VOLUME IIB

SUNSHINE CANYON LANDFILL EXTENSION

PROJECT NUMBER: SP 86312
CASE: CP 2556

STATE CLEARINGHOUSE NO.: 84082908

draft environmental impact report

ultrasystems

PREPARED FOR

COUNTY OF LOS ANGELES
DEPT. OF REGIONAL PLANNING

APPENDICES

ultrasystems

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DRAFT ENVIRONMENTAL IMPACT REPORT
SUNSHINE CANYON LANDFILL EXTENSION
VOLUME IIB

PROJECT NO: SP 86312
CASE: CP 2556

APPENDICES

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DEPARTMENT OF REGIONAL PLANNING
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Solid Waste Management Status and Disposal Options
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SOLID WASTE MANAGEMENT STATUS AND DISPOSAL OPTIONS IN LOS ANGELES COUNTY

Prepared by the staffs of:

Department of Public Works
Bureau of Sanitation
City of Los Angeles

Department of Public Works
County of Los Angeles

Solid Waste Management Department
Los Angeles County Sanitation Districts

February 1988

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SOLID WASTE MANAGEMENT STATUS AND DISPOSAL OPTIONS IN LOS ANGELES COUNTY

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I. INTRODUCTION

The purpose of this report is to present the most current information available on the existing non-hazardous solid waste management system in metropolitan Los Angeles County, projections of future quantities for use in solid waste management planning, and an outline of feasible management strategies for the County's waste in the future, including the approximate economic consequences of each alternative. The information presented herein is the result of an unprecedented cooperative effort initiated by the staffs of the County Sanitation Districts' Solid Waste Management Department, the County of Los Angeles Department of Public Works, and the City of Los Angeles Department of Public Works Bureau of Sanitation. It is not the intent of these agencies to present in this report a recommendation as to which solid waste management options should be pursued, but rather to provide the governing bodies of the City, County, and Sanitation Districts a menu of feasible solutions for consideration.

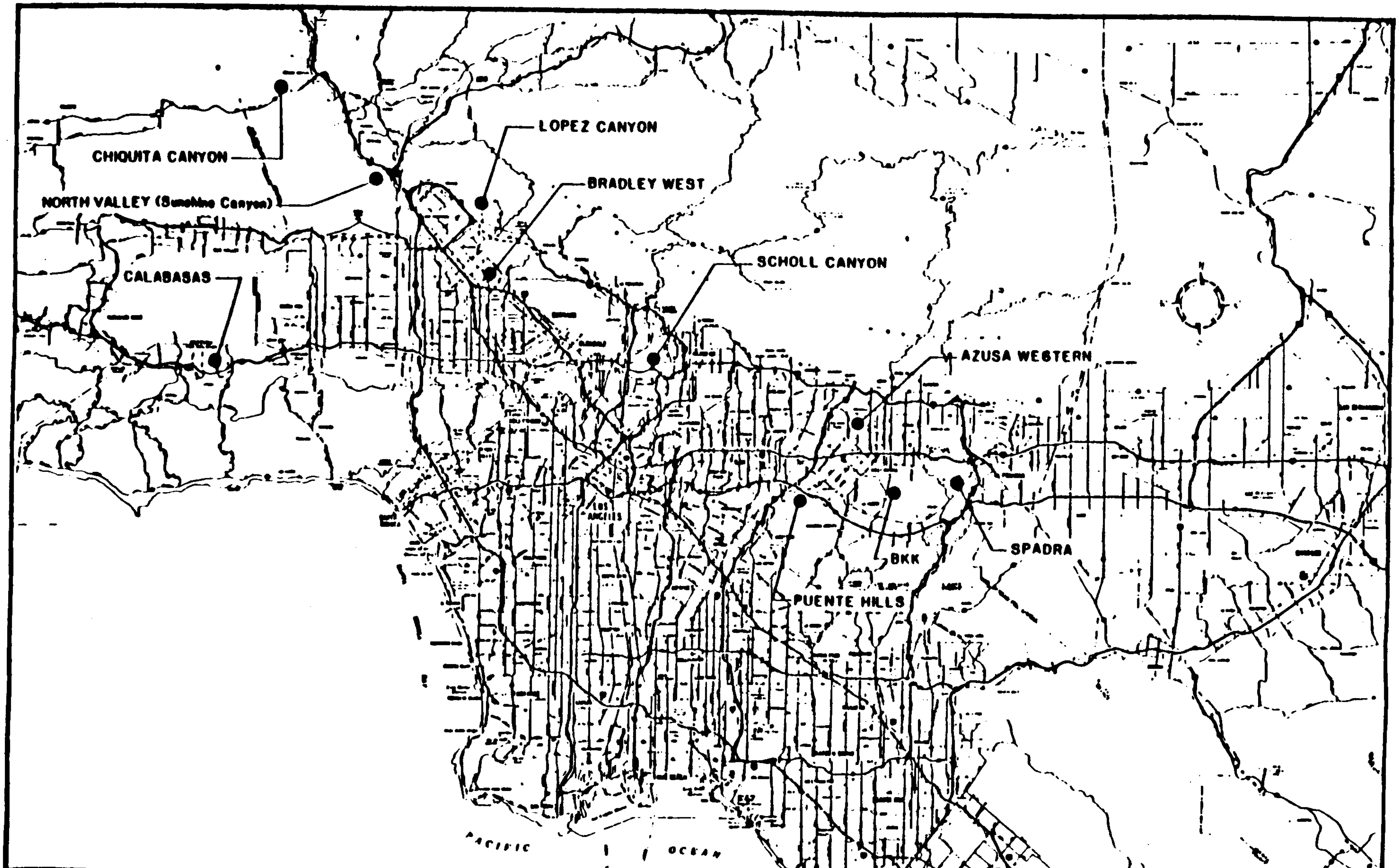
II. EXISTING SYSTEM DEFINED

The management of solid waste in Los Angeles County has always been a complex undertaking involving public and private refuse collection services, public and private operation of solid waste facilities, multi-agency regulation, and regional versus local considerations. This has become an increasingly difficult task in recent years, with the implementation of progressively more stringent regulations for landfilling operations, public resistance to refuse-to-energy facilities, increasing refuse exportation among major County areas, escalating solid waste management costs, and dwindling landfill capacity. Just as the ban on backyard incineration in the late 1950's created an immediate need for the development of a regional system of sanitary landfills, the impending disposal crisis which could result from the closure of many of the existing landfill sites has created the need for the prompt assessment of the County's long-term solid waste management options.

A. Solid Waste Disposal Quantities at Major Landfills

It is very difficult to accurately determine refuse generation quantities for each jurisdiction in the County. Conversely, because nearly all of the major landfills serving the metropolitan area utilize weighing scales, it is relatively easy to determine the total refuse disposal quantities. Surveys of the refuse disposal quantities at the ten major landfills in the metropolitan area of Los Angeles County (see Exhibit 1) were performed in August and November, 1987. Results of these surveys were averaged to de-emphasize the seasonal impact of increased waste production in summer months and to give a more accurate representation of yearly

EXHIBIT I



MAJOR CLASS III LANDFILLS IN LOS ANGELES COUNTY tonnages. The total metropolitan area solid waste disposal as measured at these ten major landfills averaged 45,000 tons per day over a 6-day week (tpd-6) or 13.9 million tons per year (tpy). Due to the current level of landfill diversion (including recycling, composting, and refuse-to-energy), it is estimated that the County-wide solid waste generation could be over 46,500 tpd-6. Of the surveyed disposal total, approximately 18,000 tpd-6, or 5.6 million tpy, comes from the City of Los Angeles (City). Small disposal sites in the cities of Burbank and Whittier account for approximately 1% of the disposal total. The disposal quantities at the ten major landfills include residential, commercial/ industrial, (mixed) construction/demolition/solid fill wastes, and some sewage sludges (at Puente Hills, Chiquita Canyon, and BKK Landfills). Uncontaminated inert wastes received at unclassified landfills are not included. Based on various recent surveys, the total wastestream at the ten major landfills is approximately one-third residential loads, one-third commercial/industrial loads, and one-third mixed construction/demolition loads (includes sewage sludges).

