation measure. Contracts have already been negotiated and are in place. Redwood cannot be responsible for the conduct of third parties. Furthermore, there are presently no add-on exhaust gas recirculation systems, or fuel additives that are verified by CARB to reduce NOx. Emerging technologies that show promise in NOx reduction have initial cost estimates are in the $15,000- $20,000 per unit range. K-40

Again, the CARB activity discussed above indicates that these mitigation measures are not within the jurisdiction of the County acting as LEA. Furthermore, the mitigation measures are so specific that Redwood could be put in the position of trying to comply with conflicting requirements – one set imposed by the County and another set K-41

imposed by CARB. As an alternative mitigation measure, Redwood suggests that the Final EIR require Redwood to comply with the Refuse Removal Vehicle regulations when adopted by CARB, and assume emissions reductions that correspond to the likely requirements to be set by CARB. (See Suggested Mitigation Measure Revisions, Exhibit D.) Redwood, through its parent company, Waste Management, Inc., also has an active alternative fuels program. If the County would like additional information about this program, Redwood requests that the County contact Paul Gagnon, Project Manager, Alternative Fuels and Emissions Fleet Standards and Programs at (813) 909-0163 or pgagnon@wm.com. K-41

c. Mitigation Measure 3.2.6c

This mitigation measure would require that Redwood reduce ROG emissions by 90 percent through use of an aerated static pile system with biofilters, or other technology. As discussed above and by Redwood's air quality consultant, ROG emissions are overestimated in the EIR and may not cause a significant impact when calculated according to best available scientific techniques. (Sullivan Memorandum, Exhibit B, Comments 8 and 15.) Even if the County, acting as LEA, still considers the impact as significant after recalculating emissions levels, mitigation measure 3.2.6c is both beyond the authority of the County to impose in this SWF permitting process and infeasible for other reasons.

The DSEIR acknowledges the infeasibility of the suggested controls for green waste composting, stating that these controls, according to SCAQMD and CIWMB, are "cost prohibitive" and may inhibit other environmental benefits (DSEIR, p. 3.2-36, fn. 11.) Even in the SCAQMD -- a district with much worse air quality than the Bay Area -- these controls are not required. Instead, SCAQMD requires registration and tracking. Furthermore, the imposition of such infeasible controls impairs the ability of facilities such as Redwood to divert materials from landfills through composting. (DSEIR, p. 3.2-36, fn. 11.) Given these considerations, Mitigation Measure 3.2.6c is infeasible on its face and should not be required. K-42

As an alternative mitigation measure, Redwood suggests that it be required to conduct a feasibility study to determine the feasibility of the suggested control measures, from both an economic and technological perspective. The results of the study could be submitted to the LEA and the BAAQMD. When the BAAQMD issues a Title V permit revision, it may impose the requirement to implement additional or alternative controls if they are indeed effective and feasible. (See Suggested Mitigation Measure Revisions, Exhibit D.)

d. Mitigation Measure 3.2.8c

In order to reduce the allegedly significant health impacts of the proposed project, Mitigation Measure 3.2.8c would require implementation of Mitigation Measures 3.2.2a through e. As discussed above, the significance of the potential health impacts of the project may well be overstated in the EIR, meaning that mitigation is not required even if feasible. Even if we assume, however, that the impact is significant, Mitigation Measures 3.2.2b through e cannot be imposed because they are neither within the County's regulatory authority nor feasible. Furthermore, CARB has implemented a diesel risk reduction program that should be referenced as a mitigation measure already incorporated into the project. This program is designed to reduce 85 percent of the diesel risk statewide and should be more than adequate to reduce any health risks of the project. No further mitigation is necessary. K-43

e. Mitigation Measure 3.3.4

This mitigation measure requires that levee reconstruction work from February 1 to August 31 of each year shall be avoided, unless surveys indicate that clapper rails are not nesting within 500 feet of the work area. Redwood would like to note that this mitigation measure, if implemented, would affect the entire construction season, except the month of September. Redwood therefore requests that the Final EIR clarify the source relied on to determine the nesting season for the clapper rail, as the DSEIR discusses the "breeding season" as extending from mid-march through July. (DSEIR, p. 3.3.13.) While Redwood understands that it must generally always strive to avoid harm to special status species, Redwood is concerned that this mitigation measure is more restrictive than necessary. K-44

f. Mitigation Measure 3.3.5b

This mitigation measure requires that landfill activities in Areas A and B that take place from February 1 to August 31 be preceded by a biological survey or a noise study. Redwood would like to clarify that landfilling activities have been occurring in these areas for years and no new increases in noise will occur as a result of the proposed expansion. Further, the 1994 EIR found no impacts related to landfill noise sources and recommended no mitigation. Additionally, Redwood requests that the area of concern within the marsh where a biologist must determine the presence or absence of nests be more clearly defined in the mitigation measure. K-45

g. Mitigation Measure 3.4.7d K-46

This mitigation measure outlines the contingency plan to be implemented if leachate is detected outside the perimeter levee. Redwood would like to clarify that, if a release occurred, it would be obligated first to follow applicable Title 27 procedures. In addition, we would work with the Regional Water Quality Control Board in the development of an Evaluation Monitoring Program and/or an Engineering Feasibility Study, as required by the regulations. Redwood's site-specific Corrective Action Financial Assurance Plan details the appropriate site-specific methods for determining the scope of a release, its mitigation, and subsequent monitoring to assure that the mitigation is complete. The steps outlined in this mitigation measure would only be implemented if the above procedures proved insufficient. K-46

h. Mitigation Measure 3.6.4b

This mitigation measure would require the County to "consider" adoption of an ordinance that would impose a mitigation fee on out-of-County waste. Even though the measure would not necessarily require the actual adoption of such an ordinance, Redwood would like to point out that the Commerce Clause of the United States Constitution and established state law principles place limitations on the County with regard to the ability to impose such fees.

Under federal constitutional principles, a law affecting interstate can be invalid if the burden imposed on commerce is excessive in relation to the local benefits. Thus, the law will be upheld only if it: (1) regulates evenhandedly to effectuate a legitimate local public interest, and (2) its effects on interstate commerce are only incidental. (*Pike v. Bruce Church* (1970) 397 U.S. 137, 142.) State cases considering local ordinances have concluded that local economic protectionism is prohibited despite the lack of an express "intrastate commerce clause." (See *City of Los Angeles v. Shell Oil* Company (1971) 4 Cal.3d 108, 119.) Given these restrictions, any fee on out of County waste would have to be proportional to impacts caused by those haulers in the County, and could not have the effect of prohibiting those haulers from using Redwood. K-47

It is also worth noting that the County already receives significant benefits from fees collected from out-of-County haulers. The Joint Powers Authority ("JPA") currently collects a $3.60 per ton fee totaling over $700,000 per year from non-franchise haulers that are collected at Redwood.[7] (See Out of County Fee Allocation Table, attached hereto as Exhibit E.) These fees are used to fund important County waste reduction programs such as recycling and household hazardous waste drop-off. Approximately $68,000 of these fees is collected from in-County haulers. Therefore, approximately $642,000 is already collected from out-of-County haulers of waste. If the County

[7] Local franchise haulers pay fees directly to the County, rather than to Redwood.

considers adoption of a fee ordinance as suggested by Mitigation Measure 3.6.4b, it should take into account the "de facto" fee already collected from out-of-County haulers.

Furthermore, the imposition of additional fees on out-of-County waste would reduce receipts of out-of-County waste and the revenue received from that waste. This would require the landfill to raise disposal rates for waste received from within Marin County. The landfill has already proposed to reduce receipt of landfilled sludge from out of County sources from a presently permitted average of 550 tpd to 100 tpd, which represents a 82 percent decrease in receipt of landfilled sludge. In order to replace that revenue stream and stabilize overall site revenue, Redwood is proposing a modest increase in landfilled waste disposal from a presently permitted average of 1800 tpd to an average of 2150 tpd, which represents a 19 percent increase in landfilled Class III municipal solid waste. K-47

i. Mitigation Measure 3.6.6

This mitigation measure would require that Redwood provide drop-off facilities for oil filters, antifreeze, fluorescent light tubes, latex paint, and cathode ray tubes. Though not required under its existing permits, Redwood currently accepts used motor oil and automotive batteries, with no reimbursement for collection and disposal costs. Redwood has two concerns regarding this proposed mitigation measure.

First, the measure is unnecessary. At the time the RDEIR was prepared, northern Marin County residents did not have access to a nearby drop-off facility for household hazardous waste. Since that time, the Novato Sanitation District has opened a facility that accepts household hazardous waste. Thus, there is no longer the need for drop-off location in northern Marin County. K-48

Second, it is not fair to burden Redwood with the cost of providing the additional services in Mitigation Measure 3.6.5 when funding from another source is already available to provide such services. Redwood requests that any additional household hazardous waste collection services receive subsidization through the Joint Powers Authority fees levied on disposal in the County.

h. Mitigation Would be Premature for the Proposed SMART Commuter Rail.

Comments on the DEIR submitted by the Marin Conservation League state that mitigation should be included for potential impacts related to the proposal to run a SMART Commuter Rail service on the tracks outside the entrance to Redwood. While Redwood fully supports public transit, it would be extremely premature to include K-49

mitigation in this EIR for potential impacts relating to the SMART Commuter Rail. The SMART project is still in the conceptual phases and is not yet a proposed project, much less a "probable future" project. (See CEQA Guidelines, § 15130, subd. (b)(1).) Once SMART becomes a proposed project, Redwood will cooperate with the SMART project proponents regarding safe passage across Redwood's access. At this point, however, it would be premature and unnecessary for the EIR to include mitigation for this speculative impact. K-49

E. **Alternatives Proposed in the DSEIR are Infeasible.**

Redwood provides the following information regarding the infeasibility of the alternatives to the proposed project presented in the DSEIR.[8] An alternative may be "infeasible" if it fails to fully promote the applicant's and the lead agency's underlying goals and objectives with respect to the project. Thus, feasibility under CEQA encompasses "desirability" to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors" of a project. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 401, 417; see also *Sequoyah Hills Homeowners Association v. City of Oakland* (1994) 23 Cal.App.4th 704, 715.) The economic viability of alternatives in relation to the proposed project is a factor that may be considered when assessing the feasibility of alternatives. (CEQA Guidelines, § 15126.6, subd. (f)(1); see also *Association of Irritated Residents v. County of Madera* (2003) 107 Cal. App. 4th 1383, 1401.) K-50

The DSEIR includes analysis of five alternatives to the proposed project: (1) No Project Alternative, (2) Status Quo Alternative, (3) Reduced Scale Alternative, (4) Mitigated Alternative, and (5) Off-Site Alternative. (DSEIR, p. 5-1.)

Under the No Project Alternative, the proposed project would not be implemented. Redwood would continue to operate under its existing SWF permit and the landfill would reach capacity between 2020 and 2025. This alternative is infeasible because it would not allow Redwood to increase revenues in order to offset large capital improvement costs associated with construction of the new road/bridge over Highway 101 and environmental controls such as LFG flaring systems. K-51

Under the Status Quo Alternative, Redwood would receive only those changes to its SWF permit needed to allow operational changes that Redwood has implemented that vary from its 1995 SWF permit. As with the No Project Alternative, the landfill would K-52

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[8] / Redwood also requests that the County update the alternatives analysis in light of the changes to Redwood's proposed project discussed previously. K-50a

reach capacity from 2020 to 2025. This alternative is infeasible for the same reasons discussed above in relation to the No Project Alternative. K-52

Under the Reduced Scale Alternative, the capacity of the landfill would supposedly be increased less than under the proposed project to 25 million cubic yards. As mentioned previously, the total permitted capacity of the landfill (including daily and final cover) is 25 million cubic yards. (See JTD, p. 2-8.) Thus, this alternative does not include an increase in capacity and is similar to the Status Quo Alternative. The Reduced Scale Alternative would also decrease daily tonnage rates for permitted waste and compostable materials from those analyzed under the proposed project. Since the DSEIR does not specify the reductions in rates, it is difficult for Redwood to assess the economic feasibility of this alternative. It appears, however, that this alternative would allow insufficient volume of disposal to be economically feasible, given the capital improvement expenditures already committed by Redwood. Additionally, this alternative does not reduce any of the impacts identified as significant and unavoidable to less than significant levels. For these reasons, this alternative is infeasible. K-53

Under the Mitigated Alternative, increase in the rate of waste acceptance would be capped at approximately 15 percent in order to reduce all impacts identified as significant and unavoidable to less than significant levels with mitigation. This alternative also includes a host of additional mitigation measures and project changes to increase recycling opportunities at Redwood. It does not appear that these recycling activities would provide any revenue to Redwood, and would in fact cost Redwood significant sums to implement. Because this alternative only involves a small increase in the amount of landfilled waste and would cost extra funds to implement, this alternative is infeasible. K-54

The Off-Site Alternative allegedly analyzes the impacts associated with siting the landfill at another location in Marin County. Since no site is identified, it is unclear whether such a site is even available. Redwood notes that the DSEIR does not specify whether this alternative site would be owned and operated by Redwood. If not, Redwood disagrees with the conclusion on page 5-17 and in Table 5-1 that this alternative would meet some of the applicant's objectives for the project. Because no site is identified and because the alternative does not reduce any of the significant effects of the project, this alternative is infeasible. K-55

The proposed project as revised represents the best combination of extending landfill life while increasing waste diversion and avoiding the need to site a new landfill in the County. Therefore, Redwood requests that the County Environmental Health K-56

Comment Letter K

Services Division, acting as LEA, adopt the proposed project as modified by the changes discussed in this letter.[9] K-56

* * *

Please contact me or my associate, Osha R. Meserve, if you have any questions about the information contained in this letter. Redwood looks forward to a continued productive relationship with the County through this environmental review process.

Very truly yours,

James G. Moose

Attachments:
Exhibit A – Revised Table 2-2 (Permitted and Proposed Types and Quantities of Materials)
Exhibit B –Review of Air Quality Section DSEIR by Patrick S. Sullivan
Exhibit C – Revised Table 3.10-4 (Project Vehicle Trip Generation Figures)
Exhibit D – Suggested Mitigation Measure Revisions
Exhibit E – Out of County Fee Allocation Table

Cc: Ramin Khany
Nancy Grisham

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[9] / Because the County EHS will be acting as LEA, neither the Planning Commission nor the Board of Supervisors has any approval authority over the proposed SWF permit revision. This fact should be made clear in the Final EIR, as members of the public may not understand the reason why the appointed Commission and elected Board have no regulatory authority over the project. K-57

Comment Letter K

TABLE 2-2
PERMITTED AND PROPOSED TYPES AND QUANTITIES OF MATERIALS
(Tons per Day)

Material Type	Currently Permitted		Proposed	Proposed	Change	Change
	Average	Peak Day	Average	Peak Day	Average	Peak Day
Landfilled						
Non-hazardous Class III waste	1250	1270	1350	1350	100	80
Non-hazardous sludge (Class B biosolids) for direct disposal or to main impoundment	550	1000	100	100	-450	-900
Class II petroleum contaminated (PC) soil (not meeting RWQCB criteria)	N/S	N/S	N/S	N/S	N/S	N/S
Class III waste to replace previous Class II waste proposal	N/S	N/S	500	500	500	500
Other designated wastes (including PC soil meeting RWQCB waste acceptance criteria)	N/S	20	200	200	180	480
Total Landfilled Waste	1800	2290	2150	2150	330	160
Recycable, Reusable, Compostable						
Non-hazardous seperated or commingled materials (not including green/yard wood waste, PC soils, or clean soils)	10	10	10	10	0	0
Compostable						
Green/yard/wood waste (includes material for composting and ADC)	42	238	400	400	358	463
Biosolids (Class B) (for composting)	84	307	82	82	-2	-123
Food Waste	-	-	32	32	32	32
Subtotal: Compostable	136	555	514	514	378	372
Materials used for interim, daily and alternative daily cover						
Petroleum contaminated (PC) soil meeeting RWQCB criteria (for ADC)	N/S	N/S	640	800	640	800
Clean Soil (for cover)	0	0	500	800	500	800
Biosolids (Class B) (for ADC)	N/S	N/S	50	50	50	50
Subtotal Cover Materials	0	0	1190	1190	1190	1650
Total Recyclable, Reusable, Compostable	136	555	1711	1711	1578	2116
TOTAL	1936	2845	3321	3321	1908	2276
Total biosolids (Class B) for all purposes - Full and Registration Tier SWFPs - (for purpose of comparison)	634	1307	200	200	-434	-1207

Comment Letter K

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SCS ENGINEERS

October 9, 2003

To: **Ramin Khany**
Waste Management, Inc.

From: **Patrick S. Sullivan**
SCS Engineers

SUBJECT **REVIEW OF AIR QUALITY SECTION DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT**

At your request, SCS Engineers (SCS) reviewed the air quality section of the subject draft subsequent environmental impact report (DEIR), and we have the following comments.

1. On Page 3.2.6, the discussion of the draft maximum achievable control technology (MACT) standard for municipal solid waste (MSW) landfills is outdated. The MACT rule was promulgated in final on January 16, 2003 (40 CFR Part 63, Subpart AAAA), and its requirements relative to the Redwood Landfill will take effect on January 16, 2004. The primary requirements of the new rule are the preparation and implementation of a start-up, shutdown, and malfunction (SSM) plan for the landfill gas (LFG) collection and control system (GCCS) and preparation and submittal of semi-annual reports (as opposed to the previous requirement for annual) under Bay Area Air Quality Management District (BAAQMD) Rule 8-34. We recommend that the DEIR be updated with the correct information relative to the new MACT rule. K-59

2. On Page 3.2-7, the discussion of the New Source Performance Standards (NSPS) and Emission Guidelines (EG) for MSW landfills is incomplete. The EG rule in the BAAQMD jurisdiction is Rule 8-34. The Redwood Landfill is currently an EG landfill and is subject to Rule 8-34, which incorporates the various federal requirements of the NSPS. The proposed landfill expansion would technically cause the Redwood site to become an NSPS (or new) site once the project is approved and construction is commenced on the expansion. For an expansion that does not increase the lateral footprint, construction per the regulation is typically triggered when the first waste is placed above the currently permitted vertical elevation. However, this will not change the requirements nor restart the time clock on any of the individual elements of Rule 8-34 or the NSPS. SCS suggests that the discussion of the NSPS/EG requirements be revised to reflect the most current information. K-60

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3. Also on Page 3.2-7, the discussion of the Title V permitting process for the Redwood Landfill is outdated. The site has recently been issued a draft Title V permit by the BAAQMD. Comments on the draft permit have been provided to the BAAQMD by the operator. Negotiations are still ongoing relative to the comments that have been submitted to the District. After considering the facility's comments and making any appropriate changes to the permit, a formal draft permit would be issued for a 45-day period of U.S. EPA and public review, which would be followed final permit issuance. Once issued, the Title V permit will create additional compliance requirements beyond what currently exists for the landfill. SCS believes that that DEIR should provide a detailed discussion of the Title V permit for the landfill, in particular those requirements that will act as mitigation to reduce project impacts. K-61

4. On Page 3.2-8, the Calderon (Air Solid Waste Assessment Test, SWAT) program, as referenced, is no longer relevant for MSW landfills in California. Air toxics issues for landfills are now addressed by the local air districts as part of their existing permitting program as well as their ongoing implementation of Assembly Bill (AB) 2588 requirements. Exemptions from AB2588 are available for sites that originally complied with the Calderon program. In the BAAQMD, both programs have been incorporated into the standard air permitting process. Air SWAT studies have not been conducted for landfills in over 10 years. Because of this, SCS recommends that the discussion of the Calderon program be removed from the DEIR since it is outdated. Instead, the document should contain a more detailed discussion of the BAAQMD's air toxics program. K-62

5. On Page 3.2-9, the discussion of BAAQMD Rule 8-34 is outdated since it was significantly revised in 1999, with most of the changes taking effect on July 1, 2002. The text references the old surface emissions standard of 1000 parts per million by volume (ppmv) versus the new standard of 500 ppmv. In addition, there are many other new or revised requirements of Rule 8-34 that affect the Redwood Landfill. Also, since Rule 8-34 is the primary rule that affects LFG emissions for sites in the BAAQMD, SCS recommends that a detailed discussion of its current requirements be included in the DEIR, including surface emissions, wellhead standards, cover integrity, continuous operation, and other elements. K-63

6. Also on Page 3.2-9, the text regarding the facility's current permit to operate (PTO) is slightly outdated and incomplete. First, the date of the current permit should be listed (expiration date; January 1, 2004). Also, the landfill has a variety of other sources that are currently under permit by the BAAQMD besides the landfill and the GCCS. These sources should be listed with, at a minimum, a brief explanation of each. A list of the various permitted sources at the landfill is include as Attachment 1 to this memorandum. This will demonstrate that many of the on-site sources are currently under a PTO from the BAAQMD, with many existing conditions requiring emission controls to meet current regulations. The current control measures in the permit would mean less net change and less impact to the environment. K-64

7. On Page 3.2-14 and –15, the description of how the emissions calculations were completed for the existing sources is poor in terms of detail. It is difficult to follow exactly how the emission estimates were performed. Also, there is more recent LFG flow rate data for 2002 and 2003 that should be obtained and utilized for describing the current LFG throughput, and the current methane content for the LFG is higher than 50%. The text also indicates that there is insufficient data to complete an emissions estimate for the combustion by-product emissions for the flare. There should be plenty of information to complete this calculation, and it should be conducted for the maximum LFG generation rate for the landfill as a whole under the current permit, not for the permitted maximum for individual pieces of equipment such as the flare. The permit maximum based on the total amount of refuse disposed should be compared against the new maximum after expansion to arrive at the project impact. Data for completion of the above estimates can be obtained from the BAAQMD emissions database and permit record, sources tests conducted on the LFG flare during 2002 and prior years, and on-site data for LFG flow and composition. In addition, an additional source test on the flare and LFG characterization study was recently conducted at the site, and the results should be available in the near future. Clearly, from the above sources, there should be sufficient data from which to complete accurate emissions estimates for the site. K-65

8. The calculation for composting emissions assumes that volatile organic compounds (VOCs), as measured in the South Coast AQMD (SCAQMD) source tests, is equal to reactive organic gases (ROG). This assumption can cause a significant overestimate of the ROG emissions from composting operations since many of the VOCs may not be ROG (i.e., do not reactive to form ground level ozone). The SCAQMD and California Integrated Waste Management Board (CIWMB) source tests for composting measured all non-methane organic compounds (NMOCs) in the emitted gas (ROG cannot be directly measured). Since the waste streams are similar to what is disposed in MSW landfills, and arguably could have a smaller ROG fraction because the composting material may have less NMOCs in it to begin with, the use of the U.S. EPA's *Compilation of Air Pollutant Emission Factors* (AP-42) default of 39% ROG in NMOCs is justified for this calculation, similar to LFG. K-66

9. On Page 3.2-23 and in subsequent pages, the description of how the risk assessment for toxic air contaminants (TACs) was conducted is unclear and incomplete. This discussion should be expanded significantly to accurately and thoroughly describe how the risk assessment was conducted and to provide the reader with a more detailed discussion of what is included in a risk assessment. It is unclear from the text and Appendix E exactly how this analysis was conducted for the Redwood site. Also, in prior sections, there were no baseline calculations for human health risks for comparison to the projected project increase in these risks. SCS recommends that the description of the risk assessment, and probably the risk assessment itself, be revised to include then following: K-67

- A detailed summary of the individual toxic chemical emissions estimates for each source should be presented in the DEIR. The emission estimates used in the risk assessment should be long-term averages consistent with the exposure duration for each receptor rather than peak year emissions. Also, care should be exercised when combining emission estimates from various sources so that it is certain that those emissions are truly additive (i.e., occur at the same time), such that the risks would then be additive. Techniques used for the emission estimates should be clearly described in the DEIR, and any assumptions should be justified. Site-specific data should be used wherever available. Regulatory default values should be used with caution.

- The emissions estimates should be inputted into a refined air dispersion model (e.g., ISCST3, AERMOD, etc.) that utilizes actual meteorological data from the nearest and most representative location and site-specific inputs to the model for the various source parameters. This will allow accurate predictions of ground levels exposure concentrations. Screening air dispersion models or techniques, such as those used in the current DEIR, can grossly overestimate the ground levels concentrations to which receptors are likely to be exposed. Long-term (i.e., annual average) ground level concentrations of air toxics should be predicted for the various actual off-site receptors that could be affected by the project, including the nearest residential and commercial/industrial worker scenarios. This process is termed the exposure assessment whereby exposure point concentrations (EPCs) are determined from the emission estimates and air modeling. K-67

- The output from the air dispersion, the so-called EPCs, should be combined with the most up-to-date exposure factors (e.g., exposure duration, exposure frequency, inhalation rate, averaging time, body weight, etc.) that are representative of the actual receptors that will be exposed. This process is termed the dose-response assessment in which average daily dose levels (i.e., the amount of each chemical that is actually taken into the body) are estimated from EPCs and exposure factors. The exposure factors used in the dose-response assessment should be clearly defined, and their use should be justified.

- The average daily dose values calculated in accordance with the above methodology should be combined with the non-carcinogenic and carcinogenic toxicity values for the various chemicals of concern to derive the estimates of human health risk. The toxicity values should be obtained from U.S. EPA and/or California EPA where available, or appropriate surrogates should be used when regulatory values are not available. The toxicity values used should be clearly delineated in the DEIR.

- The above risk calculation should be conducted for the baseline conditions of the landfill under the current permitted scenario as well as for the site after expansion. The project impact should be based on a comparison the baseline and post-project risk levels. The entire risk assessment is probably better suited for a technical appendix that is summarized in the text of the DEIR. K-67

10. On Page 3.2-25, Mitigation Measure 3.2.1c recommended for construction-related emissions of fugitive dust appears to be additive. That is, the text as written would appear to suggest that all of the individual mitigation measures must be implemented to achieve the required effect. This is not reasonable and may not even be feasible in some cases. Instead, the proposed mitigation measures should be clearly stated as being required only as needed to reduce fugitive dust to acceptable levels, using the BAAQMD's visible emissions standard as a guide. In this way, unnecessary mitigation measures will not be performed when not appropriate (e.g., such as a rainy day, days of light construction activities, etc.). K-68

11. On Page 3.2-26 and Appendix D, the EMFAC2001 model was used to estimate criteria pollutant emissions from vehicles and mobile equipment. The updated EMFAC2002 model should be used instead, as recommended by the California Air Resource Board (CARB). The calculations for NOx emissions from diesel-fueled vehicles and equipment seem high and should be rechecked. Also, it is unclear whether the existing emission estimates for vehicles and equipment accurately predict the criteria pollutant emissions from the landfill's current fleet, based on the average age of that fleet. This would affect the amount of increase above the baseline levels by increasing the baseline. K-69

12. On Page 3.2-28, Mitigation Measures 3.2.2b, 3.2.2c, 3.2.2d, and 3.2.2e for vehicles and equipment need to be re-evaluated. The potential reductions from fuel additives and the use of liquefied natural gas (LNG) or compressed natural gas (CNG) appear to be understated. Information provided by CARB indicates that the Puri-NOx product can achieve PM10 reductions of over 60%, which was not clearly stated. Also, conversion of vehicle fleets to LNG or CNG will likely result in much more significant reductions than currently stated since it would be the older, higher polluting vehicles that would be converted as they are replaced. Based on this and the above comments, it may be possible to reduce the emissions from mobile sources to a much greater degree, and this should be considered in the DEIR. K-70

In addition to the above, the State of California already requires the use of low sulfur diesel fuel, and the Redwood Landfill is required under its BAAQMD permit to certify that it has met this standard. Ultra-low sulfur fuel may not presently be available for use on a full-scale basis but will likely become available in the future when the federal-mandated implementation of ultra low sulfur diesel becomes effective in 2006, which would move the technology in that direction. Therefore, the landfill may not be able to achieve reductions through the use of ultra-low sulfur fuels immediately after K-71

project approval but these reductions would occur within several years of project implementation based on the federal standards. Similarly, fuel additives such as Puri-NOx have been shown to reduce emissions, however, these have not been developed to the point of practical commercial application. Several engine manufacturers have indicated that the use of Puri-NOx may shorten engine life and void manufacturer's engine warranties. Finally, retarding of injection timing may be appropriate if equipment performance is not significantly reduced. This could be counterproductive if the vehicles and equipment need to work more hours to accomplish the same task. In summary, the proposed mitigation measures are too specific and prescriptive and may not be appropriate or available in many instances. As such, the DEIR should be revised to allow more flexible use of a variety of mitigation measures that are reasonable and practical technologies, which are also commercially available. K-71

13. On Page 3.2-30 and –31, the fugitive dust emissions from landfill operations are significantly overstated by the calculations in this DEIR. The calculations utilize the SCAQMD's California Environmental Quality Act (CEQA) guidance from 1993, which is severely outdated based on recent changes to U.S. EPA's emission calculation methods for these sources. In particular, the current AP-42 sections for unpaved roads and heavy construction operations should be used, making sure not to double-count emissions. U.S. EPA has recommended that the current draft section on unpaved roads be used since it represents the current best method, even though it has not been finalized. Also, the calculations do not adequately and accurately account for the emission reductions that already occur based on various control techniques applied by the facility (e.g., watering, graveling, etc.). Further, in the emission calculation tables, the source of many of the inputs is unclear, making it difficult to decipher the calculations. This section needs to be significantly reworked, and if done properly, it is likely to show reductions in emissions to below the level of significance for particulate matter less than 10 microns (PM10) are possible. For example, SCS completed a series of PM10 emission estimates for a large landfill in the BAAQMD in support of an emission reduction credit (ERC) application for road paving (approved by BAAQMD). These estimates were conducted with the more up-to-date techniques, and resulted in much lower PM10 emissions for a landfill with a higher volume of traffic, longer unpaved roads, and site-specific conditions more conducive to dust formation (high silt content) than the Redwood site. Using this as reality check, the emission estimates in the DEIR appear to be severely overestimated in the DEIR for the Redwood site. K-72

14. On Page 3.2-31 through –35, the increase in emissions from LFG combustion is assumed to be significant even though no calculations were conducted. Further, no emission reductions have been estimated for the beneficial use of LFG (i.e., the offsetting of emissions that did not have to be generated elsewhere in the District due to the reuse of LFG for power production). Finally, no mitigation measures are recommended for the use lower emitting flares or other combustion equipment in the future as the technology improves. Based on industry standards of practice, it is likely, with additional evaluation, to demonstrate that the increase in LFG combustion K-73

emissions would be less than significant. Based on the above, SCS recommends that a detailed calculation of LFG combustion emissions be conducted as suggested in Comment #7 above, using appropriate mitigation measures and emission reductions already required by regulation, likely to occur due to technology changes in the future, and those that will occur due to the beneficial use of LFG. K-73

15. On Page 3.2-35 and –36, the ROG emission estimates from composting should be modified as suggested above. With these changes, the composting emissions and resulting impacts would be reduced significantly. As such, the proposed mitigation measure for enclosing the composting operation and installing a biofilter would not be necessary. Further, as stated in Footnote #11 on page 3.2-36 of the DEIR, it is unclear if the estimated emissions of ROG would be substantial in the first place because of the uncertainty in the calculations. Also, as suggested, controls for composting operations are: (1) not cost-effective, in some cases not feasible, (2) contrary to State recycling goals, and (3) would not be required even under the very stringent SCAQMD rules for the proposed project. As such, the mitigation measure listed above should be removed from the DEIR, and current BAAQMD regulations for the permitting of composting operations should be used as a guide for determining appropriate mitigation measures for composting operations. K-74

16. On Page 3.2-37, no baseline emissions were provided for the various sludge processing operations with the reason given that no specific emission estimates were provided in previous environmental documents. As such, all sludge-related emissions are considered new project impacts. This is incorrect and clearly overstates the impacts from the proposed changes to the sludge operations. The lack of specific emission estimates in previous environmental documents does not preclude the creation of baseline emission estimates for an already permitted operation. These baseline emissions should be calculated and then subtracted from the new site emissions to determine the actual project impact. K-75

17. On Page 3.2-38 through 3.2-42, as discussed above, the risk assessment completed for this DEIR is inadequate and should be reworked. If the calculations were done properly, the calculated risks would not likely rise above the level of significance. Further, the mitigation measures proposed for diesel exhaust may not be necessary. CARB has implemented a diesel risk reduction program that should be referenced as a mitigation measure already incorporated into the project. This program is designed to reduce 85% of the diesel risk statewide and should be more than adequate as a mitigation measure in the DEIR. No other mitigation measures are then necessary. K-76

SCS is hopeful that the above comments meet your needs at this time. My professional resume is provided as Attachment 2 to this memorandum, as requested.

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LIST OF PERMITTED SOURCES

Number	Source Description
S-1	Sewage Sludge Storage, Area G pond
S-2	Sewage Sludge Storage, Main Pond
S-5	Landfill with Active LFG Collection System
S-24	Diesel Engine for Tub Grinder
S-25	Yard and Green Waste Stockpiles
S-28	Co-Compost Biosolids Feed Stockpiles
S-34	Active Compost and Co-Compost Windrows & Associated Activities
S-35	Compost and Co-Compost Curing Piles & Associated Activities
S-37	Compost and Co-Compost Final Product Storage Piles & Associated Activities
S-38	On-Site Material Hauling
S-39	Trommel Screening Processes
S-44	Yard and Green Waste Shredding Operation
S-45	Pumpmaster Diesel Engine
S-46	Truck Tipper Diesel Engine
S-47	PACO Water Pump Diesel Engine
S-48	Retec Power Screen Diesel Engine
S-50	Leachate Evaporator
A-18	Water Spray Abatement Device for Landfill Roads & Other Fugitive Dust
A-44	Abatement Device for yard and Green Waste Shredding Operation
A-50	Flare Abatement Device for LFG Collection System & Leachate Evaporator

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ATTACHMENT 2

Resume

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PATRICK S. SULLIVAN, R.E.A., C.P.P.
VICE PRESIDENT

Education

B.A. - Harvard University, 1989
Biology/Ecology

Licenses, Certifications, and Specialized Training

South Coast Air Quality Management District, Certified Permitting Professional (A-1716)

State of California, Registered Environmental Assessor (No. 05952)

OSHA 40-Hour Health and Safety Training for Hazardous Waste Workers

AHERA Certification for Asbestos Inspector, Management Planner, Contractor/Supervisor, and Project Designer

Air and Waste Management Association Course on Risk Assessment and Air Dispersion Modeling; Trinity Consultants' Course on Air Dispersion Modeling; and General Sciences Corporation Course on Exposure Modeling and Risk Assessment (Air, Vadose Zone, and Groundwater Modeling Using EPA Models)

Affiliations

Air and Waste Management Association; Board of Directors Member, Mother Lode Chapter

Solid Waste Association of North America, Landfill Gas Division: Vice Chairman of Rules and Regulations Committee

Waste Industry Air Coalition; Vice Chairman

California Biomass Collaboration; Executive Board

California Integrated Waste Management Board, Technical Advisory Group for Landfill; Consulting Industry Representative

Professional Experience

Mr. Sullivan has over 14 years of experience in the area of environmental engineering, specializing in air quality and risk assessment issues for landfills and solid waste facilities. He is a Certified Permitting Professional within the South Coast Air Quality Management District (SCAQMD) and a Registered Environmental Assessor in the State of California.

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Mr. Sullivan is a Vice President and Project Director within SCS' California office and is the Group Leader for the Landfill Gas/Landfill Engineering and Technical Services (which include risk assessment and air quality). He is also a National Partner for SCS's company-wide air quality compliance program and National Partner for risk assessment.

He has participated in numerous projects related to air quality permitting and compliance. Typical activities completed by Mr. Sullivan on these projects included air quality permitting, regulatory advocacy, emissions estimation, preparation of air toxics risk assessments, computer modeling for air emissions and dispersion, air sampling/analysis, and regulatory negotiations. The risk assessment work completed by Mr. Sullivan includes human health and ecological risk assessment, chemical fate and transport modeling, and air toxics evaluation.

Selected air quality projects include the following:

- Preparation of the air quality and risk assessment sections of Environmental Impact Reports (EIRs) for approximately 15 landfill expansions and new landfills in California, including evaluations of health risks, air quality impacts, and odors.

- Preparation of Title V and New Source Review (NSR)/Prevention of Significant Deterioration (PSD) permit applications and documentation for industrial facilities and landfill sites. Mr. Sullivan has been involved with over 75 Title V permitting projects for landfill sites.

- Completion of National Emission Standards for Hazardous Air Pollutants (NESHAPs) and New Source Performance Standard (NSPS) applicability reviews and implementation plans for various sources, including landfill sites and industrial facilities. Completion of NSPS Tier 1 and 2 emission rate studies and reports, design plans, surface emission monitoring plans, and other documentation for landfills under the NSPS program. Mr. Sullivan has been involved with over 100 NSPS/Emission Guideline (EG) projects for landfills.

- Development and teaching of training courses for landfill air quality compliance at over 25 seminars. Compliance and regulatory issues that have been taught included Title V, NSPS, NESHAPS, NSR/PSD, Urban Air Toxic Strategy (UATS), and related state and local requirements.

- Preparation of comments for the landfill industry on the NSPS rule, Title V operating permit programs, proposed Maximum Achievable Control Technology (MACT) standard, and the upcoming UATS, where landfills are included as a regulated source.

- Preparation of numerous local air district, state, and federal permitting documents for the installation of air pollution control devices and industrial equipment, including boilers, cooling towers, air strippers, wastewater treatment plants, landfill gas collection systems and flares, landfill gas energy and recovery plants, and various industrial systems.

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- Permitting, compliance, and due diligence projects for over 20 landfill gas-to-energy projects throughout the United States. This has also included registration of greenhouse gas credits, facilitation of trades for greenhouse gas credits, and development of methodologies for estimation of greenhouse gas reductions from landfills.

- Utilization of air dispersion models and preparation of air toxics risk assessments for volatile organic compound and fugitive dust emissions from landfill sites and other industrial sources.

- Completion of emission inventories and air quality compliance audits and compliance plans for aerospace facilities, steel mills, jewelry manufacturing facilities, landfill sites, landfill gas recovery plants, and other industrial operations.

- Preparation of AB 2588 air toxics emissions inventory plans, reports, and risk assessments for various industrial clients in California, including a large commercial complex, a jewelry manufacturing facility, a oil well field equipment manufacturer, and numerous landfill sites and related solid waste facilities. Air toxic emissions from industrial sources were calculated and evaluated and the human health risks posed by these contaminants were estimated. Risk management procedures were developed.

- Completion of Air Quality Solid Waste Assessment Tests (SWATs) for various landfill sites in California.

- Air sampling and source testing for various emitting devices, including sampling for volatile organic compounds, criteria pollutants, particulate heavy metals, and asbestos fibers. Completion of all air sampling associated with asbestos abatement. Oversight of sources testing at over 25 landfill sites and development of a database of landfill source tests for use in the work of the Waste Industry Air Coalition.

Mr. Sullivan is also experienced in computer database management and computer modeling as related to air quality. He has worked extensively with the EPA-approved air dispersion models, Industrial Source Complex (ISC3), Dense Gas Dispersion Model (DEGADIS), and SCREEN3, as well as air emissions estimation techniques and models. Mr. Sullivan has worked extensively with the South Coast and Bay Area Air Quality Management Districts in California, two of the most stringent air districts in the country, and is well versed in their rules and regulations. Mr. Sullivan has also completed air quality compliance and permitting projects in the states of Arizona, New Mexico, Nevada, Oregon, Washington, Texas, Oklahoma, Michigan, Ohio, Florida, Virginia, Massachusetts, Wisconsin, Tennessee, Indiana, Illinois, Colorado, and Louisiana.

Mr. Sullivan is also responsible for the management and oversight of the majority of the risk assessment projects conducted by the corporation. Mr. Sullivan has been the Project Manager and lead technical expert for over 25 projects relating to risk assessment, environmental modeling, and risk management for contaminated industrial properties and landfills. These projects accounted for over $1,000,000 in consulting fees associated with risk assessment work and over $5,000,000 in total fees.

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Selected risk assessment projects and studies Mr. Sullivan has managed or otherwise participated in for landfills and solid waste facilities include the following:

- Environmental Investigations and Risk Assessment at the Former BKK Main Street Landfill in Los Angeles County. This landfill is an old, closed site that may have received both hazardous and non-hazardous wastes. It is current occupied by two golf courses and other commercial and residential developments. Project work at this facility has included completion of soil vapor surveys, installation and monitoring of landfill gas migration probes, landfill gas sampling/analysis, oversight of soil and groundwater sampling, completion of a human health risk assessment, and negotiations with regulatory agencies. The site is currently being considered for listing on the National Priorities List (NPL) as a potential Superfund site.

- Human Health Risk Evaluation and Impact Assessment, Proposed Residential Developments, Adjacent to the Otay Landfill, Chula Vista, California. Contaminants at the site included a variety of organic and inorganic chemicals associated with a former hazardous waste and municipal solid waste landfill operations. Other activities at the site have includes evaluation of landfill gas migration, LFG design, air quality permitting, and other landfill engineering services.

- Human Health Risk Evaluation and Impact Assessment, Proposed Residential Development, Adjacent to a Landfill Site, Union City, California. Contaminants at the site included PAHs, heavy metals, and landfill gas emissions containing various organic constituents.

- Human Health Risk Evaluation and Impact Assessment, Proposed Commercial Developments, On and Adjacent to the BKK Landfill Site, West Covina, California. Contaminants at the site included a variety of organic and inorganic chemicals associated with a former hazardous waste and municipal solid waste landfill. The BKK site includes two landfills: one municipal solid waste landfill and one hazardous waste site.

- Investigation, Risk Assessment, and Remediation Kaiser Ventures Inc. Facilities, Fontana, California. For the former Kaiser Steel plant in Fontana, RI/FSs, RAPs, and Remedial Designs were prepared for three on-site operable units. Mr. Sullivan was responsible for a number of individual soil, ground water, surface water, and waste investigations at the Kaiser site, including treatability studies, risk assessments, remedial action plans, and hydrogeological studies, storm water pollution prevention plans, and spill prevention, control, and countermeasure (SPCC) plans. These projects included investigations of two landfill sites, with both hazardous and non-hazardous wastes, including soil, waste materials, hazardous waste, groundwater, and surface water issues.

- Human Health Risk Evaluation and Impact Assessment, Proposed Residential Development, 38th Street Burn Dump, San Diego, California. Contaminants at the site included organics, heavy metals, and other landfill-related contaminants.

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- Environmental Investigations at the Ostrom Road Landfill in Wheatland, California. Project work at this site included sampling/analysis of landfill gas, assessment of landfill gas migration using soil-vapor techniques, sampling and monitoring of LFG migration probes, installation of additional migration probe for landfill gas, design and installation of a LFG collection and control system to mitigate groundwater impacts, as well as other engineering and permitting assignments.

- Ecological Risk Assessment for a Seasonal Wetland located along the San Francisco Bay in Hayward, California. The wetlands property was impacted by petroleum hydrocarbons originating from an active automobile recycling facility. The ecological risk assessment included both terrestrial and aquatic ecosystems.

- Burn Dump Investigation in San Joaquin County, California. As part of this project, Mr. Sullivan provided technical oversight for investigations of a possible burn dump site, which included soil investigations, trenching investigations to determine extent of refuse, LFG migration assessment, waste sampling/analysis, hazardous waste determination, and other project tasks. The project site was slated for residential development; therefore, all project elements we completed in consideration for this type of development.

- Air Quality Impact Analysis and Human Health Risk Evaluation, Fink Road Landfill, Stanislaus County, California. Regional air quality impacts, including a human health risk assessment, were evaluated as part of an Environmental Impact Report for a large landfill expansion.

- Air Quality Impact Analysis and Human Health Risk Evaluation, Regional Landfill Project, Salinas Valley Solid Waste Authority, Monterey County, California. Regional air quality impacts, including a human health risk assessment were evaluated as part of an Environmental Impact Report for four different combinations of the expansion of three regional landfills and placement of 10 regional transfer stations throughout the Salinas Valley in California.

Selected litigation support projects include the following:

- Litigation support and preparation of an expert report in defense of a landfill company in Pittsburgh, Pennsylvania, which was sued under the third-party provisions of the federal Clean Air Act. Project tasks including emissions estimation, regulatory applicability review, and preparation of an expert report. The case was settled in favor of our client.

- Litigation support in defense of a landfill company in Houston, Texas. Project tasks including emissions estimation, regulatory applicability review, and air quality compliance assessment. The case was dropped.

- Litigation support in defense of a landfill company in San Antonio, Texas against enforcement action brought by the State of Texas. Project tasks including emissions estimation, odor assessment, and air modeling. The case was settled in favor of our client.

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- Litigation support as part of a CERCLA cost recovery action filed by a group of PRPs against various municipalities and public agencies, which disposed refuse at a mixed hazardous and municipal solid waste landfill in California. Project tasks included review of depositions, evaluation of industrial and hazardous waste disposed in the landfill, and development of a draft report on the contribution of the various PRPs to contamination in the landfill. Our clients were successful in the litigation.

- Litigation support in a lawsuit filed by a landfill owner/operator in New Mexico versus the state environmental agency with respect to air quality permitting for landfills. The case included litigation support and preparation of expert reports. Then case was dropped when the state agency agreed to make the requested changes to the landfill's permit.

Publications and Presentations

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Sullivan, Patrick S. and Lister, Kenneth H., *Use of Screening Level Risk Assessment for Risk-Based Corrective Action.* Conference Proceedings, Association for the Environmental Health of Soils, 7th Annual West Coast Conference on Contaminated Soil and Groundwater, Oxnard, California, February 1997.

Sullivan, Patrick S., Nuno, Julio A., and Lister, Kenneth H., *The Use of Risk-Based Corrective Action in Site Mitigation Projects.* Conference Proceedings, Environmental Engineering Conference, Canadian Society of Civil Engineers/American Society of Civil Engineers (CSCE/ASCE), Edmonton, Alberta, July 1997.

Albert, Lon; Kubis, Elizabeth L., and Sullivan, Patrick S., *Ongoing Challenges of Emission Inventories at Municipal Solid Waste Landfills*, Conference Proceedings, Emission Inventory Conference, Air and Waste Management Association (AWMA), Raleigh-Durham, North Carolina, October 1997.

Kubis, Elizabeth L., Rankin, Sue, and Sullivan, Patrick S., *Strategic Planning for Landfill Gas and Air Quality Compliance at Municipal Solid Waste Landfills*, Conference Proceedings, 28th Annual Solid Waste Association of North America (SWANA), Western Regional Symposium, South Lake Tahoe, Nevada, April 1999.

Pierce, Jeff and Sullivan, Patrick S., *NSPS, NESHAPs, NSR, and Title V: The Impact of Federal Air Quality Regulations on Landfill Construction and Operation*, Conference Proceedings, 28th Annual Solid Waste Association of North America (SWANA), Western Regional Symposium, South Lake Tahoe, Nevada, April 1999.

Sullivan, Patrick S., *A Practical Approach to Clean Air Act Compliance for Landfills*, Presentation at the Annual Solid Waste Association of North America (SWANA), WASTECON Conference, Reno, Nevada, October 1999.

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TABLE 3.10-4
PROJECT VEHICLE TRIP GENERATION

Vehicle Type	Daily Totals		AM Peak-Hour Trips (8:00-9:00)		
	Vehicles	Vehicle Trips	Vehicle Trips	Inbound Trips	Outbound Trips
PROPOSED					
Vehicles Carrying Waste	540	1080			
Other Vehicles (Employees, Visitors and Deliveries)	50	100			
Subtotal	590	1180			
Construction Traffic (seasonal)	100	200			
Total Proposed Traffic	690	1380			
Existing					
All Vehicles (Carrying Waste, Employees, Visitors and Deliveries)	415	830			
Construction Traffic (expires 2002)	0	0			
Total Existing Traffic	415	830			
NET NEW					
Landfill Operations	175	350			
Construction Traffic (seasonal)	100	200			
TOTAL	275	550			

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Suggested Mitigation Measure Revisions

Mitigation Measure 3.2.1c

The applicant shall implement a construction dust Abatement Program. Construction contractors and landfill staff involved in construction activities at the site shall implement a Construction Dust Abatement Program to reduce the contribution of project construction-related dust emissions to local respirable particulate matter concentrations. Some of these measures are similar to those identified under Measures 3.2.1a and 3.2.1b, but with additional specificity. This program shall include the following elements as needed to reduce fugitive dust to acceptable levels, using the visible emissions standard as a guide:

- Water all construction activities at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum space between the load and the top of the trailer).
- Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and construction staging areas. K-79
- Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily with water sweepers, if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded inactive for ten days or more).
- Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install silt fences or other erosion-control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering as necessary.

Mitigation Measure 3.2.2b

The project applicant shall comply with CARB's Refuse Removal Vehicle regulations when they are adopted and any other applicable regulations to reduce criteria air pollutant emissions from equipment and trucks. K-80

~~The project applicant shall use ultra-low sulfur fuel (with low sulfur and low aromatic content) in combination with a fuel additive (such as Puri-NO_x) in all diesel-powered off-road equipment to minimize NO_x emissions. Products such as this can reduce NO_x emissions by roughly 14 percent.~~

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~~*Mitigation Measure 3.2.2c*~~
~~The project applicant shall retard the injection timing on all diesel-powered equipment to minimize NO_x emissions.~~

~~*Mitigation Measure 3.2.2d*~~
~~As off-road equipment ages and requires replacement, the project applicant can be expected to purchase new equipment that incorporates more stringent emission standards mandated by CARB. Alternatively, the project applicant may purchase electrically-powered equipment, or equipment fueled by an alternative, less-emitting fuel (e.g., liquefied natural gas [LNG] or compressed natural gas [CNG]). Use of alternative fuel engines can be expected to achieve a reduction in NO_x emissions of at least 37 percent.~~ K-80

~~*Mitigation Measure 3.2.2e*~~
~~As equipment is replaced, the project applicant, including other Waste Management affiliates that regularly haul materials to Redwood Landfill, shall convert their collection fleets to vehicles that operate on alternative, low emission fuels (such as CNG, LNG, or biodiesel) or shall modify or replace diesel engines to reduce NO_x emissions, by such measures as incorporating exhaust gas recirculation (ERG) systems and/or stratified combustion chambers, and/or by using ultra-low sulfur fuel and fuel additives.~~

Mitigation Measure 3.2.6c
The applicant shall conduct a feasibility study to determine the technologic and economic feasibility of useing a composting method that allows for collection and treatment of gaseous emissions from active composting piles, such as an aerated static pile system with biofilters. The ~~system shall be designed to reduce~~ target ROG emissions reduction rate for purposes of the study shall be ~~by~~ 90 percent. The results of the feasibility study shall be provided to the BAAQMD so that BAAQMD may consider incorporation of requirements to reduce ROG emissions into air permits for the site. The results of the study shall also be submitted to the LEA for its information. The study shall be completed within three years from the date the CIWMB concurs with the applicant's SWF permit revision. K-81

~~*Mitigation Measure 3.2.8e*~~
~~Implement Mitigation Measure 3.2.2(-e). Diesel PM emissions from off-road equipment can be reduced to levels that are less than significant if these mitigation measures are adopted, since the measures specified to reduce NO_x emissions would also reduce diesel PM emissions; use of alternative fuels reduces fine PM emissions by as much as 90 percent, and electrically-powered equipment does not emit any diesel PM. Alternatively, all off-road diesel equipment at the site could~~ K-82

~~be retrofitted with diesel particulate traps that are capable of removing over 85 percent of the diesel PM emissions, though this in itself would not reduce NO_x emissions.~~ K-82

Mitigation Measure 3.4.7d
If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter levee, Redwood shall follow Title 27 regulations and in a worst-case scenario, its site specific Corrective Action Financial Assurance Plan. In addition, Redwood shall work with the RWQCB in the development of an Evaluation Monitoring Plan and/or an Engineering Feasibility Study to determine the appropriate site-specific methods for evaluating the scope of a release, its mitigation, and subsequent monitoring program to assure that the mitigation is complete. The ~~the~~ following contingency measures may be appropriate and would ~~plan will~~ be implemented if needed and in coordination with RWQCB requirements. K-83

- Containment will involve installation of a geosynthetic membrane across The length of a trench constructed in the targeted zone along the site perimeter. The geosynthetic barrier would reduce the rate of off-site migration of the release while also reducing groundwater inflow to the collection system.

- The release will be collected by installing a French drain in the trench. A sump in the trench would be pumped to prevent hydraulic head buildup up-gradient of the containment barrier.

JPA Out of County Fee Allocation Table

Established fees for integrated waste management planning and implementation of programs for FY 2003-04

Annual fees are based upon the tons of material collected and disposed during 2002, which was provided by the haulers, landfill, anc

	total disposed tons	in county tons excluded	3rd party in county & out of county	out of county subject to JPA fee
tons	370638	158992	18590	193056
fee	710301.64 $	- $	68,411.20 $	710,446.08

jpa fees 2003-2004	$	710,301.64
less 3rd party	$	68,411.20
net jpa fee from o.c.	$	641,890.44

*Reported tonnage is subject to variance from original calculations performed.

K. JAMES G. MOOSE, REMY, THOMAS, MOOSE AND MANLEY, LLP (APPLICANT'S ATTORNEY)

K-1. The comment on the facility's existing materials recovery operations, which are not the subject of this EIR, is noted. According to RLI's existing SWFP and the information that has been provided to the County, RLI currently is permitted to accept 10 TPD of recyclable materials (not including compostables), and the applicant does not propose an increase in this amount. As shown in Table 2-2 of the DSEIR, RLI originally proposed to increase the permitted peak tonnage of recyclables from 10 to 20 TPD, but has withdrawn the proposed peak increase since the DSEIR was published (see Master Response 17 and FEIR Chapter 2). RLI proposes a substantial increase in the average and peak daily receipt of compostable greenwaste, wood, and yard waste and to initiate receipt of compostable food waste, as shown in Table 2-2 and evaluated in the DSEIR. Since publication of the DSEIR, RLI has withdrawn the proposed increase in peak tonnages, although the project would continue to include an increase in the average daily tonnage of compostable green material.

K-2. Please refer to Master Response 21.

K-2a. Please refer to Master Response 21.

K-3. Please refer to Master Responses 6 and 27.

K3a. This footnote (footnote 2, on page 3 of Letter K) is incorrect; under the Mitigated Alternative, described in DSEIR Chapter 5, Alternatives to the Project, and summarized in Chapter 1, Summary, Area G would be used as a Class III landfill cell.

K-4. Please refer to Master Response 17.

K-5. Changes in the peak rate of daily waste receipts would not affect the minimum life expectancy of the site, as long as the average rate remains the same. Please refer to Master Response 21 regarding revised site life calculations.

K-6. Comment noted; please refer to Master Response 3.

K-7. The applicant's revised proposal is addressed in Master Response 17. Discussion of the use of Area G is also included in Master Response 6.

K-8. Please refer to Master Responses 12 and 21.

K-8a. Please refer to Master Response 12.

K-9. The applicant has provided information to the effect that the perimeter LCRS trench has now been completed. This is discussed in Master Response 13.

K-10. Please refer to Master Response 15.

K-11. This is new information provided by the applicant.

K-12. This is new information provided by the applicant.

K-13. The applicant's revised proposal, as detailed in this comment letter and in Master Response 17, includes a daily average and peak intake of 232 tons of sludge. According to information provided by the applicant in the previous comment (Comment K-12), the current rate of intake is about 150 tons per day. While the proposed rate of 232 tons per day represents a substantial decrease from the currently permitted volume of sludge receipts, it also represents about a 50 percent increase over current sludge receipts. Therefore, we disagree with the statement that "the proposed project would further reduce the possibility that odor impacts would recur because Redwood proposes to significantly reduce the amount of sludge accepted for disposal and composting…." Regarding odor complaint history, please refer to Master Response 15.

K-14. The applicant's explanation for the abandonment of the N-Viro process is noted. The County (LEA) does not agree that the process as permitted in the 1995 SWFP and evaluated in the 1994 FEIR would result in increased VOC emissions. The FEIR studies concluded that it "is difficult to control VOC emissions from an open air drying operation," and that "no feasible emission control options for the [then-] current operation" [i.e., an open-air process]. The LEA notes that the reduced-scale N-Viro operation conducted prior to the 1995 SWFP issuance (apparently the "later tests commissioned by Redwood" referred to in this comment), were not conducted according to the specifications and mitigations presented in the 1995 permit's supporting documents, the Report of Disposal Site Information (RDSI) and FEIR (Barnard, 2004). The LEA agrees that as conducted, the N-Viro operation created substantial odors and VOC emissions. However, the process described in the RDSI and conditioned in the permit was the alkaline stabilization (N-Viro) processing of sludge in a building (enclosed) with a filtration system to control all emission compounds with a minimum efficiency of 90 percent (Barnard 2004).

K-15. In response to a request for additional information about this point, RLI provided documentation of a request for and approval of a demonstration project for the use of biosolids as alternative daily cover (ADC) and, following conclusion of the demonstration project, interim approval, with conditions, for the continued use of biosolids as ADC pending a revision of the SWFP.

K-16. The LEA concurs that construction materials, including soil and other clean fill material, are exempted from the facility's daily tonnage limits, though vehicles carrying construction materials, equipment, and personnel, are not exempted from the facility's daily vehicle limits. In response to a request for additional information regarding this comment and RLI's anticipated future construction activities, RLI indicates that in the

next five years they anticipate construction activities to include expansion of the landfill gas collection system, construction of the second phase of the compost pad, placement of fill to raise grade in the area south of Area G, to which the scale house and scales will be relocated, construction of the next phase (phase II) of Area G, ongoing levee improvements, improvements to the leachate pond, and improvements to the stormwater pond (Meserve, 2004).

In responding to the County's request for additional information regarding future construction activities, the applicant also states that because RLI "does not propose significant changes to the existing and previously approved levels of construction related trips or mitigation measures," the final SEIR should therefore "regard impacts related to construction related activities as less than significant. If, however, additional permits are required from the County or the BAAQMD for future construction projects, or if Redwood requires an increase in construction related truck trips," RLI states that they "will submit an application for the applicable permits and approvals at the time and after detailed information becomes available" (Meserve, 2004).

While the above-referenced statement was provided in response to the County's request for information regarding some of the applicant's DSEIR comments, and is not a comment submitted on the DSEIR during the comment period, it is noted here that the DSEIR identified significant construction-related impacts that would result from project implementation (e.g., Impacts 3.2.1, 3.3.6 and 3.5.8). However, as also identified in the DSEIR, all construction related impacts can be mitigated to a less-than-significant level with measures proposed as part of the project and/or identified in the EIR. If in the future RLI proposes activities that are not currently permitted, applications for applicable permits and approvals would need to be submitted, as the applicant has indicated in their response letter. Should this occur and the permitting agencies determine that CEQA analysis was required for the changes to approved activities, the CEQA analysis would be completed prior to the approval of the proposed activities. The DSEIR and this FEIR evaluate the future actions proposed by the applicant (or already implemented but not previously evaluated pursuant to CEQA); evaluation of currently unplanned activities would be speculative and inappropriate.

K-17. Comment noted. Please refer to Master Response 16 regarding the revised air emissions analyses.

K-18. See response to comment K-61, below.

K-19. The comment incorrectly asserts that the DSEIR analysis assumes that peak traffic volumes will occur on a daily basis in Impact 3.2.2. The DSEIR estimates on-road emissions on peak days consistent with BAAQMD methodologies, but fails to state that this would occur daily or on a regular basis. Please refer to Master Response 16 regarding revised air emissions analyses conducted for this FEIR.

Also, the text of the FEIR has been revised to reflect that the project "could" rather than "would" contribute to existing violations of the state ozone standard.

K-20. Please refer to Master Response 16.

K-21. Please refer to Master Response 16.

K-22. Please refer to Master Response 16.

K-22a. Please refer to Master Response 17.

K-23. Please see response to comment K-72, below.

K-24. Comment noted; please see the response to Comment K-25.

K-25. Refer to response to comment I-18. A 75 percent landfill gas recovery rate is used by the Air District for the purposes of estimating landfill gas emissions and during the permitting process at Redwood Landfill. This collection efficiency was also used in the DSEIR analysis. As stated by the commenter, the amount of landfill gas generated will increase with the increased waste volume associated with the project. Using the 75 percent collection efficiency rule of thumb, the amount of fugitive landfill gas would increase proportionately with the increase in gas generation. The DSEIR did not conclude that increases in fugitive landfill gas would be significant. Rather, the DSEIR found that the project would increase ROG emissions associated with fugitive landfill gas by an estimated 12 pounds per day.

K-26. The text on DSEIR page 3.2-32 acknowledges that "Development of the landfill gas collection system at Redwood Landfill occurs as filling of the landfill progresses."

In response to the County's request for additional information on this statement regarding a second flare, RLI has stated that they do not currently plan to install a second flare, or expand the existing flare (Meserve, 2004). RLI also stated that if in the future a second flare was determined to be necessary, RLI would need to apply for the appropriate permits to construct the additional flare. RLI has provided the County the results of source testing of the landfill gas flare, conducted by Best Environmental. The test indicates that average results are below established limits for the parameters tested (Best Environmental, 2003).

K-27. Refer to response to comment K-65.

K-28. Please see response to comment K-66.

K-29 The approach used in the DSEIR for assessing health risks from the Project follow standard procedures recommended by California Office of Environmental Health Hazard Assessment (OEHHA), as described in their Guidelines for the Air Toxics "Hot Spots"

Regulation (AB2588). Detailed responses to the Sullivan Memo referenced in this comment are given further as Responses to Comments K-59 through K-76. In summary, the DEIR used a screening model to estimate incremental exposure levels and risks from the Project, because there are no available historical meteorological data that are representative of the site and which can be used in a more comprehensive model, such as ISC3 or AERMOD. The DSEIR acknowledged that a screening approach would result in conservative estimates, which are geared to ensure protection of the public health. Since the DSEIR identified mitigation measures that would result in impacts that are less than significant, there were no Significant and Unavoidable Impacts predicted for the Project. As a result, further detailed analyses were not carried out.

K-30. Comment noted. Refer to Master Response 9 regarding the origin of waste disposed at Redwood Landfill. In 2002, out-of-county waste accounted for about 52 percent of the waste disposed at Redwood Landfill and most of the out-of-county waste was from Alameda and Sonoma Counties. Both Alameda and Sonoma Counties have their own landfills, and it illogical to assume that use of Redwood Landfill decreases haul trip lengths from these areas. Further, with the proposed expansion, Redwood Landfill expects to serve as more of a regional landfill by accepting long-haul materials from more distant locations in addition to the wastes it receives from local areas. The DSEIR assumes that the average trip length of vehicles traveling to and from the landfill would increase from 10 to 15 miles. For these reasons, it seems speculative to assume that the expansion of activities at Redwood Landfill would represent a net air quality benefit to the region, as suggested by the commenter.

K-31. The commenter is correct that the proposed increased landfill capacity has less influence on leachate generation rates than would changes to the cover, footprint, or other factors. However, the change in the LCRS design allows an inward flow of groundwater and creek water into the proposed LCRS trench, which ultimately would increase the fluids that require handling and processing as leachate. Although groundwater and creek water is not leachate, once it enters the LCRS, it is mixed with the leachate collected from the landfill and becomes leachate for all handling and processing purposes. The originally design leachate collection system did not have such a significant influence on creek and groundwater uptake because the perimeter cutoff wall provided a physical separation between the landfill and the outboard environment. In addition, as stated in the DSEIR, the proposed increase in daily receipts would likely result in an increase in the size of the working face, thus increasing the area where infiltration could occur in wet weather and, in turn, increasing the amount of leachate within the landfill. Also, Impact 3.4.8 identifies unexplained (and therefore unacceptable) discrepancies in background documents cited regarding leachate generation rates and LCRS capacity requirements. In response to this comment, the following first paragraph under Impact 3.4.8 on DSEIR page 3.4-33 and the first two paragraphs of Mitigation Measure 3.4.8c, DSEIR page 3.4.37 are hereby revised, as follows (new language is underlined; deleted language is indicated ~~by strikethrough~~ text):

> ~~Proposed changes to the landfill geometry (i.e., the proposed increase in the steepness of the landfill slopes, increase in the length of the intervals between slope benches, and decrease in the width of slope benches) would increase total landfill capacity from 19.1 million cubic yards to 34.6 million cubic yards. The proposed increase in landfill capacity would increase the quantity of leachate generated. It~~ The proposed increase in daily tonnage is ~~also~~ likely ~~that~~ to increase the size of the working face ~~would be increased as a result of the project, to accommodate the proposed increase in daily tonnage~~. This ~~also could~~ is expected to increase leachate generation, as a larger area that is subject to infiltration would be exposed to rainfall. Leachate can contain substantial concentrations of chemical contaminants, nutrients, and bacteria. In addition, the revised LCRS will result in some additional flow of water outside landfill to the perimeter LCRS. If the additional leachate generated as a result of the project surpassed the capacity of the LCRS, leachate could be released off site and contact and degrade groundwater or surface water….
>
> > **Mitigation Measure 3.4.8c:** RLI shall update their Leachate Management Plan so that, at a minimum, a single Leachate Management Plan serves as the current plan for the landfill. The plan shall be consistent with all aspects of the applicant's proposed project and with mitigation measures identified in this SEIR, including the currently-proposed LCRS design, management practices to limit leachate production and manage the leachate that is generated, the most current leachate flow rates based on the proposed LCRS design, the most recent and comprehensive leachate generation studies, ~~and the much larger capacity provided by the proposed landfill geometry,~~ and empirical data of actual leachate flow rates since installation of the LCRS. The Plan shall demonstrate that the LCRS components and leachate impoundment(s) provide adequate capacity as required under 27 CCR

> §20340 (i.e., twice the maximum daily volume anticipated), including adequate conveyance and storage capacity during the wettest months of the year. (The MET/Sanifill analysis [1995a] indicated that seasonal flow rates may be as much as 4 to 5 times the calculated values for long-term and short-term flows, for one or two months each year.)
>
> The updated plan shall address and remedy the current situation in which a 1992 study and plan is cited for leachate management practices and the LCRS design (but not for the leachate flow rates it presents), a 1995 study is cited for leachate flow rates, although the cited leachate flow rates although these ~~cited leachate flow~~ rates are inconsistent with reported actual use ~~based on the currently permitted landfill geometry and fill sequencing, rather than the proposed landfill geometry and fill sequencing (as well as on refined alternatives to the 1992 LCRS design)~~, and estimates of the quantity of leachate expected to be utilized or consumed by various landfill facilities and activities are not provided in a discussion of system capacity, if at all….

K-32. The Bay Area Air Quality Management District is a Responsible Agency for the project. CEQA Guidelines § 15041(b) states that a "…responsible agency may require changes in a project to lessen or avoid only the effects, either direct or indirect, of that part of the project which the agency will be called on to carry out or approve." See also CEQA Guidelines § 15096. As stated in the DSEIR (Table 2-1 in Chapter 2, Project Description), the BAAQMD has permitting authority over the landfill, specifically issuance of Permits to Operate and Authorities to Construct. The BAAQMD therefore has the legal authority to impose mitigation measures related to air quality, and to incorporate these as conditions of its permits. As per CEQA Guidelines § 15086 (a) (1), Marin County, as Lead Agency, has consulted with the various responsible agencies, including the BAAQMD, in the preparation of this SEIR. With minor exceptions (see comment letter B), the BAAQMD concurs with the air quality mitigation measures contained in the DSEIR. The draft Mitigation Monitoring and Reporting Program (MMRP) contained in the DSEIR as Appendix H, indicates a shared responsibility for monitoring and verification of air quality mitigation measures. While the BAAQMD has legal authority and responsibility for enforcement of its own permit conditions, these conditions are in many cases closely related to day-to-day landfill operations, over which the Marin County EHS, as Local Enforcement Agency, has direct regulatory authority. Thus, monitoring and verification of air quality mitigation measures may be considered a shared responsibility, with ultimate authority resting with the BAAQMD.

EIRs must include feasible mitigation measures that could reduce the significant impacts of the project. The mitigation measures included in the EIR rely on existing technologies and are considered by the report preparers to be feasible considering that they are capable of being accomplished in a successful manner within a reasonable period of time, taking into consideration economic, environmental, legal, social, and technological factors, consistent with CEQA requirements, and are proposed as means of reducing the significant environmental impacts of the project. A final determination of the feasibility

of the mitigation measures is part of the findings process made when action is taken by a lead or responsible agency and must be included in the required CEQA findings.

K-33. Please refer to response to comment K-79. Please also refer to the response to comment K-32, second paragraph, regarding EIR identification of mitigation measures to reduce project impacts.

K-33a. Please see responses to Comments K-79 through K-83. Please also refer to the response to comment K-32, second paragraph, regarding EIR identification of mitigation measures to reduce project impacts.

K-34. Refer to response to comment K-32 regarding the County's authority to impose air quality mitigation measures. Mitigation Measures 3.2.2b through 3.2.2e are included to address the significant net increase in NO_x emissions from on-road vehicle and off-road equipment sources associated with the project. Refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e. Please also refer to the response to comment K-32, second paragraph, regarding EIR identification of mitigation measures to reduce project impacts.

K-35. Comment noted.

K-36. Refer to response to comment K-32 regarding the County's authority to impose air quality mitigation measures and EIR identification of mitigation measures to reduce project impacts. Refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-37. Refer to response to comment K-71. Please also refer to the response to comment K-32, second paragraph, regarding EIR identification of mitigation measures to reduce project impacts.

K-38. See response to comment B-1.

K-39. Refer to response to comment K-70. Also, refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-40. Refer to the text of the FEIR for revisions to DSEIR Mitigation Measure 3.2.2e (now FEIR Mitigation Measure 3.2.2d). CARB's website has information on diesel emission control strategies that have been verified to result in reductions in diesel particulate matter at the following: http://www.arb.ca.gov/diesel/verdev/verdev.htm. This web address also identifies the verified NO_x emissions reductions achieved by several of these products, including fuel additives (such as Puri-NO_x). Please also refer to the response to comment K-32, second paragraph, regarding EIR identification of mitigation measures to reduce project impacts.

K-41. Refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-42. Please refer to Master Response 16 and response to comment K-81.

K-43 Most of the mitigation measures contained in Mitigations 3.2.2b-3.2.2e pertain to the offroad equipment that are used onsite and that are confined to the site. Per CEQA, this equipment would be under the County's authority to regulate. In addition, control technologies are feasible, although at the time that the DSEIR was commented on, feasibility had not yet been established. As of May 2004, USEPA adopted regulations that will require the adoption of these controls on new offroad equipment starting in 2008-2015. At the time that this comment was made on the DSEIR (October 2003), the 85% reduction in diesel emissions identified in CARB's Risk Reduction Program was not law, and was not specifically required for offroad equipment. Although the May 2004 regulation will eventually reduce emissions from new future equipment, the Regulation would apply only to new equipment purchased after 2008-2015. Equipment in existence before the Regulation takes effect would not be required to reduce emissions. Consequently, the mitigation measure would be necessary to reduce emissions from the grandfathered equipment. Also refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-44. The principal source of information for the clapper rail is:

> Goals Project. 2000. Baylands Ecosystem Species and Community Profiles: Life histories and environmental requirements of key plants, fish and wildlife. Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. P.R. Olofson, editor. San Francisco Bay Regional Water Quality Control Board, Oakland, Calif.

Eggs are normally laid March through July; however, unsuccessful breeding pairs may attempt to re-nest and this extends the season, as it is normally defined by the regulatory agencies, through the end of August.

K-45. The comment states that no new increases in noise will occur with the proposed expansion, and this is presumed to be true for bird-deterrence operations. However, as discussed in Impact 3.7.1, the increase in RLI operations that will be necessary to process the proposed increase in material entering the site can be expected to increase the ambient noise level around the Landfill by about 3 dBA. Moreover, Impact 3.7.3 states that use of equipment for composting operations in the Oxbow area and other areas proposed for composting operations could cause a significant increase in the ambient noise level.

The area of concern within the marsh (i.e., where nest surveys would be performed or noise measurements would be taken) is defined by the marsh area adjacent to Landfill Areas A or B, to 500 feet into the marsh for surveys, and at the marsh edge for sound measurements.

K-46. The suggested edits to Mitigation Measure 3.4.7d are reasonable and acknowledge Title 27 provisions for water monitoring and the RWQCB's role in the development of a corrective action program, if one were needed. In response to this comment, Mitigation

Measure 3.4.7d on pages 3.4-31-32 of the DSEIR is revised as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> **Mitigation Measure 3.4.7d:** If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter levee, RLI shall follow Title 27 CCR regulations (e.g., §20385 et seq.) and work with the RWQCB in the development of an Evaluation Monitoring Plan and/or an Engineering Feasibility Study to determine the appropriate site specific methods for evaluating the scope of a release, its mitigation, and subsequent monitoring program or corrective action program pursuant to 27 CCR §20385 and §20430. The ~~the~~ following contingency ~~plan will~~ measures may be appropriate and would be implemented if needed and in coordination with RWQCB requirements:
>
> - ~~Containment will involve i~~Installation of a geosynthetic membrane across the length of a trench constructed in the targeted zone along the site perimeter to contain the release. The geosynthetic barrier would reduce the rate of off-site migration of the release while also reducing groundwater inflow to the collection system.
>
> - ~~The release will be collected~~Collection of the leachate by installing a French drain in the trench. A sump in the trench would be pumped to prevent hydraulic head buildup up-gradient of the containment barrier.

Mitigation monitoring locations in Bay Mud, refuse, and surface water will determine the necessity for implementing the mitigation measures outlined for this impact (i.e., increase in leachate extraction rate, contingency measures for capture of leachate migration). Financial assurance for the system to capture and/or contain leachate release beyond the perimeter levee would be provided for by applicant insurance. Please also refer to Master Responses 13 and 14.

K-47. Please refer to Master Response 8.

K-48. This comment refers to Mitigation Measure 3.6.5b. The Novato Sanitation District household hazardous waste (HHW) facility serves only Novato residents. While the HHW facility at the Marin Resource Recovery Center in San Rafael serves all other Marin residents, it may not be convenient to many residents in the northern and western parts of Marin County, many of whom may use Redwood Landfill on a regular or periodic basis. The applicant has not shown that such a program would be infeasible or inconsistent with other operations at the landfill site, in particular the current acceptance of motor oil and auto batteries. It would, therefore, appear that there is a need for a HHW drop-off facility at the landfill, and that this measure would feasibly mitigate Impact 3.6.5. In addition to feasibly mitigating Impact 3.6.5, this measure would provide a benefit to County residents that could make possible findings of overriding considerations for project impacts that cannot be mitigated to insignificant levels.

Subsidies may be available for the expanded HHW program, for which the applicant could apply. However, discussion of the financing of mitigation measures is beyond the scope of an environmental impact report.

K-49. See response to Comment O-22 regarding the Marin Conservation League's comment about the SMART commuter rail service to which the commenter refers.

K-50. The applicant has provided no financial information to demonstrate that any of the alternatives selected and analyzed in the DSEIR are not economically viable. CEQA Guidelines § 15126.6 (b) states that, "…the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, *or would be more costly*" (emphasis added). As discussed in Chapter 5 of the DSEIR, the alternatives evaluated in the document were selected because they appear to have the ability to attain at least some of the basic objectives of the project (Table 5-1), and to avoid or substantially lessen some or all of the project's significant environmental effects (Table 5-2).

K-50a. The text of the Final SEIR includes changes to the alternatives analysis necessitated by the changes in the project description requested by the applicant and the resulting changes in the impact analysis. See the revised Chapter 5 in Volume 1 of this FEIR.

K-51. Redwood has agreed to construct the new access road and bridge irrespective of project approval. Redwood is required as a condition of its existing permits to operate the facility in accordance with applicable laws and regulations, including installation and upgrading of environmental controls. The cost of these endeavors has no bearing on the proposed project. The No-Project alternative is required by CEQA (Guidelines § 15126.6 (e)) and as presented in the DSEIR is properly constructed and analyzed.

K-52. Please see response to the previous comment (Comment K-51).

K-53. Regarding permitted site capacity, please refer to Master Response 12. The intent of the Reduced Scale Alternative was to evaluate whether an alternative with the same elements as the proposed project, but at a lesser scale, would mitigate some or all of the significant unavoidable impacts associated with the project. The evaluation of the alternative, as summarized in Table 5-2 of the DSEIR, indicates that the Reduced Scale Alternative would have the ability to partly, but not fully, mitigate each of the significant unavoidable impacts identified in the DSEIR. The applicant has not provided any information on economic performance or economies of scale that might aid in the evaluation of the economic feasibility of the project or any alternatives. Furthermore, as discussed in the response to comment K-50, CEQA Guidelines § 15126.6 (b) states that, "…the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project

objectives, *or would be more costly*" (emphasis added). Therefore, the description and analysis of the Reduced Scale Alternative are proper under CEQA.

K-54. See response to previous comment (Comment K-53) regarding the issue of economic feasibility of this and other alternatives, and response to Comment K-48 regarding funding mechanisms.

K-55. The purpose of presenting and analyzing the Off-Site Alternative in the DSEIR is to address the obvious issue of whether it would be preferable to gain more landfill capacity in Marin County by expanding the Redwood Landfill, or by siting a new landfill elsewhere in the County, in a location more in keeping with the Countywide Integrated Waste Management Plan's landfill siting criteria. The Off-Site Alternative need not specify a particular location or ownership for an effective, though general, comparison. Table 5-1 in the DSEIR indicates that the Off-Site Alternative would have the ability to meet or partly meet at least some of the project's objectives. The inability of the Off-Site Alternative to mitigate the significant unavoidable impacts associated with the project, and the likelihood that development of a new landfill in a site currently in open space would cause new significant impacts that the project would not, led to a conclusion that this alternative was not environmentally superior.

K-56. Comment noted.

K-57. The process for considering project approval is described in the Introduction to the DSEIR, on pages v-vi. In the FEIR, this description has been updated and expanded.

K-58. Please refer to Master Response 17 and to FEIR Chapter 2 for a corrected version of revised Table 2-2.

K-59. Text has been revised in this FEIR to reflect the new information on the MACT Rule.

K-60. BAAQMD Regulation 8, Rule 34 is discussed on page 3.2-9 of the DSEIR. Text has been added to this FEIR to clarify that the EG Rule in the BAAQMD jurisdiction is Rule 34.

K-61. DSEIR page 3.2-7 generally discusses the status of the Title V permit at the time of DSEIR publication. At that time, an application for a Title V permit had recently been submitted for Redwood Landfill (Site No. A1179), but no action had been taken on it.

Redwood Landfill has been issued a Title V permit since receipt of this comment letter. The current Title V permit was issued on November 10, 2004, which modified and superseded the previously adopted Title V permit (issued November 10, 2003) and incorporated RLI's recent applications for a significant permit revision and a subsequent minor revision. The primary purpose of the significant permit revision was to increase the maximum permitted firing capacity and the landfill gas throughput limits for the Landfill Gas Flare (A-50). The permit revision also made several corrections to

applicable requirements tables, removed future effective dates that have passed, and deleted several unnecessary limits. The purpose of the subsequent minor revision was to update the landfill gas collection system description and to authorize installation of additional wells, which are necessary to ensure compliance with BAAQMD Regulation 8, Rule 34. The minor revision resulted in no emission increases.

The current Title V permit is available for review on the BAAQMD's website at http://www.baaqmd.gov/pmt/title_v/public_notices.asp or at the District's offices at 939 Ellis Street, San Francisco, California 94109.

The current Title V permit requires that reports of all monitoring must be submitted to the District at least once every six months, except where an applicable requirement specified more frequent reporting. The reporting process also includes an annual compliance certification that must list each applicable requirement, the compliance status, whether compliance was continuous or intermittent, the method used to determine compliance, and any other specific information required by the permit.

The permit includes 19 sources and 3 abatement devices that have each been issued a BAAQMD Permit to Operate. The Title V permit requires the permit holder to comply with:

> All generally applicable requirements, including those specified in the BAAQMD and SIP Rules and Regulations and other federal requirements. These requirements apply in a general manner to the facility and/or sources exempt from the requirement to obtain a District Permit to Operate. The District has determined that the generally applicable requirements will not be violated under normal, routine operations, and that no additional periodic monitoring or reporting to demonstrate compliance is warranted.
>
> All source-specific applicable requirements that apply to sources operating under a BAAQMD Permit to Operate. These include BAAQMD Regulations and Rules, federal regulations codified in the Code of Federal Regulations (i.e., Standards of Performance for New Stationary Sources – General Provisions and Standards of Performance for Municipal Solid Waste Landfills, National Emission Standards for Hazardous Air Pollutants: General Provisions and Municipal Solid Waste Landfills), SIP Regulations, CARB Executive Orders that apply to the gasoline dispensing facility, and any additional BAAQMD permit conditions.

All of the above are addressed at length in the Title V permit. This FEIR addresses those particular requirements that will act as mitigation to reduce project impacts, as appropriate. The general information provided above has been incorporated into the text of this FEIR.

K-62. The discussion of the Calderon Air Solid Waste Assessment Test (SWAT) program has been deleted from the text in this FEIR. A general discussion of toxic air contaminants and the need to conduct screening level health-risk assessments per BAAQMD requirements are discussed on DSEIR page 3.2-9. Because the commenter does not

identify specific information on the District's Air Toxics Program that has been omitted, no additional information has been added to this FEIR.

K-63. Text has been added to this FEIR to update and expand on the discussion of BAAQMD Rule 8-34 requirements, per the commenter's request.

K-64. At the time of this writing, the current PTO for Redwood Landfill expires on January 1, 2006. The PTO for the landfill is reissued annually, as acknowledged on DSEIR page 3.2-9. The text of this FEIR has been modified to more generally reflect that there is a current Permit to Operate and that this permit is re-issued annually by the BAAQMD. The text of this FEIR has also been revised to include a table that lists the specific sources and abatement devices that are listed under the current PTO, as requested by the commenter.

K-65. Methodologies used to estimate the landfill gas emissions for the purposes of the DSEIR are described on DSEIR pages 3.2-13 through 3.2-15. The DSEIR text refers readers to Table D-7 in DSEIR Appendix D, which also includes the results of all U.S. EPA Landfill Gas Emissions Model (LandGEM) runs conducted for the DSEIR. The BAAQMD also uses LandGEM to estimate landfill gas emissions from Redwood LF in its permitting efforts.

In estimating landfill gas emissions, the DSEIR used data that was readily available and supplied by the project applicant at the time of DSEIR publication. The landfill gas flow rate data for 2002 and 2003 referenced in this comment and supplied by the project applicant as an attachment to the County letter dated July 2, 2004 (subsequent to DSEIR publication) is new information. A review of this new and more recent daily gas flare data shows that the average daily methane content of the landfill gas ranged from as low as 45% to up to 57% between 2002 and 2003. The average of the monthly data shows that the methane content level of the landfill gas over those two years was about 52%. The gas flow data also shows that the landfill gas flow rate through the landfill gas collection system ranged from as low as 999 cubic feet per minute (cfm) to as high as 2,251 cfm. The average monthly gas flow rate was about 1,450 cfm over the two-year period. This information is not substantially different than the 50% methane content and 1,800 cfm flow rate data supplied by the applicant for 2001 and used to estimate landfill gas emissions in 2001 (the DSEIR baseline year) to warrant recalculation of landfill gas emissions for this FEIR. It would seem that the commenter has misunderstood the emissions estimates included in the DSEIR. The DSEIR landfill gas emissions estimates include fugitive landfill gas (the 25 percent of the landfill gas not collected and directed to the landfill gas collection system) and also the residual ROG emissions from the flare system (the system is assumed to destroy 98 percent of the ROG emissions that are controlled). These calculations take into account the landfill gas from refuse that has been in place since the opening of the landfill. There was not sufficient information available at the time of DSEIR publication nor did the project applicant supply this information subsequent to DSEIR publication to estimate emissions of combustion by-

products from the flare. The DSEIR conservatively assumes that the combination of the increase in fugitive landfill gas emissions, flare emissions and combustion by-products from the flaring of landfill gas could exceed the BAAQMD significance thresholds for one or more of the BAAQMD threshold limits for criteria air pollutant emissions.

K-66. As suggested by the commenter, ROG is a subset of both VOCs and Non-Methane Organic Compounds (NMOCs) (or Total Non-Methane Hydrocarbons). VOCs are also a subset of NMOCs. The fraction of VOCs and NMOCs that ROG comprises varies depending on the source of the emissions. For the purposes of estimating emissions in the DSEIR, the analysis conservatively assumes that ROG is roughly equivalent to VOCs. In estimating ROG from LF Gas, the DSEIR uses U.S. EPA AP-42 default information to conclude that VOCs account for 39 percent of NMOCs.

The commenter is correct that the CIWMB source tests measured Total Non-Methane Hydrocarbons, however, SCAQMD's Test Method 25.3 measures VOC emissions including the condensable fraction that Method 25C used by the CIWMB does not account for. For these reasons, the emission factor for estimating co-composting emissions, derived from SCAQMD methodologies, is unchanged in this FEIR. The CIWMB factor used to estimate green/wood waste composting emissions is adjusted to reflect 39 percent ROG in the Total Non-Methane Hydrocarbons. Regardless of whether both factors were adjusted downward, the resulting ROG emissions would exceed BAAQMD-recommended significance thresholds. Refer to Master Response 16 to see the results of the revised emissions estimate related to composting/co-composting.

K-67. As stated in Response K-29, the approach for assessing health risks in the DSEIR follows guidelines published by OEHHA. Unlike the analysis of criteria air pollutants, which factors in background levels to compute a total concentration and compares it to an ambient air standard, the incremental contribution from a project is compared to an increment significance threshold to assess impacts. As stated in Response K-29, the impacts of carcinogenic TACs on lifetime cancer risks are usually only a small part of the total cancer risk, where total lifetime risks from all sources are in the hundreds of thousands in a million. As a result, only the increment from a project is judged against a significance threshold.

The DSEIR already describes the TAC emissions from each component of the Project. The Air Toxics section relies on the VOC emissions reported for each process, and it multiplies the measured concentrations of TACs for each process by the corresponding VOC emission reported for that process to estimate emissions for that species. For estimating emissions of benzene from landfill gas, the VOC emissions reported in the criteria pollutant section of the DSEIR (16 lbs) is multiplied by the measured concentration (500 ppm) to estimate emissions of benzene from that process. These emissions were then modeled to estimate offsite exposure levels. A similar approach is described in the DSEIR for other processes related to the Project, such as composting.

As stated in Response K-43, there are no meteorological data available for the site that can be used in dispersion models, such as ISC3 or AERMOD. Because there are no such data available, the guidelines require that screening modeling approaches be used. Screening models use hypothetical meteorological data to calculate worst-case concentrations. These calculated concentrations are then converted to annual average concentrations using default factors prescribed by CARB to determine long-term (chronic) exposure levels. The DSEIR states that calculated exposure levels using the screening approach over-predicts impacts to ensure that unhealthful impacts are not overlooked. This approach is necessary when there are no available meteorological data that would be representative of the site.

Since the TACs that were evaluated for the Project involved mostly substances that would cause health outcomes by inhalation, the DEIR relied on Unit Risk factors published by OEHHA to estimate risks from the calculated ambient air concentrations. Unit Risk factors already include the parameters referred to in the comment (inhalation rate, body weight, potency slope, etc.) to estimate emissions. These parameters have been established by OEHHA for a typical adult. As a result, the dose-response assessment is included in the analysis using Unit Risk factors.

As stated in the DEIR, the toxicity values, or Unit Risk values for carcinogens and Reference Concentrations (RfCs) for non-carcinogens, were obtained from OEHHA, which is a Division of Cal EPA.

As stated in the first part of Response K-67, it is the *incremental* impact or concentration from the Project that is judged when assessing significance under CEQA. As such, baseline concentrations do not enter into the equation when assessing the significance of an impact. The incremental impact would be the risk level over existing baseline conditions.

K-68. Please refer to response to comment K-79.

K-69. Please refer to Master Response 16.

K-70. Refer to Master Response 16 regarding the revised on-road vehicle and off-road equipment emissions estimates that reflect the revised trip information and the reduced peak daily material receipts proposed by the applicant subsequent to DSEIR publication. The FEIR has been revised to reflect these modifications. DSEIR Mitigation Measures 3.2.2b through 3.2.2e are included to reduce the significant net increase in NO_x emissions associated with increased off-road equipment use and on-road vehicle travel. The commenter is correct that use of the fuel additive Puri-NO_x can achieve PM-10 reductions of over 60 percent. This information was not presented in Mitigation Measures 3.2.2b, since the DSEIR found that the increase in on-road and off-road emissions of PM-10 were well below the BAAQMD's significance threshold of

80 pounds per day. The health risks associated with diesel particulate matter are analyzed in DSEIR Impact 3.2.8.

The commenter may also be correct that conversion of the off-road fleet to an alternative, less-emitting fuel (e.g., liquefied natural gas [LNG]) or compressed natural gas [CNG]) can increase the NO_x reductions beyond that stated in the DSEIR. However, the DSEIR conservatively documents the minimum reduction that would be expected should an alternative fuel be used. Without specific information on the fleet age and technology that would be implemented, it is impossible to accurately refine these potential reductions. The text of this FEIR has been modified to more clearly emphasize the conservative conclusions regarding the significance of NO_x emissions following mitigation.

Refer also to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-71. Ultra-low sulfur fuels and Puri-NOx are commercially available in California. Converting to ultra-low sulfur diesel fuel is simple. It does not have any special storage systems, and is stored in the same kinds of storage tanks and fueling systems as regular diesel fuel. Ultra-low sulfur fuel is currently available through Bay Area refineries and will become increasing available to other areas of the country by 2006, when U.S. EPA will require use of ultra-low sulfur fuel in all on-road engines. Refer to the text of this FEIR for revisions to Mitigation Measure 3.2.2b. Refer also to response to comment B-1 regarding DSEIR Mitigation Measure 3.2.2c (retarding injection timing), which has been eliminated from this FEIR.

K-72. Please refer to Master Response 16, where fugitive dust emissions at Redwood Landfill for baseline and 2005 conditions are revisited. BAAQMD fugitive dust emission estimates and calculation sheets for Redwood Landfill used in permitting were obtained for the analysis in this FEIR. The revised fugitive dust emissions estimates were based entirely on U.S. EPA AP-42 emission factors and methodologies.

K-73. Please refer to response to comment K-65.

K-74. Please refer to Master Response 16 and response to comment K-81.

K-75. The comment refers to the impact discussion and estimation of emissions associated with sludge processing/handling activities (other than air-drying of sludge) and the associated increase in ROG emissions at the site. Please refer to Master Response 16 and the text of this FEIR for revisions.

K-76. As stated in Response K-43, the CARB Risk Reduction Program that was referred to in the comment, is not an actual regulation that requires emission reductions for specific equipment. However, emission reductions for the onsite offroad equipment only would cover new equipment purchased after about 2010. Other equipment operating at the site

before that time period would be grandfathered and would not be subject to the Regulation. As a result, mitigation measures identified in the DEIR would be required for this equipment.

K-77. Comment noted. Refer also to response to comment K-64.

K-78. See response to comment K-20, which refers to this table.

K-79. Text has been revised in this FEIR to reflect the proposed clarification to Mitigation Measure 3.2.1c identified in this comment.

K-80. Refer to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e.

K-81. Please refer to Master Response 16 regarding revised composting/co-composting emissions estimates. Mitigation Measure 3.2.6c in this FEIR has been revised to reflect recommendations made by the commenter and to account for the revised emissions conducted in Master Response 16.

K-82. Mitigation Measure 3.2.8c has been revised in the FEIR as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

Mitigation Measure 3.2.8c: New Federal regulations for offroad diesel equipment were promulgated in May 2004. These regulations require that, starting in about 2010, new equipment will have to reduce emissions of NOx and diesel PM by about 90%. However, any equipment already in use at the time of the new regulation would be grandfathered and would not have to meet the new emissions limits. Since this equipment can operate for many years before needing replacement, future emissions would at a higher rate. If ~~Implement~~ Mitigation Measures 3.2.2~~(~~a-d (as revised in this FEIR~~-e~~) are adopted on the existing equipment, ~~. D~~diesel PM emissions from off-road equipment can be reduced to levels that are less than significant if these mitigation measures are adopted, ~~since~~ and since some of the measures specified to reduce NO_X emissions, like the use of natural gas as an alternative fuel would also reduce diesel PM emissions.~~;~~ ~~u~~Use of alternative fuels can reduce~~s~~ fine PM emissions by as much as 90 percent**,** and electrically-powered equipment does not emit any diesel PM. Alternatively, all off-road diesel equipment at the site could be retrofitted with diesel particulate traps that are capable of removing over 85 percent of the diesel PM emissions, though this in itself would not reduce NO_X emissions.

K-83. Please see the response to Comment K-46.

K-84. Comment noted.

Comment Letter L

Community Clean Water Institute

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RECEIVED
2003 SEP 25 P 12: 54
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

September 23, 2003

Tim Haddad, Environmental Coordinator
Community Development Agency
35-1 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad,

I am writing to comment on an application made to the County of Marin by Waste Management, Inc., for a major expansion of Redwood Landfill just north of Novato. This proposal would develop the landfill into a regional waste facility, taking garbage and sludge from much of the Bay Area and, perhaps, beyond. I would like to comment on potential environmental concerns raised by the application, and to suggest, on behalf of citizens concerned with clean water, mitigation measures which could be a part of the approval of this project.

The landfill is situated on San Francisco Bay wetlands four miles north of Novato and just east of 101. Currently the Landfill receives most of Marin's waste and sludge and from numerous sites outside of Marin. The transportation of this garbage and sludge (processed sewage) involves the passage of 415 trucks per day over highway 101 in the Novato Petauma "narrows." The daily truck traffic would increase to 1,000 trucks per day if this plan is approved. Mitigation for this increase could come in the form of monetary support for a CO2 reduction and climate protection program at the County of Marin, including purchase of alternative fuel vehicles to replace older gasoline vehicles. Another offset could be the capture of methane at the landfill, which would reduce greenhouse gas emissions at the landfill and produce usable natural gas energy. L-1

The Redwood Landfill is on Bay mud, situated adjacent to San Antonio Creek which feeds into the Petaluma River. Currently the water table is only two (2) feet below the bottom of the landfill. There are concerns that toxic material from the mass of waste will leak into San Antonio Creek, the Petaluma River, and hence into San Francisco Bay. The air pollution from the garbage and sludge can be intense, having a foul odor and unknown toxic effects. Rupture of the Bay mud under the Landfill is a concern. Seismic activity could produce liquefaction and disruption of the Bay mud, disruption of the clay containment layer, and release of waste into the adjacent waterways, San Francisco Bay, and into the water table. A robust water quality monitoring program at the site of the landfill is necessary to prevent such impacts from L-2

Comment Letter L

occurring.

Redwood Landfill is the last bay-front landfill remaining in operation in the Bay Area. All others have closed. Recently the Contra Costa landfill was closed because it collapsed. The plan proposed by Redwood Landfill would greatly increase the volume of the landfill by increasing the slope of the 166 foot high mass. L-3

Thank you for your consideration of these comments.

Sincerely,

Michael Sandler
Program Coordinator

L. COMMUNITY CLEAN WATER INSTITUTE

L-1. The project does include construction and operation of engines fueled with landfill gas to generate electricity. Refer to DSEIR pages 2-36 and 3.2-33, as well as the revised Project Description (FEIR Chapter 2) and Mitigation Measures 3.2.5c and 3.2.5e in Section 3.2 of this FEIR regarding these units. In addition, please refer to Master Response 20 regarding the Mitigated Alternative, which includes a provision to maximize power production at the landfill.

L-2. The setting of Redwood Landfill is described in Chapter 2, Project Description, and in greater detail for specific topic areas in the analysis sections presented in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures. As discussed on in the groundwater setting section of Section 3.4 (DSEIR page3.4-3) and under Impact 3.4.6, the lower levels of refuse are within groundwater. Impacts 3.4.6 and 3.4.7 address the potential for refuse to contaminate groundwater and for leachate (including groundwater that has contacted refuse) to contaminate off-site surface water and groundwater. As discussed under these impacts, mitigation measures proposed by the project and identified in the DSEIR would reduce the potential for contamination of off-site groundwater or surface water to a less-than-significant level. Also please refer to Master Responses 13 and 14. The reference to toxic material apparently refers to the applicant's proposed acceptance of larger quantities of designated waste. Impact 3.4.10 addresses the proposed use of Area G as a Class II landfill (i.e., for disposal of designated waste). Also, please refer to Master Response 6.

Air impacts, including odor and impacts from toxic air contaminant emissions, are evaluated in Section 3.2, Air Quality. The section describes the results of air quality assessment tests conducted at the existing landfill as well as evaluating potential project impacts. Impact 3.2.8 addresses the potential impacts on human health of toxic air contaminant emissions under the project. The impact analysis included conducting a screening level health risk assessment. The DSEIR analysis determined that mitigation measures identified in the DSEIR would reduce impacts due to toxic air contaminants to a less than significant level. (The air quality analysis addressed other potential impacts, some of which would remain significant after mitigation; please refer to Section 3.2.)

Regarding the health risk assessment, also please refer to Master Response 11.

The affects of the project on the underlying Bay Mud, and the ability of Bay Mud to support the proposed landfill mass are addressed in Section 3.4, Geology, Soils, and Seismicity. Impact 3.4.1 addresses the impacts of an earthquake on the landfill, taking into account its location on Bay Mud. Impact 3.4.2 addresses the impacts of static forces (gravity and settlement) on Bay Mud, and Impact 3.4.3 addresses the potential impacts of differential settlement within the refuse and Bay Mud on the facility's final cover, LCRS, and levee system. Mitigation measures proposed as part of the project and identified in

the DSEIR would reduce these impacts to a less-than-significant level. Please also refer to Master Response 7. Regarding liquefaction, please refer to response to comment Q-7.

The RWQCB oversees an ongoing groundwater and surface water detection monitoring program at the site pursuant to the facility's Waste Discharge Requirements. Please refer to Master Response 14. The water monitoring program would continue under the project. Potential impacts of the project to groundwater and surface water are addressed in DSEIR Sections 3.4. and 3.5, respectively.

L-3. There are several landfills located on San Francisco Bay other than Redwood that are still open, including the Tri-Cities Landfill in Fremont, the Newby Island Landfill in Milpitas, Zanker Road Landfill in Alviso, the West Contra Costa Sanitary Landfill in North Richmond, the Acme Landfill in Pacheco, and the American Canyon Landfill in American Canyon (which is still permitted, but is closing). The comment regarding the "Contra Costa landfill" is apparently a reference to the Acme Landfill in Pacheco, Contra Costa County. Regarding a slope failure at this landfill in 1978, please refer to Master Response 4.

Comment Letter M

League of Women Voters of Marin County

Marin County Planning Commission
Marin Civic Center
San Rafael, California

September 22, 2003

Re: Proposal to Increase Use of Redwood Landfill

The League of Women Voters of Marin County would like to express three concerns about the proposal to greatly increase the use of the Redwood Landfill so that it becomes a regional waste facility.

Our concerns arise from the following perspectives.

1. In conjunction with carefully planned recycling efforts in Marin the present Redwood site is said to have the capacity to accept garbage and sludge from local Marin County sources for a number of years. An important question arises when a plan is proposed to fill the current bayside landfill site much more rapidly by accepting waste from other areas. When and where will Marin County be able find an appropriate new dumpsite for its own garbage and sludge? **M-1**

2. For many years The League of Women Voters has been working toward developing an improved public transportation system along the 101 corridor to relieve traffic congestion on Highway 101. We have supported strategies to shift people from private automobiles into busses and trains. We are concerned that allowing hundreds of additional large trucks to use that highway every day will partially reverse any traffic congestion improvements that have been planned and made at significant public expense. Those additional trucks will actually increase traffic congestion. As we all know our county's one major highway is already frequently filled with slow or stopped traffic. **M-2**

3. We also support the continuing protection of wetlands along the bay where they exist or are threatened. The proposal before you is to greatly expand the use of the Redwood Landfill site to accept larger quantities of garbage and sewage sludge from many sources outside Marin County. Greatly expanded dumping increases the risk of damage to wetlands and the potential contamination of the waters in rivers and the San Francisco Bay with toxic materials. **M-3**

We urge that your discussion cover these three issues in detail and consider the full impact expansion would have on them."

Margaret Jones

Margaret Jones, President
League of Women Voters of Marin County

4340 Redwood Highway, Suite F 130 • San Rafael, California 94903 • 415-507-0824 • Fax 415-507-0826

M. LEAGUE OF WOMEN VOTERS OF MARIN COUNTY, MARGARET JONES, PRESIDENT

M-1. The County is required under state law to demonstrate that it has 15 years of landfill capacity remaining, or if it cannot demonstrate that it has 15 years of remaining capacity, to identify capacity outside the County and/or to initiate a process to site a new landfill. This process is described in the Countywide Integrated Waste Management Plan Siting Element. Both under the project and under the No-Project Alternative, the County would have more than 15 years of remaining capacity (please refer to Master Response 21).

M-2. Please refer to Master Response 5 regarding traffic level of service on Highway 101.

M-3. The project's potential to impact surface water quality is analyzed in Section 3.5 of the DSEIR. on the groundwater and surface water quality monitoring programs at the facility, which would continue under the project, are described in Master Response 14. Regarding the site's location next to a wetland, please refer to Master Response 10. Effects on Marsh wildlife are discussed in Section 3.3 of the DSEIR. See also responses to comments N-21, N-22, P-4 and Z-4. Please refer to Master Response 6 and 17 regarding changes in the project, including the withdrawal of the proposal to use Area G as a Class II disposal unit.

Comment Letter N

Marin Audubon Society *Box 599* *Mill Valley, California 94942-0599*

October 8, 2003

Tim Haddad
Marin County Community Development Department
3501 Civic Center Drive
San Rafael, CA 94903

RECEIVED
2003 OCT -9 P 3:18
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

RE: COMMENTS ON DEIR FOR REDWOOD LANDFILL

Dear Mr. Haddad:

The Marin Audubon Scad appreciates the opportunity to submit comments on the REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT. Marin Audubon recognizes the importance of this landfill to the people of Marin. While we would not support this location should it be proposed today, nevertheless the landfill is there now and any other location we can think of in the county would have adverse environmental impacts and would face similar or greater public opposition. N-1

We are interested in the landfill continuing to operate but in a manner that assures the environment is protected and the Marin community is served. Unless we can take care of our own waste, we will need to depend on other counties to do so. This is neither responsible, environmentally sound nor does it contribute to a sustainable life style. N-2

GENERAL COMMENTS

At the first public hearing, the Landfill manager withdrew that portion of the application for converting Area G to a Class II landfill. That constituted a change in the project definition which should have triggered a public explanation of how the project changed . What will Area G be used for? We have seen no written explanation of the intended use of this area. N-3

Are there state laws that set standards for counties taking care of their own solid waste? What are the state requirements, if any, for disposal of waste? N-4

In order for us to evaluate the project, we need to know whether there any other landfills remaining along the Bay edge today? Are there special requirements for landfills on bay mud and adjacent to tidal areas? N-5

Increasing the capacity of the landfill from 19.1 million cubic yards to 34.6245 cubic yards is significant. Two aspects are of overall concern about this: reason for the significant increase and how it will impact the life of the landfill. The DEIR indicates that the intent is for Redwood to become a regional landfill. Why is this and what does it actually mean? Is this why the capacity is being increased substantially, or is this in order to accommodate yard waste and other material N-6

that could be to recycled (as we have been advised by the landfill operator) or for some other reason. Is there a regional need for Redwood to take material from other counties? Is there insufficient capacity in other counties? From what counties would the material be coming? What are the benefits to Marin to increasing the landfill's capacity? N-7

Could the life of the landfill be extended through greater recycling. Please provide a more thorough discussion of the types of material that would be increased N-8

Our comments on specific sections of the DEIR:

AESTHETICS

The long range vistas analyses are only valid if the site is not developed with buildings after closing. What would prevent the applicants from eventually applying for some building on the property. The landfill in San Rafael, for example, is being developed with shopping centers or other structures? N-9

AIR QUALITY

Mitigation measures 3.2.5c and e Increase in the amount of landfill gas generated and increase emissions of air pollutants and fugitive landfill gas emissions. N-10

We support these mitigations to increase the capacity to treat landfill gas and to beneficially reuse the gas to operate power generation engines. However, it is unclear whether Redwood's proposal for generating power fueled by landfill gas is the maximum reuse that could be expected or generated from this type of facility? If it is not, Redwood should be required to provide a program that maximizes the reuse of emissions from the existing flare. Are there other measures could be taken to increase the reuse rate besides what the landfill is proposing? N-11

Mitigation 3.2.6 c to collect gases is the only effective mitigation and should be required. Monitoring and keeping records, while important to ensure compliance, would not in themselves ensure compliance. N-12

Impact 3.2.7 Changes in sludge quantities
This discusses the reduction in quantities of sludge. Many citizens complain and express fears about the degradation of air quality which could be a threat to human health and welfare. In order to evaluate the significance of these potential impacts, additional information is needed about the current and future landfill practices that would generate odors. There have been mixed messages from residents, some of whom complain that current conditions are unbearable, while others indicate that there has been improvement. It is our experience from numerous visits to the site over the last four years, that the odors have decreased significantly. To allay the fears of the community, there should be assurance that there will not be continued air quality problems. How does the current 250 to 400 TPD of sludge accepted per day today compare with sludge accepted N-13

four years ago? Is it likely Redwood would or could increase the rate of sludge accepted in the foreseeable future How much sludge is generally available now? Where does Redwood get the sludge? What limits the amount of sludge the landfill can take in? What controls are there that ensure these limits are adhered to? N-13

Impact 3.2.9 Nuisance odor emissions
Mitigation for this impact includes preparation of an Odor Impact Minimization Plan. This would provide better assurance to the community if there was more specific recommendations in this DEIR about design and operating procedures that would reduce odors. Which among the procedures mentioned would provide the most efficient and/or effective reduction in odors? List the possible measures in order of priority. N-14

Impact 3.210 Increased odors from air drying
Discuss the difference between air drying of sludge and air dry other materials, such as bay mud, and the compositing of other materials? Could replacing sludge with soils, bay mud, and/or garden wastes result in reduced odors? N-15

BIOLOGICAL IMPACTS

The discussion of the biological setting of the project is not adequate. It discusses only marshes along the side of the landfill and its location on San Antonio Creek. Just across San Antonio Creek is the 2,000 acre Petaluma Marsh which is the largest tidal marsh in the state of California that has never been diked. This marsh supports many endangered, special status and migratory species and contains habitat characteristics rare today: tidal pannes and complex vegetative and slough structure. The importance of this marsh as habitat and as historic landscape should be discussed. N-16

Actually, the entire property is surrounded by tidal marsh. Petaluma Marsh is to the east, a tidal slough to the west and it extends around south end of landfill and there is a tidal slough to north as well, between landfill and property MAS just purchased.

Potential impacts to the adjacent slough and marshes would include water quality degradation, which would also impact vegetation and sediment quality, as well as possible collapse of the levee sides into the adjacent sloughs and Petaluma and fringe marshes. The leachate collection system and perimeter levee that would most safely maintain and contain the landfill and prevent it from collapsing into the sloughs and marshes should be identified as mitigations for this impact. N-17
This discussion should address whether continuing the levee along the perimeter of the site would be the safest mitigation in comparison with the staged program discussed at Impact 3.4.2.

The site is described on page 3.3-9 as largely grassland. Migratory waterfowl and shorebird use of ponds in oxbow should be discussed. This area is only discussed in terms of mammal use. We have observed waterfowl use on those ponds in past years, even though they have not been N-18

determined to be jurisdictional wetlands. Is the water safe for their use? N-18

We have been advised that barn owls use the site and may have been impacted by certain practices at the landfill. Discuss the persistence of owls and other raptors and how the landfill is providing for their survival. N-19

Only impacts to the California Clapper Rail, SMHM and Black Rail are discussed. The protect area also supports other special status species Salt Marsh Yellowthroat and San Pablo Song Sparrow, can be expected to use the adjacent marshes and could use the marsh fringes on-site, as well as fish, Steelhead, Delta Smelt and Splittail, that use San Antonio Creek and adjacent channels. N-20 N-21

The potential effects of landfill operations being conducted at night, i.e, noise, light and glare, on the wildlife using the adjacent sloughs and the Petaluma Marsh should be identified as potential impacts and mitigation measures should be presented. These marshes are inhabited by endangered and other sensitive species, and by migratory birds during spring, fall and winter. During migration birds need to feed and rest on the sloughs and marshes and, in spring, nest in the marshes We understand that the landfill conducts some operations at night. Discuss these operations, and mitigation needed for the impacts. N-22

GEOLOGY AND SOILS

Redwood proposes to change the design to construct the leachate collection system without the perimeter levee and to substitute changing the fill sequencing plan to allow for steeper slopes is a concern. We would like some additional background to enable us to better evaluate this change. Are there other landfills in the bay Area or elsewhere that have used this sequencing plan and not constructed perimeter levees? What has been their success rate? How long have they been in operation? N-23

We understand there has been a landfill collapse in the Bay Area recently. Were circumstances similar to Redwood? Are there lessons to be learned for other landfill designs? Did they use a design that did not have a perimeter levee? N-24

Impact 3.4-1 Damage due to earthquake
This discussion only deals with impacts to the landfill. Address mitigation for possible damage caused by seismic events to adjacent marsh resulting from collapse of the landfill slopes. The mitigation measures focus on damage caused by seismic activity. Discuss avoidance of damage due to collapse occurring without seismic activity? Would a greater level of safety be provided against earthquake related erosion or collapse, if the perimeter levee were constructed around the entire landfill? N-25

Impact 3.4-2 Displacement of landfill slopes and the perimeter levee due to the LCRS or differential settlement. N-26

Comment Letter N

The discussion on page 3.4-22 describes the scenario intended to replace the perimeter levee as being a nine-stage program based on a time interval for refuse placement as being. between 200 and 1,200 days. In addition, the side slopes would increase in steepness from 4:1 to 3:1, the benches would decrease in width and the frequency of benches would be reduced to protect the adjacent sloughs and wetlands and wildlife and about the landfill establishing recycling and beneficial reuse programs. Would a greater level of safety be provided against non-earthquake related erosion or collapse, if the perimeter levee were constructed around the entire landfill? N-26

What evidence is there that the sequencing program together with the changed design of the perimeter would obviate the need for the perimeter levee. It would be helpful to know what the sequencing is now. Are any of the GeoSyntec analyses of this issue based on actual experience with this recommended program at landfills on bay mud? Identify other landfills that have used this method , how successful they have been, and if any have been through an earthquake?

Impact 3.4-4 Precipitation causing erosion of portions of the landfill
Militations for this impact rely on the maintenance of a Stormwater Pollution Prevention Plan. SWPPs are not subject to public review. N-27

Furthermore, the existing SWPP reportedly indicates a Storm water impoundment on area G. The plans for Area G have changed several times, with the most recent being the withdrawal of the area for use as a Class II landfill. However, we have seen no description of the new proposed use for Area G. In order to adequately understand the project, a description of the proposed use of Area G and the impoundment areas should be provided. N-28

Impact 3.4-6 Five-foot separation does not exist between the base of the landfill and the groundwater.
How is the preferential flow direction to the east determined? What process would the landfill have to follow to receive an exemption to the requirement that there be a five-foot separation between the landfill and the groundwater? What are the results of monitoring of the groundwater and surface water around the landfill? Since bay mud has low permeability, is not impermeable, what could be expected to get through the bay mud. Would the bay mud act as a filter? N-29

Impact 3.4-7 The LCRS could allow leachate to contaminate ground and surface water.
The basis of evaluating this impact as not significant seems to be the determination by GeoSsyntec that a "new perimeter levee/cutoff wall construction is not required to maintain stability." Most of the discussion addresses leachate management. It is not clear to us that any or all of the leachate mitigation measures satisfies or relieves the requirement that a continuous perimeter levee be installed around the entire landfill. N-30

Mitigation 3.4-7f would require that the revised leachate continency plan to identify which areas will be used for storage of leachate, that the Leachate Facilities Leak and Spill contingency Plan include the reason additional storage/evaporation pond is no longer needed and that updated plans address why other contingency measures to pumping excess leachate into San Antonio

Creek are not needed. Why is it not recommended that these items be responded to for this EIR? The answers should be considered in evaluating the project. Otherwise the public will have limited opportunity to comment. N-30

Impact 3.4.8: Possible surpassing of capacity of the LCRS possibly resulting in offsite contamination.
As above, additional information is necessary to evaluate this issue. Particularly, whether leachate impoundments other than the Stormwater pond have been constructed, how much quench water is anticipated to be used, and the amount of leachate that is expected to be generated. It is unclear to us why the County cannot require the applicant to submit this information before continuing? All of this information is important in evaluating the project. Allowing the information to be provided at some later date does not ensure the militations would be adequate nor does it enable informed public participation. N-31

Impact 3.4.9 Modifications to final cover design would adversely impact stability and/or water quality.
Mitigation 3.4.9 consists of a general recommendation that only materials with sufficient cohesion and interfaces with sufficient adhesion be used. Does the brand or manufacturers membrane proposed by the applicant meet this criteria? N-32

What can be done now to correct lack of a continuous seal to bind the cover, sides and base of the landfill?

HYDROLOGY AND WATER QUALITY

Impact 3.5-2 concerning possible contamination of nearby surface water.
This discussion, as have previous discussions, notes theat the landfill is operating without a liner, and relies on development of a leachate management plan, regular monitoring and the LCRS. Bay mud may be low permeability, but it is not impermeable. Would a perimeter levee around the entire landfill provide better protection of nearby surface waters from contamination?. N-33

Impact 3.4.5 Insufficient capacity to contain contact-water runoff
The mitigations for this impact relievo submission of a report to the RWQCB and LEA that sufficient capacity exists. Why is it not recommended that this information be provided now to allow for adequate public review? N-34

Impact 3.5.6 Area within the 100 year floodplain
Mitigation for this impact is that the applicant complete their planned "increase in the height of the perimeter levee" around the entire landfill site, and notes that such action is identified in their JTD. This recommendation is unclear. Does it mean that the levee height should be increased where the levee already exists or that a perimeter levee should be constructed around the entire landfill which would mean major sections would have to be constricted not just raised. N-35

Comment Letter N

Impact 3.5-10 Possible adverse impacts of cover materials.
Mitigation 3.5.10b calls for the continued use of dirt on Saturdays. Is the landfill still removing dirt from the hillside on the adjacent Silveria lands? If so, we object to this environmentally damaging practice. Other less environmentally damaging alternatives should be sought and used For example, Bay mud could be trucked in. N-36

LAND USE AND PLANNING

Mitigation 3.6-2d This mitigation calls for the adjustment of existing bird control programs to ensure birds do not pose a hazard to Gnoss Field. Is this intended that the management control bird use beyond the boundaries of the landfill? We understand the need for Redwood to control birds on the active landfill portions of its property, but it must be understood by all that the Petaluma Marsh and adjacent sloughs are important and unique habitat for wildlife. Under no circumstances should the landfill or any other entity interfere with wildlife being attracted to and using the Petaluma Marsh and other adjacent marshes. N-37

Impact 3.6.4 Conflict with County Recycling goals.
Where would the increase in daily average receipt of solid waste come from? How much would come from outside of Marin and identify the locations they would come from and why? N-38

How would county's state-mandated recycling goal be impacted by this plan? Does increasing the capacity consider and further Marin's 50% requirement? 39

The Waste Operations discussion in chapter 2, describes certain changes in the operations of the landfill including - changes in quantity and type of materials received for disposal. Four categories of change are listed. (Table 2-2) Additional information is needed to evaluate the impact of this change. How much would be food waste or yard waste and other materials suitable for composing; how much building/construction materials suitable for recycling? How much material would actually be recycled? N-40

Mitigation 3.6.4b recommends a fee to "develop additional landfill capacity." While we agree with a fee to develop diversion and recycling /reuse programs, how do the consultants consider that additional capacity can be developed? N-41

Impact. 3.6.7 Increased rate of filling
The life of the landfill could be extended by 8 years and result in greater than 15 years of disposal capacity. The meaning of this statement is unclear since a few sentenced below it reports that the Site's 1996 Siting Element predicted the site would reach capacity in 2025. The DEIR should indicate how the applicant's justify why the life of the landfill should be reduced? Is there a community or regional need that is being served by the increased fill and reduced life span? N-42

Comment Letter N

ALTERNATIVES

Several of the Alternatives developed have appealing components and goals. We are particularly interested in the Mitigated Alternative. Could the increased material accepted by the landfill be recycled, composted or otherwise beneficially reused. If all of the measures outlined on page 5-12 were initiated, how much of the proposed 34. 6 cubic yards of material could be recovered? Is it, or could it be, recyclable/recoverable materials? N-43

Include a recycling/recovery component in all of the alternatives as well as part of the applicant's alternative. N-44

Thank you for considering our comments.

Sincerely,

Barbara Salzman
Conservation committee

N. MARIN AUDUBON SOCIETY

N-1. The relative environmental impacts of developing a new landfill elsewhere in Marin County are compared to the project's impacts in the Alternatives section of the DSEIR; see the description and analysis of the Off-Site Alternative.

N-2. The County has a policy to assure 15 years of disposal capacity. The project's consistency with this policy is evaluated in Impact 3.6.7 in section 3.6 of the DSEIR. See also Master Response 21.

N-3. Please refer to Master Response 6.

N-4. Please see response to Comment M-1.

N-5. Please refer to response to Comment L-3 regarding remaining Bayfront landfills. Each landfill is permitted by the Local Enforcement Agency and the Regional Water Quality Control Board, amongst other agencies. Permits are written with conditions that are tailored to the individual site and that are intended to protect the environment from the potentially harmful effects of the landfill.

N-6. The site life, both under the current permit and under the proposed project, is discussed in Master Response 21. Site capacity is discussed in Master Response 12. Use of RLI as a "regional landfill" is discussed in Master Response 19. The applicant is proposing an increase in the overall capacity of the landfill itself (an increase in the total volume of waste and cover material that can be placed in the landfill), as well as an increase in the rate of waste acceptance and in the rate of acceptance of materials for composting. Please refer to Master Response 17 regarding changes in the proposed daily receipt of materials.

N-7. Regarding waste imports from other counties, please refer to Master Response 8. The principal benefit to Marin County of increasing the landfill's capacity, apart from any possible economic benefits (which are not the subject of the SEIR), is an extension of the landfill's expected life. This would enable Marin County to avoid siting a new landfill for at least an additional 13 years. See Master Response 21.

N-8. Please refer to the discussion of the Mitigated Alternative (in DSEIR Chapter 5, Alternatives to the Project), which includes several specific project elements to increase recycling.

N-9. Post-closure use of the Redwood Landfill is described in the facility's Preliminary Closure/Post Closure Plan (Chapter 9 of the JTD) as non-irrigated open space. Typically, constructing buildings on closed landfills has limited feasibility, because of the need to maintain final cover integrity, the problems associated with settlement of the landfill mass, and the hazards presented by landfill gas seepage. The applicant may propose to revise the post-closure use of the facility at a later date, for example when

preparing the Final Post-closure Maintenance Plan. That proposal would, however, be subject to environmental review under CEQA.

N-10. The comment does not raise any specific concerns regarding the adequacy of the DSEIR analysis.

N-11. The proposed power-generating engines that would burn landfill gas to generate electricity would serve to treat only a portion of the landfill gas generated at the site. The majority of the landfill gas is treated through a flare system, and yet a smaller fraction is treated through the existing leachate vaporator system. The proposed system will reuse a portion, but not all, of the gas generated at the landfill. A system that beneficially reuses landfill gas is not required to reduce landfill gas emissions associated with the landfill. Please refer also to Master Response 20 regarding additional measures to generate power at the landfill.

N-12. Comment noted.

N-13. Refer to Master Response 9 regarding the amount of sludge accepted at Redwood Landfill in recent years and its origin. Refer to DSEIR page 2-22 (Table 2-2) and Master Response 17 regarding the currently permitted and proposed permitted biosolids quantities accepted at Redwood Landfill. The proposed project would significantly reduce the overall amount of biosolids that can be accepted at Redwood Landfill on average and peak days for disposal, co-composting and/or for use as ADC. It is the responsibility of the project applicant, Redwood Landfill, Inc., to adhere to the limits (including quantities of sludge accepted) specified in the Solid Waste Facilities Permit (SWFP), and the County LEA's (Marin County Health Services Division) responsibility to provide oversight to ensure these limits are met.

N-14. The current methods of odor control summarized in Mitigation Measure 3.2.9a have been effective in significantly reducing odors at Redwood Landfill, as evidenced by the significant drop in odor complaints registered with the BAAQMD in recent years. The measures outlined in the Odor Impact Minimization Plan (Mitigation Measure 3.2.9b) are intended to be implemented in a coordinated manner and together would reduce odor impacts to a less-than-significant level. Each of these measures are required to be implemented, and are considered of highest priority. The best odor control measures include prompt and proper handling of incoming materials to minimize odors.

N-15. The project applicant, Redwood Landfill, Inc., is not currently permitted to air dry sludge nor does it propose to air dry materials (such as Bay Mud) other than sewage sludge. There is no evidence to suggest that there is a need to dry Bay Mud at Redwood Landfill, and as such, this recommendation seems unrealistic. As discussed on DSEIR page 3.2-44, the air drying of sludge would occur only during dry months (April through July) and only until the time the stockpiled wet sludge in the main sludge impoundment was depleted (approximately two years).

With respect to composting operations, the proposed project already proposes to compost green/yard/wood waste. Both composting and co-composting operations are capable of generating odors. Sensitive receptors are located over 1.5 miles from the site boundaries, which is located outside of the one mile buffer area recommended by the BAAQMD for composting facilities. Again, the best odor control measures include prompt and proper handling of incoming materials to minimize odors. Other measures to reduce potentially significant odors are identified on DSEIR page 3.2-43.

Refer also to Master Response 15 regarding odors.

N-16. Please see the response to Comment Z-4.

N-17. Project impacts on groundwater are discussed in DSEIR Section 3.4, Geology, Soils and Seismicity, and impacts on surface waters are discussed in Section 3.5, Hydrology and Water Quality. The DSEIR identifies mitigation measures to reduce project impacts to a less-than-significant level. Also please refer to Master Response 14 regarding the water quality monitoring programs at the site, which would continue under the project, pursuant to state regulations and the facility's WDRs. Landfill slope stability under seismic and static forces is addressed in Impacts 3.4.1 and 3.4.2, respectively. As discussed in Section 3.4, the applicant's geotechnical analyses and the EIR evaluation took into account the revised LCRS design. Also please refer to Master Response 22. The effectiveness and capacity of the proposed LCRS are discussed in Impacts 3.4.7 and 3.4.8, respectively. Also please refer to Master Response 13. A perimeter levee exists at the site, and the applicant already plans (not as part of the project) to raise and widen portions of the levee so that the entire levee will be at least 9 feet in elevation and 10 feet wide. The elevation and widening of the perimeter levee is a separate issue from the applicant's revised fill sequencing plan. As discussed in Impact 3.4.2, the revised fill sequencing involves staged placement of waste within the permitted disposal area at a rate that allows the underlying Bay Mud to consolidate and gain strength. The purpose of the fill sequencing plan is to ensure that the underlying Bay Mud gains sufficient strength to support the landfill. The analysis of landfill slope stability took into account the revised LCRS. Please also refer to Master Response 7.

N-18. Tundra swans, Canada geese, mallards, bufflehead, scaup, and red-winged blackbirds were observed on the stormwater pond; and black-necked stilts in the leachate pond. These observations are reported in the DSEIR, page 3.3-8. Avocets, great egrets, snowy egrets, tundra swans, shovelers, and black-necked stilts were observed in temporary shallow ponds in the grasslands of the Oxbow area (DSEIR, page 3.3-6).

The project evaluated in the DSEIR consists of elements that have already been implemented, but are not covered under existing permits and have not previously been subject to environmental review under the California Environmental Quality Act (CEQA), and elements proposed by RLI for future implementation. The main stormwater pond and leachate pond would not change and are not issues analyzed in this

DSEIR. However, the current program requires RLI to sample the leachate pond on a quarterly basis prior to use for dust control to insure that levels of chemical constituents are at "clean" standards. Reporting of the leachate sampling is included with the Self Monitoring Program associated with RLI's Waste Discharge Requirements.

N-19. Barn owls likely do use the site; the DSEIR did not attempt to list all species that could be present; rather it focused on those most likely to be exposed to significant environmental impacts.

Impact 3.3.1 acknowledges that the project would result in the loss of degraded California annual (non-native) grassland within the project boundaries, which is used by special-status raptors as foraging habitat, but concludes that the loss of this community does not constitute a significant impact to biotic resources.

N-20. The saltmarsh common yellowthroat is discussed on DSEIR page 3.3-15 and the San Pablo song sparrow is discussed on DSEIR page 3.3-17; both were considered absent from the Landfill and impacts were considered to be less-than-significant.

N-21. No direct impacts from proposed project activities on fish are anticipated. The impact of waters discharged from the Landfill, and measures to avoid degrading surface water quality, are discussed in DSEIR Section 3.5.

N-22. No change in the hours of operation of the compost facility or of the green waste drop-off area are proposed, and the applicant proposes no change in the number or type of lights used for nighttime operations. The DSEIR only analyzes proposed future operational changes and those operations not covered under existing permits.

However, the proposed increase in incoming material may result in more nighttime activity than currently takes place. Mitigation Measure 3.6.2c addresses the possibility of increased use of night lighting at the landfill. While this mitigation measure is intended to reduce potential conflicts with flight operations at Gnoss Field, it will also serve to reduce the potential effects of night lighting on wildlife in Petaluma Marsh.

N-23. We do not know of any survey that has been done of the fill sequencing plans or levees at other bay area landfills. Such a survey is not necessary for evaluating Redwood Landfill's proposals. As discussed under impacts 3.4.1 and 3.4.2, the seismic and static stability analyses conducted by Redwood Landfill's geotechnical engineers considered site-specific conditions and materials in evaluating landfill stability. Subsurface materials at the landfill include old levees, new levees, refuse/cover soil, and Bay Mud, and the material strengths of the fill and soils at the site are considered critical factors in determining landfill stability and evaluating potential settlement issues. The analyses conducted by GeoSyntec (1997b) are summarized in the DSEIR. For more information, the County's geotechnical consultants prepared geotechnical memoranda on the proposed modified landfill geometry, the proposed LCRS, and several other project elements.

These are included with series of technical memos that have been bound together and are available for review at the Marin County Community Development Agency. Regarding the perimeter levee, please refer to the response to Comment N-17.

N-24. Please refer to Master Response 4.

N-25. The seismic and static stability analyses described under Impacts 3.4.1 and 3.4.2, respectively, indicate that the landfill would not collapse. Therefore the collapse-related impacts raised in this comment would not occur. Regarding the construction of a perimeter levee, please refer to the response to comment N-26.

N-26. Impact 3.4.2 considers the effects of static forces (i.e., gravity and settlement) on landfill stability with project implementation – including but not limited to construction of the revised LCRS. A perimeter levee exists at the site, and the applicant already plans (not as part of the project) to raise and widen portions of the levee so that the entire levee will be at least 9 feet in elevation and 10 feet wide. The elevation and widening of the perimeter levee is a separate issue from the applicant's revised fill sequencing plan. As discussed in Impact 3.4.2, the revised fill sequencing involves staged placement of waste within the permitted disposal area at a rate that allows the underlying Bay Mud to consolidate and gain strength. The purpose of the fill sequencing plan is to ensure that the underlying Bay Mud gains sufficient strength to support the landfill. Please also refer to Master Response 7.

N-27. As discussed under Impact 3.4.4, RLI conducted an assessment of potential soil loss for the design slope and inclination which shows that erosion during a storm would be within allowable limits. Maintaining and updating of the facility's storm water pollution prevention program (SWPPP) is consistent with the facility's NPDES General Industrial Permit Storm Water Permit, which, in addition to requiring a SWPPP, also requires the facility to implement best available technology (BAT) to control pollutant discharges, among other provisions. Note also that key erosion-control features identified in the SWPPP are outlined in DSEIR Mitigation Measures 3.4.4b and 3.4.4c and thus will be part of the facility's mitigation monitoring and reporting program (MMRP).

N-28. The comment is correct that, as stated in the DSEIR (page 3.5-5), RLI's 2000 SWPPP indicated that Area G, which had been uses for sludge storage, was available for contact water storage (not for non-contact storm water). Since publication of the DSEIR, RLI has provided the County with an updated SWPPP, dated July 16, 2003, which indicates that a 0.5-acre storm water impoundment remains in the area adjacent to Area G. With the withdrawal of the proposal to use Area G as a Class II unit, RLI proposes to use Area G as a Class III waste unit. The lateral expansion of the landfill disposal footprint to include Area G as a Class III unit was evaluated in the 1994 FEIR. Please also refer to Master Response 6. In response to the clarification in the 2003 SWPPP about the remaining storm water impoundment adjacent to Area G, the last three sentences of the second paragraph on DSEIR page 3.5-5 are deleted and the third and fourth sentences

(beginning on line 5) of the first paragraph on DSEIR page 3.5-5 are revised as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> …in the southern part of the site, and a temporary ~~1.5~~ 0.5-acre storm water collection pond in Area G, in the west-central part of the facility. (This area will eventually be developed as part of ~~Because this 1.5-acre pond is now part of Area G, it will not be available for storm water storage once Area G is developed as~~ a waste management unit.) The landfill's permanent and…

N-29. At least three groundwater wells are needed to determine groundwater flow direction. The peizometric head (level of the water above sea level) in each well is measured, and it is assumed that flow is in the direction from the highest measured level to the lowest. However, as discussed in the DSEIR, groundwater flow beneath and in the vicinity of the site is complex and influenced by multiple factors. Please refer to DSEIR pages 3.4-4 and 3.4-5. Regarding the five-foot separation to groundwater, please refer to Master Response 1. Regarding groundwater and surface water monitoring, please refer to Master Response 14. The comment is correct that Bay Mud is considered a low-permeability soil, as described in Section 3.4 of the DSEIR. Regarding the effectiveness of the LCRS in preventing the offsite discharge of leachate, please refer to Master Response 13.

N-30. Impact 3.4.7 addresses the potential for leachate to migrate off-site and the proposed leachate collection and removal system. Please also refer to Master Response 13. The stability of the landfill, assuming the proposed revised LCRS, is evaluated under impacts 3.4.1 and 3.4.2. Please also refer to Master Response 22. Regarding the perimeter levee, please refer to the response to comment N-26.

N-31. Please note that, as discussed in the DSEIR, the site has an 11-acre leachate impoundment, to which contact water from the working face and composting operations and leachate from the LCRS is directed, and an 18-acre storm water impoundment, to which non-contact storm water runoff is directed. The two types of impoundments are not interchangeable. (Refer also to Impact 3.5.3.) Impact 3.4.8 addresses leachate capacity at the site. As stated on page 3.4-35, additional leachate impoundments that the applicant has suggested to be built as a modification to their operations (RLI, 2000) have not been yet been constructed. See Master Response 13 for further discussion of leachate generation rates and storage facility capacity.

As stated in the DSEIR (page 3.4-36), the applicant has not provided an estimate of the amount of quench water to be used for the proposed composting operations. Based on the applicant's reported current use of quench water (none) and the applicant's estimated quench water use presented in its 1996 composting permit application, the DSEIR discusses (on page 3.4-36) a possible range of from 0 to 49.6 million gallons of leachate per year that could be used as composting quench water.

N-32. Materials that meet the specified criteria for cohesion and adhesion are currently available. Please note that the final cover would not be placed until the landfill is

inactive, having reached the permitted fill height, as part of landfill closure. Since this would not occur for a number of decades (see Master Response 21 regarding site life), the landfill operator would not necessarily have determined the brand or manufacturer of the material they will use at that future time. When the cover is placed, the landfill operator will be responsible for ensuring that the material used meets the specified criteria, and that required quality assurance/quality control standards for final cover are met. It is not clear what is meant by the reference to a "lack of a continuous seal to bind the cover, sides and base of the landfill." Typically the final cover is placed at one time as part of landfill closure.

N-33. A perimeter levee constructed to 9 feet MSL, which is already planned (not as part of this project), would protect areas outside the landfill footprint from the 100-year flood, as discussed under Impact 3.5.6. Please also refer to the response to comment N-17.

N-34. As stated in the discussion under Impact 3.4.5, according to RLI's geotechnical engineers (GeoSyntec, 1998), the permanent and major temporary diversion and drainage facilities for the proposed project would be designed to accommodate flows generated by the 100-year 24-hour storm event. This is consistent with CCR Title 27 requirements for Class III landfills, but does not meet regulatory standards for a Class II landfill. Since publication of the DSEIR, RLI has withdrawn the proposal to reclassify Area G as a Class II waste unit (please refer to Master Response 6). Therefore Redwood Landfill would be operated entirely as a Class III landfill (except for the Class II leachate impoundment which is not subject to the same landfill drainage requirements). Measure 3.4.5 in the FEIR has been revised to reflect this change and ensure that the drainage features meet Title 27 standards.

N-35. Please refer to the response to comment W-7.

N-36. As shown in Table 2-1 in the DSEIR, RLI has a Quarry Permit for soil borrow operations on the hillside between the landfill and U.S. 101. The permit allows RLI to remove the entire hillside. The permit was issued in 1976 and is not affected by the currently proposed project. The project evaluated in the DSEIR consists of elements proposed by RLI for future implementation and elements that have already been implemented, but are not covered under existing permits and have not previously been subject to environmental review under the California Environmental Quality Act (CEQA).

Title 27 CCR Section 20690 requires landfill operators to use earthen material over the entire working face at the end of any operating day preceding a period of time greater than 24 hours when the facility is closed, unless procedures as required by the EA [enforcement agency] are in place to ensure that [other Title 27 requirements] are met. The County's existing conditions for the use of ADC specify that the operator shall not use ADC, or shall cover it with a geosynthetic blanket after application at the working face, on any [day] preceding closed days if unattended (Janofsky, 1996a,b). To date, RLI

has avoided removing the remaining portion of the hillside, in order to screen a portion of their operations and continually seeks off-site soils in order to preserve the remaining hillside, as stated in comment letter K, comment K-16. RLI does truck-in various materials for use as daily cover, including clean soil, petroleum-contaminated soil that meets Regional Water Quality Control Board acceptance criteria, and various materials that are used as Alternative Daily Cover (ADC), including dredge spoils. Trucking-in Bay Mud for use as cover material is not current practice, is not part of the project, nor is it considered in the alternatives. Presumably, trucking-in Bay Mud would involve excavating this material, which might have serious environmental consequences, as well as transporting it, which would also have environmental consequences. Furthermore, the moisture content and physical properties of Bay Mud – it is not easily spread – may render it a less-than-ideal cover material. To acknowledge that using a geosynthetic cover over ADC is an alternative to using soil, while continuing to require that ADC without such a cover cannot be used preceding any day the landfill is closed, consistent with the County's existing conditions for the use of ADC, Mitigation Measure 3.5.10b is revised as follows:

> **Mitigation Measure 3.5.10b:** The operator shall not use ADC, or shall cover it with a geosynthetic blanket after application at the working face, ~~Dirt shall continue to be used as the cover material~~ on any day preceding closed days (e.g., Saturdays); ADC may continue to be used as the daily cover the rest of the week (i.e., Monday through Friday; the landfill is closed on Sunday).

N-37. (Existing bird control programs) Although Mitigation Measure 3.6.2d does propose to adjust its existing bird control program as necessary for aircraft safety, such changes do not include expanding controls beyond the boundaries of the Landfill.

N-38. Please refer to Master Responses 8. 9, and 19.

N-39. The project's potential conflicts with the Countywide Integrated Waste Management Plan Source Reduction and Recycling Element are discussed in impacts 3.6.4, 3.6.5, and 3.6.6 in the DSEIR.

N-40. Table 2-2 in the DSEIR presents the maximum average and peak daily volumes of materials for different purposes that the applicant is proposing to accept. Please refer also to Master Response 17 for changes in the proposed project. DSEIR Table 2-2 shows the maximum amount of material that would be received each day for composting, including greenwaste, woodwaste, food waste, and biosolids (though some greenwaste and woodwaste may be used as Alternative Daily Cover); and also including materials for recycling. The actual amount of materials received each day need not be predicted in the EIR, since it analyzes the impacts of operations at full capacity under the requested permit modifications. Please refer to FEIR Chapter 2, Project Description, for the revised Table 2-2.

N-41. Siting and developing a new landfill involves a lengthy, costly public process. Typically, this process includes various forums for public input; a siting study to identify and preliminarily evaluate potential sites; and costs of permitting and developing a selected site. If no suitable site can be found and developed within the County, it may be necessary to develop additional transfer capacity, which itself requires a lengthy public process. A mitigation fee could be used to offset the public costs of these processes. It is also possible that mitigation fees could be used to develop a publicly owned landfill.

N-42. Please refer to Master Response 21 for revised site life calculations, both for the existing permitted landfill and for the proposed project.

N-43. It is beyond the scope of the EIR to predict how much of the incoming waste stream could be recovered through the programs outlined in the Mitigated Alternative. However, several of the programs would target portions of the waste stream that currently are not recovered at the landfill, or that are recovered at low rates, including construction and demolition debris and reusable items.

N-44. CEQA requires an EIR to include a range of reasonable alternatives. Please see the introduction to Chapter 5, Alternatives, for a more complete discussion of CEQA requirements for selection of alternatives, and the selection process for the alternatives included in the DSEIR.

Comment Letter O

MARIN CONSERVATION LEAGUE

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August 11, 2003

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COUNTY OF MARIN

Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael CA 94903

Re: Redwood Landfill Solid Waste Facilities Permit Revision
Draft Subsequent EIR
SCH No. 1991033042

Dear Sir or Madam:

The Marin Conservation League (MCL) has reviewed the above-referenced EIR that evaluates the proposed major increase in operating levels of the Redwood Landfill. MCL believes that a properly designed and operated landfill plays an essential role in encouraging conservation of resources while minimizing the impacts on the environment. The community's goals in this regard are documented in Section 3.6 of the EIR.

MCL believes that the community goals are best served by implementing the Mitigated Alternative with the additional condition that the capacity of the landfill be limited to about 25 million cubic yards.[1] MCL would support activities relating to this modified alternative. We have arrived at this conclusion because this approach: O-1

1. Encourages energy conservation
2. Encourages recycling of waste resources
3. Reduces impacts resulting from landfill operations
4. Reduces the risks associated with the location of the landfill
5. Extends the life of the existing landfill

The public benefit resulting from implementing these elements will flow to the community for decades. The value of the first two elements is well documented and is not discussed further in our comments.

Throughout the EIR, comments are made that negative impacts can be minimized by landfill design and operation. The fact remains that, in every case, if the O-2

[1] This condition is described in Section 5.2.3, Reduced Scale Alternative.

A nonprofit corporation founded in 1934 to preserve, protect and enhance the natural assets of Marin County for all people

operating level of the landfill is limited, the impacts also are limited. The EIR states that many of the identified impacts could be mitigated by designs and operations that have yet to be designed and proven. The typical scenario in such cases is that data are collected on actual operations, designs are formulated in response to those data, approvals are obtained from the proper agency, the designs are implemented, and finally the designs are monitored. The Mitigation Monitoring and Report Program within the EIR illustrates the many factors that must be controlled to assure that the impacts are controlled to a level that is not significant. Because of the highly variable nature of landfill operations, one can realistically assume that some of these factors will fail or operate below expectations. For this reason we support limiting the quantity of waste accepted to an increase of 15% above the current permit, as well as limiting the type of refuse accepted by the landfill, by avoiding any Class II landfill cells. See the Discussion Section for additional comments. O-2

The design and location of the existing landfill do not meet current standards. The two most significant defects are the fact that the landfill rests directly on bay mud without the required five foot separation between landfill material and ground water, and the fact that the site is surrounded by a natural water course that flows into the Petaluma River and subsequently into San Francisco Bay. We believe that these characteristics dictate that a conservative approach be used in the design of the side slopes of the landfill, the leachate collection system, and the levees surrounding the landfill. For this reason, we support limiting the landfill capacity to 25 million cubic yards. This moderate expansion will serve to extend the life of the landfill. In any expansion, consideration should be given to requiring additional benches with the 3:1 slope, as this configuration also reduces surface runoff problems. See the Discussion Section for additional comments. O-3

DISCUSSION SECTION

LIMITING DAILY ACCEPTANCE OF WASTE

The following negative impacts can be partially mitigated by limiting daily acceptance of waste.

- Dust
- Landfill gases
- Reactive gases
- Diesel gases and particulates
- Freeway traffic
- Leachate generation
- Odor

O-4

By limiting daily operations, the mitigation features and their operation will be more effective and reliable in reducing the significance of the impacts while tolerating the variability of the landfill operation. In contrast, the Proposed Project might be described as racing a 1958 automobile down the highway at 110 mph, twice its original design. If any little thing goes wrong there is sure to be a major disaster. Using such an analogy, it would be prudent public policy to operate this device at 63 mph.

Comment Letter O

LIMITING CAPCITY OF LANDFILL TO 25 MILLION CUBIC YARDS

The Proposed Project advocates doubling the capacity of the landfill by making the sides of the fill steeper and by filling in areas that are currently being used for ponding. The increase in slope, 3:1 from 4:1, and reducing the number of benches, changes the profile of the landfill sides substantially. Figure 2-4, Page 2-14 does not adequately allow the reader to appreciate the major change proposed. By taking a section "A" – "A" through the length of the landfill, the side slopes in Figure 2-4 are difficult to discern. We have reconstructed a comparison slope diagram, Diagram A attached, using the elevation lines shown in Figures 2-5 and 2-6, to show the sideslopes in the vicinity of the west side of Area G. The diagram illustrates the significant additional waste material at the top of the side slope, applying pressure on this side slope. O-5

The EIS states that the design was run through a computer model, with a resulting safety factor of 1.5. The details of this computer model were not given in the EIS. There is also no explanation as to why the previous landfill designers arrived at the slope and bench combination that has served well in the past. There are many areas of concern regarding this computer model:

1. The Redwood Landfill is located directly on bay mud. It is highly unlikely that any landfills in recent years have been built with such conditions. Even if the computer model had a "bay mud base factor" it is unlikely that it has been verified in practice. A computer model of a highly variable "system" such as the Redwood Landfill must be calibrated. Until such calibration is completed, the prudent designer would work with a higher safety factor to compensate for the unknowns. O-6
2. The added height of the landfill at the top of the side slopes is of particular concern. The EIS states that the bay mud has low hydraulic conductivity so that little groundwater and leachate passes through the mud. This suggests that the combined liquids at the base of the fill will accumulate, resulting in high sustained moisture levels. This in turn creates a condition that would permit the base of the fill to slip outward, causing the side slope to fail.
3. RLI chose to change the design of the LCRS contrary to the 1995 SWFP[2]. The LCRS designed by the permit incorporated an integral perimeter levy while the LCRS built by RLI does not include the perimeter levy. Based on the comments in the EIS, it is clear that the perimeter levy serves to help prevent outward movement of the base of the side slope.[3] Does the computer model take into account the effects of the permitted LCRS vs. the RLI LCRS? O-7
4. RLI recently conducted tests and got approval to use a variety of ADC materials including:

   air-dried sludge
   wet sludge mixed with soil
   wet sludge mixed with shredded green waste
   green waste/wood waste
   compost

O-8

[2] See Page 2-23 of the EIS
[3] Mitigation Measure 3.4.2c suggests the use of a berm or piles at the toe of the slope to perform the function that could be performed by a properly placed perimeter levy.

Comment Letter O

Each of these Alternative Daily Cover materials will have unique shear strength and compressive properties. Their reaction within the landfill will also depend on other variables such a rain. Were all the critical properties of these newly approved ADC materials correctly programmed into the computer model? If not it would be prudent to work with a greater safety factor. O-8

OTHER COMMENTS:

1. One unique characteristic of the project landfill is that it never dries out. According to the EIS, the leachate in normal landfills eventually reaches equilibrium and flows diminish. At this project site, if the LCRS ever stops functioning, ground water will again mix with the waste material creating a stream of leachate that would contaminate the surrounding area. This could occur after final closure of the site. Thus it is essential that the LCRS be maintained in perpetuity; including cleaning or replacing the gravel filter bed and piping and maintaining the leachate ponds. O-9
2. The LCRS proposed by RLI combines groundwater with leachate and mixes the two components. This results in higher flows of diluted leachate having to be processed by the leachate ponding system and by the vaporator. Flows will be highest during seasonal rains. Because of the critical nature of the Leachate Management Plan described in Mitigation Measure 3.4.8c, we recommend that only a conditional permit be issued until the LCRS has proven to be functional over one season. It appears that the use of the vaporator to process dilute leachate increases the consumption of landfill gas to operate the vaporator. This reduces the amount of gas that could otherwise be used for electric power generation. O-10
3. The EIR does not describe the interface between the proposed Cell G and existing Cells D & F. Will there be a side slope barrier between the cells as is proposed for the outer slopes of G? Will there by a LCRS drain pipe located at the bottom of the common lamination between cells? Will the leachate from Cell G get added to the other cells flows? O-11
4. Regarding Mitigation Measure 3.2.2e, consideration should be given to require all company diesels be retrofitted with particulate traps as soon as feasible. This should apply to all Waste Management operations using the landfill. Also there should be a mitigation fee for unmodified diesel equipment by other haulers, similar to the fee for out-of-county haulers. This would provide an incentive for the haulers to upgrade their equipment. Note that if this is done, air quality is improved throughout the entire area, not just at the landfill site. O-12
5. Regarding Mitigation Measures 3.2.9, Odor Management, the reduction in complaints may be a result of the lesser amounts of sludge deposited at the site. Monitoring for odors should be done with permanently installed instruments, not by County inspectors. It is well known that in the past the inspector would arrive some time after the complaint was made, allowing for changing wind conditions to occur. Lastly, the mitigation measure 3.2.9b calls only for an odor control management system that "minimizes odors" without any quantifiable standard. It may turn out that the minimum order achieved is not acceptable to the growing number of receptors now located in northern Novato. A measurable standard for odor control should be included in the mitigation measure. O-13

Comment Letter O

6. Regarding Mitigation Measure 3.2.10c, the proposal to buy emission credits is unacceptable. There should be no allowances for additional sewage sludge handling until the odor control is fully acceptable to the community. O-14
7. Regarding Impact 3.4.1, the EIR states that the side slopes are now designed in accordance with State regulations, yet the direct contact between groundwater and leachate is not in accordance with State standards. The side slope design should reflect all of the unique features of this landfill. The EIR states that the seismic deformations were checked out with the Newmark Analysis Computer Model. The concerns about this model are the same as mentioned above. Does it take into account the many variables of this unique landfill and consider the great potential damage if even a small failure occurs? O-15
8. Regarding Impacts 3.4.7 and 3.4.8 relating to leachate generation, ponding and contingency plans, there appear to be many factors that are conflicting or were not provided to the authors of the EIR. The resulting clarification of these factors and the details of the proposed plans in response to these impacts should be evaluated in this EIR. We recommend that the Final EIR resolve these issues and evaluate them fully. O-16
9. The last line on Page 3.4-33 states that the leachate generation will eventually drop to zero. This is not true if ground water is allowed to flow back under the landfill, which would happen if the ECRS ever becomes blocked or the pumps and leachate ponds are abandoned. O-17
10. Regarding Mitigation Measure 3.5.5a, the testing for clean leachate should be done for each period of significant operation changes, such as type of wastes accepted, rainfall, location of filling operations, etc. Testing by the calendar may not catch shifts in leachate properties soon enough. O-18
11. Regarding Mitigation Measure 3.6.4b, the EIR should confirm that such mitigation fees are legal and state what range of fees could be expected. The EIR should also state the history and projections for the annual share of Marin's waste so that estimates of revenue could be made. If the Marin Resource Recovery operation hauls out-of-county, would retaliatory fees be likely from the landfill used by this operation? O-19
12. Regarding Impact 3.6.7, the EIR should act as a wakeup call for local officials that a replacement landfill needs to be planned for in the near future. The requirements that the landfill should be located away from wetlands and be close to Highway 101 does not leave many Marin options. It is interesting to note that there may be changes in ownership of the Silviera ranch in the foreseeable future. O-20
13. A compatible use for the landfill site may well be wind power. One objection to wind power operations is the noise from the propellers. The remote location of this property may minimize the impact of this factor. O-21
14. Regarding traffic impacts, the Project results in a doubling of traffic. An evaluation should be made of the impact on safety resulting from trucks crossing over the rail right-of way to the site. The SMART commuter rail proposal would have trains passing the crossing at 75 MPH at 15 minute intervals (NB and SB) with hundreds of passengers on board. The EIR data seem to suggest that trucks will be on the crossing less than every two minutes. SMART must also take this into account in their AA/EIS. O-22
15. Table 3.10-4 should be restated using passenger car equivalents per mile per lane to properly reflect the impact of the additional truck traffic on lane loading. Other factors that influence the safety impacts of this truck traffic are: O-23

a. Mud from the haul truck tires will be deposited on the freeway, causing it to be slick during rain conditions resulting in hazardous skids by autos slowing for trucks entering or exiting the interchange. O-24

b. The standard Caltrans acceleration and deceleration lanes may not be adequate for heavily loaded, underpowered haul trucks, causing autos to have to reduce speed to avoid the trucks. A LOS D, this can result in a wave of stoppage that propagates backward through the traffic lane, increasing chances for rear-end collisions. This factor is worsened by the blind spot resulting from the vertical curve at the intersection and the down slope of the highway at this location. O-25

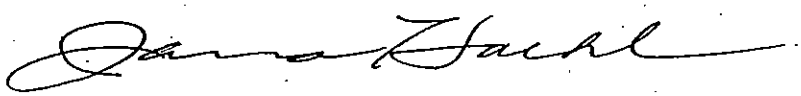
16. Consideration should be given to installing metering lights at each on ramp to prevent clusters of haul trucks from entering the highway at one time. O-26

17. The EIR should address how any change in the landfill profile would impact future uses of the site after it is completely closed. Does the introduction of the Class II cell preclude some future recreational uses? O-27

18. The EIR should address the potential growth-inducing aspects resulting of the leveling of the hill that is being used as a borrow site. How much of the hill will remain when the site is closed? O-28

Thank you for allowing us to comment on this EIR.

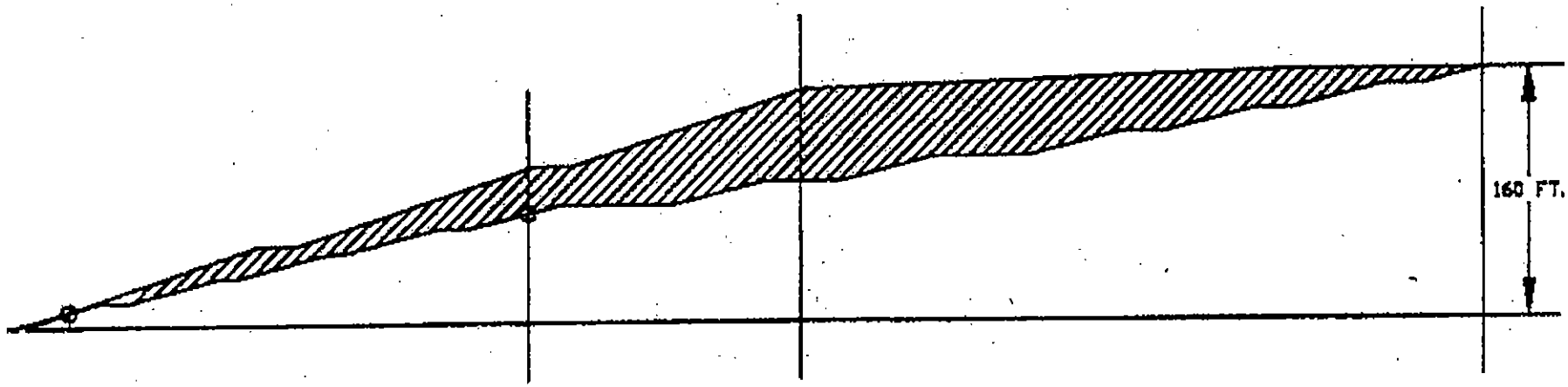
Sincerely,



Jana Haehl
President, Marin Conservation League

Encl: Diagram A – Redwood Landfill Profile

Comment Letter O



REDWOOD LANDFILL PROFILE

PROPOSED COUNTOURS ON TOP OF PERMITTED COUNTOURS

DIAGRAM A

DWN 8/8/03

O. MARIN CONSERVATION LEAGUE (Letter Dated August 11, 2003)

O-1. Comment acknowledged. Regarding new information on site capacity not available at the time of publication of the DSEIR, please refer to Master Response 12.

O-2. Comment noted. Regarding changes to the proposal to develop Area G of the landfill not as a Class II, but as a Class III waste unit, please see Master Response 6.

O-3. Please refer to Master Response 10 regarding the location of the facility in a wetland. Regarding the lack of 5-foot separation between the base of the landfill and the highest groundwater elevation, please refer to Master Response 1.

O-4. Both the Mitigated Alternative and the Reduced Alternative evaluate the relative impacts of a lower level of operations than is being proposed by the applicant. The No Project Alternative and the Status Quo Alternative both evaluate the relative effect of no increase in the current rate of operations.

O-5. The EIR preparers appreciate the superior understanding provided by the commenter's drawing.

O-6. Please refer to Master Response 22 regarding landfill slope stability. Please refer to Master Response 7 regarding Bay Mud strength and settlement. The factor of safety, as discussed in Section 3.4 of the DSEIR (pages 3.4-8 - 3.410), is a means to express the potential risk of a slope to fail; it is determined by dividing the forces that resist slope failure (i.e. shear strength) by those that drive the slope to fail (i.e. weight). If the resisting forces are greater, the factor of safety is greater than 1 and the slope is considered stable. Significance criteria used in the impact analysis (page 3.4-17) also indicate that use of a factor of safety of at least 1.5 is consistent CCR Title 27, §21750(f) requirements for critical slopes under dynamic conditions. As discussed, the factor of safety of 1.5 used as a minimum in the analysis of static slope stability for the final grading configuration is the factor of safety that is currently accepted as the industry standard for landfill design by the engineering industry.

O-7. The stability of the landfill, assuming the proposed revised LCRS, is evaluated under impacts 3.4.1 and 3.4.2. As discussed, the applicant's geotechnical analysis took into account the existing perimeter levee conditions. Please also refer to Master Response 22.

O-8. The stability analyses and sheer strengths used in the analyses assumed the landfill was composed of heterogeneous, low-strength materials; the use of ADC would not change this assumption.

O-9. Mitigation Measure 3.4.8c, page 3.4-37, requires the applicant to provide an updated Leachate Management Plan that will describe the practices necessary to keep the LCRS functioning throughout its life. Please also see Master Response 13. CCR Title 27 requires landfill facilities to meet minimum closure and post-closure maintenance

standards to protect the environment after the landfill closes, and to establish an irrevocable fund to provide financial assurance for closure activities and post-closure maintenance. In addition to requiring landfill operators to meet specified standards for final cover and post-closure surveys and maintenance, Title 27 requires operators to develop and maintain post-closure emergency response plans that are reviewed for adequacy by the RWQCB in consultation with the LEA.

O-10. The comment is correct that the perimeter LCRS creates a gradient toward the trench, so that it draws some groundwater from outside the landfill as well as capturing leachate from the landfill. DSEIR Mitigation Measure 3.4.8c requires RLI to update their Leachate Management Plan to demonstrate that adequate conveyance and storage capacity exists, including during the wettest months of the year. Please also refer to Master Response 13, regarding the effectiveness and capacity of the LCRS, and recent changes to the proposed design of the LCRS. Although SWFPs are not issued as temporary or provisional permits, as this comment apparently recommends, SWFPs typically include conditions for use, as does RLI's current SWFP. The LEA and the CIWMB have broad regulatory authority over landfill operations, including authority to undertake several types of enforcement actions; please refer to Master Response 18. The facility's WDRs also include specifications and prohibitions.

With respect to the use of landfill gas for the operation of the vaporator instead of for electric power generation, note that the construction and use of a vaporator to destroy leachate is one of the project components, as described in DSEIR Chapter 2, Project Description. As such, it was evaluated in the DSEIR (see, e.g., Impact 3.2.5 and 3.2.11 in Section 3.2, Air Quality). It is also noted that use of the vaporator as a component of the landfill's leachate collection and removal system helps ensure adequate leachate capacity, as discussed in DSEIR Section 3.4. Energy-related impacts of the project are evaluated under Impact 3.9.3 of the DSEIR. Mitigation Measure 3.9.3b requires RLI to install and commence operation of the internal combustion generators for which RLI had applied to the BAAQMD for Authority to Construct, as soon as possible. In addition, use of LFG to generator energy is a preferred component of the Mitigated Alternative (refer to Master Response 20. However, in the interim, RLI's Authority to Construct, which is a temporary permit issued by BAAQMD, has expired without the generators having been constructed.

O-11. Questions raised in this comment pertain to the use of Area G as Class II landfill, as originally proposed, adjacent to the Class III landfill. However, since publication of the DSEIR the applicant has withdrawn the proposal to reclassify Area G as a Class II cell; please refer to Master Response 6.

O-12. Comment noted. DSEIR Mitigation Measures 3.2.2a through 3.2.2e are measures intended to address the significant project-related net increase in NO_x emissions associated with on-road vehicle and off-road equipment emissions. However, some of the measures listed would also reduce diesel particulate matter emissions, as

acknowledged in Mitigation Measures 3.2.8c and 3.2.8d. Measures 3.2.8c is modified in this FEIR; refer to the text of FEIR Section 3.2 or the response to comment K-82. Refer also to the text of the FEIR for revisions to Mitigation Measures 3.2.2b through 3.2.2e. DSEIR Mitigation Measure 3.2.2e (now referred to as Mitigation Measure 3.2.2d) has been modified to reflect compliance with CARB's Solid Waste Collection Fleet Rule. This rule, among others that address diesel engines and fuel, will significantly reduce diesel particulate matter and NO_x emissions between 2004 and 2011.

O-13. Please refer to Master Response 15.

O-14. The comment is unclear as to why Mitigation Measure 3.2.10c is unacceptable. It is expected that the response to comment J-7 may address the concerns of the commenter. Refer to response to comment N-13 regarding currently permitted and proposed permitted biosolids quantities. Odor impacts are addressed under Impact 3.2.9 of the DSEIR and in Master Response 15.

O-15. Redwood Landfill was an existing landfill when federal Subtitle D standards and current state liner requirements for new landfills were adopted. Landfills that were existing at the time the standards were adopted are exempt from some requirements imposed on new landfills as long as they meet performance standards – i.e., the LCRS must be protective of the environment and prevent the offsite discharge of leachate. The fact that refuse at Redwood Landfill is placed directly on Bay Mud is described in DSEIR Chapter 2, Project Description, and taken into account in the impact analyses, including the discussion of the proposed LCRS in Section 3.4. Regarding the lack of a 5-foot separation between the base the landfill and groundwater, please refer to Master Response 1. Regarding the effectiveness of the LCRS, please also refer to Master Response 13. As discussed under Impact 3.4.1, the seismic deformation analysis conducted to evaluate landfill stability considered both the lined (Area G) and unlined areas of the landfill as well as the landfill's location on Bay Mud.

O-16. Since publication of the DSEIR, the applicant has provided reports of recent hydrologic studies to the RWQCB and has conducted additional studies regarding leachate generation; please refer to Master Response 13.

O-17. Regarding the effectiveness of the LCRS please refer to Master Response 13.

O-18. Regarding the timing of testing of leachate for use as dust control and quench water, the commenter states the "testing for clean leachate should be performed during each period of significant operation changes, such as type of wastes accepted, rainfall, location of filling operations, etc." It is not apparent why the location of filling operations (apparently referring to the cell of the landfill currently being filled) would influence the quality of the leachate in the pond, since all leachate collected in the LCRS and all contact water from the working face is directed to the leachate pond. In addition, the landfill would be permitted to accept up to its daily permit limit of any type of waste it is

permitted to receive on any given day. Therefore it is not apparent that a "significant change" in the type of waste received would occur. As discussed in the DSEIR, under Mitigation Measure 3.5.5a the testing of leachate to be used for quench water will be consistent with the existing, RWQCB-approved protocol for testing leachate used for dust control. At a minimum, this quarterly testing of the leachate prior to use is the most appropriate since all leachate placed in the 11-acre pond during the times the commenter might identify as a period of "significant operation change" will have mixed together and the results of the tests would provide a better indication of the leachate that would be used as quench water.

O-19. Regarding a waste import mitigation fee, please refer to Master Response 8. Regarding any retaliatory fees, some other Bay Area jurisdictions have already instituted some form of mitigation fee, either for all waste disposal or for waste imports. However, any such future action is considered speculative and so is not considered in the EIR.

O-20. Please refer to Master Response 21 regarding revised site life calculations.

O-21. It is likely that a more detailed proposal would be required for development of a wind power generation facility at the site and that such a proposal would be subject to additional environmental review under CEQA.

O-22. Review of the web site (www.sonomamarintrain.org) indicates that the SMART commuter rail proposal is currently under review, with no timeline established for possible implementation. The formal public scoping process for the required environmental review ended October 2003. The proposal's multi-step process is subject to funding constraints, including potential shortfalls in money available from the State. For purposes of the Redwood Landfill FEIR, the SMART proposal is not considered a reasonably foreseeable project that warrants inclusion in the impact evaluation.

Any future SMART rail service that is contemplated on the rail right-of-way is a separate project from the proposed revisions to the Solid Waste Facilities Permit (SWFP) for the Redwood Landfill, and therefore would undergo extensive analysis in its own EIR. That EIR would include the revised Redwood Landfill SWFP as a baseline or approved project. It is reasonable to expect that the SMART EIR will evaluate potential safety impacts at each of the rail crossings, including the crossing of private Sanitary Landfill Road, and will identify appropriate measures to ensure safe crossing (e.g., warning lights and signs, and crossing gates).

O-23. As described on page 3.10-4 of the DSEIR, analysis methodologies in the 2000 Highway Capacity Manual prescribe that evaluation of traffic operating conditions (level of service) on expressway lanes (or on ramps) be based on comparing the density of traffic volumes to the capacity of the expressway (or ramp junction). Density is expressed in terms of passenger car equivalents per mile per lane. The impact of project-generated traffic (trucks and non-trucks) on LOS conditions on study locations is accurately

reflected as the change in density presented in Table 3.10-6, on page 3.10-10 of the DSEIR. The manner in which the DSEIR presented project vehicle trip generation (in Table 3.10-4) and changes in density caused by project-generated traffic (in Table 3.10-6) is standard practice for traffic analyses.

O-24. Mitigation Measures 3.2.1b (periodic cleaning of paved roads) and 3.2.4 (daily sweeping of all paved access roads and parking areas with water sweepers), identified in the Air Quality section of the DSEIR, address the issue raised by the commenter. While the intent of these air quality mitigation measures is to minimize fugitive dust generated by project activities, the cleaning of paved roads would have the added benefit of minimizing mud on vehicle tires.

O-25. The grade-separated access bridge at Redwood Landfill, the design of which would include the acceleration and deceleration lanes to which this comment refers, was evaluated in a separate EIR (Marin County, 2002). Please also refer to Master Response 5.

O-26. As stated in DSEIR Chapter 2, Project Description (p. 2-5), the interim access road and bridge was evaluated in a separate EIR (Marin County 2002) and is not an element of the current project evaluated in this EIR The impact analysis presented in the DSEIR assumes that the new access road and bridge would be constructed prior to implementation of the project evaluated in this EIR. (This also is stated on DSEIR p. 3.10-3.) As discussed in Section 3.10, project impacts on U.S. 101 would be less than significant. The analysis presented in Section 3.10 does not assume the use of metering lights. According to Caltrans, the Caltrans analysis of the interim access road project indicated that metering lights were not warranted at this time (Lee, 2005). Construction of the access bridge requires an encroachment permit from Caltrans that would not be issued unless Caltrans approves the design. Please also refer to Master Response 5.

O-27. As stated in the facility's Preliminary Post-closure Maintenance Plan, post-closure use of the site will be non-irrigated open space. This should not be affected by the change in the landfill profile. Please note that the applicant has revised their proposal to eliminate development of Area G of the landfill as a Class II cell; see Master Response 6.

O-28. Please refer to the response to comment N-36 regarding quarrying of the hill to the west of the landfill site.

Comment Letter P

MARIN CONSERVATION LEAGUE

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October 14, 2003

Mr. Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael CA 94903

RECEIVED
2003 OCT 14 A 11:57
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

SUPPLEMENTARY LETTER

RE: Redwood Landfill Solid Waste Facilities Permit Draft Subsequent EIR, SCH No. 1991033042

Dear Mr. Haddad:

The Marin Conservation League (MCL) has reviewed the Redwood Landfill draft SEIR that evaluates the proposed increase in operating levels of that facility. Although the information provided in the document is helpful in evaluating the impacts of the proposal, some additional information is needed. Because this is a Subsequent EIR, the 1994 EIR is incorporated by reference; however, not all the information provided by the 1994 document is updated in the current draft. **P-1**

Information that would be helpful would include: the current total waste output of the county and where it is sent; the amount of imported waste, its composition and where it comes from; and the current number of vehicles hauling the imported waste.

Apparently the applicant has dropped the request to accept Class II waste. Is the amount of contaminated soils that will not be included in the waste stream going to be dropped from the requested increase in quantity of fill, or will another type of waste replace it? If so, what is the proposed composition of waste to replace the Class II? **P-2**

It is shocking that the anticipated date of closure due to meeting the landfill capacity is projected to be 2016 when the 1994 EIR was projecting closure with the expansion requested at that time to be 2040. Even with the currently requested expansion, the site life is only to 2024. It is critical that the county begin the process of identifying a new landfill site. **P-3**

The chapter discussing noise and noise impacts (3.7) discusses sensitive receptors only in human terms. The landfill is in an area that is rich in wildlife, particularly birds. The Landfill practice of deterring birds from being attracted to the waste on **P-4**

Comment Letter P

the site by making loud noises was not discussed in the SEIR. It must evaluate the impact of the noise on resident native birds in the adjacent wetlands, along with alternative deterrents and the rationale for the deterrents. P-4

A landfill would not be considered for placement on bay mud at the edge of a creek under today's standards. The potential for environmental catastrophe is too great. Many Bayside landfills have been closed, and at least one has suffered damage from a collapse. Please include information about the cause of the failure in Contra Costa County and whether there is potential for a similar failure at Redwood Landfill. P-5

MCL has concerns about increasing the capacity of the landfill by increasing the slopes, reducing the benches, and the impact of the added weight on the Bay mud. P-6

The Mitigated Alternative seems to be a better approach to meeting Marin's needs, conforming to Marin policies, and reducing the ultimate volume of waste. We would like to see more information in the EIR evaluating the impacts of the Mitigated Alternative. What would be the volume buried in the landfill, what amount diverted, what slopes would be required for the amount of fill anticipated, and what would be the life of the landfill under this scenario? P-7

Since the EIR assumes the implementation of the overpass, no expansion should be allowed until the overpass is completed. P-8

Thank you for permitting this supplementary letter to our original submission of comments on the project EIR.

Yours truly,

Jana Haehl
President

P. MARIN CONSERVATION LEAGUE (Letter Dated October 14, 2003)

P-1. Additional information on current landfill waste intake, the origin of waste received at Redwood, and the destination of Marin County wastes is provided in Master Response 9; additional information on waste imports is included in Master Response 8.

P-2. Please refer to Master Responses 6 and 17.

P-3. Regarding revisions to site life calculations, please see Master Response 21.

P-4. The DSEIR carefully restricts operational noise for special-status species known to be sensitive at critical times of the year (see Mitigation Measure 3.3.5a). Noise from bird deterrent activities is ongoing and not subject to change except as noted in response to Comment N-37.

Due to the scarcity of data, most environmental analyses do not consider in any detailed way how noise – at least noise within the levels common to development projects – might impact wildlife. In a wilderness setting, we would consider the impacts of an increase in noise potentially significant for wildlife (e.g., an increase from less than 60 to between 80-90 dBA). However, at RLI the deterrence programs are considered part of ambient noise, and therefore impacts from the Project on birds and other wetland wildlife would not differ from the baseline in any way that the DSEIR could quantify without undue speculation.

P-5. Please see Master Responses 10 and 4.

P-6. Impacts 3.4.2 and 3.4.3 in DSEIR Section 3.4, Geology , Soils, and Seismicity, address the effects of the proposed increase in slope and increased landfill capacity on the underlying Bay Mud. Please also refer to Master Response 7.

P-7. Please refer to Master Response 20.

P-8. Please see Master Response 3.

Q. NO WETLANDS LANDFILL EXPANSION (Letter Dated September 18, 2003, and Attachments)

Q-1. The organization's opposition to the project is noted. Please refer to Master Response 17 regarding changes in the proposed increase in daily receipt of material.

Q-2. Please refer to Master Response 9 regarding recent waste receipts at Redwood Landfill. Please refer to Master Response 21 for revised site life calculations.

Q-3. Traffic impacts of the project are addressed in DSEIR Section 3.10. Please also refer to Master Response 5.

Q-4. The potential impacts of the project on groundwater are evaluated in Section 3.4, Geology, Soils, and Seismicity, of the DSEIR and the potential impacts on surface waters are evaluated in Section 3.5, Hydrology and Water Quality. As noted, groundwater in contact with refuse is regarded as leachate. Impact 3.4.7 addresses the proposed LCRS design and Impact 3.4.8 addresses the capacity of the leachate collection system. Please also refer to Master Response 1 and Master Response 13.

Q-5. Please refer to Master Response 13. Regarding other bayfront landfills, please refer to the response to comment L-3.

Q-6. The impacts of the proposed changes to landfill geometry and capacity on the underlying Bay Mud are addressed in Impact 3.4.2 and the effects of differential settlement of the landfill mass and Bay Mud are addressed in Impact 3.4.3. Please also refer to Master Response 7.

Q-7. Clay such as the underlying Bay Mud and the alluvium beneath the Bay Mud (which is predominantly stiff clay) are not susceptible to liquefaction. Liquefaction is a phenomenon occurring in loose, saturated, cohesionless (e.g. sandy) deposits. As described in the DSEIR (page 3.4.11) there are no known active or potentially active faults under the site; therefore the risk fault rupture is remote.

Q-8. Impacts 3.4.1 and 3.4.2 address the effects of seismic and static forces, respectively, on the proposed landfill; the analysis takes into account the proposed steeper slopes, one of the fundamental components of the project. Regarding the slope stability analysis at Redwood landfill, please also refer to Master Response 22. Regarding the failure at Acme Landfill, please refer to Master Response 4.

Q-9. The comment does not specifically address the adequacy of the DSEIR.

Q-10. The commenter cites an impact evaluated in the DSEIR (Impact 3.2.8, pp. 3.2-38 to 3.2-40). As discussed, mitigation measures proposed as part of the project and identified in the EIR would reduce the potential impact of toxic air contaminants to a less-than-

Comment Letter Q

NO WETLANDS LANDFILL EXPANSION

RECEIVED
SEP 18 2003
COUNTY OF MARIN COMMUNITY DEVELOPMENT
PLANNING DIVISION

September 18,2003

To: Marin County Planning Commissioners

Subject: Redwood Landfill Expansion Proposal

The "No To Wetlands Landfill Expansion"committee is a grassroots group that is opposed to the Redwood Landfill project which expands the landfill and doubles the amount of daily solid waste accepted.

Q-1

Attached is a summary of the reasons the NWLE committe opposes the project. Our committee also represents the opinion of about 300 residents of Marin County that have signed the petition opposing the project(sample is attached). Copies of all the signed petitions will be available to each Commissioner at the September 22,2003 meeting.

Sincerely,

Don Urban

Don Urban
Committee Member
415 897 0430

936-B Street #157
Novato, CA 94945-3000
Phone: 415-391-2010
Email: dumps101@juno.com

Comment Letter Q

September 12, 2003

NO WETLANDS LANDFILL EXPANSION

Summary of the Proposed Expansion of Redwood Landfill

Project Summary

The owners of Redwood Landfill located 4 miles north of Novato have notified the County of Marin that they want to make a major expansion of the facility and develop it into a "Regional Waste Facility" serving the entire Bay Area, not just Marin.

Redwood Landfill currently receives all of Marin's solid waste (excluding of course that which is recycled) and in addition a smelly material called "sludge". One of the principal ingredients of the sludge is sewerage that has been treated by a sanitary district. Redwood currently accepts some solid waste from outside Marin (exact amount is unknown) and accepts sludge from cities outside Marin. The landfill currently receives about 475,000 tons of solid waste per year and if it continues at this level without expansion, the landfill (which has available capacity for 26 million cubic yards of solid waste) will be full by the year 2016. Q-2

Daily Garbage Truck Traffic Will Double

The owner of the landfill, USA Waste is proposing to make the facility a "Regional Landfill" and begin accepting double the amount of solid waste per day. The additional waste input will increase the daily truck traffic from 415 to 1000. These trucks are large, slow moving garbage trucks and the additional traffic at the 101 intersection will further aggravate the flow of vehicles in the "Novato Narrows". Redwood Landfill has already agreed to pay for an overpass on Highway 101 regardless of whether the expansion is approved. Q-3

Risk of Pollution to the Water Table and the Bay

Another major risk from the expansion is the concern that toxic materials from the waste will get into the water table (which is two feet below the bottom of the landfill) or into the San Antonio Creek that is on the eastern border of the landfill. This means it would ultimately get into the Petaluma River and the San Francisco Bay. Q-4

Rupture of the Bay Mud Under the Landfill Is a Major Risk

The stability of the landfill from the standpoint of leaks getting into the water table and the Bay is a major risk and concern. Redwood Landfill is one of the last bay-front landfills still in operation in the Bay area. Many others have been closed. A number of different events could result in toxic material getting into the water table (2 feet below the landfill) or into San Antonio Creek. Q-5

1. Collapse and rupture of the Bay Mud under the huge pile of solid waste that is up to 166 feet high and puts tons of pressure on the Bay Mud. Q-6
2. Rupture or liquefaction of the Bay Mud during an earthquake that would release solid waste and possible toxic materials into the water table and the San Francisco Bay. Q-7
3. A slide of the proposed steeper slopes of the landfill. Such a slide occurred in 1978 at the Acme Landfill in Martinez, California and caused a lawsuit and ultimately closure of this site. Q-8

Comment Letter Q

Air Pollution Is a Major Concern for Marin and Sonoma County Residents
About two hundred tons per day of sludge is currently trucked into the landfill and must be treated by letting the material "air dry", which creates a very smelly odor over a several mile area. This is particularly offensive for residents of Novato. Q-9

The additional solid waste and sludge will according to the Draft Environmental Impact Report "result in a substantial increase in the emission of toxic air contaminants with consequent effects on human health." Q-10

The Marin County Environmental Coordinator, Tim Haddad has stated that "the project will result in five significant unavoidable impacts as follows:
- Air quality emissions related to particulates
- Fugitive landfill gas
- Reactive organic gasses
- Nitrous oxide
- Cumulative effects associated with these emissions" Q-11

A Petition Campaign That Opposes the Redwood Landfill Expansion Is Underway
The Committee and volunteers are getting signatures on a petition that opposes expansion of the Redwood Landfill. We currently have about 300 signatures from Marin County residents. Q-12

For Environmental Reasons the No Wetlands Landfill Expansion Committee Is Strongly Opposed to Any Expansion of the Redwood Landfill
The expansion of the Redwood Landfill capacity and huge increase in the daily volume of solid waste that is proposed by USA Waste is unacceptable because of additional traffic congestion, the major risk of water pollution to the San Francisco Bay and due to increased air pollution (particularly for Novato residents).

Comment Letter Q

Petition to Oppose the Wetlands Landfill Expansion

We express dismay at the proposal to increase the size and capacity of Redwood Landfill. Q-13

- It rests on wetlands and environmentally sensitive agricultural land, and could not be rebuilt at this location today.
- This Marin site already accepts a large volume of waste from outside counties. We do not want these shipments increasing in number nor toxic levels. Q-14
- Traffic will increase by 400 trucks on 101 daily. Q-15
- Taking in other counties' garbage will soon fill up our last remaining dump in Marin. Q-16
- Toxins could leach into the water table, surrounding creeks, and San Pablo Bay. Q-17

Name	Address	Date
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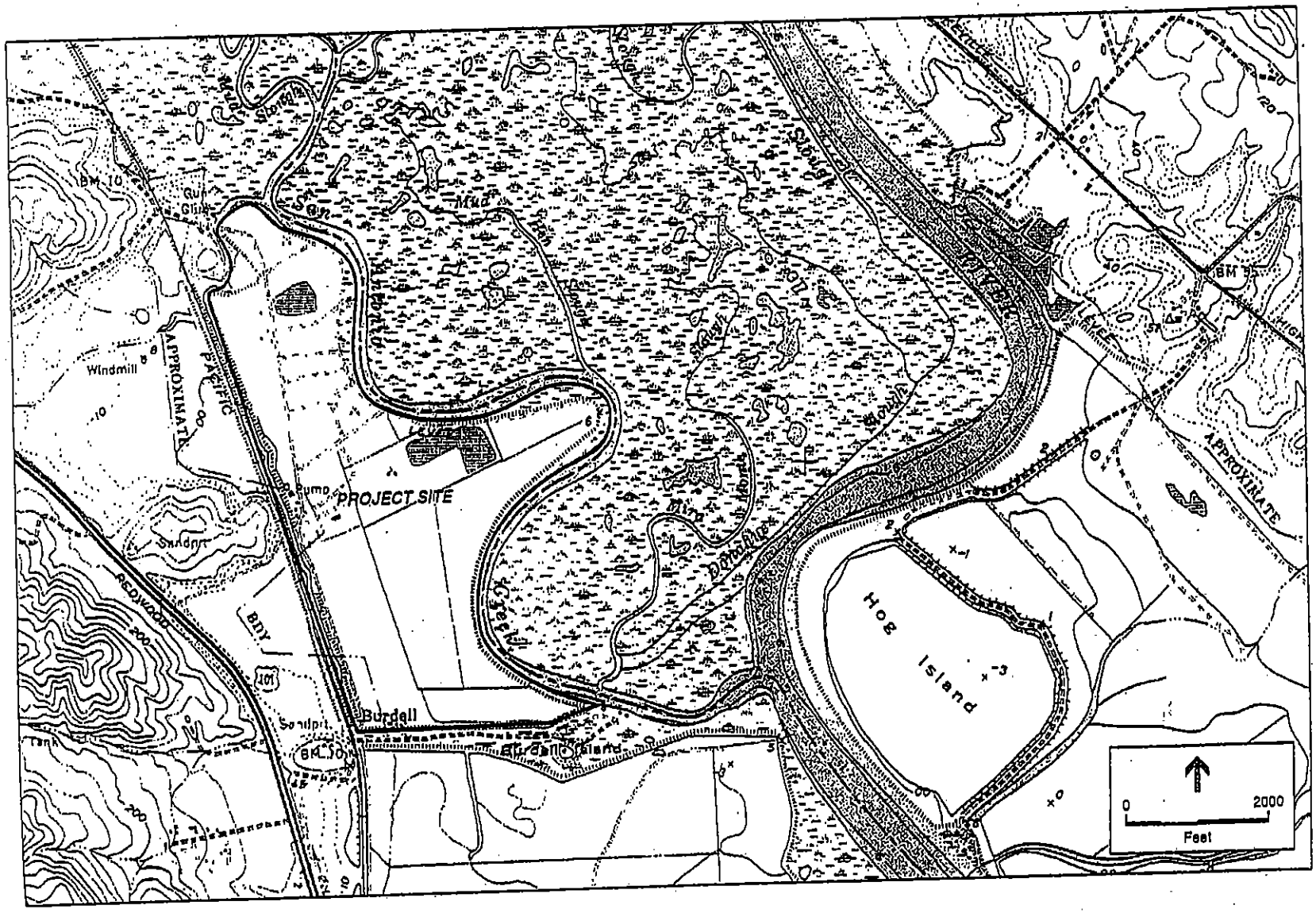
THANK YOU! from the "No Wetlands Landfill Expansion" Grassroots Committee

District 1: Terra Linda, Lucas Valley, Marinwood, Santa Venetia, Peacock Gap, Downtown San Rafael
District 2: Fairfax, Ross, Kentfield, Greenbrae, Sleepy Hollow, Downtown Larkspur, Gerstle Park, Lomita Park, Bret Harte
District 3: Mill Valley, Tiburon, Sausalito, Belvedere, Tam Valley, Marin City
District 4: West Marin, West Novato, San Geronimo, San Rafael South and Canal, Corte Madera, Homestead Valley
District 5 North Marin: Novato, Blackpoint, Ignacio, Hamilton, Indian Valley, Bahia

Comment Letter Q



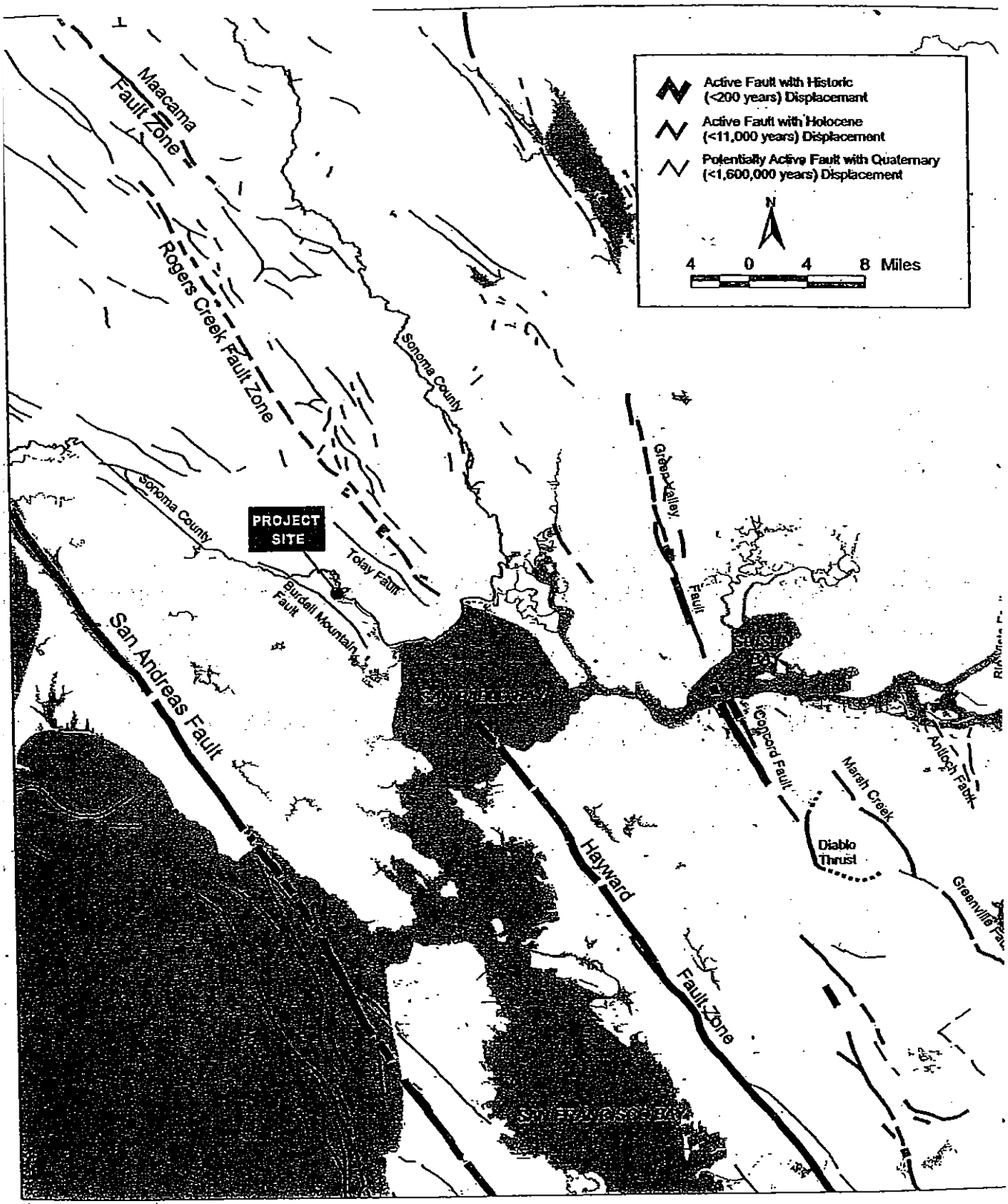
SOURCE: USGS; Environmental Science Associates

Redwood Landfill Solid Waste Facilities Permit Revision EIR / 200238

Figure 3.5-1

Surface Waterways in the Project Vicinity

Comment Letter Q



Redwood Landfill Solid Waste Facilities Permit Revision EIR / 20023

SOURCE: California Department of Conservation, Division of Mines and Geology (After Jennings, 1994)

Figure 3.4
Active and Potentially Acti
Bay Area Earthquake Fau

significant level. Please also refer to Master Response 11 for more information on the Health Risk Assessment performed for the EIR.

Q-11. Comment noted. The analysis of Air Quality impacts is presented in Section 3.2, Air Quality and summarized in Chapter 1, Summary (p. 1-8) of the DSEIR. Please also refer to Master Response 16 regarding air emissions calculations in this FEIR

Q-12. The organization's opposition to the project is again noted.

Q-13. Please refer to Master Response 10.

Q-14. Regarding waste imports, please refer to Master Responses 8 and 9. Regarding the withdrawal of the proposal to reclassify Area G as a Class II unit, please refer to Master Response 6.

Q-15. Traffic impacts were analyzed in DSEIR Section 3.10. Please refer to Master Response 17 regarding recent changes to the proposed project.

Q-16. Regarding site life, please see Master Response 21.

Q-17. Please refer to the response to comment Q-4.

Comment Letter R

ATTENTION: JOYCE EVANS

NO WETLANDS LANDFILL EXPANSION

September 22,2003

FAXED to 4997880

Tim Haddad Environmental Coordinator
Community Development Agency
3501 Civic Center Dr. Rm 308
San Rafael, Ca 94903

Dear Mr. Haddad:

This letter is to request two corrections to the official minutes of the Marin County Planning commission meeting on August 18,2003:

1. Mr. Roycroft, the Engineer for Redwood Landfill made a statement in the meeting that the landfill currently contains 25 million cubic yards of solid waste. At least two of the members of the No Wetlands Landfill Expansion committee heard it and recorded it. Since this is extremely important, I am requesting that you include it and revise the minutes. R-1

2. The minutes refer to the quantity of solid waste to be accepted using a measurement of "cubic tons'. Since there is no such measurement, I think it should be"cubic yards"and if this is the case, please revise the minutes. R-2

Please cal if you have questions.

Sincerely,
Don Urban
Don Urban
Committee Member
415 897 0430

936-B Street #157
Novato, CA 94945-3000
Phone: 415-391-2010
Email: dumps101@juno.com

R. NO WETLANDS LANDFILL EXPANSION (Letter Dated September 22, 2003)

R-1. Please refer to Master Responses 12 and 21.

R-2. Comment noted.

Comment Letter S

NO WETLANDS LANDFILL EXPANSION

September 22,2003

To: Marin County Planning Commission

Subject: Redwood Landfill Expansion Proposal

I am a member of the No Wetlands Landfill Expansion Committee and have submitted a short white paper that opposes any increase in the amount of solid waste shipments and expansion of the Redwood Landfill. You were each given a copy of thisalong with copies of a petition signed by 300 residents of Marin County. S-1

Since you have probably read the white paper, my remarks today will only highlight the reasons for our opposition.

1. Garbage truck traffic on highway 101 at the dump intersection will be 1000 slow moving garbage trucks per day, more than double today's count of 415. This means that during an average weekday, there will be 2 trucks going in and 2 trucks going out every minute, something that in our view is totally unacceptable in the heavily conjested "Novato Narrows". S-2

2. There will be a major risk of water pollution to the San Antonio Creek, the Petaluma River, and the San Francisco Bay due to the expansion and tripling the daily intake of solid wsste. Just think for a minute and ask yourself the question of whether any responsible official would locate a new landfill on the Bay front with a creek on the eastern border, with the Petaluma River 2000 feet away and where the water table is 2 feet below the bottom? Clearly the answer is NO and you should therefore ask why would a responsible Planning Commissioner want to expand and triple the daily intake of solid waste at the Redwood Landfill? Common sense tells you that the expansion greatly increases the risk of toxic water pollution. S-3

3.Residents of Marin County and particularly those of Novato are 100% opposed to the expansion. Our Committee already has petitions signed by 300 resident and we have found during our campaign that everyone who is approached is willing to sign. If the project was on the election ballot, 99% of voters would oppose the expansion. S-4

The No Wetlands Landfill Expansion Committee is therefore asking you to disapprove of any increase in the intake of solid waste quantities and expansion of the Redwood Landfill.

Our Committee is also asking the Planning Commissin to clarify and confirm whether Mr. Roycroft testified at the August 18,2003 meeting that the Redwood Landfill currently contains 25 million cubic yards of solid waste. Two of our Committee members heard his statement but it did not appear in the official minutes S-5

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Novato, CA 94945-3000
Phone: 415-391-2010
Email: dumps101@juno.com

Sincerely,

Don Urban

Don Urban, Committee Member

S. NO WETLANDS LANDFILL EXPANSION (Second Letter Dated September 22, 2003)

S-1. The referenced "white paper" is apparently the attachment to comment letter Q dated September 12, 2003, and which contains Comments Q2 – Q12.

S-2. Traffic impacts of the project were evaluated in DSEIR Section 3.10. Please also refer to Master Response 5.

S-3. Impacts to surface water quality are evaluated in Section 3.5 of the DSEIR. Please refer also to Master Responses 10 13, 14 and 1.

S-4. The referenced petition is attached to comment letter Q.

S-5. Please refer to Master Response 12 for new information on the current volume of the Redwood Landfill.

Comment Letter T

RECEIVED
SEP - 3 2003
Environmental Health

August 28, 2003

Alex Hinds, Agency Director
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 949-03-4157

RE: DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

Dear Mr. Hind:

Please accept these comments as part of the official administrative review of the above-entitled document.

PROJECT DESCRIPTION

Data to date supplied by Redwood does not adequately characterize the current impacts of its large landfill. Evidence that is available indicates that the landfill at its current size, is not properly designed to contain contaminated leachate on site. Volatile organic compounds have been detected in the groundwater under the landfill. Groundwater is very shallow at the site -as is to be expected in a wetland. T-1

Redwood does not currently maintain a five foot separation from groundwater. Redwood should not be permitted to expend resources on expansion until it can demonstrate that the current facility is managed properly for leachate runoff, ground water protection, and surface water protection. T-2

Storm water discharges to San Antonio Creek and at other locations does not currently meet permit requirements. T-3

Prior to the approval of this Subsequent EIR, intensified monitoring, monitoring of wells likely to detect contamination/releases, drilling of additional wells, sampling of surface waters and the San Pablo Bay, must be required in order for the record to contain substantial evidence of the current and potential additional cumulative impacts to wetlands, habitat, groundwater and surface water of this landfill and this proposed project. T-4

UNITED STATES ARMY CORPS OF ENGINEERS AND ENVIRONMENTAL PROTECTION AGENCY CLEAN WATER ACT 404 PERMIT REQUIRED

The landfill is located in a wetland. Its legal description states that it is swamp and overflowed land. Levees, berms, dikes, or filling do not remove wetlands protections from a site. T-5

Comment Letter T

Continued filling and expansion of the landfill since 1972 requires a CWA 404 permit from the US Army Corps of Engineers (Golden Gate Audubon v. USACE 1988). The permit should cover all activities since 1972, the present, and the reasonably foreseeable future. Mitigations for past and present significant reduction of wetlands, filling of wetlands, and discharges to wetlands must be provided. Future impacts to wetlands, if they are to be allowed at all, must be further mitigated. T-5

CUMULATIVE IMPACTS

Cumulative impacts of the landfill expansion have not been adequately evaluated. Redwood does not currently comply with all of its permit requirements (WDR or SWFMP). This makes the proper evaluation of future impacts impossible. Marin County (the County) and the State must require that Redwood first come into compliance with its current permit, for example complete an integrated leachate collection and removal system and perimeter levee system PRIOR to approval of any additional projects. In addition, the County and State must require that Redwood provide substantial evidence that it currently manages its current leachate production in a manner that effectively protects ground and surface water. Redwood cannot do this without additional monitoring in areas likely to detect releases including upstream and downstream of the site. T-6

The County and State have a duty to regulate the landfill in the interest of the public and the environment. To merely ratify Redwood's unpermitted increase in vehicle trips substantially beyond its permit, to ratify Redwood's acceptance of refuse in amounts substantially above the amount outlined in its permit, and to ratify Redwood's expansion beyond the parameters set out in its permit, without substantial and credible evidence of the current impacts of the landfill and the potential impacts of these and other changes and additions to the landfill would be a failure of the County and States' duty and would constitute an abuse of discretion. T-7

Evidence of the adequate treatment of compost emissions odors is inadequate. Evidence and information with respect to the types of wastes anticipated to be disposed of in Area G is inadequate. The County must not approve the DEIR without the prior submission of complete and adequate information on these issues. T-8

Sufficient capacity of contact water and leachate storage systems has not been demonstrated. A mass balance must be provided that satisfies the agencies and addresses all inputs to impoundments including groundwater, wastewater, rain water, floodwater, run-off, and all contact water. This information has not been provided. T-9

SUBSEQUENT DEIR INADEQUATE

The Subsequent DEIR does not contain substantial evidence that the new and increased activities at the landfill will not have a significant adverse impact on water quality or the environment. T-10

ALTERNATIVES ANALYSIS

Alternatives to the project include decreasing refuse at its source and diversion programs. Substantial evidence is required in the DEIR to demonstrate why each alternative not chosen was infeasible. The public is entitled to a level of specifity in the DEIR that provides the logical link between the evidence and the decision reached. The alternatives analysis with respect to diversion and reduction are inadequate in the DEIR and do not satisfy the requirements of the law. T-11

CONCLUSION

Further expansion and construction in this sensitive wetland must be delayed until such time as Redwood properly operates its current facility and all impacts, present and potential, are adequately evaluated T-12

Very truly yours,

KIMBERLY BURR

T. NORTHERN CALIFORNIA ENVIRONMENTAL DEFENSE CENTER

T-1. The project evaluated in the DSEIR consists of elements that have already been implemented, but are not covered under existing permits and have not previously been subject to environmental review under the California Environmental Quality Act (CEQA), and elements proposed by RLI for future implementation. The past negative impacts of the Landfill and its permitted operation are not the subject of the analysis in the DSEIR. Please refer to Master Responses 1, 13, and 14.

T-2. The potential impacts of the project on groundwater are evaluated in DSEIR Section 3.4, Geology, Soils, and Seismicity, and the potential impacts on surface waters are evaluated in Section 3.5, Hydrology and Water Quality. Regarding the landfill's proximity to groundwater, please see Master Response 1. Please also refer to Master Responses 13 and 14.

T-3. The project evaluated in the DSEIR consists of elements that have already been implemented, but are not covered in existing permits and have not previously been subject to environmental review, and elements proposed by RLI for future implementation. The commenter does not provide the basis of this comment or state in what way storm water discharges do not meet permit requirements. Therefore a more detailed or specific response is not possible.

T-4. A detection monitoring program is in place at the site, as required under CCR Title 27 and Redwood Landfill's current Waste Discharge Requirements and surface water monitoring is conducted pursuant to the facility's NPDES storm water permit. Please refer to Master Response 14. Potential impacts to biological resources are evaluated in Section 3.2 of the DSEIR. Please also refer to the response to comment Z-4.

T-5. The applicability of the Clean Water Act to the Project site is discussed extensively in the DSEIR, on pages 3.3-8 and 3.3-9

T-6. Regarding landfill compliance with existing permits please refer to Master Response 18. Regarding the effectiveness of the LCRS, please refer to Master Response 13. Regarding water quality monitoring at the site, please refer to Master Response 14.

T-7. The proposed project is the subject of this EIR and approval of the project is a discretionary decision to be made on the part of responsible public agencies. The project is not being "merely ratified" but is subject to a lengthy public process with abundant opportunity for public input.

T-8. Regarding composting odors, please refer to Impact 3.2.9 and Mitigation Measures 3.2.9a and 3.2.9b in the DSEIR. See also Master Response 15. Regarding Area G, please refer to Master Response 6.

T-9. Mitigation Measure 3.4.8c requires the applicant to update their Leachate Management Plan with the most current information regarding leachate generation, and to demonstrate that adequate leachate containment capacity exists pursuant to Title 27 requirements. Please refer to Master Response 13; as discussed, Mitigation Measure 3.4.8c is revised in this FEIR to specifically require a water balance model as part of the facility's updated Leachate Management Plan. Development of the water balance model is currently in progress according to RWQCB staff, with whom RLI is consulting on development of the model . In addition, Mitigation Measure 3.5.4 requires RLI to produce and submit to the LEA and RWQCB a report demonstrating that adequate capacity exists to contain contact water generated by composting operations outside the landfill's disposal footprint.

T-10. Potential impacts on groundwater are evaluated in DSEIR Section 3.4, and surface water impacts were evaluated in Section 3.5. The discussion of impacts is supported by evidence and mitigation measures are identified to reduce significant impacts. Regarding potential water quality impacts and monitoring, please also refer to Master Responses 13 and 14, respectively.

T-11. As stated in the introduction to Chapter 5, Alternatives in the DSEIR, CEQA requires an EIR to examine a reasonable range of feasible alternatives. All of the alternatives analyzed in the DSEIR are considered feasible, within the definition of a feasible alternative established in the CEQA Guidelines (California Code of Regulations § 15126.6[f]). Several other alternatives were considered but rejected as infeasible. CEQA allows for analysis of alternatives at a lower level of specificity than the project itself. The selection and analysis of alternatives in the DSEIR is complete and consistent with the CEQA statutes and guidelines.

T-12. Please refer to the responses to the prior comments contained in this comment letter.

Comment Letter U

Kimberly Burr
Attorney at Law
Post Office Box 1246
Forestville, California 95436
707.887.7433 • 707.887.0847 *facsimile*

RECEIVED

2003 AUG 29 A 11:

MARIN COUNTY
COMMUNITY DEVELOPMEN
AGENCY

August 29, 2003

Alex Hinds, Agency Director
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 949-03-4157

RE: DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

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Redwood does not currently maintain a five foot separation from groundwater. Redwood should not be permitted to expend resources on expansion until it can demonstrate that the current facility is managed properly for leachate runoff, ground water protection, and surface water protection.

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UNITED STATES ARMY CORPS OF ENGINEERS AND ENVIRONMENTAL PROTECTION AGENCY CLEAN WATER ACT 404 PERMIT REQUIRED

Comment Letter U

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The County and State have a duty to regulate the landfill in the interest of the public and the environment. To merely ratify Redwood's unpermitted increase in vehicle trips substantially beyond its permit, to ratify Redwood's acceptance of refuse in amounts substantially above the amount outlined in its permit, and to ratify Redwood's expansion beyond the parameters set out in its permit, without substantial and credible evidence of the current impacts of the landfill and the potential impacts of these and other changes and additions to the landfill would be a failure of the County and States' duty and would constitute an abuse of discretion.

Evidence of the adequate treatment of compost emissions odors is inadequate. Evidence and information with respect to the types of wastes anticipated to be disposed of in Area G is inadequate. The County must not approve the DEIR without the prior submission of complete and adequate information on these issues.

Sufficient capacity of contact water and leachate storage systems has not been demonstrated. A mass balance must be provided that satisfies the agencies and addresses all inputs to impoundments including groundwater, wastewater, rain water, floodwater, run-off, and all contact water. This information has not been provided.

The impacts of an increase in petroleum-contaminated soils have not been adequately evaluated. Leachate ponds are unlined and VOC's have already been detected in groundwater. Redwood must demonstrtate that the ground and surface waters can be protected. It has failed to do so thus far. An increase in the disposal rate of contaminated soils in an already imperfect system is not warranted.

Comment Letter U

SUBSEQUENT DEIR INADEQUATE

The Subsequent DEIR does not contain substantial evidence that the new and increased activities at the landfill will not have a significant adverse impact on water quality or the environment.

ALTERNATIVES ANALYSIS

Alternatives to the project include decreasing refuse at its source and diversion programs. Substantial evidence is required in the DEIR to demonstrate why each alternative not chosen was infeasible. The public is entitled to a level of specifity in the DEIR that provides the logical link between the evidence and the decision reached. The alternatives analysis with respect to diversion and reduction are inadequate in the DEIR and do not satisfy the requirements of the law.

CONCLUSION

Further expansion and construction in this sensitive wetland must be delayed until such time as Redwood properly operates its current facility and all impacts, present and potential, are adequately evaluated.

Very truly yours,

Kimberly Burr

KIMBERLY BURR

U. NORTHERN CALIFORNIA ENVIRONMENTAL DEFENSE CENTER

The text of this letter is identical to that of comment letter T. Please refer to the responses to comments T-1 through T-12.

Comment Letter V

RECEIVED

2003 OCT 15 P 3:52

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY

NCRA

Northern California Recycling Association
PO Box 5581
Berkeley, CA 94705
Fax/Phone: (510) 217-2433
ncra@ncrarecycles.org
www.ncrarecycles.org

October 14, 2003

Todd Haddad
Environmental Coordinator
Marin County Planning Department
3501 Civic Center Dr., Rm 308
San Rafael, CA 94903

RE: Comments to the Draft EIR for the Redwood Landfill

1. Generally, the DEIR is very thorough and informative. V-1

2. The Northern California Recycling Association favors the Mitigated Alternative to the project as proposed by Redwood Landfill Incorporated. Fees on the order of $7 per ton for a recycling and source reduction surcharge, $1 per ton for open space, and $0.50 per ton for host community impact should be included as permit conditions. V-2 V-3

3. Marin County principles of sustainability should be further incorporated into whatever are the permit conditions for this project by V-4

(a) Discouraging unnecessary importation of wastes for disposal that have either (1) not been processed through a source-separated recycling collection system, or (2) have been diverted from another landfill close to the area where the recycling takes place to avoid payment of mitigation fees for recycling diversion programs, habitat/open space acquisition, traffic/air quality/energy consumption impacts, or adverse impacts of any nature on the nearest incorporated host community. V-5

(b) Discouraging use, either from Marin County or out-of-county communities, of green waste or soils for use as Alternative Daily Cover (ADC), when adequate on-site soil exists for daily cover without the traffic, air, and energy consumption impacts of shipping in processed or unprocessed wastes which should be directed back to the local communities. V-6

4. Actual and projected daily tonnages by waste category (Appendices 1 and 2) should be developed for each existing and potential customer of the landfill for consideration regarding the ADC and the mitigation fee considerations. V-7

Respectfully,

Heidi Melander
President, Northern California Recycling Association

Comment Letter V

NCRA

Northern California Recycling Association
PO Box 5581
Berkeley, CA 94705
Fax/Phone: (510) 217-2433
ncra@ncrarecycles.org
www.ncrarecycles.org

FAX:

ATTENTION: SUSAN BREWER

October 14, 2003

Todd Haddad
Environmental Coordinator
3501 Civic Center Dr., Rm 308
San Rafael, CA 94903

RE: Comments to the Draft EIR for the Redwood Landfill

Dear Mr. Haddad-

Please see the letter that follows with comments on behalf of the Northern California Recycling Association regarding the expansion plans at the Redwood Landfill.

I would appreciate your acceptance of our comments by fax today. A hardcopy will follow in the mail promptly.

Sincerely,

Heidi Melander
NCRA President

Comment Letter V

NCRA

Northern California Recycling Association
PO Box 5581
Berkeley, CA 94705
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ncra@ncrarecycles.org
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October 14, 2003

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Environmental Coordinator
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3. Marin County principles of sustainability should be further incorporated into whatever are the permit conditions for this project by

(a) Discouraging unnecessary importation of wastes for disposal that have either (1) not been processed through a source-separated recycling collection system, or (2) have been diverted from another landfill close to the area where the recycling takes place to avoid payment of mitigation fees for recycling diversion programs, habitat/open space acquisition, traffic/air quality/energy consumption impacts, or adverse impacts of any nature on the nearest incorporated host community.

(b) Discouraging use, either from Marin County or out-of-county communities, of green waste or soils for use as Alternative Daily Cover (ADC), when adequate on-site soil exists for daily cover without the traffic, air, and energy consumption impacts of shipping in processed or unprocessed wastes which should be directed back to the local communities.

4. Actual and projected daily tonnages by waste category (Appendices 1 and 2) should be developed for each existing and potential customer of the landfill for consideration regarding the ADC and the mitigation fee considerations.