B. Distribution of Disposal Quantities

Table 1 shows the distribution of waste disposal County-wide in terms of three broad geographical areas delineated as: East County with 50 percent of the daily disposal quantities; Central County with 10 percent of the disposal quantities; and West County with 40 percent of the disposal quantities. Within the context of this report, it is important to distinguish between solid waste being disposed of County-wide and that being collected and disposed of within the City alone. Based on the City

TABLE 1

AVERAGE DISPOSAL TONNAGES AT MAJOR LANDFILLS IN LOS ANGELES COUNTY*

August to November 1987

		Countywide Total		L.A. City Total***	
		tpd-6**	Annual Million Tons	tpd-6**	Annual Million Tons
EAST COUNTY					
	SAN GABRIEL VALLEY				
1.	Puente Hills (County)+	12,000	3.72	---	---
2.	Spadra (City of Pomona & County)	2,100	0.65	---	---
3.	Azusa Western (City of Azusa)	1,800	0.56	---	---
4.	BKK (City of West Covina)	6,500	2.00	1,500	0.47
	Subtotal	22,400	6.93	1,500	0.47
CENTRAL COUNTY					
	SAN RAFAEL HILLS				
5.	Scholl Cyn (City of Glendale)++	4,300	1.30	1,500	0.47
WEST COUNTY					
	SAN FERNANDO VALLEY				
6.	Lopez Cyn (City of L.A.)	4,400	1.36	4,400	1.36
7.	Bradley West (City of L.A.)	1,400	0.43	1,400	0.43
8.	North Valley (City of L.A.)	6,800	2.11	6,000	1.86
	Subtotal	12,600	3.90	11,800	3.65
	WEST LOS ANGELES COUNTY				
9.	Calabasas (County)	2,600	0.81	1,700	0.53
	SANTA CLARITA VALLEY				
10.	Chiquita Cyn (County)	3,100	0.96	1,500	0.47
	TOTAL	45,000	13.90	18,000	5.59

*Includes residential, commercial, and industrial refuse, some inerts and sewage sludge. Small landfills in the Cities of Burbank, Whittier, Palmdale and Lancaster receive less than 300 tpd-6 each.

**Sites operating on 5 or 7 day schedules have had tonnages converted to equivalent 6 day averages.

***Includes all City collected and commercially collected loads.

+Land use jurisdiction shown within parentheses.

++City ordinance limiting use to only designated cities within historical wasteshed takes effect 12-28-87. Ordinance effectively reduces disposal rate to 2,500 tpd-6. In addition to the City of L.A.'s 1,500 tpd-6, 300 tpd-6 from other communities now using Scholl Canyon will be prohibited.

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of Los Angeles Bureau of Sanitation records, surveys of major landfills and transfer stations, and assumptions on the proximity of City wastesheds to landfills, approximately 18,000 tpd-6 (5.6 million tpy) of solid waste are being collected within the City for disposal at landfills. As shown in Table 1, approximately 12,600 tpd-6 (3.9 million tpy) is being disposed of at the three landfills currently operating within the City. This results in a net export of City waste of 5,400 tpd-6 (1.7 million tpy) to disposal sites outside of the City.

C. Status of Existing Disposal Capability

The solid waste disposal capacity remaining at the ten major Class III landfills in metropolitan Los Angeles County was recently estimated by the County Department of Public Works, based on a May, 1987 survey. Assuming the aforementioned refuse disposal rates were maintained through the end of 1987, the remaining capacity available at the end of 1987, based only on existing land use permits (LUPs) is approximately 152 million tons. The distribution of remaining capacity is shown in Table 2. It should be noted that of the 152 million tons remaining capacity, 98 million tons is fully permitted, indicating that other operating and technical permits from the Regional Water Quality Control Board and County Department of Health Services have also been obtained. For the purposes of this report, however, the total disposal capacity (152 million tons) under existing LUPs was assumed to be available for sanitary landfilling since, historically, political approval has been the limiting factor in terms of whether or not the capacity is ultimately used, not the ability of landfill operators to comply with technical and engineering requirements of the other permits.

TABLE 2

REMAINING CAPACITY AT MAJOR LANDFILLS IN LOS ANGELES COUNTY (End of Year 1987)

		Available Capacity* (Million Tons)
EAST COUNTY		
	SAN GABRIEL VALLEY	
1.	Puente Hills	22.5
2.	Spadra	10.0
3.	Azusa Western	26.3
4.	BKK	11.1
	Subtotal	69.9
CENTRAL COUNTY		
	SAN RAFAEL HILLS	
5.	Scholl Cyn	15.9
WEST COUNTY		
	SAN FERNANDO VALLEY	
6.	Lopez Cyn	17.2
7.	Bradley West	19.7
8.	North Valley (Sunshine)	6.2
	Subtotal	43.1
	WEST LOS ANGELES COUNTY	
9.	Calabasas	19.1
	SANTA CLARITA VALLEY	
10.	Chiquita Cyn	4.3
	TOTAL	152.3

*Includes all capacity covered under Land Use Permits (LUP's). 98 million tons of the available capacity is fully permitted, indicating that operating and technical permits have also been obtained.

Although remaining landfill capacity under LUPs is very important to the County's solid waste management system, the critical factor in the assessment of a potential disposal crisis is daily disposal capabilities (the amount of waste which can be disposed of daily at a given site). Currently, daily disposal capacity is restricted at several sites by inflow limitations imposed by LUPs, and by operational constraints at others. Thus, while it appears that 152 million tons of capacity should provide over 10 years of disposal capability (152 million tons divided by an increasing annual tonnage that is currently at 13.9 million tpy), this is not the case. In fact, recent analyses indicate that if no action is taken to add to the County's total disposal capacity, adequate daily disposal capabilities may be available only through 1991. As existing sites fill up or permits expire, daily disposal capability must be evaluated to determine whether or not remaining sites can handle the increased quantities of refuse.

D. Daily Disposal Capability: "Time to Crisis"

Population growth and increases in per capita waste generation rates are expected to cause increases in the County's solid waste production. The disposal tonnages expected from these increases, as projected from the recent historical trend in disposal quantities, are indicated in Exhibit 2. By the year 2000, it is estimated that approximately 60,000 tpd-6 of waste will require management (not accounting for increases in recycling or composting).

In an effort to determine the time left before the solid waste disposal problem in Los Angeles County reaches crisis proportions (i.e. some

LOS ANGELES COUNTY
PROJECTED SOLID WASTE DISPOSAL TONNAGE
(County-wide Total, Assumes Current Landfill Diversion Maintained)

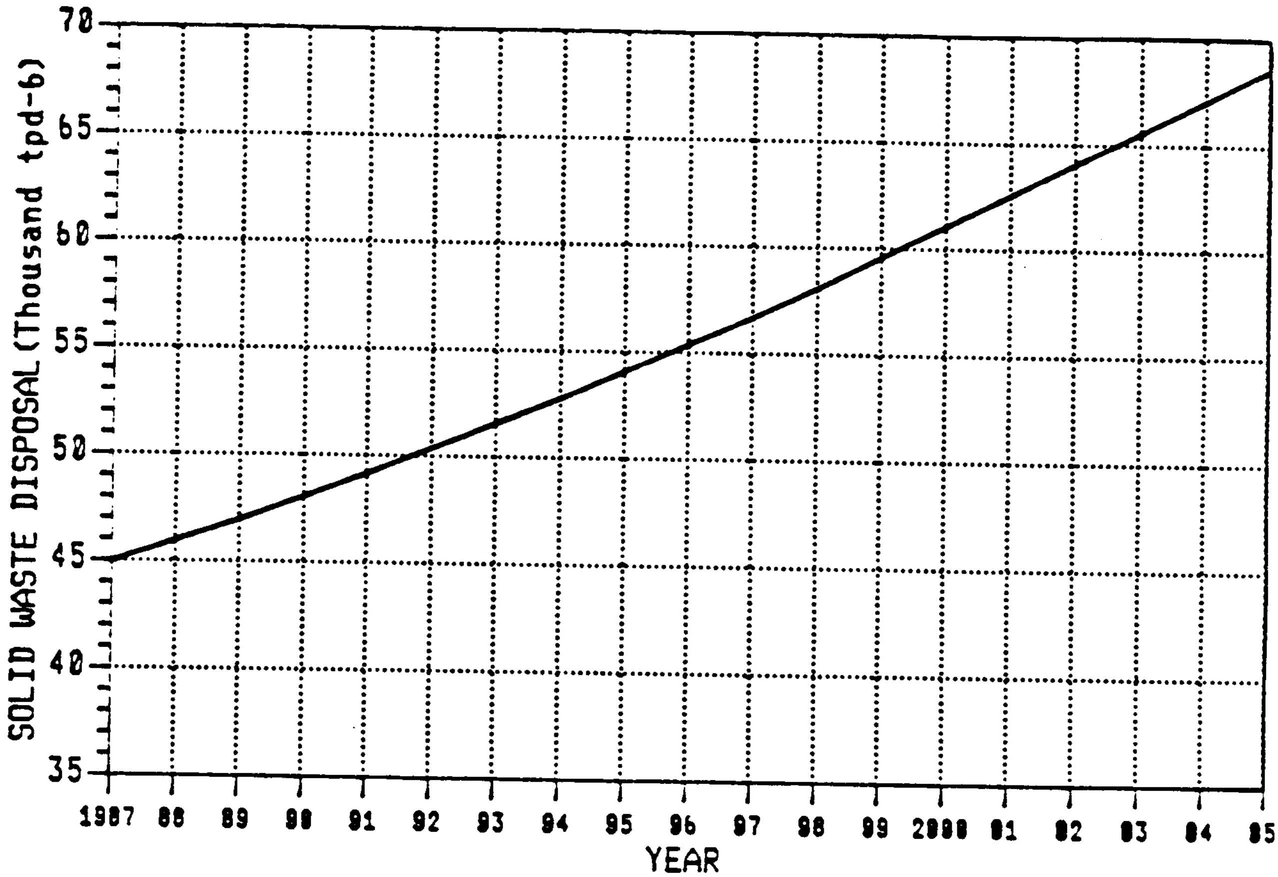


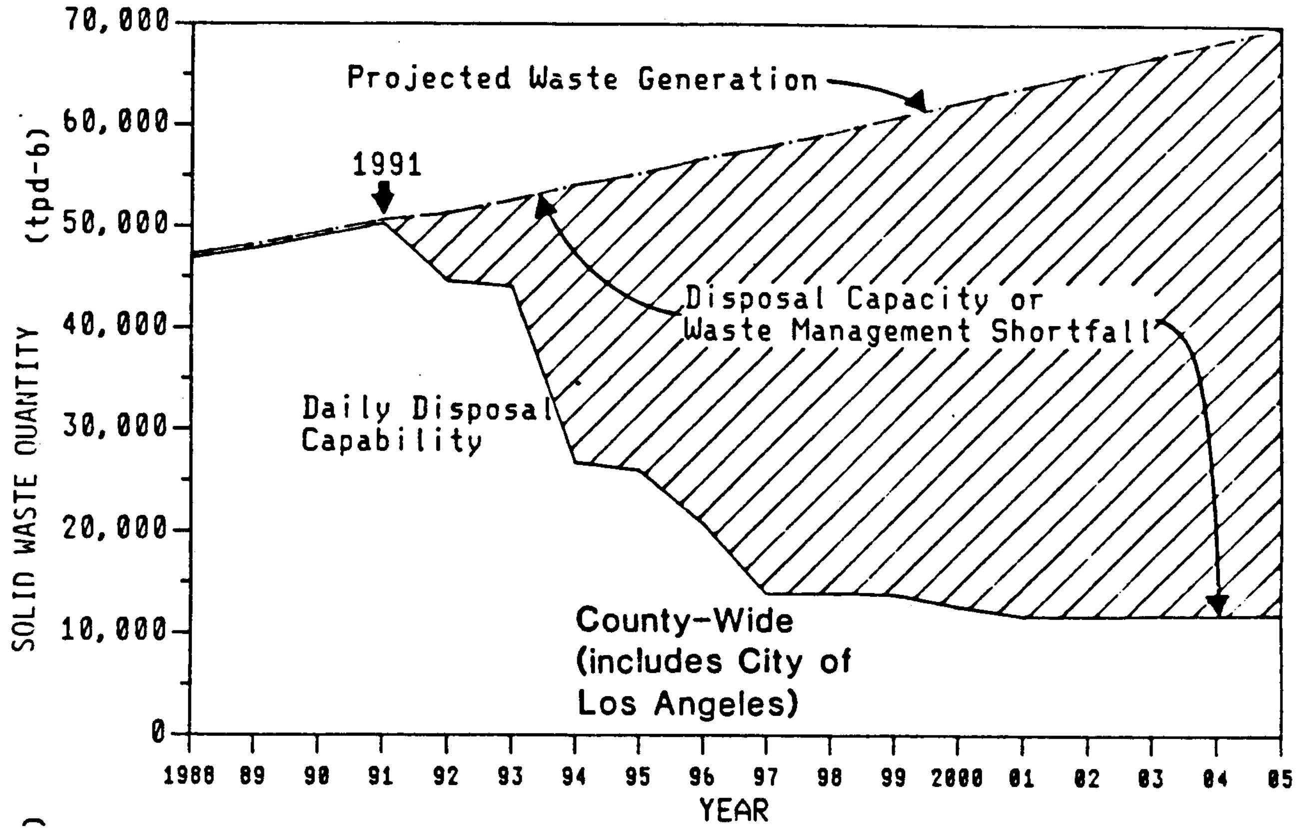
EXHIBIT 2

portion of the wastestream with no disposal location), a landfill operating life analysis was performed. This analysis accounts for landfill capacities, permit restrictions, operational constraints, and proximity of wastesheds to disposal sites. The methodology for the analysis entailed distributing yearly increases in the total amount of waste in need of disposal to existing sites without exceeding daily disposal capabilities. As disposal sites close due to exhausted capacity or permit expiration, the excess waste is distributed to the remaining sites most likely to receive the excess based on who the primary users of the closing sites are and wasteshed proximity. The assumed disposal tonnage at each site is increased in a continuous fashion to accomodate per capita wastestream increases and diversions (due to closures) until the maximum daily disposal capability is met. In "stepping" through time in the analysis, a primary goal at each yearly increment as waste is being redistributed to remaining sites is maintaining a balanced regional solid waste disposal system in which no disposal site assumes an unreasonable disposal burden based on practical or operational constraints and wasteshed proximity. The results of this analysis are summarized in Exhibit 3. A complete description and listing of assumptions used in this analysis as well as the resulting tabulated disposal tonnages are presented in Appendix I.

The time to crisis analysis depicted in Exhibit 3 presents what is essentially a "worst case" scenario. This scenario assumes that there are no expansions of existing sites, no new sites are permitted, recycling and composting activities remain at current levels, and landfilling operations cease at existing sites upon either exhaustion of capacity or expiration of

Time-to-Crisis Analysis

Scenario A: No expansions of existing sites; no new sites; maintain current level of recycling/composting.