Respectfully,

Heidi Melander
President, Northern California Recycling Association

V. NORTHERN CALIFORNIA RECYCLING ASSOCIATION

V-1. Comment noted.

V-2. Comment noted.

V-3. Please see Master Response 8.

V-4. As part of the development of the new Marin Countywide Plan, The Sustainability Working Group in 2001 produced interim Sustainability Principles (Marin County Sustainability Working Group, 2001) to help guide the development of the plan. The draft of the updated Marin Countywide Plan was released in February, 2004. The draft Plan does not yet have the force of adopted County policy, however the Sustainability Principles are being used to guide plan development. Several of the 10 Sustainability Principles are relevant to the project and to management of wastes in general:

2. Use finite and renewable resources efficiently and effectively.
We will reduce consumption and reuse and recycle resources. We will reduce waste by optimizing the full life cycle of products and processes.
Examples of Community Indicators: Per capita waste produced and recycled; per capita use of energy, natural gas, and water; ecological footprint (measures per capita consumption of natural resources).

3. Reduce the release of hazardous materials.
We will make continual progress toward eliminating the release of substances that cause damage to living systems. We will strive to prevent environmentally-caused diseases.
Examples of Community Indicators: Water and air quality; measurements of toxic levels; childhood cancer rates.

7. Foster businesses that provide a balance of economic, environmental and social benefits.
We will retain, expand and attract a diversity of businesses that meet the needs of our residents and strengthen our economic base. We will partner with local employers to address transportation and housing needs.
Examples of Community Indicators: Taxable sales; retention and attraction of targeted businesses; job growth; unemployment rate; number of businesses with environmental management systems; hospitality revenues.

10. Support public health, safety, and social justice.
We will live in healthy, safe communities and provide equal access to amenities and services. We will particularly protect and nurture our children, our elders, and the more vulnerable members of our community.
Examples of Community Indicators: Income statistics; health statistics; Percent of uninsured (medical population; longevity after retirement; volunteerism; crime rate; percent of philanthropic contributions.

V-5. Mitigation Measure 3.6.4b would discourage or help mitigate either situation postulated in this comment. This mitigation measure is also incorporated in the Mitigated Alternative. See also Master Responses 8 and 20.

V-6. Adequate cover material does not exist on site, with the exception of the quarry immediately adjacent to the landfill. While the landfill has a permit to quarry this entire hill, they have not yet done so, apparently to maintain a visual screen between US 101 and the landfill.

V-7. The meaning of this comment is unclear, but it appears to request more information on types, quantities, and origins of materials. Please refer to the response to comment N-40. Regarding the origin of waste currently received at Redwood Landfill, please refer to Master Response 9; regarding possible waste import mitigation fees, refer to Master Response 8.

Comment Letter W

1600 Broadway, Suite 300
Oakland, CA 94612-2100

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RECEIVED

2003 OCT 15 P 12:30

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

October 14, 2003

Mr. Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, California 94903

Re: Redwood Landfill Permit Revision DEIR

Dear Mr. Haddad,

Save The Bay appreciates the opportunity to provide comments for the proposed permit revision Draft Environmental Impact Report (DEIR) for Redwood Landfill. Save The Bay is non-profit advocacy and education organization with more than 8,000 members throughout the San Francisco Bay area and the state. Save The Bay works to protect and restore San Francisco Bay, home to more than 30 endangered species, an overwintering site for hundreds of thousands of migratory birds, and a recreational resource for more than seven million Bay area residents. The Bay's water resources are of utmost importance to our quality of life.

Save The Bay is concerned about the potential negative impacts increased capacity and disposal of Class II waste at Redwood Landfill could have on San Francisco Bay. W-1 The existing landfill was designed in 1958 and does not meet current design standards that require a buffer between landfill material and groundwater. W-2 Resting directly on Bay mud without the required separation, this permit revision should be considered very carefully. The landfill is also adjacent to numerous sloughs and San Antonio Creek, which flows into the Petaluma River and subsequently into San Francisco Bay. We believe that this environmental setting requires a very conservative approach for the side slope design, the leachate collection and removal system (LCRS), and the levees surrounding the landfill. W-3

As you proceed with creating a Final Environmental Impact Report, please consider the following:

1) The proposed increase in capacity at Redwood Landfill would require increasing the slope of the landfill. Will the Bay mud base of the landfill withstand additional material? How will the mud base withstand earthquake conditions with additional material? The DEIR computer modeling incorporates the landfill's bay mud base to project how the landfill will withstand these conditions, but no new landfills exist on Bay mud to provide data needed for these projection models. W-4

2) A steeper slope and narrower benches could generate an increase in runoff material and/or leachate during extreme rainfall conditions. How will this additional runoff/leachate material be collected? Have designs for the LCRS incorporated this possible increase in material? W-5

Comment Letter W

3) Under the proposed permit revision, Class II wastes could be accepted at the landfill. What additional precautions would be taken to ensure that semi-hazardous leachate does not permeate to groundwater or surrounding surface water resources? Save The Bay supports removing Class II waste from the permit revision due to leachate concerns and water quality. W-6

4) The 1994 FEIR required a perimeter levee, which was integral to supporting the landfill. Will the perimeter levee be incorporated into this project? W-7

5) What is the landfill's projected life if waste is accepted from outside Marin County? Although the proposed permit revision would allow greater capacity, if the landfill becomes a regional waste facility, the county itself is not benefiting from this increased capacity. It is highly desirable for communities to dispose of their waste locally, so as to increase incentives for conservation and recycling. Local waste disposal also reduces the number and length of vehicle trips, thereby minimizing air pollution. W-8

Please consider Save The Bay's concerns in the Final Environmental Impact Report. The Mitigated Alternative seems to have the least impact to San Francisco Bay. This alternative would not allow Class II waste disposal at Redwood Landfill, but would permit some additional capacity. Mitigation fees for disposal from outside Marin County would encourage recycling and composting rather than landfilling. This alternative would also incorporate elements more consistent with Marin County's sustainability principles and integrated waste management goals. W-9

Thank you for the opportunity to comment on the proposed permit revision.

Sincerely yours,

David Lewis
Executive Director

W. SAVE THE BAY

W-1. Project impacts to groundwater and surface waters were analyzed in DSEIR Sections 3.4 and 3.5, respectively. Regarding the applicant's change in the project proposal for Area G, please refer to Master Response 6.

W-2. Please refer to the response to comment O-15.

W-3. Slope stability under of the revised landfill design under seismic and static forces is evaluated in Impacts 3.4.1 and 3.4.2, respectively. As discussed, a factor of safety of 1.5 was used as criteria for the final slope configurations, which is considered consistent with current landfill engineering practice. Please also refer to Master Response 22 regarding slope stability. Regarding the location of the landfill adjacent Petaluma Marsh, please refer to Master Response 10.

W-4. The stability analysis discussed in DSEIR Section 3.4 took into account the proposed revised landfill geometry, increased capacity, and the facility's location on Bay Mud. Regarding Bay Mud strength and settlement, please refer to Master Response 7. With respect to the comment that there are no new landfills on Bay Mud to provide data, it is not clear why data from one or more new landfills on Bay Mud would be needed or preferable to the data collected at the Redwood Landfill site. (As discussed in Master Response 7, monitoring and data collection are ongoing at Redwood Landfill, and as indicated in the response to comment L-3, other bayfront landfills currently exist.) In any event, it is likely that many types of bayfront projects on Bay Mud contribute to increased understanding by geotechnical engineers of the properties and behavior of Bay Mud generally. However, site-specific conditions – such as the occurrence of sand lenses or peat deposits within the Bay Mud – that are relevant to stability analyses vary.

W-5. Impact 3.4.8 addresses the capacity of the LCRS; please also refer to the response to Comment K-31 and Master Response 13. Regarding rainfall on the landfill, only runoff that has contacted refuse at the working face is considered to be or needs to be managed as leachate and would be directed to the leachate impoundment. Non-contact runoff is managed as storm water runoff, not as leachate. Impact 3.4.3 addresses erosion impacts. As discussed under Impact 3.4.5, the landfill's precipitation and drainage control facilities will be designed to accommodate a 100-year, 24-hour storm event, which is appropriate and meets regulatory standards for a Class III landfill. (As discussed under Master Response 6, RLI has withdrawn the proposal to reclassify Area G as a Class II landfill.)

W-6. Impact 3.4.7 addresses the effectiveness of the LCRS system and identifies mitigation measures to reduce impacts to less than significance. Please also refer to Master Response 13. Impact 3.4.10 specifically addresses the potential for leachate to be discharged from Area G. Since publication of the DSEIR, the applicant has withdrawn the proposal to reclassify Area G as a Class II unit; please see Master Response 6.

W-7. A perimeter levee already exists around the entire site. The applicant already plans, not as part of this project, to raise portions of the levee so that the entire levee has a minimum height of 9 feet above mean sea level and increasing the width of the top of the levee to a minimum of 10 feet. See Mitigation Measure 3.5.6 in the DSEIR.

W-8. Regarding site life, please refer to Master Response 21. The DSEIR identified several significant, unavoidable air quality impacts, associated either with the proposed increase in waste and composting receipts at the landfill and other operations at the site, or with increased landfill traffic. Refer also to Master Response 16 regarding air emissions calculations in this FEIR.

W-9. The DSEIR identifies the Mitigated Alternative as the Environmentally Superior Alternative.

Comment Letter X

Sierra Club Marin Group
P.O. Box 3058
San Rafael, California 94912

RECEIVED
2003 OCT 14 P 1:00
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

October 10, 2003

Mr. Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, California 94903

Re: Redwood Landfill Permit Revision DEIR

Dear Mr. Haddad,

The Sierra Club Marin Group has concerns with the above Draft EIR.

1) We note the applicant has dropped the proposal to make Area G a Class II waste management unit. Does this mean the total daily volume received by RLI will be reduced by 1,000 tons, or will there be an increase in another component? X-1

2) The 1994 FEIR identifies the sources of material received by the landfill. The current document identifies the type of material but not where it comes from. How much of the total waste is generated by Marin, and how much is generated out of county? X-2

3) What are the plans for improving the perimeter levee, as required in the 1994 FEIR? What environmental precautions will be taken in doing so? X-3

4) How can it be verified that the proposed increased steepness of the finished slope will be stable under extreme rainfall or earthquake conditions? X-4

5) Increased traffic at the site poses congestion problems for Highway 101, particularly if the flyover is not built, and air quality issues for nearby communities. How will these be dealt with? X-5

In general, Redwood landfill, situated in a wetlands area on bay muds, is a marginal site by current environmental standards. Any expansion of it by definition increases environmental risks and should be approached with extra caution. The role of the site as a regional rather than county waste facility should be carefully considered. Since county sustainability principles prohibit the county from exporting waste to other regions, it should be our goal to prolong the life of this site for this county as long as possible. Any expansion that is primarily for the use of communities outside Marin should be discouraged. X-6 X-7

For these reasons, the Sierra Club supports the adoption of the Mitigated Alternative, which limits expansion to 15% above currently permitted levels, emphasizes energy development and diversion, and imposes mitigation fees on wastes from other areas. X-8

Yours Sincerely,

Robert Wrubel

Robert Wrubel, Co-Chair Conservation Committee

X. SIERRA CLUB MARIN GROUP

X-1. Please refer to Master Response 17.

X-2. Please refer to Master Response 9.

X-3. Please refer to the response to Comment W-7. Regarding potential impacts of levee construction, please see Impacts 3.5.8, 3.3.2, 3.3.3, and 3.3.4, and their associated mitigation measures.

X-4. Slope stability analyses conducted on the proposed landfill design are summarized under Impacts 3.4.1 and 3.4.2. As discussed under Impact 3.4.1, the landfill is designed to withstand the effects of the "design earthquake" pursuant to state regulations. As summarized in the Regulatory Background discussion of Section 3.4, according to CCR Title 27 §20240 the design earthquake for Class III landfills is the maximum probable earthquake (MPE), and for Class II landfills it is the maximum credible earthquake (MCE). (Note that since publication of the DSEIR, the applicant has withdrawn the request to reclassify Area G as a Class II landfill [see Master Response 6]; therefore, requirements specifically for Class II landfills would no longer apply.) Because some permanent seismic deformation would result, Mitigation Measures 3.4.1a and 3.4.1b require the implementation and updating of the facility's Post-Earthquake Inspection and Corrective Action Plan. Please also refer to Master Response 22. As discussed in Section 3.5, Hydrology and Water Quality and addressed in Impact 3.5.7, the landfill's permanent and major temporary diversion and drainage control facilities are designed and constructed to carry the peak discharge resulting from the 100-year, 24-hour storm event, as required by CCR Title 27.

X-5. Traffic impacts of the project are addressed in DSEIR Section 3.10, Transportation and Traffic. Please also refer to Master Response 5. As indicated in Section 3.10 (page 3.10-3), the traffic analysis assumes construction of the grade-separated access road, and if for any reason the access road project were not completed, additional traffic safety analysis would be required before the revised SWFP could be approved. Please also refer to Master Response 3. Regarding Air Quality impacts, please refer to the response to comment W-8.

X-6. Please refer to Master Response 10 regarding the facility's location in a wetland.

X-7. Please see the response to comment V-4. Please also refer to Master Response 9, which includes a table showing the destination of Marin County waste, some of which is out of county.

X-8. Comment noted; the DSEIR identifies the Mitigated Alternative as the Environmentally Superior alternative.

Comment Letter Y

Director
Marin Community Development Agency
3501 Civic Center Drive
Room 308
San Rafael, CA 94303 August 28, 2003

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2003 SEP -2 P 3:24
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Sir:

Sustainable Novato, a non-profit group dedicated to helping greater Novato adopt sustainable ways of living and working in order to improve the long-range prospects for our community, wishes to register the following comments about the proposed expansion of the Redwood Landfill.

1.As a former member of the Marin County Board of Supervisors in 1998 and as chairman of the County Congestion Management Committee, I helped arrange an agreement with the Landfill Co.,in concept, that the Landfill Company would erect a "flyover" overpass to improve the safety of the landfill's entry and exit paths. Any delay of that agreement places your company in a serious liability position Y-1

2. A signed agreement between the County and Landfill Co. as to the existing EIR and potential affects and was agreed to by the Novato City Council when I was a member of that Council. We realized then that the alternative was finding a new site and that would be very costly. It was questioned then as to the possible length of the landfill's capacity in years. To allow the ability to increase the daily tonnage of waste to get an already promised "flyover" would fly in the face of realistic thinking. Any increase through the manner in which the mountain of waste would grow should only be allowed to extend the years of the existence of the landfill. The Landfill Co. should live up to its agreement. Y-2

3. Why is it in our community's interest to become the dumping ground for much of Northern California's excess waste just to get a fly over for safety reasons when you have already agreed in concept to building the flyover?

4. It is not clear from the EIR whether the new interior configurations of the landfill, needed to increased volumes of waste, will be adequate in major earthquakes and other possible catastrophes. With the threat of earth warming and a rising sea level with potential of loss of low level lands, the position of the landfill area is dangerously close to the water's edge. Obviously a larger mountain of waste will also increase the potential for pungent odors. How will that be avoided? Y-3 Y-4

5. Truck traffic carrying the increased waste volume will arguably add to already congested roads, making our transportation situation even less sustainable than now and would be unacceptable to most of our residents. Y-5

6. Increasing the capacity of the landfill will greatly increased volumes of waste and possibly shorten the life of the landfill if your calculation are wrong, thus making our solid waste disposal problem even less sustainable than it is now. Where will our waste be sent if the landfill fills up more quickly than anticipated, and how much more will that cost us? Y-6

Comment Letter Y

We believe that you should live up to your agreement to build the "flyover overpass" and then approach the people of this area to find a way that both the landfill and the people can respect one another and their needs. Y-7

Sincerely

Harry J. Moore
CAO Sustainable Novato
415-897-0822
hmoore@marincounty.net

Y. SUSTAINABLE NOVATO

Y-1. Please refer to Master Response 3. This letter appears to be directed to the applicant, though it is addressed to the "Marin Community Development Agency."

Y-2. Please refer to Master Response 3.

Y-3. It is not clear what is meant by "interior configurations." Landfill stability is addressed in Impacts 3.4.1 (with respect to potential effects of earthquakes), 3.4.2 (with respect to the effects of gravity and settlement), and 3.4.3 (with respect to the effects of differential settlement). Landfill stability analyses took into account proposed revisions to the landfill design, including the steeper slopes by which additional capacity is provided. Please also refer to Master Response 22. With respect to potential sea level rise, please refer to the response to comment KK-12.

Y-4. Please refer to Master Response 15.

Y-5. Traffic impacts are addressed in DSEIR Section 3.10, Transportation and Traffic. Please refer to Master Response 5.

Y-6. Regarding site life, please refer to Master Response 21. Speculating on the future cost of waste disposal is beyond the scope of this EIR.

Y-7. Please refer to Master Response 3.

Comment Letter Z

WaterKeepers

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2003 SEP 23 P 3:3

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Mr. Tim Haddad, Environmental Coordinator
Community Development Agency
35-1 Civic Center Drive, Room 308
San Rafael, Ca. 94903

9/18/03

Re: Redwood Landfill expansion, draft EIR

Dear Mr. Haddad;

As the Petaluma Riverkeeper and an avid outdoorsman, with over 30 years of experience in the Petaluma Marsh, I have some serious reservations concerning the proposed Redwood Landfill permit revision as outlined in the Draft Subsequent Environmental Impact Report. The existing Landfill has serious impacts on the surrounding area and there are some negative effects on wildlife in the Petaluma Marsh that the draft EIR fails to address. Z-1

Having traveled San Antonio Creek on a regular basis since the 1970's I have had occasion to watch the Redwood Landfill expand to the large scale operation it is today. For the last 5 years I have worked as the Petaluma Riverkeeper, a program of Waterkeepers Northern California, and have recorded some of the landfill's activities on film. I also own and regularly visit a small cabin on the edge of the Petaluma Marsh where I often spend the night. Here are some of my observations.

Over the last several years (5 to 10), the Landfill has regularly run it's high intensity lights and heavy equipment late into the night; sometimes all night long. The lights and noise are very apparent and obtrusive, even at distances over a mile away. The draft EIR proposes to expand the hours of operation at night, though I found no specific stopping time mentioned. I'm sure this activity has a deleterious effect on the resident wildlife, migratory birds, and endangered species that traditionally frequent the Petaluma Marsh. In fact as an avid duck hunter, one who has hunted the marsh regularly since it was opened as a public hunting area by the Dept. of Fish and Game, I have noticed a steady decline in the number and variety of ducks and other water birds that use the marsh over time. For several years, beginning in the late 1980's, I kept records of ducks taken by sending a wing from each to the US Fish and Wildlife Service for their waterfowl census. At the conclusion of the season they would send me a tally. I hunted using the same methods a similar number of days each season. The duck numbers declined steadily. While other factors could contribute to this decline, I believe the expanded nighttime operation of the Landfill played a major part. Z-2

San Francisco BayKeeper DeltaKeeper Petaluma RiverKeeper

WaterKeepers Northern California, Presidio Building 1004, POB 29921, San Francisco, California 94129-0921 P 415.561.2299 F 415.561.2290 www.baykeeper.org

Comment Letter Z

WaterKeepers

Same song, different verse; for the past few years the Landfill has been using loud cannons and other noises for bird abatement. They are fired at regular intervals all day long. While I saw no mention of this practice in the draft EIR, it must have a negative effect on birds and other wildlife in the Petaluma Marsh. The cannon shots and other whistling noises are clearly audible in the middle of the marsh. The ponds I regularly hunt are near the old radio building off Neils Island, about a mile from the dump. I can hear the reports from the landfill clearly whenever I am out there. Bird abatement noise has no place next to a State Wildlife Area; especially one that harbors endangered and threatened species like the Clapper Rails and Black Rails. Birdlife belongs there. It is not just seagulls and crows that are affected by loud and persistent noises. Z-3

I find that the draft EIR inadequately addresses the Redwood Landfill's impact on wildlife in the marshlands it is adjacent to. The Petaluma Marsh is the largest remaining intact tidal marsh in the San Francisco Estuary, in fact it is one of the last remaining unmolested high water marshes on the West Coast. It has been used as a benchmark for studies in how a pristine marsh functions by biologists at U. C. Berkeley, The S.F. Estuary Institute, and the Point Reyes Bird Observatory. Tidal Wetlands like the Petaluma Marsh have come to be recognized as one the most fertile and important of all ecosystems, fostering more life per acre than any others. The Redwood Landfill has already negatively impacted wildlife in the marsh. An expansion of its scale and hours of operation would further threaten the tenuous balance of nature that exists there. Z-4

We have only recently begun to realize the importance of tidal wetlands and started to protect them. The fact that Redwood is the last remaining landfill bordering a tidal wetland in the Bay Area speaks to its obsolescence. It was created in an era when Wetlands were not highly valued and that era has past. It is now time to close Redwood Landfill, not expand it Z-5

Respectfully yours,

David Yearsley, Petaluma Riverkeeper and wetlands advocate
521 Walnut St.
Petaluma, Ca. 94952
707 763-7756 dmy@sonic.net

Z. WATERKEEPERS (Letter Dated 9/18/03)

Z-1. Comment noted.

Z-2. Please see response to Comment N-22.

Z-3. Please see response to Comment P-4.

Z-4. The value of Petaluma Marsh as wildlife habitat is acknowledged, and mitigation measures are proposed to protect those marsh resources most sensitive to the effects of RLI operational changes.

However, the past negative impacts of the Landfill and its permitted operation are not the subject of the analysis in the DSEIR. Per CCR Title 14 Section 15360, “environment” means the physical conditions which exist within the area which will be affected by a proposed project, with the area involved being that in which significant effects would occur. The "environment" includes both natural and man-made conditions, i.e., those created by the past operation of the Landfill.

Such effects *can* be considered as an incremental impact of the project cumulatively (CCR Title 14 Section 15355) when added to other closely related past projects, but the DSEIR concludes that the increment does not change the level of significance for impacts to biological resources.

Z-5. Regarding other Bayfront landfills, please refer to the response to Comment L-3.

Comment Letter AA

WaterKeepers

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2003 OCT 14 A 9:51

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

October 14, 2003

Via in-person submission by Mr. David Yearsley

Mr. Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Dr. Room 308
San Rafael, CA 94903

RE: Redwood Landfill Solid Waste Facility Expansion and Draft Subsequesnt Environmental Impact Report – SCH No. 1991033042

Dear Mr. Haddad:

Waterkeepers Northern California, and its projects San Francisco Baykeeper and Petaluma Riverkeeper, submit these comments on behalf of their more than 2,000 members residing in and around the Bay Area.[1] The comments, while brief, are representative of some general concerns associated with this proposal. For the reasons set forth below, we believe that the proposed expansion of the Redwood Landfill Solid Waste Facility (Landfill) is improper and the Draft Subsequent Environmental Impact Report (DSEIR) is inadequate to meet the requirements of the California Environmental Quality Act (CEQA), Cal. Pub. Res. Code § 21000 *et seq.* Therefore, the permit for expansion should be denied. AA-1

The Legislature enacted CEQA to protect California's environment and the health of Californian's, to prevent the elimination of plant and animal species due to human activities, to create and maintain ecological and economic sustainability, and to "take all action necessary to protect, rehabilitate, and enhance the environmental quality of the State." Cal. Pub. Res. Code §§ 21000(a)(b)(d)(g) and 21001(a)(b)(e). In light of these CEQA objectives, the purpose of an Environmental Impact Report (EIR) is "to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." Cal. Pub. Res. Code § 21002.1(a). The DSEIR for the Landfill expansion is inadequate to meet these objectives. AA-2

[1] These comments also incorporate by reference letters submitted by Petaluma Riverkeeper, David Yearsley and by Waterkeepers' members Ed and Nancy Spencer.

San Francisco BayKeeper DeltaKeeper Petaluma RiverKeeper

WaterKeepers Northern California, 55 Hawthorne Street, Suite 550, San Francisco, California 94105-3924 P 415.856.0444 FAX 415.856.0443 www.waterkeepers.org

Comment Letter AA

Discussion of Alternatives is Inadequate

The alternatives and mitigation sections are "the core" of an EIR. *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal. 3d 553, 564 (1990). The requirement to set forth project alternatives in the EIR "is crucial to CEQA's substantive mandate that avoidable significant environmental damage be substantially lessened or avoided where feasible."[2]

The DSEIR fails to adequately address the rationale for selecting the alternatives discussed. While the document does mention that the rejected alternatives "do not appear to have the ability to lessen or avoid the project's impact" and "would have failed to meet most of the basic project objectives," this language is vague and does not thoroughly analyze the rationale for selecting only the mentioned alternatives. Additionally, the DSEIR's cursory rejection of the no-project and status quo alternatives is wholly circular. The vague analysis rejects these alternatives for the main reason that the Landfill "could reach capacity as early as 2016." But this result is to be expected from these alternatives, which contradict the very nature of the proposed expansion project, and should not be the basis for rejection of these viable options. Additionally, this section lacks meaningful detail and does not actually compare any of the alternatives to the proposed project. It merely summarizes the differences without providing the public with actual data comparison. Finally, it seems like the reduced scale alternative and mitigated alternative would meet a majority of the project objectives and should have been more adequately discussed in comparison to the proposed project. AA-3

The analysis in this section, therefore, is incomplete and vague and thus violates CEQA requirements.

Discussion of Impacts and Cumulative Impacts is Incomplete

The cumulative impacts section briefly lists multiple projects that could have a cumulative impact on air quality. After proposing inadequate measures to mitigate these impacts, the DSEIR concludes that in terms of cumulative impacts, the total emissions will "remain well above the BAAQMD recommended significant thresholds and inhibit regional attempts to achieve attainment of air quality standards." Despite the enormous air quality problem already facing this region, the DSEIR inexplicably determines that these impacts "should be considered an unavoidable consequence of project approval." It is unclear why this conclusion was reached when other project alternatives would avoid this enormous impact. Moreover, the air pollution from the garbage and sludge can be intense, having a foul odor and unknown toxic effects. The public health and safety impacts to sensitive receptors from diminished air quality are too cursorily dismissed in the DSEIR. AA-4

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[2] Remy, Michael H., *et al.*, Guide to the California Environmental Quality Act at 431 (10th ed. 1999) (citations omitted).

Air Quality Standards are Incorrectly Measured

The DSEIR describes the air quality impacts using only an analysis of particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The Supreme Court, in *Whitman v. American Trucking Associations*, however, recently upheld the US EPA's authority to promulgate the new PM-2.5 baseline. 531 US 457 (2001). Therefore, the DSEIR must be revised to consider a more appropriate baseline of National Ambient Air Quality Standards (NAAQS) at the newer PM-2.5 standard. AA-5

Furthermore, the Landfill currently receives most of Marin's waste and sludge and waste from numerous sites outside of Marin. The transportation of this garbage and sludge (processed sewage) involves the passage of 415 trucks per day over Highway 101. The daily truck traffic would increase to 1,000 trucks per day if this plan is approved. In light of these new impacts, and in addition to the other proposed projects, such as highway expansion, the cumulative impacts to air quality must be more thoroughly discussed. AA-6

Finally, it is commonly understood that landfill gas emissions count towards the tonnage threshold necessary to determine whether a stationary source is a major stationary source and should be subject to federally required permits. It is unclear from the DSEIR whether or not this calculation was properly done. In fact, from the lack of correspondence in appendix G, there is no indication that the air district even participated in any of the comment processes leading up to this DSEIR. This failure to adequately calculate emissions would be a violation of the applicable permitting laws. AA-7

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The DSEIR also fails to adequately discuss impacts and cumulative impacts to hydrology and water quality. "A prejudicial abuse of discretion occurs if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process." *Kings County Farm Bureau,* 221 Cal. App. 3d at 712. The omission of this information precludes both informed decisionmaking and public participation because the DSEIR has done nothing more than dismiss the impacts, without informing the public of what is likely to occur. By failing to mention any future impacts to groundwater quality that might result from the proposed expansion and through cumulative effects, the DSEIR also fails to adequately address this potentially significant problem. AA-8

Impacts to Wetlands

As one of the largest existing tidal marshes in the San Francisco Estuary, the Petaluma Marsh is one of the last remaining unmolested high water marshes on the West Coast. It has been used as a benchmark for studies demonstrating the functions of pristine marshes by biologists at U. C. Berkeley, San Francisco Estuary Institute, and Point Reyes Bird Observatory. Tidal Wetlands have come to be recognized as one of the most fertile and important of all ecosystems, fostering more life per acre than any AA-9

Comment Letter AA

other. The Landfill has already negatively impacted the marsh. An expansion of its scale and hours of operation would further threaten the tenuous aquatic ecosystem. In relation to highway expansion and airport runway expansion, the cumulative impacts to these important wetlands must be adequately acknowledged and discussed. The DSEIR's failure to do so constitutes a violation of CEQA requirements. AA-9

Impacts to the San Francisco Bay

The Landfill is situated on Bay mud, located adjacent to San Antonio Creek, which feeds into the Petaluma River. Currently the water table is only two feet below the bottom of the Landfill. This situation raises significant concerns that toxic material from the mass of waste will leak into San Antonio Creek, the Petaluma River, and hence into San Francisco Bay. Expansion of the Landfill's capacity and increased traffic in the area due to other development projects only increases this concern and must be thoroughly addressed in the DSEIR. AA-10

Conclusion

This proposal is more than just an expansion of the Landfill. It, in fact, would develop the Landfill into a regional waste facility, taking garbage and sludge from much of the Bay Area and, perhaps, beyond. The DSEIR is inadequate to address the full range of environmental impacts resulting from this adverse change. A more thorough DSEIR should be circulated, and in light of the inability to adequately mitigate impacts to air and water quality, the proposal should be rejected for a more environmentally sound no-project alternative. AA-11

Thank you for this opportunity to provide comments.

Sejal Choksi
Program Attorney, Equal Justice Works Fellow
Waterkeepers Northern California

AA. WATERKEEPERS (Letter Dated October 14, 2003)

AA-1. This comment is a general statement of the commenter's opinion of the project and the DSEIR, and does not articulate a specific concern about the DSEIR to which a more specific response would be possible. The DSEIR conforms with CEQA requirements and standards, and is consistent with an EIR's purpose as an information document, to inform public agency decision-makers and the public generally of the significant environmental effects of the project, pursuant to CEQA and consistent with CEQA Guidelines. The DSEIR analyzes the relevant issue areas, identifies significant impacts of the project, evaluates the severity of the impacts, and identifies mitigation measures to reduce the severity of significant impacts. The DSEIR also evaluates a reasonable range of feasible alternatives as required by CEQA. The DSEIR analysis is supported by documentation that is referenced and discussed as appropriate.

AA-2. The commenter's opinion regarding the DSEIR's compliance with CEQA is noted. Please see the response to comment AA-1.

AA-3. The introduction to the Alternatives Analysis in Chapter 5 of the DSEIR describes the rationale for alternatives selection and for the rejection of several alternatives that were considered. The level of detail and approach used in the analysis of the alternatives in this DSEIR is customary, appropriate, and consistent with the CEQA Guidelines. Regarding revised site life projections, please refer to Master Response 21. Note that the conclusions regarding the No Project Alternative and the Mitigated Alternative have been modified in the text of the FEIR to reflect the revised site life calculations. However, the Mitigated Alternative remains the Environmentally Superior Alternative in the FEIR.

AA-4. The Cumulative Impacts section in Chapter 4 of the DSEIR follows the requirements for this part of an EIR, as described on page 4-3 of the DSEIR. An EIR must identify potentially significant impacts of a project, identify feasible mitigation measures to reduce the severity of the impact, and conclude whether these mitigation measures are sufficient to reduce the impact to a less-than-significant level. In the case of Impact CU-2, the DSEIR finds that the available, feasible mitigation measures would not be sufficient to reduce this impact sufficiently to fall beneath the threshold of significance. Therefore, the DSEIR concludes that this would be a significant, unavoidable impact. Odor and health impacts are evaluated in Section 3.2 (Air Quality) of the DSEIR.

AA-5. DSEIR Table 3.2-1 has been revised in this FEIR to reflect the approval of the State of California annual PM-2.5 standard. The standard became effective on July 5, 2003. PM-2.5 is a subset of PM-10, which was analyzed in detail in the DSEIR.

PM-2.5 emissions and impacts were not calculated as part of the DSEIR air quality analysis, since at this time there are no reliable means of estimating such emissions. For example, the current versions of models used in estimating PM-10 emissions in the DSEIR from cars, trucks, and off-road equipment (i.e., CARB's EMFAC and OFFROAD

Emissions Models) do not provide any emissions data for PM-2.5. As such, in the absence of a reliable approved method to estimate PM-2.5 emissions, it is not possible to accurately estimate PM-2.5 concentrations. Rather, the DSEIR air quality analysis relies upon currently available tools and guidance to evaluate project-related air quality impacts. Further, the BAAQMD (and other Air Districts throughout the state) have not established thresholds of significance or guidance for analyzing daily or annual PM-2.5 emissions. Therefore, even if one could determine the ambient concentration of PM-2.5, it is not clear how one would asses the significance or cumulative impacts associated with PM-2.5 emissions. It is for these reasons that PM-2.5 impacts were not evaluated in the DSEIR.

AA-6. The emissions associated with the projected increase in daily truck traffic are discussed in Impact 3.2.2, in Section 3.2 (Air Quality) of the DSEIR, with the net increase in emissions from baseline conditions shown in Table 3.2-6. Impact 3.2.2 concludes that the net increase in NO_x emissions from increased off-road equipment use and on-road vehicle travel would contribute to existing violations of the state ozone standard. Even with the implementation of all feasible mitigation measures, this impact was found to be an unavoidable consequence of the project. Further, Impact 3.2.3 determines that project traffic would not substantially contribute to violations of CO concentration standards at local intersections. Finally, the combined emissions from the project, including emissions from increased daily truck traffic, are found to be significant and unavoidable in DSEIR Impact 3.2.11.

AA-7. The commenter is correct in noting that landfill gas emissions are included in the emissions inventory process for determining whether a facility is considered a major stationary source and subject to federal permitting. Redwood Landfill is defined as a major stationary source and, as such, is subject to the Operating Permit requirements of Title V of the federal Clean Air Act and BAAQMD Regulation 2, Rule 6, Major Facility Review. Applicable federal, state and local regulations are discussed on DSEIR pages 3.2-4 through 3.2-10.

The BAAQMD received a copy of the NOP distributed on July 5, 2000, but did not submit a response letter. During preparation of the DSEIR, EIR preparers had several telephone conversations with BAAQMD permitting staff. BAAQMD staff submitted a comment letter dated October 16, 2003 in response to the DSEIR (see Letter B in this document) and met with key members of the SEIR team on January 29, 2004 to discuss their comments and other comments received on the DSEIR. BAAQMD staff are responsible for ensuring compliance with applicable federal, state and local permitting laws outside of the EIR process. During review of the DSEIR, BAAQMD staff did not identify any objections to the methodologies or conclusions with respect to the landfill gas emission calculations.

AA-8. Impacts to groundwater are addressed in DSEIR Section 3.4, Geology, Soils, and Seismicity, and impacts to surface waters are addressed in Section 3.5, Hydrology and

Water Quality. DSEIR Section 3.5 identifies 10 significant impacts to hydrology and surface water quality, and Section 3.4 identifies 6 significant impacts to groundwater. The nature of each impact is described and, contrary to dismissing them, feasible measures to reduce or eliminate each identified impact are identified, as required by CEQA (§ 15126.4). Information from background reports and studies was provided, as warranted to support or clarify the discussion of particular impacts.

As indicated in DSEIR Chapter 4, with implementation of mitigation measures identified in the DSEIR, the contribution of the project to cumulative hydrology and water quality impacts would be less than cumulatively considerable. In response to this comment, however, the cumulative impacts analysis (DSEIR Chapter 4, page 4-8, third paragraph) is hereby revised to clarify this conclusion. (New language is underlined; deleted language is indicated by ~~strikethrough~~ text):

HYDROLOGY AND WATER QUALITY

~~With implementation of the measures identified to mitigate project impacts (refer to Chapter 3 of this report), the potential project impacts related to surface water hydrology and water quality would be site-specific and would not combine with related impacts of other projects to create cumulatively considerable impacts.~~

The cumulative impact analysis for hydrology and water quality considers the contribution of the proposed project to water quality degradation and stormwater runoff to San Antonio Creek, the Petaluma River, and San Francisco Bay, in the context of existing and proposed development projects outlined in Table 4-1. Other projects in the table, including the Buck Center complex, the construction of the new access bridge to the landfill, the widening of U.S. 101, and new commercial and residential developments in Novato will contribute incrementally to the pollutant and sediment load of the aforementioned waterways, although these developments will be subject to existing regulations to protect water quality.

The landfill's current WDRs (Order No. 95-11, Item no. 32) state that the WDRs implement the water quality objectives stated in the San Francisco Bay Basin Plan adopted by the Regional Board in December 1986. Similarly, the specifications of the next revised WDRs also will be designed to implement water quality objectives in the current Basin Plan. Other projects also will be subject to RWQCB requirements that implement the water quality objectives of the Basin Plan.

As required under CCR Title 27 and in RLI's WDRs, a detection monitoring program is in place at the landfill, and would continue under the project. Detection of any statistically significant change from background levels of the specified monitoring parameters must be reported to the RWQCB, and triggers additional scrutiny and, potentially, as determined by the RWQCB, corrective action. As specified in Mitigation Measure 3.5.3d, water that has contacted refuse at the working face or compost at the composting facility ("contact water") will continue to be treated as leachate and retained on site. Under the project, all activities within the landfill property would continue to be governed by terms of the NPDES

General Industrial Activities Storm Water Discharge Permit and revised WDRs. Activities within the landfill footprint would not change substantially from those currently permitted in terms of changes to impervious surface area and disposal activities. (Subsequent to publication of the DSEIR, the applicant withdrew the proposal to reclassify Area G as a Class II disposal unit.) Outside the landfill footprint the use of fields in the Oxbow area for composting could increase the amount of impervious surface for the areas serving as composting pads (as required under Mitigation Measure 3.5.3b). However, the composting pads are required to have leachate collection systems and as noted any water contacting compost is required to be treated as leachate (pursuant to Mitigation Measure 3.5.3d); therefore much of the stormwater contacting this area would not be discharged from the site, but instead would be directed to the existing or a newly constructed leachate impoundment.

Therefore, with implementation of the measures identified to mitigate project, the project's contribution to cumulative impacts on hydrology and water quality would be less than cumulatively considerable.

AA-9. The DSEIR analyzes cumulative impacts in Chapter 4. The comment appears to request analysis of runway expansion, presumably at Gnoss Field, as part of a cumulative analysis. The Airport Master Plan is discussed in DSEIR Chapter 3, Section 3.6, and further analyzed in Chapter 4.

AA-10. Surface water quality impacts and mitigation measures are discussed in DSEIR Section 3.5. Mitigation measures proposed as part of the project and identified in the DSEIR would reduce impacts to a less-than-significant level. Groundwater impacts are addressed in DSEIR Section 3.4; the analysis concluded that potential impacts to groundwater would be mitigated to a less-than-significant level with implementation of the measures identified in the DSEIR. Please also refer to Master Response 13 regarding the effectives of the LCRS. Cumulative effects on traffic also are evaluated in DSEIR Chapter 4.

AA-11. Regarding the development of the site as a "regional waste facility" please refer to Master Response 19. As discussed in Sections 3.4 and 3.5, implementation of measures proposed as part of the project and identified in the DSEIR would reduce impacts to groundwater and surface waters to a less-than-significant level. As the commenter indicates, the DSEIR identified several significant, unavoidable air quality impacts. Since publication of the DSEIR, the applicant has requested several major changes to the project (see Master Response 17), and the air quality analysis has been modified accordingly; please refer also to Master Response 16.

The lead agency does not find sufficient reason to revise and re-circulate the DSEIR.

Comment Letter BB

Marin County Planning Commission
Marin County Civic Center
Room 328
San Rafael, California

Dear Commissioners,

I am writing and faxing my letter to you in response to an article in the Marin IJ stating that you are holding a public hearing on the capacity expansion at Redwood Landfill on Monday, July 28th. As an interested person who does read the public notices almost daily, I am alarmed to find this on such short notice. Perhaps it was published while so many of us are taking summer vacations, but I question the timing of this hearing.

As a Novato resident, I am vehemently disagreeing with a statement that the county's solid waste enforcement office that there have been no complaints about the dump or odor in several years. Perhaps that obscure office should check with the Bay Area Air Quality Board before stating such a ridiculous and untrue comment. BB-1

EVERY FALL, WINTER, AND SPRING MORNING IT STINKS!!!!.

Beyond the fouling of our air, I find it inconceivable that a semi hazardous waste portion will be approved for "primarily local municipalities" to dump petroleum and other contaminated soil in..(Not to mention the number CRITICAL accidents that occur at the highway crossing.) All this in light of the recent development that our Bahia residents will not be able to dredge the lagoon that they paid for because of 10-12 endangered birds makes me know that we have our priorities completely twisted. BB-2

It is ludicrous to consider a semi hazardous waste facility in the same water system that we are so heroically trying to save clapper rail birds! BB-3

I am quite sure that Redwood Landfill is willing to pay for the overcrossing so that they may continue in business. It is a nice gesture on their part, however, this is a state responsibility. It is not O.K. to "BUY" approval for continuing to contaminate our soil, air, and water. BB-4

I would love to attend this meeting because I think that it is important for you to hear that we care about our community and do not want the approval given for this semi-hazardous waste. Unfortunately, I have to go to work. Redwood Landfill has not been a good neighbor, has not complied with air quality standards, and should not be given approval for semi hazardous waste collection.

Sincerely,

Nancy Andrews
461 Fieldstone Drive
Novato, CA 94945
415-893-0505

INDIVIDUALS

BB. NANCY ANDREWS

BB-1. Please refer to Master Response 15 regarding odor complaint history.

BB-2. Please refer to Master Response 6 regarding the applicant's withdrawal of their proposal to develop Area G as a Class II waste unit. Please note that the project has not yet been approved or rejected, and that the purpose of an EIR is to inform the public and decision-makers of the potential environmental consequences of a project, if it were to be approved.

BB-3. Comment noted.

BB-4. Please refer to Master Response 3 regarding the Access Bridge.

Comment Letter CC

RECEIVED
2003 AUG -7 P 12:07
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

5 Ashley Court
Novato, CA 94945
August 6, 2003

Alex Hinds, Director
Marin County Community Development Agency
3501 Civic Center Drive
#308
San Rafael, CA 94903-4157

Re: Draft EIR/Redwood Landfill

Dear Mr. Hinds:

I am against the approval of the expansion of Redwood Landfill. In the past, I have been able to smell a very disagreeable odor coming from the landfill while in my house! CC-1

According to the draft EIR, there are "5 significant unavoidable adverse impacts (which) involve air quality emissions....." I do not want the landfill expanded because I do not want the quality of life in my neighborhood reduced. CC-2

Thank you for reading this letter.

Sincerely,

Madelyn Baran

Madelyn Baran

CC. MADELYN BARAN

CC-1. Please refer to Master Response 15 regarding odor odors.

CC-2. Comment noted.

Comment Letter DD

Rosario Carr-Casanova, Ph.D.
2516 Laguna Vista Drive
Novato, California 94945

AUG 18 2003

August 17, 2003

Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, California 94903

Dear Commissioners:

My home faces the Redwood Landfill and it is directly on the path of the daily south winds. The same winds that cause landing problems for planes using the Gnoss Airport.

I am addressing and writing the Commission for two reasons:

1.- There has not been enough time to provide for ample and clear communication between the residents of Marin County and the Commission. The present use and the proposed use of Redwood Land fill and its impact on the health of our children calls for an intense review by you and by the residents you serve and represent. DD-1

I am asking for an extension of at least three months for public hearing and a better participation of the residents of Marin. Traditionally families are away for summer vacations and therefore not reachable. In the past Government bodies have accommodated their schedule, accommodating the people they serve and represent.

2.- In order that my options remain open, I am raising issue with each and every portion of the DSEIR including but not limited to: Aesthetics & Visual Resources, Air Quality, Biological Resources, Geology, Soils, and Seismicity & Geophysical, Hydrology and Water Quality, Land Use and Planning, Noise, Public Health and Safety, Hazards, Public Services, Utilities, and Energy, & Service Systems, Transportation and Traffic & Circulation, Population and Housing, Energy and Natural Resources, Cultural Resources, and Social & Economic Effects related to Physical Impacts. DD-2

Thank you for you attention.

Sincerely,

Rosario Carr-Casanova, Ph.D.

DD. ROSARIO CARR-CASANOVA, PH.D. (Letter Dated August 17, 2003)

DD-1. Please note that the Planning Commission Public Hearing was continued twice, from July 28, 2003, to August 18, 2003, and then to September 22, 2003. The public comment period was extended an additional 45 days, from August 29, 2003 to October 14, 2003, to allow additional time for public review and comment.

DD-2. Each of the issue areas noted in this comment is evaluated in the DSEIR, or, in the case of Social and Economic Effects related to Physical Impacts, is not a CEQA requirement. This comment presents a list of the Chapter 3 analysis sections; however, because it does not specify any issues or concerns related to the DSEIR analyses, a more specific response to any concerns the commenter may have is not possible.

Comment Letter EE

Rosario Carr-Casanova, Ph.D.
2516 Laguna Vista Drive
Novato, CA 94945

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

9/22/03

Attention: Joyce Evans
Fax 415 499-7880

Dear Mr. Haddad:

This letter is to inform you of an omission in the August 18. 2003 minutes of the Planning Commission in paragraph five of item number 7, Redwood Landfill.
Please add:

Mr. Ramin Khany, Manager of the Redwood Landfill said that the total capacity of the landfill was 19,000,000 cubic yards. Mr. Glenn Royroft, Engineer for the Redwood Landfill said that the total capacity as measured personally by him was 25,000,000 cubic yards and that the figure of 19,000,000 cubic yards was incorrect. EE-1

Thank you for making these corrections.

Sincerely,

Rosario Carr-Casanova Ph.D.

Rosario Carr-Casanova, Ph.D.

EE. ROSARIO CARR-CASANOVA, PH.D. (Letter Dated September 22, 2003)

EE-1. Please refer to Master Response 12 regarding landfill capacity.

Comment Letter FF

RECEIVED

2003 OCT 14 P 2:33

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Rosario Carr-Casanova, Ph.D.
2516 Laugna Vista Drive
Novato, CA 94945

October 13, 2003

Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill DSEIR

Dear Mr. Haddad:

Attachment #1 is a photo of the Redwood Landfill showing a pole with a system of tubes coming from it which dispenses a noxious perfumed odor to attempt to mitigate the smell.

What is the agent that is used to cover up the odor emanating from the landfill? **FF-1**

What effect does this odor counteractant liquid as a vapor phase spray have on humans, animals, and vegetation?

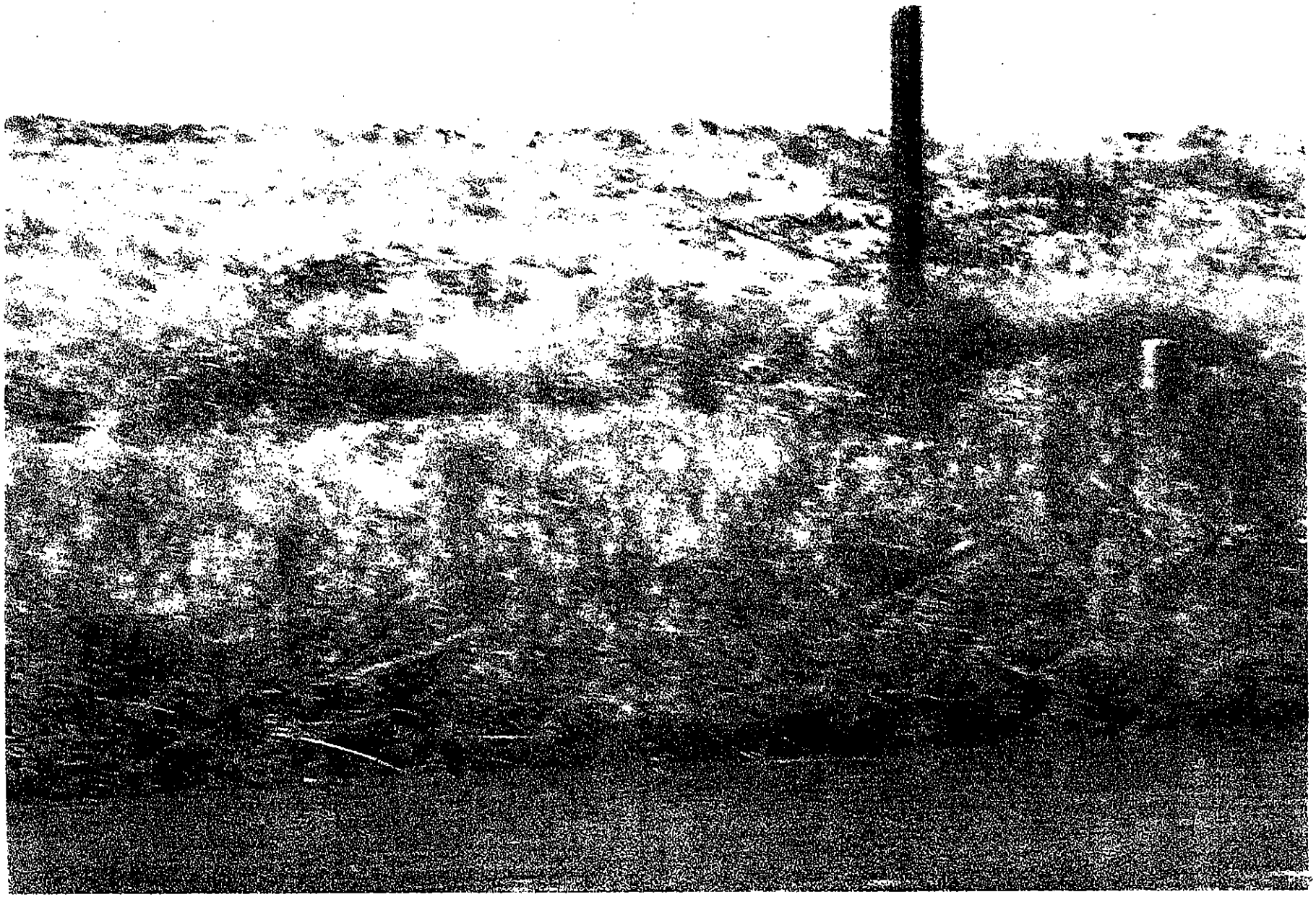
What is the purpose of the pipes shown in attachment #2 which appear to come from the top of the landfill and down to the edge of the base of the landfill?.
What is inside the pipes and where is it being carried? **FF-2**
Does the orange plastic fence in attachment #2 serve some purpose?
Does it serve to contain garbage?
Does it serve as a demarcation of the property line of the landfill?
How far is the property line of the landfill from San Antonio Creek?

Please respond to these concerns regarding the DSEIR and the Redwood Landfill in writing to me at the address on the letterhead.

Regards,

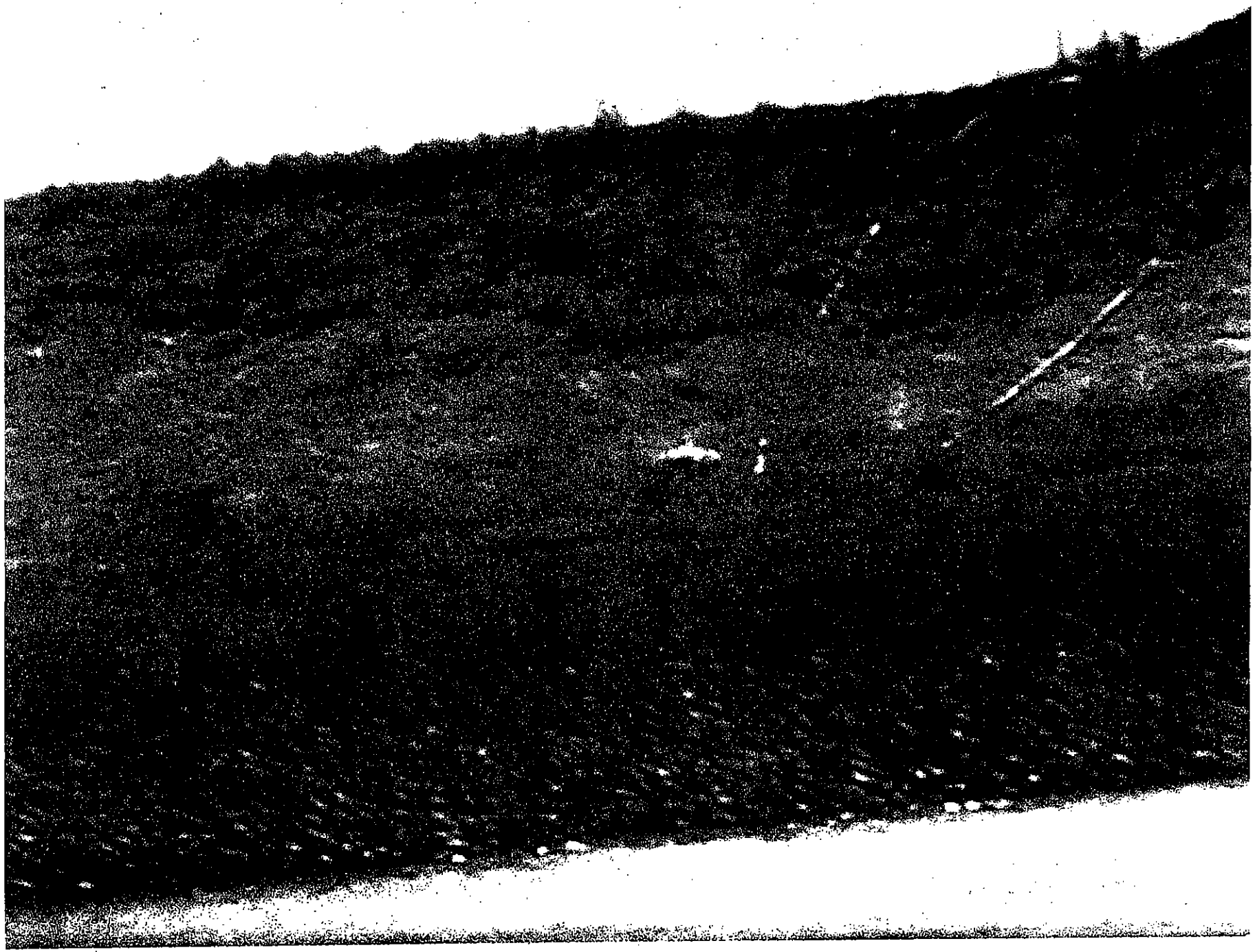
Rosario Carr-Casanova, Ph.D.

Comment Letter FF



Attachment 1

Comment Letter FF



Attachment 2

FF. ROSARIO CARR-CASANOVA, PH.D. (Letter Dated September 22, 2003)

FF-1. The manufacturer's product specification sheet provided to the County by the applicant indicates that the product is a Green Label Products 'Concentrated Odor Neutralizer Agent,' with the trade name '2000 Technical Deodorizer,' and is formulated to counteract airborne odors. The specifications sheet indicates the product contains emulsions, natural essential oils, aromatics, wetting agents, and preservatives, and is non-flammable, non-corrosive, a non-carcinogen, non-toxic, non-phosphate, and non-enzyme. The product meets all NISH, OSH, USEPA, regulatory requirements and does not contain any ingredients which have a threshold limit value (TLV) above the federal regulatory established limits (Green Label Products, Inc., 1991).

FF-2. While the photograph is of poor quality, the pipes in the photo appear to be either drainage pipes for surface water runoff, or header pipes for collected landfill gas. According to the applicant, black piping is used on site for the landfill gas and collection system, for condensate, and for surface water drainage. The orange plastic fencing is used for litter control (Meserve, 2004). As shown in many DSEIR figures, e.g., Figure 2-2 and 2-6, the landfill property borders San Antonio Creek.

Comment Letter GG

Haddad, Timothy
From: Gilkerson, Christopher [Christopher.Gilkerson@schwab.com]
Sent: Monday, August 18, 2003 1:34 PM
To: Murray, Cynthia; Haddad, Timothy; Hinds, Alex
Cc: Clark, Susannah; Hundley, Melissa
Subject: Proposed Expansion of the Redwood Landfill

TO:

Cynthia Murray, Supervisor
Planning Commission Members—
Allan Berland
Steve Thompson
Don Dickenson
Jo Julin
Raymond Buddie
Ross Herbertson
C. Henry Barner
Alex Hinds, Director Community Development Agency
Tim Haddad, Environmental Coordinator

By Email to Supervisor Murray, Messrs. Haddad and Hinds By Fax to Planning Commission (c/o Mr. Hinds)

RE: Proposed Expansion of Redwood Landfill, Hearing on August 18, 2003

Dear Ms. Murray, Planning Commissioners, Mr. Haddad, and Mr. Hinds:

I am writing about the draft Environmental Impact Report (EIR) and the proposal to expand greatly the Redwood Landfill. Please accept and consider my comments as part of the hearing record today. I was told by phone today by Planning Commission staff that your rules do not allow submission of electronic comments. I think you need to update your rules. I regret not being able to attend the hearing in person, but did not have advance notice of it.

My wife, children, and I live in the Rush Creek Subdivision in the County, a few miles south of the Redwood Landfill. I am deeply concerned about Redwood Landfill's proposed expansion as well as the lack of notice to potentially affected residents who live just south of Gnoss Field. Neither I nor my neighbors received any direct notice of Redwood Landfill's proposed plan, although we are the Marin County residents who would be most negatively impacted in terms of the increased environmental and health hazards. (I understand the legal requirement may only require actual and direct notice to property owners within a certain number of feet from the site. But broader notice is certainly permitted.) Because the County's Web site does not link to the draft EIR, I am not able to comment at this time on the EIR itself. I phoned to request a copy of the EIR today, and I plan to submit additional comments by August 29. GG-1

In the meantime, I have reviewed the staff report that was circulated to the Planning Commission for the July 28, 2003 hearing, as well as a recent article in the Novato Advance that described the plan. In addition to the process concerns noted above, I have three primary concerns about the proposal itself.

First, according to the Novato Advance article, the proposal effectively would increase the number of daily truck visits from 600 to 1,000, and nearly triple the tonnage amount accepted each day from 1,290 tons to 3,400 tons. The impact, according to the staff report would be "5 significant unavoidable adverse impacts" that cannot be mitigated: "air quality emissions relating to particulates, fugitive landfill gas, reactive organic gasses, nitrous oxide and cumulative effects associated with these emissions." In addition, Redwood Landfill wants to reclassify to enable to GG-2

Comment Letter GG

begin accepting semi-hazardous wastes for the first time. Nearby residents deserve to understand fully what these "significant unavoidable adverse impacts" and semi-hazardous waste could mean to them. Is there a chance that they could have a negative impact on the health and well-being of residents, families, neighbors, and children who live downstream and downwind from the site? The landfill should not be thought of as located in some remote corner of the county. We are connected by road, air, water, and land to what happens at the Redwood Landfill. Where will this additional and semi-hazardous waste come from? Marin County government should not support and facilitate the garbage importation business and its accompanying unknown and latent health and environmental hazards. GG-2 GG-3

Second, the landfill sits at the edge of an extremely environmentally sensitive area. For example the Petaluma River flows directly by the landfill site. Although the original permit for a small landfill may have been consistent with the County Plan, a lot has happened in the last 10 years, including the development of the Rush Creek Subdivision and other nearby neighborhoods, and the recognition that the wetlands areas draining into San Pablo Bay are interconnected to the health and welfare of all of northern Marin County. The county, many of its taxpaying citizens, and many not for-profit agencies just raised and spent some $18 million to purchase the Bahia land parcel for this very reason. Moreover, for the same reason, most county officials are on record as opposing the proposed casino just down Route 37. How would approval of this landfill expansion, including the acceptance of semi-hazardous waste and almost three-times the daily tonnage, be consistent with those positions and that vision of northern Marin County? Surely the few additional tax dollars and increasing the convenience of waste management transporters is not worth the approval of a huge dump on the edge of this fragile ecosystem. GG-4

Third, according to the staff report, Redwood Landfill - without prior approval - has already made operational changes that violate its current permit. These are not detailed in the report. Why should the County bless these permit violations, and consider allowing a known violator to expand significantly its landfill operations? The condition or promise of the Landfill paying for a much-needed overpass to avoid the traffic perils its business has created on Highway 101 should not obfuscate the issue. The Marin/Sonoma Narrows Project, chaired by Supervisor Muray, is the appropriate forum for traffic safety considerations. GG-5

I appreciate your consideration of my comments. I would enjoy an opportunity to discuss them with you.

Very truly yours,

Christopher Gilkerson, Esq.
220 Saddlewood Dr.
Novato, CA 94945
415.209.9616

GG. CHRISTOPHER GILKERSON, ESQ., (Letter Dated August 18, 2003)

GG-1. The County of Marin sends all notices regarding environmental impact reports, including Notices of Preparation, notices of availability of draft and final documents, public hearing dates, and public comment periods, to all neighbors within 600 feet of the property line of the project site, as well as to local agencies and to anyone who has requested inclusion in a mailing list for the project. In addition, the County publishes these notices in local newspapers.

GG-2. The comment accurately re-states project elements and impacts described in the DSEIR. However, regarding changes to the proposed project, please see Master Responses 6 and 17. Regarding additional information on health risks of the project, please see Master Response 11.

GG-3. Regarding recent waste imports from other counties, please see Master Response 9.

GG-4. The proposed project's consistency with County plans and policies is evaluated in Section 3.6 of the DSEIR.

GG-5. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18. Regarding the access bridge, please see Master Response 3.

Comment Letter HH

September 22, 2003

RECEIVED

2003 SEP 22 P 4: (

MARIN COUNTY
COMMUNITY DEVELOPMEN
AGENCY

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Dear Agency Director Hinds, Environmental Coordinator Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). The potential adverse environmental impacts of the RWLF proposal could directly affect the health of me, my family, and my neighbors. I appreciate this opportunity to comment on the RWLF's proposal and the draft Environmental Impact Report ("DEIR"), and I thank the preparers of the DEIR for their efforts at completing a comprehensive analysis and study. HH-1

The DEIR provides a clear, reasoned basis for rejecting the project. However, the DEIR in several places suffers from deficiencies that the Planning Commission and other decision makers should carefully consider. In short, the DEIR underestimates the significant adverse impacts or states that many of them can be mitigated without providing sufficient support or reasoned analysis.

The comments below are organized in the following categories: (I) general background considerations the Commission and other government officials must deliberate when reviewing the proposal and DEIR; (II) key considerations relating to certain significant adverse environmental impacts relating to air quality identified in the DEIR; (III) impact on ground water, and certain deficiencies in the DEIR that the Commissioners should direct the EIR consultant to address relating to conclusions or assumptions the DEIR makes without sufficient support, and (IV) significant adverse impacts of the site's current operation that are not sufficiently analyzed and must be dealt with before consideration should be given to the proposal or even the Mitigated Alternative. HH-2

I. General Considerations that Must Be Deliberated as a Threshold Matter.

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. It is absurd to think otherwise. The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin County would be taking a regressive step inconsistent with contemporary land management and environmental stewardship in approving the HH-3

proposal or any alternative that would increase the daily trips and tonnage permitted today. HH-3

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the EIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. HH-4

Moreover, RWLF has failed to meet its obligations under its current permit, and its past actions and inactions are directly relevant for considering whether it can be trusted to undertake the well over a hundred mitigation measures identified in the DEIR. The great majority of the mitigation measures are not even part of RWLF's own proposed project and, instead, are identified independently by the DEIR. HH-5

The proposal makes abundantly clear that it is intended to transform RWLF into a regional waste facility. (DEIR at 1-10.) The expansion's purpose is to almost double daily intake and accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County. Given RWLF's environmentally sensitive location in Marin County, it makes no sense other than from a corporate profit standpoint. There simply is no overriding consideration that could result in a determination by government officials that the public benefits of the RWLF proposal outweigh the significant unavoidable impacts of the project. (DEIR at 1-15.) As the DEIR indicates, the only possible benefit to Marin County would be to expand the landfill's life expectancy beyond the DEIR's projection of 2016. But as the DEIR also points out, the proposal would only glean an additional 8 years at most in terms of life expectancy (DEIR at 1-11). Those few additional years – while RWLF's owners are profiting from the waste importation business – would come at a tremendous cost and risk to the northern Marin County and Bay lands environment and those of us who live in or near it. HH-6

II. Significant Unavoidable Impacts to Air Quality.

The impact of the project would permanently and substantially impact air quality in Marin County and potentially the health and welfare of nearby residents. The DEIR catalogues the major impacts and concludes that no possible mitigation measures would uphold air quality standards and goals (e.g., those of the Bay Area Air Quality Management District). The resulting negative impact to air quality would be an "unavoidable consequence of project approval." (DEIR at 4-7; see also 3.2-45.) HH-7

The discussion of cumulative impacts, however, is too brief (one-page in the lengthy EIR) and does not attempt to measure the overall impact to air quality or the impact on Marin County residents who live in close proximity and down-wind from the RWLF (e.g., within 5 miles). HH-8

Below is a brief summary of some of the major air quality impacts that must be viewed together, not in isolation:

- Increased operations that would result from the proposal include more than doubling of traffic to 900 vehicles per day to enable the acceptance of long-haul materials from distant locations. It is telling that RWLF did not propose any mitigation measures, even though the net increase in nitrous oxide emissions would "contribute to existing violations of the state ozone standard." (DEIR at 3.2-28.) "[E]ven with the implementation of all feasible mitigation measures [that the DEIR itself identifies], this impact will remain significant and should be considered an unavoidable consequence of project approval." (DEIR at 3.2-29.) HH-9
- Fugitive dust emissions would also increase significantly, and even with mitigation measures identified in the DEIR, the impact would remain significant. (DEIR at 3.2-31.) HH-10
- The project would also increase significantly the emissions of air pollutants from the landfill gas collection and treatment system as well as the fugitive landfill gas emissions. Again, even with all mitigation measure identified in the report, the impact would remain significant. (DEIR at 3.2-35.) HH-11
- Reactive organic gases ("ROG") would result from a dramatic increase in composting activities. Although the DEIR recommends that RWLF be required to use a composting system with "aerated static pile with biofilters" to reduce ROG emissions by 90 percent, the DEIR does not analyze whether that would be feasible on the RWLF site in light of the other elements of the proposal. (DEIR at 3.2.36.) As a result, there is questionable support for DEIR's conclusion that the impact of ROG emissions "would be less than significant." (DEIR at 3.2.37.) HH-12

In addition to the above air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors, including those caused by more receipt and treatment of sewage sludge and bio-solids (most of which originate outside of Marin County) by the air drying method. There is no real analysis that the DEIR's mitigation measures, including requiring RWLF to formulate an "Odor Impact Minimization Plan," would sufficiently address the problem. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. I live just a few miles down-wind from RWLF, and I smell it when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know it would be considered an important factor in determining whether to expand RWLF's current operations. HH-13

III. Impact on Groundwater, and Certain Deficiencies in the DEIR.

As stated in the introduction, I appreciate the DEIR drafters' efforts and comprehensive analysis. However, the DEIR suffers from a number of deficiencies discussed below. The DEIR should be supplemented to address these gaps in analysis, as applied to the project and any alternative that involves expansion of the site's current activities.

Comment Letter HH

- Groundwater, and Impacts of Geology, Soils, and Seismicity. The significant risks identified in the DEIR arise from several design deficiencies coupled with the impacts from inevitable future ground motion, and deformation and shifting and settling of underlying Bay mud over time. There is insufficient basis in the DEIR to conclude that the proposed methods to mitigate the design deficiencies address the risks to less than significant levels. HH-14
  - The DEIR does not analyze in full the cumulative impacts of the project in the areas of geology, soils, seismicity, hydrology and water quality. There is no analysis or substantiation to support the summary conclusion that, although in the DEIR's view the 20 significant adverse impacts can each be mitigated (DEIR, Parts 3.4 and 3.5), these project impacts in combination would not "create cumulatively considerable impacts." (DEIR at 4-8.) The special impacts of including semi-hazardous wastes on the site for the first time are also not adequately discussed in the cumulative impacts section. HH-15
  - RWLF claims that it would be too expensive to comply with state law that requires a 5 foot separation between refuse and groundwater. (DEIR at 3.4-29.) The Commission should analyze, and the public should be allowed to review and comment on, RWLF's claim. Without that analysis, the DEIR has no cause to consider the applicant's engineered alternative. HH-16
  - The DEIR identifies the potential adverse effects to downstream water quality if the Leachate Collection and Recovery System (LCRS) is not designed properly. (DEIR at 3.4-29.) Moreover, no LCRS is currently in operation at all for Areas E, F, and G. It is clear from the points raised in the DEIR that RWLF's current plans are deficient. Assuming that RWLF will make adequate changes to conclude that the impacts can be reduced to less than significant levels is contrary to reason. (DEIR at 3.4-33.) HH-17

- Air quality. Although the DEIR's findings are sufficient to reject the proposal, the DEIR does not analyze in full the cumulative impacts of air quality degradation and resulting health impacts that the project would cause. (See Section II, above.) HH-18

- Semi-Hazardous Waste. Because RWLF has not provided critical information about its intended use of Area G as a Class II disposal unit to receive semi-hazardous wastes (DEIR at 1-15), the DEIR should state clearly that this part of RWLF's proposal is deficient, cannot be sufficiently analyzed and, therefore, should be dismissed or rejected procedurally. Instead, without adequate information from the applicant, the DEIR discusses several significant impacts in isolation and concludes that if specified mitigation measures are enacted, the impacts will be reduced to less than significant levels. (DEIR at 3.8.2.) HH-19

- "No Sensitive Receptors". As someone who lives a few miles from the site, and from time to time is able to smell it when a southerly wind is blowing, I challenge the DEIR's conclusion that "[N]o sensitive receptors live in close proximity to the site." (DEIR at 3.8-7.) No basis is given for that conclusion. HH-20

- Toxic Air Contaminants. The DEIR does not include any measurements of toxic air contaminants (TAC) emissions from composting at the RWLF and, instead, uses a proxy reading. (DEIR at 3.2-40.) The DEIR concludes that "the project would result in a substantial increase in the emissions of [TAC], with consequent effects on human health." (DEIR at 1-11.) However, any carcinogenic risk must be analyzed in full. HH-21

- Impact on Recreation and Residential Use that is Nearby. The DEIR does not take sufficient account of nearby residential neighborhoods in terms of impact analysis, or the impact on the Rush Creek Open Space or Olompali State Park, both of which are used by thousands of Marin residents and others for recreation on an annual basis. With regard to the Rush Creek Open Space marshlands, there is no analysis regarding the potential impact on the wetlands and creeks that run through the Open Space and adjacent to residential communities, especially in the event the mitigation measures relating to water quality, geology, soils, and seismic activity are not implemented effectively or in full, or in the event that they fail. HH-22

- Consequences Arising from Disaster Events. With regard to potential disaster events such as major flooding or seismic activity, the DIER over-emphasizes mitigation measures that rely on monitoring and contingency planning with little analysis of consequences should monitoring fail or be too little too late. (DEIR at 3.4.) HH-23

- "Fatal Flaws" According to 1995 Siting Element. The DEIR does not adequately address a number of the exclusionary or "fatal flaw" criteria from the 1995 Siting Element for Marin County. (DEIR 3-6-8; 3.6-12.)
    - E1. No discussion of whether the RWLF is on a known Holocene fault. HH-24
    - E2. Materials in the DEIR indicate that the RWLF site is at least in part in, and certainly adjacent to, the 100 year floodplain. In analyzing this element, however, the DEIR states only that "the landfill footprint itself is outside" the floodplain." This is not consistent. HH-25
    - E3. Wastes must be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater. The project does not meet this requirement. Despite this, the DEIR refers to the "engineered alternative" proposed by applicant. As stated above in Part II of this letter, the discussion of this alternative is insufficient. Moreover, the failure to provide 5 feet clearance – given the additional tonnage that would put pressure on the landfill structure – is still per se a fatal flaw according to the County's Siting Element. HH-26
    - E7. New or expanded facilities shall at all times be in compliance with applicable laws and existing permits and requirements. The DEIR states that, if approved, the project would bring the operations at the landfill into compliance with the facility's permits. This is impermissible bootstrapping. The fact that the RWLF is operating inconsistent with its HH-27

permit is a per se fatal flaw. It should have clean hands before proposing expansion and changes. HH-27

- E9. Distance from waste to ground water must ensure no impairment of beneficial uses of ground water beneath or adjacent to the landfill. The DEIR does not address these exclusionary criteria, other than a general cite to earlier portions of the DEIR. Nothing in the report or proposal would "ensure no impairment," and the beneficial uses of the ground water as part of the historic Bay lands and connected to Open Space marshlands is clear. HH-28

- Off-site Alternative Must Be Analyzed in More Detail. The EIR fails to provide sufficient analysis of the off-site alternative that would be located in a more remote, upland (away from the floodplain) area that would be categorized as "dry canyon." Before the Mitigated Alternative can be considered the "Environmentally Superior Alternative," additional analysis and site comparisons are necessary. (DEIR 1-15; see DEIR at 5-15.) HH-29

IV. Significant Risks and Impacts of RWLF's Current Operations Should Be Addressed Now.

The DEIR identifies a number of significant problems with the current operation of RWLF. The Planning Commission and other responsible government agencies should begin a process to require RWLF to address these problems independent of RWLF's proposal to expand its facilities.

- Operation without a liner. The fact that the landfill is operating without a liner poses an ongoing significant hazard to northern Marin County's ground water and the surrounding Bay lands. It is incredible that the RWLF's "lower refuse levels [are] within ground water." (DEIR at 3.4-28.) Instead of complying with state law that requires 5 feet of separation, RWLF has proposed – and has not yet even begun implementation – of a perimeter leachate cutoff and collection system. As the DEIR notes, this was approved as a corrective action, not as a permanent alternative. Independent of RWLF's proposal, this situation should be remedied. To prevent leachate migration, RWLF should be required to develop a plan to line the existing site. At a minimum, all of the relevant mitigation measures identified in the DEIR should be undertaken. (DEIR at 3.5-8.). HH-30

- Absence of an LCRS. RWLF, despite what appears to be conditions of its current operation and permit, has not installed and maintained in continuous operation a Leachate Collection and Removal System (LCRS) in areas E, F, and G. RWLF should be ordered to correct and update its leachate containment facilities independent of its proposal. (DEIR at 3.4-32.) HH-31

- Un-permitted use of the site without remediation. There is an un-permitted 11-acre portion of the site that has "potential for significant environment impacts to water quality and public safety." (DEIR at 1-14.) The DEIR is deficient when it says the impact can be mitigated to "less than significant levels" by requiring a landfill gas monitoring and alarm system." Such a system would only detect that harm has occurred; it would not prevent it. This is a longstanding un-permitted activity that should be remedied as a condition of continued operation. It is unacceptable to allow this waste to remain in place, contrary to past requirements. (DEIR at 3.4.43.) HH-32

Conclusion

For all of the reasons stated in this letter, the focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations. Meanwhile, Marin County officials should be actively preparing alternative plans for Marin County waste disposal and management, including finding an alternative site that would be more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. There is an opportunity to do it right, but the clock is ticking. HH-33

I encourage the Commission and other decision makers to visit RWLF, see how it already runs up against San Antonio Creek, traverse the short distance in the countryside through bay lands and marsh past Gnoss Field and into the Rush Creek Open Space Preserve that is part of my neighborhood. It is a short hike, and a short distance for hazardous air and contaminated water to travel to me and my family and our neighbors. Please consider this as you review RWLF's project, the DEIR's sufficiency, and plot the correct course Marin County needs to take for more responsible waste management in planning for and protecting our future. HH-34

Thank you for considering my comments, and feel free to contact me with any questions.

Very truly yours,

Christopher P. Gilkerson
220 Saddlewood Dr.
Novato, CA 94945

HH. CHRISTOPHER GILKERSON, ESQ., (Letter Dated September 22, 2003)

HH-1. Potential health impacts of the project are analyzed in Impact 3.2.8 in Section 3.2 (Air Quality) of the DSEIR. Please see also Master Response 11.

HH-2. Comment noted. This comment is a general statement of the commenter's opinion of the DSEIR, and does not articulate a specific concern to which a more specific response would be possible. The DSEIR conforms with CEQA requirements and standards, and is consistent with an EIR's purpose as an information document, to inform public agency decision-makers and the public generally of the significant environmental effects of the project, pursuant to CEQA and consistent with CEQA Guidelines. The DSEIR analyzes the relevant issue areas, identifies significant impacts of the project, evaluates the severity of impacts, and identifies mitigation measures to reduce the severity of impacts. The analysis is supported by documentation that is referenced and discussed as appropriate.

HH-3. The project's consistency with Marin County land use and environmental plans and policies is evaluated in Section 3.6 (Land Use and Planning) of the DSEIR. Please refer to response L-3 regarding other landfills operating along the edge of San Francisco Bay.

HH-4. The DSEIR includes a range of feasible alternatives, including a No Project Alternative and a Mitigated Alternative. See Chapter 5 of the DSEIR.

HH-5. EIRs are required to identify any mitigation measures proposed as part of a project by an applicant, as well as additional feasible mitigation measures to reduce the severity of an impact found to be potentially significant (CEQA Guidelines §15126.4.a.1.A). Regarding the applicant's history of compliance with permit conditions, please refer to Master Response 18.

HH-6. Please refer to Master Response 19, which addresses the issue of a "regional landfill." For revised site life projections, please see Master Response 21.

HH-7. Comment noted. Revisions have been made to air emissions calculations in response to the applicant's requested change in daily peak waste intake and vehicle trips, which would result in somewhat lower emissions of some pollutants, when compared to the version of the proposal evaluated in the DSEIR; please refer to Master Response 16.

HH-8. A seven-page discussion of cumulative impacts appears in Chapter 4 of the DSEIR, which includes a cumulative air quality impact (Impact CU-1). Health risks of the project are evaluated in Impact 3.2.8 in Section 3.2 (Air Quality) of the DSEIR. Please see also Master Response 11.

The analysis of cumulative air quality impacts is conducted in a manner consistent with BAAQMD Guidance. The *BAAQMD CEQA Guidelines* are specific in stating that "Any

proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact."

DSEIR Impact 3.2.11 discusses several elements of the project that would individually generate significant emissions of a least one criteria air pollutant for which the BAAQMD has established thresholds. The combined emissions from these sources would also be significant and, therefore would be expected to result in a cumulatively considerable net increase in emissions. That is, the project's contribution to cumulative air quality impacts is considerable. Once this determination has been made, CEQA does not require any exhaustive or detailed discussion of these impacts.

HH-9. The applicant has revised their proposal. The revision includes a decrease in peak daily tonnage received as well as peak daily vehicle traffic, compared with the proposal evaluated in the DSEIR. The applicant now proposes a maximum of 690 vehicles (1,380 vehicle trips) per day. See Master Response 17 for a complete description of project changes. The combined emissions from project operations are analyzed in Impact 3.2.11, in Section 3.2 (Air Quality) of the DSEIR. Substantial changes have been made to Section 3.2 in this FEIR, which are also described in Master Response 16.

HH-10. The combined emissions from project operations are analyzed in Impact 3.2.11, in Section 3.2 (Air Quality) of the DSEIR. See revisions to that section in this FEIR and the summary description of changes in Master Response 16.

HH-11. Comment noted. The combined emissions from project operations are analyzed in Impact 3.2.11, in Section 3.2 (Air Quality) of the DSEIR. See revisions to that section in this FEIR and the summary description of changes in Master Response 16.

HH-12. Refer to response to comment K-81.

HH-13. Refer to response to comment RR-8.

HH-14. The effects of the project on the underlying Bay Mud, and the ability of Bay Mud to support the proposed landfill mass, are addressed in Section 3.4, Geology, Soils, and Seismicity. Impact 3.4.1 addresses the impacts of an earthquake on the landfill, taking into account its location on Bay Mud; Impact 3.4.2 addresses the impacts of static forces (gravity and settlement) on the landfill and Bay Mud; and Impact 3.4.3 addresses the potential impacts of differential settlement within the refuse and Bay Mud on the facility's final cover, LCRS, and levee system. The methods and design earthquake assumptions used for the seismic analyses, which are consistent with Title 27 and Subtitle D regulations, are described under Impact 3.4.1. The most relevant factors in designing for static forces at the site (e.g., the strength of the underlying Bay Mud) and relationship between this and the proposed revised fill sequencing plan, are discussed under Impact 3.4.2. Factors affecting differential settlement are discussed under Impact 3.4.3.

Please also refer to Master Response 7, regarding Bay Mud strength and settlement, and Master Response 22, regarding landfill slope stability.

HH-15. The DSEIR appropriately evaluates cumulative impacts as they relate to geology, soils, seismicity. The text of the analysis of cumulative impacts to hydrology and water quality is revised in this FEIR to clarify the conclusion; please refer to the response to comment AA-8. With respect to the receipt of designated wastes, Redwood Landfill currently is permitted to receive 20 tons per day of designated waste that meets the specifications allowed in the WDR Order 95-110, as shown in Table 2-2 of DSEIR Chapter 2, Project Description, and described on p. 2-17. Since publication of the DSEIR the applicant has withdrawn the proposal to reclassify Area G as a Class II waste unit; please refer to Master Response 6.

HH-16. Redwood Landfill has maintained since the early 1990s, at least, that the five-foot separation requirement is infeasible to obtain. This is because of the low elevation of the base of the landfill, much of which is below sea level, and the high water table in the area, which is tidally influenced. In order to achieve a five-foot separation between refuse and groundwater, it would be necessary either to excavate all emplaced waste, install a liner with a subdrain system, and build up the level of the base of the landfill several feet, or alternatively to pump groundwater from beneath the landfill in an attempt to lower the water table. The first alternative would involve removal and then replacement of about 14 million cubic yards of waste and cover material. The second is technically infeasible, due to the extremely low porosity and permeability of the Bay Mud beneath the landfill. Area G of the landfill was approved as an expansion area in 1994, and so is subject to the requirements for a composite liner contained in the federal regulations (Subtitle D) as well as the five-foot separation requirement, or an engineered alternative, in state regulations (Title 27). The RWQCB has approved the applicant's Area G design (described on page 2-19 of the DSEIR) (Elias, 2005), which includes a subdrain system, a 24- inch thick compacted clay liner, and a 80-mil thick (see comment D-14) HDPE geomembrane liner as an engineered alternative to the five-foot separation requirement.

The issue of whether the proposed landfill design for the rest of the landfill meets the requirements of an engineered alternative to the five-foot separation requirement is addressed in Master Response 1.

HH-17. Please refer to Master Response 13.

HH-18. See response to comment HH-8, above.

HH-19. The applicant has modified their proposal, to eliminate the reclassification of Area G as a Class II waste unit. Please see Master Response 6.

HH-20. Potential health risks of the project are evaluated in Impact 3.2.8 in Section 3.2 (Air Quality) of the DSEIR, assuming that the nearest sensitive receptor is the Buck Center, which is about 1.5 miles from the landfill. Because toxic air contaminants, like odors, tend to disperse and dilute with increasing distance from their source, the potential health risks for the Rush Creek neighborhood, which as the commenter points out is "a few miles" from the site, would be less than at the Buck Center. Since the DSEIR finds that the health risks at the Buck Center can be reduced to a less-than-significant level with the identified mitigation measures, we can conclude that the health risks for the Rush Creek neighborhood would also be mitigated to a less-than-significant level. Regarding odors, please refer to Master Response 15.

HH-21.The commenter is correct that TAC emissions from composting were evaluated by using measured emissions from another composting process and scaling those emissions to the proposed project. This is a common practice for estimating emissions when data are not available for the facility being evaluated. Since the composting processes would be similar, the TAC species would be the same, and the rate of these emissions would be proportional to the operations. The DSEIR only concludes that total TAC emissions from all of the new processes would result in increased emissions. However, it does not conclude that emissions of TAC from composting would be substantial. In fact, the incremental health risks from composting emissions were found to be small and less than significant.

HH-22. The mitigation measures contained in the DSEIR, including those in Section 3.3 (Biological Resources) and 3.5 (Hydrology and Water Quality) are intended to protect Petaluma Marsh. They are also protective of Rush Creek Open Space marshlands and more distant marshes and creeks. Seismic and static stability of the landfill is evaluated in Section 3.4 (Geology, Soils, and Seismicity). Potential impacts to visual resources at Olompali State Park are evaluated in Section 3.1 (Aesthetics), in Impact 3.1.4, but found to be less than significant. As the project is not expected to result in a long-term increase in odors from the facility, no odor impact for recreational users of Olompali State Park or more distant recreational areas is anticipated.

HH-23. Regarding the analysis of landfill stability, please refer to the response to Comment X-4. Impact 3.5.6 addresses potential flooding impacts to areas currently within the 100-year floodplain (i.e., areas outside the current landfill footprint), and Mitigation Measure 3.5.6 requires completion of the applicant's planned elevation and widening of the perimeter levee prior to implementation of any project elements outside the landfill footprint. Considering the detailed discussion of both seismic and static stability analyses that were conducted on the proposed landfill design and specific actions required to address potential flooding, the basis for this comment is unclear. While monitoring of pore pressure within the Bay Mud is an integral component of the proposed revised fill sequencing plan, this plan was the subject of geotechnical peer review as part of DSEIR preparation, and the merits of the plan are discussed in Impact 3.4.2. Specific measures are identified to prevent landfill instability depending on the results of the monitoring.

Please also refer to Master Responses 22 and 7, regarding slope stability and Bay Mud strength, respectively. A detection monitoring program is required by Title 27 and the facility's WDRs and considered a standard element of current landfill management practices. The monitoring program is described in Master Response 14.

HH-24. The nearest active and potentially active faults to the project site are described on page 3.4-5 and shown on Figure 3.4-1 of the DSEIR; as the text and figure indicate, there are no known active faults (with Holocene displacement) or potentially active faults (with Quaternary displacement) within the project site. Distances from the landfill to the nearest known active or potentially active faults are given in Table 3.4-1.

HH-25. Please refer to Figure 3.5-2 of the DSEIR. As shown, the area permitted for disposal - the landfill footprint, as defined on page 2-10 of the DSEIR – is not located within the 100-year flood plain, although areas of the landfill property outside the landfill footprint are. In addition, with respect to Siting Criteria E2, Table 3.6-2 (page 3.6-12) refers the reader to Impact 3.5.6 (in Section 3.5, Hydrology and Water Quality). Impact 3.5.6 addresses the location in the 100-year floodplain of the portions of the landfill site outside the landfill footprint. Mitigation Measure 3.5.6 requires that the perimeter levee be elevated and widened, as has been proposed by the applicant in the past, prior to implementation of any project elements outside the permitted landfill footprint.

HH-26. Please see Master Response 1.

HH-27. Please see Master Response 18.

HH-28. The landfill's LCRS is designed to prevent impairment of the beneficial uses of groundwater and surface waters, consistent with the facility's Waste Discharge Requirements. Potential project impacts to groundwater and surface water quality are evaluated in DSEIR Sections 3.4 and 3.5, respectively. Regarding the distance of waste to groundwater, please also refer to Master Response 1; regarding the effectiveness of the LCRS, please refer to Master Response 13.

HH-29. The Off-Site Alternative is described and analyzed in the DSEIR in sufficient depth and with sufficient detail to meet CEQA Guidelines §15126.6, which state in paragraph (d) that the EIR, "…shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." Though a specific site is not given for the Off-Site Alternative, sufficient detail is given on siting criteria to make the necessary comparison with the project.

HH-30. The project evaluated in the DSEIR consists of elements proposed by RLI for future implementation and elements that have already been implemented, but are not covered under existing permits and have not previously been subject to environmental review under the California Environmental Quality Act (CEQA). The Landfill's permitted

operations are not the subject of the analysis in the DSEIR. Please also refer to Master Response 1.

HH-31. Please refer to Master Response 18.

HH-32. This comment refers to a landfill gas monitoring and alarm system that is included as part of Mitigation Measure 3.8.4 in the DSEIR. The purpose of this monitoring and alarm system is to detect any dangerous buildup of landfill gas in buildings on the site, is consistent with state regulations pertaining to landfill gas, and thus is an appropriate mitigation measure for this potential impact. Title 27 CCR Section 20919, for example, requires site owners to monitor disposal sites "for the presence and movement of gases, and shall take necessary action to control such gases. The site owner shall inform the operator of any actions order by the [Enforcement Agency], the local fire control authority or the CIWMB concerning gas control methods." Title 27 also requires landfill gas monitoring following closure of landfills and disposal sites. The applicant proposes as a part of the project to leave the 11.5 acres of waste in place, rather than to excavate the material and re-bury it in the permitted portion of the landfill. The applicant has produced a Preliminary Closure and Post-closure Maintenance Plan for this area, as discussed in Impact 3.4.11. However, Mitigation Measure 3.4.11a requires the applicant to prepare a Final Closure and Post-closure Maintenance Plan. If this plan is not acceptable to the Regional Water Quality Control Board and the Local Enforcement Agency, then the applicant will be required to excavate the material and place it in the permitted landfill (Mitigation Measure 3.4.11c). Mitigation Measure 3.4.11b also requires the applicant to monitor groundwater around the site, and if necessary, remediate any groundwater contamination that has the potential to migrate off-site. These mitigation measures are considered adequate to reduce the significance of these impacts to less-than-significant levels. Please refer to Master Response 2.

HH-33. Comment noted. Please note that a Status Quo Alternative and an Off-Site Alternative are evaluated in Chapter 5 of the DSEIR. Please refer to Master Response 21 for revised site life projections.

HH-34. Comment noted.

Comment Letter II

ADDRESS TO THE MARIN COUNTY PLANNING COMMISSION REGARDING THE REDWOOD LANDFILL DEIR, AUG. 18, 2003

My family & I live on Santolina Drive in Novato. I am a retired physician and the most recent president of the San Marin East Homeowner's Association.

SEWAGE SLUDGE

In the early 1990's this association was formed in response to a serious odor problem caused by sewage sludge processing at the nearby Redwood Landfill. The odor, generally worse in the evenings and mornings, was often so noxious that we had the choice of staying indoors with doors & windows shut, or driving away somewhere. An organization not limited to the neighborhood, Sludge Transport Information Committee (STINC), was formed. Successful lawsuits were brought against realtors who failed to disclose the odor problem to buyers, and against Redfill Landfill itself. II-1

Sewage sludge does in fact stink. Once, I brought a pickup truck load of dirt to the landfill. I had been directed to the "daily cover" section, next to a pile of sludge. I stepped in some of it. On the way home, the sludge stuck to my boot made the truck cabin stink like Santolina Drive on a bad day. A little of that stuff goes a long way.

I seriously question why sludge is allowed for ADC. I believe this to be the cause of much of the odor problems. The Introduction chapter of the DEIR, page xi, states that "cover material is used to be a barrier to escape of odors". How sewage sludge got this role is a mystery to me. It smells worse than the trash. I would like the EIR to address this issue. II-2

In the past 3 to 4 years, the odor problem has been much less, although some neighbors lower on the hill still get it occasionally. The DEIR does not address the reasons for this recent improvement. Has Redwood been taking in less sludge? We really don't know how much sludge (over 90% of which is imported from outside the county) they were taking in when the odor problem had been so much worse. Have they been processing sludge in recent years? If so, how? Have they been importing sludge and simply putting it in the impound pond, to deal with later, when they would presumably have a processing permit? II-3

In summary, we have no idea how much sludge they have been taking in in recent years nor what they have been doing with it. So, how do we evaluate the expected environmental impact of their plans to change whatever they have been doing if we don't know what this was? All we know is, the odor problem used to be serious, then became much improved, and that we have no way, by reading this DEIR, to know why, or even guess whether or not it would become worse again if the project passes.

RECEIVED
AUG 18 2003
COUNTY OF MARIN

Comment Letter II

THE OVERPASS

Everyone wants the overpass. According to the DEIR, Caltrans will build it. Has Caltrans refused to fund it? According to the newspapers, Redwood will fund it if their expansion plans are approved. This makes me nervous, especially because the public was kept in the dark about this deal until the last week of July, and that the IJ article of July 30 notes that "Agreement is only a few days away". Many people are, as expected, out of town on vacation in July and August. This timing also makes me nervous. II-4

While being nervous, this scenario came to mind: The deal is made. The overpass is started. These constructions always take several years, and always cause traffic slowing. Redwood fills up the landfill as fast as they can, by importing trash, sewage sludge, and toxic waste from the several Bay Area Counties. As Redwood profits soar, Novato environment declines, and property values drop. When the landfill has reached capacity, as it will in a very few years, Redwood will leave and dissolve its corporate structure. When the plastic sheeting holding back the steepened slopes of the landfill fail, as they surely will, waste material will slide into San Antonio Creek. No other use for the landfill will be found because of unstable sides and toxic wastes. The now-useless overpass will be barricaded off and become covered with graffiti. It will remain in place, because no funding will be found to take it down. Having lost their last remaining landfill, Marin County residents will have to look elsewhere for a place to offload their garbage. This will likely be much more expensive than it now is. The next generation will wonder how we could have been so foolish. II-5

Bob Koch
1169 Santolina Drive
Novato, CA 94945

Comment Letter II

Apr. 4, 1998

Reader's Forum
Marin Independent Journal
P.O. Box 151790
San Rafael, CA 94915-1790

Bob Koch
1169 Santolina Drive
Novato, CA 94945
(415) 898-8823

Thank you for your editorial criticizing the scofflaw attitude of Redwood Landfill Inc., a continuing nuisance to Novato.

On Nov. 11, 1996, I attended a meeting at the landfill, along with other citizens concerned about the long-standing odor problem. Mr. Diemer, the Redwood manager, informed us that they were no longer interested in building the indoor sludge processing system which they had promised us for so many years. It would be too expensive. Instead, they planned to phase out their Bay Area wide sludge receiving operation. Continuing with open air drying technique, they would empty out their sludge storage pond (then half full), complete their current sludge receipt contracts, and seek no new ones. Locally generated sludge would still be taken in, but would be composted, not air dried. If we would put up with the air drying for a little longer, the odor nuisance would be history in about two years. II-6

Fifth District Supervisor Harry Moore, who was in attendance, pointed out that we had supported the planned indoor sludge processing program for years, while enduring open air drying. They had "blindsided" us, he charged. I hope that Mr. Moore still has his Irish up about this issue, especially now that Redwood has filled the sludge ponds and is submitting plans to expand sludge receipt operations, stinky technology, no permit.

Bob Koch

Bob Koch
President, San Marin East Homeowner's Association
Novato

8-17-03

We now fast forward to the 2003 draft EIR. Redwood Landfill asks to air-dry 3000 tons of wet sludge per day from their sludge impoundment pond (page 2-25). This is 42 times the daily intake of sludge applied for in this DEIR., and 6 times the daily intake of sludge in the 1995 permit.

May we assume that, in violation of their promises, and with no permit to process, Redwood Landfill has been receiving wet sludge for years and simply putting it in their impound pond (where a crust forms over it, preventing odors). II-7

I would like to know how this volume of air-dry sludge processing compares with the volume of the early and mid 1990's (data I do not have). This proposed volume of air-drying of stockpiled sludge likely far exceeds the volume processed in the early 1990's, when my neighbors and I were up in arms over the stench.

So, the sludge impound is now full, and it is time to pay the piper. It would seem that the landfill neighbors are the ones who will be doing the paying.

Comment Letter II

Marin Independent Journal

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Marin IJ 4-4-98

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IJ EDITORIAL

The issue is health

COME OUT FROM behind that sludge with your hands up, Redwood Landfill.

It's bad enough the landfill dumped 8 million gallons of leachate — liquid from trash and garbage — into San Antonio Creek. Now the dump says it will air-dry sludge from April to June, even though county health officials say that practice violates the landfill's permit.

The dump must stop hiding behind the weak excuse that it has to accept large quantities of sludge to comply with state law. No one is making Redwood accept such large quantities of sludge, 90 percent of which comes from outside of Marin. If the dump took less sludge, it would be far easier to comply safely with the state's target of recycling 50 percent of its waste by 2000.

Marin's health officials are absolutely right to fine the dump $10,000 a day, if and when Redwood Landfill resumes air-drying sludge this month without permission. And instead of fighting back with defiant "divide and conquer" claims that other agencies, not the county, have final authority over its operation, Redwood Landfill should cooperate with the county.

Working together, the Bay Area Air Quality Management District, the state Water Quality Control Board and the county can ensure that Redwood Landfill, which provides a vital and important service to Marin, recycles garbage and sludge safely. Other businesses must, and so should the dump.

Redwood Landfill to air-dry sludge despite threat of fines

By Donna Domino

Independent Journal reporter

Redwood Landfill's manager says the company will continue to air-dry its sludge waste outdoors even though county health officials say the procedure violates the dump's permit.

The county is threatening to impose fines of $10,000 a day.

The landfill has been permitted to dry sludge outdoors under a three-year program that was supposed to end last summer. Some have complained about the odor of the sludge, a mudlike substance that remains following treatment of sewage and storm-drain water.

The sludge showdown occurred last night during a televised public forum at Novato Community House.

Redwood's General Manager Doug Diemer said the landfill planned to dry sludge outdoors from April through June for two more years and would find another method to treat the material after that.

But Ed Stewart, head of the county's Environmental Health Services, challenged that plan, asserting the practice violates the landfill's use permit.

"Presently, the air-drying of sludge is not something the permit allows for," Stewart said. He added he has consulted with county attorneys and pledged, "If they do pursue it, the county will bring enforcement action against Redwood."

He noted the dump could face stiff fines.

Redwood is allowed to accept a maximum of 550 tons of sludge daily. Currently, some of the material is used for composting, some is mixed with yard waste to cover trash at the landfill, and the rest is stored in large holding ponds. The landfill's 34-acre pond is nearing capacity.

Diemer said more than 90 percent of the sludge dumped at Redwood comes from outside Marin.

Diemer said he doubts the situation will result in a legal clash with the county.

"I don't think we'll even get to that point. I think the issues will be resolved," he said. But he added,

See Dump, page B2

3-26-98

Marin IJ

From page B1

"We do in fact have an entitlement to air-dry sludge."

Redwood is reneging on a promise to the Novato City Council to build an indoor facility to process the sludge, Stewart said. "The permit was approved for a certain type of sludge processing that is not occurring," he said.

Diemer responded that building a $6 million facility was "just not viable" because of the cost.

He said the landfill is forced to accept large quantities of sludge to meet a state target of recycling 50 percent of its waste by 2000.

Diemer also argued the county does not have final authority over the landfill's operations. Regulatory power is shared by the Bay Area Air Quality Management District and the state Water Quality Control Board, he said.

Said Stewart: "The county counsel contends it will be a violation of the permit no matter what any other agency says."

Air district representative Peter Hess said authority over Redwood is shared with the county, the air board and the state water board, but didn't comment on who has final say over what the landfill can do.

A Novato resident said the air-drying operation stinks.

"I've called Air Quality Management many times and it's a joke. There are serious problems with odor," said Leigh Ann Witter of your company, and you just car about your profits."

During last month's heavy rains Redwood Landfill pumped mor than 8 million gallons of leachat — liquid that drains from trash an garbage — into San Antonio Creek

Diemer said the discharge result ed from an unavoidable emergency and daily testing indicated the wa ter that went into the creek wa clean. But Stewart said the situa tion could have been avoided if th dump didn't contract to take s much sludge from sewage agencies

State water regulations requir landfills to contain their waste so i does not contaminate nearb creeks and rivers.

The 200-acre landfill, which cur rently accepts refuse from Unio City and San Francisco, is runnin out of storage room, county offi cials say.

Redwood has submitted plans t double its capacity, enabling th landfill to bring in three times a much waste, county officials say.

Testing at Redwood last fall re vealed hydrogen sulfide — whic smells like rotten eggs — was at th highest level of any the Bay Area' 12 landfills. The gas does not pose health hazard because it is burne off in Redwood's gas flare.

During the past eight years, 56 odor complaints were filed agains Redwood, and eight violation no tices were issued for creating a pub lic nuisance regarding odor, accord ing to the Bay Area Air Qualit Management District.

II. ROBERT KOCH (Letter Dated August 18, 2003)

II-1. Comment noted. Refer to Master Response 15 regarding odor complaint history at Redwood Landfill.

II-2. Comment noted. The potential for project operations to result in nuisance odor emissions, including from sludge handling, is evaluated in Impact 3.2.9 in Section 3.2 (Air Quality) of the DSEIR. The use of sludge as alternative daily cover (ADC) was evaluated in a demonstration project and interim approvals for such use include specific conditions that would continue to apply to continued use of sludge as ADC or as a component thereof.

II-3. Regarding annual sludge receipts at Redwood Landfill in recent years, please refer to Master Response 9. Also, as stated in comment 12 of the applicant's letter, comment letter K, Redwood has received less than 150 tons per day of sludge in recent years. Please refer also to Master Response 15 regarding odor complaint history and sludge odors.

II-4. The DSEIR (p. 2-5) states that the access road and bridge at intersection of U.S. 101 and Sanitary Landfill Road is the subject of another EIR (Marin County 2002), that the project is in the design phase, and that it requires an encroachment permit from Caltrans. This EIR assumes the access bridge will be constructed prior to project implementation, as also stated in the DSEIR. Please also refer to Master Response 3.

II-5. Impacts related to construction of the access bridge are evaluated in the EIR for that project (Marin County, 2002). Please also refer to Master Response 3. Please refer to Master Response 21 for revised site life projections. Landfills are required under state law (Public Resources Code § 43509) to calculate, and periodically revise, cost estimates for closure and for post-closure maintenance, for as long as the solid waste could have an adverse effect on the quality of the waters of the state, but not less than 30 years after closure unless all wastes are removed in accordance with federal and state law, and to place funds sufficient to meet these cost estimates in a trust account until the landfill closes. California Code of Regulations (CCR) Title 27 requires landfills to meet minimum closure and post-closure maintenance standards to protect the environment after the landfill closes, and to establish an irrevocable fund to provide financial assurance for closure activities and post-closure maintenance. Title 27 requires landfill operators to meet specified standards for final cover and post-closure surveys and maintenance, and to develop and maintain post-closure emergency response plans that are reviewed for adequacy by the RWQCB in consultation with the LEA.