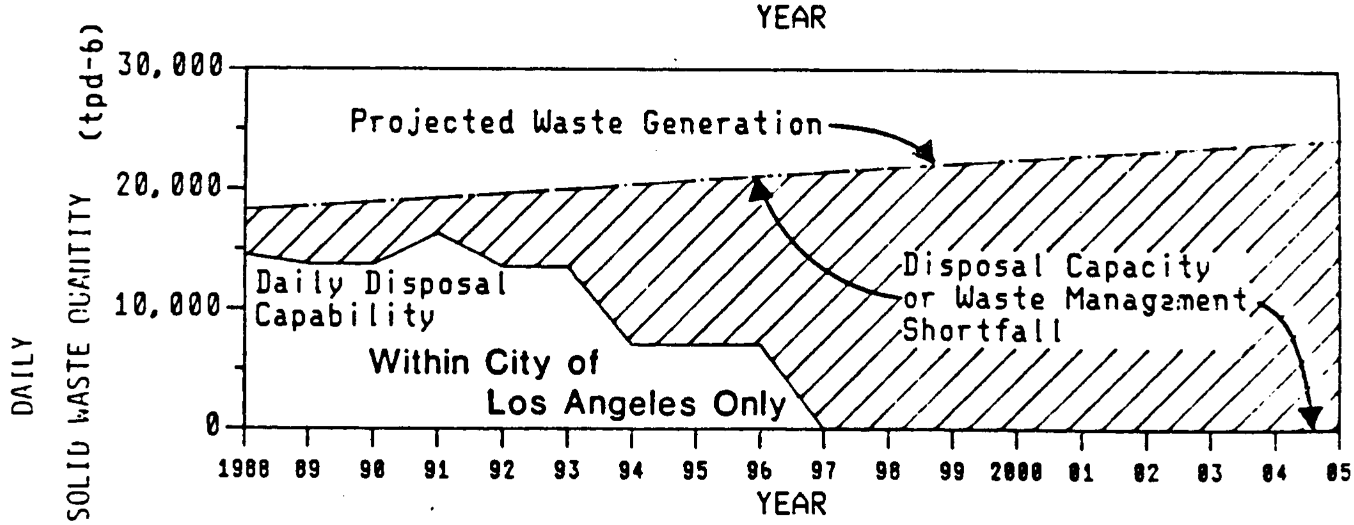


EXHIBIT 3

the LUP. Results of this "worst case" analysis indicate that 1991 will be the last year in which all of the County's solid waste can be disposed of on a daily basis. Beginning in 1992, a daily disposal capacity shortfall of 6,400 tpd-6 (13 percent of the total wastestream) will occur. This shortfall represents the amount of daily refuse in need of a disposal site based on assumptions of the analysis. However, in the absence of new or expanded disposal facilities, the shortfall under this scenario increases dramatically to 50,000 tpd-6 (82 percent of the total wastestream) by the year 2000. Exhibit 3 also separates out the wastestream and disposal tonnages attributable to the City of Los Angeles and indicates that the City could be completely without disposal capacity within the city limits by 1997.

It should be noted that while the "worst case" analysis depicts the consequences of inaction given existing conditions and current information, it is possible that an even more severe set of conditions could evolve to worsen the disposal crisis. Although probably not realistic, for the purpose of this analysis, it was assumed that markets for recyclables and compost products within Los Angeles County will remain static at current levels. In addition, as indicated in the assumptions of the landfill operating life analysis listed in Appendix I, it is assumed that BKK Landfill will continue to operate through 1995, the latest year possible under its agreement with the City of West Covina. However, depending on the progress of planned commercial development of BKK's property surrounding the site, this site could close as early as 1991, in which case the daily disposal capacity shortfall would significantly increase at that time.

III. SOLID WASTE MANAGEMENT OPTIONS

A. Landfill Diversion Alternatives

Landfill diversion refers to actions designed to divert portions of the total solid wastestream away from landfilling and into other management options. The primary alternatives for landfill diversion are recycling, composting, and refuse-to-energy. Table 3 presents a summary of landfill diversion alternatives in the year 2000, with the range of values being represented by moderate and maximum levels of recycling and composting, as defined on page 23.

1. Recycling: Source Separation and Recovery at Landfills

It is very difficult to determine the existing level of recycling that occurs in the County. There were over 200 publicly and privately operated recycle centers throughout the County before the implementation of AB 2020, also known as the "Bottle Bill", which requires the operation of a redemption center for beverage containers within one half-mile of major grocery stores. Presently, six out of 85 cities in the County operate pilot or full scale curbside collection programs for recyclables. Those cities are Downey, Santa Monica, Burbank, Claremont, Glendale, and Los Angeles. These six residential curbside programs divert a combined total of approximately 30 tpd-6 from landfills.

Source separation programs should be the most efficient and cost effective method of recycling a portion of the residential wastestream.

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TABLE 3

SUMMARY OF LANDFILL DIVERSION ALTERNATIVES ON REFUSE DISPOSAL QUANTITIES IN THE YEAR 2000
(tpd-6)

	Component of Wastestream			
	Residential	Comm./Ind.	Const./Demo. (mixed)	Total
Quantity in Need of Disposal/Management	20,000	20,000	20,000	60,000
Landfill Diversion Alternatives[a]				
1. Recycling				
a) Source Separation	2,000 - 4,000	0[b]	0	2,000 - 4,000
b) At Landfill	0 - 1,000	1,100 - 2,500	900 - 1,300	2,000 - 4,800
2. Composting	2,000 - 6,000	0 - 1,200	0	2,000 - 7,200
3. Refuse-to-Energy[c]	0 - 5,600	0 - 8,500	0	0 - 14,100 net
Minimum Quantity to Landfill[d]	3,400 - 16,000	7,800 - 18,900	18,700 - 19,100	29,900 - 54,000

a Range is represented by Moderate level to Maximum level. see Page 23 and Appendix II for discussion. All levels are in addition to the existing diversion levels.

b This information yet to be determined.

c Net diversion, not including ash residue.

d Includes refuse-to-energy ash residue.

The mechanics of source separation are simple in that only three actions are required by participating residents:

1. Keep selected recyclables from entering the mixed wastestream.

2. Provide short-term storage for the segregated materials.

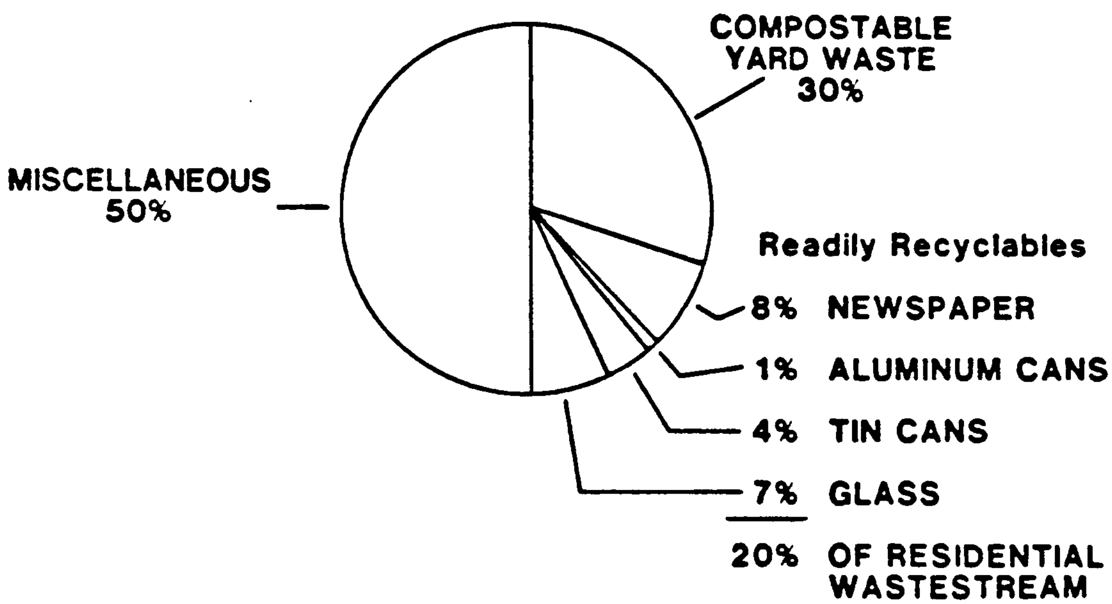
3. Place these materials at a designated location for scheduled pickup.

Factors to evaluate when considering a source separation program include existing solid waste management costs, type and quantity of materials available for recycling, methods of segregation and short-term storage, and the availability of local markets for the recyclables.

Source separation programs are operated for diverse reasons with varying measures of success. At present, almost all recycling programs are being subsidized in one form or another (even when avoided landfill disposal costs are accounted for). The reasons for implementing residential recycle programs, even though the collection and sale of recyclables will probably not be a breakeven proposition, are the need to divert this material from landfills, thereby conserving the dwindling landfill capacity and avoiding the cost of disposal, as well as conserving natural resources and energy.

Approximately 20 percent of the residential wastestream is readily recyclable materials: newspaper, metal cans, glass bottles and plastic P.E.T. beverage containers. Exhibit 4 shows the composition of

Composition of Residential Wastestream



residential wastes. If 100 percent of the citizens participate and separation efficiency for the readily recyclables is 100 percent, then approximately 7 percent of the total wastestream could be diverted from landfills since residential waste represents approximately one-third of the total wastestream (Exhibit 5 shows the relationship of residential waste composition to the total wastestream composition). Therefore, by the year 2000, up to 4,000 tpd-6 could be diverted through residential recycling.