The proposed design for the landfill does not include use of plastic sheeting to hold back the landfill's side slopes; plastic sheeting (a 40-mil thick geomembrane) is one component of the final cover (overlying a low-permeability foundation layer and below a drainage layer and erosion/vegetation layer), and is used to prevent infiltration of

rainwater into the waste mass, and the escape of landfill gas from the waste. Also, the interim ADC approval requires use of a geosynthetic blanket (tarp) during the rainy season. Final cover typically is placed after the landfill is inactive, as part of the closure process. Impacts 3.4.1, 3.4.2, and 3.4.3 addressed landfill slope stability under dynamic and static forces. Please also refer to Master Response 22 regarding slope stability. The likely post-closure use of the site is open space. Future use of the access bridge, after closure of the landfill, is beyond the scope of this EIR. The project would likely extend the life of the Redwood Landfill, though it is certainly possible that after closure of the site, County residents may have to pay more for waste disposal. Such consideration is, however, speculative, is not an environmental impact, and is beyond the scope of this EIR.

II-6. We appreciate this information on the history of sludge odor complaints and statements by Redwood Landfill management regarding plans to remediate odors.

II-7. The applicant's comments 10 through 13 in comment letter K describe changes in sludge processing and the quantities received to explain the decrease in sludge odors at the site in recent years. According to RLI, the landfill currently receives less than 150 TPD of sludge and processes and dries the sludge within the 34-acre sludge impoundment (Moose, 2003). Please note that RLI has subsequently corrected the acreage indicated in comment 11 of letter K, stating that the drying area is approximately 10 acres, not 2 to 3 acres as stated in letter K (Meserve, 2004). The LEA has notified the landfill that air drying is not currently permitted at the site (Barnard, 2004), receipt of which notice the landfill has acknowledged (Khany 2004).

Comment Letter JJ

ADDRESS TO THE MARIN COUNTY PLANNING COMMISSION
REGARDING THE REDWOOD LANDFILL DEIR, SEPT. 22, 2003

My family & I live on Santolina Drive in Novato. I am a retired physician and the most recent president of the San Marin East Homeowner's Association.

My initial alarm at the proposed physical & operations expansion of Redwood Landfill was my fear of return of the sickening stench that oppressed Novato residents some years ago. This was my motivation to oppose the proposal. JJ-1

I now believe that the issues involve much more than smell. JJ-2

Size and location of the landfill are huge problems not appreciated in this this draft EIR. JJ-3

The DEIR notes (page 2-10) that current permitted volume of the landfill mass is 19.1 million cubic yards, based upon the Solid Waste Facilities Permit granted by the state in 1995. The DEIR does not give the present volume. JJ-4

Being as the proposal under consideration asks for an **increase** in landfill volume, omission of its **present** volume renders the rest of the DEIR essentially useless. JJ-5

At the planning commission meeting of Aug. 23, there seemed to be a general assumption that present volume is now at the limit as set by the 1995 SWFP. However, you may recall, although it did not make it to the minutes, that Glenn Roycroft, engineer for the landfill, reported the volume, by his measurements, as 25 million cubic yards. The proposal asks for 34.6 million cubic yards. JJ-6

SAN ANTONIO CREEK

This creek runs under highway 101 at the county line. It drains the flood plain there. Combination of prolonged rains and high tide occasionally cause flooding of the highway where it crosses this flood plain. Downstream, the creek forms the east perimeter of the landfill. JJ-7

Comment Letter JJ

Consider this scenario: The landfill expansion proposal receives its permit. The enlarged landfill is heavy and soft with prolonged rain. The plastic sheets holding up its steepened sides fail, just as they did at the Contra Costa landfill. The landfill mass slides into the creek. Or, the base of the landfill ruptures through the bay mud into the creekbed. Either event will obstruct the creekbed and, insodoing, obstruct the drainage of the flood plain. Either could happen even without an seismic tremor, and both are certain, in my view, with even a moderate tremor occurring in the rainy season. JJ-8

Whichever happens first will cause a disaster of epic proportions.

A. Highway 101 will be under water until the rainy season ends, or until the Corps of Engineers can dredge out an alternate channel in the flooded plain. JJ-9

B. Waste materials will be washed by the rain into the marshes and bay. Some of it is toxic. I have heard that Sonoma County sends their sewage sludge to Redwood Landfill because they deem it too toxic for their own landfill. Marin authorities, it would appear, are not as persnickety. Planning commission staff could easily check this out. JJ-10

C. The landfill will be immediately shut down. JJ-11

D. Marin County will get some very bad press. "How could they not see this coming?" everyone will ask. JJ-12

I have some recommendations:

A. Commission engineers to measure the volume of the landfill. How can we debate a size increase proposal when we don't know its size now? JJ-13

B. Send them to the Contra Costa landfill for a report on why it failed. JJ-14

C. Start looking for a new landfill site. JJ-15

C. Make some contingency plans for response to the scenario described above. JJ-16

Bob Koch

Bob Koch
1169 Santolina Drive
Novato, CA 94945

Mailed 10-6-03

JJ. BOB KOCH (Letter Dated October 6, 2003)

JJ-1. Regarding odor complaint history, please refer to Master Response 15.

JJ-2. Comment noted.

JJ-3. Much of the impact analysis in the DSEIR examines potential impacts related to the proposals to expand the total volume of the landfill and the daily intake of waste, and the potential impacts on surrounding land uses and environment.

JJ-4. Please refer to Master Response 12.

JJ-5. The EIR examines the potential impacts of the proposal, compared to the currently permitted landfill, as is proper under CEQA (see discussion of baseline on page vii in the Introduction to the DSEIR).

JJ-6. Please refer to Master Response 12.

JJ-7. Surface hydrology in proximity to the project site is discussed in Section 3.5 (Hydrology and Water Quality) of the DSEIR. Regarding the landfill's present volume, please refer to Master Response 12.

JJ-8. Landfill slope stability is discussed under Impacts 3.4.1 and 3.4.2 in the DSEIR. Plastic sheeting on the surface of the landfill has no bearing on landfill stability. The commenter may be referring to impermeable tarps RLI places over ADC when rain is forecast (described on DSEIR page 3.5-5) to prevent infiltration. Please also refer to Master Response 22 regarding slope stability. Regarding slope failure at the Acme Landfill in Contra Costa County, please refer to Master Response 4.

JJ-9. The scenario described in comment JJ-8 is unlikely, given the engineering studies that have been performed and reviewed for the Redwood Landfill. Please refer to DSEIR Section 3.4 and Master Response 22.

JJ-10. As noted above, the scenario described is unlikely; please refer to the response to Comment JJ-8. In addition, Redwood Landfill is currently limited by the terms of its permits (Solid Waste Facilities Permit and Waste Discharge Requirement) to accept only sewage sludge that at minimum meets federal standards for "Class B biosolids," meaning that they do not exceed numerical limits for concentration of several common environmental toxins and human pathogens. Redwood Landfill also is prohibited from accepting hazardous wastes, as defined by statute. The specifications for sludge acceptance are contained in the facility's 1995 Waste Discharge Requirements (Specification B-5, pages 17-18) and included as Appendix B in the DSEIR.

JJ-11. While it is noted that the scenario of which this comment is a part ignores the stability analyses that were conducted on the proposed landfill design, it is hoped the following

information is useful. The landfill has an Emergency Response Plan and Post-Earthquake Inspection and Corrective Action Plan, which include specifications for actions to be taken in case of earthquake. The California State Integrated Waste Management Disaster Plan has been prepared pursuant to Assembly Bill 2920 (Lee, 1992, Stats. 1992, c.436). This legislation requires the California Integrated Waste Management Board to develop a plan that provides for the handling, storage, processing, transportation, diversion from disposal sites, or disposal where absolutely necessary, of solid waste, resulting from a state or local emergency. This mandate is codified in Public Resources Code (PRC) § 43035. The Plan has been prepared in consultation with the Governor's Office of Emergency Services (OES) with input from the Federal Emergency Management Agency (FEMA), Local Enforcement Agencies, local emergency services personnel, local solid waste coordinators, and the public. In addition, DSEIR Mitigation Measure 3.4.1c, which requires Redwood Landfill to update its Post-Earthquake Inspection and Corrective Action Plan, specifies that the updated plan discuss contingency measures in the event that Redwood Landfill is unusable or inaccessible as a result of a major earthquake in the vicinity.

JJ-12. Please see response to previous comment.

JJ-13. Please refer to Master Response 12.

JJ-14. Please refer to Master Response 4.

JJ-15. Please refer to Master Response 21. As there appears to be well over 15 years of landfill capacity in the County, whether or not the project is approved, the County is not compelled by state law to begin the lengthy and expensive process to site a new landfill.

JJ-16. Please refer to the responses to Comments JJ-8 and JJ-9.

Comment Letter KK

RECEIVED
2003 OCT 13 P 3:20
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

October 13, 2003

Tim Haddad
Environmental Quality Administrator
Marin County Community Development Agency
3501 Civic Center Drive, Rm. 308
San Rafael, CA 94903-4157

By hand delivery

Re: **Redwood Landfill**
DEIR

Dear Mr. Haddad:

The draft DEIR for the Redwood Landfill expansion permit fails to answer many questions including:

- What is the size of the Landfill? 19 million cubic yards? 25 million cubic yards? Or another figure? The Landfill size listed in the DEIR conflicts with the Landfill's engineer's testimony.
- Has the County conducted an independent survey to determine the accurate size/volume of the Landfill? If not, why not? Why should the Landfill's data used throughout the DEIR be trusted, as there appears to be a 6 million cubic yard discrepancy on its size, a basic figure? KK-1
- How tall is the Landfill today? What is the average height? What is the mean height? Has any measurement been taken by the County? KK-2
- How can any environmental impact assessment of the Landfill expansion begin without knowing the current size of the Landfill? The assumptions and basis on which the DEIR is based are flawed because a critical element of the DEIR – the size of the Landfill is unknown. KK-3
- Will a new DEIR be made and new hearings be held on it based on an accurate size of the Landfill?
- The DEIR states that the Landfill is not in compliance with its current permit. What mechanisms are available that will guarantee that the Landfill will KK-4

Comment Letter KK

comply with the terms of a new permit? If these mechanisms exist, why are they not recommended as conditions of the new permit?

- Why has not the County or State begun sanction proceedings against the Landfill for its violation of its current permit? Why has the DEIR not assessed the County's or the State's failure to take action against the current violations and the impact of this lax oversight on future compliance with any mitigation or permit conditions? KK-4

- Why hasn't the DEIR compared the justifications (scientific and other) for the current permit with the justifications (and new data) supporting the expansion? Are there any inconsistencies? KK-5

- The DEIR fails to consider any impact on the people, businesses, environment across the nearby Sonoma County line, including but not limited to the farm workers, equestrians, milk cows, vineyards, and citizens of Sonoma. Why? KK-6

- Why has not the County required scientific tests of soil, water, and air downwind and downstream in Novato, Petaluma, Sonoma, Pengrove, and Napa to determine the effects of the Landfill on the environment today and if the Landfill is expanded?

- Why have not independent scientific tests been done on the air in Novato, Petaluma, and Sonoma to determine if the dump is spreading dangerous chemicals to these areas? KK-7

- Why have not independent scientific tests been done on the water in San Antonio Creek, the Petaluma River, and San Francisco Bay to determine if dangerous chemicals are leaking from the Landfill into the water? Why were such tests not done during and immediately after a storm when water is running off the Landfill?

- There are pipes extending from the Landfill. The DEIR does not state what liquids are coming out of these pipes. Has the effluent from these pipes been tested for toxic chemicals? If so, by whom and what are the results? If not, why not? KK-8

- Why has not the DEIR discussed and analyzed the possibility of limiting the Landfill to receiving only Marin refuse and waste? The courts have permitted such limits for environmental and other non-economic reasons. KK-9

- Has the County reevaluated all of the data put forth by the Landfill? Should not independent scientists evaluate the data in light of discrepancies in the Landfill's data on such basic matters such as the size of the Landfill? KK-10

Comment Letter KK

- What assurances are there that the dump will not fail during an earthquake? Some say it is proposed to be constructed like the Contra Costa dump which failed without an earthquake. KK-11

- Global warming is raising the levels of the oceans (some scientists expect two to three feet in the next 100 years). The Landfill is, according to the DEIR, only two feet above the Bay mud. Why does the DEIR not address the fact that the tidal Petaluma River and San Antonio Creek are rising? Will the rising water table reach the Landfill and cause toxins to pollute the water? Will citizens have to pay the costs associated with protecting the water from the dump as ocean levels rise? KK-12

- The DEIR fails to address whether the dump will become less stable as the ground water table rises due to ocean level increases.

- The DEIR only assessed the effect of the dump on the environment as an isolated event. Are there other polluting businesses or natural pollutants in the Petaluma River Valley which, when mixed with any pollutants from the Landfill, will cause health problems to humans or animals? If so, what are they? What is their origin? KK-13

- What is the composition of the "perfume" used to mask the slug smell? Is it toxic? Has it been tested? Why is it ineffective? Have animals been tested to see if this chemical is getting into the food chain? KK-14

- The DEIR does not say the Landfill is "partnering" with Marin County for the expansion. Why not?

- Has the Landfill's "partnering" with the County effected the independent analysis of the DEIR? What assurance is there that the County staff is going to conduct an independent analysis of the Landfill since according to the Landfill's documents (attached) it is "partnering" with the County? Does not the County have a conflict of interest in evaluating a proposal form a partner? What actions have the County and its official taken to cause the Landfill to tell the community it is partnering with the County? Does this not cast doubt on the entire EIR process, which must by law be an independent analysis? Has the County staff considered recusing themselves form the process as they are not independent, but apparently working in conjunction with the Landfill? KK-15

- Why does the DEIR not list every contact the Landfill staff has made with all County staff? Please do so, so that the public can ascertain the independence of the staff in relation to the "partnering" with the County. KK-16

Comment Letter KK

- The DEIR says 600 more trucks a day will go to the Landfill. Has Caltran or a traffic study been performed on HWY 101? Why does not the DEIR suggest a test to see what 600 more trucks a day will do to the traffic on HWY 101? KK-17

Please answer this letter in writing as soon as possible.

Sincerely,

Martin J. Lawler
2401 Laguna Vista Drive
Novato, CA 94903

Comment Letter KK

Redwood Landfill Permit Revision
Project Description

I. Overview

Over the past several years, Waste Management has been working closely with the Marin County Environmental Health Department to revise its solid waste permit at the Redwood Landfill in Novato. County staff has been supportive of our efforts and we are proud to have the County as our partner in the process.

Waste Management's Redwood Landfill receives 90% of Marin County's solid waste. In addition, 33% of Marin County's diversion activities are a result of the diversion efforts carried out at the Redwood Landfill.

Even more significantly, 45% of the material that is delivered to the Redwood Landfill is recovered or reused for diversion. Waste Management's ultimate goal is to recycle 75% of the material delivered to Redwood Landfill.

There are three key reasons for the permit modification:

1. To better reflect the actual operations of the landfill once Waste Management reduced the amount of tons of biosolids that it accepts each day;
2. To increase the life of the landfill by 20 years, which will allow Marin County to benefit from a less expensive in-county disposal option through the year 2040; and
3. To increase the amount of material that Redwood Landfill receives for reuse, recycling, and composting, which will help Marin County's continue to lead the state in achieving its diversion goals. KK-18

II. Key Points Associated with the Permit Revision

MSW Tons. Waste Management is proposing only a small increase in the number of tons of solid waste that it accepts at Redwood Landfill. Instead, the permit revision is focused around the replacement of biosolids tons (biosolids) with Municipal Solid Waste (MSW).

Waste Management is proposing to reduce the number of tons of biosolids from the currently permitted 550 tons/day to 100 tons of biosolids per day. The total increase in MSW is 350 tons/day over the average daily tons per day currently permitted, or a reduction of 140 tons from the peak permitted tons per day. The permit revision calls for a reduction in the number of landfilled tons from 2,290 peak tons per day to 2,150 peak tons per day, or 140 fewer peak tons each day.

Tons accepted for diversion. Waste Management is also requesting permission to increase the amount of recyclables and reusable tons that it accepts at the Redwood Landfill. Reusable and recyclable materials received at the Redwood Landfill are not subject to disposal. Waste Management diverts 45% of the tons that it receives at the landfill for reuse, recycling and composting, which means that an additional amount of material will be diverted in Marin County.

Footprint/height of the Landfill. Waste Management is not proposing to increase the footprint or the height of the landfill. The increase in capacity is a result of a change in angle of the slope of the landfill only. It will go from a 5:1 slope to a 3:1 slope.

Life of the landfill. The permit revision will extend the life of the landfill from 2020 to 2040.

Benefit of Marin County landfill. The Redwood Landfill is an asset to the County, providing the lowest solid waste landfill rate in the Bay Area. Extending the life of the landfill to 2040 will benefit County customers by allowing waste to stay in Marin County, which will keep landfill rates low.

Fly-over/Overpass. The revision to the permit will not go into affect until the fly-over is completed in the spring of 2005. This overpass will eliminate existing traffic concerns associated with the landfill.

Wetlands Improvements. Waste Management recently donated 180 acres of wetlands to the Marin Audubon Society through a greatly reduced sale price for the wetlands. The Marin Audubon will begin restoration efforts immediately to return the wetlands to a tidal marsh.

KK-18

C&D Diversion. The Redwood Landfill was recently given approval to divert recyclable construction and demolition debris from the landfill to a recovery facility. The C&D will be diverted for recycling. With the addition of this program at the Redwood Landfill, Marin County was able to pass an ordinance requiring C&D recycling at all construction sites in the County.

III. Timeline and Process

The Environmental Impact Report is currently in the review process and has been reviewed by the Marin County Planning Commission. However, the Permit Revision must ultimately be approved by the local LEA upon certification by the Marin County Board of Supervisors. It will then be submitted to the California Integrated Waste Management Board for final approval. The permit is expected to be on the Marin county Board of Supervisors agenda in early 2004.

IV. Tour Invitation

Waste Management would like to invite you – in fact, we would like to encourage you!!- to tour the Redwood Landfill at your convenience. We are proud of our operations, and find that a site visit helps our community partners to understand the reality of what we do at the landfill each day. We would be happy to arrange individual tours or group tours at your convenience.

KK. MARTIN J. LAWLER

KK-1. Please refer to Master Response 12.

KK-2. Please refer to Master Response 12.

KK-3. The EIR examines the potential impacts of the proposal, compared to the currently permitted landfill, as is proper under CEQA (see discussion of baseline on page vii in the Introduction to the DSEIR).

KK-4. Please refer to Master Response 18.

KK-5. The DSEIR is based on the latest available data to evaluate the applicant's proposed permit revisions.

KK-6. The DSEIR considers impacts on San Antonio Creek and Petaluma Marsh, the nearest part of Sonoma County to the landfill, in Section 3.3, Biological Resources. The EIR addresses regional impacts in several sections, including aesthetic (Section 3.1) air quality (Section 3.2), biological resources (Section 3.3) and traffic (Section 3.10). Health risks are evaluated in impact 3.2.8, and further discussed in Master Response 11. Acute effects of the project are not expected within Sonoma County, because of the distance of the land areas of the County from the project site. The nearest potentially affected inhabited areas of Sonoma County are sparsely located residences and agricultural operations along Lakeville Highway. The nearest of these is about 1.5 miles from the eastern edge of the landfill. Therefore, the health risk assessment, noise analysis, and other analyses contained in the DSEIR are applicable to Sonoma County as well as Marin.

KK-7. Please refer to Master Responses 14 and 16.

KK-8. It is unclear to what pipes this comment refers. However, according to the applicant, black piping is used on site for the landfill gas collection system, for condensate, and for surface water drainage (Meserve, 2004). As described in Section 3.5 of the DSEIR, non-contact runoff (i.e., storm water runoff that has not been in contact with refuse, compost or sludge, is conveyed to a stormwater pond or conveyed directly offsite into San Antonio Creek or the surrounding sloughs. As also described in Section 3.5, Redwood Landfill operates under National Pollution Discharge Elimination System (NPDES) Storm Water Discharge Permit requirements and Waste Discharge Requirements of the Regional Water Quality Control Board, among other permits and regulations.

KK-9. Please refer to Master Response 8.

KK-10. The EIR is based on extensive review of all recent data provided by Redwood Landfill. These data were reviewed, and the EIR was prepared, by an independent consultant, Environmental Science Associates.

KK-11. Landfill DSEIR Impacts 3.4.1 and 3.4.2 evaluate landfill stability under seismic and static forces, respectively. Please also refer to Master Responses 22 and 4.

KK-12. Please refer to Master Response 1 regarding the proximity of the base of the landfill to groundwater. Please refer to Master Response 13, regarding the effectiveness of the LCRS.

The effect of global warming has not specifically been addressed in this SEIR; however, as discussed in DSEIR Section 3.5 (page 3.5-5) the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for this part of Marin County shows that the base flood elevation is elevation +6 feet (NGVD) (FEMA, 1982) and for the adjacent area of Sonoma (FEMA 1991) is elevation +7 feet NGVD. (The EIR analysis assumes the differences in elevation result from separate mapping efforts.) The levee system surrounding the landfill is or will be constructed to a minimum elevation of +9 feet. The differential between the maximum design flood elevation (assuming the higher of the two, 7 feet NGVD) and levee elevation is therefore two feet. For global warming to have an effect on this project, the level of the adjacent waterways would have to rise by at least two feet.

Global warming will result in an increase in the mean elevation of sea level. However, the actual amount by which sea level elevation may increase is currently debatable and is a function of the increase in global temperature and the effect on the polar ice caps, mountain glaciers, thermal expansion of the ocean, and other factors. Although it is true this landfill may be at risk if sea level rises above two feet, mitigation to protect the landfill would be to raise the height of the perimeter levee as appropriate.

KK-13. Cumulative impacts are discussed in Chapter 4 of the EIR.

KK-14. Please refer to the response to comment FF-1.

KK-15. The County is not “partnering” with Redwood Landfill. The County is the Lead Agency for CEQA for the proposed project, a position that requires objectivity. The County Environmental Health Services Division also has regulatory oversight of the landfill, through issuance and enforcement of the Solid Waste Facilities Permit.

KK-16. Written records of contacts between the applicant, County staff, and the EIR consultant are contained in the project record. Also please refer to the response to Comment KK-15.

KK-17. The increased traffic that would result from the project is evaluated in Section 3.10, Transportation and Traffic, of the DSEIR. Also please refer to Master Response 5.

KK-18. This comment is apparently an informational flyer produced and distributed by the applicant, and appears to be the source of the commenter’s contention, stated in comment KK-15, that the applicant is “partnering” with the County. The County had no part in

producing or distributing this flyer, and does not consider it a source document for preparation of the EIR.

Comment Letter LL

RICHARD E. LEVY, Ph.D.
2516 LAGUNA VISTA DRIVE
NOVATO, CALIFORNIA 94945

AUG 18 2003

August 18, 2003

Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Dear Planning Commission Members:

I live directly south of the Redwood Landfill and have been assaulted by the foul smell emanating from the landfill. I was recently informed about major changes to the Redwood Landfill and obtained a copy of the 2" Draft Subsequent Environmental Impact Report (DSEIR) last Friday afternoon. I have not had time to fully acquaint myself with the contents of the voluminous document. Many of my neighbors have been on vacation and are not aware of the request for changes to the landfill which directly affects them. In short, there has been inadequate time to become acquainted with the DSEIR so as to evaluate and comment on its contents. This is a formal request to extend the public hearing another three months so that adequate notice and full community participation will take place. LL-1

The "Courtesy Notice of Continuation of Public Hearing" indicates

> *"that if you challenge the project DEIR in court, you may be limited to raising only those issues you or someone else raised in written correspondence submitted during the DEIR public review period or at the public hearing described in this notice."*

In order that my options remain open, I am raising issue with each and every portion of the DSEIR including but not limited to: Aesthetics & Visual Resources, Air Quality, Biological Resources, Geology, Soils, and Seismicity & Geophysical, Hydrology and Water Quality, Land Use and Planning, Noise, Public Health and Safety, Hazards, Public Services, Utilities, and Energy, & Service Systems, Transportation and Traffic & Circulation, Population and Housing, Energy and Natural Resources, Cultural Resources, and Social & Economic Effects related to Physical Impacts. LL-2

Thank you for the opportunity to open up discussion to the entire community through a three month continuation of this public hearing. The outcome of your decisions affect all residents of Marin County as well as other all other San Francisco Bay Area Counties for generations to come.

Sincerely,

Richard E. Levy, Ph.D.

LL. RICHARD E. LEVY, PH.D. (Letter Dated August 18, 2003)

LL-1. The public comment period for the DSEIR was extended to October 14. 2003.

LL-2. All of the issues areas listed in this comment are addressed in the DSEIR, except for Social and Economic Effects related to Physical Impacts, which is not a CEQA requirement. This comment presents a list of the Chapter 3 analysis sections; however, because it does not specify any issues or concerns related to the DSEIR analyses, a more specific response to any concerns the commenter may have is not possible.

Comment Letter MM

Richard E. Levy, Ph.D.
2516 Laguna Vista Drive
Novato, CA 94945

September 23, 2003

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill Expansion

Dear Mr. Haddad:

In the anteroom of the Marin County Planning Commission after yesterdays hearing I asked you to describe the future and process of the application to expand the Redwood Landfill.

You explained a rather convoluted and confusing process involving several departments and agencies at the Marin County level including the Board of Supervisors and at the State of California level. Because the process is unclear, I said I would send you a note for a written explanation.

Your answer to me was "NO." You said that the process would be written in the Final Environmental Impact Report which was several months away and that it would be unfair to others if you did so. When I suggested that you send it to all the people on the mailing list for the Final EIR, you said that you would not do so and that you had other work to attend to. When I suggested a press release, your response was also negative. MM-1

Your response surprised me, as it is my understanding that as a taxpayer, I have the right to obtain this information from a public servant, unless there are policies regulating such requests, otherwise your office and/or you are keeping your activities secret from the public. I don't understand and I am asking you to send to me information detailing the processes, agencies, organizations, governmental departments and personnel who this Final EIR must pass through or get approval from and in what sequential order before a permit or similar document can be granted to the applicant. This is basic procedural information provided by agencies involved in permit applications.

Sincerely,

Richard E. Levy, Ph.D

Cc: Alex Hinds, Director, Marin County Community Development Agency
Marin County Planning Commission Members
Marin County Board of Supervisors
Marin County League of Women Voters
Marin Conservation League
Marin Audubon Society
No Wetlands Landfill Expansion
Petaluma Riverkeeper
Sierra Club

MM. RICHARD E. LEVY, PH.D. (Letter Dated September 23, 2003)

MM-1. The processes for EIR preparation, circulation, and adoption, and for consideration of project approval, are described in the section "Marin County Planning and Project Review Process" on pages v-vi in the Introduction to the DSEIR, and further elaborated on in Chapter 1 of the FEIR.

Comment Letter NN

RECEIVED

2003 OCT 14 P 2:

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

RICHARD E. LEVY, Ph.D.
2516 LAGUNA VISTA DRIVE
NOVATO, CALIFORNIA 94945

October 13, 2003

Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill DSEIR

Dear Mr. Haddad:

On 9/23/03 I sent to you the attached letter which has not been responded to as of this date. Please enter this letter (10/13/03) and the attached letter (9/23/03) into the administrative record re: the DSEIR for the Redwood Landfill and respond to me immediately regarding the contents of my 9/23/03 letter. NN-1

Sincerely,

Richard E. Levy, Ph.D.

Richard E. Levy, Ph.D.

NN. RICHARD E. LEVY, PH.D. (Letter Dated October 13, 2003)

NN-1. Please refer to the response to Comment MM-1.

Comment Letter OO

RECEIVED

2003 OCT 14 P 2:3

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

RICHARD E. LEVY, Ph.D.
2516 LAGUNA VISTA DRIVE
NOVATO, CALIFORNIA 94945

October 13, 2003

Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill DSEIR

Dear Mr. Haddad:

The DSEIR states on page vi that "*existing and proposed physical operational modifications at the Redwood Landfill that were not reviewed in the 1994 FEIR are the subject of this EIR.*" *Page vii continues…"some aspects of the project have already been implemented, but without all of the necessary discretionary approvals and prior environmental review."*

1. Specifically what modifications have been made to date that are not in the 1994 FEIR?
2. What enforcement has been undertaken to address modifications which have not been approved and certified?
3. If no enforcement has been undertaken, why has no enforcement occurred?

OO-1

Page 3.2-10 states "*The BAAQMD's monitoring station located closest to the project site is in the City of San Rafael, roughly 15 miles south of the project site. Data collected at this station is considered to be generally representative o f air quality at the project site.*"

4. What is the scientific source for this conclusion? Common sense indicates that such conclusions are inaccurate and spurious.

OO-2

It would be prudent to have an independent objective monitoring of the project site at the project site. I can often smell foul air emitting from the landfill which is located some four miles north of my residence.

5. What is the source of this odor and what contaminants do they contain?

OO-3

Page 3.2-14 indicates "*The five major effects of landfill gas emissions are human health and vegetation effects from ozone produced by NMOC emissions, carcinogenicity and other possible non-cancer health effects, global warming effects from methane emissions, explosion hazards, and odor nuisance (U.S. EPA, 1991). Landfill gas production from a given refuse fill will typically continue for many years, though the active gas production life is dependent on site-specific conditions. Generation life may range from a few years to hundreds of years, depending on these conditions.*

6. As if these dangers were not bad enough, what other dangers do these contaminants and pollutants pose to my family?

OO-4

Comment Letter OO

7. Should any of my family become ill from the pollutants, who will pay for their illness, lost wages, loss of quality of life, loss of life and effect on future generations? OO-4
8. Can these effects be mitigated by money?

Page 3.2-14 continues *"The landfill gas collection system is assumed to have a landfill gas recovery efficiency of 75 percent; the remaining 25 percent of the unrecovered gas, referred to as fugitive landfill gas, is emitted directly to the atmosphere."* OO-5

9. Should any of my family become ill from the pollutants, who will pay for their illness, lost wages, loss of quality of life, loss of life and effect on future generations?
10. Can these effects be mitigated by money?

Page 3.2-18 states *"The applicant never implemented the mitigation measure specified in the 1994 FEIR that required processing of sludge with the N-Viro process to be conducted in a building with emissions controls."* OO-6

11 If the applicant does not follow through with mitigation measures outlined in a Prior FEIR, how can the applicant be trusted to follow through with any mitigation measures outlined in this DSEIR?

12. What is the applicant's track record in terms of lawsuits brought against it since 1970 regarding pollution, contamination to air, water and the environment in the United States and abroad? OO-7

There is continuous noise from some sort of blasting agent which makes considerable noise scaring off birds and other animals from the landfill. This has significant effects on the animal life and especially California clapper rail nesting from February 1 – August 31. From page 3.3-23, "*Because noise levels from landfill and composting operations could exceed 76 dBA in the marsh, this would be a significant impact.*" The disclosing of significant impacts to wildlife does not justify the operations in this writer's opinion. OO-8

13. What is the opinion of the California Department of Fish and Game, the California Department of Health and other environmental groups regarding this continuous noise?

Page 3.4-24 states *"Mitigation Measure 3.3.2d: Depending on findings of the geotechnical monitoring program, the fill sequencing plan shall be modified, as needed, to slow the rate of fill if Bay Mud strength is less than anticipated. The change in rate of fill shall be determined by quantitative threshold values that shall be incorporated into the geotechnical monitoring program. Any modifications to the fill sequencing plan shall be reported to the LEA and the RWQCB."* OO-9

14 How is it that the strength of the Bay Mud is not known?

15. Who will do the geotechnical monitoring, the Redwood Landfill, Waste Management, Inc. or an independent scientific consulting firm paid for through independent funds?
16. If the veracity of the operations of the landfill are questionable, what reliability can be obtained in the future as to monitoring or reporting?

According to the 8/18/03 Marin County Planning Commission meeting, the Class II landfill portions of the application were withdrawn verbally by the Redwood Landfill.. OO-10

Comment Letter OO

17. Has this been done in writing?
18 What guarantees are there that Class II toxins and materials will not end up in the landfill? OO-10

The conclusion that the proposed project trip generation from 415 to at least 1000 vehicles per day would have a less than significant effect on traffic on Highway 101 appears unfounded. OO-11

19. How was this conclusion arrived at?

Page 3.2-14 states, *"The 1995 SWFP and 2002 PTO for Redwood Landfill limit the current capacity of the landfill to 19.1 million cubic yards."* At the 8/18/03 Marin County Planning Commission meeting the engineer for the Redwood Landfill emphatically stated that he had measured the landfill and its total capacity was 25 million cubic yards. OO-12

20. What is the current capacity permitted for?
21. What is the capacity the project is requesting a permit for?
22. What is the current amount of fill in the landfill now?

Various dates for closure are stated on page 1-4, but there is no consistent measurement or criteria applied to project and each of the alternatives to the proposed project. Appendix A provides *Landfill Site Life Calculations for Redwood Landfill, but the four scenarios listed have questionable relevance to the alternatives.* OO-13

23. What and who will determine when the landfill will close?
24. What are the criteria to determine rates of fill and how is this projected in time?
25. When will the landfill close under each of the alternatives presented?
26. What is the current measured heights of the landfill in terms of mean, mode, median and range?

The current glare from nighttime lighting and activities does provide a significant adverse impact to me and my family in our residence. Page 3.1-14, Impact 3.1.5 OO-14

27. What will be done to stop lights from shining from the landfill south to my home at night?

28. What happens when the landfill closes? OO-15
29. Who maintains it?
30. What happens if something cracks, leaks, explodes, implodes causing an environmental and toxic hazard? OO-16
31. What are the long term effects from insidious dissemination of toxins from the landfill?
32. What are the effects to the San Antonio Creek, the Petaluma River, the San Pablo Bay and the San Francisco Bay Area? OO-17

33. How is the water in the adjacent tributaries independently tested? OO-18

Comment Letter OO

The Draft Subsequent Environmental Impact Report for the Redwood Landfill is very confusing for a non-trained scientist to read and understand. The validity of many of the conclusions which are drawn in regards to Air Quality; Geology, Soils and Seismicity; Hydrology and Water Quality; Land Use and Planning; Noise; Public Health and Safety and Transportation and Traffic are highly questionable. To address the above problems, independent scientific investigators should examine and analyze the proposal and data, so that a more objective report could be presented to the public. OO-19

34 Will you or the County of Marin or any other government body hire independent scientific consultants to address these issues?

Please answer my questions and concerns in writing to the above address.

Sincerely,

Richard E. Levy, Ph.D.

Comment Letter OO

Richard E. Levy, Ph.D.
2516 Laguna Vista Drive
Novato, CA 94945

September 23, 2003

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill Expansion

Dear Mr. Haddad:

In the anteroom of the Marin County Planning Commission after yesterdays hearing I asked you to describe the future and process of the application to expand the Redwood Landfill.

You explained a rather convoluted and confusing process involving several departments and agencies at the Marin County level including the Board of Supervisors and at the State of California level. Because the process is unclear, I said I would send you a note for a written explanation.

Your answer to me was "NO." You said that the process would be written in the Final Environmental Impact Report which was several months away and that it would be unfair to others if you did so. When I suggested that you send it to all the people on the mailing list for the Final EIR, you said that you would not do so and that you had other work to attend to. When I suggested a press release, your response was also negative. OO-20

Your response surprised me, as it is my understanding that as a taxpayer, I have the right to obtain this information from a public servant, unless there are policies regulating such requests, otherwise your office and/or you are keeping your activities secret from the public. I don't understand and I am asking you to send to me information detailing the processes, agencies, organizations, governmental departments and personnel who this Final EIR must pass through or get approval from and in what sequential order before a permit or similar document can be granted to the applicant. This is basic procedural information provided by agencies involved in permit applications.

Sincerely,

Richard E. Levy, Ph.D

Cc: Alex Hinds, Director, Marin County Community Development Agency
Marin County Planning Commission Members
Marin County Board of Supervisors
Marin County League of Women Voters
Marin Conservation League
Marin Audubon Society
No Wetlands Landfill Expansion
Petaluma Riverkeeper
Sierra Club

OO. RICHARD E. LEVY, PH.D. (Second Letter Dated October 13, 2003)

OO-1. Modifications that have been made to date that were not evaluated in the 1994 FEIR and thus are part of the project evaluated in this SEIR are described in DSEIR Chapter 2, Project Description, Section 2.5, Project Elements. Please also refer to Master Response 18.

OO-2. Please refer to Master Response 16.

OO-3. Refer to response to comment O-13.

OO-4.The DSEIR analyzes the NMOC emissions (or ROG emissions) from the Project in the criteria pollutant part of the Air Quality section of the DSEIR, and it acknowledges that these emissions are precursors to ozone in the airshed. However, these emissions would cause an area-wide impact and not a local impact, because of the slow reactivity of precursors in forming ozone. The health effects of these emissions were addressed in the air toxics portion of the DSEIR. The DSEIR describes the vapor gathering and incineration system that is geared to prevent the chance of accumulation of gases that could lead to explosions. With respect to greenhouse gas emissions, again, this is a global phenomenon and not a local one. The affects on the local population would be miniscule. With respect to the effects of toxic pollutants on the local public, the DSEIR assessed the health risks and, for those impacts that exceeded significance thresholds, mitigation measures were added t reduce the impacts to levels that would not cause significant health effects.

OO-5. The uncollected landfill gas was analyzed by determining the worst-case impacts to local populations. The estimated amount of fugitive landfill gas was reported to be very small. The DSEIR modeled these emissions, and the health risks were found to be extremely small, well below detected health effects.

OO-6. Please refer to Master Response 18.

OO-7. CEQA does not require examination of an applicant's record of lawsuits. CEQA requires evaluation of potential effects on the physical environment of a proposed project. Regarding the permitting history of the Redwood Landfill, please refer to Master Response 18.

OO-8. Please see response to letter P, Comment 4

OO-9. This comment refers to Mitigation Measure 3.4.2d. As discussed under Impact 3.4.2, the strength of the Bay Mud changes. As discussed, unconsolidated Bay Mud is relatively weak, and, when weight is applied gradually, consolidates and gains strength. Please refer to Master Response 7 regarding Bay Mud strength and settlement. Regarding the compliance record of the applicant, please refer to Master Response 18.

OO-10. Please refer to Master Response 6 regarding the applicant's withdrawal of the proposal to reclassify Area G as a Class II landfill. As described in Section 3.8 of the DSEIR, the landfill operates a load checking program to detect materials that are prohibited from disposal at the site. (See the description of the landfill's Prohibited Waste Control Program on page 3.8-12 of the DSEIR.) The landfill is also subject to periodic inspection by various regulatory agencies. While these measures do not guarantee that absolutely no materials that are prohibited from disposal at the site will in fact be disposed, they greatly reduce this likelihood, and are consistent with state and federal regulatory standards for waste acceptance and disposal at municipal solid waste landfills.

OO-11. Please refer to Master Response 5.

OO-12. Please refer to Master Response 12.

OO-13. Regarding the estimated site life of the landfill, please refer to Master Response 21. Regarding estimated site life for each of the alternatives. (The site life of the No Project and Status Quo alternatives would be roughly the same as that shown for "permitted" in Master Response 21. The site life of the Reduced Scale alternative would be between that of the No Project alternative and the project because it would have both reduced waste intake and reduced capacity. The Off-site alternative would have a somewhat shorter site life than would the project because it would not have the additional capacity that results from Bay Mud settlement. The Mitigated alternative would have a longer site life than the project because it would have the same capacity and reduced waste intake, thus prolonging the site life. The rate of fill is limited to quantities permitted in the SWFP. Regarding the landfill's current height (according to the most recent measurement) refer to Master Response 12.

OO-14. The EIR analyzes the potential impacts of proposed changes to permitted operations, not the impacts of already permitted operations. Please refer to the response to comment N-22.

OO-15. Please see response to comment I-10 regarding final cover requirements. Landfills are required under state law (Public Resources Code § 43509) to calculate, and periodically revise, cost estimates for closure and for post-closure maintenance, for as long as the solid waste could have an adverse effect on the quality of the waters of the state, but not less than 30 years after closure unless all wastes are removed in accordance with federal and state law, and to place funds sufficient to meet these cost estimates in a trust account until the landfill closes. In addition, CCR Title 27 requires landfills to meet minimum closure and post-closure maintenance standards to protect the environment after the landfill closes, and to establish an irrevocable fund to provide financial assurance for closure activities and post-closure maintenance. In addition to meeting specified standards for final cover and post-closure surveys and maintenance, Title 27 requires landfill operators to develop and maintain post-closure emergency response plans that are reviewed for adequacy by the RWQCB in consultation with the LEA. The applicant has

prepared a Preliminary Closure/Post Closure Plan (Chapter 9 of the JTD), as required by CCR Title 27; the preliminary closure plan describes post-closure use of the Redwood Landfill site as non-irrigated open space. The applicant may propose to revise the post-closure use of the facility at a later date, for example when preparing the Final Post-closure Maintenance Plan. That proposal would, however, be subject to environmental review under CEQA.

OO-16. Please refer to Impact 3.8.1 in the DSEIR regarding potential spill or upset conditions resulting from the receipt and handling of designated waste. Please refer to the response to Comment OO-15 regarding post closure planning and maintenance requirements. The capacity of the LCRS to withstand damage from earthquakes, gravity, differential settlement, and to contain leachate generated at the landfill is discussed under Impacts 3.4.1, 3.4.2, 3.4.3, 3.4.7 and 3.4.8, respectively, in the DSEIR; also please refer to Master Response 13.

OO-17. When referring to the term "insidious dissemination of toxins," we assume that the commenter is concerned about vandalism that could result in a toxic release. The site would be secured to prevent access to minimize the potential for vandalism. In addition, regarding the effectiveness of the LCRS and water quality monitoring at the site, please refer to Master Responses 13 and 14, respectively.

OO-18. Master Response 14 describes the surface water and groundwater quality monitoring program at the site. The detection monitoring program includes monitoring wells on the landfill's perimeter, to allow detection of a leachate release, should one occur, before the release reaches adjacent waterways. No monitoring of adjacent tributaries is conducted in conjunction with operation of the landfill.

OO-19. The EIR is being prepared by independent consultants, including individuals with scientific expertise in the various issue areas analyzed. The DSEIR also was circulated for public comment for a period of 90 days, in order to enable any interested individual, agency, or organization to comment on the document.

OO-20. Comment OO-20 duplicates comment MM-1.

Comment Letter PP

4 Guisela Court
Novato, CA 94945
September 7, 2003

RECEIVED
2003 SEP 11 A 10:15
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Marin Community Development Agency
3501 Civic Center, #308
San Rafael, CA 94903

Re: EXPANSION OF REDWOOD SANITARY LANDFILL

Dear Commissioners:

Novato should not become the dumping ground for the entire Bay Area. Marin should take responsibility for its own trash and garbage, but it should not be required to accommodate the waste of other counties. PP-1

According to the Environmental Impact Report (July 2003), USA Waste of California wants to expand Redwood Sanitary Landfill to become "a regional waste disposal facility" serving "jurisdictions throughout the Bay Area and potentially beyond." The EIR indicates that this expansion would substantially increase traffic and air pollution. We suspect it would also increase unpleasant odors and potentially, more serious health and environmental problems. PP-2

We oppose the expansion of Redwood Sanitary Landfill, unless USA Waste agrees to (1) limit the use of the expanded facility to the waste of Marin communities and (2) to restrict collection to non-hazardous waste. PP-3

Sincerely,

Arlene Mulligan

Arlene Mulligan

Edward Mulligan

Edward Mulligan

PP. ARLENE MULLIGAN AND EDWARD MULLIGAN

PP-1. Comment noted.

PP-2. Potential odor impacts of the proposed project are analyzed in Impact 3.2.9, in Section 3.2 (Air Quality) of the DSEIR, and health risks are analyzed in Impact 3.2.8 in the same section. Please also see Master Responses 15 regarding odors and Master Response 11 regarding health risks.

PP-3. Please refer to Master Response 8 regarding waste imports, and Master Response 6 regarding the applicant's withdrawal of the proposal to develop Area G of the landfill as a Class II waste disposal unit.

Comment Letter QQ

Cari Pace
1169 Santolina Drive
Novato, CA 94945

RECEIVED
2003 SEP -2 P 1:18
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

August 31, 2003

Mr. Tim Haddad
Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: Redwod Landfill Permit Revision

Dear Mr. Haddad:

I have reviewed the Draft EIR and wish to submit the following questions:

It seems that Redwood's proposal is to cut into the ground to build a sort of shallow trough around the present pile of waste. The water table is only two feet below the current bottom of the solid mud and another five feet below the non-solid mud. Redwood's plan is to increase the height (and weight) and steepen the sides of the dump. Redwood wants to build up and out using geotechnical plastic to separate the garbage from the mud. The EIR states that toxins can leach into the water table and adjoining San Antonio Creek if the plastic sheeting fails, cracks or splits under all that weight. Redwood Landfill proposes constant monitoring, but if there is a breach and toxins leach into the water, what will they do? Won't it be too late to do anything? QQ-1

If there is contamination, can San Antonio Creek be blocked up to clean it so no toxins reach the Bay? What if the toxins seep into the wetlands surrounding the landfill? QQ-2

If San Antonio creek must be cleaned and therefore blocked, won't this flood Highway 101?

On another note, was there a similar landfill operated in Contra Costa county with this same type of expansion of height and with steeper sides? What happened to this landfill? I heard a rumor that it failed and leached toxins into the water. Please tell me is this landfill still operating? QQ-3

I was told that Harding and Lawson, the engineers on this proposed Redwood expansion, were the engineers on the Contra Costa landfill which failed. Is there any way to determine if this is true? I don't want to cast any blame, but I want to see how accurate their projections on Redwood's expansion might be, or not.

Thank you for your information on these troubling issues.

Sincerely,

Cari

Cari Pace
Homeowner

QQ. CARI PACE

QQ-1. A perimeter trench is a fundamental component of the Leachate Collection and Removal System (LCRS), as described in DSEIR Chapter 2, Project Description, and under Impact 3.4.7 of DSEIR Section 3.4. Since publication of the DSEIR, RLI, in consultation with the RWQCB, also has commenced pumping leachate from the interior of the landfill. The project does not include increasing the height of the landfill beyond its currently permitted maximum elevation or expanding the disposal footprint laterally beyond the area where waste already has been placed. The project does include increasing the steepness of the side slopes, which would increase the landfill capacity. The increase in capacity would increase the weight of the landfill mass on the underlying Bay Mud; the potential impact of the increased landfill mass on Bay Mud is evaluated under Impact 3.4.2. Also please refer to Master Response 7 regarding Bay Mud strength and settlement.

The purpose of the LCRS is to prevent the off-site discharge of leachate; failure of the LCRS could potentially result in such a discharge. The ability of the LCRS to withstand damage from earthquakes, gravity, differential settlement, and to contain leachate generated at the landfill is evaluated under Impacts 3.4.1, 3.4.2, 3.4.3, 3.4.7 and 3.4.8, respectively, in the DSEIR. Please also refer to Master Response 13 regarding changes to and the effectiveness of the LCRS. Only at Area G does the landfill liner include a layer consisting of HDPE geomembrane. The HDPE geomembrane, which is one of seven components that make up the composite liner-LCRS at Area G, may be the plastic sheeting to which this comment refers. Elsewhere within the disposal footprint (i.e., outside of Area G), refuse directly overlies low-permeability Bay Mud; in these areas the LCRS consists primarily of the perimeter trench and associated sumps and pumps and other equipment.

Monitoring to detect any off-site discharge is standard practice at landfills and is required under CCR Title 27 Section 20385. All landfills must institute a detection monitoring program unless there is “measurably significant’ (as defined in the CCR title 27) evidence of a release or significant physical evidence of a release from the waste unit. In either of these cases, “evaluation monitoring” is triggered, to determine the cause, extent, and other parameters of a release, followed by corrective action if required by the RWQCB. Please refer to Master Response 14.

QQ-2. The potential impact of leachate on off-site surface waters is addressed under Impact 3.5.2 of the DSEIR. Refer also to Master Response 13, on the effectiveness of and changes to the LCRS, and to Master Response 14, regarding groundwater and surface water impacts and monitoring. As discussed in the response to Comment QQ-1, under CCR Title 27, Section 20385, evaluation monitoring is triggered if the facility’s detection monitoring program indicates the potential for an off-site release of leachate. If the evaluation monitoring indicates that corrective action is needed, a corrective action plan is developed by the landfill operator and submitted to the RWQCB prior to

implementation. The response plan would take into account the consequences of the corrective actions. For example, if pumping were initiated to prevent the downstream spread of a contaminant, the plan would indicate how and where the pumped water would be discharged in order to prevent other adverse impacts.

QQ-3. Regarding the failure of the Acme Landfill in Contra Costa County, please refer to Master Response 4. The applicant's geotechnical and engineering consultant for the proposed Redwood Landfill expansion is GeoSyntec Consultants, not Harding Lawson Associates. Geotechnical monitoring is an integral part of the landfill's revised fill sequencing plan, as discussed on pp. 3.4-22 to 3.4-23. Mitigation Measure 3.4.2d (on p. 3.4-24) requires that the rate of fill be reduced if anticipated rates of Bay Mud consolidation and strength gain are not borne out by the monitoring program. Also please refer to Master Response 7.

Comment Letter RR

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

**Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc.
Revised Solid Waste Facilities Permit**

Dear Agency Director Hinds, Mr. Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) notes that the project would more than double daily truck traffic to 900 vehicles per day. Implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval." RR-1 RR-2

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the DEIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. The Commission should ensure that the DEIR does not underestimate any potential significant adverse impacts on the environment and me and my neighbors. RR-3

Regional Waste Facility. The proposal makes clear that it is intended to transform RWLF into a regional waste facility. The expansion's purpose is to accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County and almost double the daily intake of waste. Given RWLF's environmentally sensitive location in Marin County, this makes no sense other than from a corporate profit standpoint. What are the benefits to Marin County, and why has the corporate owner of RWLF selected this site, instead of another, to create a regional waste facility? The DEIR does not fully answer these questions. RR-4

Absence of Key Data and Analysis in the DEIR. The DEIR is deficient because it does not clearly measure the current tonnage at the RWLF today, indicate whether the current tonnage is within the permitted amount, explain what is currently in the landfill, or analyze what the proposed additional tonnage would mean in terms of cumulative impacts and potential disaster events such as flooding and seismic activity. Too much emphasis is placed on mitigation measures of monitoring. What additional burdens and risks will be incurred by Marin County residents as a result of the additional tonnage after the landfill closes in the future? Again, the DEIR is silent. RR-5 RR-6 RR-7a RR-7b

Increase in Foul Odors. In addition to the measurable air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. The DEIR says there are "no sensitive RR-8

receptors." This is false. I live just a few miles down-wind from RWLF, and I smell it sometimes when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know that it would be considered an important factor in determining whether to expand RWLF's current operations. RR-8

Acceptance of Semi-hazardous Materials, and Increase in Toxic Air Contaminants. RWLF's request to begin accepting semi-hazardous materials is a danger to this community, and RWLF has not provided enough information to evaluate fully its request. I am also concerned that the proposal will increase toxic air contaminants to a dangerous level. The DEIR should undertake further analysis of the carcinogenic risk it would pose to residents within a five mile radius. RR-9

Negative Impact on Nearby Neighborhoods and Open Space. The DEIR must take full account of nearby residential neighborhoods in terms of impact analysis, and consider the impact on the Rush Creek Open Space which is close to my home and is used by thousands of Marin residents for recreation on an annual basis. The Commission should consider the impact on the wetlands and creeks that run through the Open Space, especially in the event of flooding or seismic activity. RR-10

RWLF's Current Problems, and Analyzing Alternative Sites. The focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations, such as the absence of a liner and the legally-required 5 feet separation from ground water. These should be discussed in more detail in the DEIR. RR-11 Marin County officials should be actively preparing alternative plans for future waste disposal and management to serve County residents, not big business. This includes finding an alternative site more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. The DEIR fails to analyze off-site alternatives in any detail. RR-12

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. It is absurd to think otherwise. RR-13 The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin County would be taking a regressive step inconsistent with contemporary land management and environmental stewardship in approving the proposal or any alternative that would increase the daily trips and tonnage permitted today. This is why additional time and attention should be spent on getting the DEIR right. Thank you for considering my comments. RR-14

Very truly yours,

Jamie Pike

RR. JAMIE PIKE

RR-1. The proximity of sensitive receptors such as residences south of the project site was considered in the DSEIR analysis. Potential impacts of the project on air quality, groundwater quality, and surface water quality are evaluated in Sections 3.2., Air Quality, 3.4, Geology, Soils and Seismicity, and 3.5, Hydrology and Water Quality, respectively. Mitigation measures proposed as part of the project or identified in the DSEIR in Sections 3.4 and 3.5 would reduce adverse project impacts to groundwater and surface water to less-than-significant levels. Impact 3.2.8 addresses the potential impacts on human health of toxic air contaminant emissions under the project. The impact analysis included conducting a screening level health risk assessment. As discussed, the DSEIR analysis determined that mitigation measures identified in the DSEIR would reduce impacts due to toxic air contaminants to a less-than-significant level. Also please refer to Master Response 11 concerning the health risk assessment. Other potential effects on public health and safety are evaluated in DSEIR Section 3.8, Public Health and Safety. The DSEIR identified several significant, unavoidable air quality impacts, associated either with the proposed increase in waste and composting receipts at the landfill and other operations at the site, or with increased landfill traffic. Refer also to Master Response 16 regarding air emissions calculations in this FEIR. In considering project approval, County decision-makers will need to make findings of overriding considerations if they determine that the benefits of the project outweigh its significant unavoidable impacts.

RR-2. The commenter is correct that the project evaluated in the DSEIR would more than double traffic to the site, as shown in Table 3.10-4 of the DSEIR. The impacts of the proposed increase in traffic were evaluated in Section 3.10 of the DSEIR. The DSEIR analysis concluded that with implementation of the identified mitigation measures, impacts relating to the increase in traffic would be reduced to less-than-significant levels. See also Master Response 5. Since publication of the DSEIR the applicant has requested changes to the project; please refer to Master Response 17. Regarding significant and unavoidable impacts of the project, please see the response to Comment RR-1.

RR-3. The sensitivity of the landfill's location, including the value of Petaluma Marsh as wildlife habitat, is acknowledged and taken into account in the DSEIR analysis. Please see also Master Response 10 and the response to comment P-4. The DSEIR analysis identifies feasible mitigation measures that would reduce most of the other identified impacts to less-than-significant levels. However, as discussed in DSEIR Section 3.2., Air Quality, the project would have several significant, unavoidable air quality impacts. Refer also to Master Response 16 regarding air emissions calculations in this FEIR.

DSEIR Chapter 5, Alternatives, compares the relative merits of the project with a range of alternatives, including the Status Quo Alternative and the No Project Alternative; the evaluation identifies the Mitigated Alterative, which would involve a limited increase in waste receipts, as the environmentally superior alternative. Although all three have the

ability to reduce or avoid most or all the significant unavoidable impacts of the project, and would meet the County's solid waste management planning standard of having at least 15 years of landfill capacity, the Mitigated Alternative would provide additional disposal capacity and, unlike the Status Quo and No Project alternatives, would include some mitigation measures that would (incidentally) have a positive effect on existing operations.

As required under CEQA, the lead agency is responsible for the adequacy and objectivity of the Draft EIR (CEQA Guidelines §15084[e]) and for preparation of the Final EIR prior to approving a project (CEQA Guidelines §15089 [a]). CEQA requires that prior to approving a project, the lead agency must certify that the Final EIR has been completed in compliance with CEQA, that the final EIR was presented to the decision-making body of the lead agency and that the decision-making body reviewed and considered the information contained in the final EIR, and that the final EIR represents the lead agency's independent judgment and analysis (CEQA Guidelines §15090). As discussed in the Introduction of the DSEIR, the Marin County Environmental Health Services Division (EHS) has decision-making authority for action on the SWFP and is the CEQA Lead Agency for certification of the EIR. CEQA Guidelines § 15091 requires that prior to approving a project with one or more significant impacts, the lead agency must make one or more written findings on each of the significant effects. If the decision-making agency approves a project with significant unavoidable effects, CEQA Guidelines § 15093 require that the agency "state in writing the specific reasons to support its action based on the final EIR and/or other information in the record."

RR-4. Please refer to Master Response 19, regarding the landfill's use as a regional facility.

RR-5. The currently permitted tonnage is presented in Table 2.2, pages 2-22 and 2-23 of the DSEIR. As described under "Approach to Analysis" on page vii of the Introduction, the currently permitted level of operation (including waste acceptance rates and traffic levels), rather than the existing level, were considered the baseline for the analysis of the propose project. This approach is in accordance with the court decision in *Fairview Neighbors v. County of Ventura* ([2d Dist. 1999] 70 Cal. App. 4th 238 [82 Cal. Rptr.2d 436]). Table 2.2 also lists currently permitted types of material received at Redwood Landfill. (Where modifications to permitted landfill activities have been made that were not evaluated in the 1994 FEIR, and thus are part of the project evaluated in this SEIR, such departures from permit conditions are described in Section 2.5, Project Elements, of DSEIR Chapter 2, Project Description; waste quantities received are within currently permitted levels.) Regarding the landfill's current volume, refer to Master Response 12.

RR-6. Sections 3.5, Hydrology and Water Quality, and 3.4, Geology, Soils and Seismicity, evaluate the potential impacts of the project related to flooding and seismic activity at the site, respectively. Section 4.2 in Chapter 4 of the DSEIR addresses cumulative impacts.

RR-7a. The comment does not specify to which monitoring it refers or indicate the reason(s) monitoring would be inappropriate for the impacts for which it is specified. Monitoring is a well-established means of demonstrating that measures taken to prevent the release of contaminants to the environment are effective, or that timely corrective actions are required. Monitoring is required as *part* of the measures proposed as part of the project and/or identified in the DSEIR to mitigate impacts discussed in Sections 3.2, Air Quality, 3.4, Geology, Soils and Seismicity, and 3.5, Hydrology and Water Quality. For example, the odor monitoring protocol required as an element of an Odor Impact Minimization Plan (Measure 3.2.9b) is, as stated in the DSEIR, a required element of the Odor Impact Minimization Plan required in State regulations, Title 14 CCR, Section 17863.4. Groundwater and surface water quality monitoring is required of at landfill sites (pursuant to Title 27 CCR Section 20385) and water monitoring conducted as part of the mitigation measures in Sections 3.4. and 3.5 trigger specific actions to be taken if the monitoring indicated that standards for the parameters being monitored had been exceeded. Please also see Master Response 14.

RR-7b. Regarding the question, "What additional burdens and risks will be incurred by Marin County residents as a result of the additional tonnage after the landfill closes in the future," please note that the impacts of increased tonnage, as well as the other project elements, are considered in the impact analyses presented in Chapters 3 and 4 of the DSEIR. Impacts of increased tonnage and capacity on the production of landfill gas production and leachate production are evaluated in Sections 3.2, Air Quality, and 3.4, Geology, Soils, and Seismicity, respectively. The impacts of increased tonnage and other project components on underlying Bay Mud and landfill slope stability are evaluated in Section 3.4, Geology, Soils, and Seismicity.

Please see the response to Comment O-9 regarding post-closure maintenance and emergency response requirements. According to the current WDRs (Order 95-110, Item 31), RLI has an approved closure plan that provides evidence of an irrevocable closure and post-closure maintenance fund as required under state regulations and federal law. Mitigation Measure 3.4.4c, proposed as part of the project (in GeoSyntec, 1998), indicates that a final landfill closure and post-closure maintenance and monitoring plan will be implemented, as required by state and federal regulations.

RR-8. Impact 3.2.9 of the DSEIR assesses the potential for odor impacts to occur resulting from project implementation related to the proposed increase in waste quantities received at the landfill, changes in the handling of sludge, and changes in the composting/co-composting activities using methodologies recommended by the BAAQMD. The commenter incorrectly asserts that the DSEIR "says that there are 'no sensitive receptors.'" Impact 3.2.9 on DSEIR page 3.2-42 identifies that the closest sensitive receptors are located over 1.5 miles from the site boundaries. Other sensitive receptors located in proximity to Redwood Landfill are discussed on DSEIR pages 3.2-20 and 3.2-21.

Refer also to Master Response 15 regarding the procedure for filing an odor complaint with the BAAQMD.

RR-9. Please refer to Master Response 6, regarding the applicant's withdrawal of the proposal to use Area G as a Class II waste unit.

RR-10. Impact 3.6.1 on page 3.6-14 of the DSEIR addresses potential land use conflicts with adjacent or nearby areas, including residences and open space. The potential impacts of the project on sensitive receptors are considered in other sections of DSEIR Chapter 3, as applicable (see, e.g., Section 3.2, Air Quality, and Section 3.7, Noise). These analyses appropriately evaluate potential impacts to the closest sensitive receptors. The mitigation measures contained in the DSEIR, including those in Section 3.3 (Biological Resources) and 3.5 (Hydrology and Water Quality), to protect Petaluma Marsh also are protective of Rush Creek Open Space marshlands and more distant marshes and creeks. Section 3.5, Hydrology and Water Quality, addresses potential flooding impacts and potential effects on adjacent and nearby surface waters, and the seismic and static stability of the landfill is evaluated in Section 3.4 (Geology, Soils, and Seismicity). Please refer to the response to comment RR-3 regarding CEQA requirements for written findings for any significant impacts identified in the EIR.

RR-11. The impacts of the currently permitted landfill and its permitted operations are not the subject of the analysis in this SEIR. As discussed in the DSEIR, RLI has been in operation as a disposal site since 1958, prior to current federal or state regulations requirements for landfill liners or separation from groundwater. The DSEIR evaluates proposed future operational changes and those not covered under existing permits. Operation of the Class III landfill within the permitted disposal area is permitted under the current SWFP and - except for Area G – the current WDRs. Because Area G had not previously been used for waste disposal, the current WDRs require Area G to meet current standards of having a composite liner and LCRS, and to meet Subtitle D and Title 27 siting criteria (including a 5-foot separation to groundwater or an approved engineered alternative). Regarding the required separation from groundwater, refer to Master Response 1. Regarding the effectiveness of the proposed LCRS, please refer to Master Response 13. Since publication of the DSEIR, RLI has withdrawn the proposal to reclassify Area G as a Class II unit; please refer to Master Response 6.

RR-12. Please refer to Master Response 21. As there appears to be well over 15 years of landfill capacity in the County, whether or not the project is approved, the County is not compelled by state law to begin the lengthy and expensive process to site a new landfill. The purpose of the alternatives analysis under CEQA is to identify alternatives to the project that would reduce or eliminate impacts of the project while meeting most of the basic objectives of the project. The purpose of presenting and analyzing the Off-Site Alternative in the DSEIR is to address the obvious issue of whether it would be preferable to gain more landfill capacity in Marin County by expanding the Redwood Landfill, or by siting a new landfill elsewhere in the County, in a location more in

keeping with the Countywide Integrated Waste Management Plan's landfill siting criteria. The Off-Site Alternative need not specify a particular location for an effective, though general, comparison. Table 5-1 in the DSEIR indicates that the Off-Site Alternative would have the ability to meet or partly meet at least some of the project's objectives. The inability of the Off-Site Alternative to mitigate the significant unavoidable impacts associated with the project, and the likelihood that development of a new landfill in a site currently in open space would cause new significant impacts that the project would not, led to a conclusion that this alternative was not environmentally superior.

RR-13. Please refer to Master Response 10.

RR-14. Regarding other landfills on bayfront lands, please refer to the response to Comment L-3. As discussed in the response to Comment RR-3, the DSEIR alternatives analysis considers the Status Quo Alternative (under which tonnage and vehicle trips would remain at current levels as authorized by the Stipulated Notice and Order) and the No Project Alternatives (under which tonnage and vehicle trips would remain at levels written into the SWFP), among others, and concludes that the Mitigated Alterative, which would involve a limited increase in waste receipts, is the environmentally preferable alternative. Although all three have the ability to reduce or avoid most or all the significant unavoidable impacts of the project, the Mitigated Alternative would include some mitigation measures that would (incidentally) have a positive effect on existing operations.

Comment Letter SS

1147 Santolina Drive
Novato, CA 94945
(415) 898-2532
August 13, 2003

RECEIVED
2003 AUG 14 P 12:47
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Mr. Alex Hines, Director
Marin County Community Development Agency
3501 Civic Center Drive Room #308
San Rafael, CA 94903

Dear Mr. Hines:

I am writing to express my concern over the proposed changes at Redwood Landfill. The potential daily tripling of garbage intake, and especially the request to air-dry sludge for two years, raises alarm bells for myself and my neighbors. Given the past lack of response to air-quality complaints—a lack shared by the landfill as well as the County—I fear that problems could cause years of compromised quality of life, reduced home values, and litigation. On the other hand, I greatly appreciate the landfill's recent efforts to reduce and eliminate odors, which have been largely successful. Even so, there has been no air-drying of human waste, so this may account for the change (EIR, July 2003, p. 3.2-20). SS-1

In reviewing the changes requested by Redwood Landfill, I urge you to consider the following responses, some of which reflect the EIR's Mitigated Alternative:

- Establish an efficient and well-publicized complaint procedure in which residents can receive prompt and courteous assistance in resolving problems. SS-2
- Resolve the permit and financing issues surrounding the construction of the access road and bridge across 101. Have the bridge built *before* any increase in landfill traffic is allowed. SS-3
- Rather than allowing Redwood to triple its intake immediately, phase in modest increases over several years, and phase in only those increases that would serve Marin County. Opening the door to a tripling of waste intake invites the entire Bay Area and beyond to make Marin County its dumping ground. It also creates a traffic and pollution nightmare. The Mitigated Alternative suggested in the EIR seems to be the *most* the landfill could do at this time without causing harm, but even that may not be the case. The use of the landfill should center on preserving capacity for Marin in the short and long term. It makes no sense to open the floodgates if we don't want the valley to fill up quickly. It certainly makes no sense to encourage other communities to double or triple the flow. SS-4
- Deny the bid to accept toxic (Class II) waste. I feel that such a request is inappropriate, given the landfill's proximity to Novato and the bay. Should present containment plans fail, such waste could cause environmental damage, health hazards, and greater costs to the County, as Redwood would likely have to implement expensive retroactive remedies or engage in lawsuits. SS-5

For the record, I received no formal notice of the hearings surrounding this issue, even though I live in an area historically affected by the landfill. I strongly urge you to allow no less than the Mitigated Alternative and to consider all potential impacts on Novato and Marin, especially regarding the latter's status as "dumping ground." Thanks for your time. SS-6

Sincerely,

Molly D Roth

Molly D. Roth
cc: Novato City Council; Cynthia Murray

SS. MOLLY ROTH

SS-1. Since publication of the DSEIR, the applicant has requested several changes to the proposed project; please see Master Response 17. Regarding past odor complaints, please refer to Master Response 15. Regarding changes to sludge management in recent years (and the reduction of odors) please refer to Master Response 15. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18.

SS-2. Please refer to Master Response 15.

SS-3. Please refer to Master Response 3.

SS-4. As noted in the response to comment SS-1, since publication of the DSEIR, the applicant has requested several changes to the proposed project; please see Master Response 17. As discussed in DSEIR Chapter 5, Alternatives to the Project (page 5-12), the Mitigated Alternative would reduce or eliminate the aspects of the project that have the greatest potential to harm the environment. Consistent with the commenter's statement, the DSEIR analysis concludes that the Mitigated Alternative is the environmentally superior alternative. Regarding the use of the landfill as a regional facility, please refer to Master Responses 19 and 8.

SS-5. Please refer to Master Response 6.

SS-6. Regarding notice of the public hearings, please refer to the response to comment GG-1. Regarding the Mitigated Alternative and the potential impacts of the project, this comment expresses an opinion on the preferred alternative and points for the County to consider in its decision on the project, and not on the adequacy of the DSEIR. The DSEIR identified the Mitigated Alternative as the environmentally superior alternative for reasons presented in DSEIR Chapter 5. Also please refer to Master Responses 19 (regarding Redwood Landfill as a regional facility, and 8 (regarding waste import mitigation fees).

Comment Letter TT

I'm Molly Roth, and I live on Santolina Drive in Novato. There are three issues I want to raise. Trust, timing, and risk.

First, trust. In August 1999 my family and I endured a week of horrible latrine smells. We had to keep the windows closed, and we couldn't breath outside without gagging. I felt invaded and worried that the value of my house would drop. Two of my neighbors had already settled lawsuits with the landfill. TT-1

Since my letter to you of August 13, I have learned even more about the possible effects of expansion. Given the potentially drastic effects of what the landfill has proposed and presumably deems "reasonable," given its history of doing whatever it pleases regardless of the public good, and given the chronic lack of regulatory oversight, I greatly fear that the County ~~will~~ could face a disaster if it allows *any* expansion, inc. mitigated alternative. For the County must TT-2

Before ~~your~~ any consideration of expansion continues, I ~~urge you to~~ take the following actions:

1. Determine the current size, practices, and emissions of the landfill. This must be done by independent scientific experts. TT-3
2. Establish effective means of monitoring the landfill on site. TT-4
3. Establish an efficient and well-publicized complaint procedure in which residents can receive prompt and courteous assistance in resolving problems. TT-5

The second issue is timing. I strongly believe that any consideration of new use permits should be suspended until all current problems associated with the landfill have been resolved. These include use-permit violations and dangerous truck crossings. TT-6

Finally, I wish to raise the issue of risk. Any expansion plan, including the DEIR's mitigated alternative, presents Marin residents with potential risks involving health and safety, future cleanup costs, and premature closure of the landfill. USA Waste is asking the citizens of Marin to take on such risks for a project that in no way serves the public good—a project that serves only the company's bottom line. TT-7

Further, many issues concerning the effects of landfill gasses and other emissions remain controversial; if it turns out that the landfill is more toxic than previously believed, the County could face many lawsuits and prohibitively expensive cleanup efforts. I would like ~~you~~ the County to minimize these risks in any way ~~you~~ it can, such as revoking the current sludge permit ~~and replacing it with one allowing sludge from Marin County only.~~ TT-8

I again urge ~~you~~ the County to suspend all consideration of expansion until the current issues have been ~~resolved~~ addressed and the prior agreements enforced. TT-9

Thanks for your time.

Fully

TT. MOLLY ROTH

TT-1. Comment noted. The number of confirmed and unconfirmed odor complaints registered with the BAAQMD, and a brief characterization of the types of odors observed, between 1997 and 2001 are identified in DSEIR Table 3.2-5, page 3.2-21. The characteristics of the types of odor complaints registered in 1999 with the BAAQMD are similar to those described in this comment.

TT-2. Regarding the consistency of current operations with existing permits, please refer to Master Response 18. The DSEIR alternatives analysis (Chapter 5) considers the Status Quo Alternative (under which tonnage and vehicle trips would remain at current levels as authorized by the Stipulated Notice and Order) and the No Project Alternatives (under which tonnage and vehicle trips would remain at levels written into the SWFP), among others, and concludes that the Mitigated Alterative, which would involve a limited increase in waste receipts, is the environmentally preferable alternative. Although all three of these alternatives have the ability to reduce or avoid most or all the significant unavoidable impacts of the project, the Mitigated Alternative would include some mitigation measures that would (incidentally) have a positive effect on existing operations.

TT-3. Regarding the current size of the landfill, please refer to Master Response 12. The EIR is being prepared by independent consultants, including individuals with scientific expertise in the various issue areas analyzed. The DSEIR contains current information on landfill practices and emissions.

TT-4. With respect to surface water and groundwater quality monitoring please refer to Master Response 14.

TT-5. Please refer to Master Response 15.

TT-6. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18. The DSEIR evaluates as project components some practices that are not permitted under the current Solid Waste Facilities Permit (SWFP) and identifies measures to reduce or eliminate the significant impacts of these and the project components that are proposed for future implementation. The landfill is not in violation of its Use Permit, which was issued by the County in 1958 and the terms of which are broad. Regarding the access bridge, please refer to Master Response 3.

TT-7. Regarding the relative merits of the Status Quo, No Project, and Mitigated Alternatives, refer to the response to Comment TT-2. Health and safety-related aspects of the project were evaluated in subsections of Chapter 3 of the DSEIR, including Section 3.2, Air Quality; Section 3.4. Geology, Soils and Seismicity; Section 3.5, Hydrology; Section 3.8, Public Health and Safety, and Section 3.10, Transportation and Traffic. Please also refer to Master Response 11. The analysis identified significant and unavoidable air quality

impacts of the project, as described in Chapter 1, Summary, and Section 3.2. Please refer also to Master Response 16 regarding air emissions calculations in this FEIR.

The commenter's specific concern about future cleanup is unclear. Title 27 CCR has established specific standards for closure and post-closure maintenance of landfills to protect public health and safety and the environment. Please refer to the response to comment RR-7b.

TT-8. Impact 3.2.5 addresses the impact of increased landfill gas emissions and identifies measures to reduce the impact, although emissions related to LFG would remain a significant, unavoidable consequence of project implementation. Please refer also to Master Response 16 regarding air emissions calculations in this FEIR. Receipt of non-hazardous sludge, also called Class B biosolids, is part of currently permitted activities at the landfill. Impact 3.5.3 addresses the impacts to water quality from proposed changes in the management of water that has contacted sludge (and compost), and Impact 3.2.10 addresses potential impacts from emissions of volatile organic compounds and odors that could result from the proposal to air dry stockpiled sludge. Potential health impacts of the project are analyzed in Impact 3.2.8 in Section 3.2 (Air Quality) of the DSEIR. Regarding the health risk assessment conducted as part of the air quality analysis, refer to Master Response 11.

In considering project approval, the County will need to weigh the relative merits of the proposed project and project alternatives. CEQA Guidelines § 15091 requires that prior to approving a project with one or more significant impacts, the lead agency must make one or more written findings on each of the significant effects. If the project or any alternative with significant, unavoidable impacts is approved, CEQA Guidelines § 15093 require that the agency "state in writing the specific reasons to support its action based on the final EIR and/or other information in the record."

TT-9. Please refer to the response to comment TT-2.

Comment Letter UU

1147 Santolina Drive
Novato, CA 94945
(415) 898-2532
October 6, 2003

RECEIVED
2003 OCT -7 P 12:51
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Mr. Alex Hinds, Director
Mr. Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive Room #308
San Rafael, CA 94903

Dear Mssrs. Hinds and Haddad:

I wrote to you in August to express my concern over the proposed changes at Redwood Landfill. Since then, I have had more time to consider the DEIR and would like to clarify my previous position in terms that are more central to the revision of the DEIR itself. UU-1

1. The DEIR proposes a mitigated alternative that seems reasonable on face value. However, much of the acceptability of this alternative depends on large changes on the part of Redwood Landfill. I do not believe that the landfill will put these changes into effect, even if they are required as a condition of expansion. UU-2

This lapse has occurred in the past, and I believe it continues to do so. In August 1999 my family and I endured a week of horrible latrine smells. We had to keep the windows closed, and we couldn't breath outside without gagging. I felt invaded and worried that the value of my house would drop. Two of my neighbors had already settled lawsuits with the landfill. Redwood Landfill has a history of abusing the public good in my neighborhood and others, in violation of its agreements with the County. UU-3

Given the potentially drastic effects of what the landfill has proposed and presumably deems "reasonable," given its history of doing whatever it pleases regardless of the public good, and given the chronic lack of regulatory oversight, I think the EIR should delineate the effects of expansion that would occur if the changes that would make such expansion "safe" were not implemented.

In other words, I believe that the most likely scenario is that the County will allow a mitigated expansion, but the measures demanded by the agreement will neither be put into place by the landfill nor be enforced by regulatory agencies. The EIR should recognize this as a likely scenario and include a table outlining the effects of each point of the mitigated alternative *without* any new safeguarding infrastructure in place.

2. The role of the overpass should be greatly clarified. Even though the overpass is a condition of a prior permit, the EIR should delineate what would happen if it were *not* built and increases occurred. Again, the pattern in certain critical UU-4

Comment Letter UU

regards has been that the County says Yes to Redwood Landfill, Redwood Landfill reneges on its agreements, and no one follows up. UU-4

3. The DEIR at times shows a bias in favor of expansion and against the public good. For example, it does not present a scenario in which only Marin County waste would be accepted. Further, to consider a "mitigation fee" (DEIR, p. 1-4) as an appropriate way to deal with "adverse environmental effects" betrays an assumption that the landfill somehow has a right to cause negative environmental effects. I believe that this sort of suggestion has no place in a purely descriptive document, let along one intended to ensure public safety. UU-5

4. From what I understand, the DEIR has not fully determined the current size, practices, and emissions of the landfill. This must be done so that any true assessment of the proposed increases will be meaningful. Further, having it done by independent scientific experts would give the County thorough information without bias. I think a complete EIR should include such information. UU-6

5. To implement the mitigated alternative, the County would need to establish effective means of monitoring the landfill on site. The county would also need an efficient complaint procedure. However, past problems have not brought these reforms about, so any expansion scenario should assume that these safeguards will not be in place, at least as one probable outcome among many. UU-7

6. The DEIR proposes raising the level of acceptable emissions and other impacts to 15 percent above the currently permitted rate. The reasoning for this remains mysterious. Why 15 percent? Why wasn't the landfill permitted that level in earlier petitions? What has changed to make this acceptable now, when it was apparently not acceptable in 1995? Again, I would like the EIR to address the history of approval and the basis for suggesting such changes now, as opposed to then. UU-8

In short, given the history of the landfill's lack of responsibility, the reputation of its parent company, and the sensitivity of the area on which the landfill sits, I think the DEIR must directly address the likelihood of mismanagement as well as any "worst-case" scenarios that failure of current technologies might bring about. UU-9

I truly appreciate your efforts to advocate for the public good in overseeing the EIR. I wish you wisdom and patience in your formidable task. Thank you for your time and consideration.

Sincerely,

Molly D. Roth

Molly D. Roth

UU. MOLLY ROTH

UU-1. Comment noted.

UU-2. Comment noted; the DSEIR identifies the Mitigated Alternative as the environmentally superior alternative.

UU-3. Regarding the consistency of current operations with the facility's existing permits please see Master Response 18. Regarding odor complaint history at the site, please see Master Response 15. With respect to the requested table showing impacts of the Mitigated Alternative if it were implemented without the mitigation measures, the purpose of the EIR, as required by CEQA, is to evaluate the environmental impacts of the proposed project and identify measures to mitigate identified significant impacts. To the extent a project would have significant impacts, a "mitigated alternative" without the mitigation measures also would have significant impacts, although in the case of the Mitigated Alternative described in DSEIR Chapter 5, its reduced scale alone would reduce the severity of some impacts. Approval of a project having identified significant impacts, if it were assumed that identified mitigation measures would *not* be implemented, would be contrary to the purpose and requirements of CEQA. Therefore, compilation of a table showing the impacts of the Mitigated Alternative if no mitigations were implemented would be a superfluous exercise. However, the commenter's skepticism that mitigation measures will be implemented is acknowledged. DSEIR Appendix H presents a draft Mitigation Monitoring and Reporting Program (MMRP) identifying the reporting requirements of the applicant and the regulatory agency responsible for overseeing implementation of each measure. (This program will be revised to address project revisions and any revisions to mitigation measures identified in this FEIR prior to consideration of project approval.) Each enforcement agency has its own enforcement procedures, which generally include notices of violation and requirements to take corrective action; cease and desist orders; authority to suspend operations; fines; and criminal prosecution.

UU-4. Regarding the access bridge, please refer to Master Response 3.

UU-5. The purpose of the alternatives analysis under CEQA is to identify alternatives to the project that would reduce or eliminate impacts of the project while meeting most of the project's basic objectives. The alternatives presented in DSEIR Chapter 5 represents a reasonable range of alternatives, as required under CEQA. CEQA Guidelines §15126.6(a) states that an "EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation." According to the CIWMB's disposal reporting system, as shown in Table MR 9-2 of Master Response 9, in 2003 Marin County sent disposal waste and ADC material to 16 different disposal sites; approximately 18 percent of the County's waste was sent to facilities in other counties. Please also refer to Master Response 9. Even if the County had the legal

authority to restrict the receipt of out-of county waste, such a restriction could ultimately prove counterproductive to the goal of responsibly managing the County's municipal solid waste, if it led to comparable, retaliatory measures by other counties.

The reference to a mitigation fee on DSEIR page 1-4 is in the context of a table summarizing relative attributes of the project alternatives. The mitigation fee concept is discussed in greater detail in DSEIR Section 3.6, Land Use and Planning, and in Master Response 8. The summary of the County's Source Reduction and Recycling Element (SRRE) presented in Section 3.6 shows that Goal 9, Maximize the Use of Incentives that Will Promote Diversion Programs, includes the objective of developing tip fee differential rates based on materials or jurisdiction of origin. Impact 3.6.4 addresses the project's conflict with three SRRE goals, and Mitigation Measure 3.6.4 identifies the County's consideration of an ordinance to impose a mitigation fee as part of the mitigation for that specific impact, consistent with CEQA Guidelines § 15126.4 which requires that an EIR identify mitigation measures that could minimize identified significant impacts. Measure 3.6.4 is consistent with County waste management planning goals and its implementation would specifically address conflicts with goals of the SRRE. The mitigation fee component of the (two-part) measure states that the "mitigation fee will be used to develop additional landfill capacity, to develop diversion programs, and to offset other project impacts, including significant, unavoidable air quality impacts (see Section 3.2, Air Quality and Chapter 4, Cumulative Impacts)." The DSEIR identifies other measures to reduce or eliminate every other significant impacts identified in the SEIR (refer to Table 1-2, Summary of Impacts and Mitigation Measures). As discussed in Section 3.2. Air Quality, some significant air quality impacts would remain after the implementation of all feasible mitigation measures.

UU-6. Please refer to the response to comment TT-3.

UU-7. The LEA conducts inspections at the site on a monthly basis, as required under Title 14 CCR, § 18083. Regarding oversight responsibility for mitigation measures identified in the EIR, please refer to the response to comment J-6. Regarding odors, please refer to Master Response 15.

UU-8. The 1994 FEIR evaluated the project proposed at the time by the applicant. The DSEIR evaluates the project that is currently proposed by the applicant (the project proponent, RLI). The quantities proposed by the applicant are presented in DSEIR Table 2-2 (pages 2-22 to 2-23). (Since publication of the DSEIR, the applicant has requested several major changes to the project (see Master Response 17.) The applicant's purpose and need for the project are presented on page 2-5 of Chapter 2, Project Description, of the DSEIR. The purpose of this SEIR is to evaluate changes to the project since the 1994 FEIR was certified. The DSEIR analysis identifies significant impacts that would result from the proposed project and identifies feasible mitigation measures that would reduce most of the identified impacts to less-than-significant levels. However, five significant unavoidable air quality impacts of the project would remain, as feasible mitigation

measures that would reduce the impacts to insignificant levels were not available. The purpose of the CEQA alternatives analysis is to consider alternatives to the project that would reduce or eliminate impacts of the project while meeting most of the basic objectives of the project. The alternatives analysis also includes the Status Quo Alternative (under which tonnage and vehicle trips would remain at current levels as authorized by the Stipulated Notice and Order) and the No Project Alternatives (under which tonnage and vehicle trips would remain at levels written into the SWFP). Since the purpose of the Mitigated Alternative (as its name suggests) is to mitigate project impacts, it includes an estimated rate of waste and composting material acceptance where the increase in emissions from various project activities would be below significance thresholds. As described on DSEIR page 5-11, this level is estimated to be approximately 15 percent above currently permitted rates.

Regarding consistency between current operations and the facility's existing permits please see Master Response 18.

UU-9. Please refer to Master Response 18. Regarding the location of the landfill adjacent to a wetland, please refer to Master Response 10.

Comment Letter VV

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

RECEIVED
2003 OCT -9 A 7:07
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Dear Agency Director Hinds, Mr. Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) notes that the project would more than double daily truck traffic to 900 vehicles per day. Implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval."

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the DEIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. The Commission should ensure that the DEIR does not underestimate any potential significant adverse impacts on the environment and me and my neighbors.

Regional Waste Facility. The proposal makes clear that it is intended to transform RWLF into a regional waste facility. The expansion's purpose is to accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County and almost double the daily intake of waste. Given RWLF's environmentally sensitive location in Marin County, this makes no sense other than from a corporate profit standpoint. What are the benefits to Marin County, and why has the corporate owner of RWLF selected this site, instead of another, to create a regional waste facility? The DEIR does not fully answer these questions.

Absence of Key Data and Analysis in the DEIR The DEIR is deficient because it does not clearly measure the current tonnage at the RWLF today, indicate whether the current tonnage is within the permitted amount, explain what is currently in the landfill, or analyze what the proposed additional tonnage would mean in terms of cumulative impacts and potential disaster events such as flooding and seismic activity. Too much emphasis is placed on mitigation measures of monitoring. What additional burdens and risks will be incurred by Marin County residents as a result of the additional tonnage after the landfill closes in the future? Again, the DEIR is silent.

Increase in Foul Odors. In addition to the measurable air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. The DEIR says there are "no sensitive

Comment Letter VV

receptors." This is false. I live just a few miles down-wind from RWLF, and I smell it sometimes when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know that it would be considered an important factor in determining whether to expand RWLF's current operations.

Acceptance of Semi-hazardous Materials, and Increase in Toxic Air Contaminants. RWLF's request to begin accepting semi-hazardous materials is a danger to this community, and RWLF has not provided enough information to evaluate fully its request. I am also concerned that the proposal will increase toxic air contaminants to a dangerous level. The DEIR should undertake further analysis of the carcinogenic risk it would pose to residents within a five mile radius.

Negative Impact on Nearby Neighborhoods and Open Space. The DEIR must take full account of nearby residential neighborhoods in terms of impact analysis, and consider the impact on the Rush Creek Open Space which is close to my home and is used by thousands of Marin residents for recreation on an annual basis. The Commission should consider the impact on the wetlands and creeks that run through the Open Space, especially in the event of flooding or seismic activity.

RWLF's Current Problems, and Analyzing Alternative Sites. The focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations, such as the absence of a liner and the legally-required 5 feet separation from ground water. These should be discussed in more detail in the DEIR. Marin County officials should be actively preparing alternative plans for future waste disposal and management to serve County residents, not big business. This includes finding an alternative site more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. The DEIR fails to analyze off-site alternatives in any detail.

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. It is absurd to think otherwise. The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin County would be taking a regressive step inconsistent with contemporary land management and environmental stewardship in approving the proposal or any alternative that would increase the daily trips and tonnage permitted today. This is why additional time and attention should be spent on getting the DEIR right. Thank you for considering my comments.

Very truly yours,

Claire Lavona
50 Morning Star Ct.
Novato CA 94945
415 898 5327

VV. CLAIRE SAVONA

Please refer to the responses to letter RR.

Comment Letter WW

RECEIVED

2003 OCT -9 A 7:06

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Dear Agency Director Hinds, Mr. Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) notes that the project would more than double daily truck traffic to 900 vehicles per day. Implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval."

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Comment Letter WW

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Very truly yours,

Margaret Schaub
215 Saddlewood Drive
Novato 94945

WW. MARGARET SCHAUB

Please refer to the responses to letter RR.

Comment Letter XX

RECEIVED

2003 SEP 30 P 1: 21

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc.
Revised Solid Waste Facilities Permit

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Comment Letter XX

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Very truly yours,

ROBERT T. [illegible], JR.
245 [illegible] DR.
NOVATO, CA 94945

XX. ROBERT T. SHAW, JR.

Please refer to the responses to letter RR.

Comment Letter YY

Edward L. Spencer, M.D.
4 Ashley Court
Novato, CA 94945

09/07/2003

RECEIVED
2003 OCT 10 A 10:
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Tim Haddad
Environmental Coordinator
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad,

The following, (1-6) are my questions regarding the Draft EIR for Redwood Landfill.

We are told that Redwood Landfill is performing operations in violation of permit.

1-What are the specific activities that violate the permit? YY-1
1.1-When did each of these activities begin?
1.2-How will Marin County bring Redwood Landfill into compliance?

2-If Redwood Landfill proceeded with expansion plans without permit, what action will Marin County take? YY-2

We have heard several numbers regarding the volume of the current landfill. YY-3

3- What is the actual surveyed volume of the current landfill (cubic feet and tons)?

We understand that the air quality control measurements for Redwood Landfill are actually made in San Rafael. YY-4

4- How do we get an air quality control station placed at Gnoss Field?
5-How is stench measured by air quality control stations?
6-What are the quantitative standards for measuring stench?

Thank you for your assistance. I have other questions which I am formulating and will submit as soon as possible.

Very truly yours,

Edward L. Spencer, M.D.

YY. EDWARD SPENCER, M.D.

YY-1. Please refer to Master Response 18.

YY-2. Pursuant to Public Resources Code (PRC) § 45005 and § 45011, the LEA has the authority to order solid waste facility operators who are in violation of applicable PRC statutes and regulations to cease and desist any improper action, to clean up any solid waste, to abate the effects thereof, and to take any other necessary remedial action; pursuant to PRC § 45011, the LEA has the authority to seek administrative civil penalties not to exceed Five Thousand ($5,000) for each day a violation of or illegal operation of a solid waste facility occurs in violation of PRC § 45011, including a violation of any standard adopted by the CIWMB pursuant to PRC § 45011. In addition, in condition 17(j) of the current SWFP, the LEA reserves the right to suspend and/or modify waste receiving operations at [Redwood Landfill] when deemed necessary due to any emergency, potential health hazard and/or creation of a public nuisance. The revised SWFP would include a comparable condition. Please also refer to Master Response 18.

YY-3. Please refer to Master Response 12.

YY-4. Please refer to Master Response 15. The comment regarding siting a monitoring station at Gnoss Field does not address the adequacy of the DSEIR.

Comment Letter ZZ

RECEIVED
2003 OCT 10 A 10: 10
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Edward L. Spencer, M.D.
4 Ashley Court
Novato, CA 94945
10/10/2003

Tim Haddad
Environmental Coordinator
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad,

The following (7 -12.1) are further questions regarding the Draft EIR for Redwood Landfill.

7- What sites currently ship sludge to Redwood Landfill? ZZ-1

7.1- What is the tonnage generated by each of these sites?

7.2- Under the requested expansion what sites would ship sludge to Redwood Landfill?

7.3 For each of the sites referred to above in 7 and 7.2, what industrial facilities use the sewage system?

7.4- What chemicals do these industrial facilities dump into the sewage system? ZZ-2

7.5- How are these facilities monitored?

7.6- What it the toxicology of the chemicals referred to in 7.4?

7.7- What are the synergistic medical effects of these chemicals?

8- What studies have been done to predict the effects of a maximum 100 year earth quake? ZZ-3

8.1- How have these studies dealt with the fact that Redwood landfill is on San Francisco Bay mud?

9-What is the current cost per ton mile of transporting sludge? ZZ-4

Comment Letter ZZ

9.1- CNN has announced the advent of global peak oil production. Taking into account the increasing cost of fuel, what will be the cost per ton mile of transporting sludge ten and twenty years into the future? ZZ-5

10-In respect to the health hazards of Redwood Landfill, what effects do chemicals, viral, bacterial, parasitical or prion, agents from the landfill, either as fugitive gas or water contaminants, produce in the categories below?

10.1- Infectious diseases
10.2- Parasite diseases
10.3- Lung disorders
10.4- Immunological disorders
10.5- Hematological disorders
10.6- Neurological disorders
10.7- Neoplastic disease
10.8- Disorders of reproduction
10.9- Disorders of fetal and child development
10.10- Disorders of learning and behavior,
10.11- Disorders of internal organs such as: liver, kidney, digestive system, spleen, bladder, pancreas, prostate
10.12- Disorders of skin and bone
10.13- Disorders of Breasts and lactation
10.14- Disorders of cardiovascular system
10.15- Disorders of special senses.

ZZ-6

!1-Redwood Landfill is owned by a large corporation. What litigation against Redwood Landfill, the owner of Redwood Landfill and affiliated corporations has been filed since January 1,1970?

11.1- In the litigation referred to in 11, what are the out comes?

12-What litigation against private persons, groups, organizations, or corporations has been filed by Redwood Landfill, the owners of Redwood Landfill, and affiliated corporations has been filed since January 1, 1970?

12.1- What are the outcomes of the litigation referred to in 12?

ZZ-7

Thank you for your assistance,

Very truly yours,

Edward L. Spencer, M.D.

ZZ. EDWARD L. SPENCER, M.D.

ZZ-1. Please refer to Master Response 9.

ZZ-2. Table MR9-1 of Master Response 9 shows the out-of-county jurisdictions that sent sludge to Redwood in 2002; it is likely that sludge receipts could come from some or all of these jurisdictions in the future, as well. Please note that under the project evaluated in the DSEIR, Redwood Landfill would receive approximately one-third the amount (average and peak daily quantities) of sludge it is currently permitted to receive, as shown in DSEIR Chapter 2, Table 2-2. Since publication of the DSEIR, RLI has proposed additional changes to the project (refer to Master Response 17; under the revised proposal, Redwood Landfill would receive approximately one-fifth the average quantity of sludge currently permitted. RLI is permitted and proposes to receive sludge classified as "Class B biosolids." As described on DSEIR page 2-26, biosolids are classified under federal regulations (40 CFR, Part 503) as "Class B" if pathogens are detectable, but have been reduced to levels that do not pose a threat to public health and the environment as long as actions are taken to prevent exposure to the biosolids after their use or disposal. The regulation of wastewater treatment facilities is beyond the scope of this EIR.

ZZ-3. Earthquakes cannot be predicted. According to the U.S. Geological Survey (USGS), neither the USGS nor scientists elsewhere have ever predicted a major earthquake. However based on scientific data, probabilities can be calculated for potential future earthquakes (USGS, n.d.). To evaluate the probability of future large earthquakes in the San Francisco Bay Region, the USGS has established a series of Working Groups on California Earthquake Probabilities (referred to as WG88, WG90, WG99, and WG02). Each of these Working Groups expanded on the work of its predecessors, applying the data and methodology available at the time and drawing on input from broad cross-sections of the earth science community (USGS, 2003). In the Bay Area, WG88 and WG90 established a framework for estimating earthquake probabilities based on simple physical models for the San Andreas and Hayward faults. WG99 extended this framework into a more comprehensive, regional one for the San Francisco Bay Region based on a greatly expanded set of geological and geophysical observations. The most recent study, WG02, expanded upon the WG99 framework by incorporating additional data, more fully analyzing the possible effects of the 1906 earthquake on the current earthquake potential in the Bay Area, and more fully developing other aspects of the earlier studies (USGS, 2003a). According to WG02, there is a 0.62 probability (i.e., a 62 percent probability) of at least one magnitude 6.7 or greater earthquake in the 3-decade interval 2003-2032 within the San Francisco Bay Region. WG02 found this result to be consistent with the estimates made by the previous working groups, given the differences among the studies and their uncertainty ranges. Consistent with the previous probability estimates, the Hayward-Rodgers Creek and San Andreas fault systems have the highest probabilities of generating a magnitude 6.7 or greater earthquake before 2032 (USGS, 2003b). Based on this more recent information, the last sentence of the first paragraph on

DSEIR page 3.4-5 is hereby revised as follows (new language is underlined; deleted language is indicated by ~~strikethrough~~ text):

> The U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities has evaluated the probability of one or more earthquakes of Richter magnitude 6.7 or higher occurring in the San Francisco Bay Area within the next 30 years. The result of the evaluation indicated a ~~70~~62 percent likelihood that such an earthquake event will occur in the Bay Area between ~~2000~~2003 and ~~2030~~2033 (USGS, ~~1999~~2003).

ZZ-4. This question does not pertain to the environmental effects of the proposed project or the EIR analysis thereof, and therefore no response is necessary. The analysis of the socioeconomic effects of a project is not required under CEQA, although it is not clear that the question pertains to socioeconomic effects, either. The indirect physical effects of developing a new disposal site, including the effects on air quality and traffic of potentially greater travel distances, could be relevant to the CEQA analysis if a project caused the premature closure of a landfill. Under both the project and the No-Project Alternative, the County would have more than 15 years of remaining capacity (please refer to the discussion of revised site-life calculations in Master Response 21). Therefore, the County is not required to initiate a process to site a new landfill or identify other landfill capacity outside the County.

ZZ-5. This question does not address the environmental effects of the proposed project or the EIR analysis thereof, and therefore no response is necessary. Also please refer to the response to comment ZZ-4.

ZZ-6 The health hazards identified in the comment will not occur as a result of the Project. For example, the vectors, such as infectious disease and parasitic disease, are not generated by the processes involved in the generation of landfill gas. Other hazards identified in the comment are mainly associated with health effects from exposure to non-carcinogens, and these outcomes are considered by OEHHA when Reference Concentrations (RfCs) are established for these substances. RfCs are concentrations below which there would be no observable health effects similar to those identified in the comment. The DSEIR compared predicted concentrations from the Project to the RfCs and concluded that there would be no observable impacts from exposure to non-carcinogens that could cause these health outcomes. As a result, the impacts were considered to be less than significant.

ZZ-7. CEQA does not require examination of the record of litigation against the applicant, the applicant's owner, or affiliated corporations. CEQA requires evaluation of potential effects on the physical environment of a proposed project. Regarding the permitting history of the Redwood Landfill, please refer to Master Response 18.

Comment Letter AAA

Nancy Spencer
4 Ashley Ct.
Novato, CA 94945
spencer.nancy@comcast.net

RECEIVED
2003 SEP -9 P 12: 5
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Tim Haddad, Environmental Coordinator
Community Development Agency
35-1 Civic Center Drive, Rm 308
San Rafael, CA 94903
Sunday, August 31, 2003

Dear Mr. Haddad,

I have read much of the DEIR regarding the Redwood Landfill permit revision and have many questions I am hoping you can answer.

1. How much sludge is actually being being taken in now? AAA-1

2. What is the maximum amount allowed under the new permit? AAA-2

3. It appears that there are several different years mentioned for life expectancy of the landfill. In any case it seems we are around the 15 year mark now. Is the county actively looking for new landfill sites? If not, why not? AAA-3

4. The landfill has been operating in violation of the current permit since the N-viro process was never implemented. Have the owners been cited or fined? If not, why not? AAA-4

5. Are water samples from San Antonio Creek adjacent to the landfill regularly tested? If so, where are the results? AAA-5

6. Is the ground water under the landfill regularly tested? AAA-6

7. Although the odor has been less I still smell it at times. During the years when it was so strong I would call BAAQMD and it would be several hours before an inspector would respond and often there would be no visit until the next day. By that time the weather had changed and the odor would not be apparent. I know that most of my numerous complaints and those of my neighbors would not be registered as valid. Why is the air quality monitoring station 15 miles away from the landfill? AAA-7

Thank you.

Yours truly,

Nancy Spencer

Nancy Spencer

AAA. NANCY SPENCER

AAA-1. Regarding annual sludge receipts please refer to Master Response 9. Also, as stated in comment 12 of the applicant's letter, comment letter K, Redwood has received less than 150 tons per day of sludge in recent years.

AAA-2. The maximum amount of sludge originally proposed to be permitted for the project, as described in Chapter 2, Project Description, of the DSEIR, is a total to 200 tons per day average, and 450 tons per day peak. Since publication of the DSEIR, the applicant has proposed revisions in quantities of various materials, including sludge. The applicant now proposes to receive an average and peak of 232 tons per day. Also please refer to Master Response17, regarding project changes. Please note that a new SWFP would not be issued until the CEQA process is completed and a project is approved.

AAA-3. The County is required under state law to demonstrate that it has 15 years of landfill capacity remaining, or if cannot demonstrate that it has 15 years of remaining capacity, to identify capacity outside the County and/or to initiate a process to site a new landfill. This process is described in the Countywide Integrated Waste Management Plan Siting Element. With or without the proposed project, the County would have more than 15 years of remaining capacity (please refer to Master Response 21 for revised site life estimates).

The analysis of an Off-Site Alternative in the DSEIR alternatives analysis (Chapter 5) addresses the obvious issue of whether it would be preferable to gain more landfill capacity in Marin County by expanding the Redwood Landfill, or by siting a new landfill elsewhere in the County, in a location more in keeping with the Countywide Integrated Waste Management Plan's landfill siting criteria. The inability of the Off-Site Alternative to mitigate the significant unavoidable impacts associated with the project, and the likelihood that development of a new landfill in a site currently in open space would cause new significant impacts that the project would not, led to a conclusion the off-site alternative was not environmentally superior.

AAA-4. Please refer to Master Response 18. Please also refer to Master Response 15 regarding practices to control sludge odors.

AAA-5. Please see Master Response 14. The detection monitoring program includes monitoring wells on the landfill's perimeter, to allow detection of a leachate release, should one occur, before the release reaches adjacent waterways.

AAA-6. Please refer to Master Response 14.

AAA-7. Please see Master Response 15.

Comment Letter BBB

RECEIVED

2003 SEP 12 A 11:39

MARIN COUNTY
CALIFORNIA ENVIRONMENTAL DEVELOPMENT AGENCY

September 12,2003
140 Cerro Crest Drive
Novato, Ca 94945
Phone 415 897 0430

Tim Haddad, Environmental Coordinator
Community Development Agency
3501 Civic Center Drive Room 308
San Rafael,Ca 94903

Dear Mr. Haddad:

Summarized below are a number of questions which I want answers for involving the Draft Environmental Impact Report on the Redwood Landfill expansion project.

1. There is great uncertainty regarding the current pile of solid waste that is actually in place in the 380 acre landfill. This of course determines the remaining capacity without expansion. The DEIR only refers to remaining capacity and does not show the starting point which is the current size of the pile. BBB-1
Therefore, I am requesting that the County Planning Commission require USA Waste hire a independent engineering firm to survey the size of the pile and determine the remaining capacity without considering any expansion (steeper slopes). This should be included in the final EIR. The survey should also show as an alternative the added capacity with 3:1 slope.

2. In view of the Radwood Landfill's close proximity to the San Francisco Bay considering the the shallow water table, the risk of water pollution with toxic and non-toxic materials is very significant and serious. I am requesting that the Planning Commission provide recent and convincing evidence based on actual water tests showing that the water around and under the landfill is free of pollution. If this is not available, I am requesting that you make arrangements to have water around and under the landfill tested by an outside firm. Test results on the water must be shown in the final EIR. BBB-2

3. The DEIR indicates that the overpass project is approved and the funding from USA Waste is committed. If this is the case, why hasn't CalTrans finished the final design and why isn't the construction date scheduled for 2004? BBB-3

4. The draft minutes of the August 18,2003 meeting said that the waste accepted would increase from 550 cubic tons to 1700. Is this correct? BBB-4

5. What percentage of the solid waste in Marin is recycled? BBB-5

6.I understand that the Martinez landfill (Acme) had a serious slide on the sides in 1978 because the slope was too steep or was not properly constrained. I am requesting that you get the full details of this event and include it in the EIR. BBB-6

7. Can garbage trucks get into the Redwood Landfill after 3 pm and throughout the night by using their own key to the gate? BBB-7

8. Does the Environmental Health Department find that Redwood Landfill conforms to the terms and conditions, and if so the EIR should show the full details of the inspections andthe frequency that the inspections and evaluations are performed. BBB-8

Comment Letter BBB

9. I am interested in seeing the comments in response to the DEIR that you have received from the following agencies: BBB-9

-Bay Area Air Quality Management District
-San Francisco Bay Regional Water Quality Control Board

I am requesting that you provide these before the next Planning Commission meeting on September 22,2003. If you do not have them yet, I am requesting copies as soon as they are available.