Materials recovery at landfills currently consist of the on site reuse of asphalt and concrete loads for constructing roads and wet weather operating areas, and the use of clean solid fill loads for daily cover of the disposal area. Existing landfill recycling of asphalt and concrete totals approximately 800 tpd-6. The recovery of scrap wood, primarily for use as a fuel source, appears to be the most feasible program to increase recycling of materials at landfills. It is estimated that with increased recovery of asphalt and concrete, and maximum recovery of wood, approximately 8 percent of the total wastestream in the year 2000 (4,800 tpd-6) could be diverted. While this level of recovery at landfills combined with residential source separation could divert nearly 15 percent of the total wastestream, the ability of markets to absorb these County-wide quantities of recyclables (8,800 tpd-6 in the year 2000) is uncertain.

In addition to the recovery of scrap wood and compostables from the commercial/industrial wastestream, recycling of paper, cardboard, glass, and metal in this sector offers the potential for the diversion

Wastestream Characterization

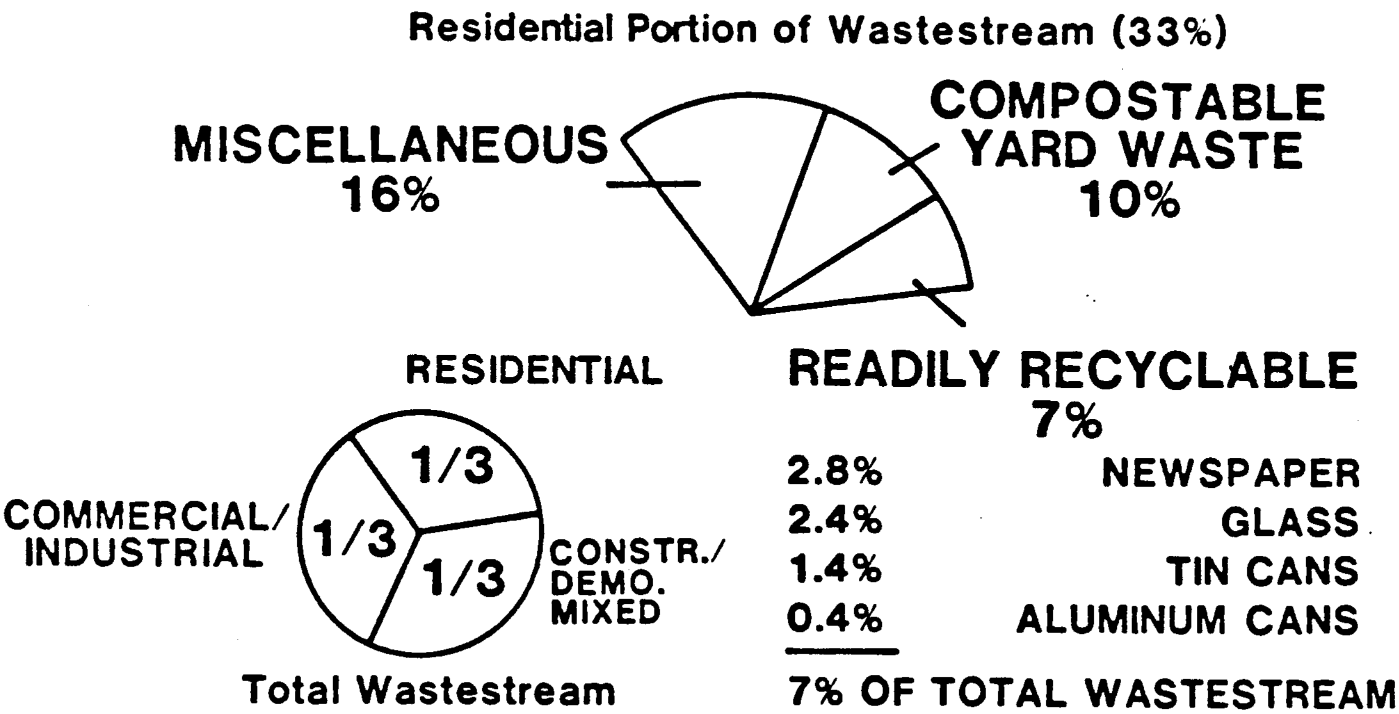


EXHIBIT 5

of a significant portion of the total wastestream. Recovery of these materials from the commercial/industrial wastestream could be accomplished through source separation or by processing the wastes at a central facility. While source separation and recycling of commercial wastestream components are certainly occurring, especially due to recent record high scrap values available for several materials, it can not be estimated how much commercial/industrial recycling is currently being done. It is also not known if it would be economically feasible to require source separation of all recyclables by all commercial/industrial generators given the heterogeneity of these enterprises and the differences in the collection system for commercial/industrial wastes as opposed to residential waste collection. All three of the participating agencies are evaluating various technologies for recovery of materials from the commercial wastestream, but at the time of this report no definitive estimate has been reached regarding the potential percentage diversion possible. For this reason, the potential diversion due to source separation or through a waste processing center for commercial/industrial wastes was not accounted for in this analysis, as indicated by the footnoted zero value in Table 3.

2. Composting

Composting, which has been practiced for centuries by gardners and farmers, is the controlled biological decomposition of organic wastes into a relatively stable, humus-like material. The final product is a nutrient rich material that can act as an excellent soil conditioner.

It is estimated that 30 percent of the residential and 6 percent of the commercial wastestream consists of yard and garden waste that may be compostable. This accounts for approximately 7,200 tpd-6 (in the year 2000) of waste that can potentially be diverted from Los Angeles County landfills. However, in order to produce a higher quality, more marketable product, only selected loads of relatively pure yard and garden wastes are suitable for composting. Accordingly, it is anticipated that actual recovery rates will result in the diversion of significantly less than the 7,200 tpd-6 of material considered to be available for composting.

Since a large portion of the yard and garden waste is found in the residential wastestream, one method to achieve higher diversion rates may be to provide separate collection of this waste. This would require residents to segregate their yard and garden wastes into containers separate from their recyclables and other household waste. If separate collection of yard and garden wastes were provided and communities composted this material, it would allow cities to realize the avoided costs of diversion such as transportation and disposal fees, in addition to providing a soil ammendment product.

A key factor to the success of composting and ultimate diversion of yard and garden wastes is the ability to establish a market for the final compost product. Presently, markets do not exist in the Los Angeles area that are capable of consuming the large quantities of compost that can potentially be produced. Therefore, prior to implementing large County-wide composting operations, market development needs to be first initiated on a smaller scale. New markets which would not replace existing soil ammendments made from other recycled materials, such as composted sewage sludge, would have to be developed. Marketing considerations include the cooperation of local governments to encourage the new uses of the final compost as a soil additive. Additionally, other markets such as using compost as a substitute for daily cover at landfills and local agricultural and commercial nursery applications need to be pursued if composting is to be considered a viable landfill diversion alternative for Los Angeles County.

3. <u>Refuse-to-Energy</u>

Refuse-to-energy technology has been identified by most solid waste management professionals as the alternative able to divert the greatest quantity of material from landfills, although at present time, landfills in the metropolitan areas remain the primary facilities for waste disposal. Currently, the Commerce Refuse-to-Energy Facility processes approximately 330 tpd-6 (with peaks in the 350 to 375 tpd-6 range), while the Southeast Resource Recovery Facility (SERRF) project in Long Beach, which will start-up in early 1989, will eventually process 1,350 tpd-6. These two projects will ultimately divert approximately 1,200 tpd-6 from landfilling (30 percent of the processed material becomes ash residue which will be disposed of at landfills). However, if fully implemented after recycling and composting programs have been maximized, refuse-to-energy could result in a net diversion of approximately 14,100 tpd-6 (24 percent of the total wastestream) in the year 2000.

Further implementation of refuse-to-energy technology in the near future in Los Angeles County is unlikely due to public and political resistance in conjunction with the current energy surplus. While aggressive application of this technology in conjunction with a program of moderate recycling and composting could result in a maximum net diversion (accounting for ash residue) of 50 percent of the total wastestream (30,000 tpd-6 by the year 2000), the lack of political support due to public resistance based on perceived air quality impacts precludes such action. It may take several years of actual operation of this technology by the Commerce and SERRF plants to demonstrate conclusively to the public that refuse-to-energy with state-of-the-art air pollution control systems is in fact an environmentally sound alternative which should be pursued. Table 3 indicates a range of landfill diversion possible through refuse-to-energy. The range is represented by a zero level of implementation (over existing levels) to maximum implementation of refuse-to-energy in conjunction with a maximum level of recycling and composting, as defined in the following section.

4. Landfill Diversion Scenarios

There are many possible scenarios for landfill diversion under various levels of combined recycling and composting. For the purpose of developing possible solid waste management options in this report, two levels of diversion due to recycling and composting (moderate and maximum) were considered in additional time-to-crisis analyses. These levels, which assume no implementation of refuse-to-energy beyond existing programs and are in addition to the current level of recycling and composting, are defined below. Assumptions which were adopted to determine how these levels of diversion would occur are presented in Appendix II.

<u>Moderate Diversion</u>: This is defined as an increase over existing levels of diversion of 10 percent of total wastestream. While the diversion of an additional 10 percent may appear easily achieveable, in point of fact, this level of diversion will require a considerable effort comprised of recovery of 20 percent of the residential wastestream (50 percent of readily recyclables and 33 percent of compostable garden and yard waste) and 5 percent of both the commercial/industrial and construction/demolition wastestreams (primarily scrap wood). To accomplish this recovery level from the residential wastestream, every political jurisdiction in the County must implement curbside recycle programs (with a number of jurisdictions implementing mandatory programs) and markets must be developed for 2,000 tpd-6 of compostables in the year 2000.

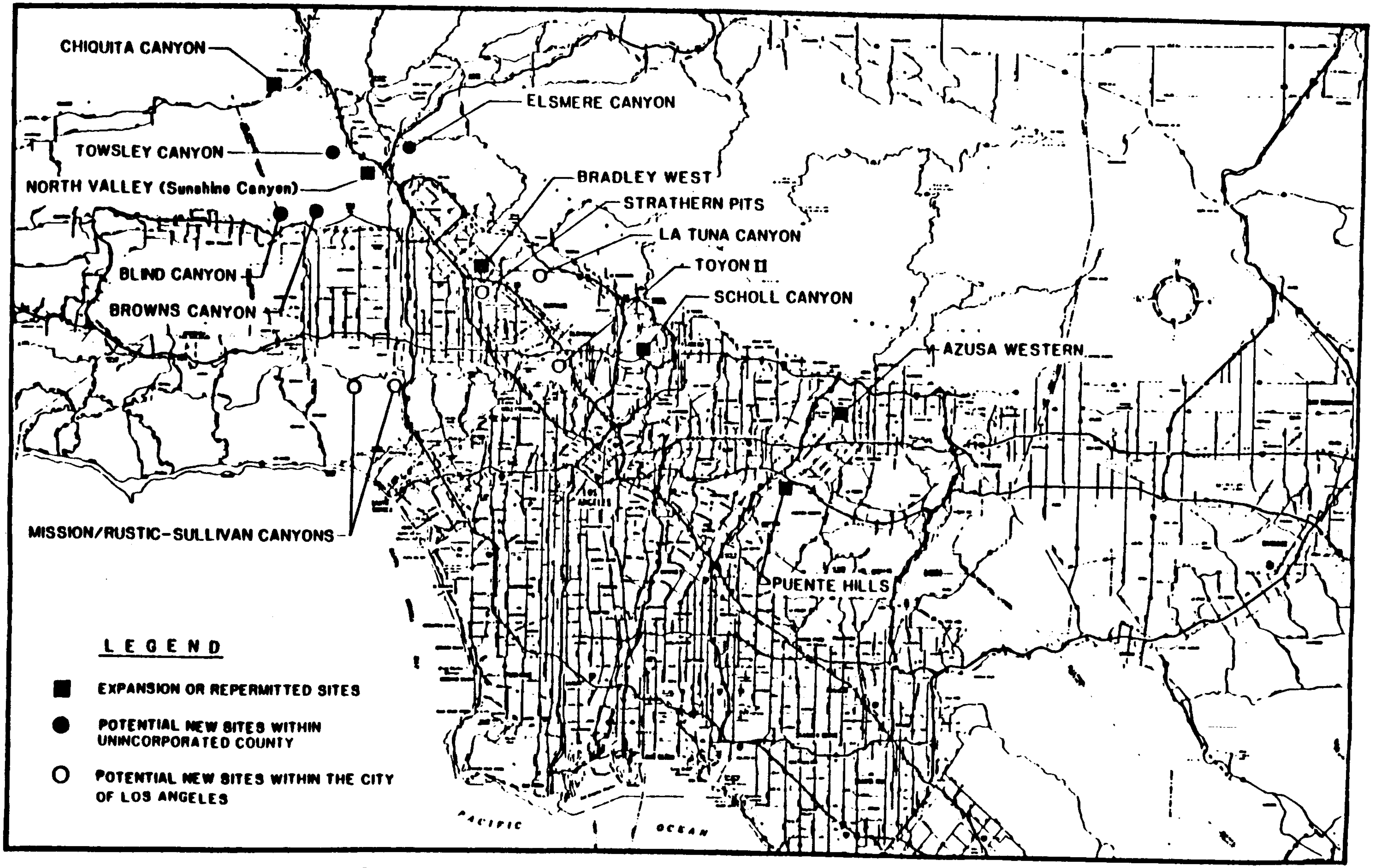
<u>Maximum Diversion</u>: This is defined as an increase over existing levels of diversion of 27 percent of total wastestream, comprised of the recovery of 55 percent of the residential wastestream (100 percent of readily recyclables through source separation, 100 percent of compostable garden and yard waste, and 100 percent of recoverable scrap wood at the landfill) and 13 percent of the commercial/industrial and construction/demolition wastestreams (100 percent of the scrap wood, asphalt and concrete available for

recovery at the landfill and 100 percent of commercial/industrial compostables). Markets must be developed for 7,200 tpd-6 of compostables in the year 2000.

B. Expansion of Existing Sites

In the context of this report, the term "expansion" means the continuation of landfilling operations beyond existing LUP limits, either by filling over previously filled areas to a higher elevation or in new areas contiguous to the existing operating area. Increases in the size of the disposal operation (i.e. the daily disposal tonnage) are not included under this definition. The potential exists for site expansions at the following landfills: Puente Hills, Scholl Canyon, Azusa Western, Chiquita Canyon, and North Valley (Sunshine Canyon) Landfills. In addition, the Bradley West Landfill will in all likelihood have a portion of the existing permitted capacity still available upon the expiration of the LUP in 1993. Repermitting of this site at that time would make additional capacity available through the year 2000. Locations of these sites are shown in Exhibit 6.

The additional capacity from expansion or repermitting of these six existing sites represents a total of approximately 330 million tons and would provide an increase in the daily disposal capability of 28,000 tpd-6 in the year 2000. This compares to the projected shortfall in capability daily disposal of 50,000 tpd-6 in the year 2000. Therefore, more than half of the year 2000 shortfall could be provided by expansion of existing sites. If implemented immediately, these expansions could also divert



POTENTIAL SITES FOR NEW AND EXPANDED LANDFILL FACILITIES

EXHIBIT 6

refuse from other sites that would otherwise receive an increased wastestream, thereby delaying closures at some non-expansion sites.

The LUP for Puente Hills expires in 1993 and, assuming the site is repermitted, an additional 70 million tons of capacity would be available. At the current rate of disposal approximately 20 years of life would be provided. Viewed from the potential distribution of waste disposal sites available in 1993, it appears that there would likely be pressure to keep the repermitted tonnage limitation at Puente Hills Landfill at the current limit of 12,000 tpd-6.

At the request of the City of Glendale, plans are now being considered for the modification of the final fill plan at Scholl Canyon Landfill which would increase the remaining capacity an additional 6 million tons to a total of 22 million tons. The increased capacity could be obtained without requiring the acquisition of additional land. The City of Glendale on October 6, 1987 adopted an ordinance limiting the use of the site to only designated cities within the historical Scholl Canyon wasteshed. This ordinance, which took effect on December 28, 1987, will likely result in a reduction in the disposal rate to approximately 2,500 tpd-6.