10. I have been in touch with Joyce Evans for the past week to get an official copy of the minutes of the August 18th meeting but she has advised me they are not available. It is very important for me to have these minutes at least a week before the next Planning Commission meeting and I am requesting that you accelerate the editing process and get them to me by Monday, September 15,2003. BBB-10

MY Fax number is892 7170.

Sincerely,

Don Urban

Don Urban

BBB. DON URBAN

BBB-1. Please refer to Master Responses 12 and 21 for additional information regarding the landfill's current volume and projected site life.

BBB-2. Please refer to Master Response 14. Please also refer to Master Response 13 regarding the effectiveness of the LCRS.

BBB-3. Please refer to Master Response 3.

BBB-4. Although the minutes of the August 18, 2003 Planning Commission hearing, summarizing the comments of Glenn Roycroft of Redwood Landfill, state that waste accepted would grow from 550 cubic tons (sic) per day to 1,700 tons per day, a review of a tape of the hearing indicates that these numbers refer to Mr. Roycroft's characterization of the proposed increase (in tons) of recyclables. These numbers roughly correlate to the currently permitted peak tons per day and proposed average tons per day, respectively, shown for total recyclable, reusable and compostable materials in Table 2-2 of the DSEIR. The DSEIR analysis is based on the quantities shown in Table 2-2, which are supported by written documentation. (Due to inconsistencies in background information, and to revisions to quantities proposed by the applicant following publication of the applicant's Joint Technical Document, multiple sources were required for the table. Table 2-2 indicates the sources of the information presented and footnotes provide additional clarifications of the quantities shown.) Since publication of the DSEIR, the applicant has proposed other changes to the project. Please refer to Master Response 17.

BBB-5. This question does not pertain to the adequacy of the DSEIR or the environmental impacts of the project and therefore no response is necessary. However, please note that Impact 3.6.4 of DSEIR Section 3.6, Land Use and Planning, addresses the project's potential impacts on Marin County's source reduction and diversion goals. In addition, according to the CIWMB, the waste diversion rate for Marin County in 2000, the most recent year for which there is a Board-reviewed estimate, was 71 percent (CIWMB, 2004a). Diversion programs include a range of activities and programs including but not limited to recycling, composting, source reduction, and transformation.

BBB-6. Please refer to Master Response 4.

BBB-7. The relevance of this question to the project impacts or DSEIR analysis of the project is unclear. No change in the hours of operation or the landfill or compost facility are proposed. The DSEIR only analyzes proposed future operational changes and those operations not covered under existing permits. As specified in the current SWFP, the permitted hours for landfill operations are from 8 p.m. (prior day) to 4:30 p.m., and the permitted hours for commercial haulers is 12:00 a.m. [midnight] to 3:00 p.m. and 24 hours per day for sludge haulers.

BBB-8. As stated in the DSEIR Project Description (page 2-1, second paragraph) the project evaluated in the DSEIR consists of some physical and operational changes that have already been implemented but are not covered under existing permits and have not previously been subject to environmental review. Please also refer to Master Response 18.

BBB-9. All comments on the DSEIR received by the County during the comment period and the County's responses to them are provided herein, pursuant to CEQA requirements. The County sent a notice of availability of the FEIR to anyone who has commented on the DSEIR or requested inclusion on a mailing list for the project, in addition to publishing a notice of availability in local newspapers.

BBB-10. Comment noted. This request for minutes of the August 2003 Planning Commission meeting prior to the September 2003 meeting does not pertain to the environmental impacts of the proposed project or the adequacy of the DSEIR.

Comment Letter CCC

RECEIVED

140 Cerro Crest Dr
Novato, Ca 94945
2003 OCT 14 P 1:14
October 13,2003

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Dr. Room 308
San Rafael,Ca 94903

Dear Mr. Haddad:

Summarized below are a number of questins which I want answered that pertain to the Draft EIR on the Redwood Landfill expansion project:

1. I have viewed the entire Redwood Landfill perimeter from the San Antonio Creek in order to evaluate the current height of the top of the landfill. I estimate visually that the current height of the pile of solid waste is 60 feet above the water level at high tide. The"maximum permitted height" according to the DEIR is 166 feet. I have three questions: CCC-1
   - Do you have a recent "survey" by a qualified independent firm that establishes the current height of solid waste? If not , I am requesting that the Marin County Planning Commission direct ESA to have it done and include the results in the final EIR.
   - Why isn't the Redwood Landfill using the available air capacity for solid waste by increasing the height of the pile to 166 ft rather than increasing the slope of the perimeter? CCC-2
   - Do you have a recent geological engineering analysis by a qualified outside firm that substantiates that the surface under the landfill (which is Bay mud without a liner) will withstand the tremendous weight of solid waste 166 feet high without collapsing? Also, do you have evidence from other Bay front landfills that have had a maximum heights of 166 feet on Bay mud without collapsing? CCC-3

2. What are the black pipes that lay on the slopes on the perimeter of the landfill used for? CCC-4

3. Is Redwood Landfill required to submit financial data including profit and loss information to Marin County? If it is, I am requesting that it be included in the final EIR. CCC-5

4. How much are the fees that Redwood Landfill pays the County of Marin annually and what are the fees based on? CCC-6

5. Has Redwood Landfill ever been permitted to accept toxic materials? CCC-7

6. I understand that the Environmental Health Department has a checklist for regular monthly inspections of the Redwood Landfill. I am requesting that a sample of this be included in the final EIR? I am also requesting that the actual completed checklist for the last 12 months be included in the final EIR to show the extent the County is monitoring and policing the landfill and results? CCC-8

7List the violations that Redwood Landfill has been cited for since Waste Management has owned the facility and indicate what action the County has taken. CCC-9

By copy of this letter, I am requesting that answers to these questions and responses to the above requests be included in the final EIR. I am also requesting that you respond by sending me a copy of your answers. CCC-10

Sincerely, Don Urban

Don Urban

CCC. DON URBAN

CCC-1. Please refer to Master Response 12

CCC-2. The final height of the landfill would not change as a result of the project. The project element pertaining to landfill slopes consists of the proposed increase in the steepness of the slopes from 4:1 to 3:1, a decrease in the width of the slope benches, and an increase the intervals between benches. If approved, these changes to the landfill's geometry would be implemented as the successive refuse layers and cover are placed, to the landfill's permitted elevation of 166 feet above sea level. Please refer to DSEIR Figures 2-4, 2-5, and 2-6 in Chapter 2, Project Description. .

CCC-3. The proposed changes to the landfill geometry, fill sequencing and other elements related to landfill stability proposed by the applicant and the supporting documentation prepared by the applicant's geotechnical consultants, GeoSyntec, Inc., were reviewed on behalf of the County as part of the EIR analysis by geotechnical engineers with the firm Treadwell & Rollo, Inc. Treadwell & Rollo prepared a series of geotechnical memoranda on the proposed modified landfill geometry and several other project elements. These technical memos have been bound together and are available for review at the Marin County Community Development Agency. The DSEIR analysis of the effects of the proposed fill sequencing plan and other project elements on the underlying Bay Mud presented in Section 3.4, Geology, Soils and Seismicity, incorporated relevant information from the Treadwell & Rollo review. Please also refer to Master Response 7.

CCC-4. Please see the response to comment F-2.

CCC-5. The landfill is required to provide financial assurances, also disposal reports, various monitoring and other reports to meet various permit conditions, but as a private corporation (and not under franchise) does not provide financial information. In addition, please note that this comment does not pertain to the environmental impacts of the project or the adequacy of the EIR.

CCC-6. This question does not pertain to the environmental impacts of the project or the adequacy of the EIR, and therefore no response is necessary.

CCC-7. Previously permitted activities at the site are not the subject of this SEIR. The project evaluated in the DSEIR consists of elements that have already been implemented, but are not covered under existing permits and have not previously been subject to environmental review under the CEQA, and elements proposed by RLI for future implementation.

Prior to the promulgation of the first regulations by the SWRCB of waste discharges to land in 1972 and the establishment by the SWRCB of tiered waste classification and landfill classification systems in 1984, waste types generally were not segregated

(SWRCB, 2003). Therefore, it is not known for certain whether toxic or other hazardous waste was received at Redwood Landfill during its early years. However, it is noted that the Solid Waste Assessment Test conducted at the landfill in 1990, as part of a SWRCB program to determine whether landfills in the state were leaking and posed a threat to water quality, was approved by the RWQCB, which concurred that the site was "not leaking contaminants at or above Department of Health Services' action levels (Ritchie and McMurtry, 1993). In addition, as discussed in DSEIR Section 3.5, RLI currently tests leachate in the leachate pond and is permitted to use it for dust control when it tests "clean," i.e., at or below background levels for specified constituents.

The Use Permit and Garbage Dump Permit issued by the County in 1958 permits the establishment of a "sanitary landfill garbage and rubbish dump," without otherwise specifying the type of waste to be received. The first SWFP, issued by EHS in 1978, describes the landfill as a Class II-2 sanitary landfill (which is generally comparable to Class III, i.e., for non-hazardous solid waste, under the system used today); it was permitted to receive residential and commercial waste, tires, autos, construction and demolition waste, and sewage sludge. Hazardous wastes explicitly were not permitted.

As described in DSEIR Chapter 2, Project Description, the current SWFP and WDRs allow Redwood to accept the following designated wastes: dewatered sewage sludge, incinerator ash, grit and grease, storm drain cleanings, nonhazardous holding tank pumpings from food processing facilities, treated wood (e.g., telephone and power poles, pier docks), dredge and fill material, triple-rinsed chemical containers, and petroleum-contaminated soils that are permitted under waste acceptance criteria approved by the RWQCB. The specified waste acceptance criteria is presented in Appendix B of the DSEIR Regarding the proposal to reclassify Area G as a Class II waste unit, the distinctions between hazardous and designated wastes, and the three characteristics besides toxicity used to distinguish hazardous from non-hazardous waste, refer to Master Response 6.

CCC-8. The LEA conducts monthly inspections at the site pursuant to Title 14 and Title 27 regulations. Inspection reports are public records and are available for inspection at the office of the office of Environmental Health Services (EHS). The commenter may contact EHS to make an appointment to inspect these records. There may be a charge for copies. A surface and groundwater monitoring program overseen by the RWQCB also is conducted at the site; please refer to Master Response 14.

CCC-9. Please refer to Master Response 18.

CCC-10. Please see the response to Comment BBB-9.

Comment Letter DDD

RECEIVED

2003 OCT 14 P 1:14

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

140 Cerro Crest Dr
Novato, Ca 94945

October 14,2003

Mr. Tim Haddad,Environmental Coordinator
Marin County Community Development Agency

Dear Mr. Haddad:

I am asking that the final EIR on the Redwood Landfill expansion proposal show the quality of the water samples that are supposed to be taken by the monitoring wells that are in place in the ground. Specifically, I want the results for the last three years and want them to show that the testing has been done by an outside qualified laboratory. I do not know what chemicals or elements should be part of the test but I expect that the California Regional Water Agency has such standards including the maximum level that is permitted. DDD-1

I am requesting that the above test results be shown in the final EIR and a copy of that informatin be sent to me separately as soon as it is available, particularly if it is sooner than the final EIR document publicaton.

Sincerely,

Don Urban

Don Urban

DDD. DON URBAN

DDD-1. Please refer to Master Response 14, which summarizes the last three semi-annual monitoring reports (i.e., covering 1.5 years) and otherwise describes the surface water and groundwater monitoring program. Please also refer to Master Response 13 regarding the effectiveness of the LCRS.

Comment Letter EEE

140 Cerro Crest Dr
Novato, ca 94945
October 14,2003

Mr. Tim Haddad, Environmental Coordinator
Marin County Community Development Agency

Dear Mr. Haddad:

Traffic in the"Novato Narrows" is as you know a major factor in evaluating the Redwood Landfill expansion project. There is nothing inthe Draft EIR that indicates the size and tonnage of the truck counts that will be specified in future permits for any expansion. Furthermore, it does not appear there are truck sizes and tonnages specified in the current permits. EEE-1

I am requesting that truck sizes, tonnages and speed entering the 101 freeway be specified in the final EIR. Please also send this information to me when it is available,which will probably be before the final EIR is published.

Sincerely,
Don Urban
Don Urban

RECEIVED
2003 OCT 14 P 3:57
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

EEE. DON URBAN

EEE-1. Solid Waste Facility Permits typically specify the number of vehicles permitted to enter a facility. Please refer to Table 3.10-4 in DSEIR Section 3.10, which shows the number of waste-hauling and other vehicles used in the DSEIR traffic analysis. Please also refer to Tables D-1 and D-3 of DSEIR Appendix D, which show assumptions regarding on-road vehicles used in the air quality analysis. Caltrans, County, and Redwood Landfill engineers working on the access bridge design are aware that the site being accessed is a landfill. As stated in the response to Comment II-4, construction of the access bridge, which was the subject of another EIR (Marin County 2002), requires an encroachment permit from Caltrans. The encroachment permit would not be issued if Caltrans did not approve the design.

Comment Letter FFF

July 25, 2003
Jack Watson
P.O. Box #1381
Novato, Cal. 94948

Marin County Notice
E.I.R. Redwood Land Fill
Post Marked July 16, 2003

RECEIVED
2003 JUL 25 P 2:38
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Regarding: Revised
Solid Waste Facilities
Proposed For Permit Approval

Attention: "Marin County"
Mark Riseman Field = C.E.O.
Alex Hinds = Director
Tim Haddad = Co-ordinator
Marin County Board
Of Supervisors
Novato City Council
Members
Novato City Manager

308

Who Is Going To Insure That Novato's
Air Quality Is Not Impacted If Permit
Changes Are Allowed At The Redwood Landfill
With These Items:

1 Proposed Sludge Management Practices
2 Alternative Daily Cover
3 Increase Composting Volume
4 Leachate Management
5 Waste Classification
6 Design Capacity
7 Landfill Life

FFF-1

Health And Safety With Novato Air Quality
And Water Are The Bottom Line For —
Our Novato Residents.

Respond Please
To This Letter.
Jack Watson

FFF. JACK WATSON

FFF-1. Redwood Landfill is a highly regulated facility. At the federal level, Redwood Landfill operates under a Title V permit. A Title V permit acts as an umbrella permit, which consolidates all federal, State and local air quality regulations and requirements into a single permit. Additional text has been added to the FEIR regarding the current Title V permit.

The BAAQMD has been delegated the responsibility of providing air quality oversight at Redwood Landfill. The BAAQMD is responsible for regulating those portions of Redwood Landfill that have air emissions and the potential to affect air quality, with the exception of odors from the composting/co-composting operations. The County EHS, the LEA, regulates odors from composting operations. Both the BAAQMD and County EHS provide on-going regulatory oversight at Redwood Landfill.

Comment Letter GGG

Copy to Marin Planning Commission
Copy to Marin County Board of Realtors
Copy to Novato City Council

TO WHOM IT MAY CONCERN

August 18, 2003

FROM: Jack Watson
14 Kristin Lane
Novato, CA 94945

AUG 18 2003

RE: Expansion of Novato Redwood Landfill Inc.

My concerns are the following:

- Last chance for public input on Redwood Landfill expansion at
  Marin Civic Center – Room 308
  Marin Planning Commission
  Monday, August 18 – 1:00pm **GGG-1**

- Decrease in Novato's Air Quality and it's negative impact on Novato Citizen's Health **GGG-2**

- Negative impact on Highway 101 Traffic due to the increase from 400 Vehicles per day to 1200-1400 vehicles per day in/out of the Redwood Sanitary Landfill site – A Safety Issue On Hwy #101. **GGG-3**

- Change in the permit status of the Redwood Landfill site from a Muni Dump to a Semi-Hazardous Toxic Waste Dump site. **GGG-4**

P.S.

GGG-5 Conclusion Why Has Not Our Marin Board Of Supervisors And Or Our Marin Planning Commission Done A Needs Assessment Survey, Report Or Analysis Before Allowing A Draft Environmental Report To Be Made Seeking A Class #2 Site To Dump Semi Hazzardous Toxic Was.

GGG. JACK WATSON

GGG-1. The pubic comment period was extended to October 14, 2003, and three Planning Commission hearings were held to take public comment on the project.

GGG-2. Air quality impacts were evaluated in Section 3.2, Air Quality, of the DSEIR. The analysis evaluated impacts on sensitive receptors in the project vicinity. The analysis identified four significant unavoidable impacts to air quality and a significant unavoidable cumulative impact to air quality as a result of the project. Please refer also to Master Response 16 regarding air emissions calculations in this FEIR. In considering project approval, the County EHS will need to weigh the benefits of the project against any significant unavoidable impacts.

GGG-3. Impact 3.10.4 of DSEIR Section 3.10, Transportation and Traffic, address traffic safety issues. Please refer to Master Response 5.

GGG-4. Please refer to Master Response 6.

GGG-5. The project evaluated in the DSEIR consists of elements proposed by the applicant (RLI) for future implementation, including the reclassification of Area G as a Class II unit, in addition to elements that have been implemented but are not covered under existing permits and have not previously been subject to environmental review under the California Environmental Quality Act (CEQA). The County did not propose the reclassification of Area G as a Class II unit and therefore would not have had occasion to prepare a needs assessment that might (in theory) lead to such a proposal. Since publication of the DSEIR the applicant has withdrawn its request to reclassify Area G as a Class II unit (see Master Response 6).

Comment Letter HHH

Sept. 4, 2003
Jack Watson
#14 Kristin Lane
Novato, 94945

RECEIVED
2003 SEP -5 P 4:32
MARIN COUNTY
DEVELOPMENT

To:
Marin County Board Of Sups.
Marin Planning Commission
Novato City Council Members
Marin Environmental Co-ordinator
Tim Haddad And Agency Dir. Alex Hinds

Regarding: Collapse
Of Redwood Land Fill
By Ground Compacting

Ladies + Gentlemen

HHH-1 If It Can Be Shown That Ground Compacting Is And Will Cause North Bay Water Pollution At Both The North And South Landfill Sites — What Is Your Position On This Wetlands located Landfill Expansion?

HHH-2 Realizing That We Are Dealing With Two Wetland Landfill Solid Waste Facilities Next To Each Other At This Marin Co. Location — How Does The Marin Board Of Supervisors, Planning Commission And Marin Environmental Agency View OR Plan On Re-Certifying Increase Capacity Rate With So Many Safety Issues Unanswered?

R.S.V.P.
Jack Watson

HHH. JACK WATSON

HHH-1. The commenter poses a hypothetical question about the effect of ground compaction on water quality. The reference to north and south landfill sites is unclear. As described in Chapter 2, Project Description, the total 600 acres of the Redwood Landfill property was divided into a 180-acre "northern area" and a 420-acre "southern area." The permitted waste disposal area (landfill footprint) and related landfill operations are located on the southern area. As discussed in the Project Description, the northern area was purchased from RLI by the Marin Audubon Society and has never been used for waste disposal.

As discussed in DSEIR Section 3.4, Geology, Soils, and Seismicity, it is known that the relatively soft Bay Mud underlying the landfill will compact with the addition waste, and the consideration and monitoring of the rate Bay Mud compaction is an integral part of the applicant's proposed fill sequencing plan. See also Master Response 7. Section 3.4 addresses potential impacts to groundwater and Section 3.5, Hydrology and Water Quality, addresses potential impacts to surface waters; mitigation measures were identified to reduce impacts to groundwater and surface water to less than significant levels. Please also see Master Response 13 regarding the effectiveness of the LCRS and Master Response 14 regarding water quality monitoring at the site.

HHH-2. Regarding this comment's reference to "two wetland landfills," please refer to the response to comment HHH-1. The commenter does not specify what safety issues he believes to be unanswered. Health and safety-related aspects of the project were evaluated in several subsections of Chapter 3 of the DSEIR, including Section 3.2, Air Quality; Section 3.4. Geology, Soils and Seismicity; Section 3.5, Hydrology; Section 3.8, Public Health and Safety, and Section 3.10, Transportation and Traffic. The analysis identified significant and unavoidable air quality impacts of the project, as described in Chapter 1, Summary, and Section 3.2. Please refer also to Master Response 16 regarding air emissions calculations in this FEIR.

Comment Letter III

RECEIVED
1993 SEP 29 P 2:16
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Dear Agency Director Hinds, Mr. Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) notes that the project would more than double daily truck traffic to 900 vehicles per day. Implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval."

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the DEIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. The Commission should ensure that the DEIR does not underestimate any potential significant adverse impacts on the environment and me and my neighbors.

Regional Waste Facility. The proposal makes clear that it is intended to transform RWLF into a regional waste facility. The expansion's purpose is to accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County and almost double the daily intake of waste. Given RWLF's environmentally sensitive location in Marin County, this makes no sense other than from a corporate profit standpoint. What are the benefits to Marin County, and why has the corporate owner of RWLF selected this site, instead of another, to create a regional waste facility? The DEIR does not fully answer these questions.

Absence of Key Data and Analysis in the DEIR The DEIR is deficient because it does not clearly measure the current tonnage at the RWLF today, indicate whether the current tonnage is within the permitted amount, explain what is currently in the landfill, or analyze what the proposed additional tonnage would mean in terms of cumulative impacts and potential disaster events such as flooding and seismic activity. Too much emphasis is placed on mitigation measures of monitoring. What additional burdens and risks will be incurred by Marin County residents as a result of the additional tonnage after the landfill closes in the future? Again, the DEIR is silent.

Increase in Foul Odors. In addition to the measurable air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. The DEIR says there are "no sensitive

Comment Letter III

receptors." This is false. I live just a few miles down-wind from RWLF, and I smell it sometimes when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know that it would be considered an important factor in determining whether to expand RWLF's current operations.

~~Acceptance of Semi-hazardous Materials, and Increase in Toxic Air Contaminants~~. RWLF's request to begin accepting semi-hazardous materials is a danger to this community, and RWLF has not provided enough information to evaluate fully its request. I am also concerned that the proposal will increase toxic air contaminants to a dangerous level. The DEIR should undertake further analysis of the carcinogenic risk it would pose to residents within a five mile radius.

Negative Impact on Nearby Neighborhoods and Open Space. The DEIR must take full account of nearby residential neighborhoods in terms of impact analysis, and consider the impact on the Rush Creek Open Space which is close to my home and is used by thousands of Marin residents for recreation on an annual basis. The Commission should consider the impact on the wetlands and creeks that run through the Open Space, especially in the event of ~~flooding or seismic activity~~.

RWLF's Current Problems, and Analyzing Alternative Sites. The focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations, such as the absence of a liner and the legally-required 5 feet separation from ground water. These should be discussed in more detail in the DEIR. Marin County officials should be actively preparing alternative plans for future waste disposal and management to serve County residents, not big business. This includes finding an alternative site more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. The DEIR fails to analyze off-site alternatives in any detail.

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. It is absurd to think otherwise. The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin ~~County would be taking a regressive step inconsistent with contemporary land management~~ and environmental stewardship in approving the proposal or any alternative that would increase the daily trips and tonnage permitted today. This is why additional time and attention should be spent on getting the DEIR right. Thank you for considering my comments.

Very truly yours,

Leslie Weber

Leslie Decker Weber
235 Saddle Wood Drive
Novato, CA 94945

9/26/03

III. LESLIE DECKER WEBER

Please refer to the responses to comment letter RR.

Comment Letter JJJ

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

RECEIVED
2003 OCT 1 A 11:48
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc.
Revised Solid Waste Facilities Permit

Dear Agency Director Hinds and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. JJJ-1 The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) provides a clear, reasoned basis for rejecting the project. However, the Commission should also ensure that the DEIR does not underestimate the potential significant adverse impacts on me and my neighbors. JJJ-2

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. JJJ-3 It is absurd to think otherwise. The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin County would be taking a regressive step inconsistent with contemporary land management and environmental stewardship in approving the proposal or any alternative that would increase the daily trips and tonnage permitted today. JJJ-4

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the DEIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. JJJ-5

Regional Waste Facility. The proposal makes abundantly clear that it is intended to transform RWLF into a regional waste facility. The expansion's purpose is to accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County and almost double the daily intake of waste. Given RWLF's environmentally sensitive location in Marin County, this makes no sense other than from a corporate profit standpoint. There simply is no overriding consideration that could result in a determination by government officials that the public benefits of the RWLF proposal outweigh the significant unavoidable impacts of the project. JJJ-6

Unavoidable Negative Impact on Air Quality. The project would more than double daily truck traffic to 900 vehicles per day. As the DEIR finds, this would JJJ-7

permanently and substantially impact air quality in Marin County and potentially the health and welfare of nearby residents. According to the DEIR, implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval." JJJ-7

Increase in Foul Odors. In addition to the measurable air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors, including those caused by more receipt and treatment of sewage sludge and bio-solids (most of which originate outside of Marin County) by the air drying method. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. I live just a few miles down-wind from RWLF, and I smell it sometimes when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know that it would be considered an important factor in determining whether to expand RWLF's current operations. JJJ-8

Acceptance of Semi-hazardous Materials, and Increase in Toxic Air Contaminants. RWLF's request to begin accepting semi-hazardous materials is a danger to this community, and RWLF has not provided enough information to evaluate fully its request. I am also concerned that the proposal will increase toxic air contaminants to a dangerous level. The DEIR should undertake further analysis of the carcinogenic risk it would pose to residents within a five mile radius. JJJ-9

Negative Impact on Nearby Neighborhoods and Open Space. The DEIR and the Commission also must take full account of nearby residential neighborhoods in terms of impact analysis, and consider the impact on the Rush Creek Open Space which is close to my home and is used by thousands of Marin residents for recreation on an annual basis. The Commission should consider the impact on the wetlands and creeks that run through the Open Space and adjacent to my neighborhood, especially in the event of flooding or seismic activity. JJJ-10

For all of the reasons summarized in this letter and others filed by my neighbors, the focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations, such as the absence of a liner and the legally-required 5 feet separation from ground water. JJJ-11 Meanwhile, Marin County officials should be actively preparing alternative plans for future waste disposal and management to serve County residents, not big business. This includes finding an alternative site more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. JJJ-12 There is an opportunity to do it right, but the clock is ticking. Thank you for considering my comments.

Very truly yours,

GEORGE WHYTE JR
200 SADDLE WOOD DR
NOVATO CA 94945-3448

JJJ. GEORGE WHYTE, JR.

JJJ-1. Please refer to the response to comment RR-1.

JJJ-2. Please refer to the response to comment RR-3

JJJ-3. Please refer to the response to comment RR-13.

JJJ-4. Please refer to the response to comment RR-14.

JJJ-5. Please refer to the response to comment RR-3.

JJJ-6. Please refer to the response to comment RR-4.

JJJ-7. Please refer to the response to comment RR-2.

JJJ-8. Please refer to the response to comment RR-8.

JJJ-9. Please refer to Master Response 6, regarding the applicant's withdrawal of the proposal to reclassify Area G as a Class II unit.

JJJ-10. Please refer to the response to comment RR-10.

JJJ-11. Please refer to the response to comment RR-11.

JJJ-12. Please refer to the response to comment RR-12.

Comment Letter KKK

Lawence S. Witter
75 Fairway Drive
Novato, California 94949
(415) 883-6889

RECEIVED
2003 OCT 13 A 9:08
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

10/14/2003

Marin County Development
Tim Haddad
3501 Civic Center Dr. #308
San Rafael Ca, 94903-4156

Dear Tim Haddad
I have been a resident of Marin County Ignacio area for fifty years 1953-1955 Hamilton AFB, at the above address from 1959 to present.

I am very concerned about REDWOOD LANDFILL INC., Novato in the present and in future expansion plans. The processing of this waste has serious health problems for humans and wildlife. KKK-1

I understand REDWOOD LANDFILL INC. is nine million cubic yards over its processing limit from sixteen million cubic yards to the present twenty-five million cubic yards as set in the original contract. Is there a penalty fine in place for over use? KKK-2

How do other metropolitan areas process waste? ie, San Francisco, San Jose, Sacramento, and Los Angeles etc. KKK-3

Is it true that REDWOOD LANDFILL INC. waste is a regional sludge deposit for most of the bay area? KKK-4

How sad it is that this beautiful Marin County, is marked by the bay area, to be the ultimate dumping ground for the region. We must find an alternative plan. This plan is not acceptable! KKK-5

Thank you for addressing these issues

Sincerely
Lawence S. Witter DDS

KKK. LAWRENCE S. WITTER, DDS

KKK-1. The DSEIR evaluates the potential impacts of the project. Please refer to Chapter 3, Environmental Setting, Impacts, and Mitigation Measures. Also refer to the responses to comments P-4 and Z-4, regarding effects on wildlife; Master Response 11, regarding health risk assessment; and the response to comment HH-20, regarding sensitive receptors.

KKK-2. Please refer to Master Response 12, regarding the landfill's existing capacity and volume and Master Response 21, regarding the facility's site life.

KKK-3. This comment does not pertain to the environmental impacts of the proposed project or the adequacy of the DSEIR and therefore no response is required. However, it is hoped that the following information is helpful to the commenter and perhaps others.

According to the CIWMB, landfill disposal is the primary means used for waste disposal in California. In 2000, the most recent year for which there are these statewide data are available on the CIWMB website, 96 percent of disposed waste was landfilled, 2 percent was sent to transformation /waste-to-energy facilities (burned), and 2 percent was exported out of state for disposal (CIWMB, 2004b). More recent data are available for specific jurisdictions at CIWMB's Disposal Reporting System. For example, according to the disposal reporting system, in 2002 San Francisco sent disposal waste and/or material utilized for ADC to 20 landfills, although most of its disposal waste was sent to Altamont Landfill in Alameda County (83 percent), Ox Mountain in San Mateo County (8 percent), Hillside Class III Disposal Site in San Mateo) (4 percent)and Redwood Landfill (3 percent). San Jose sent disposal waste and/or material utilized as ADC to 24 landfills, primarily Newby Island in Santa Clara County (61 percent), Kirby Canyon Recycling and Disposal Facility and Guadalupe Sanitary Landfill, both in Santa Clara County (12 percent each), and Potrero Hills Landfill in Solano County (11 percent). (CIWMB, 2004c). Please refer to Master Response 9 regarding the disposition of wastes originating in Marin County, and the origin of materials disposed at Redwood Landfill.

KKK-4. Much of the sludge generated in the Bay Area is now applied to land, used as ADC at other landfills, incinerated, or stockpiled at WWTPs. Please refer to Master Response 9.

KKK-5. The commenter expresses an opinion on the project and not on the adequacy of the EIR. The analysis in DSEIR Section 3.1, Aesthetics, of potential impacts of the project on visual quality concluded that the impacts of the proposed changes to the landfill's final contours, compared with the currently permitted final contours, would be less than significant. Impact 3.1.6 addresses the impacts on visual quality due to use of the waste tipper and increased litter and identifies mitigation measures to reduce the impact to a less-than-significant level. DSEIR Chapter 5, Alternatives, compares the relative

merits of the project with a range of alternatives, including the Status Quo alternative and the No-Project alternative; the evaluation identifies the Mitigated Alternative as the environmentally superior alternative.

Comment Letter LLL

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2003 AUG 21 P 12:05

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

1122 Santolina Drive
Novato, CA 94945
8-16-03
415-892-9098

I am writing to voice my concern and opposition to the Redwood Landfill expansion. Doubling the daily waste tonnage, additional traffic on an already overloaded highway, and past sewage sludge processing, should preclude any further expansion of existing facilities. LLL-1

Due to our residence close proximity, (approximately 2 miles) we have made numerous complaints about the sewage smell that has permeated our neighborhood. Redwood Landfill's response has been less than satisfactory. Two of our neighbors settled lawsuits several years ago and the sewage smell has improved dramatically. Despite this improvement, I suspect Redwood Landfill is on their good behavior so they can expand their operation, then resume their processing of sewage sludge. LLL-2

Regulatory agencies like the Bay Area Air Quality Control were useless regarding any type of enforcement or control over Redwood Landfill. Before any expansion is authorized, limits, strong enforcement penalties and sate of the art zero smell sludge treatment facilities are required. LLL-3

Redwood Landfill has already demonstrated bad faith in the past, over quality of life issues with it's nearest neighbors. I recommend you reject any application to expand the Landfill"s, sewage sludge, toxic waste processing. With this landfill quickly reaching its designed capacity and the lead time required to find a new site location furthur expansion is not an option. LLL-4

Sincerely,

David M. Witter

David M. Witter

LLL. DAVID M. WITTER

LLL-1. The commenter's opinion on the project is noted. The DSEIR evaluated the impacts of the proposed project elements. Past permitted activities at the site are not the subject of the DSEIR. Traffic impacts were evaluated in DSEIR Section 3.10; also refer to Master Response 5. Regarding odors, please refer to Master Response 15. Since publication of the DSEIR, the applicant has revised some elements of their original proposal; please refer to Master Response 17. Please also refer to the response to comment RR-3 regarding the written findings the County is required under CEQA to make for any significant impacts identified in the EIR.

LLL-2. Please refer to Master Response 15.

LLL-3. The comment does not specifically address the content or adequacy of the DSEIR. The BAAQMD's Compliance & Enforcement Division is responsible for taking enforcement action if a violation of Air District regulations has occurred.

LLL-4. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18. Regarding sludge receipts, as shown in DSEIR Table 2-2, the applicant proposes to decrease the permitted quantity of sludge received (although the proposed amount is greater than the amount currently received; refer to the response to comment K-13.e). Since publication of the DSEIR RLI has withdrawn the proposal to reclassify Area G as a Class II facility; see Master Response 6. Regarding landfill capacity and site life, please refer to the response to Comment M-1 and Master Responses 12 and 21.

Comment Letter MMM

RECEIVED

2003 AUG 21 P 12: 04

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

1122 Santolina Drive
Novato, CA 94945
8-16-03
415-892-9098

The Redwood Landfill has an expansion plan to go along with an overpass that will increase safety. The two plans should not be considered together. Safety, is an important issue. The overpass should have been built 20 years ago. With the useful life of the landfill reaching it's limits, an overpass should not be considered now. MMM-1

Expansion is another major problem. Daily waste volume will almost triple from 1,290 T to 3,400 T per day. Traffic in and out of the dump will increase by 600-1000 vehicles. They also want to convert their facility to a semi-hazardous waste dump site. MMM-2

I live in the San Marin area of Novato. As a 42 year resident of this wonderful city, I oppose Redwood Landfill's expansion plans. For several years Novato residents and businesses have suffered from the noxious odors produced from improper treatment of sewage sludge. In other words, when you try to breathe, you actually can taste this sludge, which out at our landfill is human feces.

The county's solid waste enforcement office hasn't had any complaints about odors for several years, proving that foul smelling fumes can be controlled. Would you believe the air quality monitor is located 15 miles away in San Rafael. MMM-3

For many years the disgusting smell would follow you around town, at soccer games, downtown while eating breakfast, by the community swimming pool, and even while shopping at Vintage Oaks. But for many Novato residents the worst part was in the evening, the stench would enter homes lingering through the night and into the morning hours.

The city of Novato and it's residence have already experienced severe safety and air quality violations. How can we trust Redwood Landfill? I urge you to reject the expansion application, and initiate the new site location process. MMM-4

Sincerely,

Leigh Ann Witter

Leigh Ann Witter

MMM. LEIGH ANN WITTER

MMM-1. Construction of the access bridge was considered in a separate Supplemental EIR completed in June 2002. As stated in the DSEIR Chapter 2, Project Description, the analyses presented in the DSEIR assume that the access road and bridge will be built prior to project implementation; please also refer to Master Response 3. Please refer to Master Response 21 regarding revised site life calculations.

MMM-2. The DSEIR evaluated the impacts of the proposed increases in tonnage of various materials (presented in Table 2-2 of the Project Description) and associated increase in traffic, and the proposal to reclassify Area G as a Class II waste unit. Since publication of the DSEIR the applicant has withdrawn the proposal to classify Area G as a Class II unit (see Master Response 6) and has requested several other changes to the project (see Master Response 17).

MMM-3. Please see Master Response 15

MMM-4. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18. Impact 3.10.4 addresses traffic safety impacts of the project. Regarding the access bridge, please refer to Master Response 3. Based on other comments in this letter, it is assumed the reference to air quality violations pertains to odor problems; please refer to Master Response 15.

Comment Letter NNN

Marin County Community
Development Agency

9-22-03

Expanding a Landfill that has poor permit compliance, and is built on bay mud wetlands is a disaster waiting to happen. NNN-1

However, my main concern is about odors and sludge processing. During the past two years or so... odors have not been a problem; so I know they can be controlled.

I moved into my Novato home in 1995. For 5 consecutive years odors pounded my neighborhood. These odors were frequent, intolerable, and of long duration lasting from 4:00 in the afternoon, peaking around 9:00 in the evening; they would then enter your home. The smell began to subside in the early morning hours, but would still linger indoors until 11:00 a.m. NNN-2

The smell from the dump, due to sludge processing is not something you can live with. It's a vile stench that leaves you to wretch in agony.

If you are concerned with the principles of right and wrong, please do not give a permit for landfill expansion. NNN-3

Carefully look over the EIR report. Do not allow sludge processing.

Sincerely,

Leigh Ann Witter

Leigh Ann Witter

NNN. LEIGH ANN WITTER

NNN-1. Regarding the consistency of current operations with the facility's existing permits, please refer to Master Response 18. Regarding the location of the landfill on Bay Mud, DSEIR Impacts 3.4.1, 3.4.2 and 3.4.3 address seismic stability, static stability, and potential differential settlement of the landfill, taking into account its location on Bay Mud. Please also refer to Master Response 7. DSEIR Impact 3.3.3 addresses potential impacts on jurisdictional wetlands; please also refer to Master Response 10.

NNN-2. Please refer to Master Response 15.

NNN-3. The commenter's opinion about the project is acknowledged. In considering project approval, the Marin County Environmental Health Services Division, as lead agency, will need to weigh the benefits of the project against its unavoidable impacts. CEQA Guidelines § 15093 specifies that the decision-making agency is required "to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risk when determining whether to approve the project." If a project with significant unavoidable effects is approved, the lead agency "shall state in writing the specific reasons to support its action based on the final EIR and/or other information in the record. The statement of overriding considerations shall be supported by substantial evidence in the record." CEQA Guidelines § 15096 (g)(2) states that when "an EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the Agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."

Comment Letter OOO

Marin County Community Development Agency
Marin County Planning Commission
3501 Civic Center Drive, #308
San Rafael, CA 94903-4517

RECEIVED
2003 OCT -7 P 12: 52
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Re: Draft Subsequent Environmental Impact Report: Redwood Landfill, Inc.
Revised Solid Waste Facilities Permit

Dear Agency Director Hinds, Mr. Haddad, and Planning Commission Members:

I live in the Rush Creek neighborhood, just a few miles down-wind, down-stream, and down-road from the Redwood Landfill ("RWLF"). It is a short distance for hazardous air and contaminated water to travel from RWLF to me and my family. The potential adverse environmental impacts of the RWLF proposal could directly affect our health and I am deeply concerned. The Draft Environmental Impact Report (DEIR) notes that the project would more than double daily truck traffic to 900 vehicles per day. Implementing all feasible mitigation measures would not be sufficient, and the resulting negative impact to air quality would be an "unavoidable consequence of project approval."

The grossly negative impact of locating a landfill in such an environmentally sensitive location is aptly demonstrated by the dozens of adverse environmental impacts listed in the DEIR. For this reason, no alternative that would expand the facility, as opposed to altering its operation (e.g., more recycling or recovery programs), can be rationally considered consistent with the health and welfare of this community. The Commission should ensure that the DEIR does not underestimate any potential significant adverse impacts on the environment and me and my neighbors.

Regional Waste Facility. The proposal makes clear that it is intended to transform RWLF into a regional waste facility. The expansion's purpose is to accept the "solid waste disposal and composting needs of jurisdictions" well beyond Marin County and almost double the daily intake of waste. Given RWLF's environmentally sensitive location in Marin County, this makes no sense other than from a corporate profit standpoint. What are the benefits to Marin County, and why has the corporate owner of RWLF selected this site, instead of another, to create a regional waste facility? The DEIR does not fully answer these questions.

Absence of Key Data and Analysis in the DEIR. The DEIR is deficient because it does not clearly measure the current tonnage at the RWLF today, indicate whether the current tonnage is within the permitted amount, explain what is currently in the landfill, or analyze what the proposed additional tonnage would mean in terms of cumulative impacts and potential disaster events such as flooding and seismic activity. Too much emphasis is placed on mitigation measures of monitoring. What additional burdens and risks will be incurred by Marin County residents as a result of the additional tonnage after the landfill closes in the future? Again, the DEIR is silent.

Increase in Foul Odors. In addition to the measurable air quality factors, the proposed increase in waste activities will undoubtedly lead to an increase in foul odors. The DEIR takes too much comfort from the fact that there have been few recent official odor complaints under current operating conditions. The DEIR says there are "no sensitive

Comment Letter OOO

receptors." This is false. I live just a few miles down-wind from RWLF, and I smell it sometimes when the wind is blowing. Like many of my neighbors, I have not called to complain because I did not know that it would be considered an important factor in determining whether to expand RWLF's current operations.

Acceptance of Semi-hazardous Materials, and Increase in Toxic Air Contaminants. RWLF's request to begin accepting semi-hazardous materials is a danger to this community, and RWLF has not provided enough information to evaluate fully its request. I am also concerned that the proposal will increase toxic air contaminants to a dangerous level. The DEIR should undertake further analysis of the carcinogenic risk it would pose to residents within a five mile radius.

Negative Impact on Nearby Neighborhoods and Open Space. The DEIR must take full account of nearby residential neighborhoods in terms of impact analysis, and consider the impact on the Rush Creek Open Space which is close to my home and is used by thousands of Marin residents for recreation on an annual basis. The Commission should consider the impact on the wetlands and creeks that run through the Open Space, especially in the event of flooding or seismic activity.

RWLF's Current Problems, and Analyzing Alternative Sites. The focus of county planners and decision makers should be to preserve the status quo at RWLF and require its owners to address the significant risks and impacts of its current operations, such as the absence of a liner and the legally-required 5 feet separation from ground water. These should be discussed in more detail in the DEIR. Marin County officials should be actively preparing alternative plans for future waste disposal and management to serve County residents, not big business. This includes finding an alternative site more consistent with preservation of the environment and the County's policy to maintain 15 years of landfill capacity. The DEIR fails to analyze off-site alternatives in any detail.

If RWLF did not exist today, this Commission, the County Board of Supervisors, the Marin County Environmental Health Services Division and other decision makers would never propose or permit the RWLF at its current Bay front location, adjacent to streams and marshlands along major earthquake fault lines in a floodplain. It is absurd to think otherwise. The RWLF is the last site of its kind located in such close proximity to Bay lands. Marin County would be taking a regressive step inconsistent with contemporary land management and environmental stewardship in approving the proposal or any alternative that would increase the daily trips and tonnage permitted today. This is why additional time and attention should be spent on getting the DEIR right. Thank you for considering my comments.

Very truly yours,

Cathy Yee

OOO. CATHERINE YEE

Please refer to the responses to letter RR.

Comment Letter PPP

MARIN COUNTY PLANNING COMMISSION MINUTES
JULY 28, 2003
Marin County Civic Center, Room #328 - San Rafael, California

Commissioners Present:	Allan Berland Ray Buddie Don Dickenson Jo Julin Hank Barner Steve Thompson
Commissioners Absent:	Ross Herbertson
Staff Present:	Alex Hinds, Agency Director Brian C. Crawford, Deputy Director of Planning Services Tom Lai, Principal Planner Timothy Haddad, Environmental Planning Coordinator Michelle Reed, Recording Secretary
Minutes Approved on:	***OCTOBER 20, 2003***

Convened at 1:10 p.m.
Adjourned at 2:35 p.m.
Reconvened at 2:50 p.m.
Readjourned at 6:30 p.m.

Comment Letter PPP

5. DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT: REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

Hearing to receive testimony on the Draft Subsequent Environmental Impact Report for the Redwood Landfill, Inc. Revised Solid Waste Facilities Permit. Redwood Landfill, Inc., a wholly owned subsidiary of USA Waste of California, in association with Waste Management, Inc., has applied to the Marin County Environmental Health Services Department for a Revised Solid Waste Facilities Permit (SWFP) for continuation and expansion of a 380-acre landfill on a 420-acre site near Novato, California. Since issuance of the 1995 SWFP, certain changes to the operation and facility have been implemented, and new changes are proposed in connection with the Revised SWFP, including sludge management practices, alternative daily cover, increase composting volume, leachate management, increase waste receipts, traffic, design capacity, waste classification, landfill life, gas control, and waste containment units reclassified as Class II for receipt of some semi-hazardous wastes. The Redwood Landfill property, accessed by private road from State Highway 101, is approximately 600 acres in size and consists of a 180-acre northern area and a 420-acre southern area. Waste disposal activities are dedicated to the 420-acre southern area. Redwood Landfill is the principal landfill serving Marin County and is located on the east side of State Highway 101, 4 miles north of the City of Novato and 7 miles southeast of Petaluma in Marin County, and is further identified as Assessor's Parcel 125-160-13.

Commissioner Dickenson expressed concern that the public did not have adequate time to review and comment on this matter, and therefore, suggested continuing this matter to the hearing of August 18, 2003. While Agency Director Hinds concurred, he suggested that staff go ahead and make a brief presentation.

Tim Haddad, Environmental Coordinator, summarized the information set forth in the staff report, and agreed that the hearing should be continued to the August 18th date to allow more time for public comments.

Dan Cicular, project manager for ESA, summarized the merits of the proposed project.

Commissioner Barner noted that the document discussed the flyover, which has not yet been built. Agency Director Hinds stated that some parts of the project will be approved before other parts of the application. Staff further noted that because of the commitments of the EIR, it was important to proceed with parts of the application regarding the expansion. PPP-1

The public testimony portion of the meeting was opened.

Pat Hasler, Frank McGovern, Frank Watson, and Larry Heron expressed concerns regarding disposal of hazardous waste at the site, air quality, ground water levels, safety, and traffic. PPP-2

The public testimony portion of the meeting was closed.

M/s Dickenson/Julin, and passed unanimously of those present, to continue this matter to the hearing of August 18, 2003. Motion passed 6/0 (Commissioner Herbertson not present).

Comment Letter PPP

MARIN COUNTY PLANNING COMMISSION MINUTES
August 18, 2003
Marin County Civic Center, Room #328 - San Rafael, California

Commissioners Present:	Ray Buddie Allan Berland Ross Herbertson Don Dickenson Jo Julin Hank Barner Steve Thompson
Commissioners Absent:	None
Staff Present:	Alex Hinds, Agency Director Michele Rodriguez, Principal Planner Dan Dawson, Senior Planner Sandra Berger, Recording Secretary Joyce Evans, Recording Secretary
MINUTES APPROVED:	***SEPTEMBER 8, 2003***

Convened at 1:00 p.m.
Adjourned at 6:45 p.m.

Comment Letter PPP

7. DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT: REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

Continued hearing to receive testimony on the Draft Subsequent Environmental Impact Report for the Redwood Landfill, Inc. Revised Solid Waste Facilities Permit. Redwood Landfill, Inc. a wholly owned subsidiary of USA Waste of California, in association with Waste Management, Inc., has applied to the Marin County Environmental Health Services Department for a Revised Solid Waste Facilities Permit (SWFP) for continuation and expansion of a 380-acre landfill on a 420-acre site near Novato, California. Since issuance of the 1995 SWFP, certain changes to the operation and facility have been implemented, and new changes are proposed in connection with the Revised SWFP, including sludge management practices, alternative daily cover, increase composting volume, leachate management, increase waste receipts, traffic, design capacity, waste classification, landfill life, gas control, and waste containment unites reclassified as Class II for receipt of some semi-hazardous wastes. The Redwood Landfill property, accessed by private road from State Highway 101, is approximately 600 acres in size and consists of a 180-acre northern area and a 420-acre southern area. Waste disposal activities are dedicated to the 420-acre southern area. Redwood Landfill is the principal landfill serving Marin County and is located on the east side of State Highway 101, 4 miles north of the City of Novato and 7 miles southeast of Petaluma in Marin County, and is further identified as Assessor's Parcel 125-160-13.

The hearing was open to public testimony.

Concerned residents and community representatives Don Levin, Richard Levy, Ph.D., Rosario Carr-Cassanova, Ph.D. Jack Watson, John Tantilla, Wesley Jefrem, Jack Watson, Robert Koch, Keil Keilman, Nancy Spencer, William Rothman, Martin Lawler (San Giacomo Vineyards), Carol Dillon-Knutsen, Barbara Salzman (Marin Audubon), David Wallace, and Lee Ann Witter commented on the foul odor of the landfill, toxicity, increased traffic vehicles, and the need for a time extension in order to further analyze the Environmental Impact Report. PPP-3

Richard Levy, Ph.D., Jana Haehl (Marin Conservation League), Christopher Gilkerson, Jack Watson, Robert Koch submitted their comments in writing.

Glenn Roycroft, Engineer for Redwood Landfill, stated that the proposal would reduce the amount of sludge each day from about 1,000 tons to approximately 550 tons, and would increase traffic from approximately 415 vehicles to 1,000 vehicles per day. However, expansion would not take place until after a bridge across Highway 101 has been constructed. Construction of the bridge is expected to begin in 2004 and will be fully funded by Redwood Landfill. The waste accepted would grow from 550 cubic tons per day to 1,700 tons per day and would take place on the slopes within the perimeter of the existing facility. However, either the height or footprint of the mound would change. The proposed expansion would delay the need of a new dump in the county for about 10 to 20 years. The landfill would also increase its recycling and composting activities with the expansion. Mr. Roycroft concluded by stating that the company was withdrawing its proposal to add a semi-hazardous waste dumpsite. PPP-4

The Commission requested that additional information and clarification be added to the EIR to further address the following: 1) impacts of traffic on Highway 101; 2) amount of landfill waste increase; 3) the actual life span of the landfill; 4) environmental impacts of the increase of the landfill as related to air pollution and agriculture (including surrounding communities, ie. Sonoma, etc.); 5) clarification of the actual capacity of the landfill (there is a discrepancy of the statistical numbers reported in the EIR); 6) Department of Transportation comments; 7) ongoing activities on the property that go beyond the current permit; and 8) receipt of waste from other Bay Area locations. PPP-5-12

Cynthia Barnard, Environmental Health Services, explained the Bay Area Air Quality District's involvement in the permitting process. PPP-13

Comment Letter PPP

Tim Haddad, Environmental Planning Coordinator, stated that a press release would be published explaining the rest of the planning review process. He concluded by commenting on the environmental review process stating that the Final EIR will include responses to all comments received. PPP-14

Agency Director Hinds reiterated the fact that no expansion will take place until the flyover is built. However, staff's view of necessary requirements for the landfill include less sludge, more recycling, no hazardous waste disposal, capturing of methane gas, onsite emergency generator from captured gas, and full review of the EIR prior to any public hearings being held. PPP-15

In response to Commissioner Buddie, Dan Sicular (consultant EIR project manager) stated that settlement and an analysis for waste removal would be addressed by geotechnical experts Treadwell and Rollo, who were not present at this hearing. PPP-16

Commissioner Dickenson asked to review the comments received from the City of Novato and have a clearer explanation of all of the uses of the landfill property and what impact those uses might have on adjacent marsh. PPP-17

Commissioner Julin asked for additional information regarding Redwood Landfill since it was a regional facility. However, staff indicated that said information should not be considered in making a decision on this particular matter. PPP-18

Commissioner Thompson indicated that he would be submitting his comments in writing. PPP-19

M/s Barner/Julin, and passed unanimous, to extend public comment period to October 14, 2003 and continue the public hearing to September 22, 2003. Motion passed 7/0.

Comment Letter PPP

MARIN COUNTY PLANNING COMMISSION MINUTES
September 22, 2003
Marin County Civic Center, Room #328 - San Rafael, California

Commissioners Present:	Allan Berland, Vice Chair Hank Barner Ray Buddie (Out for Item Nos. 6-9) Don Dickenson Jo Julin Steve Thompson (Out for Item #6)
Commissioners Absent:	Ross Herbertson, Chair
Staff Present:	Alex Hinds, Agency Director Brian Crawford, Deputy Director of Planning Services Ben Berto, Principal Planner Tim Haddad, Environmental Planning Coordinator Jessica Woods, Recording Secretary Nancy Grisham, Deputy County Counsel
Minutes Approved on:	***October 20, 2003***

Convened at 1:00 p.m.
Adjourned at 7:15 p.m.

Comment Letter PPP

7. DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT: REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

Continued hearing to receive testimony on the Draft Subsequent Environmental Impact Report for the Redwood Landfill, Inc. Revised Solid Waste Facilities Permit. Redwood Landfill, Inc. a wholly owned subsidiary of USA Waste of California, in association with Waste Management, Inc., has applied to the Marin County Environmental Health Services Division for a Revised Solid Waste Facilities Permit (SWFP) for continuation and expansion of a 380-acre landfill on a 420-acre site near Novato, California. Since issuance of the 1995 SWFP, certain changes to the operation and facility have been implemented, and new changes are proposed in connection with the Revised SWFP, including sludge management practices, alternative daily cover, increase composting volume, leachate management, increased waste receipts, traffic, design capacity, waste classification, landfill life, gas control, and waste containment unites reclassified as Class II for receipt of some semi-hazardous wastes. The Redwood Landfill property, accessed by private road from State Highway 101, is approximately 600 acres in size and consists of a 180-acre northern area and a 420-acre southern area. Waste disposal activities are dedicated to the 420-acre southern area. Redwood Landfill is the principal landfill serving Marin County and is located on the east side of State Highway 101, 4 miles north of the City of Novato and 7 miles southeast of Petaluma in Marin County, and is further identified as Assessor's Parcel 125-160-13.

Tim Haddad, Environmental Planning Coordinator, summarized the staff report for the Redwood Landfill Permit Revisions. He explained that all comments at these hearings as reflected in the summary minutes that the Commission approves after each succeeding meeting as well as all letters and oral comments would be addressed in a Final EIR and a written response to each issue raised would be provided in that document. He added that it would be circulated for a two-week period, prior to bringing the Final EIR to this Commission for consideration of a recommendation for certification of the Final EIR, which would conclude the Commission's part in this process. He pointed out that the Commission was provided with a set of all comments up to the date of distribution for this meeting and that staff had received a few comments since then, and any others with all previously received comments would go into the Final EIR and written responses would be provided. He further added that the Commission would be provided with the full set of comments at the time staff provides the Final EIR.

Commissioner Dickenson announced to the public that Commissioners conducted a site visit with staff of the Redwood Landfill site and county staff.

Ramin Khany, District Manager for Redwood Landfill, stated that at this point they would respond with written comments and submit those comments on October 14th.

Vice Chair Berland opened the public hearing on this item.

Don Mc Enhill, 22 Mt. Foraker Dr., San Rafael, read a letter into the record from Margaret Jones, President of the League of Women Voters of Marin County regarding concerns with acceptance of waste from other areas, traffic congestion from the site and protection of wetlands. PPP-20

Leigh Ann Witter, Dr. Rosario Carr-Casanova, and Dr. Richard Levy spoke regarding their concerns with odors from the site, accuracy of the total capacity of the landfill, permitted capacity for the landfill, air quality and types of materials that would be dumped at the site. PPP-21

In response to a questions regarding the lack of detail in the summary minutes, Tim Haddad, Environmental Planning Coordinator, explained that every meeting is recorded, and the tapes are used by the consultants to determine what issues raised by oral testimony will be included in the EIR. He further stated that the general public could purchase the tapes of each meeting.

Comment Letter PPP

Nancy Spencer read a letter from David Yearsley, Petaluma Riverkeeper, regarding concerns with the impact the landfill has on the river and wildlife, use of high intensity lights and heavy equipment late into the night, and negative effects of loud noises used to scare off birds and ducks. PPP-22

Martin Lawler, stated that the draft EIR had no comparison with the last EIR that was used for the current permit. He expressed concern for the landfill expansion and believed a comparison must be done to explain why the science in the last EIR is different from the current EIR and justify the expansion of the landfill. He also noted that they must know the size of the landfill as well. He added that the EIR is completely flawed and asked the County to immediately stop any planning until a survey is conducted in order to understand the size of the landfill. He stated that the advice that the Commission received from County Counsel at the last meeting was inaccurate. He provided information from the Supreme Court that if a legitimate local purpose is found, then the question becomes of what degree, and the extent of the burden that would be tolerated would depend upon the nature of the local interest involved and whether it be promoted as well as with a lesser impact on interstate activities. He further believed the County of Marin must receive legal advice with regard to this matter. PPP-23 PPP-24 PPP-25

Christopher Gilkerson stated that the potential adverse impact would greatly affect his family and noted that the draft EIR is very important. He added that he filed a 17-page comment letter listing about 18 of those deficiencies of the draft EIR. He felt there is no analysis to support the summary conclusion of the draft EIR. He further noted that the draft EIR must be complete and additional work is needed and necessary. PPP-26

Dr. Ed Spencer, noted that he submitted questions in writing earlier and the following are additional questions for the Commission's review and consideration:

1. What sites ship sludge to Redwood Landfill?
2. What is the tonnage generated by each of these sites?
3. Under the requested expansion what sites would ship sludge to Redwood Landfill?
4. For each sites above, what industrial facilities use the sewage system?
5. What chemicals do the industrial facilities dump into the sewage system?
6. How are these facilities monitored?
7. What is the toxicology of the chemicals listed above?
8. What is the synergistic medical effect of these chemicals?
9. What studies were done to predict the effects of a maximum 100-year earthquake on the Landfill?
10. How have these studies dealt with the fact that Redwood Landfill is on Bay mud and only two feet above the water table?
11. What is the current cost of per ton mile of transporting sludge?
12. Global oil production is about to peak and the cost of fuel would increase, and the County may have to ship sludge and garbage elsewhere; what would be the cost of shipping per ton mile in 10 or 20 years?

PPP-27

Mr. Spencer further indicated that he would continue to research the matter and provide additional information to the Commission when available.

Bob Koch, representing NWLE, pointed out that he agreed that an EIR of this magnitude that did not specify the size of the landfill is inadequate on that basis. He discussed San Antonio Creek that runs under Highway 101 and that a combination of prolonged drainage and high tides occasionally causes flooding of the Highway 101, shutting it down. He asked the Commission to consider this scenario: The project is approved and the enlarged landfill is heavy and soft with prolonged drainage and the plastic sheets holding up the sides fail, just as they did at the Contra Costa landfill, the landfill mass slides into the creek obstructing it or the base of the landfill ruptures through the Bay mud into the creek bed. He pointed out that both are certain with a moderate tremor occurring in the rainy season and either event would obstruct the creek bed and cause a disaster of epic proportions not noted in the EIR. He also believed the County should commission engineers to measure the volume of the landfill and the engineers should be sent to the Contra Costa Landfill to report on why a landfill engineer to the present proposal PPP-28

failed. He further recommended looking for a new landfill site and that the County should have some contingency plans in place.

Don Urban, NWLE Committee Member, provided the Commission with material regarding the Redwood Landfill Expansion proposal including a petition of about 300 residents of Marin County opposed to the expansion and explained that they are opposed to the expansion, which expands the landfill and doubles the amount of daily solid waste accepted. He then highlighted the reasons for their opposition as follows:

1. Garbage truck traffic on Highway 101 at the dump intersection will be 1000 slow moving garbage trucks per day, more than double today's count of 415. This means that during an average weekday, there will be two trucks entering and two trucks exiting every minute, something that in our view is totally unacceptable in the heavily congested "Novato Narrows."
2. There will be a major risk of water pollution to the San Antonio Creek, and the Petaluma River, and the San Francisco Bay due to the expansion and tripling the daily intake of solid waste. He then asked the question whether any responsible official would locate a new landfill on the Bay front with a creek on the eastern border, with the Petaluma River 2000 feet away and where the water table is two feet below the bottom? Clearly the answer is NO and the Commission should ask why would a responsible Planning Commissioner want to expand and triple the daily intake of solid waste at the Redwood Landfill? PPP-29
3. Residents of Marin County and particularly those of Novato are 100% opposed to the expansion. Our Committee already has petitions signed by 300 residents and they have found during their campaign that everyone who is approached was willing to sign. If the project were on the election ballot, 99% of voters would oppose the expansion.

Mr. Urban added that the No Wetlands Landfill Expansion Committee (NWLE) is therefore asking the Commission to disapprove of any increase in the intake of solid waste quantities and expansion of the Redwood Landfill. He also asked the Commission to clarify what the Redwood Landfill contained. The Committee is also asking the Commission to clarify and confirm whether Mr. Roycroft testified at the August 18, 2003 meeting that the Redwood Landfill currently contains 25 million cubic yards of solid waste. He explained that two of their Committee members heard his statement, but it did not appear in the official minutes.

Molly Roth, 1147 Santolina Dr., Novato, raised three issues that the EIR did not adequately address for the Commission's consideration that included trust, timing, and risk. She pointed out that her family and she endured a week of horrible latrine smells. They had to keep the windows closed, and they could not breathe outside without gagging. She felt invaded and worried that the value of her home would decrease. She added that since her letter to this Commission in August, she learned even more about the possible effects of expansion. Given the potentially drastic effects of what the landfill has proposed and presumably deems reasonable, given its history of doing whatever it pleases regardless of the public good, and given the chronic lack of regulatory oversight, she greatly feared that the County could face a disaster if it allows any expansion. She indicated that before any consideration of expansion continues, she felt the County must take the following actions:

1. Determine the current size, practices and emissions of the landfill. This must been done by independent scientific experts. PPP-30
2. Establish effective means of monitoring the landfill site.
3. Establish an efficient and well-published complaint procedure in which residents can receive prompt and courteous assistance in resolving problems.

Ms. Roth strongly believed that any consideration of new use permits should be suspended until all current problems associated with the landfill have been resolved. These include use permit violations and dangerous truck crossings. She also noted that any expansion plan, including the EIR's mitigated alterative, presents Marin residents with potential risks involving health and safety, future cleanup costs, and premature closure of the landfill. USA Waste is asking the citizens of Marin to take on such risks for a project that in no way serves the public good – a project that serves only the company's bottom line. She added that many issues concerning the effect of landfill gases and other emissions remain controversial; if it turns out that the landfill is more toxic than

previously believed, the County could face many lawsuits and prohibitively expensive cleanup efforts. She desired the County to minimize the risks in any way possible, such as revoking the current sludge permit. She further urged the County to suspend all consideration of expansion until the current issues have been fully addressed and the prior agreements enforced.

David Wallace, 901 Sherman Ave., Novato, Planning Manager of the City of Novato, provided the Commission with a letter opposing this project. He stated that the City of Novato appreciates the opportunity to comment on the Redwood Landfill Solid Waste Facility Permit revision request and the draft supplemental EIR for the project. He pointed out that on September 15, 2003, the City Council of the City of Novato received public testimony, discussed the proposed project extensively and voted unanimously to oppose approval of expansion of the solid waste facility. He explained that the letter submitted summarized the City Council's concerns with expansion of the facility and provides comments on the Draft SEIR. He added that if the Commission had any questions with regard to the letter submitted, the Commission could contact him to discuss or clarify any of the comments. PPP-31

Deputy County Council Nancy Grisham stated that the legal constraints she described at the previous hearing were accurate and that she had consulted with other counties on these issues, all of whom concurred in her findings. PPP-32

There being no further public testimony on this item, Vice Chair Berland closed the public portion of the testimony and brought the matter back to the Commission for discussion and action.

Commissioner Barner commented on San Antonia Creek and the monitoring wells and suggested on a regular basis having an individual monitor the San Antonio Creek and the same would apply to the odor problem. He felt it would be helpful if there were a more elaborate discussion as to complaints filed. He commented on the actual format of the report, in particular, there were several examples of necessity of the flyover before this project could be viable, and believed it should be better identified. PPP-33 PPP-34 PPP-35

Commissioner Dickenson desired the EIR to investigate the following: debris blowing into the Petaluma Marsh, nighttime lighting, noise abatement, the real numbers as to what is currently permitted and proposed, address the ability or lack of ability to limit waste receipts to local garbage only, and prohibiting disposal of sludge on the property altogether. PPP-36-41

Commissioner Thompson announced that he submitted his comments in writing and had nothing further to add. Commissioner Julin noted that she expressed her comments at the last meeting and had nothing further to add. PPP-42

Vice Chair Berland agreed with Commission Barner and believed it is relevant to review other sites in the Bay Area and why they are being asked to receive the excess refuse as opposed to other areas in the Bay Area. He further requested that all issues be investigated as well as the legal analysis from County Counsel regarding the Commission's options. PPP-43

Commissioner Thompson appreciated all the public testimony provided and believed all testimony was excellent. He submitted his comments in writing. The Commission concurred. Vice Chair Berland reiterated that all comments would be addressed in the Final EIR before any decision is made concerning the permit for Redwood Landfill.

M/s Dickenson/Barner, and passed unanimously of those present, to direct staff and consultants to prepare the final EIR after the close of the public review period on October 14th and return the Final EIR, with responses to comments. Motion passed. 5/0 (Commissioners Herbertson and Buddie not present).

PPP. PLANNING COMMISSION PUBLIC HEARING COMMENTS

1. Regarding the Access Bridge, please see Master Response 3.

2. Hazardous waste will not be disposed at the site. Regarding project changes, please see Master Response 17. Air quality is discussed in Section 3.2 of the DSEIR; see changes to this section in the FEIR text. Impacts to groundwater are evaluated in DSEIR Section 3.4; regarding groundwater levels, please also see Master Response 1. Traffic impacts are evaluated in DSEIR Section 3.10; Impact 3.10.4 addresses traffic safety impacts; please also see Master Response 5.

3. Regarding odors, please see Impact 3.2.9 in the DSEIR and Master Response 15. DSEIR Impact 3.2.8 addresses the potential impacts on human health of toxic air contaminant emissions under the project. The impact analysis included conducting a screening level health risk assessment. As discussed, the DSEIR analysis determined that mitigation measures identified in the DSEIR would reduce impacts due to toxic air contaminants to a less-than-significant level. Also please refer to Master Response 11 concerning the health risk assessment. In addition, Sections 3.4 and 3.5 address project impacts to groundwater and surface water, respectively. Since publication of the DSEIR RLI has withdrawn the proposal to reclassify Area G as a Class II waste unit; please refer to Master Response 6. DSEIR Section 3.10 evaluates project impacts related to traffic; please also refer to Master Response 5. The pubic comment period was extended to October 14, 2003, and three Planning Commission hearings were held to take public comment on the project.

4. Regarding project changes, see Master Response 17. Regarding the proposed change to the use of Area G, see Master Response 6. Regarding the revised site life calculations, please see Master Response 21.

5. Please see Master Response 5.

6. Please see Master Response 17.

7. Please see Master Response 21.

8. Please see response to comment KK-6.

9. Please see Master Response 12.

10. Please see Comment Letter E and responses.

11. Please see Master Response 18.

12. Please see Master Response 9.

13. Comment noted. Please see also Comment Letter B.

14. Comment noted.

15. The DSEIR identifies the Mitigated Alternative as the environmentally superior alternative. Although conclusions regarding the No Project Alternative and the Mitigated Alternative have been modified in the text of the FEIR to reflect the revised site life calculations, the Mitigated Alternative remains the environmentally superior alternative in the FEIR. Please see Master Response 3 regarding the access bridge.

16. Please see Master Response 7 regarding Bay Mud settlement and Master Response 13 regarding the effectiveness of the LCRS.

17. Please see Comment Letter H and responses. Regarding the effects of landfill activities on the marsh, the DSEIR only analyzes the impacts of the proposed future changes in RLI operations and those operations not covered under existing permits. (See, e.g., DSEIR Sections 3.3, Biological Resources, Section 3.5, Hydrology, and Section 3.7 Noise).

18. Please see Master Response 19.

19. Please see Comment Letters I and J and responses.

20. Please see Comment Letter M and responses.

21. Please refer to Master Responses 15 (odor), 12 (landfill capacity), DSEIR and FEIR Section 3.2 (air quality), and Master Response 6 (regarding the use of Area G as a Class III, rather than a Class II, landfill.)

22. Please see Comment Letter Z and responses.

23. The present EIR uses the latest engineering and scientific information available for the landfill. Much of this information has been updated since the 1994 EIR was written. The applicant's engineering regarding slope stability, LCRS design, etc., has been independently peer-reviewed.

24. Please see Master Response 12.

25. Please see Master Responses 8 and 19.

26. Please see Comment Letters GG and HH and responses.

27. Please see Comment Letters YY and ZZ and responses.

28. Regarding the size of the landfill, please see Master Response 12. Please see response to comment II-5.

29. Please see Comment Letter Q and responses.

30. Please see Comment Letter TT and responses.

31. Please see Comment Letter H and responses.

32. Comment noted.

33. Master Response 14 describes the water quality monitoring programs at the site. The detection monitoring program includes monitoring wells on the landfill's perimeter, to allow detection of a leachate release, should one occur, before the release reaches adjacent waterways. At present there is no regular monitoring of San Antonio Creek or other surface waterways in conjunction with landfill operations.

34. Please see Master Response 15.

35. Please see Master Response 3.

36. DSEIR Impact 3.1.6 and the associated mitigation measures reduce litter impacts to a less-than-significant level for aesthetics and these measures would have the same result with respect to impacts on wildlife in Petaluma Marsh, per Impact 3.3.9.

37. Impact 3.1.5 in the DSEIR addresses potential impacts from night lighting; also see the response to Comment N-22.

38. Noise impacts are addressed in Section 3.7, Noise, of the DSEIR. Please also see DSEIR Impact 3.3.5, and the response to Comment P-4

39. Please see Master Responses 12 and 17.

40. Please see Master Responses 8 and 19.

41. The range of alternatives presented in the DSEIR is considered to be consistent with the requirements of CEQA.

42. Comment noted.

43. Please see Master Responses 8, 9, and 19.

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CHAPTER 7

EIR AUTHORS, PERSONS AND ORGANIZATIONS CONTACTED

7.1 EIR AUTHORS

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7.2 EIR CONSULTANTS

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Project Manager:	Dan Sicular
Deputy Project Manager:	Chris Mueller
Project Description	Dan Sicular, Chris Mueller
Aesthetics Section:	Chris Mueller
Air Quality Section:	Nanette Sartoris, Robert Vranka, Dan Sicular
Biological Resources Section:	Tom Roberts, A.T. Gerstell, Mark Fogiel
Geology, Soils, and Seismicity Section:	Peter Hudson
Hydrology & Water Quality Section:	Chris Mueller
Land Use and Planning Section:	Dan Sicular, Chris Mueller
Noise Section:	Dan Sicular
Public Health and Safety Section:	Chris Mueller
Public Services and Utilities Section:	Chris Mueller, Tonya Redfield
Transportation and Traffic Section:	Jack Hutchison, P.E. (Registration #T1411)
Impact Overview:	Dan Sicular, Chris Mueller
Alternatives Analysis:	Dan Sicular
Graphics:	Linda Uehara, Ron Teitel, Lisa Crossett
Word Processing:	Lisa Bautista, Gus JaFolla
Response to Comments:	Dan Sicular, Chris Mueller

Technical Review of Geotechnical Project Impacts:
Craig Hall, P.E., Linda Liang, P.E., Hadi Yap, P.E., Treadwell and Rollo

Review of Project Description:
John Roberto, John Roberto Associates

7.3 PERSONS AND ORGANIZATIONS CONSULTED

List of other people and organizations consulted are provided in the references at the end of each section.

APPENDICES

APPENDIX A

MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

APPENDIX A

MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

AUTHORITY AND PURPOSE

Pursuant to the California Public Resources Code, Section 21081.6 (Assembly Bill 3180), Marin County is required to implement a mitigation monitoring and reporting program for the Redwood Landfill Solid Waste Facilities Permit Revision Project. The County's monitoring program is established in the conditions of permit revision approval and as further set forth in the mitigation conditions and verification measures listed here.

The purpose of this mitigation monitoring and reporting program is to ensure compliance with and effectiveness of the mitigation measures identified in the certified EIR for the Redwood Landfill Solid Waste Facilities Permit Revision Project. PRC Section 21081.6 requires monitoring of mitigation measures for those impacts identified in the EIR to be significant.

COUNTY MONITORING PROGRAM FEATURES

The County's mitigation monitoring and report program for the Redwood Landfill Solid Waste Facilities Permit Revision Project consists of two major elements:

- A list of mitigation conditions and verifications required of the project sponsor at each stage of project approval and development.
- A checklist to document and verify mitigation condition compliance.

FINAL MMRP

The MMRP presented in the following pages is the final version. Changes to the draft MMRP, which appeared as Appendix H of the DSEIR, are indicated as follows:

<u>Additions to the text are underlined</u>

~~Deletions are struck through.~~

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Aesthetics					
3.1.6: The increase in waste receipts and compost throughput and the use of a waste tipper could result in increased litter on and near the project site, causing adverse aesthetic impacts in the site vicinity. (LTS)	**3.1.6a:** RLI will continue its current litter-control program, which includes the following elements (GeoSyntec, 1998): • compaction of the waste, • application of daily cover, • placement of fixed and portable litter fences around the active working face, • construction of a semi-permanent litter fence on the east and north sides of the landfill adjacent to San Antonio Creek, • daily use of a clean-up crews to collect litter from the site and surrounding area, and • use of signage to advise haulers that incoming loads must be properly covered and that tarps are to be removed only in designated areas.	Applicant	Upon issuance of revised SWFP	Marin County EHS	Marin County EHS and CIWMB, both of whom conduct periodic inspections of the site.
	3.1.6b: The tipper is not operated in winds exceeding 50 mph (GeoSyntec, 1998).	Applicant	Upon issuance of revised SWFP	Marin County EHS	Marin County EHS and CIWMB, both of whom conduct periodic inspections of the site.
	3.1.6c: RLI shall update its current litter-control program as necessary to ensure compliance with 27 CCR §20830. The updated program will take into account the use of the waste tipper and the increase in incoming waste and composting receipts, and will indicate the means to prevent litter from escaping the Oxbow area proposed for composting. Measures may include, but are not limited to, the following: • use of additional portable litter fencing in the Oxbow area, • use of higher temporary fences at the working face, as needed to prevent litter from escaping when loads are emptied by the tipper, and	Applicant	Prior to issuance of revised SWFP	Marin County EHS	CIWMB, prior to issuance of revised SWFP; periodic inspections to ensure implementation.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.1.6 (cont.)	• increasing the staff of the daily clean-up crew to adequately police the additional areas proposed for composting. RLI shall submit the updated litter control plan to the LEA for approval prior to project implementation.				
	3.1.6d: The waste tipper shall not be operated in wind conditions that would result in windblown litter, regardless of wind speed.	Applicant	Upon issuance of revised SWFP	Marin County EHS	Marin County EHS, continuing periodic inspections.
Air Quality					
3.2.1: Construction activities would generate substantial amounts of dust, which would result in potential health and nuisance impacts in the immediate project vicinity. (LTS)	**3.2.1a:** As described under existing facilities in the Joint Technical Document (JTD) (GeoSyntec, 1998), the applicant controls dust by frequent application of water spray on soil-covered work areas and the use of a dust palliative on the access road and main haul roads, if necessary, to supplement watering. The JTD indicates that the same practices would be continued under the project.	Applicant	Upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.
	3.2.1b: The applicant shall implement good construction practices to minimize fugitive dust. Such practices shall include general watering of exposed areas, the use of palliatives or other dust suppressants on any unpaved haul roads, and periodic cleaning of paved roads.	Applicant	Upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.1 (cont.)	**3.2.1c:** The applicant shall implement a Construction Dust Abatement Program. Construction contractors and landfill staff involved in construction activities at the site shall implement a Construction Dust Abatement Program to reduce the contribution of project construction-related dust emissions to local respirable particulate matter concentrations. Some of these measures are similar to those identified under Measures 3.2.1a and 3.2.1b, but with additional specificity. This program shall include the following elements as needed to reduce fugitive dust to acceptable levels, using the BAAQMD Regulation 6 visible emissions standards as a guide: • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the load and the top of the trailer). • Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and construction staging areas. • Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily with water sweepers, if visible soil material is carried onto adjacent public streets. • Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more). • Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.). • Limit traffic speeds on unpaved roads to 15 miles per hour.	Applicant	Written description of Program must be submitted prior to issuance of revised SWFP. Implementation upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.1 (cont.)	• Install silt fences or other erosion-control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible. • Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.				
3.2.2: Equipment and truck operations associated with an increase in incoming materials at the landfill would generate additional criteria air pollutant emissions. (SU)	**3.2.2a:** The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for all operating equipment at the landfill.	Applicant	Written description of Program, including document keeping and reporting requirements, must be submitted prior to issuance of revised SWFP. Implementation upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.
	3.2.2b: The project applicant shall use ultra-low sulfur fuel (with low sulfur and low aromatic content) in combination with a fuel additive (such as Puri-NOx) in all diesel-powered off-road equipment to minimize NOx emissions to the extent that these materials are commercially available to Redwood Landfill. Products such as this can reduce NOx emissions by roughly 14 percent.	Applicant	Upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.2 (cont.)	~~**3.2.2c:** The project applicant shall retard the injection timing on all diesel-powered equipment to minimize NOx emissions.~~	~~Applicant~~	~~Upon issuance of revised SWFP~~	~~Marin County EHS, BAAQMD~~	~~Marin County EHS and BAAQMD, continuing periodic inspections.~~
	3.2.2~~d~~c: As off-road equipment ages and requires replacement, the project applicant can be expected to purchase new equipment that incorporates technology that meets more stringent emission standards mandated by CARB. Alternatively, the project applicant may purchase electrically-powered equipment, or equipment fueled by an alternative, less-emitting fuel (e.g., liquefied natural gas [LNG] or compressed natural gas [CNG]). Use of alternative fuel engines can be expected to achieve a reduction in NO_X emissions of at least 37 percent.[1] The purchase of new equipment shall be limited to that which is available on the market at the time of replacement.	Applicant	Upon issuance of revised SWFP	BAAQMD, Marin County EHS, ~~BAAQMD~~	~~Marin County EHS and~~ BAAQMD and Marin County EHS, continuing periodic inspections.

[1] Based on the difference in U.S. EPA emissions standards for heavy duty diesel and alternative fuel engines. See U.S. EPA, 1997.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.2 (cont.)	**3.2.2de:** As collection vehicles are ~~equipment is~~ replaced, the project applicant, including other Waste Management affiliates that regularly haul materials to Redwood Landfill, shall comply with CARB's Solid Waste Collection Vehicle Fleet Rule (contained in Title 13, California Code of Regulations, Sections 2020, 2021, 2021.1, and 2021.2) adopted in September 2003 to address diesel particulate matter. The project applicant shall give preference to add-on technologies or control measures (such as fleet conversions) that also reduce NO_x emissions, while meeting necessary BACT requirements. The types of control measures that may be implemented include such measures as converting their collection fleets to vehicles that operate on alternative, low-emission fuels (such as CNG, LNG, or biodiesel) or ~~shall~~ modification or ~~y or~~ replacement of ~~-~~diesel engines to reduce NO_X emissions, by such measures as incorporating exhaust gas recirculation (ERG) systems and/or stratified combustion chambers, and/or by using ultra-low sulfur fuel and fuel additives.	Applicant	Upon issuance of revised SWFP	BAAQMD, Marin County EHS~~, BAAQMD~~	~~Marin County EHS and~~ BAAQMD and Marin County EHS, continuing periodic inspections.
3.2.4: Landfill operations, including vehicle and equipment travel on unpaved surfaces, would generate fugitive dust. (SU)	**3.2.4:** The project applicant shall develop an Operational Dust Mitigation Plan/Program, in conjunction with the ~~LEA and~~ BAAQMD and the LEA~~,~~ that would achieve at a minimum a dust control efficiency of about 75 percent. Upon completion, the Plan shall be subject to BAAQMD ~~LEA~~ review and approval. Components of the Plan should include: • A watering program consistent with current practices. On dry days, apply water to unpaved surfaces at least once every three hours, and to parking areas and infrequently used unpaved surfaces, the active landfill face, active stockpile areas, or other dust prone areas at least twice daily. Apply water to composting operations areas once or twice daily, as needed. On rainy days, apply water to these areas as necessary to reduce visible emissions.	Applicant	Written description of Program, including document keeping and reporting requirements, must be submitted prior to issuance of revised SWFP. Implementation upon issuance of revised SWFP	~~Marin County EHS,~~ BAAQMD, RWQCB, and Marin County EHS,	~~Marin County EHS~~ BAAQMD, ~~, and~~ RWQCB, and Marin County EHS continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.4 (cont.)	• Use of a chemical palliative or dust suppressant to reduce fugitive dust emissions from vehicle travel surfaces. Some chemical stabilizers can contain a considerable fraction of hydrocarbons, and should be selected judiciously. The choice of chemical palliative shall be made with the approval of the ~~LEA,~~ RWQCB, ~~and~~ BAAQMD, and the LEA. • Posting signs at the site that limit traffic speeds on unpaved roads to 15 miles per hour. • Sweeping daily with water sweepers all paved access roads and parking areas. • Appoint a designated person to oversee implementation of the Operational Dust Mitigation Plan, and make them responsible for ensuring that the Plan is fully implemented.				
3.2.5: The project would increase the amount of landfill gas generated and could exceed the capacity of the landfill gas collection and treatment system. In addition, emissions of air pollutants from the landfill gas treatment system, as well as fugitive landfill gas emissions, would increase. (SU)	**3.2.5a:** The applicant has installed a landfill gas flare capable of accommodating a landfill gas flow rate of up to 4,250 cfm. The flare currently is permitted to operate at a maximum flow rate of 4,000~~2,500~~ cfm. The flare also is used to destroy leachate vapors from the leachate vaporator.	Applicant	Upon issuance of revised SWFP	~~Marin County EHS,~~ BAAQMD, Marin County EHS,	~~Marin County EHS and~~ BAAQMD and Marin County EHS, continuing periodic inspections.
	3.2.5b: The applicant has installed a leachate vaporator that operates at a landfill gas flow rate of 167 cfm.	Applicant	Upon issuance of revised SWFP	~~Marin County EHS,~~ BAAQMD, Marin County EHS,	~~Marin County EHS and~~ BAAQMD and~~,~~ Marin County EHS, continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.5 (cont.)	**3.2.5c:** The project applicant shall apply to~~has received from~~ the BAAQMD for -authority to construct ~~three~~ power generation engines to be fueled by landfill gas capable of producing 4 to 5 megawatts of power within two years of concurrence on its revised SWFP by the CIWMB. This will increase the overall capacity available to treat landfill gas, and will also result in the beneficial use of some portion of the landfill gas generated. Operation of the landfill-gas-powered generators will make the project consistent with Policy 4.2 of the Marin Countywide Plan Community Development element (refer to Applicable Plans and Policies in Section 3.9, Public Services, Utilities, and Energy), which calls for exploration and implementation, where possible, of opportunities for cost-effective energy savings that are compatible with other countywide and community goals.	Applicant	Authority to Construct authorizes operation for 90 days; then requires Permit to Operate	BAAQMD	BAAQMD
	3.2.5d: The applicant shall apply to the BAAQMD to revise limits in the current Permit to Operate the flare, as needed to accommodate increased LFG generation. The flare/vaporator system will be operated/equipped as necessary to ensure BAAQMD emission limits specified in the PTO are maintained. The project applicant shall provide background test data and/or other supporting data as necessary to document to the BAAQMD and LEA that the system would accommodate worst case peak gas emissions.	Applicant	Prior to issuance of SWFP	~~Marin County EHS,~~ BAAQMD, Marin County EHS,	BAAQMD according to terms of permit
	3.2.5e: The applicant shall apply for a Permit to Operate the power generation engines within the time frame specified in the Authority to Construct and shall operate the power generation engines in compliance with all BAAQMD regulations and conditions specified in the Permit to Operate. ~~As specified in the current Authority to Construct, t~~The applicant shall continue to maintain records of all compliance demonstration test results as specified in the Authority to Construct.	Applicant	Within 90 days of commencement of operation of engines	BAAQMD	BAAQMD according to terms of permit

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.5 (cont.)	~~In addition, implementation of Mitigation Measure 3.9.3b (Section 3.9, Public Services, Utilities, and Energy), to construct the power generators as soon as possible, would ensure maximum beneficial use of landfill gas.~~	~~See referenced mitigation measure.~~			
3.2.6: The project would increase the amount of ROG emissions from composting/ co-composting activities. (LTS)	**3.2.6a:** The project applicant shall maintain records of all materials composted (in terms of volume or weight by material type) and shall comply with all applicable rules, regulations and permit conditions.	Applicant	Upon issuance of revised SWFP	Marin County EHS	Marin County EHS, CIWMB; periodic inspections
	3.2.6b: The applicant shall prepare an Emissions Monitoring Plan that includes source testing of windrows used for composting and co-composting to obtain site-specific ROG emissions data. The Monitoring Plan shall require analysis of the effect of various feedstock materials on composting emissions, and a comparison of emissions during wet and dry season periods. The Monitoring Plan shall be subject to BAAQMD ~~and LEA~~ review and approval.	Applicant	Within one year of issuance of revised SWFP	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD will review and approve Plan within 3 months of submission by applicant
	3.2.6c: The applicant shall also conduct a feasibility study to determine the technologic and economic feasibility of using~~use~~ a composting method that allows for collection and treatment of gaseous emissions from active composting piles, such as an aerated static pile system with biofilters. The target ~~system shall be designed to reduce~~ ROG emissions reduction rate for purposes of the study shall be ~~by~~ a minimum of ~~90~~ 25 percent, such that the increase in emissions would be below the BAAQMD 80 pounds per day significance threshold. The results of the feasibility study shall be provided to the BAAQMD such that BAAQMD staff may consider incorporation of additional requirements to reduce ROG emissions into air permits for the site. The results of the study shall also be submitted to the LEA. If controls are determined to be infeasible or not economical, then the project applicant shall reduce the amount of compostable materials that are accepted at the site by 25 percent on a daily basis.	Applicant	System design must be completed prior to issuance of revised SWFP	Marin County EHS and BAAQMD	Marin County EHS, CIWMB, and BAAQMD, design approval prior to issuance of revised SWFP; periodic inspection after implementation

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.6 (cont.)	**3.2.6d:** The applicant shall conduct monitoring in accordance with the approved Monitoring Plan and shall prepare a report summarizing the findings of the monitoring. Copies of the written report shall be provided to the BAAQMD and LEA for incorporation into permits for the site.	Applicant	Upon approval of the Monitoring Plan by the BAAQMD ~~issuance of revised SWFP~~	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing
3.2.8: Emissions of toxic air contaminants could pose a risk to human health. (LTS)	**3.2.8a:** The landfill gas collection and flare system will substantially reduce the rate of emission of TACs from the landfill.	Applicant	Already implemented	~~Marin County EHS and~~ BAAQMD, Marin County EHS	~~Marin County EHS and~~ BAAQMD and~~,~~ Marin County EHS periodically and continuing
	3.2.8b: Best management practices for the composting and co-composting operation, including scheduled pile turning and managing piles to avoid excessively high temperatures, will reduce the emissions of TACs from composting and co-composting operations.	Applicant	Upon issuance of revised SWFP	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
	3.2.8c: New Federal ~~R~~regulations for offroad diesel equipment were promulgated in May 2004. These regulations require that, starting in 2010, new equipment will have to reduce emissions of NOx and diesel PM by about 90%. However, any equipment already in use at the time of the new regulation would be grandfathered and would not have to meet the new emissions limits. Since this equipment can operate for many years before needing replacement, future emissions would be at a higher rate. If ~~Implement~~ Mitigation Measures 3.2.2a-de (as revised in this FEIR) are adopted on the existing equipment,~~.~~ d~~D~~iesel PM emissions from off-road equipment can be reduced to levels that are less than significant. ~~if these mitigation measures are adopted, since~~ Some of the measures specified to reduce NO_X emissions, such as the use of natural gas as an alternative fuel, would also reduce diesel PM emissions.~~;~~ U~~u~~se of alternative fuels can reduce~~s~~ fine PM emissions by as much as 90 percent**,** and electrically-powered equipment does not emit any diesel PM. Alternatively, all off-road diesel equipment at the site could be retrofitted with diesel particulate traps that are capable of removing over 85 percent of the diesel PM emissions, though this in itself would not reduce NO_X emissions.	See referenced mitigation measure.			
3.2.8 (cont.)	**3.2.8d:** Although d~~D~~iesel PM emissions from new on-road trucks~~vehicles~~ after 2007 will~~can~~ be reduced because the trucks will have to comply with the~~reduced~~ Federal ~~R~~regulations, trucks that were purchased before 2007 would not be subject to the new regulations. Diesel PM emissions from the older truck fleet shall be reduced by retrofitting the trucks with ~~through implementation of Mitigation Measure 3.2.2c, and/or the use of~~ particulate traps~~ on fleet vehicles~~.	Applicant ~~See referenced mitigation measure.~~	Upon issuance of the SWFP	BAAQMD	Continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.9: Project operations could result in nuisance odor emissions. (LTS)	**3.2.9a:** Continuation of current odor management practices. These include: covering landfilled waste at the end of each day with either soil or mixed ADC; applying potassium permanganate to air drying sludge and operation of a vapor phase odor counteractant system around the landfill's southern boundary; and, maintaining windrows in a manner that optimizes the composting process.	Applicant	Upon issuance of revised SWFP	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing
	3.2.9b: The project applicant shall formulate an Odor Impact Minimization Plan in accordance with the recently revised State composting regulations (Title 14 CCR § 17863.4.) This plan will be submitted to the LEA as part of the application for a solid waste facilities permit for the expanded composting facility. In accordance with the above-cited regulations, the plan shall contain, at a minimum: • an odor monitoring protocol which describes the proximity of possible odor receptors and a method for assessing odor impacts at the locations of the possible odor receptors; and, • a description of meteorological conditions effecting migration of odors and/or transport of odor-causing material off-site. Seasonal variations that effect wind velocity and direction shall also be described; and,	Applicant, Marin County EHS, BAAQMD	Plan must be submitted prior to issuance of revised SWFP. Implementation upon issuance of revised SWFP	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.9 (cont.)	• a complaint response protocol that includes the immediate notification of BAAQMD Compliance & Enforcement Division and County LEA staff upon receipt of any odor complaints and the provision of the BAAQMD odor complaint hotline number (1-800-334-ODOR [6367]) to complainants upon receipt of their call; and, • a description of design considerations and/or projected ranges of optimal operation to be employed in minimizing odor, including method and degree of aeration, moisture content of materials, feedstock characteristics, airborne emission production, process water distribution, pad and site drainage and permeability, equipment reliability, personnel training, weather event impacts, utility service interruptions, and site specific concerns; and, • a description of operating procedures for minimizing odor, including aeration, moisture management, feedstock quality, drainage controls, pad maintenance, wastewater pond controls, storage practices (e.g., storage time and pile geometry), contingency plans (i.e., equipment, water, power, and personnel), biofiltration, and tarping.				
3.2.10: The proposal to air-dry stockpiled sewage sludge could result in increased emissions of volatile organic compounds and odors. (LTS)	**3.2.10a:** To control odors during drying, the applicant will apply potassium permanganate solution to the surface of the drying sludge and apply an odor counteractant liquid as a vapor phase spray in the drying area.	Applicant	Upon issuance of revised SWFP	~~Marin County EHS and~~ BAAQMD and Marin County EHS	~~Marin County EHS and~~ BAAQMD and~~,~~ Marin County EHS periodically and continuing
	3.2.10b: The applicant shall limit the amount of sewage sludge air dried each day to less than 1,800 wet tons (360 dry tons) per day. At an emission rate of .29 pounds per dry ton per day, this would result in emissions lower than 104 pounds of VOCs per day, which represents an increase of less than 80 pounds per day above the currently permitted limit of 24 pounds per day specified in the 1994 FEIR.	Applicant	Upon issuance of revised SWFP	~~Marin County EHS and~~ BAAQMD, Marin County EHS	~~Marin County EHS and~~ BAAQMD and Marin County EHS, periodically and continuing

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.10 (cont.)	**3.2.10c:** Alternatively, the applicant could purchase emissions credits from the BAAQMD, resulting in an off-set of VOC (ROG) emissions of any increment above 104 pounds per day. This would enable the applicant to process more than 1,800 wet tons (360 dry tons) per day of sewage sludge.	Applicant	Prior to commencing air drying of sludge in amount exceeding 1,800 wet tons per day	BAAQMD, Marin County EHS	BAAQMD, according to terms of purchase of emissions credits
3.2.11: The combined emissions from project operations would exceed BAAQMD significance criteria for ROG, NO_X and PM-10. (SU)	**3.2.11:** Implementation of Mitigation Measures 3.2.2 (a-d~~e~~), 3.2.4, 3.2.5(d-~~f~~e), 3.2.6(a-d), and 3.2.10(b or c) would help to mitigate the combined project operational emissions.	See referenced mitigation measure.			
3.2.13: Transport, handling, and disposal of the proposed increased volume of designated wastes ~~in Area G~~ could result in increased emissions of various air pollutants. (Significant)	**3.2.13~~a~~:** ~~The applicant proposes not to accept friable asbestos or petroleum-contaminated soils that exceed 50 parts per million of volatile compounds for disposal in Area G.~~The applicant has in place special handling requirements for generators of ash waste and procedures in place that ensure that acceptance and disposal of ash waste does not result in migration of airborne particles.	Applicant	Upon issuance of revised SWFP and WDRs	Marin County EHS and RWQCB	Marin County EHS and RWQCB, periodic and ongoing inspections
	~~**3.2.13b:** The applicant shall be limited to accepting only designated wastes that do not pose a threat to air quality. Prior to issuance of a revised Solid Waste Facilities Permit, the applicant shall submit to the LEA and the BAAQMD a detailed list of material types and constituent concentrations that they propose to accept for disposal in Area G, and will provide evidence of why handling and disposal of these material types and constituent concentrations will not result in emissions of criteria air pollutants or toxic air contaminants beyond threshold limits. This list will be prepared by a specialist with expertise in calculating air emissions from handling and disposal of wastes. The Solid Waste Facilities Permit will include as a condition of the permit that wastes acceptable for disposal in Area G will be limited to those included in the list only.~~	~~Applicant~~	~~Prior to issuance of revised SWFP~~	~~Marin County EHS and BAAQMD~~	~~Prior to issuance of revised SWFP, with periodic inspections and reporting requirements thereafter~~

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.2.14: Acceptance of a greater quantity of petroleum contaminated soil (meeting Regional Water Quality Control Board acceptance criteria) and use of this material as alternative daily cover could result in increased emissions of volatile organic compounds. (LTS)	**3.2.14:** The applicant shall limit the acceptance of PC soils meeting RWQCB acceptance criteria for use as ADC only to those situations in which the PC soils will be exposed to the atmosphere for less than 24 hours. The applicant will ensure that, within 24 hours of receiving PC soils, the PC soils will either be covered with tarps, with waste material, or with other cover material.	Applicant	Upon issuance of revised SWFP	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing
Biological Resources					
3.3.2: Project activities may disturb habitat for special status plant species. (LTS)	**3.3.2*:*** No project actions shall be permitted which result in removal of vegetation above the toe of the slope on the marsh side of landfill levees unless preceded by a survey to establish that no sensitive plant species are present.	Applicant	Prior to commencement of work on levees	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
3.3.3: Project activities may disturb jurisdictional wetlands. (LTS)	**3.3.3*:*** When working near brackish marsh areas, the edge of the marsh shall be clearly marked with orange mesh fencing or equivalent to indicate limits of disturbance.	Applicant	Prior to commencement of work near brackish marsh areas	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
3.3.4: Project activities may have a deleterious effect on special status bird and mammal species. (LTS)	**3.3.4:** Levee reconstruction work during the California clapper rail nesting season (February 1 – August 31) shall be avoided, unless surveys by a qualified biologist indicate that black or clapper rails are not nesting within 500 feet of the work area. Proper precautions shall be taken to confine the necessary disturbances to the smallest area possible. Although salt marsh harvest mice were absent from the landfill in 1992, they should be considered potentially present during high tides, when mice may use the outer levee slope as a refuge. Care should be taken to avoid construction that disturbs the outer levee bank during spring tides.	Applicant	Prior to commencement of work on levee reconstruction	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.3.5: High noise levels from composting operations in the Oxbow area and in Field 1, and from landfill activities in Areas A and B may disturb California clapper rail nesting. (LTS)	**3.3.5a:** Compost machinery, including tubgrinders, trommel screens, and windrow turners, and other composting equipment capable of generating high noise levels shall be positioned to assure that noise levels do not exceed 76 dBA at the marsh boundary east of the levee during clapper rail nesting season (February 1 – August 31). See also Mitigation Measure 3.7-3.	Applicant	Detailed facility design, including location of machinery, to be submitted prior to issuance of revised SWFP	Marin County EHS	Marin County EHS, CDFG, USFWS, periodic inspections
	3.3.5b: If landfill activities are to take place in Areas A or B during clapper rail nesting season (February 1- August 31), they must be preceded by either a biological survey to determine presence or absence of clapper rail nests in the marsh area adjacent to the landfill, or a noise study to determine noise levels from landfill operations at the marsh boundary. Landfill activities may proceed in these areas during nesting season only if it is determined that nests are not present, or that sound levels at the marsh boundary are below 76 dBA.	Applicant	Prior to commencement of activities in Areas A or B during specified season	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
3.3.6: Project activities in the vicinity of the 18-acre storm water impoundment could affect California red-legged frogs or western pond turtle. (LTS)	**3.3.6:** It is understood that the project involves changes in landfill capacity, design, operations, environmental controls, and infrastructure, and that these changes constitute a system of continuous operational actions as opposed to a discrete project timeframe. To avoid the possibility of "taking" (harming or harassing) red-legged frogs or pond turtles, surveys for their presence will be performed following approved protocols for season and intensity of surveys. For red-legged frogs these are four discrete surveys within a one-week period between May and November; pond turtle surveys could be done concurrently. If no frogs or pond turtles were found, the landfill would be considered operating adjacent to unoccupied habitat and no additional mitigation would be necessary. If frogs or pond turtles are found, the provisions described below will be followed. As an alternative to conducting the above surveys, the following measures will be followed without the surveys.	Applicant	Surveys to be completed during specified timeframe, any time before or after issuance of revised SWFP	Marin County EHS, USFWS	Marin County EHS, CDFG, USFWS, as needed

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.3.6 (cont.)	• A 50 ft construction buffer zone will be established between work sites and the storm water pond. The storm water impoundment will be separated from the work areas with "frog-proof" staked fabric silt fencing at the border of the 50 ft buffer zone. The fencing will essentially extend along all areas bordering this impoundment from other landfill areas. The purpose of the fence is to limit site access by construction equipment and limit accidental wildlife movement onto the work sites. The fence shall be buried to a depth of at least 4 inches and be a minimum of 3 feet tall.	Applicant	Within 30 days of confirmation of presence of red-legged frogs or pond turtles	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, as needed
	• An employee education program shall be conducted to explain red-legged frog concerns to landfill employees and contractors. The program shall consist of a brief presentation by persons knowledgeable in species biology and legislative protection and shall include the following: a description of the species and its habitat needs; the occurrence of the species in the project area; status of the species and its protection under the Federal Endangered Species Act, including fines and penalties; and measures being taken to reduce impacts to the species during active landfill or construction operations near sensitive areas.	Applicant	Within 30 days of confirmation of presence of red-legged frogs or pond turtles, and annually thereafter	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, annually
	• If a California red-legged frog is identified in the project operational zone, all work in the immediate area shall immediately cease and the USFWS shall be contacted immediately.	Applicant	Immediately upon identification of red-legged frogs or pond turtles	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, as needed
3.3.7: Removal or remodeling of structures could result in the loss of individuals of special status bat species. (LTS)	**3.3.7:** Prior to removal of the buildings, they will be inspected for the presence of bats during the spring or summer of the year preceding construction by a qualified wildlife biologist. Should any bats be found, a qualified wildlife biologist holding the appropriate permits will remove and relocate the bats.	Applicant	Spring or summer of the year preceding construction	Marin County EHS, CDFG, USFWS	Marin County EHS, CDFG, USFWS, prior to removal or remodeling of buildings

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Geology, Soils, and Seismicity					
3.4.1: A seismic event on one of the active or potentially active Bay Area faults could generate seismic ground motion capable of causing failure of landfill slopes, displacement of perimeter levee slopes, damage to the LCRS, and/or damage to the proposed Area G liner. (LTS)	**3.4.1a:** A detailed Post Earthquake Inspection and Corrective Action Plan was prepared by RLI and approved by RWQCB in October 1995 (RLI, 1995a). The plan focuses on damage caused to groundwater monitoring wells, perimeter levees, and the LCRS following a major earthquake event. This plan includes, but is not limited to, the following: • visual inspection for damage, soil settlement, slope failure, tension cracks, ponding of water, and leachate seeps; • evaluation of water level fluctuations and slope inclinometer measurements of soils displacement; and • replacement of damaged wells and repair or reconstruction of the LCRS and perimeter levees.	Applicant	Already implemented	Marin County EHS	Marin County EHS, as needed
	If groundwater monitoring performed as part of the Post Earthquake Inspection and Corrective Action Plan detects leachate outside the perimeter levee, the facility's collection and containment plan shall be implemented (refer to Mitigation Measure 3.4.7d, below).	See referenced mitigation measure.			
	3.4.1b: Costs to remediate degradation of groundwater or surface water due to earthquake-related landfill and perimeter levee slope displacement, and/or breaching of the leachate collection and removal system will be financially assured by the applicant's Pollution Legal Liability Insurance or an applicant-sponsored trust fund for closure/post-closure activities.	Applicant	Upon issuance of revised SWFP	Marin County EHS	Marin County EHS and CIWMB, periodically
	3.4.1c: The applicant shall update the existing Post Earthquake Inspection and Corrective Action Plan to reflect current understanding of ground motion and seismicity in the Bay Area, to address changes to the landfill site resulting from the proposed project, and to reflect geotechnical analyses conducted for the proposed project. The understanding of earthquake probabilities, predicted ground motion, the attenuation of seismic waves, and other aspects	Applicant	Plan to be updated prior to issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of updated Plan

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.1 (cont.)	of seismology has advanced since the facility's current plan was written in 1995, and the plan shall be revised to reflect this new understanding. Consistent with the current plan, the revised plan shall require immediate inspection and repair of earthquake damage to the landfill slopes, perimeter levees, groundwater wells, and the LCRS. The measures to repair earthquake damage as developed in the revised Post Earthquake Inspection and Corrective Action Plan shall be submitted to the RWQCB for approval and become part of the project. The updated plan also will discuss contingency measures in the event that Redwood Landfill is unusable or inaccessible as a result of a major earthquake in the vicinity.				
3.4.2: Static forces acting on native materials underlying the landfill or on the refuse and cover materials could cause displacement of landfill slopes and the perimeter levee, damage to the LCRS, or differential settlement. (LTS)	**3.4.2a:** The applicant has developed and will utilize criteria for monitoring the lateral and vertical deformation of Bay Mud during fill placement to provide advance warning of potential instability. If the geotechnical monitoring program indicates an increasing rate of deformation in the monitored slopes, filling activity will stop at impacted areas. The applicant also has developed and will utilize criterion for monitoring pore pressures following fill placement to confirm that sufficient consolidation is achieved prior to placement of the next fill lift (GeoSyntec, 1997b). GeoSyntec recommends staged placement of refuse due to the low strength of the underlying Bay Mud. Based upon results of analyses, GeoSyntec developed an observational approach to monitor the stability of the waste fill at the site (GeoSyntec, 1997b). Geotechnical monitoring consists of installing, monitoring, and collecting data from inclinometers and piezometers. Currently there are 10 inclinometers (numbered I-6 through I-15) and 14 piezometers (numbered P-7 through P-10, P-13 through P-17, P-20, P-21, P-23, and P-24) at the site. Based on the results of collected field data, modification to the fill-sequencing plan may be needed. The modification may consist of limiting refuse placement in certain areas to restrict slope deformations, or taking advantage of stronger foundation conditions by increasing landfill capacity.	Applicant	Upon issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.2 (cont.)	GeoSyntec provides quantitative criteria to evaluate when the results of the inclinometers and piezometers indicate a slope failure may occur and filling should stop. These criteria, shown in Table 3.4-4, are based on the ratio of vertical and lateral deformations as provided by inclinometer readings and the rate of excess pore pressure generation for refuse placed as provided by piezometers. The~~ frequency of~~ monitoring and reporting that is included in the geotechnical monitoring program shall occur quarterly, unless the RWQCB or the LEA determines that more frequent monitoring is needed, and will follow ~~thatthat~~ the frequency indicated in the WDRs and/or the SWFP.				
	3.4.2b: The geotechnical monitoring program developed by GeoSyntec to monitor fill placement shall be conducted under supervision of a geotechnical engineer familiar with landfill operations and the behavior of the underlying Bay Mud. Recommendations of the supervising engineer and activities conducted as part of the monitoring plan shall be documented and included in periodic reports submitted to the County of Marin and, if appropriate, the RWQCB.	Applicant	Upon issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
	3.4.2c: If refuse placement activities have stopped, due to indications of an increasing rate of deformation in the monitored slopes, as provided under Mitigation Measure 3.4.2a, and geotechnical monitoring continues to indicate exceedance of the threshold values, the supervising engineer shall implement one or more of the following measures to increase the factor of safety of the slope and be within the geotechnical monitoring criteria described above: • remove refuse in critical areas to reduce the driving force of the slope; • construct a berm or install piles at the toe of the slope to provide resistance to slope movement; and/or • implement other engineering measure(s) to reduce the rate of deformation and prevent slope instability. The appropriate measure or measures to be undertaken shall be assessed by the geotechnical engineer supervising the geotechnical monitoring program, as specified under 3.4.2b.	Applicant	Upon conditions specified	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.2 (cont.)	**3.4.2d:** Depending on findings of the geotechnical monitoring program, the fill sequencing plan shall be modified, as needed, to slow the rate of fill if Bay Mud strength is less than anticipated. The change in rate of fill shall be determined by quantitative threshold values that shall be incorporated into the geotechnical monitoring program. Any modifications to the fill sequencing plan shall be reported to the LEA and the RWQCB.	Applicant	Upon conditions specified	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed
3.4.3: Differential settlement of the refuse and the underlying Bay Mud, causing cracks in the levee or final cover and damage to the LCRS, could occur as additional refuse is placed on the landfill. (LTS)	**3.4.3:** As part of the geotechnical monitoring program, the applicant will inspect quarterly for cracks in cover material and monitor pressure and volume changes in the landfill gas collection system. If measured settlement or deformation rates begin to increase, the inspection frequency will be increased to weekly. If monitoring reveals evidence of differential settlement, the following measures will be implemented, as needed: • if settlement cracks are observed in the levee or final cover, the cracks shall be re-graded to seal them; and • if the LCRS or landfill gas collection system is damaged, pipes shall be repaired and/or replaced.	Applicant	Upon issuance of revised SWFP and quarterly or more frequently (as described) thereafter	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
3.4.4: Precipitation contacting the landfill cover and other unpaved areas of the landfill could generate storm water runoff with sufficient velocity to dislodge and transport soil and sediment, resulting in the formation of erosion features that could damage portions of the landfill. (LTS)	**3.4.4a:** RLI will maintain a Storm Water Pollution Prevention Plan (SWPPP) as required under their storm water discharge permit. The SWPPP will provide necessary Best Management Practices to control storm water runoff and reduce erosion. RLI prepared a SWPPP (RLI, ~~2000~~2003) for compliance with Provision C.2 of the General Industrial Storm Water Discharge Permit issued by the State Water Resources Control Board (SWRCB) and enforced by the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. In addition, the landfill was designed in accordance with CCR Title 27, §20365, which (as outlined above) specifies requirements and performance standards for precipitation and drainage control for active Class III landfills (GeoSyntec, 1998).	Applicant	Already implemented	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.4 (cont.)	**3.4.4b:** According to the applicant's SWPPP (RLI, 2000), sediment and erosion control features implemented include: • placement of yard waste and grass seeds on slopes to promote vegetation of slopes; • top deck berms; • collection inlets; • downdrain pipes; • hay bales; • silt fences; and • directing storm water flows to the main storm water impoundment in the southern part of the site or a 1/2 acre pond in the western-central portion of the site for settlement of suspended sediments prior to discharging offsite. ~~(The 2000 SWPPP states that storm water flows also may be directed to an approximately one acre impoundment [shown as 1.5 acres in Exhibit 2 of the SWPPP]; however, since the 2000 SWPPP was produced, this impoundment has been incorporated into the Area G waste management unit and is no longer available to accept storm water flows.)~~ RLI has stated that the SWPPP will be amended whenever a change in design, construction, operation, or maintenance occurs that has a significant potential for pollutants to discharge to the adjacent waterways.	Applicant	Upon issuance of revised SWFP; amended SWPPP implemented as needed	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections; verification of amended SWPPP upon its submission
	3.4.4c: A final landfill closure and post-closure maintenance and monitoring plan, as per federal and state regulations, will need to be implemented (GeoSyntec, 1998). Preliminary closure and post-closure plans were provided in the JTD (GeoSyntec, 1998). Preliminary closure and post-closure maintenance activities proposed to reduce the effects of surface water runoff and erosion were detailed in the JTD's Sections 8 and 9 and included:	Applicant	By regulatory deadline for submission of Final Closure and Post-Closure Maintenance Plans	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of Plans

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
	• Applicable final cover design to reduce infiltration and reduce surface water runoff velocity • Minimum grading requirements for the final cover				
3.4.4 (cont.)	• Environmental monitoring and control systems including final cover, surface water, and leachate management. According to GeoSyntec (1998), reporting requirements and schedule will be further defined in Final Closure and Post-Closure Maintenance Plans.				
	3.4.4d: Prior to project implementation the applicant shall update the facility's SWPPP as needed to accurately reflect existing conditions and features. Because Area G is to be developed as a disposal cell, the remaining 1/2 acre stormwater pond in this area, referenced in the 2003 revision of the SWPPP, will eventually be eliminated; such change shall be addressed in a timely revision of the SWPPP. ~~The revision shall include the removal of references to the pond at Area G as an area to which storm water flows could be directed, since the pond is now part of the Area G waste management unit~~. As required by NPDES provisions, the revised SWPPP shall be kept on site and made available to RWQCB staff upon request.	Applicant	Revised SWPPP to be prepared and submitted prior to issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, prior to issuance of revised SWFP and periodically thereafter
3.4.5: The existing surface drainage system ~~s~~ may be inadequate for a Class III landfill. (Significant)	**3.4.5:** Implement Mitigation Measure 3.5.9 (i.e., ~~prior to reclassification of Area G as a Class II unit,~~ the applicant shall produce~~,~~ and present to the ~~LEA and~~ RWQCB for approval~~,~~ a report demonstrating that precipitation and drainage control facilities ~~affecting Area G~~ meet Title 27 requirements, and provide a copy of the report to the LEA ~~for Class II units~~).	See referenced mitigation measure.			