The Azusa Western Landfill is an active quarry in which landfilling is conducted only in mining areas as completed excavations become available. As such, the refuse disposal rate has historically been limited by mining operations and in recent past has been constrained to less than 2500 tpd-6. However, the daily disposal rate in the near future is not clearly defined due to recent changes in ownership. Terms of this transfer of ownership provide for increased excavation rates in the future, providing for up to 4,000 tpd-6 of solid waste disposal.

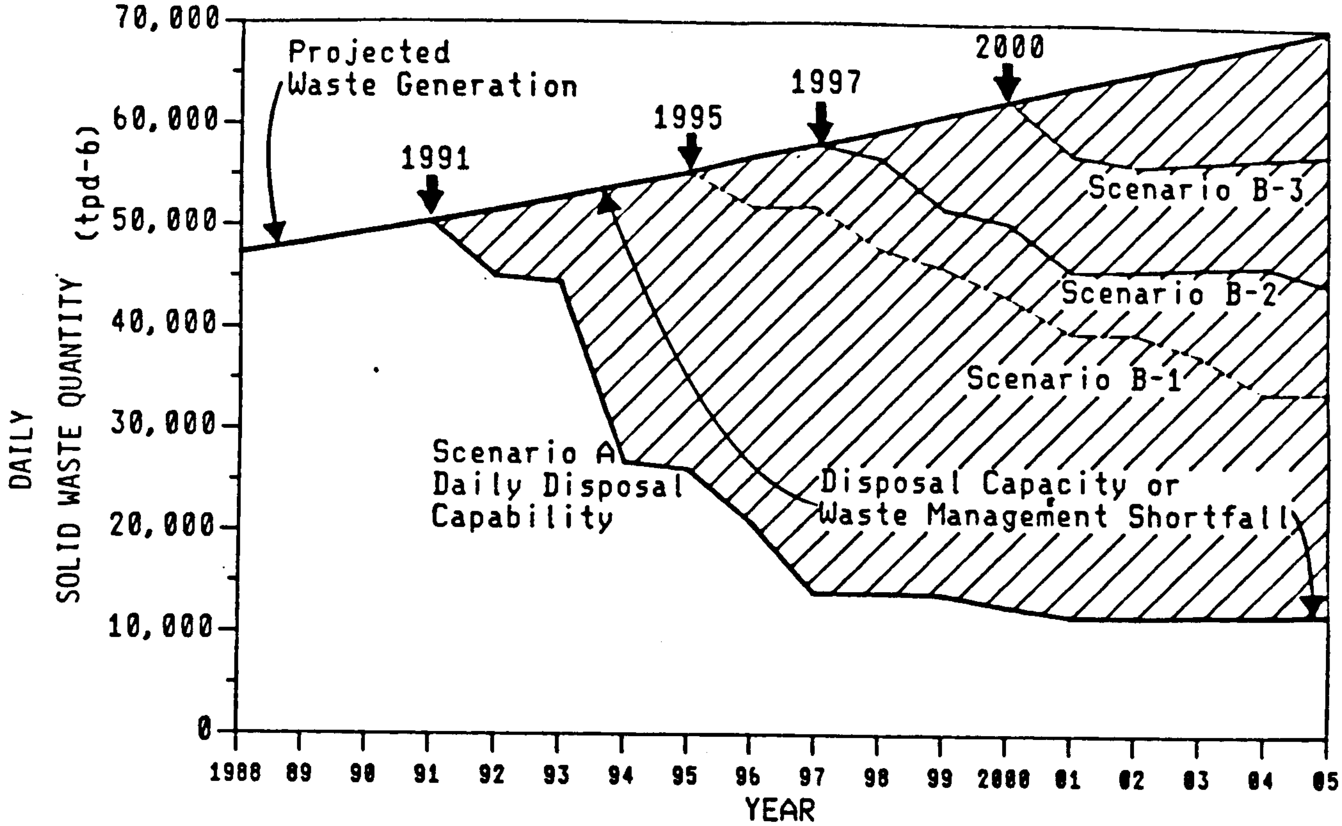
The Chiquita Canyon Landfill is the most distant existing disposal facility for hauling and disposal of refuse generated within metropolitan Los Angeles County. However, the early closure of this site in 1991 due to exhausted capacity will be one of the early causes of the worst case disposal crisis. Thus, even though the hauling costs associated with the use of Chiquita Canyon will certainly be among the highest for the City and southwest County, the permitted expansion of this site could provide daily capacity for a significant portion of the daily disposal shortfall.

The North Valley Landfill, because of its proximity to and existing permitting by the City, currently accepts more City generated refuse (approximately 6,000 tpd-6) than any other facility in the County. The existing LUP for the site expires in May, 1991, although the existing capacity could be exhausted much sooner. The potential 215 million ton expansion is comprised of 139 million tons in unincorporated Los Angeles County and 76 million tons in the City. Presently, Browning-Ferris Industries, Inc., the operator of the site, is moving forward only on an application to expand this site into the County area. At its present disposal rate of 6,800 tpd-6 the County parcel would provide over 60 years of disposal capacity, while the potential capacity within the City would provide over 30 years of use. Again, the critical parameter is the daily disposal rate.

The Bradley West Landfill accepted approximately 1,500 tpd-6 of refuse during 1987 although the site was recently permitted to accept up to 7,000 tpd. The existing LUP expires in 1993, at which time a significant portion of the disposal capacity will still be available. Repermitting of this site could add 11 to 15 million tons to the total capacity available in the County.

It has been estimated that the permitting and implementation process for any of these expansions will take from 3 to 5 years which should make the proposed expansion areas operational at the time the additional capacity will be needed (beginning in 1991). The impact on the potential disposal crisis as a result of permitting all possible expansions of existing sites, assuming no new disposal sites are permitted and existing levels of recycling and composting are maintained, is shown in Exhibit 7 as Scenario B-1 (yellow line). The "time to crisis" can be delayed from 1991 to 1995 under this scenario. If, in addition to expanding all existing sites that have expansion capability, a moderate level of recycling/composting (defined previously on page 23 as 10 percent of the total wastestream) is also implemented, then the time to crisis can be further delayed through 1997, as indicated by Scenario B-2 (blue line) in Exhibit 7. To provide a long-term solution beyond the year 2000, it is clear that <u>new</u> sites will be needed even with maximum levels of recycling/composting and assuming all available expansions at existing sites are permitted, as indicated by Scenario B-3 (green line) in Exhibit 7. Tabulated disposal tonnages under these and additional scenarios are presented in Appendix I.

Impact on Time-to-Crisis Analysis (County-Wide Only) for Several Waste Management Options



Scenario A: No expansions of existing sites; no new sites; maintain current level of recycling/composting.

Scenario B-1: All expansions permitted to allow for continuity of landfilling operations; no new sites; maintain current level of recycling/composting. Delays the disposal shortfall through 1995.

Scenario B-2: All expansions permitted to allow for continuity of landfilling operations; no new sites; additional recycling/composting implemented immediately and linearly increased to moderate level* (10% of total wastestream) by 1992. Delays the disposal shortfall through 1997.

Scenario B-3: All expansions permitted to allow for continuity of landfilling operations; no new sites; additional recycling/composting implemented immediately and linearly increased to maximum level** (27% of total wastestream) by 2000. Delays the disposal shortfall through 2000.

*Moderate diversion as defined previously in Section III.A.
**Maximum diversion as defined previously in Section III.A.

EXHIBIT 7

C. Site and Permit New Disposal Sites

1. New Disposal Sites Within the City of Los Angeles

The least costly and most secure disposal option for the City of Los Angeles is to develop or expand landfills within the City. While expansions of existing landfills could delay the exigent need for new disposal facilities, additional landfills must be sited and permitted in the very near future. Potential sites previously identified within the City include Mission Canyon/Rustic-Sullivan Canyons, La Tuna Canyon, Toyon II, and the Strathern Pits (see Exhibit 6). In previous years, the City Council has rejected and/or not considered most of these sites due to environmental concerns.