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.6: A five-foot separation does not exist between the base of the landfill and the underlying groundwater. (LTS)	**3.4.6:** The applicant has proposed a leachate collection and removal system (LCRS) as an engineered alternative to the Title 27 requirement of a minimum separation of five feet between waste and groundwater (GeoSyntec, 1998). According to the applicant, the cost to modify the landfill to meet the five-foot separation requirement would be too great; thus the applicant has filed an exemption request with the RWQCB (GeoSyntec, 1998). Title 27 provides for consideration of engineering alternatives if the minimum five-foot separation between the landfill and underlying groundwater is not possible or would be prohibitively expensive to provide. As described in the Joint Technical Document (GeoSyntec, 1998), the underlying Bay Mud has relatively low permeability (less than 10^{-6} cm/s) and the thickness of the Bay Mud deposit ranges from 7 to 45 feet within the landfill's footprint. Given the thickness of the Bay	Applicant	Part of LCRS has already been constructed. Remainder of LCRS must be constructed prior to commencement of landfilling in areas currently not served by the LCRS.	Marin County EHS and RWQCB	Marin County EHS, CIWMB and RWQCB, upon completion of each new LCRS segment
3.4.6 (cont.)	Mud, its low permeability, and the preferential flow direction of the leachate along the refuse-Bay Mud interface, significant migration of leachate below the site would not occur. The landfill's LCRS (described in greater detail below, under Impact 3.4.7) would intercept leachate flowing along the refuse-Bay Mud interface, and the leachate would be pumped to the onsite leachate pond. The results of a study on a perimeter LCRS and its effect on leachate migration (MET and Sanifill, 1995a) indicate the preferential flow of the leachate for the entire site would be towards the perimeter LCRS. Therefore, because the LCRS prevents the contamination of the underlying groundwater by directing the leachate flow away from the underlying groundwater, the design can be considered an adequate engineered alternative to the five feet separation requirement (Treadwell & Rollo, 2002).				

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7: If not properly designed, the proposed Leachate Collection and Recovery System (LCRS) could allow leachate to migrate off-site and potentially contaminate off-site groundwater and surface water. (LTS)	**3.4.7a:** According to the applicant, leachate is managed at the existing facility in accordance with the RWQCB-approved Leachate Management Plan prepared by CH2MHill (1992) (GeoSyntec, 1998). The Joint Technical Document (GeoSyntec, 1998) description of existing leachate management includes the following activities to minimize the production of leachate and promote the reuse of collected leachate. Although not explicitly stated in Chapter 6 (Proposed Facility Modifications) of the Joint Technical document, this analysis assumes these practices will be continued with the proposed project. • placement of well-compacted, vegetation-free intermediate cover (defined in 27 CCR §20164 as cover material placed on all fill surfaces where additional cells are not to be constructed for 180 days or more, to control vectors, fires, odors, blowing litter, scavenging, and drainage) over the refuse; • grading of daily, intermediate, and final cover to minimum 3 percent slopes to promote surface-water runoff from the landfill; • installation and continuous operation of a perimeter LCRS around the landfill; • placement of final cover in phases throughout the life of the landfill as final grades are reached; and • use of collected leachate for dust control on access roads and intermediate covers as approved by regulatory agencies.	Applicant	Already implemented	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections
	3.4.7b: To address the issue of leachate leakage from the leachate pond, RLI prepared a Leachate Facilities Leak or Spill Contingency Plan (RLI, 1995b). RLI site operations personnel routinely monitor the leachate pond in association with daily activities and the site operations supervisor performs weekly formal monitoring/inspection.	Applicant	Already implemented	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	**3.4.7c:** Following a significant seismic or rare rainfall event, RLI will initiate an immediate inspection of the leachate pond containment facilities as part of their contingency measures. If any noticeable damage is observed during these inspections, landfill or contracted equipment will be used to repair and control all minor leaks. If a major leak is evident, Redwood will take the following immediate measures to ensure control of the leachate release (RLI, 1995b): • construction of a dike using available soil; • construction of temporary berms; • excavation of additional channels; • construction of a temporary leachate storage pond in the Oxbow area (the Leachate Facilities Leak or Spill Contingency Plan identifies Fields 2 and 3 and the narrow strip between the eastern edge of the existing leachate pond and Field 5 as the location of the contingent leachate pond); and • pump water into onsite ponds as emergency disposal of "clean" leachate in heavy rainfall. (The Leachate Facilities Leak and Spill Contingency Plan, produced in 1995 [RLI, 1995b], does not identify specific "onsite ponds" to which it refers. The plan states that additional pond storage capacity was planned at the time, through the construction of an additional leachate storage/ evaporation pond in the summer of 1996.)	Applicant	As needed	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	**3.4.7d:** If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter levee, RLI shall follow Title 27 CCR regulations (e.g., Section 20385 et seq.) and work with the RWQCB in the development of an Evaluation Monitoring Plan and/or an Engineering Feasibility Study to determine the appropriate site specific methods for evaluating the scope of a release, its mitigation, and subsequent monitoring program or corrective action program pursuant to 27 CCR Section 20385 and Section 20430. The~~the~~ following contingency ~~plan will~~ measures may be appropriate and would be implemented if needed and in coordination with RWQCB requirements: • ~~Containment will involve i~~Installation of a geosynthetic membrane across the length of a trench constructed in the targeted zone along the site perimeter to contain the release. The geosynthetic barrier would reduce the rate of off-site migration of the release while also reducing groundwater inflow to the collection system. • ~~The release will be collected~~ Collection of the leachate by installing a French drain in the trench. A sump in the trench would be pumped to prevent hydraulic head buildup up-gradient of the containment barrier. Mitigation monitoring locations in Bay Mud, refuse, and surface water will determine the necessity for implementing the mitigation measures outlined for this impact (i.e., increase in leachate extraction rate, contingency measures for capture of leachate migration). Financial assurance for the system to capture and/or contain leachate release beyond the perimeter levee would be provided for by applicant insurance.	Applicant	Upon issuance of revised SWFP and WDRs	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections and as needed

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	**3.4.7e:** ~~Prior to the placement of wastes at Areas E and F, t~~The applicant ~~shall~~ has completed installation of the ~~at these areas a~~ LCRS at Areas E and F, thus completing the perimeter LCRS~~as was installed at Areas B, C, and D~~. ~~Although "installation and continuous operation of a perimeter LCRS around the landfill" is listed as one of the activities performed to manage leachate in Chapter 5, Existing Facility, of the Joint Technical Document (GeoSyntec, 1998), no LCRS is currently in place in Areas E, F, or G. The applicant has proposed a separate LCRS for Area G in conjunction with the proposal to use Area G as a Class II unit (discussed under Impact 3.4.10). If waste were placed in Areas E or F without a LCRS, leachate generation would be a significant impact. Ensuring that the LCRS is in place prior to waste placement at Areas E or F would ensure that this impact at these areas would be less than significant.~~ To further limit the potential for significant leachate accumulation in the landfill, RLI shall undertake a leachate pumping program in coordination with the RWQCB whereby leachate is initially extracted from up to 13 existing landfill gas wells in the interior of the landfill. The pumping shall be selectively monitored for pumping times, rates and recovery to determine well productivity and effectiveness for use in future additions to the pumping program. Chemistry tests on pumped liquids will be selectively conducted to determine the source of gas well liquid in order to differentiate between leachate and groundwater. Additional dual leachate/gas collection wells shall be installed to the base of the landfill or to sea level, whichever is higher, and shall be equipped with leachate extraction pumps. The number and spacing of leachate extraction wells shall be augmented each year until a consistent decrease in leachate volume can be empirically verified and is sufficient to achieve the long-term objective of removing the leachate mound.	Applicant	~~Prior to placement of wastes in Areas E and F~~ Immediately	~~Marin County EHS and~~ RWQCB and Marin County EHS	RWQCB and Marin County EHS, CIWMB;~~, and RWQCB, upon completion of each LCRS segment~~ Efficiencies to be demonstrated within 5 years

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	Empirical verification of initial leachate volume reduction and verification that an appropriate number of wells and pumps have been installed shall be provided to the RWQCB and shall include the satisfaction of the following performance criteria: 1) Demonstrate, using a refined water balance model approved by the RWQCB, that the leachate extraction rate exceeds the leachate generation rate; and 2) Demonstrate a measurable and quantifiable decrease in leachate volume within the landfill using leachate elevation measurements from either monitoring wells or landfill gas extraction wells located in the interior of the landfill. Once it has been established that the leachate collection and removal system size and pumping rate is sufficient to reduce the leachate volume, the system shall be maintained and operated such that leachate volume is steadily reduced. Leachate levels shall be reduced to a sustainable level over a period of 5 years. The achievement of the sustainable level shall be empirically verified by the achievement of at least one of the following three performance criteria: 1) Demonstrate that the piezometric head in the basal (laterally continuous) leachate is no greater than 1 ft MSL; 2) Demonstrate that the extracted leachate is chemically indistinguishable from the groundwater in the vicinity of the landfill; or 3) Demonstrate that an inward gradient has been achieved such that leachate flows from the perimeter of the landfill towards the center of the landfill The performance criteria evaluations shall account for seasonal fluctuations and be capable of demonstrating performance achievement on a year-to-year basis				

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	**3.4.7f:** RLI shall update its Leachate Facilities Leak or Spill Contingency Plan to accommodate proposed project changes. At a minimum, the revised plan shall address the following issues: (1) Areas in the Oxbow shown in the existing plan (RLI, 1995b) as the location of the contingent leachate pond (Fields 2 and 3 and the narrow strip between the eastern edge of the existing leachate pond and Field 5) are proposed under the project to be used for composting and co-composting, and Fields 3, 4, and 5 are proposed under the project to be used for composting, co-composting, and are "also available for Class II leachate impoundments." The revised leachate contingency plan shall identify which area or areas will be used for contingent leachate storage or, alternatively, explain/clarify how composting operations and emergency leachate storage will be accommodated in the same area. (Refer to Measure 3.5.3a, 3.5.3b, and 3.5.3d regarding leachate potentially generated at these new composting areas.)	Applicant	Prior to project approval	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of updated Plan
	(2) Because an additional leachate storage/evaporation pond that, according to the 1995 Leachate Facilities Leak and Spill Contingency Plan (RLI, 1995b), was to have been constructed in the summer of 1996 to provide additional pond storage capacity, has not been constructed, the revised plan shall also include the reason(s) that the additional leachate storage/evaporation pond is no longer planned or needed, especially in the event of a leak at the existing 11-acre leachate pond or malfunction of the leachate vaporator.				

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.7 (cont.)	(3) With regard to potential overtopping of the leachate pond during rare rainfall events, the 1995 plan indicated that pumping directly into San Antonio Creek, if leachate water was confirmed to be clean, was the most effective contingency measure to quickly evacuate the leachate pond. The updated leachate contingency plans shall not rely solely on such a measure for leak or spill contingencies, but shall include other contingency measures as discussed under item (1), above (i.e., identification of the location of on-site contingent impoundments), that prevent the off-site release of leachate. The updated Leachate Facilities Leak or Spill Contingency Plan shall be submitted to the LEA and the RWQCB prior to project approval. Approval of use of Oxbow areas for composting, where the applicant has recently constructed a compost pad, shall be conditioned upon approval of the updated leachate contingency plan, in addition to other relevant approvals required as mitigations in this report.				
3.4.8: The increased generation of leachate that would result from the project could surpass the capacity of the LCRS, resulting in the off-site release of leachate and the contamination of off-site groundwater. (LTS)	**3.4.8a:** The applicant proposes to use leachate that tests "clean," according to standards established by the RWQCB, for composting quench water, if approved.	Applicant	Upon issuance of revised SWFP and WDRs	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, approval prior to issuance of revised SWFP and WDRs; periodic inspections thereafter

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
	3.4.8b: The applicant has installed a leachate vaporator to destroy collected leachate, as part of the facility's LCRS. The vaporator has not previously been evaluated and is a component of the project evaluated in this EIR. In addition, actions undertaken as part of Mitigation Measures 3.4.7a, including the grading of slopes to promote runoff, the timely placement of intermediate and final cover, and the use of leachate for dust control, would help enhance LCRS capacity by limiting leachate generation and making use of the leachate that is generated.	Applicant	Already implemented	Marin County EHS, BAAQMD, and RWQCB	Marin County EHS, CIWMB, BAAQMD, and RWQCB, periodic inspections

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.8 (cont.)	**3.4.8c:** RLI shall update their Leachate Management Plan so that, at a minimum, a single Leachate Management Plan serves as the current plan for the landfill. The plan shall be consistent with all aspects of the applicant's proposed project and with mitigation measures identified in this SEIR, including the currently-proposed LCRS design;~~,~~ management practices to limit leachate production and manage the leachate that is generated;~~,~~ and the most current leachate flow rates based on the proposed LCRS design, the most recent and comprehensive leachate generation studies, ~~and the much larger capacity provided by the proposed landfill geometry,~~ and empirical data of actual leachate flow rates since installation of the LCRS. The Plan shall demonstrate that the LCRS components and leachate impoundment(s) provide adequate capacity as required under 27 CCR §20340 (i.e., twice the maximum daily volume anticipated), including adequate conveyance and storage capacity during the wettest months of the year. (The MET/Sanifill analysis [1995a] indicated that seasonal flow rates may be as much as 4 to 5 times the calculated values for long-term and short-term flows, for one or two months each year.) The updated plan shall address and remedy the current situation in which a 1992 study and plan is cited for leachate management practices and the LCRS design (but not for the leachate flow rates it presents), a 1995 study is cited for leachate flow rates, although these ~~cited leachate flow~~ rates are inconsistent with reported actual use ~~based on the currently permitted landfill geometry and fill sequencing, rather than the proposed landfill geometry and fill sequencing (as well as on refined alternatives to the 1992 LCRS design)~~, and estimates of the quantity of leachate expected to be utilized or consumed by various landfill facilities and activities are not provided in a discussion of	Applicant	Prior to project approval	RWQCB, Marin County EHS~~,~~ ~~RWQCB~~	RWQCB, Marin County EHS, CIWMB, ~~and RWQCB,~~ upon submission of updated Plan and prior to project approval; Annual updates to the Leachate Management Plan; Monitoring results submitted quarterly to RWQCB and Marin County EHS

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.8 (cont.)	system capacity, if at all. In demonstrating that adequate leachate capacity exists to prevent the off-site discharge of leachate, the updated plan shall include a complete water balance model that shows ~~diagram and/or a clearly written text presentation showing~~ quantitatively (using both actual flow rates from operation of the LCRS to date, as well as estimated projections) the amount of leachate that is expected to be generated and how it is managed to prevent any off-site discharges. The water balance model ~~demonstration of capacity~~ shall include any elements that are expected by the applicant to be considered by permitting agencies in their assessment of the leacahte system's capacity (e.g., the anticipated quantities of leachate to be used for dust control and quench water [if approved], and the basis for such estimates, if these are to be considered in the assessment of system capacity). The Leachate Management Plan shall incorporate elements of the report required by Mitigation Measure 3.5.4 (concerning composting contact water) to ensure that the plan also addresses leachate generated by the expanded composting operations. The updated Leachate Management Plan shall be submitted to the LEA and RWQCB prior to project approval. RLI shall review annually and if necessary revise the updated Leachate Management Plan, including the water balance model, taking into consideration monitoring results that RLI collects and presents quarterly to the RWQCB and the LEA. These monitoring data shall include the amount of leachate extracted from the landfill, the elevation of leachate within monitoring and extraction wells, and the disposition of collected leachate. RLI shall present the results of the annual review and any revisions to the RWQCB for approval, with a copy sent to the LEA.				

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.8 (cont.)	In addition, the implementation of Mitigation Measure 3.4.7f, updating the landfill's Leachate Facilities Leak and Spill Contingency Plan, will help ensure that adequate capacity exists in the event of a leak in the existing pond.				
3.4.9: Proposed modifications to the final cover design could adversely impact landfill stability or result in the degradation of groundwater or surface water quality. (LTS)	**3.4.9a:** To ensure the adequacy of cover materials to resist sliding (failure) under static or dynamic conditions, RLI's geotechnical consultants established the degree of shear strength (resistance to shear, or deformation in a direction parallel to planes of contact) any material used for the cover would need to possess (GeoSyntec, 1998). The required shear strength of a cover material (expressed as the angle of friction, where the lower the angle of friction the weaker is the material and vice versa) varies depending on whether or not seepage would be present, the cohesion of the materials within each layer, and the degree of adhesion between layers in contact. Materials used for the final cover would require the following specified degrees of shear strength. To maintain a static factor of safety against sliding, assuming no seepage, each of the cover materials must have shear strengths of friction angle ϕ greater than 34°, if no cohesion is present, or friction angle ϕ greater than 9°, if 50 lb/ft^2 of cohesion is present. Intermediate values of friction angle ϕ are required for cohesion between 0 and 50 lb/ft^2. Each material interface must have similar shear strength requirements for friction angle δ and adhesion. If seepage is encountered through the entire thickness of the vegetative cover, the required shear strengths become more restrictive. Without cohesion/adhesion, friction angles in excess of 49° would be required, while 50 lb/ft^2 of cohesion/adhesion reduces the requirement to 3°. Because it is unlikely that a 49° friction angle could be achieved with conventional cover materials, only materials that have sufficient cohesion and interfaces with sufficient adhesion will be used. The drainage layer will be properly designed to prevent seepage forces through the entire depth of the vegetative layer and will reduce the shear strength requirement for the long term seepage condition.	Applicant	After issuance of revised SWFP	Marin County EHS, RWQCB	Marin County EHS, CIWMB, and RWQCB, during and after construction

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.9 (cont.)	To prevent permanent seismic displacement in excess of 12 inches, the cover shear strength friction angles must exceed 34° in the absence of cohesion/adhesion and must exceed 9° when coupled with 50 lb/ft^2 cohesion/ adhesion (GeoSyntec, 1998).				
	3.4.9b: Preconstruction testing will be conducted to ensure that the minimum material strength is achieved.	Applicant	Prior to construction	Marin County EHS, RWQCB	Marin County EHS, CIWMB, and RWQCB, to review results of testing prior to construction
3.4.10: The proposed increase in the acceptance rate for designated waste ~~use of Area G as a Class II landfill~~ could result in groundwater contamination from escaping ~~Class II~~ leachate and waste. (Significant)	**3.4.10a:** The applicant has ~~committed to~~ constructed ~~a liner and~~ a perimeter trench LCRS and has agreed to augment the leachate collection system by pumping from wells located in the interior of the landfill (see Mitigation Measure 3.4.7g). ~~in Area G that complies with applicable state and federal regulations governing Class II waste disposal facilities, including an engineered alternative to the requirement to maintain five feet of separation between groundwater and the base of the landfill~~.	Applicant	After issuance of revised SWFP and WDRs	RWQCB, Marin County EHS ~~and RWQCB~~	RWQCB, Marin County EHS, CIWMB, ~~and RWQCB~~ to monitor during and after construction
	3.4.10b: Maintain receipt of designated waste at currently permitted levels. ~~Prior to issuance of a revised Solid Waste Facilities Permit and revised Waste Discharge Requirements, the applicant shall submit a detailed list of material types and chemical concentration limits of wastes proposed for placement in Area G to Marin County Environmental Health Services and the Regional Water Quality Control Board~~.	Applicant	Prior to issuance of revised SWFP and WDRs	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, prior to issuance of revised SWFP and WDRs, and ongoing

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.10 (cont.)	**3.4.10c:** ~~If the Regional Water Quality Control Board finds that the applicant's proposed design for Area G is not adequate for protecting groundwater quality from the material types and chemical concentrations proposed for placement therein (as per Mitigation Measure 3.4.10b), Regional Board staff may suggest to the applicant modifications to their proposal, including modifications to the design of Area G, and lower constituent concentration limits or elimination of certain material types for placement in Area G. The Regional Water Quality Control Board may then re-consider a revised proposal.~~ The applicant could construct a cell that meets Title 27 prescriptive standards for a Class II cell and seek to permit it as such, and, if the cell was so permitted, seek to change the quantity of designated waste received.	RWQCB, Marin County EHS, CIWMB	After receiving list specified in 3.4.10b	RWQCB, Marin County EHS, CIWMB	RWQCB, ~~after receiving list specified in 3.4.10b~~Marin County EHS, CIWMB, upon receipt of application
	3.4.10d: ~~If the Regional Water Quality Control Board finds that the applicant's proposed design for Area G is adequate for protecting groundwater quality from the material types and chemical concentrations proposed for placement therein (as per Mitigation Measure 3.4.10b), the Regional Board shall provide evidence of this finding, along with any necessary conditions, to the Marin County Local Enforcement Agency (LEA). The LEA will then prepare revisions to the Solid Waste Facilities Permit that incorporate these conditions.~~	~~RWQCB, Marin County EHS~~	~~Upon completion of review by RWQCB, as described in 3.4.10c~~	~~Marin County EHS, RWQCB~~	~~Marin County EHS, CIWMB, RWQCB, prior to issuance of revised SWFP~~
	~~**3.4.10e:** If the Regional Water Quality Control Board is unable to conclude, based on information provided by the applicant, that the proposed design for Area G is suitable for use of this unit as a Class II waste disposal unit, then further consideration of use of Area G as a Class II waste disposal unit will require further environmental review under CEQA after submission of a sufficiently complete proposal by the applicant.~~	~~RWQCB, Marin County Community Development Department~~	~~Upon completion of review of information provided by applicant~~	~~RWQCB, Marin County CDA-Planning~~	~~Marin County CDA-Planning and EHS, prior to issuance of revised SWFP~~

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.11: The proposed management of the buried waste in the southwest corner could result in soil or groundwater contamination. (LTS)	**3.4.11a:** Prior to landfill closure, the applicant shall prepare and submit for approval to the RWQCB and the LEA a final Closure and Post-Closure Maintenance plan for this waste unit as required under Title 27, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance. The Closure and Post-Closure plan shall demonstrate that the proposed alternative final cover design and existing base underlying the waste unit, in conjunction with post-closure monitoring, will continue to isolate the waste in the 11.5-acre unit and prevent the degradation of groundwater. The closure and post-closure plan shall demonstrate that the proposed alternative final cover will continue to isolate the waste in this unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards. This measure is consistent with Title 27 §21090, which provides that the RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards. The closure and post-closure plan also shall demonstrate that the proposed alterative liner (i.e., the materials underlying the waste unit) will meet the performance criteria for containing waste and preventing the degradation of waters of the state required under Title 27 Section 20310. The description of the proposed alternative liner will include information on the geologic unit(s) (including thicknesses thereof) underlying the refuse across the 11.5-acre unit. Technical data from extensive groundwater monitoring and Hydrologic Evaluation of Landfill Performance (HELP) model results may be necessary to demonstrate to the RWQCB that no significant groundwater impact will result from the proposed alternative final cover and liner. <u>Pursuant to CEQA Guidelines, the revised Closure and Post-Closure Maintenance Plan will be subject to additional review under CEQA prior to approval.</u>	Applicant	Prior to landfill closure	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, prior to landfill closure

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
	3.4.11b: The applicant shall continue to implement the existing groundwater monitoring program for this area. If leachate is detected by the monitoring program, the applicant will implement appropriate measures to prevent the off-site release of such leachate. Such measures may include installation of an extraction well, pumping the detected leachate plume at a rate sufficient to prevent its release off-site, and disposing of the collected leachate at the 11-acre leachate pond. (Because this 11.5-acre waste unit does not have an LCRS trench system, remedial actions here would necessarily be different from those identified for the permitted landfill footprint under 3.4.7d, above.)	Applicant	Already implemented; to continue	Marin County EHS and RWQCB	Marin County EHS, CIWMB, RWQCB, ongoing
	3.4.11c: If the RWQCB or LEA ~~finds~~ determine that the applicant's ~~proposed~~ revised Closure and Post-Closure Maintenance Plan for this waste unit is inadequate to protect groundwater quality, then the applicant shall excavate the refuse as previously proposed and dispose of it within the permitted landfill footprint. The estimated 65,000 cubic yards of refuse is equivalent to approximately 5 percent of the air space consumed annually, assuming the waste acceptance rate proposed under the project, or about 15 days' worth of landfill space (refer to Appendix A, Site Life Calculations).	Applicant	Upon completion of review of Closure Post-Closure Maintenance Plan	Marin County EHS and RWQCB	Marin County EHS, CIWMB, RWQCB, upon completion of review of Closure Post-Closure Maintenance Plan
	3.4.11d: Without mitigation, excavation of 65,000 cubic yards of refuse would have adverse impacts on air quality due to dust and equipment emissions. If Mitigation Measure 3.4.11c is required, it shall be implemented in conjunction with Mitigation Measures 3.2.1a-c, identified in this EIR, to reduce impacts of construction activities on air quality, and in conjunction with Mitigation Measures 3.2.2a-e, to reduce impacts associated with equipment and truck emissions of criteria air pollutants.	See referenced mitigation measures.			

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.12: Due to the increase of load pressure by waste placement and the decrease of pore water velocity during Bay Mud consolidation, a leachate mound could be created that will create sufficient uplift pressure on the landfill to trigger slope failure. (LTS)\	**3.4.12a:** As described under Impact 3.4.6 and 3.4.7, the applicant has proposed to install a LCRS around the perimeter of the landfill footprint and will continue to manage leachate in accordance with the facility's RWQCB-approved Leachate Management Plan. The LCRS will include a gravel-filled trench that is lined with a collection pipe and graded to sumps that are spaced along the trench alignment. The sumps are fitted with automatic level control pumping systems that are set to maintain an elevation of -1 feet MSL within the system, to promote the flow of leachate and outboard groundwater toward the LCRS trench (GeoSyntec, 1998). The LCRS will help to prevent leachate mounding within the landfill.	Applicant	Already implemented; ongoing	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
	3.4.12b: If quarterly measurements of leachate elevations in leachate wells indicate that buildup is occurring, the results of geotechnical monitoring required under Impact 3.4.2 shall be evaluated to assess the effect of the leachate mound on slope stability. The assessment shall be conducted under the supervision of the geotechnical engineer familiar with landfill operations and the behavior of the underlying Bay Mud, as specified in Mitigation Measure 3.4.2b. If the geotechnical assessment determines that the leachate elevation ~~uplift pressure~~ needs to be reduced to maintain landfill stability, RLI will immediately undertake steps to reduce the height of the leachate mound ~~shall be reduced~~. Measures that could be taken to reduce the height of the mound include (1) increasing the rate of leachate removal by adjusting the settings on the automatic pumps in the perimeter sumps and in the landfill gas/leachate extraction wells to commence operation at lower leachate levels, and (2) ~~utilizing temporary pumps placed either within the LCRS sump or installed within the landfill where the leachate mound is observed to increase leachate volume removal i~~mplementation of Mitigation Measure 3.4.7e.	Applicant	Upon detection of problem	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.4.13: Excess pore pressure resulting from infiltration of quench water for composting operations conducted on the permitted landfill area could cause slope instability. (LTS)	**3.4.13a:** All composting within the permitted landfill footprint shall be conducted on a low permeability pad that meets permeability specifications established by the RWQCB.	Applicant	Upon issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections
	3.4.13b: Runoff from composting areas within the permitted landfill footprint shall be controlled and transmitted to the leachate collection pond or other leachate storage or treatment area.	Applicant	Upon issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections
	3.4.13c: The applicant shall comply with all provisions of CCR Title 14, §17865 and Subtitle D, 40 CFR 258.28a.	Applicant	Upon issuance of revised SWFP	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections
Hydrology and Water Quality					
3.5.1: Displacement of landfill slopes, the perimeter levee, or damage to the LCRS due to static or dynamic forces could allow leachate or refuse to reach and potentially contaminate surrounding surface water bodies, block adjacent drainages, or allow surrounding floodwaters to flood the landfill. (LTS)	**3.5.1a:** Implement Measures 3.4.1a and 1b (regarding RLI's Post Earthquake Inspection and Corrective Action Plan and ensuring that costs to remediate groundwater or surface water degradation resulting from earthquake-caused damage to landfill or levee slopes or the LCRS are financially assured), and Measure 3.4.2a (regarding utilization of criteria developed by GeoSyntec for monitoring the lateral and vertical deformation of Bay Mud to provide advance warning or potential landfill instability).	See referenced mitigation measures.			
	3.5.1b: Implement Measures 3.4.1c (i.e., update the facility's Post Earthquake Inspection and Corrective Action Plan to address changes resulting from the project), and Measures 3.4.2b (regarding the conduct and reporting of the geotechnical monitoring program), 3.4.2c (regarding actions to take in response to indications of an increasing rate of deformation in the monitored slopes), 3.4.2d (regarding the modification of the fill sequencing plan, as needed, if the strength of the Bay Mud is less than anticipated), and Measure 3.4.3 (regarding regular inspection for cracks in cover material and regular monitoring of pressure and volume changes in the landfill gas collection system).	See referenced mitigation measures.			

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.2: The off-site migration of landfill leachate could contaminate nearby surface waters. (LTS)	**3.5.2a:** Implement Mitigation Measures 3.4.7a (regarding the continued management of leachate in accordance with the landfill's RWQCB-approved leachate management plan), 3.4.7b (regarding RLI's preparation of a leachate facilities leak and spill contingency plan and regular monitoring of the leachate pond), 3.4.7c (regarding the immediate inspection of leachate pond containment facilities after any significant seismic or rainfall event, and actions to take if a major leak is evident), and 3.4.7d (regarding evaluation and development of a monitoring and corrective action program ~~the implementation of a collection and containment plan~~ if the groundwater monitoring program detects leachate outside the perimeter levee), and Mitigation Measure 3.4.10a (regarding RLI's ~~commitment to~~ construction of a perimeter trench ~~a liner and~~ LCRS and augmentation of the LCRS by the pumping of leachate from wells in the interior of the landfill ~~in Area G that complies with applicable state and federal regulations governing Class II waste disposal facilities~~).	See referenced mitigation measures.			
3.5.2 (cont.)	**3.5.2b:** Implement Mitigation Measure 3.4.7e (regarding the installation of a LCRS at Areas E and F and implementation of a pumping program in the interior of the landfill ~~prior to the placement of wastes in those areas~~), Mitigation Measure 3.5.3b (to ensure that composting occurs on appropriate pads that are sufficiently impermeable), Mitigation Measure 3.5.3d (to ensure that contact water [leachate] from the proposed composting, co-composting, and sludge processing areas continues to be managed separately from non-contact runoff), and Mitigation Measure 3.4.7f (regarding the landfill's Leachate Facilities Leak or Spill Contingency Plan).	See referenced mitigation measures.			

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.3: The proposal to no longer manage water that has contacted compost, co-compost, sludge, and materials proposed to be used as ADC, separately from non-contact water could degrade the water quality of the storm water impoundment and ultimately transport contaminants to off-site surface waters. (LTS)	**3.5.3a:** Outside of areas with a LCRS, future composting/co-composting activities will be conducted on appropriate composting pads to limit infiltration and to control run-off (GeoSyntec, 1998). Based on the applicant's "Comments and Project Clarification Discussion [on the project]" (RLI/WM, 2000), wet-weather composting will not take place in unlined areas. Thus, year-round composting will take place only on lined pads (i.e., lined with 2 feet of clay, as in Fields 1 and 2). Pads will be designed and constructed to promote surface drainage and prevent ponding. Portions of the composting pads may be surfaced with 6 to 12 inches of gravel, asphalt, or other suitable material to provide for all weather access (GeoSyntec, 1998). Dry-weather composting will be conducted on pads comprised of a minimum of either 1 foot of native soils or recompacted imported soils possessing a maximum saturated hydraulic conductivity of 1×10^{-6} centimeters per second.	Applicant	Prior to issuance of revised Composting Facilities Permit and revised WDRs	Marin County EHS, RWQCB	EHS and RWQCB prior to issuance of revised permits
	3.5.3b: For composting operations outside the landfill footprint, including any operations in the area currently known as the main sludge impoundment, pads used for both wet weather and dry weather operations must meet permeability specifications established by the RWQCB. Although Bay Mud is generally a low-permeability soil, lenses of more permeable sand or organic material are known to occur within it. The applicant shall provide documentation to the RWQCB of site-specific studies documenting that areas proposed to be used for composting meet RWQCB specifications throughout the proposed area.	Applicant	Prior to issuance of revised Composting Facilities Permit and revised WDRs	Marin County EHS, RWQCB	RWQCB prior to issuance of revised WDRs; periodic inspections
	3.5.3c: For composting or co-composting operations conducted on any portion of the landfill that already has a LCRS (i.e., within the permitted 223-acre landfill footprint), implement Mitigation Measure 3.4.13c (regarding Title 14 Section 17865 requirements for the siting of composting facilities on landfills). See also Impact 3.4.13 (regarding potential excess pore pressure resulting from the infiltration of quench water) in Section 3.4, Geology and Seismicity.	See referenced mitigation measures.			

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.3 (cont.)	**3.5.3d:** To ensure storm water discharges do not contaminate off-site receiving waters, all contact water shall continue to be managed separately from non-contact water and retained on site. Storm water management shall include the following measures: 1. Composting operations areas outside of the landfill footprint, including areas used for active composting, stockpiling of feedstock and curing or finished compost, maturing piles, and other processing, shall be fitted with leachate collection systems, such as site grading and perimeter drain systems, that prevent pooling of liquids, that collect any free liquid, including leachate, excess quench water, and other liquids, and that convey the collected liquid to the leachate collection pond or other leachate treatment facility. 2. Areas used for wet season handling, storage, or stockpiling of dried sludge, materials to be used for ADC, or other materials capable of producing contaminated runoff shall be fitted with impermeable pads and leachate collections systems, or the materials themselves shall be protected from contact with rainwater.	Applicant	Prior to issuance of revised SWFP and revised WDRs	Marin County EHS, RWQCB	EHS and RWQCB prior to issuance of revised permits, and continuing periodic inspections
3.5.4: Insufficient capacity to contain contact-water runoff from new areas proposed to be used for composting and co-composting would result in the off-site release of contact water and the potential degradation of nearby surface waters. (LTS)	**3.5.4:** The applicant shall produce and present to the LEA and RWQCB for approval a report demonstrating that sufficient capacity exists to contain contact water from areas outside the landfill footprint, proposed to be used for composting, co-composting and sludge processing, that would result from a 100-year storm event. Approval of use of these areas for composting, co-composting, and sludge processing shall be conditioned upon submittal and approval that this standard has been met.	Applicant	Prior to issuance of revised SWFP and revised WDRs	Marin County EHS, RWQCB	Marin County EHS and RWQCB, prior to issuance of revised permits; continuing periodic inspections of drainage facilities

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.4 (cont.)	Because the amount of contact water generated at Redwood Landfill would increase as a result of the expanded composting area~~, and Area G, which currently is available as back-up for contact water storage, will no longer be available for back-up storage when it is developed as either a Class III or Class II waste management unit~~, RLI will have to demonstrate to the satisfaction of the LEA and the RWQCB where, within the landfill boundaries, contact water from this area would be directed, and that such contact-water impoundment will have sufficient capacity to accommodate run-off from a 100-year storm event. Storage capacity shall be adequate to contain contact water generated from a storm occurring mid- or late-season, when the impoundment could have water in it from previous storms.				
3.5.5: The use of leachate as quench water could contaminate groundwater and surface water. (LTS)	**3.5.5a:** The applicant will test leachate to be used as quench water quarterly, consistent with current testing and use protocols applied to the use of leachate for dust control. The leachate will be used for quench water as long as, and only if, it meets RWQCB-approved standards established for the use of leachate for dust control at the site. This measure will be reflected as a requirement in the Solid Waste Facilities Permit as well as the landfill's Waste Discharge Requirements. The current program to reuse leachate for dust control, upon which the program to reuse leachate for quench water will be based, requires RLI to sample the leachate pond on a quarterly basis prior to use for dust control to insure that levels of chemical constituents are at "clean" standards. Reporting of the leachate sampling is included with the Self Monitoring Program associated with Redwood Landfill's Waste Discharge Requirements. Written detection monitoring reports, which include compliance evaluation summaries, are filed by the 15th day of the month following the report period; an annual report also is required, by January 31 for the previous calendar year.	Applicant	Ongoing	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
	3.5.5b: Implement Mitigation Measure 3.5.3a.	See referenced mitigation measures.			

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.5 (cont.)	**3.5.5c:** Implement Mitigation Measures 3.5.3b, 3.5.3c, and 3.5.3d.	See referenced mitigation measures.			
3.5.6: Areas outside the 223-acre landfill footprint, including areas proposed for composting and co-composting operations and the relocated administration facilities, are within the 100-year flood plain. (LTS)	**3.5.6:** To ensure the site and project elements are protected from potential impacts of flooding, the applicant shall complete their planned increase in the height of the perimeter levee that encompasses the entire landfill site (i.e., the approximately 380 acres of the 420-acre Southern Area currently located within levees) to 9 feet above msl and their planned increase in the width of the perimeter levee to 10 feet prior to implementation of project elements in the Oxbow or other areas outside the permitted 223-acre landfill footprint. The applicant's Joint Technical Document (JTD) (GeoSyntec, 1998) states on page 4-21 that the perimeter levee is approximately four miles long and separates the site from adjacent sloughs. As part of the description of the existing facility (pages 5-1 and 5-2) the JTD states that the perimeter levee encompasses approximately 380 acres of the 420-acre Southern Area of the landfill property, and that the height of the perimeter levee will be increased to 9 feet above mean sea level around the entire landfill, and that the crest will be widened to 10 feet. These changes to the perimeter levee are not specified as project elements, and elsewhere in the JTD some ambiguity exists as to whether references to a perimeter levee refer to a levee around only the permitted landfill footprint (approximately 223 acres) or around the entire landfill site (approximately 380 acres of which are within existing levees). This analysis assumes that as part of the facility's existing operation, as stated on the aforementioned pages, RLI intends to increase the perimeter levee that encompasses the entire 380 acres of the 420-acre Southern Area to 9 feet above msl and to widen its crest to 10 feet.	Applicant	Prior to implementation of project elements outside the permitted 223-acre landfill footprint	Marin County EHS	Marin County EHS and RWQCB prior to issuance of revised permits; continuing periodic inspections

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
	Because the base flood elevation for the 100-year storm is 6 to 7 feet ngvd (approximately equivalent to mean sea level), increasing the levee to 9 feet would protect the landfill property from the 100-year flood. Increasing the width should contribute support to the levee's stability and ability to withstand the dynamic forces of the river at flood stage. The 223-acre landfill footprint already is located outside the 100-year flood plain due to existing levees. The portion of the site outside the landfill footprint remains vulnerable to flooding until these planned changes to the perimeter levee are completed.				
3.5.7: If surface water drainage systems are not properly managed, storm water contacting the landfill surface could erode landfill cover materials and cause the sedimentation of onsite drainage systems, and potentially, the sedimentation and/or contamination of off-site receiving surface waters. (LTS)	**3.5.7:** Implement Mitigation Measures 3.4.4a, 4b, 4c, and 4d (to implement an updated SWPPP and prepare and eventually implement a final closure and post-closure maintenance plan). As discussed under Impact 3.4.4 in Section 3.4, Geology, Soils, and Seismicity, implementation of these measures would reduce the potential impacts of storm-generated erosion and help ensure the proper management of the site's drainage system. Implementation of these measure, combined with requirements specified in Title 27 for precipitation and drainage controls as well as the existing drainage facilities and management practices at the landfill would reduce this impact to a less-than-significant level.	See referenced mitigation measures.			
3.5.8: Construction activities, including grading and related activities at the proposed composting areas could increase soil erosion and result in the transport of sediments and other contaminants to off-site surface waters. (LTS)	**3.5.8:** Prior to construction, the applicant will prepare a construction Storm Water Pollution Prevention Plan (SWPPP) to minimize impacts to storm water runoff quality from construction activities. The construction SWPPP will be kept on site and available to RWQCB and LEA staff upon request.	Applicant	Prior to issuance of revised WDRs	RWQCB	RWQCB; periodically

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.9: The existing drainage system may be insufficient to accommodate the 1~~,00~~0-year, 24-hour precipitation event required of Class III landfills~~, as Area G is proposed to be classified~~. (Significant)	**3.5.9:** The applicant shall produce and present to the ~~LEA and~~ RWQCB for approval a report demonstrating that sufficient capacity exists in the precipitation and drainage control facilities ~~affecting or affected by Area G~~ to accommodate the 1,00~~0~~-year 24-hour precipitation event as required by Title 27. A copy of the report shall also be provided to the LEA. The report shall include information about the anticipated elevation of flows in San Antonio Creek during the 100-year flood; if existing and any new discharge outlets to San Antonio Creek are below this elevation, such drains shall be equipped with flap gates to prevent flood waters from entering the outlets, as two existing drains are equipped to prevent flood tides from entering. ~~Approval of use of this area as a Class II unit shall be conditioned, in part, upon submittal and approval that this standard has been met.~~ The final engineering design specifications for the permanent and major temporary drainage facilities capable of meeting the requirements specified in Title 27, Table 4.1 shall be developed by a registered engineer and shall include drainage facilities for all areas of the landfill property. These specifications shall become part of the project.	Applicant	Prior to issuance of revised SWFP and WDRs ~~reclassifying Area G as a Class II unit.~~	~~Marin County EHS,~~ RWQCB	CIWMB, Marin County EHS and RWQCB~~, prior to issuance of revised permits reclassifying Area G~~
3.5.10: The proposed use of various alternative daily cover (ADC) materials could have an adverse impact on water quality. (LTS)	**3.5.10a:** As described under "working face operations in wet weather" in Redwood Landfill's current Storm Water Pollution Prevention Plan (Redwood Landfill, 2000), when rain occurs or is forecast or imminent, RLI shall cover the ADC applied that day with impermeable tarps to prevent rainwater contact with the ADC.	Applicant	Ongoing	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
	3.5.10b: The operator shall not use ADC, or shall cover it with a geosynthetic blanket after application at the working face ~~Dirt shall continue to be used as the cover material~~ on any day preceding closed days (e.g., Saturdays); ADC may continue to be used as the daily cover the rest of the week (i.e., Monday through Friday; the landfill is closed on Sunday)..	Applicant	Ongoing	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.5.10 (cont.)	**3.5.10c:** In conjunction with implementing Mitigation Measure 3.5.3, above, water contacting ADC shall be considered, and managed as, contact water. Thus water contacting ADC shall be managed separately from non-contact water and retained on site.	Applicant	Ongoing	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
Land Use					
3.6.2: Development of the proposed project could result in conflicts with operations at Gnoss Field. (LTS)	**3.6.2a:** The applicant proposes to continue their existing bird control program. Redwood Landfill's bird control program focuses on gulls, the predominant avian scavengers at the site, and consists of using pyrotechnic devices to discourage gulls from landing or circling overhead during refuse placement and compaction. The devices provide noise (bang or whistle), a flash of light, smoke, and the sound of the propellant. RLI focuses its deterrent efforts when the birds first begin to arrive in the morning (shortly after dawn) and the morning hours, having found that this results in fewer gulls approaching the site during the rest of the day. RLI also may use a gas-fired cannon, which emits a loud blast, in conjunction with the pyrotechnic devices. Redwood Landfill periodically re-evaluates and revises bird control techniques as necessary.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.6.2b: The applicant proposes no change in the number or type of lights used for nighttime operations. There are no records that indicate that the existing use of lights at the landfill poses a hazard to operations at Gnoss Field.	Applicant	Ongoing	Marin County EHS, Marin County ALUC	Marin County CDA-Planning, EHS and ALUC; periodically by EHS
	3.6.2c: To ensure that nighttime activities do not interfere with operations at Gnoss Field, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. The applicant shall notify the Gnoss Field Airport prior to any change in the way lighting is used for nighttime operations.	Applicant	Ongoing; notification of Gnoss Field of changes to lighting prior to implementation of such changes	Marin County EHS, Marin County ALUC	Marin County EHS, periodic inspections; and Marin County ALUC following notification of plan to revise use of lighting

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.6.2 (cont.)	**3.6.2d:** If bird activity at the landfill, including the areas outside the permitted landfill footprint proposed for composting, increases as a result of the project, as determined by the LEA during regular site inspections, RLI shall adjust its existing bird control program as necessary to ensure that the facility does not pose a bird hazard to aircraft. RLI shall modify as necessary the demonstration required in 40 CFR Part 258, §258.10 (a) and 27 CCR, §20270(a) (that the landfill does not pose a bird hazard to aircraft).	Applicant	Immediately upon notification of determination by EHS that revision is necessary	Marin County EHS, Marin County ALUC	Marin County EHS, Marin County ALUC, as needed
3.6.4: The project would conflict with Goals 1, 6, and 9 of the Source Reduction and Recycling Element of the Integrated Waste Management Plan for Marin County and its Cities. (S)	**3.6.4a:** The applicant is proposing to increase the capacity of the existing composting/co-composting facility.	Applicant	Upon issuance of revised Composting Facilities Permit	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.6.4b: The following measures will be required as conditions of a revised Solid Waste Facilities Permit, or through other actions, as noted: • RLI will be required to implement additional diversion programs at the landfill, such as construction and demolition debris recovery, recovery of materials from self-haul and debris box loads, salvage of building materials and other reusable items, increased opportunity for drop-off of source-separated materials, and other measures as detailed in the Mitigated Alternative (see Chapter 5); • The County will consider the enactment of an ordinance that would impose a mitigation fee on waste imported to Redwood Landfill from areas of California outside Marin County. The mitigation fee will be used to develop additional landfill capacity, to develop diversion programs, and to offset other project impacts, including significant, unavoidable air quality impacts (see Section 3.2, Air Quality and Chapter 4, Cumulative Impacts).	Applicant, Marin County Board of Supervisors	As soon as possible.	Marin County EHS and Board of Supervisors	Marin County EHS and Board of Supervisors, ongoing

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.6.5: The project would conflict with Summary Plan Goal 12, which is to insure that all residents of Marin County have access to a program that safely and effectively manages household hazardous waste, and Summary Plan Policy 14, to develop an effective program for managing household hazardous waste generated in the county. (LTS)	**3.6.5a:** RLI currently accepts used motor oil and automotive batteries at the landfill, and does not plan to discontinue this service.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.6.5b: Redwood Landfill shall provide facilities for residents to drop-off oil filters, antifreeze, fluorescent light tubes, latex paint, and cathode ray tubes, in addition to used motor oil and automotive batteries, which are currently accepted.	Applicant	Applicant to submit facility plan within 1 year of issuance of revised SWFP. Plan may require additional CEQA review	Marin County EHS, CDA-Planning, Marin County Solid and Hazardous Waste Joint Powers Authority	CIWMB and DTSC, Marin County EHS; CDA-Planning.
Noise					
3.7.3: Use of equipment for composting operations in the Oxbow area and other areas proposed for composting operations could cause an increase in the ambient noise level for adjacent land uses. (LTS)	**3.7.3a:** Operating hours for the tubgrinder shall be restricted to 7 a.m. to 7 p.m.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.7.3b: The tubgrinder shall be operated at least 600 feet from the outer edge (creek side) of the road along the perimeter levee.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.7.3c: Alternatively, the landfill operator could construct an earthen berm between the tubgrinder operations area and all parts of the eastern landfill boundary within 600 feet of the tubgrinder location. The earthen berm must be at least as high as the highest part of the tubgrinder itself. Compost windrows could be substituted for the earthen berm, as long as they are as high as the highest part of the tubgrinder, and located between the tubgrinder operations area and the eastern landfill boundary.	Applicant	Prior to use of tubgrinder less than 600 feet from the outer edge (creek side) of the road along the perimeter levee.	Marin County EHS	Marin County EHS, continuing periodic inspections

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Public Health and Safety					
3.8.1: Receipt of designated wastes, in particular, spill or upset conditions resulting from the receipt and handling of designated wastes, could expose site workers or the general public to unacceptable contaminant levels. (LTS)	**3.8.1a:** The project applicant has prepared and implements a worker health and safety program.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.8.1b: Implement Mitigation Measure 3.2.~~13~~10b (limit acceptance of designated wastes currently accepted at the landfill to the currently permitted level of 20 TPD) which ~~ose that are determined not to pose a threat to air quality and provide to the LEA and BAAQMD detailed information including material types and handling procedures), Mitigation Measure 3.4.10b (submit a detailed list of material types and chemical concentration limits of wastes proposed for placement in Area G to the LEA and the RWQCB, and an engineering study demonstrating the effectiveness of the liner and LCRS proposed for Area G in protecting groundwater and the surrounding environment from constituents in the waste and leachate generated by it), and Mitigation Measure 3.4.10c (if the RWQCB finds the proposed design is not adequate, modify the proposal as appropriate, potentially modifying the design of Area G, lowering the constituent concentrations in waste to be accepted, or eliminating certain material types proposed to be placed in the unit)~~. ~~Implementation of these measures~~ would reduce to a less-than-significant level the potential for ~~help to limit exposure of~~ workers or members of the public using the facility to be exposed to unacceptable contaminant levels associated with the landfill's receipt of designated wastes.	See referenced mitigation measures.			
	~~**3.8.1c:** The applicant shall modify the facility's injury and illness prevention program to address the receipt and appropriate handling of the wastes proposed to be accepted at Area G (as specified under Mitigation Measures 3.2.13b and 3.4.10b), and submit the modified program to the LEA for approval prior to approval of Area G as a Class II unit.~~	~~Applicant~~	~~Prior to issuance of revised SWFP reclassifying Area G as a Class II unit.~~	~~Marin County EHS~~	~~CIWMB, Marin County EHS, prior to issuance of revised SWFP reclassifying Area G as a Class II unit~~

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.8.2: Expanding the composting operations could increase the health threat to workers from exposure to *Aspergillus fumigatus* and endotoxins. (LTS)	**3.8.2a:** Redwood Landfill's existing composting operation includes dust control measures, such as the addition of water (using a water truck or portable sprinkler system) to composting windrows as needed to control dust and to maintain the appropriate moisture content for the composting process (GeoSyntec, 1998). Because bioaerosols and endotoxins are both carried on dust particles (particulate matter), measures to control dust at Redwood Landfill also will help limit the dispersal of *Aspergillus fumigatus* and endotoxins.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.8.2b: Implement Mitigation Measure 3.2-4 (development and implementation of a Dust Mitigation Plan/Program).	See referenced mitigation measures.			
	3.8.2c: The project applicant shall follow sound composting management practices, including maintaining moisture, temperature and pH levels, and properly aerating, turning and mixing the composting materials. Specifically, the following practices will help minimize the generation and dispersal of dust and fungus spores during composting operations and thus limit exposure: • Refrain from turning, screening, or loading activities on windy days; • Use water sprays or mists during grinding, screening, and pile turning activities; • Maintain proper moisture levels in active composting piles; • Maintain good housekeeping practices, including site cleanliness; and • Provide employee training and the use of personal protective equipment.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.8.3: The proposed changes to the management of water that has contacted sludge and composting and co-composting materials could degrade water quality and impact public health. (LTS)	**3.8.3:** Implement Mitigation Measures 3.5.3a, 3.5.3b, 3.5.3c, and 3.5.3d regarding the conduct of composting outside and within the permitted landfill footprint and the management of contact water and storm water.	See referenced mitigation measures.			
3.8.4: Landfill gas migrating from the 11.5-acre waste unit in the southwest corner of the site could become trapped beneath the nearby relocated administration building and accumulate to explosive levels. (LTS)	**3.8.4:** The project applicant shall continue to implement the continuous monitoring of landfill gas levels in the relocated administration building, as is currently the practice at the existing administration building. Continuous monitoring is conducted using a GasTech gas sensing device and alarm system. In addition, the other existing gas monitoring programs at the landfill site shall be reviewed and modified if necessary to include monitoring of the 11.5-acre waste unit. The other monitoring includes quarterly monitoring by an outside consultant using portable gas detection equipment and weekly monitoring by RLI using a GasTech combustible gas indicator, in accordance with the terms of the landfill's Permit to Operate from BAAQMD.	Applicant	Ongoing	Marin County EHS	Marin County EHS, continuing periodic inspections
3.8.5: Increased refuse and composting throughput could result in increases in gulls and other scavenging birds at the site, thus increasing the risk of bird strikes for aircraft approaching or departing from the nearby County airport, Gnoss Field. (LTS)	**3.8.5:** Implement Mitigation Measure 3.6.2d (i.e., modification of RLI's bird control program if needed to address increased bird activity at the site).	See referenced mitigation measures.			

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Public Services, Utilities and Energy					
3.9.1: The proposed increase in composting throughput could increase the risk of fire occurring at the composting facility. (LTS)	**3.9.1:** For composting operations in new areas of the project site, RLI shall adhere to management practices established in the Registration Permit for the current composting operation and the terms and conditions established for the green waste and food waste pilot program.	Applicant	Upon commencement of composting operations in new areas of the project site	Marin County EHS	Marin County EHS, continuing periodic inspections following expansion of composting operations
3.9.2: The proposed increase in composting operations could place burdensome demands on public water supplies, exceeding available capacity, especially during periods of drought. (LTS)	**3.9.2:** During periods of drought RLI shall use only water from non-potable sources for dust control and/or quench water for the expanded composting operation.	Applicant	Upon issuance of voluntary water conservation order by the North Marin Water District	Marin County EHS	Marin County EHS, continuing periodic inspections during declared drought periods
3.9.3: On-site activities, primarily the increased use of landfill equipment and vehicles, would increase energy consumption. (S)	**3.9.3a:** RLI shall apply to the ~~has applied for and received from~~ BAAQMD for Authority to Construct power generation engines capable of producing four to five megawatts of power within two years of concurrence on the revised SWFP by the CIWMB.~~three landfill-gas-powered, internal combustion generators (BAAQMD, 2002~~). ~~The Authority to Construct expires two years from the date of issuance unless substantial use of the authority has begun~~.	Applicant	Within two years of issuance of Authority to Construct	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, upon notification by applicant of implementation
	3.9.3b: Implement Mitigation Measures 3.2.5c and 3.2.5e (apply for an authority to construct power generation engines with a capacity to produce four to five megawatts of power within two years of concurrence on the revised SWFP by the CIWMB, and apply for a Permit to Operate the engines.) Consistent with County policies regarding best energy management practices, RLI shall ~~install the proposed power generation engines, pursuant to the Authority to Construct issued by the BAAQMD, and~~ commence operation of these engines as soon as possible. The experience of other landfills indicates that electricity	See referenced mitigation measures.			

REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION MITIGATION MONITORING AND REPORT PROGRAM (Continued)

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
3.9.3 (cont.)	generated by the landfill gas could replace (partly or entirely) electricity currently provided by PG&E, and eventually (if not immediately) provide sufficient power to be sold to offsite users. The use of landfill gas to provide for the facility's electricity needs would serve to offset partly the increased consumption of diesel fuel for project operations. The applicant also shall install additional power generation engines in order to offset some use of the LFG flare. ~~According to the Authority to Construct, the three proposed power generation engines have a combined capacity to accommodate landfill gas flows of 1,446 cubic feet per minute (cfm), while the total capacity of the gas flare is 4,250 cfm, and total LFG generation is projected to reach 7,549 cfm by 2024. Of this projected total generation, 5,662 cfm would be collected by the LFG collection system (assuming collection efficiency of 75 percent) and directed to the flare, vaporator and generators (as discussed under Impact 3.2.5).~~ Currently, use of the flare is required to abate the emission of all collected LFG except the relatively small amount used by the leachate vaporator, as well as to destroy the vapor produced by the vaporator. The flare also could potentially be used to destroy exhaust emissions from the vaporator and the future power generation engines. However, rather than using the flare at full capacity as the generation of LFG increases, an increasing share of LFG could be diverted to generate additional electrical power if additional generation engines were installed. Even with the additional power generation engines installed, some use of the flare will continue to be required, for final destruction of leachate vapor as well as for destruction of combustion exhaust emissions from the vaporator and, potentially, from the power generation engines. However, operation of additional power generation engines potentially would provide a more productive use of much of the collected LFG than simply flaring it.	Applicant	As soon as feasible.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, upon notification by applicant of implementation

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Cumulative Impacts					
CU-2: The project would incrementally add to cumulative air pollutant emissions. (Significant)	**CU-2a:** Implement Mitigation Measure 3.2.1a.	See referenced mitigation measures.			
	CU-2b: Implementation of the following mitigation measures, identified in Section 3.2, Air Quality, to mitigate project impacts concerning air pollutant emissions, also would help to mitigate the project's contribution to the cumulative impact: Mitigation Measure 3.2.2 (a-de) to reduce impacts from the increased equipment and truck operations associated with the proposed increase in incoming materials, Mitigation Measure 3.2.4 to reduce levels of project-generated fugitive dust, Mitigation Measure 3.2.5 (a-ed f) to address landfill gas emissions, Mitigation Measure 3.2.6 (a-d) to address ROG emissions from the proposed composting operation, and Mitigation Measure 3.2.10 (b or c) to address VOCs and odor from the air drying of sludge.	See referenced mitigation measures.			

KEY:

Significance After Mitigation

LTS = Mitigated to a less-than-significant level
SU = Significant and unavoidable

Monitored By:

ALUC = Airport Land Use Commission
BAAQMD = Bay Area Air Quality Management District
CDA-Planning = Marin Community Development Agency – Planning Division
CDFG = California Department of Fish and Game
CIWMB = California Integrated Waste Management Board
DTSC = California Department of Toxic Substances Control
EHS = Marin County Environmental Health Services Division
RWQCB = Regional Water Quality Control Board, San Francisco Bay Region
USFWS = U.S. Fish and Wildlife Service

APPENDIX B

WASTE ACCEPTANCE CRITERIA IN
CURRENT WASTE DISCHARGE REQUIREMENT
(Order No. 95-110, Specifications B.4 and B.5)

SPECIFICATIONS

[B.4] Hazardous wastes and Infectious wastes shall not be disposed of at this landfill. Non-hazardous, Inert wastes and Asbestos may be disposed of at this landfill provided that all regulations and provisions of the California Integrated Waste Management Board, California Department of Toxic Substance Control, local health agencies and County Land Use Permit requirements are complied with.

[B.5] Sludges and petroleum contaminated soils are acceptable for disposal into the landfill provided that concentrations do not exceed the acceptance limit for the constituents identified below:

Parameter	Acceptance limit (mg/l)
Benzene	0.015
Dichloromethane	0.075
Diesel (TPH)	0.15
Ethylbenzene	0.45
MEK	3.0
PCB's	0.0075
Perchloroethylene (PCE)	0.075
Phenol	0.075
Styrene	0.15
Toluene	0.6
Trichloroethylene	0.075
Vinyl Chloride	0.03
Xylenes	0.3
Aluminum	10
Arsenic	0.25
Barium	50
Berellium	0.05
Cadmium	0.25
Chloride	12500
Chromium, VI	2.5
Cobalt	2.5
Copper	10
Lead	0.75
Manganese	2.5

Parameter (cont.)	Acceptance limit (mg/l)
Mercury	0.0006
Molybdenum	0.5
Nickel	5
Nitrate	500
Nitrite	50
Selenium	0.5
Silver	2.5
Sulfate	12500
Thallium	0.1
Vanadium	1
Zinc	100

Acceptance limit is defined as the highest average concentration for each constituent of concern within a waste per disposal event. Event is the disposal of a specified quantity of waste; ongoing, long term disposal of a waste stream would consist of a series of individual events.

APPENDIX C

NOISE CALCULATIONS

Redwood Landfill (200238)

Calculation of noise levels produced by the landfill's existing operations (no project) at San Antonio Creek
Based on noise levels of 91 dBA at 50 feet, and distance to San Antonio Creek of 200 feet
Assumes daytime ambient noise level of 60 dBA Leq

	TIME	dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24	79.0	79432823	794328235	251188643
am 1:00	100	79.0	79432823	794328235	251188643
2:00	200	79.0	79432823	794328235	251188643
3:00	300	79.0	79432823	794328235	251188643
4:00	400	79.0	79432823	794328235	251188643
5:00	500	79.0	79432823	794328235	251188643
6:00	600	79.0	79432823	794328235	251188643
7:00	700	79.0	79432823	794328235	251188643
8:00	800	79.0	79432823	794328235	251188643
9:00	900	79.0	79432823	794328235	251188643
10:00	1000	79.0	79432823	794328235	251188643
11:00	1100	79.0	79432823	794328235	251188643
12:00	1200	79.0	79432823	794328235	251188643
pm 1:00	1300	79.0	79432823	794328235	251188643
2:00	1400	79.0	79432823	794328235	251188643
3:00	1500	79.0	79432823	794328235	251188643
4:00	1600	70.0	10000000	100000000	31622777
5:00	1700	60.0	1000000	10000000	3162278
6:00	1800	60.0	1000000	10000000	3162278
7:00	1900	60.0	1000000	10000000	3162278
8:00	2000	79.0	79432823	794328235	251188643
9:00	2100	79.0	79432823	794328235	251188643
10:00	2200	79.0	79432823	794328235	251188643
pm 11:00	2300	79.0	79432823	794328235	251188643

Leq Morning Peak Hour 7:00-10:00 a.m.
79 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
65 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
79 dBA

Leq Daytime 7:00 am-10:00 p.m.
78 dBA

Leq 24-Hour
78 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
85 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
85 dBA

CNEL - Ldn 0.18291468

Redwood Landfill (200238)

Calculation of noise levels produced by the project landfill operations under the Project at San Antonio Creek
Based on noise levels of 94 dBA at 50 feet, and distance to San Antonio Creek of 200 feet
Assumes daytime ambient noise level of 60 dBA Leq

	TIME		dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24		82.0	158489319	1584893192	501187234
am	1:00	100	82.0	158489319	1584893192	501187234
	2:00	200	82.0	158489319	1584893192	501187234
	3:00	300	82.0	158489319	1584893192	501187234
	4:00	400	82.0	158489319	1584893192	501187234
	5:00	500	82.0	158489319	1584893192	501187234
	6:00	600	82.0	158489319	1584893192	501187234
	7:00	700	82.0	158489319	1584893192	501187234
	8:00	800	82.0	158489319	1584893192	501187234
	9:00	900	82.0	158489319	1584893192	501187234
	10:00	1000	82.0	158489319	1584893192	501187234
	11:00	1100	82.0	158489319	1584893192	501187234
	12:00	1200	82.0	158489319	1584893192	501187234
pm	1:00	1300	82.0	158489319	1584893192	501187234
	2:00	1400	82.0	158489319	1584893192	501187234
	3:00	1500	82.0	158489319	1584893192	501187234
	4:00	1600	73.0	19952623	199526231	63095734
	5:00	1700	60.0	1000000	10000000	3162278
	6:00	1800	60.0	1000000	10000000	3162278
	7:00	1900	60.0	1000000	10000000	3162278
	8:00	2000	82.0	158489319	1584893192	501187234
	9:00	2100	82.0	158489319	1584893192	501187234
	10:00	2200	82.0	158489319	1584893192	501187234
pm	11:00	2300	82.0	158489319	1584893192	501187234

Leq Morning Peak Hour 7:00-10:00 a.m.
82 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
68 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
82 dBA

Leq Daytime 7:00 am-10:00 p.m.
81 dBA

Leq 24-Hour
81 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
88 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
88 dBA

CNEL - Ldn 0.18238902

Redwood Landfill (200238)

Calculation of noise levels produced by the landfill's existing operations (no project) at western property boundary
Based on noise levels of 91 dBA at 50 feet, and distance to property boundary of 100 feet
Assumes daytime ambient noise level of 65 dBA Leq

	TIME	dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24	85.0	316227766	3162277660	1000000000
am 1:00	100	85.0	316227766	3162277660	1000000000
2:00	200	85.0	316227766	3162277660	1000000000
3:00	300	85.0	316227766	3162277660	1000000000
4:00	400	85.0	316227766	3162277660	1000000000
5:00	500	85.0	316227766	3162277660	1000000000
6:00	600	85.0	316227766	3162277660	1000000000
7:00	700	85.0	316227766	3162277660	1000000000
8:00	800	85.0	316227766	3162277660	1000000000
9:00	900	85.0	316227766	3162277660	1000000000
10:00	1000	85.0	316227766	3162277660	1000000000
11:00	1100	85.0	316227766	3162277660	1000000000
12:00	1200	85.0	316227766	3162277660	1000000000
pm 1:00	1300	85.0	316227766	3162277660	1000000000
2:00	1400	85.0	316227766	3162277660	1000000000
3:00	1500	85.0	316227766	3162277660	1000000000
4:00	1600	80.0	100000000	1000000000	316227766
5:00	1700	65.0	3162278	31622777	10000000
6:00	1800	65.0	3162278	31622777	10000000
7:00	1900	65.0	3162278	31622777	10000000
8:00	2000	85.0	316227766	3162277660	1000000000
9:00	2100	85.0	316227766	3162277660	1000000000
10:00	2200	85.0	316227766	3162277660	1000000000
pm 11:00	2300	85.0	316227766	3162277660	1000000000

Leq Morning Peak Hour 7:00-10:00 a.m.
85 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
74 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
85 dBA

Leq Daytime 7:00 am-10:00 p.m.
84 dBA

Leq 24-Hour
84 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
91 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
91 dBA

CNEL - Ldn 0.18236195

Redwood Landfill (200238)

Calculation of noise levels produced by projected landfill operations under the Project at the western property boundary
Based on noise levels of 94 dBA at 50 feet, and distance to property boundary of 100 feet
Assumes daytime ambient noise level of 65 dBA Leq

				10 dBA	5 dBA
	TIME	dBA	Numbers...	More Numbers...	
Midnight	0 / 24	88.0	630957344	6309573445	1995262315
am 1:00	100	88.0	630957344	6309573445	1995262315
2:00	200	88.0	630957344	6309573445	1995262315
3:00	300	88.0	630957344	6309573445	1995262315
4:00	400	88.0	630957344	6309573445	1995262315
5:00	500	88.0	630957344	6309573445	1995262315
6:00	600	88.0	630957344	6309573445	1995262315
7:00	700	88.0	630957344	6309573445	1995262315
8:00	800	88.0	630957344	6309573445	1995262315
9:00	900	88.0	630957344	6309573445	1995262315
10:00	1000	88.0	630957344	6309573445	1995262315
11:00	1100	88.0	630957344	6309573445	1995262315
12:00	1200	88.0	630957344	6309573445	1995262315
pm 1:00	1300	88.0	630957344	6309573445	1995262315
2:00	1400	88.0	630957344	6309573445	1995262315
3:00	1500	88.0	630957344	6309573445	1995262315
4:00	1600	83.0	199526231	1995262315	630957344
5:00	1700	65.0	3162278	31622777	10000000
6:00	1800	65.0	3162278	31622777	10000000
7:00	1900	65.0	3162278	31622777	10000000
8:00	2000	88.0	630957344	6309573445	1995262315
9:00	2100	88.0	630957344	6309573445	1995262315
10:00	2200	88.0	630957344	6309573445	1995262315
pm 11:00	2300	88.0	630957344	6309573445	1995262315

Leq Morning Peak Hour 7:00-10:00 a.m.
88 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
77 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
88 dBA

Leq Daytime 7:00 am-10:00 p.m.
87 dBA

Leq 24-Hour
87 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
94 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
94 dBA

CNEL - Ldn 0.18194505

Redwood Landfill (200238)

Noise calculations for composting operations at San Antonio Creek, based on noise source level of 96 dBA, distance of 200 feet, and attenuation from levee of 10 dBA
Assumes ambient noise levels of 60 dBA Leq daytime and 55 dBA Leq nighttime

	TIME		dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight	0 / 24		55.0	316228	3162278	1000000
am	1:00	100	55.0	316228	3162278	1000000
	2:00	200	55.0	316228	3162278	1000000
	3:00	300	55.0	316228	3162278	1000000
	4:00	400	55.0	316228	3162278	1000000
	5:00	500	55.0	316228	3162278	1000000
	6:00	600	74.0	25118864	251188643	79432823
	7:00	700	74.0	25118864	251188643	79432823
	8:00	800	74.0	25118864	251188643	79432823
	9:00	900	74.0	25118864	251188643	79432823
	10:00	1000	74.0	25118864	251188643	79432823
	11:00	1100	74.0	25118864	251188643	79432823
	12:00	1200	74.0	25118864	251188643	79432823
pm	1:00	1300	74.0	25118864	251188643	79432823
	2:00	1400	60.0	1000000	10000000	3162278
	3:00	1500	60.0	1000000	10000000	3162278
	4:00	1600	60.0	1000000	10000000	3162278
	5:00	1700	60.0	1000000	10000000	3162278
	6:00	1800	60.0	1000000	10000000	3162278
	7:00	1900	60.0	1000000	10000000	3162278
	8:00	2000	55.0	316228	3162278	1000000
	9:00	2100	55.0	316228	3162278	1000000
	10:00	2200	55.0	316228	3162278	1000000
pm	11:00	2300	55.0	316228	3162278	1000000

Leq Morning Peak Hour 7:00-10:00 a.m.
74 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
60 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
65 dBA

Leq Daytime 7:00 am-10:00 p.m.
71 dBA

Leq 24-Hour
69 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
73 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
73 dBA

CNEL - Ldn 0.03327405

Redwood Landfill (200238)

Noise calculations for composting operations at San Antonio Creek, based on noise source level of 96 dBA
and attenuation from levee of 10 dBA,
PLUS ADDITIONAL MEASURES TO REDUCE NOISE AS PER MITIGATION MEASURE 3.7.3
Assumes ambient noise levels of 60 dBA Leq daytime and 55 dBA Leq nighttime

	TIME		dBA	Numbers...	10 dBA More Numbers...	5 dBA
Midnight		0 / 24	55.0	316228	3162278	1000000
am	1:00	100	55.0	316228	3162278	1000000
	2:00	200	55.0	316228	3162278	1000000
	3:00	300	55.0	316228	3162278	1000000
	4:00	400	55.0	316228	3162278	1000000
	5:00	500	55.0	316228	3162278	1000000
	6:00	600	55.0	316228	3162278	1000000
	7:00	700	66.0	3981072	39810717	12589254
	8:00	800	66.0	3981072	39810717	12589254
	9:00	900	66.0	3981072	39810717	12589254
	10:00	1000	66.0	3981072	39810717	12589254
	11:00	1100	66.0	3981072	39810717	12589254
	12:00	1200	66.0	3981072	39810717	12589254
pm	1:00	1300	66.0	3981072	39810717	12589254
	2:00	1400	66.0	3981072	39810717	12589254
	3:00	1500	60.0	1000000	10000000	3162278
	4:00	1600	60.0	1000000	10000000	3162278
	5:00	1700	60.0	1000000	10000000	3162278
	6:00	1800	60.0	1000000	10000000	3162278
	7:00	1900	60.0	1000000	10000000	3162278
	8:00	2000	55.0	316228	3162278	1000000
	9:00	2100	55.0	316228	3162278	1000000
	10:00	2200	55.0	316228	3162278	1000000
pm	11:00	2300	55.0	316228	3162278	1000000

Leq Morning Peak Hour 7:00-10:00 a.m.
66 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
60 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
55 dBA

Leq Daytime 7:00 am-10:00 p.m.
64 dBA

Leq 24-Hour
62 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
64 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
65 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldn 0.22646733

Redwood Landfill (200238)

Redwood landfill, existing operations, noise level at Mira Vista Marina, assuming source level of 91 dBA and distance of 2400 feet

Assumes ambient noise level of 55 dBA Leq

	TIME		dBA	Numbers...	10 dBA	More Numbers...	5 dBA
Midnight	0 / 24		55.0	316228	3162278	1000000	
am	1:00	100	55.0	316228	3162278	1000000	
	2:00	200	55.0	316228	3162278	1000000	
	3:00	300	55.0	316228	3162278	1000000	
	4:00	400	55.0	316228	3162278	1000000	
	5:00	500	55.0	316228	3162278	1000000	
	6:00	600	55.0	316228	3162278	1000000	
	7:00	700	55.0	316228	3162278	1000000	
	8:00	800	55.0	316228	3162278	1000000	
	9:00	900	55.0	316228	3162278	1000000	
	10:00	1000	55.0	316228	3162278	1000000	
	11:00	1100	55.0	316228	3162278	1000000	
	12:00	1200	55.0	316228	3162278	1000000	
pm	1:00	1300	55.0	316228	3162278	1000000	
	2:00	1400	55.0	316228	3162278	1000000	
	3:00	1500	55.0	316228	3162278	1000000	
	4:00	1600	55.0	316228	3162278	1000000	
	5:00	1700	55.0	316228	3162278	1000000	
	6:00	1800	55.0	316228	3162278	1000000	
	7:00	1900	55.0	316228	3162278	1000000	
	8:00	2000	55.0	316228	3162278	1000000	
	9:00	2100	55.0	316228	3162278	1000000	
	10:00	2200	55.0	316228	3162278	1000000	
pm	11:00	2300	55.0	316228	3162278	1000000	

Leq Morning Peak Hour 7:00-10:00 a.m.

55 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.

55 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)

55 dBA

Leq Daytime 7:00 am-10:00 p.m.

55 dBA

Leq 24-Hour

55 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

61 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

62 dBA

CNEL - Ldn 0.2603428

Redwood Landfill (200238)

Redwood landfill, projected noise level at Mira Vista Marina under Project conditions, assuming source level of 94 dBA and distance of 2400 feet
Assumes ambient noise level of 55 dBA Leq

				10 dBA	5 dBA
	TIME	dBA	Numbers...	More Numbers...	
Midnight	0 / 24	58.0	630957	6309573	1995262
am 1:00	100	58.0	630957	6309573	1995262
2:00	200	58.0	630957	6309573	1995262
3:00	300	58.0	630957	6309573	1995262
4:00	400	58.0	630957	6309573	1995262
5:00	500	58.0	630957	6309573	1995262
6:00	600	58.0	630957	6309573	1995262
7:00	700	58.0	630957	6309573	1995262
8:00	800	58.0	630957	6309573	1995262
9:00	900	58.0	630957	6309573	1995262
10:00	1000	58.0	630957	6309573	1995262
11:00	1100	58.0	630957	6309573	1995262
12:00	1200	58.0	630957	6309573	1995262
pm 1:00	1300	58.0	630957	6309573	1995262
2:00	1400	58.0	630957	6309573	1995262
3:00	1500	58.0	630957	6309573	1995262
4:00	1600	57.0	501187	5011872	1584893
5:00	1700	55.0	316228	3162278	1000000
6:00	1800	55.0	316228	3162278	1000000
7:00	1900	55.0	316228	3162278	1000000
8:00	2000	58.0	630957	6309573	1995262
9:00	2100	58.0	630957	6309573	1995262
10:00	2200	58.0	630957	6309573	1995262
pm 11:00	2300	58.0	630957	6309573	1995262

Leq Morning Peak Hour 7:00-10:00 a.m.
58 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
56 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
58 dBA

Leq Daytime 7:00 am-10:00 p.m.
57 dBA

Leq 24-Hour
58 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
64 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
65 dBA

CNEL - Ldn 0.22162669

APPENDIX D

AIR QUALITY CALCULATIONS

APPENDIX D-1

REVISED AIR QUALITY CALCULATIONS FOR THE PROJECT

Table D-1: On-Road Vehicle Trip Assumptions

rev. 3/22/05

Redwood LF 200238

Proposed - Permit - 2005 Conditions	Daily Trips (one way)	Ave. Tons/ Vehicle	0.5 tons/payload Light Duty Auto (Catal.) % of Fleet	# of Daily Trips	7 tons/payload Medium Heavy Trucks (Diesel) (GVW = 14,001 - 33,000 lbs) % of Fleet	# of Daily Trips	23 tons/payload Heavy Heavy Trucks (Diesel) (GVW = 33,001 - 60,000 lbs) % of Fleet	# of Daily Trips	Total %	Total Trips	Payload by Vehicle Type (tons) Light Duty Auto 0.5	Medium Heavy Trucks 7	Heavy Heavy Trucks 23	Total	Target
1. Trucks (landfill operations)															
A. Landfilled Materials	496														
- MSW	440	8.4	40%	176	35%	154	25%	110	100%	440	44	540	1,266	1,850	1850
- Sludge	13	15.0	0%	-	50%	7	50%	7	100%	13	-	23	77	100	100
- Other Designated	43	9.4	0%	-	85%	36	15%	6	100%	43	-	127	73	200	200
									Subtotal:	496			*Subtotal:*	2,150	2,150
B. Recycled/Reused Materials	482														
- Separated/Commingled Recyclables (incl. white gds and scrap metals)	17	1.2	90%	16	10%	2	0%	-	100%	17	4	6	-	10	10
- Greenwaste/Yardwaste/Woodwaste	254	4.1	70%	178	20%	51	10%	25	100%	254	44	178	292	514	514
- PC Soils (for alternative/interim cover)	107	15.0	0%	-	50%	53	50%	53	100%	107	-	187	613	800	800
- Inerts (includes PC soils, clean soils, concrete, asphalt screenings)	104	16.3	5%	5	35%	37	60%	63	100%	104	1	128	721	850	850
									Subtotal:	482			*Subtotal:*	2,174	2,174
C. Outgoing Compost Product and Recycled Metals	102	3.7	75%	77	15%	15	10%	10	100%	102	19	54	117	190	190.18
			Overall fleet mix for landfill operations:												
Subtotal:	1,081		42%	451	33%	355	25%	275	100%						
2. Non-Truck Deliveries	100		100%	100	0%	-	0%	-	100%	100	NA	NA	NA	NA	NA
employees (35) & deliveries															
TOTAL:	1,181		47%	551	30%	355	23%	275	100%	1,181					
											VMT = Trip length x # of trips				Ave. length
Distance (miles per trip)			12.7		12.7		24.0				7,002	4,505	6,594	18,101	15

Baseline - Permit -1994 Conditions	Daily Trips (one way)	Ave. Tons/ Vehicle	0.5 tons/payload Light Duty Auto (Catal.) % of Fleet	# of Daily Trips	7 tons/payload Medium Heavy Trucks (Diesel) (GVW = 14,001 - 33,000 lbs) % of Fleet	# of Daily Trips	23 tons/payload Heavy Heavy Trucks (Diesel) (GVW = 33,001 - 60,000 lbs) % of Fleet	# of Daily Trips	Total %	Total Trips	Payload by Vehicle Type (tons) Light Duty Auto 0.5	Medium Heavy Trucks 7	Heavy Heavy Trucks 23	Total	Target
1. Trucks (landfill operations)	730	NA	65%	475	20%	146	15%	110	100%	730	119	511	1,259	1,889	2,310
- vehicle split similar to that assumed in 1994 EIR.															
2. Non-Truck Deliveries	100	NA	100%	100	0%	-	0%	-	100%	100	NA	NA	NA	NA	NA
employees (35) & deliveries															
TOTAL:	830		69%	575	18%	146	13%	110	100%						
											VMT = Trip length x # of trips				Ave. length
Distance (miles per trip)			10		10		18				4,745	1,460	1,971	8,176	10

Table D-2: Baseline On-Road Vehicle Emissions (2001)				rev. 3/22/05	
Redwood LF 200238					
Trip Characteristics /a/	**0.5 tons/payload Light Duty Auto (Catal.)**	**7 tons/payload Medium Heavy Trucks (Diesel)**	**23 tons/payload Heavy Heavy Trucks (Diesel)**		
# of Daily Trips	575	146	110		
Avg. Daily Trip Length (miles)	10	10	18		
Vehicle Miles Travelled (per day)	5,745	1,460	1,971		
/a/ See trip assumptions table.					
Pollutant	**Running Exhaust Emissions Factor at 55 mph (grams/mile)**				
ROG	0.255	0.214	0.749		
CO	5.923	5.133	15.283		
NOX	0.639	1.204	14.774		
SO2	0.006	0.01	0.116		
Total PM10	0.719	0.723	0.941		
PM10 - Exhaust	0.008	0.012	0.217		
PM10 - Tire Wear	0.008	0.008	0.021		
PM10 - Break Wear	0.013	0.013	0.013		
PM10 - Entrained Road Dust	0.69	0.69	0.69		
				Total for 2001	
Pollutant	**Running Exhaust Emissions (grams/day)**			**(grams/day)**	**(lbs/day)**
ROG	1,465	312	1,476	3,254	7
CO	34,028	7,494	30,123	71,645	158
NOX	3,671	1,758	29,120	34,548	76
SO2	34	15	229	278	1
Total PM10	4,131	1,056	1,855	7,041	16
PM10 - Exhaust	46	18	428	491	1
PM10 - Tire Wear	46	12	41	99	0
PM10 - Break Wear	75	19	26	119	0
PM10 - Entrained Road Dust	3,964	1,007	1,360	6,331	14
Notes					
1 - Emission factors derived using EMFAC2002 V2.2, except for PM10 Entrained Road Dust.					
The BAAQMD-recommended factor of 0.69 grams of PM10 per vehicle mile traveled was used.					
2 - All emission factors are for summer (assuming an average daytime temperature of 80 degrees Fahrenheit and					
50% relative humidity) except for CO, which is for winter (assuming an average daytime temperature of					
55 degrees Fahrenheit and 60% relative humidity).					

Table D-3: Project On-Road Vehicle Emissions (2005)				rev. 3/22/05			
Redwood LF 200238							
Trip Characteristics /a/	**0.5 tons/payload Light Duty Auto (Catal.)**	**7 tons/payload Medium Heavy Trucks (Diesel)**	**23 tons/payload Heavy Heavy Trucks (Diesel)**				
# of Daily Trips	551	355	275	-23	209	165	374
Avg. Daily Trip Length (miles)	12.7	12.7	24				
Vehicle Miles Travelled (per day)	7,002	4,505	6,594				
/a/ See trip assumptions table.							
Pollutant	**Running Exhaust Emissions Factor at 55 mph (grams/mile)**						
ROG	0.162	0.156	0.611				
CO	5.923	5.133	15.283				
NOX	0.414	0.959	12.637				
SO2	0.004	0.008	0.121				
Total PM10	0.719	0.726	0.905				
PM10 - Exhaust	0.008	0.014	0.181				
PM10 - Tire Wear	0.008	0.009	0.021				
PM10 - Break Wear	0.013	0.013	0.013				
PM10 - Entrained Road Dust	0.69	0.69	0.69				
				Total for 2005			
Pollutant	**Running Exhaust Emissions (grams/day)**			**(grams/day)**	**(lbs/day)**		
ROG	1,134	703	4,029	5,866	13		
CO	41,472	23,124	100,783	165,379	365		
NO_x	2,899	4,320	83,334	90,553	200		
SO_2	28	36	798	862	2		
Total PM_{10}	5,034	3,271	5,968	14,273	31		
PM_{10} - Exhaust	56	63	1,194	1,313	3		
PM_{10} - Tire Wear	56	41	138	235	1		
PM_{10} - Break Wear	91	59	86	235	1		
PM_{10} - Entrained Road Dust	4,831	3,108	4,550	12,490	28		
Notes							
1 - Emission factors derived using EMFAC2002 V2.2, except for PM10 Entrained Road Dust.							
The BAAQMD-recommended factor of 0.69 grams of PM10 per vehicle mile traveled was used.							
2 - All emission factors are for summer (assuming an average daytime temperature of 80 degrees Fahrenheit and							
50% relative humidity) except for CO, which is for winter (assuming an average daytime temperature of							
55 degrees Fahrenheit and 60% relative humidity).							

Table D-4: Off-Road Equipment Emissions

rev. 3/21/05

Redwood LF 200238

Equipment Model	General Description	Number Used	Assumed hp-rating	Hours/Week/ Piece of Equipment	Typical Operating Load Factor	Existing Operations (2001) Total Hours/ Week	Existing Operations (2001) Total Hours/ Day	Existing Operations (2001) Total hp-hours/ Day	Project Operations (2005) Total Hours/ Week	Project Operations (2005) Total Hours/ Day	Project Operations (2005) Total hp-hours/ Day	Description of Use
Cat 826C	Compactor	2	380	49	0.55	98	16	3,414	184	31	6,418	Refuse Management
Cat D300	Dump Truck	3	240	29	0.65	87	15	2,262	164	27	4,253	Hauling dirt and daily cover
Cat D6H	Track-type tractor	1	165	24	0.55	24	4	363	45	8	682	Refuse Management
Cat D9	Track-type tractor	1	405	20	0.55	20	3	743	38	6	1,396	Moving soil/construction/cover
Komatsu D65	Track-type tractor	1	180	4	0.55	4	1	66	8	1	124	Moving soil/construction/cover
Komatsu D60	Track-type tractor	1	180	2	0.55	2	0	33	4	1	62	Moving soil/construction/cover
Cat 980	Rubber-tire loader	1	311	34	0.54	34	6	952	64	11	1,789	Loading dirt and materials
Cat 950	Rubber-tire loader	1	180	17	0.54	17	3	275	32	5	518	Loading materials/composting ops
Cat 966	Rubber-tire loader	1	235	18	0.54	18	3	381	34	6	716	Loading materials/composting ops
Komatsu W60(	Rubber-tire loader	1	200	16	0.54	16	3	288	30	5	541	Loading dirt and materials
Terrex	Water truck 4k gal	1	180	10	0.65	10	2	195	19	3	367	Dust and fire control
Cat 14G	Motorgrader	1	180	23	0.61	23	4	421	43	7	791	Site and road maintenance, repair
Brown Bear	Rubber-tire tractor	1	180	0	0.59	-	-	-	-	-	-	Sludge processing/turning
Columbia	Truck tipper	2	180	NA	0.55	NA	NA	NA	86	14	1,427	Trailer tipping (refuse & compost)
Frontier	Windrow turner	1	180	7	0.55	7	1	116	13	2	217	Composting operations
			Total:	253		360	60	9,507	763	127	19,301	

Pollutant	Emission Factor (grams/hp-hour)	Emissions (lbs/day) Existing (2001)	Project (2005)	Net Increment
ROG	0.32	7	14	7
CO	0.92	19	39	20
NOx	5.47	115	233	**118**
PM10	0.13	2.82	5.73	2.91

Notes

1 -- Information on equipment type, use and usage rate on a weekly basis for existing conditions provided by project applicant. A tub grinder was not included on an update of the JTD Table 5-5 equipment list provided by the applicant (G. Roycroft, July 21, 2001), presumably as an oversight. The tub grinder is not included in this emissions inventory list because the applicant currently is permitted to operate the tub grinder up to 8 hours per day (peak); daily use is not expected to increase substantially beyond this under the project.

2 -- In the summer of 1997, RLI acquired and began using the waste tipper. For that reason, its use is not considered for the 1994 existing conditions scenario.

3 -- Off-road equipment use is assumed to increase proportionally with the overall increase in peak day material receipts from Table 2-1.

1994 Permit Conditions:	2,300	tons
2005 Project Conditions:	4,324	tons
	1.9	Increase applied to equipment use

4 -- Where feasible, hp-ratings for individual models of equipment were obtained from the applicable manufacturer's website. Professional judgement was used to estimate the remaining hp-ratings.

5 -- Based on composite uncontrolled emission factors for post-1987 model years for equipment with a hp-rating below 175 hp and Tier 1 emission rates for engines with a hp-rating greater than 175 hp. Emission factor data was obtained from the California Air Resources Board's Emission Inventory of Off-Road Large Compression-Ignited Engines (>25 hp) Using the New OFFROAD Emissions Model Mail Out#: MSC 99-32, January 27, 2000 (Tables 12 and 13). Load factors are taken from Appendix B. of this document.

6 -- Emission factors for NOx and PM10 have been adjusted using fuel correction factors (Table 15) to account for the use of California diesel fuel.

Table D-5: Fugitive Dust Emissions (Revised)				rev. 3/22/05
Redwood LF 200238				
	PM-10 Emissions (lbs/day)			
		2005	Net	
Fugitive Dust Source[1]	Baseline	Conditions	Increase	Notes
Off-Site Vehicle Travel on Gravel Surfaces at Redwood LF	351	499	148	Assumes watering effectiveness of 75%.
Off-Site Vehicle Travel on Dirt Surfaces at Redwood LF	285	406	120	Assumes watering effectiveness of 75%.
On-Site Vehicle Travel on Dirt Surfaces at Redwood LF	57	107	50	Assumes watering effectiveness of 75%.
Off-Site Vehicle Travel on Paved Surfaces at Redwood LF	86	122	36	Assumes watering or sweeping w/ 50% effectiveness.
Waste Handling	37	56	19	
Wind Erosion	1	2	1	Includes wind erosion from active LF face and cover stockpiles.
Totals	**817**	**1,191**	**375**	
[1] See detailed worksheets for emissions estimates from each fugitive dust source.				

Emisssions Calculations for Off-Site Vehicle Travel on Gravel Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k\,(s/12)^a (W/3)^b$$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

$$E = [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$$

where:

E = size-specific emissions factor (lb/VMT)
s = surface material silt content (%), default 6.4%
W = mean vehicle weight (tons)
M = surface material moisture content (%), default for regularly watered roads is 4%.
S = mean vehicle speed (mph), default and maximum is 15 mph
C = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.
k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = E\,[(365 - P)/365]$$

where:
E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
E = emission factor from Equation 1a or 1b
P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:
Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	**6**
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	6.4	6.4	6.4
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	0.00036	0.00047	0.00047
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	**0.23**	**1.5**	**4.9**
a	**0.9**	**0.9**	**0.7**
b	**0.45**	**0.45**	**0.45**
s	6.4	6.4	6.4
W	15.42	15.42	15.42
P	**60**	**60**	**60**

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.273	1.780	6.592	Uncontrolled
Equation 2 - 1a	0.228	1.487	5.509	Uncontrolled (but natural Mitigation)

	Baseline	2005 Conditions	
Off-Site Trips/day	830	1,180	- one-way trips
Unpaved Length (ft)	6,000	6,000	- from BAAQMD permits (one-way)
VMT/day	943	1,341	

	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	257	1,678	6,218	366	2,386	8,840	109	708	2,622
Equation 2 - 1a	215	1,403	5,196	306	1,994	7,386	91	591	2,191
Watered + 2	54	351	1,299	76	499	1,847	23	148	548

Emisssions Calculations for Off-Site Vehicle Travel on Dirt Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k\,(s/12)^a (W/3)^b$$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

$$E = [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$$

where:

E = size-specific emissions factor (lb/VMT)
s = surface material silt content (%), 11% for dirt roads
W = mean vehicle weight (tons)
M = surface material moisture content (%), default for regularly watered roads is 4%.
S = mean vehicle speed (mph), default and maximum is 15 mph
C = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.
k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = E\,[(365 - P)/365]$$

where:
E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
E = emission factor from Equation 1a or 1b
P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:
Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	**6**
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	11	11	11
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	0.23	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45
s	11	11	11
W	15.42	15.42	15.42

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.444	2.897	9.631	Uncontrolled
Equation 2 - 1a	0.371	2.421	8.048	Uncontrolled (but natural Mitigation)

	Baseline	2005 Conditions	
Off-Site Trips/day	830	1,180	- one-way trips
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)
VMT/day	472	670	

	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	210	1,366	4,542	298	1,943	6,457	88	576	1,915
Equation 2 - 1a	175	1,142	3,795	249	1,623	5,396	74	481	1,600
Watered + 2	44	285	949	62	406	1,349	18	120	400

Emisssions Calculations for On-Site Vehicle Travel on Dirt Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k\,(s/12)^a (W/3)^b$$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

$$E = [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$$

where:

- E = size-specific emissions factor (lb/VMT)
- s = surface material silt content (%), 11% for dirt roads
- W = mean vehicle weight (tons)
- M = surface material moisture content (%), default for regularly watered roads is 4%.
- S = mean vehicle speed (mph), default and maximum is 15 mph
- *C* = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.
- k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = E\,[(365 - P)/365]$$

where:

- E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
- E = emission factor from Equation 1a or 1b
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:

Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	6
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	11	11	11
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	0.23	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45
s	11	11	11
W	28.37	28.37	28.37

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.585	3.812	12.671	Uncontrolled
Equation 2 - 1a	0.488	3.185	10.588	Uncontrolled (but natural Mitigation)

			2005						
		Baseline	Conditions						
General	Number	# of round	# of round						
Description	Used	trips/day	trips/day		Notes:				
Compactor	2	2	4		Adjusted to reflect to reflect increase in waste receipts				
Dump Truck	3	20	38						
Track-type tractor	1	2	4						
Track-type tractor	1	2	4						
Track-type tractor	1	2	4						
Track-type tractor	1	2	4						
Rubber-tire loader	1	2	4						
Rubber-tire loader	1	2	4						
Rubber-tire loader	1	2	4						
Rubber-tire loader	1	2	4						
Water truck 8k gal	1	5	9						
Water truck 4k gal	1	5	9						
Water truck 3k gal	1	5	9						
Motorgrader	1	2	4						
Rubber-tire tractor	1	2	4						
Backhoe	1	2	4						
Truck tipper	2	2	4						
Windrow turner	1	2	4						
Total:		63	118						
		2005							
	Baseline	Conditions							
Off-Site Trips/day	63	118	- Round trips						
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)						
VMT/day	72	135							
	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	42	273	907	79	513	1,705	37	240	798
Equation 2 - 1a	35	228	758	66	429	1,425	31	201	667
Watered + 2	9	57	190	16	107	356	8	50	167

Emissions Calculations for Off-Site Vehicle Travel on Paved Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.1, Paved Roads, Final Rule 12/03

Equation 1: for vehicle travel on a dry paved road:

$$E = [k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C$$

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = [[k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C]\,(1 - (P/4N))$$

where
- E = particulate emission factor (lbs/VMT)
- E_{ext} = annual average emission factor, lbs/VMT
- k = particle size multiplier for particle size range and units of interest
- sL = road surface silt loading (grams per square meter, g/m^2)
- W = average weight (tons) of the vehicles traveling the road, and
- *C* = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area
- N = number of days in averaging period, 365 days

Table 1: Variables used for Equations 1.

	PM-2.5	PM-10	PM-30
k	0.004	0.016	0.082
sL	7.4	7.4	7.4
W	15.42	15.42	15.42
C	0.00036	0.00047	0.00047
P	60	60	60
N	365	365	365

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1	0.1087	0.4359	2.2361	Uncontrolled
Equation 2	0.0909	0.3643	1.8686	Uncontrolled (but natural Mitigation)
Water/Sweep	0.045	0.182	0.934	

	Baseline	2005 Conditions	
Off-Site Trips/day	830	1,180	- one-way trips
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)
VMT/day	472	670	

	Emissions (lbs/day)									
	Baseline			2005			Net Increment			
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	
Equation 1	51	206	1,055	73	292	1,499	22	87	445	Uncontrolled
Equation 2	43	172	881	61	244	1,253	18	72	372	Uncontrolled (but natural Mitigation)
Water/Sweep	21	86	441	30	122	626	9	36	186	

Particulate Emission from Waste Disposal Activities at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.3, Heavy Construction Operations, Final Rule 1/95
AP-42 Chapter 11.9, Western Surface Coal Mining, Final Rule 10/98
AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles, Final Rule 1/95

	Materials	Silt (s)	Moisture (M)	PM-10 Em. Factor (lbs/hour)	Baseline Vehicle (hours/day)	Baseline Number of Vehicles	2005 Conditions Vehicle (hours/day)	2005 Conditions Number of Vehicles	Baseline PM-10 Total (lbs/day)	2005 Conditions PM-10 Total (lbs/day)	Net Increment PM-10 Total (lbs/day)
Bulldozing	waste/other	12.0	11.0	1.0861	6	3	9	3	19.55	29.71	10.16
Bulldozing	cover	9.0	12.0	0.6246	1	1	2	1	0.62	0.95	0.32
Compacting	waste/other	12.0	11.0	1.0861	6	2	9	2	13.03	19.81	6.78
Compacting	cover	9.0	12.0	0.6246	1	1	2	1	0.62	0.95	0.32
Excavating	clay/dirt	9.2	14.0	0.5202	4	1	6	1	2.08	3.16	1.08
				(lbs/ton)	Baseline (tons/day)		2005 Conditions (tons/day)				
Dumping	waste/other	12.0	11.0	0.0001	2,300		4,324		0.31	0.59	0.27
Dumping	cover	9.0	12.0	0.0001	1,150		2,162		0.14	0.26	0.12
TOTAL									36.36	55.43	19.07

1. AP-42 Table 13.2.3-1 recommends using factors from Table 11.0-1 for bulldozer activities.
   Equation from 11.9-1 for bulldozing (overburden): E (lbs PM-10/hour) $= 0.75 * 1.0 * s^{1.5}/M^{1.4}$
2. AP-42 Table 13.2.3-1 recommends using factors derived from Chapter 13.2.4 for dumping activities.
   From page 13.2.4-3: E (lbs PM-10/ton) $= 0.35 * 0.0032 * ((U/5)^{1.3}/(M/2)^{1.4})$
   The mean wind speed (U in equation) used for the site is 6 mph.
3. Mean silt and moisture contents were taken from Table 13.2.4-1 for materials at MSW landfills.

Particulate Emission from Adding and Removing Soil at the Cover Soil Stockpile

	Silt (s)	Moisture (M)	PM-10 Em. Factor (lbs/ton)	Baseline (tons/day)	2005 Conditions (tons/day)	Baseline PM-10 Total (lbs/day)	2005 Conditions PM-10 Total (lbs/day)	Net Increment PM-10 Total (lbs/day)
Soil to Stockpiles	9.0	12.0	0.0001	1,150	2,162	0.1378085	0.25908	0.1212715
Soil to On-Site Trucks	9.0	12.0	0.0001	1,150	2,162	0.1378085	0.25908	0.1212715
Total						0.275617	0.5181599	0.2425429

Wind Erosion Emissions at Redwood Landfill rev. 1/24/05

Source: AP-42 Chapter 13.2.5, Industrial Wind Erosion, Final Rule 1/95

EF	= emission factor, g/m^2 (EF_c is for chronic conditions, EF_a is for acute conditions)
k	= particle size multiplier, dimensionless
N	= number of days of disturbances per year
P_i	= erosion potential for disturbed area, g/m^2
	(Per AP-42, erosion potential is assumed to be 0 between disturbances and for undisturbed areas.)
u^*	= friction velocity, m/s
u_t^*	= threshold friction velocity, m/s
	From Table 13.2.5-1, u_t^* ranges from 0.43 m/s to 1.00 m/s using seive procedure.
	From Table 13.2.5-2, u_t^* ranges from 0.54 m/s for fine coal dust to 1.33 m/s for roadbed material.
	From Table 13.2.5-2, u_t^* = 1.02 m/s for overburden at a coal mine.
u_{10}^+	= fastest mile of wind, m/s, at reference anonometer hieght of 10 cm.
A	= disturbed area, m^2
E	= emissions, grams/year

Equation (1): $u^* = 0.053 * u_{10}^+$

Equation (2): $P_i = 58 * (u^* - u_t^*)^2 + 25 * (u^* - u_t^*)$

Equation (3): $EF = k * \sum_{i=1}^{N} Pi$

Equation (4): $E = EF * A$

Variables for conditions at Redwood Landfill:

Variable	Working Face Daily	Cover Stockpile Daily	Notes:
u_{10}^+	19.21	19.21	For Redwood Landfill u^* = 42.5 mph (19.0 m/s) at 30 feet (9.144 m)
u^*	1.01813	1.01813	Calculated using Equation (1)
u_t^*	1.0	1.0	Assume u_t^* = 1.0 for the compacted landfill working face and watered stockpiles (similar to overburden at a coal mine).
P_i	0.47	0.47	Calculated using Equation (2)
N	1	1	Assumes working face and stockpile are disturbed once every working day

Wind Erosion from the Active Face of the Landfill (PM-10):

	Emissions (lbs/day) Baseline	2005 Conditions	Notes:
k	0.5	0.5	From AP-42 (p. 13.2.5-3)
EF_d	0.24	0.24	Calculated using Equation (3) and daily condition variables.
A_d	1,505	2,829	Per Redwood LF and BAAQMD permit calculations, maximum surface area of working face is 1,800 yd2; 1 yd2 = 0.83612736 m2
Daily Emissions			
grams/day	355	668	Calculated using Equation (4) with daily emission factor (EF_d) and maximum daily surface area (A_d).
lbs/day	0.78	1.47	lbs/day = grams/day / 453.59237

Wind Erosion from the Cover Soil Stockpile (PM-10):

	Emissions (lbs/day) Baseline	2005 Conditions	Notes:
k	0.5	0.5	From AP-42 (p. 13.2.5-3)
EF_d	0.24	0.24	Calculated using Equation (3) and daily condition variables.
A_d	454	854	Per Redwood LF and BAAQMD permit calculations, maximum soil usage is 1,100 yd^3/day.
Daily Emissions			Max SA = 543 yd2. (see below)
grams/day	107	202	
lbs/day	0.24	0.44	

Per Redwood LF and BAAQMD permit calculations:

A_d =

	yd^3	height (m)	radius (m)	SA
Total stored, yd^3	50,000	7	36.9	21,810
Avg, per day, yd^3	320.5	7	6.6	200
Max, per day, yd^3	1100	7	12.2	543

Table D-6: Composting Emissions

rev. 3/22/05 nms

Redwood LF 200238

Tons	Current Permit			Proposed Project			Net Change		
	Annual	Ave	Peak	Annual	Ave	Peak	Annual	Ave	Peak
Green/wood waste	13,000	42	238	124,800	400	400	111,800	358	163
Biosolids	30,702	84	307	29,930	82	82	(772)	(2)	(225)
Food waste	-	-	-	9,984	32	32	9,984	32	32
Total:	43,702	126	545	164,714	514	514	121,012	388	(31)

a) Annual throughput assumes receipt of green/wood waste 312 days per year, and biosolids 365 days per year.

Cubic Yards	Current Permit			Proposed Project			Net Change		
	Annual	Ave	Peak	Annual	Ave	Peak	Annual	Ave	Peak
Green/wood waste	52,000	167	950	499,200	1,600	1,600	447,200	1,433	650
Biosolids	36,135	99	350	33,945	93	93	(2,190)	(6)	(257)
Food waste	-	-	-	11,382	36	36	11,382	36	36
Total:	88,135	266	1,300	544,527	1,729	1,729	456,392	1,464	429

a) For the purposes of estimating volume of food waste, it was assumed that food waste had the same density factor as biosolids.

Composting/Co-Composting Split (cubic yards)	Current Permit		Proposed Project		Percent of Total: Current Permit		Percent of Total: Proposed Project	
Windrow Type	Ave	Peak	Ave	Peak	Ave	Peak	Ave	Peak
Composting	68	600	1,471	1,471	25%	46%	85%	85%
Co-Composting	198	700	259	259	75%	54%	15%	15%
Total:	266	1,300	1,729	1,729	100%	100%	100%	100%

a) The composting/co-composting split assumes that co-composting is done at a 1:1 ratio for green/wood waste and biosolids (i.e., for every cubic yard of biosolids or foodwaste co-composted one cubic yard of green/wood waste is used).

Emissions from Composting at Redwood Landfill -- calculated using SCAQMD emission factors

Emission Factors (lbs/ton of material)	VOC		Ammonia		Composite Factor	
	Active Compost	Curing	Active Compost	Curing	VOC	Ammonia
Composting	3.44	0.4	0.83	0.02	3.84	0.85
Co-Composting	1.42	0.36	1.47	1.47	1.78	2.94

	Annual Throughput (tons)		Emissions (lbs/day): Current Permit		Proposed Project		Net Increment	
	Current Permit	Proposed Project	VOC	Ammonia	VOC	Ammonia	VOC	Ammonia
Composting	11,131	140,051	117	26	1,473	326	1,356	300
Co-Composting	32,571	24,663	159	262	120	199	(39)	(64)
Total:	43,702	164,714	276	288	1,594	525	1,318	237

a) Daily emissions calculated from annual emissions divided by 365 days.

Emissions from Composting at Redwood Landfill -- calculated using CIWMB emission factor (equals 27% of factor used by SCAQMD for green/wood waste)

	VOC Emissions (lbs/day)		
	Current Permit	Proposed Project	Net Increment
Composting	32	398	366
Co-Composting	159	120	(39)
Total:	190	518	328

Emissions Adjusted to reflect commentor's suggestion that ROG is 39% of VOC.

	Current Permit	Proposed Project	Net Increment
Composting	12	155	143
Co-Composting	159	120	(39)
Total:	171	275	104

- VOC emission factor for green/wood waste composting is adjusted to reflect 39% of the factor.

Table D-7: Landfill Gas Emissions
Redwood Landfill

Table D-7a: Landfill Gas Emissions Calculations - Current Permit - 2001

rev. 10/28/02 nms
rev. 2/28/03 crm

Year: 2001		
Peak Methane Generation Rate:	17,880,000	cubic meters/year
Landfill Gas Generation Rate (2x Methane Rate):	35,760,000	cubic meters/year
(in cubic feet/year)	1,262,852,492	cubic feet/year
(in cubic feet/minute)	2,403	cubic feet/minute (scfm)
Gas through LGCS (75%):	1,802	cubic feet/minute (scfm)
Fugitive LFG (25%):	601	cubic feet/minute (scfm)

From EPA Landfill Gas Emissions Model Version 2.0 Peak NMOC emissions under current permit would occur in: 2001

=	76	Megagrams/year
=	168,146	pounds/year
=	461	pounds/day

Per AP-42, VOCs (approximately equal to ROG) account for 39% of NMOCs

Total ROG emissions =	180	pounds/day
ROG through LGCS (75%):	135	pounds/day
Fugitive ROG Emissions (25%):	45	pounds/day

Assuming 98% capture by landfill gas collection system (as required by PTO), fugitive emissions would be:

Fugitive ROG emissions from LGCS: 3 pounds/day

Table D-7: Landfill Gas Emissions
Redwood Landfill

Table D-7b: Landfill Gas Emissions Calculations - Current Permit - 2016

Year: 2016		
Peak Methane Generation Rate:	47,070,000	cubic meters/year
Landfill Gas Generation Rate (2x Methane Rate):	94,140,000	cubic meters/year
	3,324,522,751	cubic feet/year
	6,325	cubic feet/minute (scfm)
Gas through LGCS (75%):	4,744	cubic feet/minute (scfm)
Fugitive LFG (25%):	1,581	cubic feet/minute (scfm)

From EPA Landfill Gas Emissions Model Version 2.0 Peak NMOC emissions under current permit would occur in: 2016

=	201	Megagrams/year
=	442,688	pounds/year
=	1,213	pounds/day

Per AP-42, VOCs (approximately equal to ROG) account for 39% of NMOCs

Total ROG emissions =	473	pounds/day
ROG through LGCS (75%):	355	pounds/day
Fugitive ROG Emissions (25%):	118	pounds/day

Assuming 98% capture by landfill gas collection system (as required by PTO), fugitive emissions would be:

Fugitive ROG emissions from LGCS: 7 pounds/day

Table D-7: Landfill Gas Emissions
Redwood Landfill

Table D-7c: Landfill Gas Emissions Calculations - Proposed at 34.6245 million CY - 2024

Year: 2024 closure year		
Peak Methane Generation Rate:	56,180,000	cubic meters/year
Landfill Gas Generation Rate:	112,360,000	cubic meters/year
(2 x Methane Rate)	3,967,955,984	cubic feet/year
	7,549	cubic feet/minute (scfm)
Gas through LGCS (75%):	5,662	cubic feet/minute (scfm)
Fugitive LFG (25%):	1,887	cubic feet/minute (scfm)

From EPA Landfill Gas Emissions Model Version 2.0 Peak NMOC emissions under proposed permit would occur in: 2024

=	222	Megagrams/year
=	488,323	pounds/year
=	1,338	pounds/day

Per AP-42, VOCs (approximately equal to ROG) account for 39% of NMOCs

Total ROG emissions =	522	pounds/day
ROG through LGCS (75%):	391	pounds/day
Fugitive ROG Emissions (25%):	130	pounds/day

Assuming 98% capture by landfill gas collection system (as required by PTO), fugitive emissions would be:

Fugitive ROG emissions from LGCS:	8	pounds/day

Project increment (project less existing permit) ROG = 1

Table D-8: Sludge Handling Emissions

rev. 3/22/05

Redwood LF 200238

Amount of Sludge (wet tons) Received at Redwood Landfill

Source	Current Permit		Proposed Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	424	455	100	100	(324)	(355)
Composting	84	307	82	82	(2)	(225)
ADC	-	-	50	50	50	50
Total:	508	762	232	232	(276)	(530)
Air Drying	-	500	-	3,000	-	2,500

- air dried tons are not part of material received; this is the amount that would be air dried from Main Impoundment for 2 consecutive spring seasons.

Conversion to Dry tons

Amount of Sludge (dry tons) Received at Redwood Landfill

Source	Current Permit		Proposed Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	85	91	20	20	(65)	(71)
Composting	17	61	16	16	(0)	(45)
ADC	-	-	10	10	10	10
Total:	102	152	46	46	(55)	(106)
Air Drying	-	177	-	600	-	423

Emissions from biosolids used in co-composting are addressed in Impact 3.2.6 and included in Table D-6.

- air dried tons are not part of material received; this is the amount that would be air dried from Main Impoundment for 2 consecutive spring seasons.

Note: a 4:1 ratio is used to convert sludge measured on a wet basis to sludge measured on a dry basis; this is equivalent to about 20 percent solids and is the figure used in the 1997 J.M. Smith & Associates Study and current JTD.

Emissions from Sludge as ADC and Disposed

ROG Emissions (pounds per day) /a/

Source	Current Permit		Proposed Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	25	26	6	6	(19)	(21)
ADC	-	-	3	3	3	3
Stockpiled Materials /b/	12	12	12	12	-	-
Total:	37	38	21	21	(16)	(18)

/a/ Uses an emission factor of 0.29 pounds or ROG (used synonomously with VOCs) per dry ton of sludge treated per day. Source: J.M. Smith 1998 Study.

/b/ Evaporative emissions from stockpiled sludge are estimated to be about 12 pounds per day. Source: 1998 JTD.

Emissions from Sludge Air Drying

ROG Emissions (pounds per day) /a/

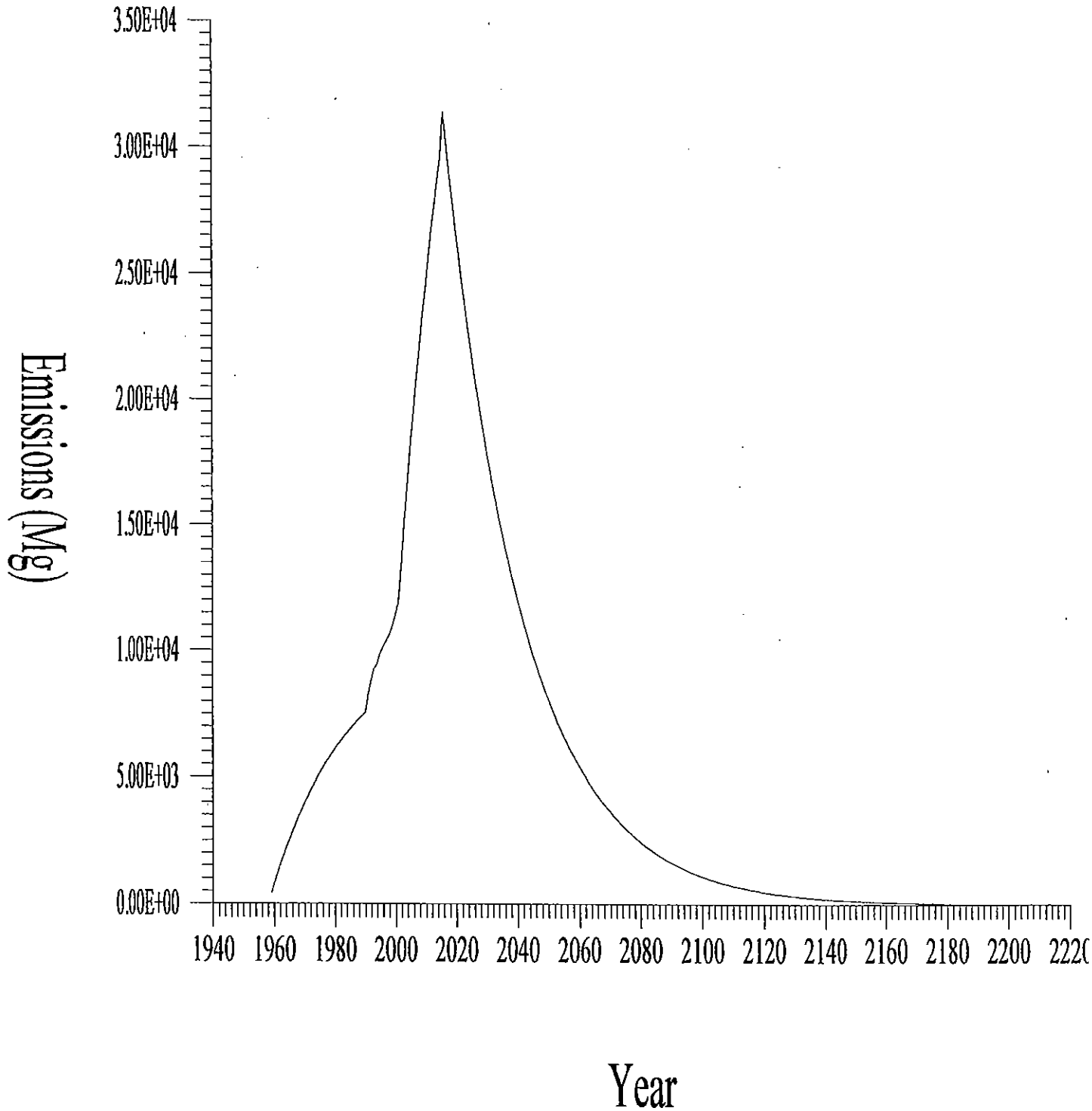
Source	Current Permit /b/		Proposed Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Air Drying	-	24	-	174	-	150

/a/ Uses an emission factor of 0.29 pounds or ROG (used synonomously with VOCs) per dry ton of sludge treated per day. Source: J.M. Smith 1998 Study.

/b/ Uses the 24 pounds per day figures stated in the 1994 FEIR as a baseline.

Current Permit

Projected Methane Emissions



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2001 Closure Year: 2016
Capacity : 20157720 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 779798.73 Mg/year

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	(Cubic m/yr)
1959	1.531E+05	4.085E+02	6.123E+05
1960	3.062E+05	8.010E+02	1.201E+06
1961	4.592E+05	1.178E+03	1.766E+06
1962	6.123E+05	1.540E+03	2.309E+06
1963	7.654E+05	1.889E+03	2.831E+06
1964	9.185E+05	2.223E+03	3.332E+06
1965	1.072E+06	2.544E+03	3.814E+06
1966	1.225E+06	2.853E+03	4.277E+06
1967	1.378E+06	3.150E+03	4.721E+06
1968	1.531E+06	3.435E+03	5.148E+06
1969	1.684E+06	3.709E+03	5.559E+06
1970	1.837E+06	3.972E+03	5.953E+06
1971	1.990E+06	4.224E+03	6.332E+06
1972	2.143E+06	4.467E+03	6.696E+06
1973	2.296E+06	4.701E+03	7.046E+06
1974	2.449E+06	4.925E+03	7.382E+06
1975	2.602E+06	5.140E+03	7.705E+06
1976	2.755E+06	5.347E+03	8.015E+06
1977	2.909E+06	5.546E+03	8.313E+06
1978	3.062E+06	5.737E+03	8.600E+06
1979	3.215E+06	5.921E+03	8.875E+06
1980	3.368E+06	6.097E+03	9.139E+06
1981	3.521E+06	6.267E+03	9.393E+06
1982	3.674E+06	6.429E+03	9.637E+06
1983	3.827E+06	6.586E+03	9.871E+06
1984	3.980E+06	6.736E+03	1.010E+07
1985	4.133E+06	6.880E+03	1.031E+07
1986	4.286E+06	7.019E+03	1.052E+07
1987	4.439E+06	7.152E+03	1.072E+07
1988	4.592E+06	7.280E+03	1.091E+07
1989	4.746E+06	7.404E+03	1.110E+07
1990	4.899E+06	7.522E+03	1.127E+07
1991	5.284E+06	8.256E+03	1.238E+07
1992	5.609E+06	8.800E+03	1.319E+07
1993	5.912E+06	9.263E+03	1.388E+07
1994	6.121E+06	9.457E+03	1.418E+07
1995	6.408E+06	9.852E+03	1.477E+07
1996	6.665E+06	1.015E+04	1.522E+07
1997	6.899E+06	1.038E+04	1.556E+07
1998	7.146E+06	1.063E+04	1.593E+07
1999	7.429E+06	1.097E+04	1.644E+07
2000	7.772E+06	1.145E+04	1.717E+07

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	1.193E+04	1.788E+07
2002	8.898E+06	1.354E+04	2.030E+07
2003	9.678E+06	1.509E+04	2.262E+07
2004	1.046E+07	1.658E+04	2.485E+07
2005	1.124E+07	1.801E+04	2.700E+07
2006	1.202E+07	1.939E+04	2.906E+07
2007	1.280E+07	2.071E+04	3.104E+07
2008	1.358E+07	2.198E+04	3.294E+07
2009	1.436E+07	2.320E+04	3.477E+07
2010	1.514E+07	2.437E+04	3.652E+07
2011	1.592E+07	2.549E+04	3.821E+07
2012	1.670E+07	2.657E+04	3.983E+07
2013	1.748E+07	2.761E+04	4.139E+07
2014	1.826E+07	2.861E+04	4.289E+07
2015	1.904E+07	2.957E+04	4.432E+07
2016	2.016E+07	3.141E+04	4.707E+07
2017	2.016E+07	3.017E+04	4.523E+07
2018	2.016E+07	2.899E+04	4.346E+07
2019	2.016E+07	2.785E+04	4.175E+07
2020	2.016E+07	2.676E+04	4.011E+07
2021	2.016E+07	2.571E+04	3.854E+07
2022	2.016E+07	2.470E+04	3.703E+07
2023	2.016E+07	2.374E+04	3.558E+07
2024	2.016E+07	2.281E+04	3.418E+07
2025	2.016E+07	2.191E+04	3.284E+07
2026	2.016E+07	2.105E+04	3.156E+07
2027	2.016E+07	2.023E+04	3.032E+07
2028	2.016E+07	1.943E+04	2.913E+07
2029	2.016E+07	1.867E+04	2.799E+07
2030	2.016E+07	1.794E+04	2.689E+07
2031	2.016E+07	1.724E+04	2.584E+07
2032	2.016E+07	1.656E+04	2.482E+07
2033	2.016E+07	1.591E+04	2.385E+07
2034	2.016E+07	1.529E+04	2.291E+07
2035	2.016E+07	1.469E+04	2.202E+07
2036	2.016E+07	1.411E+04	2.115E+07
2037	2.016E+07	1.356E+04	2.032E+07
2038	2.016E+07	1.303E+04	1.953E+07
2039	2.016E+07	1.252E+04	1.876E+07
2040	2.016E+07	1.203E+04	1.802E+07
2041	2.016E+07	1.155E+04	1.732E+07
2042	2.016E+07	1.110E+04	1.664E+07
2043	2.016E+07	1.067E+04	1.599E+07
2044	2.016E+07	1.025E+04	1.536E+07
2045	2.016E+07	9.845E+03	1.476E+07
2046	2.016E+07	9.459E+03	1.418E+07
2047	2.016E+07	9.088E+03	1.362E+07
2048	2.016E+07	8.732E+03	1.309E+07
2049	2.016E+07	8.390E+03	1.258E+07
2050	2.016E+07	8.061E+03	1.208E+07
2051	2.016E+07	7.745E+03	1.161E+07
2052	2.016E+07	7.441E+03	1.115E+07
2053	2.016E+07	7.149E+03	1.072E+07
2054	2.016E+07	6.869E+03	1.030E+07
2055	2.016E+07	6.599E+03	9.892E+06
2056	2.016E+07	6.341E+03	9.504E+06
2057	2.016E+07	6.092E+03	9.132E+06
2058	2.016E+07	5.853E+03	8.773E+06
2059	2.016E+07	5.624E+03	8.429E+06
2060	2.016E+07	5.403E+03	8.099E+06
2061	2.016E+07	5.191E+03	7.781E+06
2062	2.016E+07	4.988E+03	7.476E+06
2063	2.016E+07	4.792E+03	7.183E+06
2064	2.016E+07	4.604E+03	6.901E+06
2065	2.016E+07	4.424E+03	6.631E+06
2066	2.016E+07	4.250E+03	6.371E+06

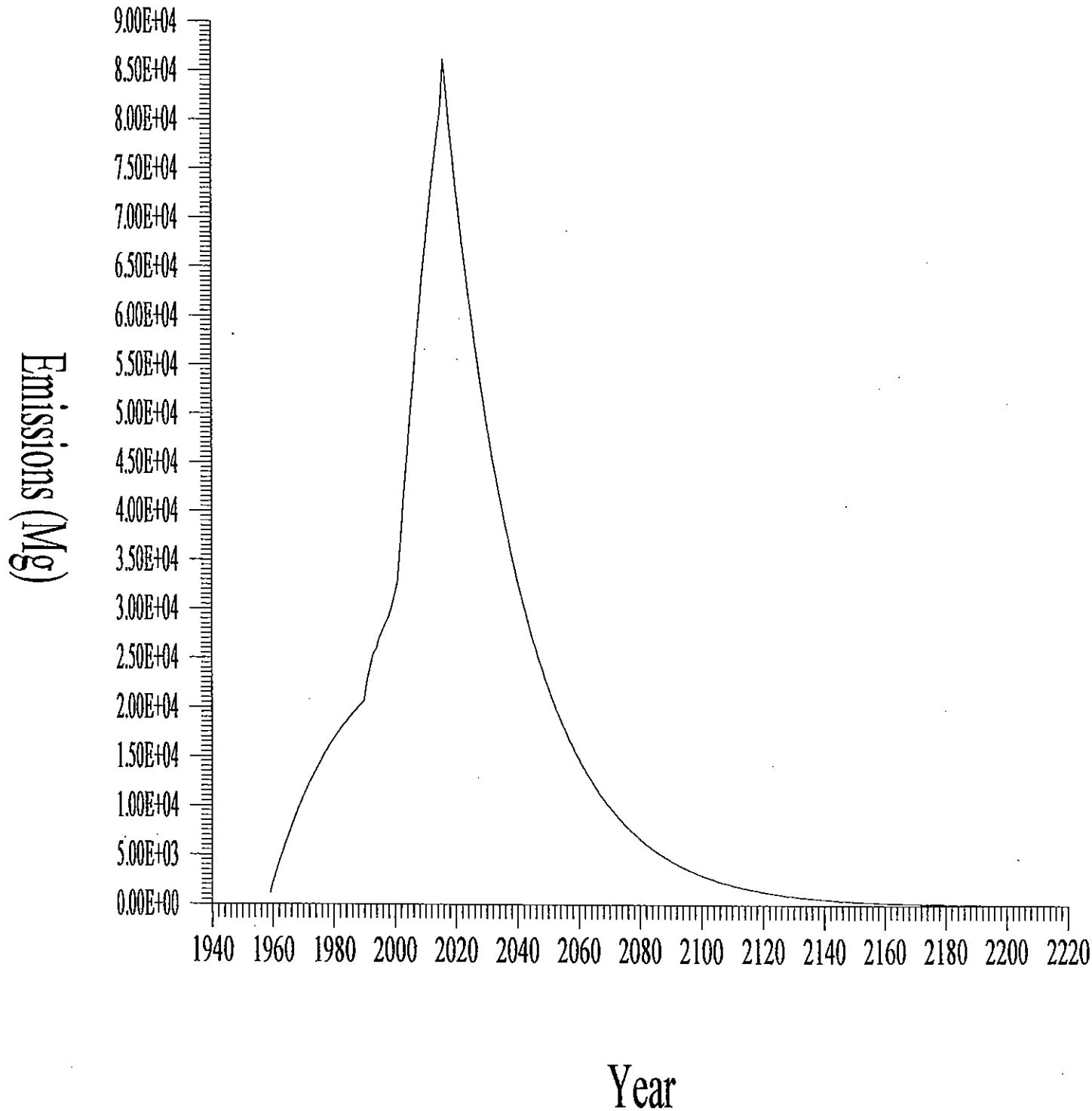
Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2067	2.016E+07	4.084E+03	6.121E+06
2068	2.016E+07	3.924E+03	5.881E+06
2069	2.016E+07	3.770E+03	5.650E+06
2070	2.016E+07	3.622E+03	5.429E+06
2071	2.016E+07	3.480E+03	5.216E+06
2072	2.016E+07	3.343E+03	5.011E+06
2073	2.016E+07	3.212E+03	4.815E+06
2074	2.016E+07	3.086E+03	4.626E+06
2075	2.016E+07	2.965E+03	4.445E+06
2076	2.016E+07	2.849E+03	4.271E+06
2077	2.016E+07	2.737E+03	4.103E+06
2078	2.016E+07	2.630E+03	3.942E+06
2079	2.016E+07	2.527E+03	3.788E+06
2080	2.016E+07	2.428E+03	3.639E+06
2081	2.016E+07	2.333E+03	3.496E+06
2082	2.016E+07	2.241E+03	3.359E+06
2083	2.016E+07	2.153E+03	3.228E+06
2084	2.016E+07	2.069E+03	3.101E+06
2085	2.016E+07	1.988E+03	2.979E+06
2086	2.016E+07	1.910E+03	2.863E+06
2087	2.016E+07	1.835E+03	2.750E+06
2088	2.016E+07	1.763E+03	2.643E+06
2089	2.016E+07	1.694E+03	2.539E+06
2090	2.016E+07	1.627E+03	2.439E+06
2091	2.016E+07	1.564E+03	2.344E+06
2092	2.016E+07	1.502E+03	2.252E+06
2093	2.016E+07	1.443E+03	2.164E+06
2094	2.016E+07	1.387E+03	2.079E+06
2095	2.016E+07	1.332E+03	1.997E+06
2096	2.016E+07	1.280E+03	1.919E+06
2097	2.016E+07	1.230E+03	1.844E+06
2098	2.016E+07	1.182E+03	1.771E+06
2099	2.016E+07	1.135E+03	1.702E+06
2100	2.016E+07	1.091E+03	1.635E+06
2101	2.016E+07	1.048E+03	1.571E+06
2102	2.016E+07	1.007E+03	1.509E+06
2103	2.016E+07	9.675E+02	1.450E+06
2104	2.016E+07	9.296E+02	1.393E+06
2105	2.016E+07	8.931E+02	1.339E+06
2106	2.016E+07	8.581E+02	1.286E+06
2107	2.016E+07	8.245E+02	1.236E+06
2108	2.016E+07	7.921E+02	1.187E+06
2109	2.016E+07	7.611E+02	1.141E+06
2110	2.016E+07	7.312E+02	1.096E+06
2111	2.016E+07	7.026E+02	1.053E+06
2112	2.016E+07	6.750E+02	1.012E+06
2113	2.016E+07	6.486E+02	9.721E+05
2114	2.016E+07	6.231E+02	9.340E+05
2115	2.016E+07	5.987E+02	8.974E+05
2116	2.016E+07	5.752E+02	8.622E+05
2117	2.016E+07	5.527E+02	8.284E+05
2118	2.016E+07	5.310E+02	7.959E+05
2119	2.016E+07	5.102E+02	7.647E+05
2120	2.016E+07	4.902E+02	7.347E+05
2121	2.016E+07	4.709E+02	7.059E+05
2122	2.016E+07	4.525E+02	6.782E+05
2123	2.016E+07	4.347E+02	6.516E+05
2124	2.016E+07	4.177E+02	6.261E+05
2125	2.016E+07	4.013E+02	6.015E+05
2126	2.016E+07	3.856E+02	5.780E+05
2127	2.016E+07	3.705E+02	5.553E+05
2128	2.016E+07	3.559E+02	5.335E+05
2129	2.016E+07	3.420E+02	5.126E+05
2130	2.016E+07	3.286E+02	4.925E+05
2131	2.016E+07	3.157E+02	4.732E+05
2132	2.016E+07	3.033E+02	4.546E+05

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.016E+07	2.914E+02	4.368E+05
2134	2.016E+07	2.800E+02	4.197E+05
2135	2.016E+07	2.690E+02	4.032E+05
2136	2.016E+07	2.585E+02	3.874E+05
2137	2.016E+07	2.483E+02	3.722E+05
2138	2.016E+07	2.386E+02	3.576E+05
2139	2.016E+07	2.292E+02	3.436E+05
2140	2.016E+07	2.202E+02	3.301E+05
2141	2.016E+07	2.116E+02	3.172E+05
2142	2.016E+07	2.033E+02	3.047E+05
2143	2.016E+07	1.953E+02	2.928E+05
2144	2.016E+07	1.877E+02	2.813E+05
2145	2.016E+07	1.803E+02	2.703E+05
2146	2.016E+07	1.733E+02	2.597E+05
2147	2.016E+07	1.665E+02	2.495E+05
2148	2.016E+07	1.599E+02	2.397E+05
2149	2.016E+07	1.537E+02	2.303E+05
2150	2.016E+07	1.476E+02	2.213E+05
2151	2.016E+07	1.418E+02	2.126E+05
2152	2.016E+07	1.363E+02	2.043E+05
2153	2.016E+07	1.309E+02	1.963E+05
2154	2.016E+07	1.258E+02	1.886E+05
2155	2.016E+07	1.209E+02	1.812E+05
2156	2.016E+07	1.161E+02	1.741E+05
2157	2.016E+07	1.116E+02	1.672E+05
2158	2.016E+07	1.072E+02	1.607E+05
2159	2.016E+07	1.030E+02	1.544E+05
2160	2.016E+07	9.896E+01	1.483E+05
2161	2.016E+07	9.508E+01	1.425E+05
2162	2.016E+07	9.135E+01	1.369E+05
2163	2.016E+07	8.777E+01	1.316E+05
2164	2.016E+07	8.433E+01	1.264E+05
2165	2.016E+07	8.102E+01	1.214E+05
2166	2.016E+07	7.785E+01	1.167E+05
2167	2.016E+07	7.479E+01	1.121E+05
2168	2.016E+07	7.186E+01	1.077E+05
2169	2.016E+07	6.904E+01	1.035E+05
2170	2.016E+07	6.634E+01	9.943E+04
2171	2.016E+07	6.374E+01	9.553E+04
2172	2.016E+07	6.124E+01	9.179E+04
2173	2.016E+07	5.884E+01	8.819E+04
2174	2.016E+07	5.653E+01	8.473E+04
2175	2.016E+07	5.431E+01	8.141E+04
2176	2.016E+07	5.218E+01	7.822E+04
2177	2.016E+07	5.014E+01	7.515E+04
2178	2.016E+07	4.817E+01	7.220E+04
2179	2.016E+07	4.628E+01	6.937E+04
2180	2.016E+07	4.447E+01	6.665E+04
2181	2.016E+07	4.272E+01	6.404E+04
2182	2.016E+07	4.105E+01	6.153E+04
2183	2.016E+07	3.944E+01	5.912E+04
2184	2.016E+07	3.789E+01	5.680E+04
2185	2.016E+07	3.641E+01	5.457E+04
2186	2.016E+07	3.498E+01	5.243E+04
2187	2.016E+07	3.361E+01	5.037E+04
2188	2.016E+07	3.229E+01	4.840E+04
2189	2.016E+07	3.102E+01	4.650E+04
2190	2.016E+07	2.981E+01	4.468E+04
2191	2.016E+07	2.864E+01	4.293E+04
2192	2.016E+07	2.752E+01	4.124E+04
2193	2.016E+07	2.644E+01	3.963E+04
2194	2.016E+07	2.540E+01	3.807E+04
2195	2.016E+07	2.440E+01	3.658E+04
2196	2.016E+07	2.345E+01	3.515E+04
2197	2.016E+07	2.253E+01	3.377E+04
2198	2.016E+07	2.164E+01	3.244E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.016E+07	2.080E+01	3.117E+04
2200	2.016E+07	1.998E+01	2.995E+04
2201	2.016E+07	1.920E+01	2.877E+04
2202	2.016E+07	1.844E+01	2.765E+04
2203	2.016E+07	1.772E+01	2.656E+04
2204	2.016E+07	1.703E+01	2.552E+04
2205	2.016E+07	1.636E+01	2.452E+04
2206	2.016E+07	1.572E+01	2.356E+04
2207	2.016E+07	1.510E+01	2.263E+04
2208	2.016E+07	1.451E+01	2.175E+04
2209	2.016E+07	1.394E+01	2.089E+04
2210	2.016E+07	1.339E+01	2.008E+04
2211	2.016E+07	1.287E+01	1.929E+04
2212	2.016E+07	1.236E+01	1.853E+04
2213	2.016E+07	1.188E+01	1.781E+04
2214	2.016E+07	1.141E+01	1.711E+04
2215	2.016E+07	1.097E+01	1.644E+04

Projected Carbon Dioxide Emissions

Current Permit



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2001 Closure Year: 2016
Capacity : 20157720 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 779798.73 Mg/year

Model Results

Year	Refuse In Place (Mg)	Carbon Dioxide Emission Rate (Mg/yr)	Carbon Dioxide Emission Rate (Cubic m/yr)
1959	1.531E+05	1.121E+03	6.123E+05
1960	3.062E+05	2.198E+03	1.201E+06
1961	4.592E+05	3.232E+03	1.766E+06
1962	6.123E+05	4.227E+03	2.309E+06
1963	7.654E+05	5.182E+03	2.831E+06
1964	9.185E+05	6.099E+03	3.332E+06
1965	1.072E+06	6.981E+03	3.814E+06
1966	1.225E+06	7.828E+03	4.277E+06
1967	1.378E+06	8.642E+03	4.721E+06
1968	1.531E+06	9.424E+03	5.148E+06
1969	1.684E+06	1.018E+04	5.559E+06
1970	1.837E+06	1.090E+04	5.953E+06
1971	1.990E+06	1.159E+04	6.332E+06
1972	2.143E+06	1.226E+04	6.696E+06
1973	2.296E+06	1.290E+04	7.046E+06
1974	2.449E+06	1.351E+04	7.382E+06
1975	2.602E+06	1.410E+04	7.705E+06
1976	2.755E+06	1.467E+04	8.015E+06
1977	2.909E+06	1.522E+04	8.313E+06
1978	3.062E+06	1.574E+04	8.600E+06
1979	3.215E+06	1.625E+04	8.875E+06
1980	3.368E+06	1.673E+04	9.139E+06
1981	3.521E+06	1.719E+04	9.393E+06
1982	3.674E+06	1.764E+04	9.637E+06
1983	3.827E+06	1.807E+04	9.871E+06
1984	3.980E+06	1.848E+04	1.010E+07
1985	4.133E+06	1.888E+04	1.031E+07
1986	4.286E+06	1.926E+04	1.052E+07
1987	4.439E+06	1.962E+04	1.072E+07
1988	4.592E+06	1.998E+04	1.091E+07
1989	4.746E+06	2.031E+04	1.110E+07
1990	4.899E+06	2.064E+04	1.127E+07
1991	5.284E+06	2.265E+04	1.238E+07
1992	5.609E+06	2.415E+04	1.319E+07
1993	5.912E+06	2.542E+04	1.388E+07
1994	6.121E+06	2.595E+04	1.418E+07
1995	6.408E+06	2.703E+04	1.477E+07
1996	6.665E+06	2.785E+04	1.522E+07
1997	6.899E+06	2.848E+04	1.556E+07
1998	7.146E+06	2.916E+04	1.593E+07
1999	7.429E+06	3.010E+04	1.644E+07
2000	7.772E+06	3.143E+04	1.717E+07

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	3.273E+04	1.788E+07
2002	8.898E+06	3.716E+04	2.030E+07
2003	9.678E+06	4.141E+04	2.262E+07
2004	1.046E+07	4.549E+04	2.485E+07
2005	1.124E+07	4.942E+04	2.700E+07
2006	1.202E+07	5.319E+04	2.906E+07
2007	1.280E+07	5.682E+04	3.104E+07
2008	1.358E+07	6.030E+04	3.294E+07
2009	1.436E+07	6.364E+04	3.477E+07
2010	1.514E+07	6.686E+04	3.652E+07
2011	1.592E+07	6.995E+04	3.821E+07
2012	1.670E+07	7.291E+04	3.983E+07
2013	1.748E+07	7.576E+04	4.139E+07
2014	1.826E+07	7.850E+04	4.289E+07
2015	1.904E+07	8.113E+04	4.432E+07
2016	2.016E+07	8.617E+04	4.707E+07
2017	2.016E+07	8.279E+04	4.523E+07
2018	2.016E+07	7.954E+04	4.346E+07
2019	2.016E+07	7.643E+04	4.175E+07
2020	2.016E+07	7.343E+04	4.011E+07
2021	2.016E+07	7.055E+04	3.854E+07
2022	2.016E+07	6.778E+04	3.703E+07
2023	2.016E+07	6.513E+04	3.558E+07
2024	2.016E+07	6.257E+04	3.418E+07
2025	2.016E+07	6.012E+04	3.284E+07
2026	2.016E+07	5.776E+04	3.156E+07
2027	2.016E+07	5.550E+04	3.032E+07
2028	2.016E+07	5.332E+04	2.913E+07
2029	2.016E+07	5.123E+04	2.799E+07
2030	2.016E+07	4.922E+04	2.689E+07
2031	2.016E+07	4.729E+04	2.584E+07
2032	2.016E+07	4.544E+04	2.482E+07
2033	2.016E+07	4.366E+04	2.385E+07
2034	2.016E+07	4.194E+04	2.291E+07
2035	2.016E+07	4.030E+04	2.202E+07
2036	2.016E+07	3.872E+04	2.115E+07
2037	2.016E+07	3.720E+04	2.032E+07
2038	2.016E+07	3.574E+04	1.953E+07
2039	2.016E+07	3.434E+04	1.876E+07
2040	2.016E+07	3.299E+04	1.802E+07
2041	2.016E+07	3.170E+04	1.732E+07
2042	2.016E+07	3.046E+04	1.664E+07
2043	2.016E+07	2.926E+04	1.599E+07
2044	2.016E+07	2.812E+04	1.536E+07
2045	2.016E+07	2.701E+04	1.476E+07
2046	2.016E+07	2.595E+04	1.418E+07
2047	2.016E+07	2.494E+04	1.362E+07
2048	2.016E+07	2.396E+04	1.309E+07
2049	2.016E+07	2.302E+04	1.258E+07
2050	2.016E+07	2.212E+04	1.208E+07
2051	2.016E+07	2.125E+04	1.161E+07
2052	2.016E+07	2.042E+04	1.115E+07
2053	2.016E+07	1.962E+04	1.072E+07
2054	2.016E+07	1.885E+04	1.030E+07
2055	2.016E+07	1.811E+04	9.892E+06
2056	2.016E+07	1.740E+04	9.504E+06
2057	2.016E+07	1.672E+04	9.132E+06
2058	2.016E+07	1.606E+04	8.773E+06
2059	2.016E+07	1.543E+04	8.429E+06
2060	2.016E+07	1.483E+04	8.099E+06
2061	2.016E+07	1.424E+04	7.781E+06
2062	2.016E+07	1.369E+04	7.476E+06
2063	2.016E+07	1.315E+04	7.183E+06
2064	2.016E+07	1.263E+04	6.901E+06
2065	2.016E+07	1.214E+04	6.631E+06
2066	2.016E+07	1.166E+04	6.371E+06

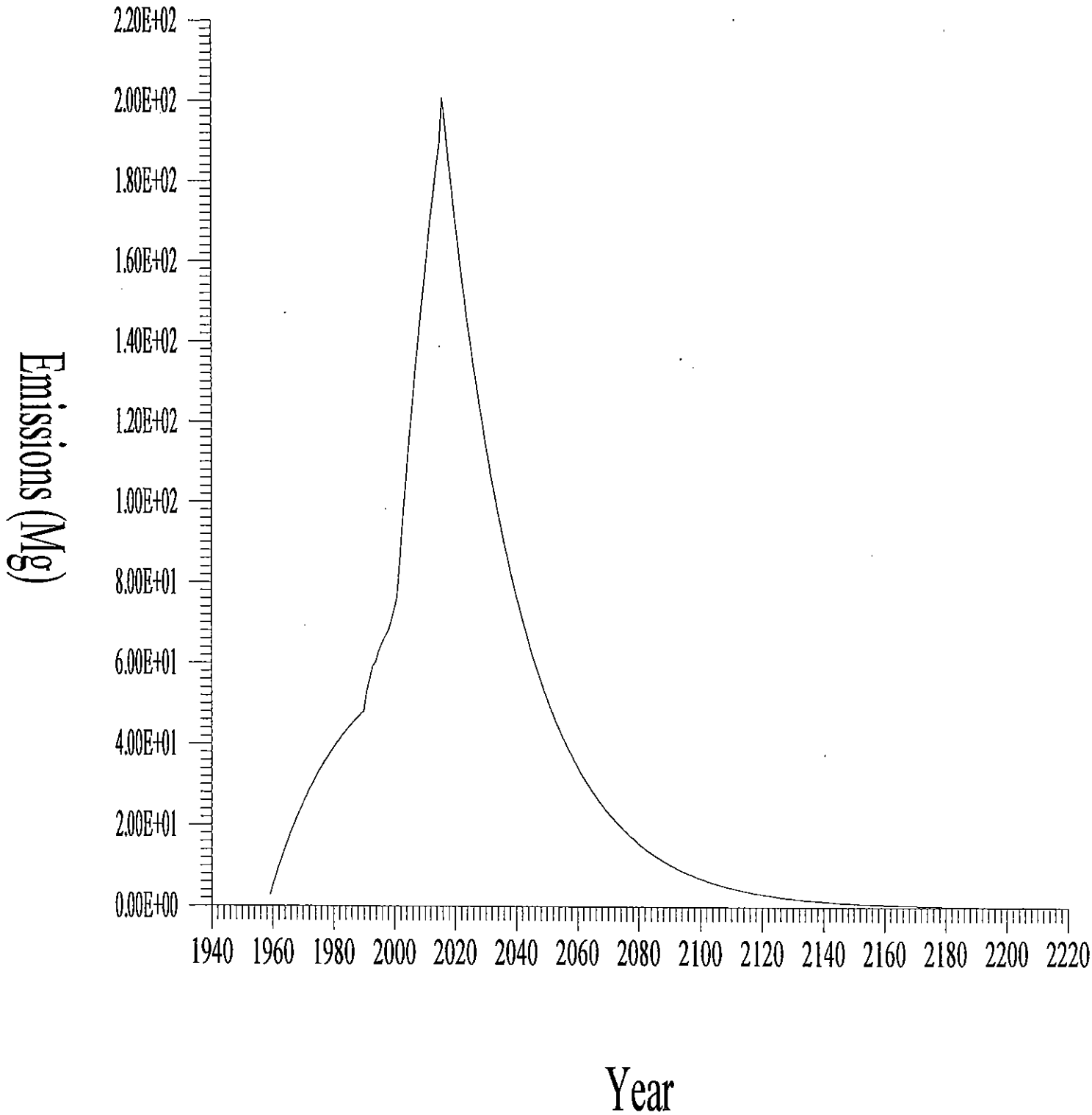
Year	Refuse in Place (Mg)	(Mg/yr)	(Cubic m/yr)
2067	2.016E+07	1.120E+04	6.121E+06
2068	2.016E+07	1.077E+04	5.881E+06
2069	2.016E+07	1.034E+04	5.650E+06
2070	2.016E+07	9.938E+03	5.429E+06
2071	2.016E+07	9.548E+03	5.216E+06
2072	2.016E+07	9.174E+03	5.011E+06
2073	2.016E+07	8.814E+03	4.815E+06
2074	2.016E+07	8.468E+03	4.626E+06
2075	2.016E+07	8.136E+03	4.445E+06
2076	2.016E+07	7.817E+03	4.271E+06
2077	2.016E+07	7.511E+03	4.103E+06
2078	2.016E+07	7.216E+03	3.942E+06
2079	2.016E+07	6.933E+03	3.788E+06
2080	2.016E+07	6.661E+03	3.639E+06
2081	2.016E+07	6.400E+03	3.496E+06
2082	2.016E+07	6.149E+03	3.359E+06
2083	2.016E+07	5.908E+03	3.228E+06
2084	2.016E+07	5.676E+03	3.101E+06
2085	2.016E+07	5.454E+03	2.979E+06
2086	2.016E+07	5.240E+03	2.863E+06
2087	2.016E+07	5.035E+03	2.750E+06
2088	2.016E+07	4.837E+03	2.643E+06
2089	2.016E+07	4.647E+03	2.539E+06
2090	2.016E+07	4.465E+03	2.439E+06
2091	2.016E+07	4.290E+03	2.344E+06
2092	2.016E+07	4.122E+03	2.252E+06
2093	2.016E+07	3.960E+03	2.164E+06
2094	2.016E+07	3.805E+03	2.079E+06
2095	2.016E+07	3.656E+03	1.997E+06
2096	2.016E+07	3.512E+03	1.919E+06
2097	2.016E+07	3.375E+03	1.844E+06
2098	2.016E+07	3.242E+03	1.771E+06
2099	2.016E+07	3.115E+03	1.702E+06
2100	2.016E+07	2.993E+03	1.635E+06
2101	2.016E+07	2.876E+03	1.571E+06
2102	2.016E+07	2.763E+03	1.509E+06
2103	2.016E+07	2.655E+03	1.450E+06
2104	2.016E+07	2.551E+03	1.393E+06
2105	2.016E+07	2.451E+03	1.339E+06
2106	2.016E+07	2.354E+03	1.286E+06
2107	2.016E+07	2.262E+03	1.236E+06
2108	2.016E+07	2.173E+03	1.187E+06
2109	2.016E+07	2.088E+03	1.141E+06
2110	2.016E+07	2.006E+03	1.096E+06
2111	2.016E+07	1.928E+03	1.053E+06
2112	2.016E+07	1.852E+03	1.012E+06
2113	2.016E+07	1.779E+03	9.721E+05
2114	2.016E+07	1.710E+03	9.340E+05
2115	2.016E+07	1.643E+03	8.974E+05
2116	2.016E+07	1.578E+03	8.622E+05
2117	2.016E+07	1.516E+03	8.284E+05
2118	2.016E+07	1.457E+03	7.959E+05
2119	2.016E+07	1.400E+03	7.647E+05
2120	2.016E+07	1.345E+03	7.347E+05
2121	2.016E+07	1.292E+03	7.059E+05
2122	2.016E+07	1.242E+03	6.782E+05
2123	2.016E+07	1.193E+03	6.516E+05
2124	2.016E+07	1.146E+03	6.261E+05
2125	2.016E+07	1.101E+03	6.015E+05
2126	2.016E+07	1.058E+03	5.780E+05
2127	2.016E+07	1.016E+03	5.553E+05
2128	2.016E+07	9.766E+02	5.335E+05
2129	2.016E+07	9.383E+02	5.126E+05
2130	2.016E+07	9.015E+02	4.925E+05
2131	2.016E+07	8.662E+02	4.732E+05
2132	2.016E+07	8.322E+02	4.546E+05

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.016E+07	7.996E+02	4.368E+05
2134	2.016E+07	7.682E+02	4.197E+05
2135	2.016E+07	7.381E+02	4.032E+05
2136	2.016E+07	7.092E+02	3.874E+05
2137	2.016E+07	6.814E+02	3.722E+05
2138	2.016E+07	6.546E+02	3.576E+05
2139	2.016E+07	6.290E+02	3.436E+05
2140	2.016E+07	6.043E+02	3.301E+05
2141	2.016E+07	5.806E+02	3.172E+05
2142	2.016E+07	5.578E+02	3.047E+05
2143	2.016E+07	5.360E+02	2.928E+05
2144	2.016E+07	5.150E+02	2.813E+05
2145	2.016E+07	4.948E+02	2.703E+05
2146	2.016E+07	4.754E+02	2.597E+05
2147	2.016E+07	4.567E+02	2.495E+05
2148	2.016E+07	4.388E+02	2.397E+05
2149	2.016E+07	4.216E+02	2.303E+05
2150	2.016E+07	4.051E+02	2.213E+05
2151	2.016E+07	3.892E+02	2.126E+05
2152	2.016E+07	3.739E+02	2.043E+05
2153	2.016E+07	3.593E+02	1.963E+05
2154	2.016E+07	3.452E+02	1.886E+05
2155	2.016E+07	3.316E+02	1.812E+05
2156	2.016E+07	3.186E+02	1.741E+05
2157	2.016E+07	3.062E+02	1.672E+05
2158	2.016E+07	2.941E+02	1.607E+05
2159	2.016E+07	2.826E+02	1.544E+05
2160	2.016E+07	2.715E+02	1.483E+05
2161	2.016E+07	2.609E+02	1.425E+05
2162	2.016E+07	2.507E+02	1.369E+05
2163	2.016E+07	2.408E+02	1.316E+05
2164	2.016E+07	2.314E+02	1.264E+05
2165	2.016E+07	2.223E+02	1.214E+05
2166	2.016E+07	2.136E+02	1.167E+05
2167	2.016E+07	2.052E+02	1.121E+05
2168	2.016E+07	1.972E+02	1.077E+05
2169	2.016E+07	1.894E+02	1.035E+05
2170	2.016E+07	1.820E+02	9.943E+04
2171	2.016E+07	1.749E+02	9.553E+04
2172	2.016E+07	1.680E+02	9.179E+04
2173	2.016E+07	1.614E+02	8.819E+04
2174	2.016E+07	1.551E+02	8.473E+04
2175	2.016E+07	1.490E+02	8.141E+04
2176	2.016E+07	1.432E+02	7.822E+04
2177	2.016E+07	1.376E+02	7.515E+04
2178	2.016E+07	1.322E+02	7.220E+04
2179	2.016E+07	1.270E+02	6.937E+04
2180	2.016E+07	1.220E+02	6.665E+04
2181	2.016E+07	1.172E+02	6.404E+04
2182	2.016E+07	1.126E+02	6.153E+04
2183	2.016E+07	1.082E+02	5.912E+04
2184	2.016E+07	1.040E+02	5.680E+04
2185	2.016E+07	9.989E+01	5.457E+04
2186	2.016E+07	9.597E+01	5.243E+04
2187	2.016E+07	9.221E+01	5.037E+04
2188	2.016E+07	8.860E+01	4.840E+04
2189	2.016E+07	8.512E+01	4.650E+04
2190	2.016E+07	8.178E+01	4.468E+04
2191	2.016E+07	7.858E+01	4.293E+04
2192	2.016E+07	7.550E+01	4.124E+04
2193	2.016E+07	7.254E+01	3.963E+04
2194	2.016E+07	6.969E+01	3.807E+04
2195	2.016E+07	6.696E+01	3.658E+04
2196	2.016E+07	6.433E+01	3.515E+04
2197	2.016E+07	6.181E+01	3.377E+04
2198	2.016E+07	5.939E+01	3.244E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.016E+07	5.706E+01	3.117E+04
2200	2.016E+07	5.482E+01	2.995E+04
2201	2.016E+07	5.267E+01	2.877E+04
2202	2.016E+07	5.061E+01	2.765E+04
2203	2.016E+07	4.862E+01	2.656E+04
2204	2.016E+07	4.672E+01	2.552E+04
2205	2.016E+07	4.488E+01	2.452E+04
2206	2.016E+07	4.312E+01	2.356E+04
2207	2.016E+07	4.143E+01	2.263E+04
2208	2.016E+07	3.981E+01	2.175E+04
2209	2.016E+07	3.825E+01	2.089E+04
2210	2.016E+07	3.675E+01	2.008E+04
2211	2.016E+07	3.531E+01	1.929E+04
2212	2.016E+07	3.392E+01	1.853E+04
2213	2.016E+07	3.259E+01	1.781E+04
2214	2.016E+07	3.131E+01	1.711E+04
2215	2.016E+07	3.009E+01	1.644E+04

Current Permit

Projected NMOC Emissions



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2001 Closure Year: 2016
Capacity : 20157720 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 779798.73 Mg/year

Model Results

Year	Refuse In Place (Mg)	NMOC Emission Rate (Mg/yr)	NMOC Emission Rate (Cubic m/yr)
1959	1.531E+05	2.612E+00	7.287E+02
1960	3.062E+05	5.121E+00	1.429E+03
1961	4.592E+05	7.532E+00	2.101E+03
1962	6.123E+05	9.849E+00	2.748E+03
1963	7.654E+05	1.207E+01	3.369E+03
1964	9.185E+05	1.421E+01	3.965E+03
1965	1.072E+06	1.627E+01	4.538E+03
1966	1.225E+06	1.824E+01	5.089E+03
1967	1.378E+06	2.014E+01	5.618E+03
1968	1.531E+06	2.196E+01	6.127E+03
1969	1.684E+06	2.371E+01	6.615E+03
1970	1.837E+06	2.539E+01	7.084E+03
1971	1.990E+06	2.701E+01	7.535E+03
1972	2.143E+06	2.856E+01	7.968E+03
1973	2.296E+06	3.005E+01	8.385E+03
1974	2.449E+06	3.149E+01	8.785E+03
1975	2.602E+06	3.287E+01	9.169E+03
1976	2.755E+06	3.419E+01	9.538E+03
1977	2.909E+06	3.546E+01	9.893E+03
1978	3.062E+06	3.668E+01	1.023E+04
1979	3.215E+06	3.785E+01	1.056E+04
1980	3.368E+06	3.898E+01	1.088E+04
1981	3.521E+06	4.007E+01	1.118E+04
1982	3.674E+06	4.111E+01	1.147E+04
1983	3.827E+06	4.211E+01	1.175E+04
1984	3.980E+06	4.307E+01	1.202E+04
1985	4.133E+06	4.399E+01	1.227E+04
1986	4.286E+06	4.488E+01	1.252E+04
1987	4.439E+06	4.573E+01	1.276E+04
1988	4.592E+06	4.655E+01	1.299E+04
1989	4.746E+06	4.734E+01	1.321E+04
1990	4.899E+06	4.809E+01	1.342E+04
1991	5.284E+06	5.279E+01	1.473E+04
1992	5.609E+06	5.626E+01	1.570E+04
1993	5.912E+06	5.922E+01	1.652E+04
1994	6.121E+06	6.047E+01	1.687E+04
1995	6.408E+06	6.299E+01	1.757E+04
1996	6.665E+06	6.490E+01	1.811E+04
1997	6.899E+06	6.636E+01	1.851E+04
1998	7.146E+06	6.796E+01	1.896E+04
1999	7.429E+06	7.014E+01	1.957E+04
2000	7.772E+06	7.324E+01	2.043E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	7.627E+01	2.128E+04
2002	8.898E+06	8.658E+01	2.415E+04
2003	9.678E+06	9.649E+01	2.692E+04
2004	1.046E+07	1.060E+02	2.958E+04
2005	1.124E+07	1.152E+02	3.213E+04
2006	1.202E+07	1.240E+02	3.458E+04
2007	1.280E+07	1.324E+02	3.694E+04
2008	1.358E+07	1.405E+02	3.920E+04
2009	1.436E+07	1.483E+02	4.137E+04
2010	1.514E+07	1.558E+02	4.346E+04
2011	1.592E+07	1.630E+02	4.547E+04
2012	1.670E+07	1.699E+02	4.740E+04
2013	1.748E+07	1.765E+02	4.925E+04
2014	1.826E+07	1.829E+02	5.103E+04
2015	1.904E+07	1.891E+02	5.274E+04
2016	2.016E+07	2.008E+02	5.602E+04
2017	2.016E+07	1.929E+02	5.382E+04
2018	2.016E+07	1.854E+02	5.171E+04
2019	2.016E+07	1.781E+02	4.968E+04
2020	2.016E+07	1.711E+02	4.774E+04
2021	2.016E+07	1.644E+02	4.586E+04
2022	2.016E+07	1.580E+02	4.407E+04
2023	2.016E+07	1.518E+02	4.234E+04
2024	2.016E+07	1.458E+02	4.068E+04
2025	2.016E+07	1.401E+02	3.908E+04
2026	2.016E+07	1.346E+02	3.755E+04
2027	2.016E+07	1.293E+02	3.608E+04
2028	2.016E+07	1.243E+02	3.466E+04
2029	2.016E+07	1.194E+02	3.330E+04
2030	2.016E+07	1.147E+02	3.200E+04
2031	2.016E+07	1.102E+02	3.074E+04
2032	2.016E+07	1.059E+02	2.954E+04
2033	2.016E+07	1.017E+02	2.838E+04
2034	2.016E+07	9.774E+01	2.727E+04
2035	2.016E+07	9.391E+01	2.620E+04
2036	2.016E+07	9.022E+01	2.517E+04
2037	2.016E+07	8.669E+01	2.418E+04
2038	2.016E+07	8.329E+01	2.324E+04
2039	2.016E+07	8.002E+01	2.232E+04
2040	2.016E+07	7.688E+01	2.145E+04
2041	2.016E+07	7.387E+01	2.061E+04
2042	2.016E+07	7.097E+01	1.980E+04
2043	2.016E+07	6.819E+01	1.902E+04
2044	2.016E+07	6.552E+01	1.828E+04
2045	2.016E+07	6.295E+01	1.756E+04
2046	2.016E+07	6.048E+01	1.687E+04
2047	2.016E+07	5.811E+01	1.621E+04
2048	2.016E+07	5.583E+01	1.558E+04
2049	2.016E+07	5.364E+01	1.496E+04
2050	2.016E+07	5.154E+01	1.438E+04
2051	2.016E+07	4.952E+01	1.381E+04
2052	2.016E+07	4.757E+01	1.327E+04
2053	2.016E+07	4.571E+01	1.275E+04
2054	2.016E+07	4.392E+01	1.225E+04
2055	2.016E+07	4.219E+01	1.177E+04
2056	2.016E+07	4.054E+01	1.131E+04
2057	2.016E+07	3.895E+01	1.087E+04
2058	2.016E+07	3.742E+01	1.044E+04
2059	2.016E+07	3.596E+01	1.003E+04
2060	2.016E+07	3.455E+01	9.638E+03
2061	2.016E+07	3.319E+01	9.260E+03
2062	2.016E+07	3.189E+01	8.897E+03
2063	2.016E+07	3.064E+01	8.548E+03
2064	2.016E+07	2.944E+01	8.213E+03
2065	2.016E+07	2.828E+01	7.891E+03
2066	2.016E+07	2.717E+01	7.581E+03

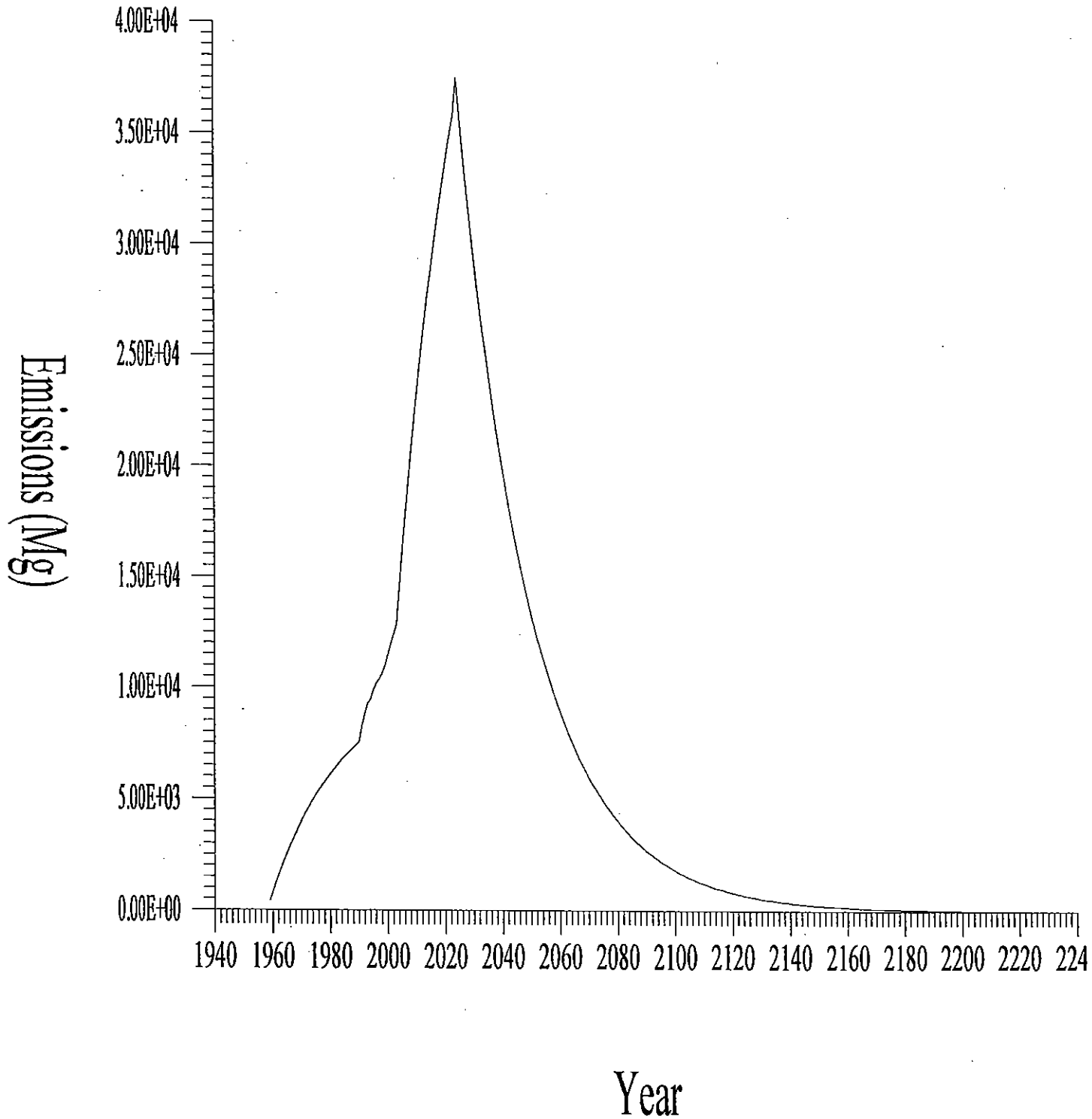
Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2067	2.016E+07	2.611E+01	7.284E+03
2068	2.016E+07	2.509E+01	6.998E+03
2069	2.016E+07	2.410E+01	6.724E+03
2070	2.016E+07	2.316E+01	6.460E+03
2071	2.016E+07	2.225E+01	6.207E+03
2072	2.016E+07	2.138E+01	5.964E+03
2073	2.016E+07	2.054E+01	5.730E+03
2074	2.016E+07	1.973E+01	5.505E+03
2075	2.016E+07	1.896E+01	5.289E+03
2076	2.016E+07	1.822E+01	5.082E+03
2077	2.016E+07	1.750E+01	4.883E+03
2078	2.016E+07	1.682E+01	4.691E+03
2079	2.016E+07	1.616E+01	4.507E+03
2080	2.016E+07	1.552E+01	4.331E+03
2081	2.016E+07	1.491E+01	4.161E+03
2082	2.016E+07	1.433E+01	3.998E+03
2083	2.016E+07	1.377E+01	3.841E+03
2084	2.016E+07	1.323E+01	3.690E+03
2085	2.016E+07	1.271E+01	3.546E+03
2086	2.016E+07	1.221E+01	3.407E+03
2087	2.016E+07	1.173E+01	3.273E+03
2088	2.016E+07	1.127E+01	3.145E+03
2089	2.016E+07	1.083E+01	3.021E+03
2090	2.016E+07	1.041E+01	2.903E+03
2091	2.016E+07	9.997E+00	2.789E+03
2092	2.016E+07	9.605E+00	2.680E+03
2093	2.016E+07	9.229E+00	2.575E+03
2094	2.016E+07	8.867E+00	2.474E+03
2095	2.016E+07	8.519E+00	2.377E+03
2096	2.016E+07	8.185E+00	2.283E+03
2097	2.016E+07	7.864E+00	2.194E+03
2098	2.016E+07	7.556E+00	2.108E+03
2099	2.016E+07	7.259E+00	2.025E+03
2100	2.016E+07	6.975E+00	1.946E+03
2101	2.016E+07	6.701E+00	1.870E+03
2102	2.016E+07	6.439E+00	1.796E+03
2103	2.016E+07	6.186E+00	1.726E+03
2104	2.016E+07	5.943E+00	1.658E+03
2105	2.016E+07	5.710E+00	1.593E+03
2106	2.016E+07	5.487E+00	1.531E+03
2107	2.016E+07	5.271E+00	1.471E+03
2108	2.016E+07	5.065E+00	1.413E+03
2109	2.016E+07	4.866E+00	1.358E+03
2110	2.016E+07	4.675E+00	1.304E+03
2111	2.016E+07	4.492E+00	1.253E+03
2112	2.016E+07	4.316E+00	1.204E+03
2113	2.016E+07	4.147E+00	1.157E+03
2114	2.016E+07	3.984E+00	1.111E+03
2115	2.016E+07	3.828E+00	1.068E+03
2116	2.016E+07	3.678E+00	1.026E+03
2117	2.016E+07	3.534E+00	9.858E+02
2118	2.016E+07	3.395E+00	9.471E+02
2119	2.016E+07	3.262E+00	9.100E+02
2120	2.016E+07	3.134E+00	8.743E+02
2121	2.016E+07	3.011E+00	8.400E+02
2122	2.016E+07	2.893E+00	8.071E+02
2123	2.016E+07	2.780E+00	7.754E+02
2124	2.016E+07	2.671E+00	7.450E+02
2125	2.016E+07	2.566E+00	7.158E+02
2126	2.016E+07	2.465E+00	6.878E+02
2127	2.016E+07	2.369E+00	6.608E+02
2128	2.016E+07	2.276E+00	6.349E+02
2129	2.016E+07	2.186E+00	6.100E+02
2130	2.016E+07	2.101E+00	5.861E+02
2131	2.016E+07	2.018E+00	5.631E+02
2132	2.016E+07	1.939E+00	5.410E+02

Year	Refuse in Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.016E+07	1.863E+00	5.198E+02
2134	2.016E+07	1.790E+00	4.994E+02
2135	2.016E+07	1.720E+00	4.798E+02
2136	2.016E+07	1.653E+00	4.610E+02
2137	2.016E+07	1.588E+00	4.429E+02
2138	2.016E+07	1.525E+00	4.256E+02
2139	2.016E+07	1.466E+00	4.089E+02
2140	2.016E+07	1.408E+00	3.929E+02
2141	2.016E+07	1.353E+00	3.775E+02
2142	2.016E+07	1.300E+00	3.627E+02
2143	2.016E+07	1.249E+00	3.484E+02
2144	2.016E+07	1.200E+00	3.348E+02
2145	2.016E+07	1.153E+00	3.216E+02
2146	2.016E+07	1.108E+00	3.090E+02
2147	2.016E+07	1.064E+00	2.969E+02
2148	2.016E+07	1.023E+00	2.853E+02
2149	2.016E+07	9.825E-01	2.741E+02
2150	2.016E+07	9.439E-01	2.633E+02
2151	2.016E+07	9.069E-01	2.530E+02
2152	2.016E+07	8.714E-01	2.431E+02
2153	2.016E+07	8.372E-01	2.336E+02
2154	2.016E+07	8.044E-01	2.244E+02
2155	2.016E+07	7.728E-01	2.156E+02
2156	2.016E+07	7.425E-01	2.071E+02
2157	2.016E+07	7.134E-01	1.990E+02
2158	2.016E+07	6.854E-01	1.912E+02
2159	2.016E+07	6.586E-01	1.837E+02
2160	2.016E+07	6.327E-01	1.765E+02
2161	2.016E+07	6.079E-01	1.696E+02
2162	2.016E+07	5.841E-01	1.629E+02
2163	2.016E+07	5.612E-01	1.566E+02
2164	2.016E+07	5.392E-01	1.504E+02
2165	2.016E+07	5.180E-01	1.445E+02
2166	2.016E+07	4.977E-01	1.389E+02
2167	2.016E+07	4.782E-01	1.334E+02
2168	2.016E+07	4.595E-01	1.282E+02
2169	2.016E+07	4.414E-01	1.232E+02
2170	2.016E+07	4.241E-01	1.183E+02
2171	2.016E+07	4.075E-01	1.137E+02
2172	2.016E+07	3.915E-01	1.092E+02
2173	2.016E+07	3.762E-01	1.049E+02
2174	2.016E+07	3.614E-01	1.008E+02
2175	2.016E+07	3.473E-01	9.688E+01
2176	2.016E+07	3.336E-01	9.308E+01
2177	2.016E+07	3.206E-01	8.943E+01
2178	2.016E+07	3.080E-01	8.592E+01
2179	2.016E+07	2.959E-01	8.255E+01
2180	2.016E+07	2.843E-01	7.932E+01
2181	2.016E+07	2.732E-01	7.621E+01
2182	2.016E+07	2.624E-01	7.322E+01
2183	2.016E+07	2.522E-01	7.035E+01
2184	2.016E+07	2.423E-01	6.759E+01
2185	2.016E+07	2.328E-01	6.494E+01
2186	2.016E+07	2.236E-01	6.239E+01
2187	2.016E+07	2.149E-01	5.995E+01
2188	2.016E+07	2.064E-01	5.760E+01
2189	2.016E+07	1.984E-01	5.534E+01
2190	2.016E+07	1.906E-01	5.317E+01
2191	2.016E+07	1.831E-01	5.108E+01
2192	2.016E+07	1.759E-01	4.908E+01
2193	2.016E+07	1.690E-01	4.716E+01
2194	2.016E+07	1.624E-01	4.531E+01
2195	2.016E+07	1.560E-01	4.353E+01
2196	2.016E+07	1.499E-01	4.182E+01
2197	2.016E+07	1.440E-01	4.018E+01
2198	2.016E+07	1.384E-01	3.861E+01

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.016E+07	1.330E-01	3.709E+01
2200	2.016E+07	1.277E-01	3.564E+01
2201	2.016E+07	1.227E-01	3.424E+01
2202	2.016E+07	1.179E-01	3.290E+01
2203	2.016E+07	1.133E-01	3.161E+01
2204	2.016E+07	1.089E-01	3.037E+01
2205	2.016E+07	1.046E-01	2.918E+01
2206	2.016E+07	1.005E-01	2.803E+01
2207	2.016E+07	9.655E-02	2.694E+01
2208	2.016E+07	9.276E-02	2.588E+01
2209	2.016E+07	8.913E-02	2.486E+01
2210	2.016E+07	8.563E-02	2.389E+01
2211	2.016E+07	8.227E-02	2.295E+01
2212	2.016E+07	7.905E-02	2.205E+01
2213	2.016E+07	7.595E-02	2.119E+01
2214	2.016E+07	7.297E-02	2.036E+01
2215	2.016E+07	7.011E-02	1.956E+01

Proposed Permi

Projected Methane Emissions



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2003 Closure Year: 2024
Capacity : 25997921 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 802363.14 Mg/year

Model Results

Year	Refuse In Place (Mg)	Methane Emission Rate (Mg/yr)	Methane Emission Rate (Cubic m/yr)
1959	1.531E+05	4.085E+02	6.123E+05
1960	3.062E+05	8.010E+02	1.201E+06
1961	4.592E+05	1.178E+03	1.766E+06
1962	6.123E+05	1.540E+03	2.309E+06
1963	7.654E+05	1.889E+03	2.831E+06
1964	9.185E+05	2.223E+03	3.332E+06
1965	1.072E+06	2.544E+03	3.814E+06
1966	1.225E+06	2.853E+03	4.277E+06
1967	1.378E+06	3.150E+03	4.721E+06
1968	1.531E+06	3.435E+03	5.148E+06
1969	1.684E+06	3.709E+03	5.559E+06
1970	1.837E+06	3.972E+03	5.953E+06
1971	1.990E+06	4.224E+03	6.332E+06
1972	2.143E+06	4.467E+03	6.696E+06
1973	2.296E+06	4.701E+03	7.046E+06
1974	2.449E+06	4.925E+03	7.382E+06
1975	2.602E+06	5.140E+03	7.705E+06
1976	2.755E+06	5.347E+03	8.015E+06
1977	2.909E+06	5.546E+03	8.313E+06
1978	3.062E+06	5.737E+03	8.600E+06
1979	3.215E+06	5.921E+03	8.875E+06
1980	3.368E+06	6.097E+03	9.139E+06
1981	3.521E+06	6.267E+03	9.393E+06
1982	3.674E+06	6.429E+03	9.637E+06
1983	3.827E+06	6.586E+03	9.871E+06
1984	3.980E+06	6.736E+03	1.010E+07
1985	4.133E+06	6.880E+03	1.031E+07
1986	4.286E+06	7.019E+03	1.052E+07
1987	4.439E+06	7.152E+03	1.072E+07
1988	4.592E+06	7.280E+03	1.091E+07
1989	4.746E+06	7.404E+03	1.110E+07
1990	4.899E+06	7.522E+03	1.127E+07
1991	5.284E+06	8.256E+03	1.238E+07
1992	5.609E+06	8.800E+03	1.319E+07
1993	5.912E+06	9.263E+03	1.388E+07
1994	6.121E+06	9.457E+03	1.418E+07
1995	6.408E+06	9.852E+03	1.477E+07
1996	6.665E+06	1.015E+04	1.522E+07
1997	6.899E+06	1.038E+04	1.556E+07
1998	7.146E+06	1.063E+04	1.593E+07
1999	7.429E+06	1.097E+04	1.644E+07
2000	7.772E+06	1.145E+04	1.717E+07

Year	Refuse in Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	1.193E+04	1.788E+07
2002	8.461E+06	1.237E+04	1.855E+07
2003	8.805E+06	1.281E+04	1.920E+07
2004	9.607E+06	1.445E+04	2.165E+07
2005	1.041E+07	1.602E+04	2.401E+07
2006	1.121E+07	1.753E+04	2.628E+07
2007	1.201E+07	1.899E+04	2.846E+07
2008	1.282E+07	2.038E+04	3.055E+07
2009	1.362E+07	2.173E+04	3.257E+07
2010	1.442E+07	2.302E+04	3.450E+07
2011	1.522E+07	2.425E+04	3.635E+07
2012	1.603E+07	2.544E+04	3.814E+07
2013	1.683E+07	2.659E+04	3.985E+07
2014	1.763E+07	2.769E+04	4.150E+07
2015	1.843E+07	2.874E+04	4.308E+07
2016	1.924E+07	2.976E+04	4.460E+07
2017	2.004E+07	3.073E+04	4.606E+07
2018	2.084E+07	3.167E+04	4.747E+07
2019	2.164E+07	3.257E+04	4.881E+07
2020	2.244E+07	3.343E+04	5.011E+07
2021	2.325E+07	3.426E+04	5.135E+07
2022	2.405E+07	3.506E+04	5.255E+07
2023	2.485E+07	3.583E+04	5.370E+07
2024	2.600E+07	3.748E+04	5.618E+07
2025	2.600E+07	3.601E+04	5.398E+07
2026	2.600E+07	3.460E+04	5.186E+07
2027	2.600E+07	3.324E+04	4.983E+07
2028	2.600E+07	3.194E+04	4.787E+07
2029	2.600E+07	3.069E+04	4.599E+07
2030	2.600E+07	2.948E+04	4.419E+07
2031	2.600E+07	2.833E+04	4.246E+07
2032	2.600E+07	2.722E+04	4.079E+07
2033	2.600E+07	2.615E+04	3.919E+07
2034	2.600E+07	2.512E+04	3.766E+07
2035	2.600E+07	2.414E+04	3.618E+07
2036	2.600E+07	2.319E+04	3.476E+07
2037	2.600E+07	2.228E+04	3.340E+07
2038	2.600E+07	2.141E+04	3.209E+07
2039	2.600E+07	2.057E+04	3.083E+07
2040	2.600E+07	1.976E+04	2.962E+07
2041	2.600E+07	1.899E+04	2.846E+07
2042	2.600E+07	1.824E+04	2.734E+07
2043	2.600E+07	1.753E+04	2.627E+07
2044	2.600E+07	1.684E+04	2.524E+07
2045	2.600E+07	1.618E+04	2.425E+07
2046	2.600E+07	1.555E+04	2.330E+07
2047	2.600E+07	1.494E+04	2.239E+07
2048	2.600E+07	1.435E+04	2.151E+07
2049	2.600E+07	1.379E+04	2.067E+07
2050	2.600E+07	1.325E+04	1.986E+07
2051	2.600E+07	1.273E+04	1.908E+07
2052	2.600E+07	1.223E+04	1.833E+07
2053	2.600E+07	1.175E+04	1.761E+07
2054	2.600E+07	1.129E+04	1.692E+07
2055	2.600E+07	1.085E+04	1.626E+07
2056	2.600E+07	1.042E+04	1.562E+07
2057	2.600E+07	1.001E+04	1.501E+07
2058	2.600E+07	9.619E+03	1.442E+07
2059	2.600E+07	9.242E+03	1.385E+07
2060	2.600E+07	8.880E+03	1.331E+07
2061	2.600E+07	8.532E+03	1.279E+07
2062	2.600E+07	8.197E+03	1.229E+07
2063	2.600E+07	7.876E+03	1.181E+07
2064	2.600E+07	7.567E+03	1.134E+07
2065	2.600E+07	7.270E+03	1.090E+07
2066	2.600E+07	6.985E+03	1.047E+07

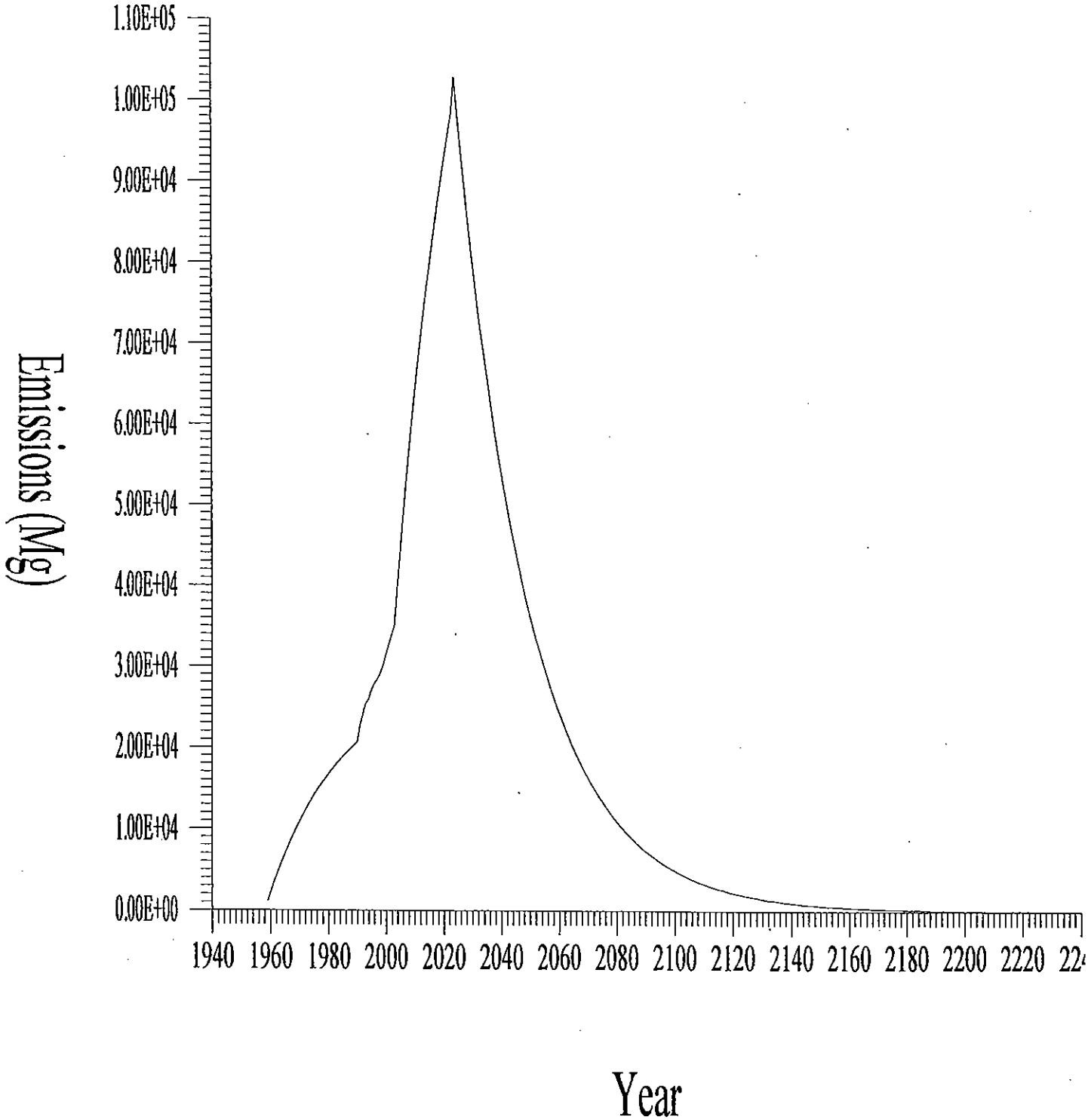
Year	Refuse in Place (Mg)	(Mg/yr)	(Cubic m/yr)
2067	2.600E+07	6.711E+03	1.006E+07
2068	2.600E+07	6.448E+03	9.665E+06
2069	2.600E+07	6.195E+03	9.286E+06
2070	2.600E+07	5.952E+03	8.922E+06
2071	2.600E+07	5.719E+03	8.572E+06
2072	2.600E+07	5.495E+03	8.236E+06
2073	2.600E+07	5.279E+03	7.913E+06
2074	2.600E+07	5.072E+03	7.603E+06
2075	2.600E+07	4.873E+03	7.305E+06
2076	2.600E+07	4.682E+03	7.018E+06
2077	2.600E+07	4.499E+03	6.743E+06
2078	2.600E+07	4.322E+03	6.479E+06
2079	2.600E+07	4.153E+03	6.225E+06
2080	2.600E+07	3.990E+03	5.981E+06
2081	2.600E+07	3.834E+03	5.746E+06
2082	2.600E+07	3.683E+03	5.521E+06
2083	2.600E+07	3.539E+03	5.304E+06
2084	2.600E+07	3.400E+03	5.096E+06
2085	2.600E+07	3.267E+03	4.897E+06
2086	2.600E+07	3.139E+03	4.705E+06
2087	2.600E+07	3.016E+03	4.520E+06
2088	2.600E+07	2.897E+03	4.343E+06
2089	2.600E+07	2.784E+03	4.173E+06
2090	2.600E+07	2.675E+03	4.009E+06
2091	2.600E+07	2.570E+03	3.852E+06
2092	2.600E+07	2.469E+03	3.701E+06
2093	2.600E+07	2.372E+03	3.556E+06
2094	2.600E+07	2.279E+03	3.416E+06
2095	2.600E+07	2.190E+03	3.282E+06
2096	2.600E+07	2.104E+03	3.154E+06
2097	2.600E+07	2.021E+03	3.030E+06
2098	2.600E+07	1.942E+03	2.911E+06
2099	2.600E+07	1.866E+03	2.797E+06
2100	2.600E+07	1.793E+03	2.687E+06
2101	2.600E+07	1.723E+03	2.582E+06
2102	2.600E+07	1.655E+03	2.481E+06
2103	2.600E+07	1.590E+03	2.383E+06
2104	2.600E+07	1.528E+03	2.290E+06
2105	2.600E+07	1.468E+03	2.200E+06
2106	2.600E+07	1.410E+03	2.114E+06
2107	2.600E+07	1.355E+03	2.031E+06
2108	2.600E+07	1.302E+03	1.951E+06
2109	2.600E+07	1.251E+03	1.875E+06
2110	2.600E+07	1.202E+03	1.801E+06
2111	2.600E+07	1.155E+03	1.731E+06
2112	2.600E+07	1.109E+03	1.663E+06
2113	2.600E+07	1.066E+03	1.598E+06
2114	2.600E+07	1.024E+03	1.535E+06
2115	2.600E+07	9.839E+02	1.475E+06
2116	2.600E+07	9.453E+02	1.417E+06
2117	2.600E+07	9.083E+02	1.361E+06
2118	2.600E+07	8.727E+02	1.308E+06
2119	2.600E+07	8.384E+02	1.257E+06
2120	2.600E+07	8.056E+02	1.207E+06
2121	2.600E+07	7.740E+02	1.160E+06
2122	2.600E+07	7.436E+02	1.115E+06
2123	2.600E+07	7.145E+02	1.071E+06
2124	2.600E+07	6.865E+02	1.029E+06
2125	2.600E+07	6.595E+02	9.886E+05
2126	2.600E+07	6.337E+02	9.498E+05
2127	2.600E+07	6.088E+02	9.126E+05
2128	2.600E+07	5.850E+02	8.768E+05
2129	2.600E+07	5.620E+02	8.424E+05
2130	2.600E+07	5.400E+02	8.094E+05
2131	2.600E+07	5.188E+02	7.777E+05
2132	2.600E+07	4.985E+02	7.472E+05

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.600E+07	4.789E+02	7.179E+05
2134	2.600E+07	4.601E+02	6.897E+05
2135	2.600E+07	4.421E+02	6.627E+05
2136	2.600E+07	4.248E+02	6.367E+05
2137	2.600E+07	4.081E+02	6.117E+05
2138	2.600E+07	3.921E+02	5.877E+05
2139	2.600E+07	3.767E+02	5.647E+05
2140	2.600E+07	3.620E+02	5.425E+05
2141	2.600E+07	3.478E+02	5.213E+05
2142	2.600E+07	3.341E+02	5.008E+05
2143	2.600E+07	3.210E+02	4.812E+05
2144	2.600E+07	3.084E+02	4.623E+05
2145	2.600E+07	2.963E+02	4.442E+05
2146	2.600E+07	2.847E+02	4.268E+05
2147	2.600E+07	2.736E+02	4.101E+05
2148	2.600E+07	2.628E+02	3.940E+05
2149	2.600E+07	2.525E+02	3.785E+05
2150	2.600E+07	2.426E+02	3.637E+05
2151	2.600E+07	2.331E+02	3.494E+05
2152	2.600E+07	2.240E+02	3.357E+05
2153	2.600E+07	2.152E+02	3.226E+05
2154	2.600E+07	2.068E+02	3.099E+05
2155	2.600E+07	1.986E+02	2.978E+05
2156	2.600E+07	1.909E+02	2.861E+05
2157	2.600E+07	1.834E+02	2.749E+05
2158	2.600E+07	1.762E+02	2.641E+05
2159	2.600E+07	1.693E+02	2.537E+05
2160	2.600E+07	1.626E+02	2.438E+05
2161	2.600E+07	1.563E+02	2.342E+05
2162	2.600E+07	1.501E+02	2.250E+05
2163	2.600E+07	1.442E+02	2.162E+05
2164	2.600E+07	1.386E+02	2.077E+05
2165	2.600E+07	1.332E+02	1.996E+05
2166	2.600E+07	1.279E+02	1.918E+05
2167	2.600E+07	1.229E+02	1.842E+05
2168	2.600E+07	1.181E+02	1.770E+05
2169	2.600E+07	1.135E+02	1.701E+05
2170	2.600E+07	1.090E+02	1.634E+05
2171	2.600E+07	1.047E+02	1.570E+05
2172	2.600E+07	1.006E+02	1.508E+05
2173	2.600E+07	9.669E+01	1.449E+05
2174	2.600E+07	9.290E+01	1.393E+05
2175	2.600E+07	8.926E+01	1.338E+05
2176	2.600E+07	8.576E+01	1.285E+05
2177	2.600E+07	8.240E+01	1.235E+05
2178	2.600E+07	7.917E+01	1.187E+05
2179	2.600E+07	7.606E+01	1.140E+05
2180	2.600E+07	7.308E+01	1.095E+05
2181	2.600E+07	7.021E+01	1.052E+05
2182	2.600E+07	6.746E+01	1.011E+05
2183	2.600E+07	6.481E+01	9.715E+04
2184	2.600E+07	6.227E+01	9.334E+04
2185	2.600E+07	5.983E+01	8.968E+04
2186	2.600E+07	5.749E+01	8.617E+04
2187	2.600E+07	5.523E+01	8.279E+04
2188	2.600E+07	5.307E+01	7.954E+04
2189	2.600E+07	5.099E+01	7.642E+04
2190	2.600E+07	4.899E+01	7.343E+04
2191	2.600E+07	4.707E+01	7.055E+04
2192	2.600E+07	4.522E+01	6.778E+04
2193	2.600E+07	4.345E+01	6.512E+04
2194	2.600E+07	4.174E+01	6.257E+04
2195	2.600E+07	4.011E+01	6.012E+04
2196	2.600E+07	3.853E+01	5.776E+04
2197	2.600E+07	3.702E+01	5.549E+04
2198	2.600E+07	3.557E+01	5.332E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.600E+07	3.418E+01	5.123E+04
2200	2.600E+07	3.284E+01	4.922E+04
2201	2.600E+07	3.155E+01	4.729E+04
2202	2.600E+07	3.031E+01	4.543E+04
2203	2.600E+07	2.912E+01	4.365E+04
2204	2.600E+07	2.798E+01	4.194E+04
2205	2.600E+07	2.688E+01	4.030E+04
2206	2.600E+07	2.583E+01	3.872E+04
2207	2.600E+07	2.482E+01	3.720E+04
2208	2.600E+07	2.384E+01	3.574E+04
2209	2.600E+07	2.291E+01	3.434E+04
2210	2.600E+07	2.201E+01	3.299E+04
2211	2.600E+07	2.115E+01	3.170E+04
2212	2.600E+07	2.032E+01	3.046E+04
2213	2.600E+07	1.952E+01	2.926E+04
2214	2.600E+07	1.876E+01	2.811E+04
2215	2.600E+07	1.802E+01	2.701E+04
2216	2.600E+07	1.731E+01	2.595E+04
2217	2.600E+07	1.664E+01	2.494E+04
2218	2.600E+07	1.598E+01	2.396E+04
2219	2.600E+07	1.536E+01	2.302E+04
2220	2.600E+07	1.475E+01	2.212E+04
2221	2.600E+07	1.418E+01	2.125E+04
2222	2.600E+07	1.362E+01	2.042E+04
2223	2.600E+07	1.309E+01	1.961E+04

Proposed Permi

Projected Carbon Dioxide Emissions



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2003 Closure Year: 2024
Capacity : 25997921 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 802363.14 Mg/year

Model Results

Year	Refuse In Place (Mg)	Carbon Dioxide Emission Rate (Mg/yr)	(Cubic m/yr)
1959	1.531E+05	1.121E+03	6.123E+05
1960	3.062E+05	2.198E+03	1.201E+06
1961	4.592E+05	3.232E+03	1.766E+06
1962	6.123E+05	4.227E+03	2.309E+06
1963	7.654E+05	5.182E+03	2.831E+06
1964	9.185E+05	6.099E+03	3.332E+06
1965	1.072E+06	6.981E+03	3.814E+06
1966	1.225E+06	7.828E+03	4.277E+06
1967	1.378E+06	8.642E+03	4.721E+06
1968	1.531E+06	9.424E+03	5.148E+06
1969	1.684E+06	1.018E+04	5.559E+06
1970	1.837E+06	1.090E+04	5.953E+06
1971	1.990E+06	1.159E+04	6.332E+06
1972	2.143E+06	1.226E+04	6.696E+06
1973	2.296E+06	1.290E+04	7.046E+06
1974	2.449E+06	1.351E+04	7.382E+06
1975	2.602E+06	1.410E+04	7.705E+06
1976	2.755E+06	1.467E+04	8.015E+06
1977	2.909E+06	1.522E+04	8.313E+06
1978	3.062E+06	1.574E+04	8.600E+06
1979	3.215E+06	1.625E+04	8.875E+06
1980	3.368E+06	1.673E+04	9.139E+06
1981	3.521E+06	1.719E+04	9.393E+06
1982	3.674E+06	1.764E+04	9.637E+06
1983	3.827E+06	1.807E+04	9.871E+06
1984	3.980E+06	1.848E+04	1.010E+07
1985	4.133E+06	1.888E+04	1.031E+07
1986	4.286E+06	1.926E+04	1.052E+07
1987	4.439E+06	1.962E+04	1.072E+07
1988	4.592E+06	1.998E+04	1.091E+07
1989	4.746E+06	2.031E+04	1.110E+07
1990	4.899E+06	2.064E+04	1.127E+07
1991	5.284E+06	2.265E+04	1.238E+07
1992	5.609E+06	2.415E+04	1.319E+07
1993	5.912E+06	2.542E+04	1.388E+07
1994	6.121E+06	2.595E+04	1.418E+07
1995	6.408E+06	2.703E+04	1.477E+07
1996	6.665E+06	2.785E+04	1.522E+07
1997	6.899E+06	2.848E+04	1.556E+07
1998	7.146E+06	2.916E+04	1.593E+07
1999	7.429E+06	3.010E+04	1.644E+07
2000	7.772E+06	3.143E+04	1.717E+07

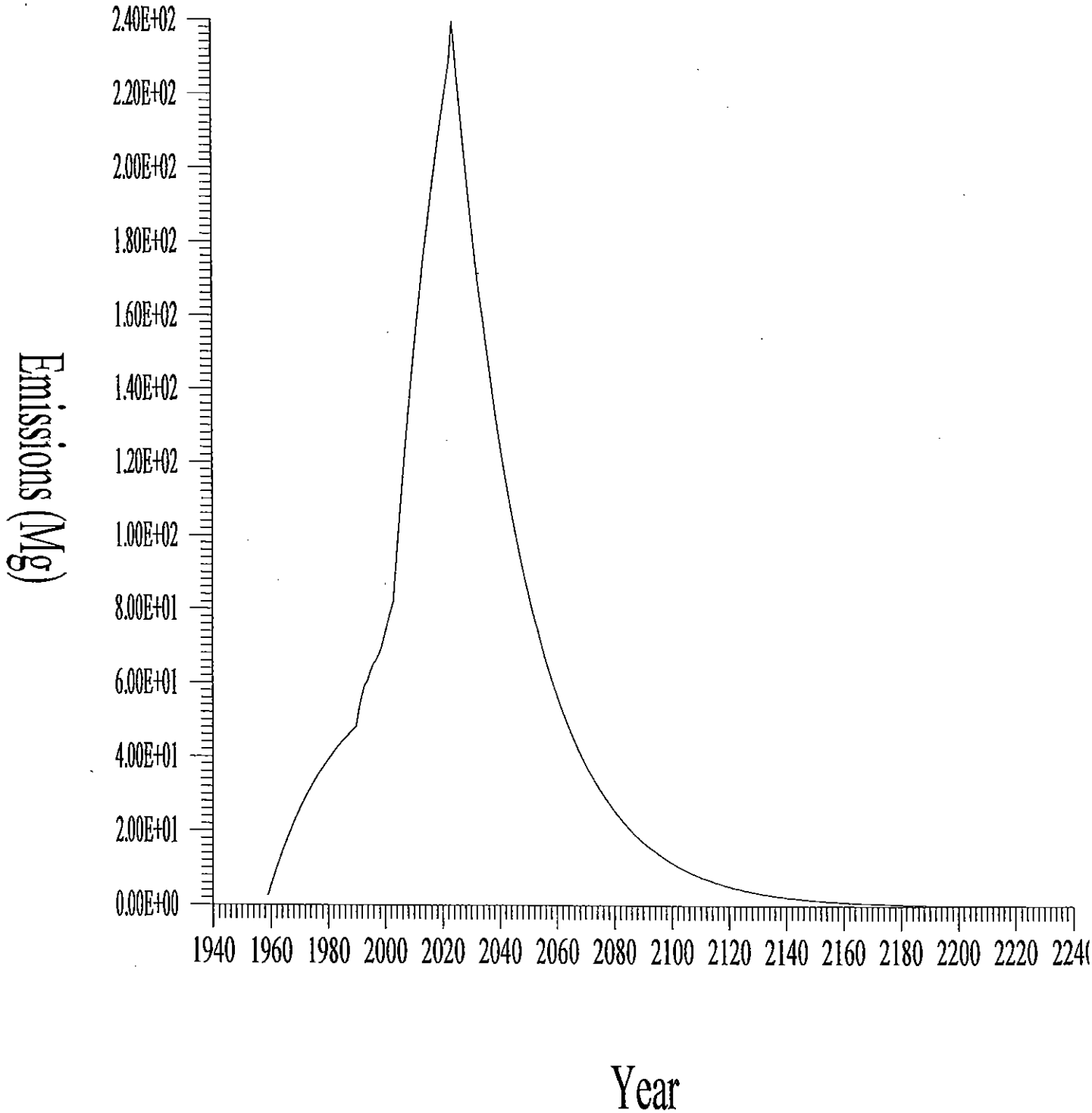
Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	3.273E+04	1.788E+07
2002	8.461E+06	3.395E+04	1.855E+07
2003	8.805E+06	3.514E+04	1.920E+07
2004	9.607E+06	3.964E+04	2.165E+07
2005	1.041E+07	4.396E+04	2.401E+07
2006	1.121E+07	4.811E+04	2.628E+07
2007	1.201E+07	5.210E+04	2.846E+07
2008	1.282E+07	5.593E+04	3.055E+07
2009	1.362E+07	5.961E+04	3.257E+07
2010	1.442E+07	6.315E+04	3.450E+07
2011	1.522E+07	6.655E+04	3.635E+07
2012	1.603E+07	6.981E+04	3.814E+07
2013	1.683E+07	7.295E+04	3.985E+07
2014	1.763E+07	7.596E+04	4.150E+07
2015	1.843E+07	7.886E+04	4.308E+07
2016	1.924E+07	8.164E+04	4.460E+07
2017	2.004E+07	8.432E+04	4.606E+07
2018	2.084E+07	8.689E+04	4.747E+07
2019	2.164E+07	8.935E+04	4.881E+07
2020	2.244E+07	9.173E+04	5.011E+07
2021	2.325E+07	9.400E+04	5.135E+07
2022	2.405E+07	9.619E+04	5.255E+07
2023	2.485E+07	9.830E+04	5.370E+07
2024	2.600E+07	1.028E+05	5.618E+07
2025	2.600E+07	9.880E+04	5.398E+07
2026	2.600E+07	9.493E+04	5.186E+07
2027	2.600E+07	9.121E+04	4.983E+07
2028	2.600E+07	8.763E+04	4.787E+07
2029	2.600E+07	8.419E+04	4.599E+07
2030	2.600E+07	8.089E+04	4.419E+07
2031	2.600E+07	7.772E+04	4.246E+07
2032	2.600E+07	7.467E+04	4.079E+07
2033	2.600E+07	7.174E+04	3.919E+07
2034	2.600E+07	6.893E+04	3.766E+07
2035	2.600E+07	6.623E+04	3.618E+07
2036	2.600E+07	6.363E+04	3.476E+07
2037	2.600E+07	6.114E+04	3.340E+07
2038	2.600E+07	5.874E+04	3.209E+07
2039	2.600E+07	5.644E+04	3.083E+07
2040	2.600E+07	5.422E+04	2.962E+07
2041	2.600E+07	5.210E+04	2.846E+07
2042	2.600E+07	5.005E+04	2.734E+07
2043	2.600E+07	4.809E+04	2.627E+07
2044	2.600E+07	4.621E+04	2.524E+07
2045	2.600E+07	4.439E+04	2.425E+07
2046	2.600E+07	4.265E+04	2.330E+07
2047	2.600E+07	4.098E+04	2.239E+07
2048	2.600E+07	3.937E+04	2.151E+07
2049	2.600E+07	3.783E+04	2.067E+07
2050	2.600E+07	3.635E+04	1.986E+07
2051	2.600E+07	3.492E+04	1.908E+07
2052	2.600E+07	3.355E+04	1.833E+07
2053	2.600E+07	3.224E+04	1.761E+07
2054	2.600E+07	3.097E+04	1.692E+07
2055	2.600E+07	2.976E+04	1.626E+07
2056	2.600E+07	2.859E+04	1.562E+07
2057	2.600E+07	2.747E+04	1.501E+07
2058	2.600E+07	2.639E+04	1.442E+07
2059	2.600E+07	2.536E+04	1.385E+07
2060	2.600E+07	2.436E+04	1.331E+07
2061	2.600E+07	2.341E+04	1.279E+07
2062	2.600E+07	2.249E+04	1.229E+07
2063	2.600E+07	2.161E+04	1.181E+07
2064	2.600E+07	2.076E+04	1.134E+07
2065	2.600E+07	1.995E+04	1.090E+07
2066	2.600E+07	1.917E+04	1.047E+07

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2067	2.600E+07	1.841E+04	1.006E+07
2068	2.600E+07	1.769E+04	9.665E+06
2069	2.600E+07	1.700E+04	9.286E+06
2070	2.600E+07	1.633E+04	8.922E+06
2071	2.600E+07	1.569E+04	8.572E+06
2072	2.600E+07	1.508E+04	8.236E+06
2073	2.600E+07	1.448E+04	7.913E+06
2074	2.600E+07	1.392E+04	7.603E+06
2075	2.600E+07	1.337E+04	7.305E+06
2076	2.600E+07	1.285E+04	7.018E+06
2077	2.600E+07	1.234E+04	6.743E+06
2078	2.600E+07	1.186E+04	6.479E+06
2079	2.600E+07	1.139E+04	6.225E+06
2080	2.600E+07	1.095E+04	5.981E+06
2081	2.600E+07	1.052E+04	5.746E+06
2082	2.600E+07	1.011E+04	5.521E+06
2083	2.600E+07	9.710E+03	5.304E+06
2084	2.600E+07	9.329E+03	5.096E+06
2085	2.600E+07	8.963E+03	4.897E+06
2086	2.600E+07	8.612E+03	4.705E+06
2087	2.600E+07	8.274E+03	4.520E+06
2088	2.600E+07	7.950E+03	4.343E+06
2089	2.600E+07	7.638E+03	4.173E+06
2090	2.600E+07	7.338E+03	4.009E+06
2091	2.600E+07	7.051E+03	3.852E+06
2092	2.600E+07	6.774E+03	3.701E+06
2093	2.600E+07	6.509E+03	3.556E+06
2094	2.600E+07	6.253E+03	3.416E+06
2095	2.600E+07	6.008E+03	3.282E+06
2096	2.600E+07	5.773E+03	3.154E+06
2097	2.600E+07	5.546E+03	3.030E+06
2098	2.600E+07	5.329E+03	2.911E+06
2099	2.600E+07	5.120E+03	2.797E+06
2100	2.600E+07	4.919E+03	2.687E+06
2101	2.600E+07	4.726E+03	2.582E+06
2102	2.600E+07	4.541E+03	2.481E+06
2103	2.600E+07	4.363E+03	2.383E+06
2104	2.600E+07	4.192E+03	2.290E+06
2105	2.600E+07	4.027E+03	2.200E+06
2106	2.600E+07	3.869E+03	2.114E+06
2107	2.600E+07	3.718E+03	2.031E+06
2108	2.600E+07	3.572E+03	1.951E+06
2109	2.600E+07	3.432E+03	1.875E+06
2110	2.600E+07	3.297E+03	1.801E+06
2111	2.600E+07	3.168E+03	1.731E+06
2112	2.600E+07	3.044E+03	1.663E+06
2113	2.600E+07	2.924E+03	1.598E+06
2114	2.600E+07	2.810E+03	1.535E+06
2115	2.600E+07	2.700E+03	1.475E+06
2116	2.600E+07	2.594E+03	1.417E+06
2117	2.600E+07	2.492E+03	1.361E+06
2118	2.600E+07	2.394E+03	1.308E+06
2119	2.600E+07	2.300E+03	1.257E+06
2120	2.600E+07	2.210E+03	1.207E+06
2121	2.600E+07	2.124E+03	1.160E+06
2122	2.600E+07	2.040E+03	1.115E+06
2123	2.600E+07	1.960E+03	1.071E+06
2124	2.600E+07	1.883E+03	1.029E+06
2125	2.600E+07	1.810E+03	9.886E+05
2126	2.600E+07	1.739E+03	9.498E+05
2127	2.600E+07	1.670E+03	9.126E+05
2128	2.600E+07	1.605E+03	8.768E+05
2129	2.600E+07	1.542E+03	8.424E+05
2130	2.600E+07	1.482E+03	8.094E+05
2131	2.600E+07	1.423E+03	7.777E+05
2132	2.600E+07	1.368E+03	7.472E+05

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.600E+07	1.314E+03	7.179E+05
2134	2.600E+07	1.263E+03	6.897E+05
2135	2.600E+07	1.213E+03	6.627E+05
2136	2.600E+07	1.165E+03	6.367E+05
2137	2.600E+07	1.120E+03	6.117E+05
2138	2.600E+07	1.076E+03	5.877E+05
2139	2.600E+07	1.034E+03	5.647E+05
2140	2.600E+07	9.931E+02	5.425E+05
2141	2.600E+07	9.542E+02	5.213E+05
2142	2.600E+07	9.168E+02	5.008E+05
2143	2.600E+07	8.808E+02	4.812E+05
2144	2.600E+07	8.463E+02	4.623E+05
2145	2.600E+07	8.131E+02	4.442E+05
2146	2.600E+07	7.812E+02	4.268E+05
2147	2.600E+07	7.506E+02	4.101E+05
2148	2.600E+07	7.212E+02	3.940E+05
2149	2.600E+07	6.929E+02	3.785E+05
2150	2.600E+07	6.657E+02	3.637E+05
2151	2.600E+07	6.396E+02	3.494E+05
2152	2.600E+07	6.145E+02	3.357E+05
2153	2.600E+07	5.904E+02	3.226E+05
2154	2.600E+07	5.673E+02	3.099E+05
2155	2.600E+07	5.450E+02	2.978E+05
2156	2.600E+07	5.237E+02	2.861E+05
2157	2.600E+07	5.031E+02	2.749E+05
2158	2.600E+07	4.834E+02	2.641E+05
2159	2.600E+07	4.645E+02	2.537E+05
2160	2.600E+07	4.462E+02	2.438E+05
2161	2.600E+07	4.287E+02	2.342E+05
2162	2.600E+07	4.119E+02	2.250E+05
2163	2.600E+07	3.958E+02	2.162E+05
2164	2.600E+07	3.803E+02	2.077E+05
2165	2.600E+07	3.654E+02	1.996E+05
2166	2.600E+07	3.510E+02	1.918E+05
2167	2.600E+07	3.373E+02	1.842E+05
2168	2.600E+07	3.240E+02	1.770E+05
2169	2.600E+07	3.113E+02	1.701E+05
2170	2.600E+07	2.991E+02	1.634E+05
2171	2.600E+07	2.874E+02	1.570E+05
2172	2.600E+07	2.761E+02	1.508E+05
2173	2.600E+07	2.653E+02	1.449E+05
2174	2.600E+07	2.549E+02	1.393E+05
2175	2.600E+07	2.449E+02	1.338E+05
2176	2.600E+07	2.353E+02	1.285E+05
2177	2.600E+07	2.261E+02	1.235E+05
2178	2.600E+07	2.172E+02	1.187E+05
2179	2.600E+07	2.087E+02	1.140E+05
2180	2.600E+07	2.005E+02	1.095E+05
2181	2.600E+07	1.926E+02	1.052E+05
2182	2.600E+07	1.851E+02	1.011E+05
2183	2.600E+07	1.778E+02	9.715E+04
2184	2.600E+07	1.709E+02	9.334E+04
2185	2.600E+07	1.642E+02	8.968E+04
2186	2.600E+07	1.577E+02	8.617E+04
2187	2.600E+07	1.515E+02	8.279E+04
2188	2.600E+07	1.456E+02	7.954E+04
2189	2.600E+07	1.399E+02	7.642E+04
2190	2.600E+07	1.344E+02	7.343E+04
2191	2.600E+07	1.291E+02	7.055E+04
2192	2.600E+07	1.241E+02	6.778E+04
2193	2.600E+07	1.192E+02	6.512E+04
2194	2.600E+07	1.145E+02	6.257E+04
2195	2.600E+07	1.100E+02	6.012E+04
2196	2.600E+07	1.057E+02	5.776E+04
2197	2.600E+07	1.016E+02	5.549E+04
2198	2.600E+07	9.760E+01	5.332E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.600E+07	9.377E+01	5.123E+04
2200	2.600E+07	9.010E+01	4.922E+04
2201	2.600E+07	8.656E+01	4.729E+04
2202	2.600E+07	8.317E+01	4.543E+04
2203	2.600E+07	7.991E+01	4.365E+04
2204	2.600E+07	7.677E+01	4.194E+04
2205	2.600E+07	7.376E+01	4.030E+04
2206	2.600E+07	7.087E+01	3.872E+04
2207	2.600E+07	6.809E+01	3.720E+04
2208	2.600E+07	6.542E+01	3.574E+04
2209	2.600E+07	6.286E+01	3.434E+04
2210	2.600E+07	6.039E+01	3.299E+04
2211	2.600E+07	5.802E+01	3.170E+04
2212	2.600E+07	5.575E+01	3.046E+04
2213	2.600E+07	5.356E+01	2.926E+04
2214	2.600E+07	5.146E+01	2.811E+04
2215	2.600E+07	4.945E+01	2.701E+04
2216	2.600E+07	4.751E+01	2.595E+04
2217	2.600E+07	4.564E+01	2.494E+04
2218	2.600E+07	4.385E+01	2.396E+04
2219	2.600E+07	4.213E+01	2.302E+04
2220	2.600E+07	4.048E+01	2.212E+04
2221	2.600E+07	3.890E+01	2.125E+04
2222	2.600E+07	3.737E+01	2.042E+04
2223	2.600E+07	3.590E+01	1.961E+04

Projected NMOC Emissions Proposed Permit



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Model Parameters

Lo : 100.00 m^3 / Mg
k : 0.0400 1/yr
NMOC : 595.00 ppmv
Methane : 50.0000 % volume
Carbon Dioxide : 50.0000 % volume

Landfill Parameters

Landfill type : No Co-Disposal
Year Opened : 1958 Current Year : 2003 Closure Year: 2024
Capacity : 25997921 Mg
Average Acceptance Rate Required from
Current Year to Closure Year : 802363.14 Mg/year

Model Results

Year	Refuse In Place (Mg)	NMOC Emission Rate (Mg/yr)	NMOC Emission Rate (Cubic m/yr)
1959	1.531E+05	2.612E+00	7.287E+02
1960	3.062E+05	5.121E+00	1.429E+03
1961	4.592E+05	7.532E+00	2.101E+03
1962	6.123E+05	9.849E+00	2.748E+03
1963	7.654E+05	1.207E+01	3.369E+03
1964	9.185E+05	1.421E+01	3.965E+03
1965	1.072E+06	1.627E+01	4.538E+03
1966	1.225E+06	1.824E+01	5.089E+03
1967	1.378E+06	2.014E+01	5.618E+03
1968	1.531E+06	2.196E+01	6.127E+03
1969	1.684E+06	2.371E+01	6.615E+03
1970	1.837E+06	2.539E+01	7.084E+03
1971	1.990E+06	2.701E+01	7.535E+03
1972	2.143E+06	2.856E+01	7.968E+03
1973	2.296E+06	3.005E+01	8.385E+03
1974	2.449E+06	3.149E+01	8.785E+03
1975	2.602E+06	3.287E+01	9.169E+03
1976	2.755E+06	3.419E+01	9.538E+03
1977	2.909E+06	3.546E+01	9.893E+03
1978	3.062E+06	3.668E+01	1.023E+04
1979	3.215E+06	3.785E+01	1.056E+04
1980	3.368E+06	3.898E+01	1.088E+04
1981	3.521E+06	4.007E+01	1.118E+04
1982	3.674E+06	4.111E+01	1.147E+04
1983	3.827E+06	4.211E+01	1.175E+04
1984	3.980E+06	4.307E+01	1.202E+04
1985	4.133E+06	4.399E+01	1.227E+04
1986	4.286E+06	4.488E+01	1.252E+04
1987	4.439E+06	4.573E+01	1.276E+04
1988	4.592E+06	4.655E+01	1.299E+04
1989	4.746E+06	4.734E+01	1.321E+04
1990	4.899E+06	4.809E+01	1.342E+04
1991	5.284E+06	5.279E+01	1.473E+04
1992	5.609E+06	5.626E+01	1.570E+04
1993	5.912E+06	5.922E+01	1.652E+04
1994	6.121E+06	6.047E+01	1.687E+04
1995	6.408E+06	6.299E+01	1.757E+04
1996	6.665E+06	6.490E+01	1.811E+04
1997	6.899E+06	6.636E+01	1.851E+04
1998	7.146E+06	6.796E+01	1.896E+04
1999	7.429E+06	7.014E+01	1.957E+04
2000	7.772E+06	7.324E+01	2.043E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2001	8.118E+06	7.627E+01	2.128E+04
2002	8.461E+06	7.912E+01	2.207E+04
2003	8.805E+06	8.188E+01	2.284E+04
2004	9.607E+06	9.236E+01	2.577E+04
2005	1.041E+07	1.024E+02	2.858E+04
2006	1.121E+07	1.121E+02	3.128E+04
2007	1.201E+07	1.214E+02	3.387E+04
2008	1.282E+07	1.303E+02	3.636E+04
2009	1.362E+07	1.389E+02	3.875E+04
2010	1.442E+07	1.472E+02	4.105E+04
2011	1.522E+07	1.551E+02	4.326E+04
2012	1.603E+07	1.627E+02	4.539E+04
2013	1.683E+07	1.700E+02	4.742E+04
2014	1.763E+07	1.770E+02	4.938E+04
2015	1.843E+07	1.838E+02	5.127E+04
2016	1.924E+07	1.903E+02	5.308E+04
2017	2.004E+07	1.965E+02	5.481E+04
2018	2.084E+07	2.025E+02	5.648E+04
2019	2.164E+07	2.082E+02	5.809E+04
2020	2.244E+07	2.137E+02	5.963E+04
2021	2.325E+07	2.191E+02	6.111E+04
2022	2.405E+07	2.242E+02	6.253E+04
2023	2.485E+07	2.291E+02	6.390E+04
2024	2.600E+07	2.396E+02	6.685E+04
2025	2.600E+07	2.302E+02	6.423E+04
2026	2.600E+07	2.212E+02	6.171E+04
2027	2.600E+07	2.125E+02	5.929E+04
2028	2.600E+07	2.042E+02	5.697E+04
2029	2.600E+07	1.962E+02	5.473E+04
2030	2.600E+07	1.885E+02	5.259E+04
2031	2.600E+07	1.811E+02	5.053E+04
2032	2.600E+07	1.740E+02	4.854E+04
2033	2.600E+07	1.672E+02	4.664E+04
2034	2.600E+07	1.606E+02	4.481E+04
2035	2.600E+07	1.543E+02	4.305E+04
2036	2.600E+07	1.483E+02	4.137E+04
2037	2.600E+07	1.425E+02	3.974E+04
2038	2.600E+07	1.369E+02	3.819E+04
2039	2.600E+07	1.315E+02	3.669E+04
2040	2.600E+07	1.264E+02	3.525E+04
2041	2.600E+07	1.214E+02	3.387E+04
2042	2.600E+07	1.166E+02	3.254E+04
2043	2.600E+07	1.121E+02	3.126E+04
2044	2.600E+07	1.077E+02	3.004E+04
2045	2.600E+07	1.034E+02	2.886E+04
2046	2.600E+07	9.939E+01	2.773E+04
2047	2.600E+07	9.550E+01	2.664E+04
2048	2.600E+07	9.175E+01	2.560E+04
2049	2.600E+07	8.815E+01	2.459E+04
2050	2.600E+07	8.470E+01	2.363E+04
2051	2.600E+07	8.138E+01	2.270E+04
2052	2.600E+07	7.819E+01	2.181E+04
2053	2.600E+07	7.512E+01	2.096E+04
2054	2.600E+07	7.217E+01	2.014E+04
2055	2.600E+07	6.934E+01	1.935E+04
2056	2.600E+07	6.663E+01	1.859E+04
2057	2.600E+07	6.401E+01	1.786E+04
2058	2.600E+07	6.150E+01	1.716E+04
2059	2.600E+07	5.909E+01	1.649E+04
2060	2.600E+07	5.677E+01	1.584E+04
2061	2.600E+07	5.455E+01	1.522E+04
2062	2.600E+07	5.241E+01	1.462E+04
2063	2.600E+07	5.035E+01	1.405E+04
2064	2.600E+07	4.838E+01	1.350E+04
2065	2.600E+07	4.648E+01	1.297E+04
2066	2.600E+07	4.466E+01	1.246E+04

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic M/yr)
2067	2.600E+07	4.291E+01	1.197E+04
2068	2.600E+07	4.123E+01	1.150E+04
2069	2.600E+07	3.961E+01	1.105E+04
2070	2.600E+07	3.806E+01	1.062E+04
2071	2.600E+07	3.656E+01	1.020E+04
2072	2.600E+07	3.513E+01	9.801E+03
2073	2.600E+07	3.375E+01	9.417E+03
2074	2.600E+07	3.243E+01	9.047E+03
2075	2.600E+07	3.116E+01	8.693E+03
2076	2.600E+07	2.994E+01	8.352E+03
2077	2.600E+07	2.876E+01	8.024E+03
2078	2.600E+07	2.764E+01	7.710E+03
2079	2.600E+07	2.655E+01	7.407E+03
2080	2.600E+07	2.551E+01	7.117E+03
2081	2.600E+07	2.451E+01	6.838E+03
2082	2.600E+07	2.355E+01	6.570E+03
2083	2.600E+07	2.263E+01	6.312E+03
2084	2.600E+07	2.174E+01	6.065E+03
2085	2.600E+07	2.089E+01	5.827E+03
2086	2.600E+07	2.007E+01	5.598E+03
2087	2.600E+07	1.928E+01	5.379E+03
2088	2.600E+07	1.852E+01	5.168E+03
2089	2.600E+07	1.780E+01	4.965E+03
2090	2.600E+07	1.710E+01	4.771E+03
2091	2.600E+07	1.643E+01	4.584E+03
2092	2.600E+07	1.579E+01	4.404E+03
2093	2.600E+07	1.517E+01	4.231E+03
2094	2.600E+07	1.457E+01	4.065E+03
2095	2.600E+07	1.400E+01	3.906E+03
2096	2.600E+07	1.345E+01	3.753E+03
2097	2.600E+07	1.292E+01	3.606E+03
2098	2.600E+07	1.242E+01	3.464E+03
2099	2.600E+07	1.193E+01	3.328E+03
2100	2.600E+07	1.146E+01	3.198E+03
2101	2.600E+07	1.101E+01	3.072E+03
2102	2.600E+07	1.058E+01	2.952E+03
2103	2.600E+07	1.017E+01	2.836E+03
2104	2.600E+07	9.768E+00	2.725E+03
2105	2.600E+07	9.385E+00	2.618E+03
2106	2.600E+07	9.017E+00	2.516E+03
2107	2.600E+07	8.663E+00	2.417E+03
2108	2.600E+07	8.324E+00	2.322E+03
2109	2.600E+07	7.997E+00	2.231E+03
2110	2.600E+07	7.684E+00	2.144E+03
2111	2.600E+07	7.382E+00	2.060E+03
2112	2.600E+07	7.093E+00	1.979E+03
2113	2.600E+07	6.815E+00	1.901E+03
2114	2.600E+07	6.548E+00	1.827E+03
2115	2.600E+07	6.291E+00	1.755E+03
2116	2.600E+07	6.044E+00	1.686E+03
2117	2.600E+07	5.807E+00	1.620E+03
2118	2.600E+07	5.579E+00	1.557E+03
2119	2.600E+07	5.361E+00	1.496E+03
2120	2.600E+07	5.150E+00	1.437E+03
2121	2.600E+07	4.949E+00	1.381E+03
2122	2.600E+07	4.754E+00	1.326E+03
2123	2.600E+07	4.568E+00	1.274E+03
2124	2.600E+07	4.389E+00	1.224E+03
2125	2.600E+07	4.217E+00	1.176E+03
2126	2.600E+07	4.052E+00	1.130E+03
2127	2.600E+07	3.893E+00	1.086E+03
2128	2.600E+07	3.740E+00	1.043E+03
2129	2.600E+07	3.593E+00	1.002E+03
2130	2.600E+07	3.452E+00	9.632E+02
2131	2.600E+07	3.317E+00	9.254E+02
2132	2.600E+07	3.187E+00	8.891E+02

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2133	2.600E+07	3.062E+00	8.543E+02
2134	2.600E+07	2.942E+00	8.208E+02
2135	2.600E+07	2.827E+00	7.886E+02
2136	2.600E+07	2.716E+00	7.577E+02
2137	2.600E+07	2.609E+00	7.280E+02
2138	2.600E+07	2.507E+00	6.994E+02
2139	2.600E+07	2.409E+00	6.720E+02
2140	2.600E+07	2.314E+00	6.456E+02
2141	2.600E+07	2.224E+00	6.203E+02
2142	2.600E+07	2.136E+00	5.960E+02
2143	2.600E+07	2.053E+00	5.726E+02
2144	2.600E+07	1.972E+00	5.502E+02
2145	2.600E+07	1.895E+00	5.286E+02
2146	2.600E+07	1.820E+00	5.079E+02
2147	2.600E+07	1.749E+00	4.880E+02
2148	2.600E+07	1.680E+00	4.688E+02
2149	2.600E+07	1.615E+00	4.504E+02
2150	2.600E+07	1.551E+00	4.328E+02
2151	2.600E+07	1.490E+00	4.158E+02
2152	2.600E+07	1.432E+00	3.995E+02
2153	2.600E+07	1.376E+00	3.838E+02
2154	2.600E+07	1.322E+00	3.688E+02
2155	2.600E+07	1.270E+00	3.543E+02
2156	2.600E+07	1.220E+00	3.404E+02
2157	2.600E+07	1.172E+00	3.271E+02
2158	2.600E+07	1.126E+00	3.143E+02
2159	2.600E+07	1.082E+00	3.019E+02
2160	2.600E+07	1.040E+00	2.901E+02
2161	2.600E+07	9.991E-01	2.787E+02
2162	2.600E+07	9.599E-01	2.678E+02
2163	2.600E+07	9.223E-01	2.573E+02
2164	2.600E+07	8.861E-01	2.472E+02
2165	2.600E+07	8.514E-01	2.375E+02
2166	2.600E+07	8.180E-01	2.282E+02
2167	2.600E+07	7.859E-01	2.193E+02
2168	2.600E+07	7.551E-01	2.107E+02
2169	2.600E+07	7.255E-01	2.024E+02
2170	2.600E+07	6.970E-01	1.945E+02
2171	2.600E+07	6.697E-01	1.868E+02
2172	2.600E+07	6.434E-01	1.795E+02
2173	2.600E+07	6.182E-01	1.725E+02
2174	2.600E+07	5.940E-01	1.657E+02
2175	2.600E+07	5.707E-01	1.592E+02
2176	2.600E+07	5.483E-01	1.530E+02
2177	2.600E+07	5.268E-01	1.470E+02
2178	2.600E+07	5.062E-01	1.412E+02
2179	2.600E+07	4.863E-01	1.357E+02
2180	2.600E+07	4.672E-01	1.304E+02
2181	2.600E+07	4.489E-01	1.252E+02
2182	2.600E+07	4.313E-01	1.203E+02
2183	2.600E+07	4.144E-01	1.156E+02
2184	2.600E+07	3.982E-01	1.111E+02
2185	2.600E+07	3.825E-01	1.067E+02
2186	2.600E+07	3.675E-01	1.025E+02
2187	2.600E+07	3.531E-01	9.852E+01
2188	2.600E+07	3.393E-01	9.465E+01
2189	2.600E+07	3.260E-01	9.094E+01
2190	2.600E+07	3.132E-01	8.738E+01
2191	2.600E+07	3.009E-01	8.395E+01
2192	2.600E+07	2.891E-01	8.066E+01
2193	2.600E+07	2.778E-01	7.750E+01
2194	2.600E+07	2.669E-01	7.446E+01
2195	2.600E+07	2.564E-01	7.154E+01
2196	2.600E+07	2.464E-01	6.873E+01
2197	2.600E+07	2.367E-01	6.604E+01
2198	2.600E+07	2.274E-01	6.345E+01

Year	Refuse In Place (Mg)	(Mg/yr)	(Cubic m/yr)
2199	2.600E+07	2.185E-01	6.096E+01
2200	2.600E+07	2.099E-01	5.857E+01
2201	2.600E+07	2.017E-01	5.627E+01
2202	2.600E+07	1.938E-01	5.407E+01
2203	2.600E+07	1.862E-01	5.195E+01
2204	2.600E+07	1.789E-01	4.991E+01
2205	2.600E+07	1.719E-01	4.795E+01
2206	2.600E+07	1.651E-01	4.607E+01
2207	2.600E+07	1.587E-01	4.427E+01
2208	2.600E+07	1.525E-01	4.253E+01
2209	2.600E+07	1.465E-01	4.086E+01
2210	2.600E+07	1.407E-01	3.926E+01
2211	2.600E+07	1.352E-01	3.772E+01
2212	2.600E+07	1.299E-01	3.624E+01
2213	2.600E+07	1.248E-01	3.482E+01
2214	2.600E+07	1.199E-01	3.346E+01
2215	2.600E+07	1.152E-01	3.214E+01
2216	2.600E+07	1.107E-01	3.088E+01
2217	2.600E+07	1.064E-01	2.967E+01
2218	2.600E+07	1.022E-01	2.851E+01
2219	2.600E+07	9.818E-02	2.739E+01
2220	2.600E+07	9.433E-02	2.632E+01
2221	2.600E+07	9.064E-02	2.529E+01
2222	2.600E+07	8.708E-02	2.429E+01
2223	2.600E+07	8.367E-02	2.334E+01

APPENDIX D-2

AIR QUALITY CALCULATIONS FOR THE MITIGATED ALTERNATIVE

Table MD-1: Mitigated On-Road Vehicle Trip Assumptions						rev. 3/21/05											
Redwood LF 200238																	
							7 tons/payload		23 tons/payload				Payload by Vehicle Type (tons)				
					0.5 tons/payload		Medium Heavy Trucks		Heavy Heavy Trucks				Light	Medium	Heavy		
		Ave.			Light Duty Auto		(Diesel)		(Diesel)				Duty Auto	Heavy Trucks	Heavy Trucks		
Proposed - Permit - 2005 Conditions (Mitigated)	Daily Trips	Tons/	# of Daily		(Catal.)		(GVW = 14,001 - 33,000 lbs)		(GVW = 33,001 - 60,000 lbs)		Total	Total	Payload (tons)				
	(one way)	Vehicle	Loads		% of Fleet	# of Daily Trips	% of Fleet	# of Daily Trips	% of Fleet	# of Daily Trips	%	Trips	0.5	7	23	Total	Target
1. Trucks (landfill operations)																	
A. Landfilled Materials	319																
- MSW	302	8.4	151	95%	40%	121	35%	106	25%	76	100%	302	30	370	869	1,270	1270
- Sludge	13	15.0	7	4%	0%	-	50%	7	50%	7	100%	13	-	23	77	100	100
- Other Designated	3	13.4	1	1%	0%	-	60%	2	40%	1	100%	3	-	6	14	20	20
											Subtotal:	319			Subtotal:	1,390	1,390
B. Recycled/Reused Materials	667		159	100%													
- Separated/Commingled Recyclables (incl. white gds and scrap metals)	542	1.5	271	81%	85%	461	15%	81	0%	-	100%	542	115	285	-	400	400
- Greenwaste/Yardwaste/Woodwaste/Food Waste/Biosolids for Compostin	34	4.7	17	5%	60%	20	30%	10	10%	3	100%	34	5	36	39	80	80
- PC Soils (for alternative/interim cover)	53	15.0	27	8%	0%	-	50%	27	50%	27	100%	53	-	93	307	400	400
- Clean Soil for Cover	37	16.3	18	6%	5%	2	35%	13	60%	22	100%	37	0	45	254	300	300
											Subtotal:	667			Subtotal:	1,180	1,180
			333	100%													
C. Outgoing Compost Product and Recyclables	40	16.8	20		10%	4	25%	10	65%	26	100%	40	1	35	296	332	332
					Overall fleet mix for landfill operations:												
Subtotal:	1,025				59%	608	25%	255	16%	161	100%						
2. Non-Truck Deliveries	100				100%	100	0%	-	0%	-	100%	100	NA	NA	NA	NA	NA
employees (35) & deliveries																	
TOTAL:	1,125				63%	708	23%	255	14%	161	100%	1,125					
													VMT = Trip length x # of trips				Ave. length
Distance (miles per trip)	955				12.7		12.7		24.0				8,994	3,243	3,874	16,111	14
							7 tons/payload		23 tons/payload								
					0.5 tons/payload		Medium Heavy Trucks		Heavy Heavy Trucks				Payload by Vehicle Type (tons)				
		Ave.			Light Duty Auto		(Diesel)		(Diesel)				Light	Medium	Heavy		
Baseline - Permit -1994 Conditions	Daily Trips	Tons/			(Catal.)		(GVW = 14,001 - 33,000 lbs)		(GVW = 33,001 - 60,000 lbs)		Total	Total	Duty Auto	Heavy Trucks	Heavy Trucks		
	(one way)	Vehicle			% of Fleet	# of Daily Trips	% of Fleet	# of Daily Trips	% of Fleet	# of Daily Trips	%	Trips	0.5	7	23	Total	Target
1. Trucks (landfill operations)	730	NA			65%	475	20%	146	15%	110	100%	730	119	511	1,259	1,889	2,310
- vehicle split similar to that assumed in 1994 EIR.																	
2. Non-Truck Deliveries	100	NA			100%	100	0%	-	0%	-	100%	100	NA	NA	NA	NA	NA
employees (35) & deliveries																	
TOTAL:	830				69%	575	18%	146	13%	110	100%						
													VMT = Trip length x # of trips				Ave. length
Distance (miles per trip)					10		10		18				4,745	1,460	1,971	8,176	10

Table MD-2: Baseline On-Road Vehicle Emissions (2001)				rev. 3/21/05	
Redwood LF 200238					
Trip Characteristics /a/	**0.5 tons/payload Light Duty Auto (Catal.)**	**7 tons/payload Medium Heavy Trucks (Diesel)**	**23 tons/payload Heavy Heavy Trucks (Diesel)**		
# of Daily Trips	575	146	110		
Avg. Daily Trip Length (miles)	10	10	18		
Vehicle Miles Travelled (per day)	5,745	1,460	1,971		
/a/ See trip assumptions table.					
Pollutant	**Running Exhaust Emissions Factor at 55 mph (grams/mile)**				
ROG	0.255	0.214	0.749		
CO	5.923	5.133	15.283		
NOX	0.639	1.204	14.774		
SO2	0.006	0.01	0.116		
Total PM10	0.719	0.723	0.941		
PM10 - Exhaust	0.008	0.012	0.217		
PM10 - Tire Wear	0.008	0.008	0.021		
PM10 - Break Wear	0.013	0.013	0.013		
PM10 - Entrained Road Dust	0.69	0.69	0.69		
				Total for 2001	
Pollutant	**Running Exhaust Emissions (grams/day)**			**(grams/day)**	**(lbs/day)**
ROG	1,465	312	1,476	3,254	7
CO	34,028	7,494	30,123	71,645	158
NOX	3,671	1,758	29,120	34,548	76
SO2	34	15	229	278	1
Total PM10	4,131	1,056	1,855	7,041	16
PM10 - Exhaust	46	18	428	491	1
PM10 - Tire Wear	46	12	41	99	0
PM10 - Break Wear	75	19	26	119	0
PM10 - Entrained Road Dust	3,964	1,007	1,360	6,331	14
Notes					
1 - Emission factors derived using EMFAC2002 V2.2, except for PM10 Entrained Road Dust.					
The BAAQMD-recommended factor of 0.69 grams of PM10 per vehicle mile traveled was used.					
2 - All emission factors are for summer (assuming an average daytime temperature of 80 degrees Fahrenheit and					
50% relative humidity) except for CO, which is for winter (assuming an average daytime temperature of					
55 degrees Fahrenheit and 60% relative humidity).					

Table MD-3: Mitigated Project On-Road Vehicle Emissions (2005)					rev. 3/21/05
Redwood LF 200238					
Trip Characteristics /a/	**0.5 tons/payload Light Duty Auto (Catal.)**	**7 tons/payload Medium Heavy Trucks (Diesel)**	**23 tons/payload Heavy Heavy Trucks (Diesel)**		
# of Daily Trips	708	255	161		
Avg. Daily Trip Length (miles)	12.7	12.7	24		
Vehicle Miles Travelled (per day)	8,994	3,243	3,874		
/a/ See trip assumptions table.					
Pollutant	**Running Exhaust Emissions Factor at 55 mph (grams/mile)**				
ROG	0.162	0.156	0.611		
CO	5.923	5.133	15.283		
NOX	0.414	0.959	12.637		
SO2	0.004	0.008	0.121		
Total PM10	0.719	0.726	0.905		
PM10 - Exhaust	0.008	0.014	0.181		
PM10 - Tire Wear	0.008	0.009	0.021		
PM10 - Break Wear	0.013	0.013	0.013		
PM10 - Entrained Road Dust	0.69	0.69	0.69		
				Total for 2005	
Pollutant	**Running Exhaust Emissions (grams/day)**			**(grams/day)**	**(lbs/day)**
ROG	1,457	506	2,367	4,330	10
CO	53,272	16,645	59,205	129,123	285
NO_X	3,724	3,110	48,955	55,788	123
SO_2	36	26	469	531	1
Total PM_{10}	6,467	2,354	3,506	12,327	27
PM_{10} - Exhaust	72	45	701	819	2
PM_{10} - Tire Wear	72	29	81	182	0
PM_{10} - Break Wear	117	42	50	209	0
PM_{10} - Entrained Road Dust	6,206	2,238	2,673	11,117	25
Notes					
1 - Emission factors derived using EMFAC2002 V2.2, except for PM10 Entrained Road Dust.					
The BAAQMD-recommended factor of 0.69 grams of PM10 per vehicle mile traveled was used.					
2 - All emission factors are for summer (assuming an average daytime temperature of 80 degrees Fahrenheit and					
50% relative humidity) except for CO, which is for winter (assuming an average daytime temperature of					
55 degrees Fahrenheit and 60% relative humidity).					

Table MD-4: Mitigated Off-Road Equipment Emissions

rev. 3/21/05

Redwood LF 200238

Equipment Model	General Description	Number Used	Assumed hp-rating	Hours/Week/ Piece of Equipment	Typical Operating Load Factor	Existing Operations (2001) Total Hours/ Week	Existing Operations (2001) Total Hours/ Day	Existing Operations (2001) Total hp-hours/ Day	Mitigated Project Operations (2005) Total Hours/ Week	Mitigated Project Operations (2005) Total Hours/ Day	Mitigated Project Operations (2005) Total hp-hours/ Day	Description of Use
Cat 826C	Compactor	2	380	49	0.55	98	16	3,414	107	18	3,725	Refuse Management
Cat D300	Dump Truck	3	240	29	0.65	87	15	2,262	95	16	2,469	Hauling dirt and daily cover
Cat D6H	Track-type tractor	1	165	24	0.55	24	4	363	26	4	396	Refuse Management
Cat D9	Track-type tractor	1	405	20	0.55	20	3	743	22	4	810	Moving soil/construction/cover
Komatsu D65	Track-type tractor	1	180	4	0.55	4	1	66	4	1	72	Moving soil/construction/cover
Komatsu D60	Track-type tractor	1	180	2	0.55	2	0	33	2	0	36	Moving soil/construction/cover
Cat 980	Rubber-tire loader	1	311	34	0.54	34	6	952	37	6	1,039	Loading dirt and materials
Cat 950	Rubber-tire loader	1	180	17	0.54	17	3	275	19	3	301	Loading materials/composting ops
Cat 966	Rubber-tire loader	1	235	18	0.54	18	3	381	20	3	415	Loading materials/composting ops
Komatsu W60(	Rubber-tire loader	1	200	16	0.54	16	3	288	17	3	314	Loading dirt and materials
Terrex	Water truck 4k gal	1	180	10	0.65	10	2	195	11	2	213	Dust and fire control
Cat 14G	Motorgrader	1	180	23	0.61	23	4	421	25	4	459	Site and road maintenance, repair
Brown Bear	Rubber-tire tractor	1	180	0	0.59	-	-	-	-	-	-	Sludge processing/turning
Columbia	Truck tipper	2	180	NA	0.55	NA	NA	NA	50	8	828	Trailer tipping (refuse & compost)
Frontier	Windrow turner	1	180	7	0.55	7	1	116	8	1	126	Composting operations
			Total:	253		360	60	9,507	443	74	11,204	

Pollutant	Emission Factor (grams/hp-hour)	Emissions (lbs/day) Existing (2001)	M. Project (2005)	Net Increment
ROG	0.32	7	8	1
CO	0.92	19	23	3
NOx	5.47	115	135	20
PM10	0.13	2.82	3.32	0.50

Notes

1 -- Information on equipment type, use and usage rate on a weekly basis for existing conditions provided by project applicant. A tub grinder was not included on an update of the JTD Table 5-5 equipment list provided by the applicant (G. Roycroft, July 21, 2001), presumably as an oversight. The tub grinder is not included in this emissions inventory list because the applicant currently is permitted to operate the tub grinder up to 8 hours per day (peak); daily use is not expected to increase substantially beyond this under the project.

2 -- In the summer of 1997, RLI acquired and began using the waste tipper. For that reason, its use is not considered for the 1994 existing conditions scenario.

3 -- Off-road equipment use is assumed to increase proportionally with the overall increase in peak day material receipts from Table 2-1.

1994 Permit Conditions:	2,300	tons
2005 Project Conditions:	2,510	tons
	1.1	Increase applied to equipment use

4 -- Where feasible, hp-ratings for individual models of equipment were obtained from the applicable manufacturer's website. Professional judgement was used to estimate the remaining hp-ratings.

5 -- Based on composite uncontrolled emission factors for post-1987 model years for equipment with a hp-rating below 175 hp and Tier 1 emission rates for engines with a hp-rating greater than 175 hp. Emission factor data was obtained from the California Air Resources Board's Emission Inventory of Off-Road Large Compression-Ignited Engines (>25 hp) Using the New OFFROAD Emissions Model Mail Out#: MSC 99-32, January 27, 2000 (Tables 12 and 13). Load factors are taken from Appendix B. of this document.

6 -- Emission factors for NOx and PM10 have been adjusted using fuel correction factors (Table 15) to account for the use of California diesel fuel.

Table MD-5: Fugitive Dust Emissions				rev. 3/22/05
Redwood LF 200238				
	PM-10 Emissions (lbs/day)			
		2005	Net	
Fugitive Dust Source[1]	Baseline	Conditions	Increase	Notes
Off-Site Vehicle Travel on Gravel Surfaces at Redwood LF	351	398	47	Assumes watering effectiveness of 75%.
Off-Site Vehicle Travel on Dirt Surfaces at Redwood LF	285	324	38	Assumes watering effectiveness of 75%.
On-Site Vehicle Travel on Dirt Surfaces at Redwood LF	57	65	8	Assumes watering effectiveness of 75%.
Off-Site Vehicle Travel on Paved Surfaces at Redwood LF	86	97	11	Assumes watering or sweeping w/ 50% effectiveness.
Waste Handling	37	55	19	
Wind Erosion	1	1	0	Includes wind erosion from active LF face and cover stockpiles.
Totals	**817**	**941**	**124**	
[1] See detailed worksheets for emissions estimates from each fugitive dust source.				

Emisssions Calculations for Off-Site Vehicle Travel on Gravel Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k\,(s/12)^a (W/3)^b$$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

$$E = [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$$

where:

- E = size-specific emissions factor (lb/VMT)
- s = surface material silt content (%), default 6.4%
- W = mean vehicle weight (tons)
- M = surface material moisture content (%), default for regularly watered roads is 4%.
- S = mean vehicle speed (mph), default and maximum is 15 mph
- *C* = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.
- k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = E\,[(365 - P)/365]$$

where:

- E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
- E = emission factor from Equation 1a or 1b
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:

Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	**6**
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	6.4	6.4	6.4
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	0.00036	0.00047	0.00047
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	**0.23**	**1.5**	**4.9**
a	**0.9**	**0.9**	**0.7**
b	**0.45**	**0.45**	**0.45**
s	6.4	6.4	6.4
W	15.42	15.42	15.42
P	**60**	**60**	**60**

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.273	1.780	6.592	Uncontrolled
Equation 2 - 1a	0.228	1.487	5.509	Uncontrolled (but natural Mitigation)

	Baseline	2005 Conditions	
Off-Site Trips/day	830	941	- one-way trips
Unpaved Length (ft)	6,000	6,000	- from BAAQMD permits (one-way)
VMT/day	943	1,069	

	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	257	1,678	6,218	292	1,903	7,049	34	224	832
Equation 2 - 1a	215	1,403	5,196	244	1,590	5,890	29	188	695
Watered + 2	54	351	1,299	61	398	1,473	7	47	174

Emisssions Calculations for Off-Site Vehicle Travel on Dirt Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

$$E = k\,(s/12)^a (W/3)^b$$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

$$E = [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$$

where:

- E = size-specific emissions factor (lb/VMT)
- s = surface material silt content (%), 11% for dirt roads
- W = mean vehicle weight (tons)
- M = surface material moisture content (%), default for regularly watered roads is 4%.
- S = mean vehicle speed (mph), default and maximum is 15 mph
- *C* = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.
- k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = E\,[(365 - P)/365]$$

where:

- E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
- E = emission factor from Equation 1a or 1b
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:

Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	**6**
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	11	11	11
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	0.23	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45
s	11	11	11
W	15.42	15.42	15.42

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.444	2.897	9.631	Uncontrolled
Equation 2 - 1a	0.371	2.421	8.048	Uncontrolled (but natural Mitigation)

	Baseline	2005 Conditions	
Off-Site Trips/day	830	941	- one-way trips
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)
VMT/day	472	535	

	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	210	1,366	4,542	238	1,549	5,149	28	183	607
Equation 2 - 1a	175	1,142	3,795	198	1,294	4,303	23	153	508
Watered + 2	44	285	949	50	324	1,076	6	38	127

Emisssions Calculations for On-Site Vehicle Travel on Dirt Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.2, Unpaved Roads, Final Rule 12/03

Equation 1a: for vehicles traveling on unpaved surfaces at industrial sites:

E $= k\,(s/12)^a (W/3)^b$

Equation 1b: for vehicles traveling on publicly accessible roads, dominated by light duty trucks:

E $= [[k\,(s/12)^a (S/30)^d]/[(M/0.5)^c]] - C$

where:

E = size-specific emissions factor (lb/VMT)

s = surface material silt content (%), 11% for dirt roads

W = mean vehicle weight (tons)

M = surface material moisture content (%), default for regularly watered roads is 4%.

S = mean vehicle speed (mph), default and maximum is 15 mph

C = emission factor fo 1980's vehicle fleet exhaust, brake wear, and tire wear.

k, a, b, c and d = empirical constants based on particulate size.

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

E_{ext} $= E\,[(365 - P)/365]$

where: E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area

Notes:

Use the tables to fill in site specific data.

Table 1: Variables used for Equations 1b & 2.

	PM-2.5	PM-10	PM-30
k	**0.27**	**1.8**	**6**
a	**1**	**1**	**1**
c	**0.2**	**0.2**	**0.3**
d	**0.5**	**0.5**	**0.3**
s	11	11	11
S	15	15	15
M	4	4	4
M_{dry}	0.2	0.2	0.2
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**

Table 2: Variables used for Equations 1a

	PM-2.5	PM-10	PM-30
k	0.23	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45
s	11	11	11
W	28.37	28.37	28.37

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1a	0.585	3.812	12.671	Uncontrolled
Equation 2 - 1a	0.488	3.185	10.588	Uncontrolled (but natural Mitigation)

			2005						
		Baseline	Conditions						
General	Number	# of round	# of round						
Description	Used	trips/day	trips/day		Notes:				
Compactor	2	2	2		Adjusted to reflect to reflect increase in waste receipts				
Dump Truck	3	20	23						
Track-type tractor	1	2	2						
Track-type tractor	1	2	2						
Track-type tractor	1	2	2						
Track-type tractor	1	2	2						
Rubber-tire loader	1	2	2						
Rubber-tire loader	1	2	2						
Rubber-tire loader	1	2	2						
Rubber-tire loader	1	2	2						
Water truck 8k gal	1	5	6						
Water truck 4k gal	1	5	6						
Water truck 3k gal	1	5	6						
Motorgrader	1	2	2						
Rubber-tire tractor	1	2	2						
Backhoe	1	2	2						
Truck tipper	2	2	2						
Windrow turner	1	2	2						
Total:		63	72						
		2005							
	Baseline	Conditions							
Off-Site Trips/day	63	72	- Round trips						
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)						
VMT/day	72	82							
	Emissions (lbs/day)								
	Baseline Conditions			2005 Conditions			Net Increment		
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30
Equation 1a	42	273	907	48	313	1,041	6	40	134
Equation 2 - 1a	35	228	758	40	262	870	5	34	112
Watered + 2	9	57	190	10	65	218	1	8	28

Emissions Calculations for Off-Site Vehicle Travel on Paved Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.1, Paved Roads, Final Rule 12/03

Equation 1: for vehicle travel on a dry paved road:

$$E = [k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C$$

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = [[k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C]\,(1 - (P/4N))$$

where
- E = particulate emission factor (lbs/VMT)
- E_{ext} = annual average emission factor, lbs/VMT
- k = particle size multiplier for particle size range and units of interest
- sL = road surface silt loading (grams per square meter, g/m^2)
- W = average weight (tons) of the vehicles traveling the road, and
- *C* = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area
- N = number of days in averaging period, 365 days

Table 1: Variables used for Equations 1.

	PM-2.5	PM-10	PM-30
k	**0.004**	**0.016**	**0.082**
sL	**7.4**	**7.4**	**7.4**
W	15.42	15.42	15.42
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**
N	**365**	**365**	**365**

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1	0.1087	0.4359	2.2361	Uncontrolled
Equation 2	0.0909	0.3643	1.8686	Uncontrolled (but natural Mitigation)
Water/Sweep	0.045	0.182	0.934	

	Baseline	2005 Conditions	
Off-Site Trips/day	830	941	- one-way trips
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)
VMT/day	472	535	

	Emissions (lbs/day)										
	Baseline			2005			Net Increment				
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30		
Equation 1	51	206	1,055	58	233	1,196	7	27	141	Uncontrolled	
Equation 2	43	172	881	49	195	999	6	23	118	Uncontrolled (but natural Mitigation)	
Water/Sweep	21	86	441	24	97	500	3	11	59		

Emissions Calculations for Off-Site Vehicle Travel on Paved Roads at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.1, Paved Roads, Final Rule 12/03

Equation 1: for vehicle travel on a dry paved road:

$$E = [k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C$$

Equation 2: for average annual uncontrolled conditions (but including natural mitigation)

$$E_{ext} = [[k\,(SL/2)^{0.65} \times (W/3)^{1.5}] - C]\,(1 - (P/4N))$$

where
- E = particulate emission factor (lbs/VMT)
- E_{ext} = annual average emission factor, lbs/VMT
- k = particle size multiplier for particle size range and units of interest
- sL = road surface silt loading (grams per square meter, g/m^2)
- W = average weight (tons) of the vehicles traveling the road, and
- *C* = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.
- P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation, defualt is 60 for entire Bay Area
- N = number of days in averaging period, 365 days

Table 1: Variables used for Equations 1.

	PM-2.5	PM-10	PM-30
k	**0.004**	**0.016**	**0.082**
sL	**7.4**	**7.4**	**7.4**
W	15.42	15.42	15.42
C	**0.00036**	**0.00047**	**0.00047**
P	**60**	**60**	**60**
N	**365**	**365**	**365**

	Emission Factor (lb/VMT)			
	PM-2.5	PM-10	PM-30	
Equation 1	0.1087	0.4359	2.2361	Uncontrolled
Equation 2	0.0909	0.3643	1.8686	Uncontrolled (but natural Mitigation)
Water/Sweep	0.045	0.182	0.934	

	Baseline	2005 Conditions	
Off-Site Trips/day	830	941	- one-way trips
Unpaved Length (ft)	3,000	3,000	- from BAAQMD permits (one-way)
VMT/day	472	535	

	Emissions (lbs/day)										
	Baseline			2005			Net Increment				
	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30	PM-2.5	PM-10	PM-30		
Equation 1	51	206	1,055	58	233	1,196	7	27	141	Uncontrolled	
Equation 2	43	172	881	49	195	999	6	23	118	Uncontrolled (but natural Mitigation)	
Water/Sweep	21	86	441	24	97	500	3	11	59		

Particulate Emission from Waste Disposal Activities at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.3, Heavy Construction Operations, Final Rule 1/95
AP-42 Chapter 11.9, Western Surface Coal Mining, Final Rule 10/98
AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles, Final Rule 1/95

	Materials	Silt (s)	Moisture (M)	PM-10 Em. Factor (lbs/hour)	Baseline Vehicle (hours/day)	Baseline Number of Vehicles	2005 Conditions Vehicle (hours/day)	2005 Conditions Number of Vehicles	Baseline PM-10 Total (lbs/day)	2005 Conditions PM-10 Total (lbs/day)	Net Increment PM-10 Total (lbs/day)
Bulldozing	waste/other	12.0	11.0	1.0861	6	3	9	3	19.55	29.71	10.16
Bulldozing	cover	9.0	12.0	0.6246	1	1	2	1	0.62	0.95	0.32
Compacting	waste/other	12.0	11.0	1.0861	6	2	9	2	13.03	19.81	6.78
Compacting	cover	9.0	12.0	0.6246	1	1	2	1	0.62	0.95	0.32
Excavating	clay/dirt	9.2	14.0	0.5202	4	1	6	1	2.08	3.16	1.08
				(lbs/ton)	Baseline (tons/day)		2005 Conditions (tons/day)				
Dumping	waste/other	12.0	11.0	0.0001		2,300		2,640	0.31	0.36	0.05
Dumping	cover	9.0	12.0	0.0001		1,150		1,320	0.14	0.16	0.02
TOTAL									36.36	55.10	18.74

1. AP-42 Table 13.2.3-1 recommends using factors from Table 11.0-1 for bulldozer activities.
   Equation from 11.9-1 for bulldozing (overburden): E (lbs PM-10/hour) $= 0.75 * 1.0 * s^{1.5}/M^{1.4}$
2. AP-42 Table 13.2.3-1 recommends using factors derived from Chapter 13.2.4 for dumping activities.
   From page 13.2.4-3: E (lbs PM-10/ton) $= 0.35 * 0.0032 * ((U/5)^{1.3}/ (M/2)^{1.4})$
   The mean wind speed (U in equation) used for the site is 6 mph.
3. Mean silt and moisture contents were taken from Table 13.2.4-1 for materials at MSW landfills.

Particulate Emission from Adding and Removing Soil at the Cover Soil Stockpile

	Silt (s)	Moisture (M)	PM-10 Em. Factor (lbs/ton)	Baseline (tons/day)	2005 Conditions (tons/day)	Baseline PM-10 Total (lbs/day)	2005 Conditions PM-10 Total (lbs/day)	Net Increment PM-10 Total (lbs/day)
Soil to Stockpiles	9.0	12.0	0.0001	1,150	1,320	0.1378085	0.1581802	0.0203717
Soil to On-Site Trucks	9.0	12.0	0.0001	1,150	1,320	0.1378085	0.1581802	0.0203717
Total						0.275617	0.3163604	0.0407434

Wind Erosion Emissions at Redwood Landfill rev. 3/22/05

Source: AP-42 Chapter 13.2.5, Industrial Wind Erosion, Final Rule 1/95

EF	= emission factor, g/m^2 (EF_c is for chronic conditions, EF_a is for acute conditions)
k	= particle size multiplier, dimensionless
N	= number of days of disturbances per year
P_i	= erosion potential for disturbed area, g/m^2 (Per AP-42, erosion potential is assumed to be 0 between disturbances and for undisturbed areas.)
u^*	= friction velocity, m/s
u_t^*	= threshold friction velocity, m/s
	From Table 13.2.5-1, u_t^* ranges from 0.43 m/s to 1.00 m/s using seive procedure.
	From Table 13.2.5-2, u_t^* ranges from 0.54 m/s for fine coal dust to 1.33 m/s for roadbed material.
	From Table 13.2.5-2, u_t^* = 1.02 m/s for overburden at a coal mine.
u_{10}^+	= fastest mile of wind, m/s, at reference anonometer hieght of 10 cm.
A	= disturbed area, m^2
E	= emissions, grams/year

Equation (1): $u^* = 0.053 * u_{10}^+$

Equation (2): $P_i = 58 * (u^* - u_t^*)^2 + 25 * (u^* - u_t^*)$

Equation (3): $EF = k * \sum_{i=1}^{N} P_i$

Equation (4): $E = EF * A$

Variables for conditions at Redwood Landfill:

Variable	Working Face Daily	Cover Stockpile Daily	Notes:
u_{10}^+	19.21	19.21	For Redwood Landfill u^* = 42.5 mph (19.0 m/s) at 30 feet (9.144 m)
u^*	1.01813	1.01813	Calculated using Equation (1)
u_t^*	1.0	1.0	Assume u_t^* = 1.0 for the compacted landfill working face and watered stockpiles (similar to overburden at a coal mine).
P_i	0.47	0.47	Calculated using Equation (2)
N	1	1	Assumes working face and stockpile are disturbed once every working day

Wind Erosion from the Active Face of the Landfill (PM-10):

	Emissions (lbs/day) Baseline	2005 Conditions	Notes:
k	0.5	0.5	From AP-42 (p. 13.2.5-3)
EF_d	0.24	0.24	Calculated using Equation (3) and daily condition variables.
A_d	1,505	1,642	Per Redwood LF and BAAQMD permit calculations, maximum surface area of working face is 1,800 yd^2; 1 yd^2 = 0.83612736 m^2
Daily Emissions			
grams/day	355	388	Calculated using Equation (4) with daily emission factor (EF_d) and maximum daily surface area (A_d).
lbs/day	0.78	0.86	lbs/day = grams/day / 453.59237

Wind Erosion from the Cover Soil Stockpile (PM-10):

	Emissions (lbs/day) Baseline	2005 Conditions	Notes:
k	0.5	0.5	From AP-42 (p. 13.2.5-3)
EF_d	0.24	0.24	Calculated using Equation (3) and daily condition variables.
A_d	454	495	Per Redwood LF and BAAQMD permit calculations, maximum soil usage is 1,100 yd^3/day. Max SA = 543 yd^2. (see below)
Daily Emissions			
grams/day	107	117	
lbs/day	0.24	0.26	

Per Redwood LF and BAAQMD permit calculations:

A_d =

	yd^3	height (m)	radius (m)	SA
Total stored, yd^3	50,000	7	36.9	21,810
Avg, per day, yd^3	320.5	7	6.6	200
Max, per day, yd^3	1100	7	12.2	543

Table MD-6: Composting Emissions

rev. 3/22/05 nms

Redwood LF 200238

Tons	Current Permit			Mitigated Project			Net Change		
	Annual	Ave	Peak	Annual	Ave	Peak	Annual	Ave	Peak
Green/wood waste	13,000	42	238	18,720	60	60	5,720	18	(178)
Biosolids	30,702	84	307	29,200	80	80	(1,502)	(4)	(227)
Food waste	-	-	-	9,360	30	30	9,360	30	30
Total:	43,702	126	545	57,280	170	170	13,578	44	(375)

a) Annual throughput assumes receipt of green/wood waste 312 days per year, and biosolids 365 days per year.

Cubic Yards	Current Permit			Mitigated Project			Net Change		
	Annual	Ave	Peak	Annual	Ave	Peak	Annual	Ave	Peak
Green/wood waste	52,000	167	950	74,880	240	240	22,880	73	(710)
Biosolids	36,135	99	350	33,945	93	93	(2,190)	(6)	(257)
Food waste	-	-	-	10,670	34	34	10,670	34	34
Total:	88,135	266	1,300	119,495	367	367	31,360	102	(933)

a) For the purposes of estimating volume of food waste, it was assumed that food waste had the same density factor as biosolids.

Composting/Co-Composting Split (cubic yards)	Current Permit		Mitigated Project		Percent of Total: Current Permit		Percent of Total: Mitigated Project	
Windrow Type	Ave	Peak	Ave	Peak	Ave	Peak	Ave	Peak
Composting	68	600	113	113	25%	46%	31%	31%
Co-Composting	198	700	254	254	75%	54%	69%	69%
Total:	266	1,300	367	367	100%	100%	100%	100%

a) The composting/co-composting split assumes that co-composting is done at a 1:1 ratio for green/wood waste and biosolids (i.e., for every cubic yard of biosolids or foodwaste co-composted one cubic yard of green/wood waste is used).

Emissions from Composting at Redwood Landfill – calculated using SCAQMD emission factors

Emission Factors (lbs/ton of material)	VOC		Ammonia		Composite Factor	
	Active Compost	Curing	Active Compost	Curing	VOC	Ammonia
Composting	3.44	0.4	0.83	0.02	3.84	0.85
Co-Composting	1.42	0.36	1.47	1.47	1.78	2.94

	Annual Throughput (tons)		Emissions (lbs/day)					
	Current Permit	Proposed Project	Current Permit		Mitigated Project		Net Increment	
			VOC	Ammonia	VOC	Ammonia	VOC	Ammonia
Composting	11,131	17,596	117	26	185	41	68	15
Co-Composting	32,571	39,684	159	262	194	320	35	57
Total:	43,702	57,280	276	288	379	361	103	72

a) Daily emissions calculated from annual emissions divided by 365 days.

Emissions from Composting at Redwood Landfill – calculated using CIWMB emission factor (equals 27% of factor used by SCAQMD for green/wood waste)

	VOC Emissions (lbs/day)		
	Current Permit	Mitigated Project	Net Increment
Composting	32	50	18
Co-Composting	159	194	35
Total:	190	244	53

Emissions Adjusted to reflect commentor's suggestion that ROG is 39% of VOC.

	Current Permit	Mitigated Project	Net Increment
Composting	12	19	7
Co-Composting	159	194	35
Total:	171	213	42

- VOC emission factor for green/wood waste composting is adjusted to reflect 39% of the factor.

Table MD-8: Mitigated Sludge Handling Emissions

rev. 3/22/05

Redwood LF 200238

Amount of Sludge (wet tons) Received at Redwood Landfill

Source	Current Permit		Mitigated Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	424	455	100	100	(324)	(355)
Composting	84	307	80	80	(4)	(227)
ADC	-	-	50	50	50	50
Total:	508	762	230	230	(278)	(532)
Air Drying	-	500	-	1,750	-	1,250

- air dried tons are not part of material received; this is the amount that would be air dried from Main Impoundment for multiple consecutive spring seasons.

Conversion to Dry tons

Amount of Sludge (dry tons) Received at Redwood Landfill

Source	Current Permit		Mitigated Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	85	91	20	20	(65)	(71)
Composting	17	61	16	16	(1)	(45)
ADC	-	-	10	10	10	10
Total:	102	152	46	46	(56)	(106)
Air Drying	-	177	-	350	-	173

Emissions from biosolids used in co-composting are addressed in Impact 3.2.6 and Included in Table D-6.

- air dried tons are not part of material received; this is the amount that would be air dried from Main Impoundment for multiple consecutive spring seasons.

Note: a 4:1 ratio is used to convert sludge measured on a wet basis to sludge measured on a dry basis; this is equivalent to about 20 percent solids and is the figure used in the 1997 J.M. Smith & Associates Study and current JTD.

Emissions from Sludge as ADC and Disposed

ROG Emissions (pounds per day) /a/

Source	Current Permit		Mitigated Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Landfilled	25	26	6	6	(19)	(21)
ADC	-	-	3	3	3	3
Stockpiled Materials /b/	12	12	12	12	-	-
Total:	37	38	21	21	(16)	(18)

/a/ Uses an emission factor of 0.29 pounds or ROG (used synonomously with VOCs) per dry ton of sludge treated per day. Source: J.M. Smith 1998 Study.

/b/ Evaporative emissions from stockpiled sludge are estimated to be about 12 pounds per day. Source: 1998 JTD.

Emissions from Sludge Air Drying

ROG Emissions (pounds per day) /a/

Source	Current Permit /b/		Mitigated Project		Net Change	
	Ave	Peak	Ave	Peak	Ave	Peak
Air Drying	-	24	-	102	-	78

/a/ Uses an emission factor of 0.29 pounds or ROG (used synonomously with VOCs) per dry ton of sludge treated per day. Source: J.M. Smith 1998 Study.

/b/ Uses the 24 pounds per day figures stated in the 1994 FEIR as a baseline.

APPENDIX E

HEALTH RISK ASSESSMENT MODEL RUNS

01/06/03
10:16:14

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 95250 ***

TCE modeling from compost 15 acres, assume 1 g/sec.

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE                =        AREA
   EMISSION RATE (G/(S-M**2)) =     .170000E-04
   SOURCE HEIGHT (M)          =       .0000
   LENGTH OF LARGER SIDE (M)  =    246.0000
   LENGTH OF SMALLER SIDE (M) =    246.0000
   RECEPTOR HEIGHT (M)        =      1.5000
   URBAN/RURAL OPTION         =       RURAL
   MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION


BUOY. FLUX =     .000 M**4/S**3;  MOM. FLUX =     .000 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
100.	951.3	6	1.0	1.0	10000.0	.00	45.
200.	1152.	6	1.0	1.0	10000.0	.00	45.
300.	832.4	6	1.0	1.0	10000.0	.00	45.
400.	639.7	6	1.0	1.0	10000.0	.00	45.
500.	523.4	6	1.0	1.0	10000.0	.00	45.
600.	444.3	6	1.0	1.0	10000.0	.00	45.
700.	387.6	6	1.0	1.0	10000.0	.00	45.
800.	345.4	6	1.0	1.0	10000.0	.00	45.
900.	312.9	6	1.0	1.0	10000.0	.00	45.
1000.	286.5	6	1.0	1.0	10000.0	.00	45.
1100.	264.6	6	1.0	1.0	10000.0	.00	45.
1200.	246.1	6	1.0	1.0	10000.0	.00	45.
1300.	229.9	6	1.0	1.0	10000.0	.00	45.
1400.	215.6	6	1.0	1.0	10000.0	.00	45.
1500.	202.8	6	1.0	1.0	10000.0	.00	45.
1600.	191.2	6	1.0	1.0	10000.0	.00	45.
1700.	180.8	6	1.0	1.0	10000.0	.00	45.
1800.	171.3	6	1.0	1.0	10000.0	.00	45.
1900.	162.5	6	1.0	1.0	10000.0	.00	45.
2000.	154.7	6	1.0	1.0	10000.0	.00	45.
2100.	147.7	6	1.0	1.0	10000.0	.00	45.
2200.	141.4	6	1.0	1.0	10000.0	.00	45.
2300.	135.4	6	1.0	1.0	10000.0	.00	44.
2400.	129.9	6	1.0	1.0	10000.0	.00	45.
2500.	124.8	6	1.0	1.0	10000.0	.00	45.
2600.	119.9	6	1.0	1.0	10000.0	.00	44.
2700.	115.3	6	1.0	1.0	10000.0	.00	45.
2800.	111.0	6	1.0	1.0	10000.0	.00	44.
2900.	107.0	6	1.0	1.0	10000.0	.00	45.
3000.	103.2	6	1.0	1.0	10000.0	.00	45.
3500.	87.92	6	1.0	1.0	10000.0	.00	45.
4000.	76.01	6	1.0	1.0	10000.0	.00	45.
4500.	66.51	6	1.0	1.0	10000.0	.00	45.
5000.	58.81	6	1.0	1.0	10000.0	.00	42.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

195.	1154.	6	1.0	1.0	10000.0	.00	45.

```
**********************************
*** SCREEN DISCRETE DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	523.4	6	1.0	1.0	10000.0	.00	45.
1000.	286.5	6	1.0	1.0	10000.0	.00	45.
1500.	202.8	6	1.0	1.0	10000.0	.00	45.
2000.	154.7	6	1.0	1.0	10000.0	.00	45.
2400.	129.9	6	1.0	1.0	10000.0	.00	45.

```
     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************
```

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1154.	195.	0.

01/06/03
09:25:03

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 95250 ***

Landfill gas screening assuming 1 g/sec. over 200 acres (809,400 m2)

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	.123000E-05
SOURCE HEIGHT (M)	=	.0000
LENGTH OF LARGER SIDE (M)	=	900.0000
LENGTH OF SMALLER SIDE (M)	=	900.0000
RECEPTOR HEIGHT (M)	=	1.5000
URBAN/RURAL OPTION	=	RURAL
MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION		

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
100.	127.3	6	1.0	1.0	10000.0	.00	45.
200.	132.0	6	1.0	1.0	10000.0	.00	45.
300.	139.4	6	1.0	1.0	10000.0	.00	45.
400.	147.6	6	1.0	1.0	10000.0	.00	45.
500.	154.9	6	1.0	1.0	10000.0	.00	45.
600.	161.7	6	1.0	1.0	10000.0	.00	45.
700.	150.2	6	1.0	1.0	10000.0	.00	45.
800.	123.1	6	1.0	1.0	10000.0	.00	45.
900.	106.7	6	1.0	1.0	10000.0	.00	45.
1000.	95.43	6	1.0	1.0	10000.0	.00	45.
1100.	87.02	6	1.0	1.0	10000.0	.00	45.
1200.	80.51	6	1.0	1.0	10000.0	.00	45.
1300.	75.28	6	1.0	1.0	10000.0	.00	45.
1400.	70.93	6	1.0	1.0	10000.0	.00	45.
1500.	67.22	6	1.0	1.0	10000.0	.00	45.
1600.	64.01	6	1.0	1.0	10000.0	.00	45.
1700.	61.19	6	1.0	1.0	10000.0	.00	45.
1800.	58.68	6	1.0	1.0	10000.0	.00	45.
1900.	56.42	6	1.0	1.0	10000.0	.00	45.
2000.	54.38	6	1.0	1.0	10000.0	.00	45.
2100.	52.53	6	1.0	1.0	10000.0	.00	45.
2200.	50.85	6	1.0	1.0	10000.0	.00	45.
2300.	49.30	6	1.0	1.0	10000.0	.00	45.
2400.	47.88	6	1.0	1.0	10000.0	.00	45.
2500.	46.58	6	1.0	1.0	10000.0	.00	45.
2600.	45.39	6	1.0	1.0	10000.0	.00	45.
2700.	44.28	6	1.0	1.0	10000.0	.00	45.
2800.	43.24	6	1.0	1.0	10000.0	.00	45.
2900.	42.27	6	1.0	1.0	10000.0	.00	45.
3000.	41.36	6	1.0	1.0	10000.0	.00	45.
3500.	37.53	6	1.0	1.0	10000.0	.00	45.
4000.	34.55	6	1.0	1.0	10000.0	.00	45.
4500.	32.04	6	1.0	1.0	10000.0	.00	45.
5000.	29.89	6	1.0	1.0	10000.0	.00	45.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

639.	164.3	6	1.0	1.0	10000.0	.00	45.

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	154.9	6	1.0	1.0	10000.0	.00	45.
1000.	95.43	6	1.0	1.0	10000.0	.00	45.
1500.	67.22	6	1.0	1.0	10000.0	.00	45.
2000.	54.38	6	1.0	1.0	10000.0	.00	45.
2400.	47.88	6	1.0	1.0	10000.0	.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	164.3	639.	0.

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************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
************************************************
```

Run with Screen View by Lakes Environmental Software

Input File = C:\SCREEN\LFG.IN

01/06/03
11:07:35

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 95250 ***

diesel PM from trucks (505+366 trips/day), 1 mile over .5 mi. line@.22g/mile

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	.174000E-07
SOURCE HEIGHT (M)	=	3.0000
LENGTH OF LARGER SIDE (M)	=	800.0000
LENGTH OF SMALLER SIDE (M)	=	100.0000
RECEPTOR HEIGHT (M)	=	1.5000
URBAN/RURAL OPTION	=	RURAL

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
100.	1.077	6	1.0	1.0	10000.0	3.00	3.
200.	1.207	6	1.0	1.0	10000.0	3.00	0.
300.	1.331	6	1.0	1.0	10000.0	3.00	0.
400.	1.441	6	1.0	1.0	10000.0	3.00	0.
500.	1.332	6	1.0	1.0	10000.0	3.00	0.
600.	1.147	6	1.0	1.0	10000.0	3.00	0.
700.	.9966	6	1.0	1.0	10000.0	3.00	0.
800.	.8762	6	1.0	1.0	10000.0	3.00	0.
900.	.7779	6	1.0	1.0	10000.0	3.00	0.
1000.	.6950	6	1.0	1.0	10000.0	3.00	0.
1100.	.6257	6	1.0	1.0	10000.0	3.00	0.
1200.	.5662	6	1.0	1.0	10000.0	3.00	0.
1300.	.5145	6	1.0	1.0	10000.0	3.00	0.
1400.	.4698	6	1.0	1.0	10000.0	3.00	0.
1500.	.4307	6	1.0	1.0	10000.0	3.00	0.
1600.	.3963	6	1.0	1.0	10000.0	3.00	0.
1700.	.3659	6	1.0	1.0	10000.0	3.00	0.
1800.	.3392	6	1.0	1.0	10000.0	3.00	0.
1900.	.3154	6	1.0	1.0	10000.0	3.00	0.
2000.	.2945	6	1.0	1.0	10000.0	3.00	0.
2100.	.2757	6	1.0	1.0	10000.0	3.00	0.
2200.	.2590	6	1.0	1.0	10000.0	3.00	0.
2300.	.2439	6	1.0	1.0	10000.0	3.00	0.
2400.	.2305	6	1.0	1.0	10000.0	3.00	0.
2500.	.2182	6	1.0	1.0	10000.0	3.00	0.
2600.	.2070	6	1.0	1.0	10000.0	3.00	0.
2700.	.1967	6	1.0	1.0	10000.0	3.00	0.
2800.	.1873	6	1.0	1.0	10000.0	3.00	0.
2900.	.1787	6	1.0	1.0	10000.0	3.00	0.
3000.	.1708	6	1.0	1.0	10000.0	3.00	0.
3500.	.1394	6	1.0	1.0	10000.0	3.00	0.
4000.	.1170	6	1.0	1.0	10000.0	3.00	0.
4500.	.1001	6	1.0	1.0	10000.0	3.00	0.
5000.	.8699E-01	6	1.0	1.0	10000.0	3.00	0.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

422.	1.460	6	1.0	1.0	10000.0	3.00	0.

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
200.	1.207	6	1.0	1.0	10000.0	3.00	0.
400.	1.441	6	1.0	1.0	10000.0	3.00	0.
800.	.8762	6	1.0	1.0	10000.0	3.00	0.
1400.	.4698	6	1.0	1.0	10000.0	3.00	0.
2000.	.2945	6	1.0	1.0	10000.0	3.00	0.
2400.	.2305	6	1.0	1.0	10000.0	3.00	0.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN     1.460          422.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

Run with Screen View by Lakes Environmental Software

Input File = C:\SCREEN\DIESEL.IN

01/10/03
15:50:03

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 95250 ***

diesel exh. offroad equip. over 380 acre area, 1687 grams/day

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	.126000E-07
SOURCE HEIGHT (M)	=	3.0000
LENGTH OF LARGER SIDE (M)	=	1754.0000
LENGTH OF SMALLER SIDE (M)	=	877.0000
RECEPTOR HEIGHT (M)	=	1.5000
URBAN/RURAL OPTION	=	RURAL

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
100.	1.259	6	1.0	1.0	10000.0	3.00	24.
200.	1.313	6	1.0	1.0	10000.0	3.00	24.
300.	1.378	6	1.0	1.0	10000.0	3.00	24.
400.	1.439	6	1.0	1.0	10000.0	3.00	24.
500.	1.497	6	1.0	1.0	10000.0	3.00	23.
600.	1.553	6	1.0	1.0	10000.0	3.00	23.
700.	1.606	6	1.0	1.0	10000.0	3.00	23.
800.	1.657	6	1.0	1.0	10000.0	3.00	23.
900.	1.705	6	1.0	1.0	10000.0	3.00	23.
1000.	1.708	6	1.0	1.0	10000.0	3.00	25.
1100.	1.568	6	1.0	1.0	10000.0	3.00	26.
1200.	1.422	6	1.0	1.0	10000.0	3.00	26.
1300.	1.303	6	1.0	1.0	10000.0	3.00	26.
1400.	1.209	6	1.0	1.0	10000.0	3.00	25.
1500.	1.135	6	1.0	1.0	10000.0	3.00	25.
1600.	1.074	6	1.0	1.0	10000.0	3.00	25.
1700.	1.022	6	1.0	1.0	10000.0	3.00	25.
1800.	.9778	6	1.0	1.0	10000.0	3.00	24.
1900.	.9392	6	1.0	1.0	10000.0	3.00	24.
2000.	.9047	6	1.0	1.0	10000.0	3.00	24.
2100.	.8735	6	1.0	1.0	10000.0	3.00	24.
2200.	.8455	6	1.0	1.0	10000.0	3.00	23.
2300.	.8202	6	1.0	1.0	10000.0	3.00	23.
2400.	.7969	6	1.0	1.0	10000.0	3.00	23.
2500.	.7757	6	1.0	1.0	10000.0	3.00	23.
2600.	.7562	6	1.0	1.0	10000.0	3.00	22.
2700.	.7375	6	1.0	1.0	10000.0	3.00	21.
2800.	.7214	6	1.0	1.0	10000.0	3.00	21.
2900.	.7063	6	1.0	1.0	10000.0	3.00	21.
3000.	.6922	6	1.0	1.0	10000.0	3.00	21.
3500.	.6328	6	1.0	1.0	10000.0	3.00	20.
4000.	.5860	6	1.0	1.0	10000.0	3.00	16.
4500.	.5493	6	1.0	1.0	10000.0	3.00	14.
5000.	.5189	6	1.0	1.0	10000.0	3.00	14.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

1008.	1.708	6	1.0	1.0	10000.0	3.00	26.

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	1.497	6	1.0	1.0	10000.0	3.00	23.
1000.	1.708	6	1.0	1.0	10000.0	3.00	25.
1500.	1.135	6	1.0	1.0	10000.0	3.00	25.
2000.	.9047	6	1.0	1.0	10000.0	3.00	24.
2400.	.7969	6	1.0	1.0	10000.0	3.00	23.
3000.	.6922	6	1.0	1.0	10000.0	3.00	21.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)

```
SIMPLE TERRAIN     1.708        1008.        0.

**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************


Run with Screen View by Lakes Environmental Software

Input File = C:\SCREEN\OFFRD.IN
```

APPENDIX F

NOTICE OF PREPARATION

Marin County
Community Development Agency

Alex Hinds, Director

NOTICE OF PREPARATION
SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
REDWOOD LANDFILL, INC. REVISED SOLID WASTE FACILITIES PERMIT

Redwood Landfill, Inc., a wholly owned subsidiary of USA Waste of California, in association with Waste Management, Inc., has applied to the Marin County Environmental Health Services Department for a Revised Solid Waste Facilities Permit (SWFP) for continuation and expansion of a 380-acre landfill on a 420-acre site near Novato, California. The Marin County Environmental Health Services Office, acting as the Local Enforcement Agency (LEA), will retain an environmental consultant to prepare a Subsequent Environmental Impact Report (EIR) for the project. The Redwood Landfill property, accessed by private road from State Highway 101, is approximately 600 acres in size and consists of a 180-acre northern area and a 420-acre southern area. Waste disposal activities are dedicated to the 420-acre southern area. Redwood Landfill is the principal landfill serving Marin County and is located on the east side of State Highway 101, 4 miles north of the City of Novato and 7 miles southeast of Petaluma in Marin County, and is further identified as Assessor's Parcel 125-160-13.

Redwood Landfill is a Class III landfill which has been receiving non-hazardous solid waste since 1958. When the existing SWFP was issued on July 28, 1995, approximately 210 acres of the 420 acres had been filled and approval was given to reach 166 feet in height at the southern portion and 125 feet in height at the northern portion of the fill area. The remaining 210 acres of the site are used for infrastructure, sludge storage and processing, leachate storage, stormwater storage, composting, scale-house activities, administration, recycling activities, gas control, leachate vaporization, various leasehold activities and maintenance structures.

Since certification of the Final EIR (FEIR) and issuance of the (1995) SWFP, certain changes to the operation and facility have been implemented, and new changes are proposed. Proposed permit changes include sludge management practices, alternative daily cover, increase composting volume, leachate management, increase waste receipts, traffic, design capacity, waste classification, landfill life, gas control, and waste containment units. These changes are either not addressed or not adequately addressed in the existing project's FEIR certified May 24, 1994, and will require preparation of a Subsequent EIR pursuant to CEQA. A Technical Review/Project Description and Initial Study Type environmental checklist and analysis was completed for the current project application by a County retained environmental consultant. The Initial Study concluded that sixteen substantial changes to the project have the potential for new or more severe impacts which are not addressed in the 1994 Certified EIR. Based on the Initial Study analysis, it has been determined that a Subsequent EIR, focusing on these sixteen aspects of the proposed project, is required to be prepared and circulated for public review and comment pursuant to the California Environmental Quality Act (CEQA).

Pursuant to state and local guidelines implementing the California Environmental Quality Act (CEQA), please be advised that the Marin County Community Development Agency - Planning Division will be the lead agency for the project. The Marin County Environmental Coordinator has determined that a Subsequent EIR is required for the project. The Subsequent EIR will focus on the following topical issues:

1)	Land Use & Planning	6)	Transportation/Circulation	11)	Public Services
2)	Population & Housing	7)	Biological Resources	12)	Utilities & Service Systems
3)	Geophysical	8)	Energy & Natural Resources	13)	Aesthetics/Visual Resources
4)	Water	9)	Hazards	14)	Cultural Resources
5)	Air Quality	10)	Noise	15)	Social & Economic Effects Related to Physical Impacts

To ensure that the Subsequent EIR for this project is thorough and adequate, and meets the needs of all agencies reviewing it, we are soliciting comments on specific issues to be included in the environmental review. Public comments on the scope of issues to be evaluated in the Subsequent EIR are encouraged. A summary of the project applicant's description and mapped location of the project is on file with the office of the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, and is available for public review between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday.

Please submit your written comments to the Community Development Agency by August 4, 2000. **Comments by FAX will not be accepted.** Please direct questions about the project itself to Cynthia Barnard, Environmental Health Services, at (415) 499-6907.

ALEX HINDS
Agency Director

i:th:projs:redwood9:nop.doc
7/5/00

Tim Haddad
Environmental Coordinator

3501 Civic Center Drive, #308, San Rafael, CA 94903-4157 - Telephone (415) 499-6269 - Fax (415) 499-7880

APPENDIX G

RESPONSES TO NOTICE OF PREPARATION AND
PUBLIC SCOPING LETTERS

INTRODUCTION

This appendix contains written responses to the Notice of Preparation and also letters received during the Public Scoping process submitted by interested agencies and organizations. Eight response letters were received. The comments in these letters are responded to in the text of this EIR, as noted below:

County of Sonoma, July 14, 2000
Surface and groundwater quality impacts are addressed in Section 3.5, Hydrology and Water Quality.

North Marin Water District, July 28, 2000
Potential impacts to water service and water distribution are addressed in Section 3.9, Public Services, Utilities, and Energy; potential impacts to water quality are addressed in Section 3.5, Hydrology and Water Quality.

Marin Audubon Society, August 3, 2000
Current and proposed site plans are presented in Chapter 2, Project Description. Location of adjacent wetlands are shown in Figure 3.5-1 in Section 3.5, Hydrology and Water Quality. Potential impacts on wetlands are discussed in Section 3.3, Biological Resources. Explanation of the need for and benefits of the project are discussed in Chapter 1, Summary, and Chapter 2, Project Description. Additional waste stream reduction measures are discussed in the Mitigated Alternative, in Chapter 5. The proposed access bridge is discussed in Chapter 1, Summary, in Section 3.10, Transportation and Traffic, and in Chapter 4, Growth-Inducing and Cumulative Effects. The regional role of the landfill is discussed primarily in Chapter 1, Summary.

California Department of Transportation, August 4, 2000
Discussion of potential impacts related to increased vehicle trips at the intersection of Sanitary Landfill Road and U.S. 101 can be found in Section 3.10, Transportation and Traffic.

California Integrated Waste Management Board, August 7, 2000
Proposed use and management of leachate and storm water runoff is discussed in Section 3.5, Hydrology and Water Quality. Proposed use and management of landfill gas is discussed primarily in Section 3.2, Air Quality. Proposed non-disposal operations are discussed throughout the document. Management of petroleum-contaminated soils is evaluated primarily in Section 3.2, Air Quality, and Section 3.5, Hydrology and Water Quality. Mitigation monitoring is discussed in the draft Mitigation Monitoring and Reporting Program (MMRP), in Appendix H. There are no specific changes to the collection area or haul routes proposed as part of the project.

However, expansion of the landfill's service area is discussed in various parts of the document, including Chapter 1, Summary, and Section 3.10, Transportation and Traffic.

City of Novato, February 8, 2001
This EIR assumes that the proposed new access bridge at the intersection of Sanitary Landfill Road and U.S. 101, which is the subject of a separate, certified EIR, will be constructed. This would eliminate the need for trucks to use the San Marin Drive/Atherton Avenue/U.S. 101 interchange. Effects of proposed increases in daily truck trips using the proposed access bridge are discussed in Section 10, Transportation and Traffic. Cumulative effects of the project and the access bridge project are discussed in Chapter 4, Growth-Inducing and Cumulative Effects.

Marin Audubon Society, February 16, 2001
Wetlands issues and potential impacts on Clapper Rail and other special status species are addressed in Section 3.3, Biological Resources.

Marin County Department of Pubic Works, January 25, 2001
Potential for increased bird attraction, obstruction of flight paths, and changes in night lighting at the landfill are addressed in Section 3.6, Land Use and Planning, and in Section 3.8, Public Health and Safety.

EDWARD J. WALKER
DIRECTOR OF TRANSPORTATION
AND PUBLIC WORKS

COUNTY OF SONOMA
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

117A ADMINISTRATION BUILDING
575 ADMINISTRATION DRIVE
SANTA ROSA, CALIFORNIA 95403

AREA CODE (707)
ROADS 527-2231
TRANSIT 585-7516
REFUSE 527-2231
AIRPORT 524-7243
AIR POLLUTION 433-5911
FAX 527-2620

July 14, 2000

Mr. Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Redwood Landfill, Inc. Revised SWFP and Subsequent EIR

Dear Mr. Haddad:

Thank you for including us on your notification list for the Notice of Preparation (NOP) for a Subsequent Environmental Impact Report (EIR) for Redwood Landfill's Revised Solid Waste Facility Permit. The list of topical issues included in your NOP appears adequate, assuming that the category "4) Water" includes surface and groundwater quality impacts. Our office would like to review the EIR when it becomes available. The EIR should be sent to my attention at the address shown above.

Sincerely,

EDWARD J. WALKER, DIRECTOR
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

Ken Wells, Integrated Waste Manager

c: Ed Walker
Dave Knight

north marin water district
999 RUSH CREEK PLACE • POST OFFICE BOX 146 • NOVATO, CALIFORNIA 94948 • (415) 897-4133 • FAX (415) 892-8043

July 28, 2000

Community Development Agency
Attn: Tim Haddad, Environmental Coordinator
COUNTY OF MARIN
3501 Civic Center Drive, #308
San Rafael, CA 94903-4157

Re: Notice of Preparation – Subsequent Environmental Impact Report
State Clearinghouse #1991033042
Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Gentlemen:

The North Marin Water District provides water service for domestic use and fire protection to the Redwood Landfill. As part of the environmental review process, proposed operational and facility changes need to be evaluated to determine, as a minimum; potential impacts to water service, water quality protection and necessity for water distribution facility improvements.

Information developed as part of the Subsequent EIR document must be reviewed by the District to determine overall requirements for project approval. Should you have any questions please contact me at your convenience.

Sincerely,

Drew McIntyre
Chief Engineer

DM:bn

l:files\wordproc\netter\redwood landfill response.doc

Marin Audubon Society Box 599 Mill Valley, California 94942-0599

August 3, 2000

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive
San Rafael, CA 94903

RE: REDWOOD LANDFILL, INC. - REVISED SOLID WASTE FACILITIES PERMIT

Dear Mr. Haddad:

The Marin Audubon Society recommends that the following be addressed or included in the Subsequent EIR the County is requiring for changes in operations and facilities at the Redwood Landfill:

- A site plan showing existing facilities and other features including wetlands and a plan showing the proposed uses and facilities.

- Potential impact of the project uses and activities on exiting on-site and adjacent wetlands. Mitigation that is proposed for loss or other impacts to wetlands. The site contains existing seasonally ponded habitats and is adjacent to the largest tidal marsh in the state that has never been diked.

- An explanation of the need for and benefits of each of the activities included in the notice. Why there is a need, for example, to increase receipts, for alternative daily cover, and for increased composting volume. Also, impacts if these activities were not undertaken, e.g. more of the adjacent hill would have to be removed, along with mature oak trees if alternative daily cover were not provided, should also be addressed.

- Is there any other recycling Redwood could consider to reduce the waste stream even further?

- Why is the proposed new access to Redwood being addressed in a separate EIR and not in this EIR? It seems that that road and overcross project is integrally connected with this project. At least the cumulative impacts of both should be considered in this EIR.

- A discussion of the regional role played by Redwood particularly in the area of sludge management. It is our understanding that not many landfills have the space to recycle this material.

Thank you for considering our issues.

Sincerely,

Barbara Salzman

RECYCLED PAPER

DEPARTMENT OF TRANSPORTATION
BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454

August 4, 2000

MRN-101
MRN101324
S C # 19901033042

Mr. Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive, #308
San Rafael, CA 94603-4157

Dear Mr. Haddad:

Redwood Landfill, INC. Revised Solid Waste Facilities Permit

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. We have the following comment regarding this project:

The Transportation/Circulation section of the environmental document should include a discussion of vehicles entering and exiting the landfill and any impacts these trips will have on U.S. 101.

We appreciate the opportunity to work with you on this project. Should you require additional information or have any questions regarding this letter, please call Bonnit Braxton of my staff at (510) 622-1645.

Sincerely,

HARRY Y.YAHATA
District Director

By

for JEAN C. R. FINNEY
District Branch Chief
IGR/CEQA

Enclosures

C: State Clearinghouse

California Integrated Waste Management Board

Linda Moulton-Patterson, Chair
8800 Cal Center Drive • Sacramento, California 95826 • (916) 255-2200
www.ciwmb.ca.gov

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

RECEIVED BY
2000 AUG 10 P 1:47
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

August 7, 2000

via Certified Mail

Mr. Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive
Room 308
San Rafael, CA 94903

Dear Mr. Haddad

Subject: Notice of Preparation, State Clearinghouse (SCH) Number 1991033042, Redwood Landfill, Inc. Revised Solid Waste Facilities Permit draft Environmental Impact Report

The Environmental Review Section (ERS) staff of the California Integrated Waste Management Board (CIWMB) have reviewed the Notice of Preparation (NOP) cited above, and offer the following project description and recommendations for the draft subsequent Environmental Impact Report (DEIR). If the ERS staff project description varies substantially from the project as understood by the Marin County Community Development Agency, ERS staff request notification of any significant differences prior to local approval of the project.

PROJECT DESCRIPTION

The Marin County Environmental Health Services Department, which is the Local Enforcement Agency (LEA) for solid waste management, proposes to revise the Solid Waste Facilities Permit (SWFP) for the Redwood Landfill, an existing municipal solid waste landfill located north of the City of Novato and south of the Marin/Sonoma County line.

The Technical Review/Project Description (TR/PD) and Initial Study Type Review (ISTR) indicate that the project is necessitated by a combination of new operations and extensive changes to existing operations, resulting in sixteen identified aspects of the project requiring study. We agree with the following statement from the TR/PD: A number of inconsistencies and contradictions in the project record enable differing

interpretations of project intent (what is actually being proposed as new versus what is presently occurring but not covered by permits) which hinders the reader's understanding of the differences between the previously permitted project, current operations and facilities, and future proposals." Our understanding of the project is that it will not exceed these parameters:

- Landfill type and ultimate size will change from Class III and 19.1million cubic yards to Class II and Class III and 34.6245 million cubic yards. We believe the landfill footprint change from 210 to 222.5 acres is an expansion required to be analyzed for environmental effects in the EIR. In addition, the project will include a very significant capacity change and a change in estimated landfill life, extending the expected active life from the landfill's previous final date of 2039 to the year 2047. The closure plan and financial assurance calculations for the facility will therefore also change.

- Leachate management is being re-designed.

- Landfill gas management will be re-designed.

- Equipment will be added. We disagree with the claim that addition of a truck tipper will not require review for potential environmental impacts.

- Non-disposal solid and liquid waste management aspects of the operation will expand in size and increase in number of waste types. The proposed project is unclear to us with regard to management of yard waste and green waste. The TR/PD implies a change in the regulatory status of yard waste and green waste; please ensure that the DEIR analyzes the environmental effects of all waste management within the area encompassed by the SWFP.

- Aspects of the operation related to disposal will expand, changing final slopes and closure plans.

- Structures where waste handling does not occur will be moved. This includes a public water system pipeline.

The above summary does not attempt to differentiate among activities already underway and proposed, activities covered by a valid permit, and proposed activities not currently authorized by a valid permit.

CIWMB ROLE AS A RESPONSIBLE AGENCY

CEQA compliance is required for the establishment, expansion, or change in operations of a solid waste facility requiring the issuance of, or changes to a SWFP. The CIWMB cooperates with local government to assure protection of the public health and the

environment from the potentially detrimental effects of solid waste management. The CIWMB is a Responsible Agency for the review of environmental documents (EDs) for concurrence on SWFPs. When it finds, among other factors, that the requirements of CEQA have been met, the CIWMB concurs in the issuance, revision or modification of a Solid Waste Facility Permit (SWFP) approved by Local Enforcement Agencies (LEAs), to assure that a solid waste facility operates in a manner consistent with all applicable laws and regulations. The SWFP is not valid until concurred upon by the CIWMB.

CIWMB staff review an environmental document in order to help decision-makers 1) identify potential impacts from proposed projects, 2) determine whether any such impacts are significant, and 3) ascertain whether significant impacts can be mitigated to a level of insignificance in compliance with CEQA statutes and guidelines. Staff establish whether the environmental document is adequate for use in the CIWMB permitting process. In general, a document is adequate if the proposed project is described in sufficient detail and the potential environmental impacts as well as proposed mitigation measures are identified clearly enough to enable decision-makers to choose among alternative courses of action available.

As you know, the subsequent EIR developed by the lead agency will be developed to support the permit for which the CIWMB is a responsible agency. Much of the factual information in the subsequent EIR is incorporated into the permit. ERS staff have produced several outlines that help identify elements common to the environmental document and the permit. You might find these outlines useful as a guide during preparation of the subsequent EIR. Please refer to the CIWMB website for the Disposal Facility Outline (www.ciwmb.ca.gov/LEACentral/CEQA/disposal.htm), the Transfer Station Outline (www.ciwmb.ca.gov/LEACentral/CEQA/transfer.htm), and other materials.

ISSUES RECOMMENDED FOR ENVIRONMENTAL REVIEW

The subjects proposed to be covered by the subsequent EIR are listed in your NOP as numbers 1 through 15 as follows: Land Use & Planning, Population & Housing, Geophysical, Water, Air Quality, Transportation/Circulation, Biological Resources, Energy & Natural Resources, Hazards, Noise, Public Services, Utilities & Service Systems, Aesthetics/Visual Resources, Cultural Resources, and Social & Economic Effects Related to Physical Impacts. Pursuant to CEQA Guidelines section 15082, we are identifying the significant environmental issues related to the CIWMB's area of statutory responsibility.

The subsequent EIR should include specific information on the environmental effects of proposed systems for use and management of leachate as well as storm runoff water. It should also include information on changes to existing and proposed new systems for use and management of landfill gas, proposed operating methods and limits, and all solid waste nondisposal operations to be conducted within the area governed by the SWFP. Portions of the TR/PD allude to reuse plans for yard waste, green waste, wood waste, sludge, concrete, and asphalt. Please address the potential for environmental

effects associated with all phases of management of these wastes. With respect to clean and petroleum-contaminated soils, please describe proposed methods for verifying the regulatory status of these wastes, isolating and managing wastes within the facility, and monitoring the success of mitigation measures developed to limit the effect of these wastes of the environment.

The collection area and haul routes associated with the facility are also proposed to be changed. These changes, even though they occur off the project site, must also be examined for environmental effects.

Thank you for the opportunity to comment on the NOP. Please consider this letter a request for copies of any subsequent environmental documents, public notices, statement of overriding consideration, mitigation reporting and monitoring program, or resolutions regarding this project, which continues to be identified with State Clearinghouse Number 1991033042. If a document is adopted without a public hearing, please provide notification of the date of adoption and project approval by the decision-making body. Please direct mail any such documents not circulated to the State Clearinghouse to the following contact person: Sue O'Leary, MS 24, 8800 Cal Center Drive, Sacramento, California 95826.

Sincerely,

Sue Stack

Sue Stack
Environmental Review Section
Permitting and Inspection Branch
Permitting and Enforcement Division

cc Katie Shulte
State Clearinghouse
PO Box 3044
Sacramento, CA 95812-3044

Reinhard Hohlwein
CIWMB
Permitting and Inspections Branch

Cynthia Barnard
Marin County Environmental Health Services Department
LEA for Marin County

THE CITY OF
NOVATO
CALIFORNIA

900 Sherman Avenue
Novato, CA 94945
415/897-4311
FAX 415/897-4354

Mayor
James W. Henderson
Mayor Pro Tem
John Mani
Councilmembers
Michael Di Giorgio
Carole Dillon-Knutson
Pat Eklund

City Manager
Roderick J. Wood

February 8, 2001

RECEIVED BY
2001 FEB 12 P 2:40
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Mr. Tim Haddad
Marin County Community Development
3501 Civic Center Dr., #308
San Rafael, CA 94903-4157

RE: Subsequent EIR for Redwood Landfill, Inc. Revised Solid Waste Facilities Permit

Dear Mr. Haddad:

Thank you for giving the City of Novato the opportunity to comment on the scope of the proposed EIR for Redwood Landfill's revised Solid Waste Facilities Permit (SWFP). Over the past several months the City has received several referrals from your agency regarding revision of the Redwood Landfill SWFP and construction of a new "flyover" to access the landfill site. The City of Novato would like to submit the following comments on the scope of the Subsequent EIR for the revised SWFP.

The City is concerned that revisions to the SWFP will likely increase the volume of truck trips occurring on U.S. Highway 101. More particularly, this concern extends to loaded trucks using the San Marin Drive/Atherton Avenue/U.S. 101 interchange to exit southbound U.S. 101 and enter northbound U.S. 101, eventually accessing the Landfill site. The City is requesting the Subsequent EIR analyze any increase in daily trips resulting from expanded Landfill operations and any potential affects on the Level of Service (LOS) at the San Marin Drive/Atherton Avenue/U.S. Highway 101 interchange.

Another concern of the City is the relationship between the proposed access flyover and the revised SWFP. The City is of the understanding the proposed flyover is designed to provide safe ingress and egress from the Landfill site. However, it is unclear from the Initial Study prepared for the revised SWFP wether the proposed flyover could result in future increases in landfill activity beyond what is currently being proposed. The City is requesting the cumulative impact analysis for the Subsequent EIR address the effects of the improved access on future operations at the Landfill.

In closing, the City is requesting that any finding(s) of significant impact and proposed mitigation measures be forwarded to the City for review and comment. The City desires to continue working with the County of Marin to ensure the Landfill operation does not adversely affect residents of Novato and continues to provide adequate disposal services for the residents of Marin County.

If you have any questions regarding the issues discussed above, please feel free to contact Steve Marshall, Planner I at 899-1446.

Sincerely,

Stephen C. Marshall for

Jennifer Barrett, AICP
Acting Planning Manager

cc: Novato City Council
Rod Wood, City Manager
Shirley Gremmels, City Clerk
Carol Branan, Director of Community Development
Project File
SCM/rf

C:/scm/marinco/redwoodscope

Marin Audubon Society Box 5

Post-it® Fax Note 7671	Date 2/16/01	# of pages ▶ 1
To Tim Haddad	From B. Salzman	
Co./Dept.	Co. MAS	
Phone #	Phone # 924-6057	
Fax #	Fax #	

February 16, 2001

Tim Haddad
Marin County Community Development Department
3501 Civic Center Drive
San Rafael, CA 94903

RE: REDWOOD LANDFILL, INC.

Dear Mr. Haddad:

The Marin Audubon Society appreciates the opportunity to submit scoping comment on the Revised Solid Waste Facilities permit and Subsequent Eir for Redwood Landfill. We request that the Subsequent EIR address the following:

- wetlands that may exist on the project site, how they would be impacted by the project, and mitigaiton for any adverse impacts.
- wetlands adjacent to the landfill, whether they would be impacted and, if so, how. We note that the the tidal marshes adjacent to the site are habitat for the endangered Clapper Rail and other special status species. The EIR should address potential project impacts on all special status species.

Thank you for addressing our concerns.

Sincerely,

Barbara Salzman
Conservation Committee

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2001 FEB 16 A 11: 22
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

INTER-OFFICE MEMORANDUM

DEPARTMENT OF PUBLIC WORKS

Date: January 25, 2001

To: Tim Haddad
Environmental Coordinator

From: Jeff Rawles, Program Manager

Re: EIR for Redwood Landfill – Gnoss Field Impacts

The EIR for Redwood Landfill should address potential impacts to Gnoss Field as outlined in its existing master plan that was approved by the Board of Supervisors in 1989. Specific issues include:

1.) Attraction of additional birds and other wildlife and their proximity to Gnoss Field.
2.) Any increase in height elevation could have an impact on aircraft flight paths from Gnoss Field.
3.) Any change in lighting at the landfill could impact Gnoss Aircraft.

Thank you for your consideration of these concerns.

JR:sdp:\\s-fileserv1\dpwdata\waste\jrawles\memos\haddad012501.doc

c: Aviation Commission
Mehdi Madjd-Sadjadi
Richard A. Carlsen
Ken Robbins