The Mission Canyon/Rustic-Sullivan Canyon sites are at the heart of the controversy that has developed between the City of Los Angeles, the County and the Sanitation Districts over granting landfill permits and access to existing landfills. The City of Los Angeles Board of Public Works actually obtained the original land use permit for the Mission Canyon Landfill in 1957 from the City Planning Commission. The City Council subsequently requested the County and Sanitation Districts to purchase the site and open the landfill. The Sanitation Districts purchased the 1900 acres in Rustic-Sullivan Canyons in 1969 to provide a long term disposal site following the closure of Mission Canyon, after first obtaining unanimous approval from the City Council of Los Angeles of the proposed purchase for sanitary landfilling purposes. The County and Sanitation Districts' investment in these sites represent approximately $31 million (1987 dollars).

Mission Canyon site has an identified capacity of 24 million tons, while Rustic-Sullivan site has a capacity of approximately 250 million tons (requires purchase of additional property which was identified at the time of the 1969 acquisition). Mission Canyon Landfill has the drawback that a number of residences built on the ridges overlooking the canyon during the original landfill operation from 1960-1965, would have direct visual access to the disposal operation. The major advantage of the Rustic-Sullivan site, in addition to its large capacity and its isolation from residential views to the potential disposal area, is its close proximity to the West Los Angeles County metropolitan area.

Operations at Mission Canyon would require an initial tipping fee of approximately $10 to $12 per ton. Rustic-Sullivan Canyon operation, due to the additional property purchase and construction of a long access road would require an initial tipping fee of $14 to $16 per ton.

The "No Project" cost (i.e. hauling refuse further distances to alternative existing sites such as North Valley, Bradley West, and Calabasas Landfills) has been estimated at $30 million per year in 1987 dollars, based on the July, 1980 Mission Canyon Landfill Final EIR prepared by the Sanitation Districts. If no Mission/Rustic-Sullivan Landfill project is pursued, the City could be requested to consider a buyout of the County's and Districts' investments in both sites and to compensate the expected users of these facilities for additional haul costs ("No Project" costs) incurred. The City Bureau of Sanitation estimates that their portion of these "No Project" costs could be as much as $7.7 million per year. Approximately 15 percent of the "No Project" costs, or $4.5 million per year, would be incurred by non-City users with the remaining estimated costs of $17.8 million per year being borne by private refuse collectors and haulers operating within the City.

La Tuna Canyon, located in the Verdugo Mountains south of the Foothill Freeway, is visually isolated from residential areas and has a potential capacity of approximately 14 million tons. While the preparation of an EIR for a landfill project was initiated in April, 1983, the Los Angeles City Council, in response to a different project proposal for the area, subsequently declared the canyon an ecologically important area to be preserved as open space and no further effort was made by the proponent to proceed with the landfill project permit process.

Toyon Canyon II is an area originally planned as an extension to the Toyon Canyon Landfill located in Griffith Park. An EIR for a landfilling project was submitted to the City Council in November 1985, but was refused certification. The area is located southwest of the now closed Toyon Canyon Landfill and has a potential capacity of approximately 4.5 million tons.

The Strathern Pits, located adjacent to the closed Penrose Landfill in East San Fernando Valley, has a potential capacity of approximately 5.5 million tons. The owner of the site, Los Angeles By Products Company, has proposed landfilling operations at a disposal rate of

2,700 tpd-6 for a duration of six years. Los Angeles By Products is moving forward on all aspects of the permitting process for the site. The permitting and implementation process for any of the identified new site has been estimated to take 3 to 7 years.

2. New Disposal Sites Within the County Metropolitan Area

New sites in unincorporated County areas within economical haul distance of metropolitan Los Angeles also need to be considered and evaluated. A number of possible sites for consideration exist along Interstate 5 Freeway, the Antelope Valley Freeway, and the Simi Valley Freeway. Potential sites which have recently been identified in unincorporated County areas include Elsmere Canyon, Blind Canyon, Towsley Canyon, and Browns Canyon (see Exhibit 6). Descriptions of these sites as well as the associated capital start-up costs are presented below. The capital start-up costs given are based on the costs of land purchase, equipment purchase, site preparation, access road construction, scale facility construction, site mitigation and landscaping requirements, and construction of environmental control systems.

Elsmere Canyon is a potential landfill site in the unincorporated County which is also identified in the County Solid Waste Management Plan. This site, is well isolated from residential areas and is located immediately adjacent to the Antelope Valley Freeway. Elsmere has a potential refuse disposal capacity of up to 225 million tons. The primary disposal area, however, as identified by the project proponent, is located in the Angeles National Forest and therefore its use requires approval of a land exchange by the Forest Service. BKK Corporation, who is the project proponent, has estimated capital start-up costs of implementing a landfill at this site at $90-100 million, which includes the cost of constructing a liner over the entire site. Start-up capital costs would be lower if only an initial portion of the operating area was lined, with the cost of constructing the remaining liner area being offset by revenue from the tipping fee.

There are three other potential landfill sites that have been identified on the edge of the metropolitan area in unincorporated County. There are no specific project proponents for these sites. One of these sites is Blind Canyon, which is located a few miles north of the Simi Valley Freeway which lies in both Los Angeles and Ventura Counties. Blind Canyon has a potential capacity of 55 million tons utilizing only the portion of the site within Los Angeles County and up to 120 million tons if the portion of the canyon within Ventura County is filled. The Blind Canyon site is comparable to Elsmere Canyon in terms of the distance from the central metropolitan area and in terms of its isolation from residential areas. The estimated capital costs of implementing a landfill at Blind Canyon would be in the range of approximately $60 to $80 million, including construction of an access road from the Simi Valley Freeway (recently estimated at a cost of approximately $20 million).

Towsley Canyon is another unincorporated County site which has been identified in past years as a potential landfill site. This site is also isolated from residential areas and is located immediately west of Interstate 5 and the City of Santa Clarita. Towsley Canyon has a potential capacity of over 200 million tons. Barring any unusual conditions, this site appears similar to Blind Canyon and Elsmere Canyon in terms of location (Blind), and capacity and access (Elsmere). Towsley Canyon, therefore, should have capital costs of implementation in the range of $50 to $60 million.

Browns Canyon is the third potential site with no project proponent identified on the edge of the metropolitan area in unincorporated County. This site, which is also isolated from residential areas, is located north of the Simi Valley Freeway and a few miles east of Blind Canyon. Browns Canyon has an estimated capacity of up to 50 million tons. Due to its similarities with Blind and Elsmere Canyons in terms of its location (Blind) and access (Elsmere), Browns Canyon should have capital costs of implementation in the range of $50 to $60 million. Permitting and implementation of any of the identified new sites could take 3 to 7 years.

Assuming a disposal rate of 8,000 tpd-6 (2.4 million tpy) at any of these sites within unincorporated County, the expected life of these proposed landfills ranges from 20 to 90 years. The estimated tipping fee required for the capital recovery of start-up and operation and maintenance costs are $15 to $20 per ton.

3. Long Hauls to Remote Areas via Transfer Stations

Another option for siting disposal facilities is to site landfills at locations more remote to the metropolitan area. The current estimated economic direct haul limit for two (2) member collection vehicles (i.e. typical load of 6-8 tons) is approximately 25 to 30 miles (one-way) to a disposal site. The current estimated economic direct haul limit for newer one (1) member collection vehicles (i.e. 10-12 tons per load capacity) is approximately 50 to 60 miles to a disposal site. If haul is required beyond these distances, experience has shown that consistent overtime or additional trucks and labor will be needed. Therefore, transfer stations located in immediate proximity to the collection area become more economical when the haul distance to the disposal site is greater than 25 to 50 miles (one-way). Exhibit 8 presents the hauling cost per ton of direct haul for a wasteshed employing equal numbers of one member and two member collection vehicles, compared with the cost of truck transfer and hauling for larger transfer vehicles (i.e. 20 tons per load).

Exhibit 8 indicates that the use of a transfer station becomes cost effective relative to direct haul when the minimum roundtrip distance to the disposal point equals or exceeds 50 miles. Distant landfills (farther than 50 miles away) may be more politically sound if they can be isolated from the population centers. It is estimated that the tipping fees at transfer stations would range from $20 to $40 per ton depending on haul distance and tipping fee at the ultimate disposal site.

COST COMPARISON
DIRECT HAUL vs. TRANSFER HAUL

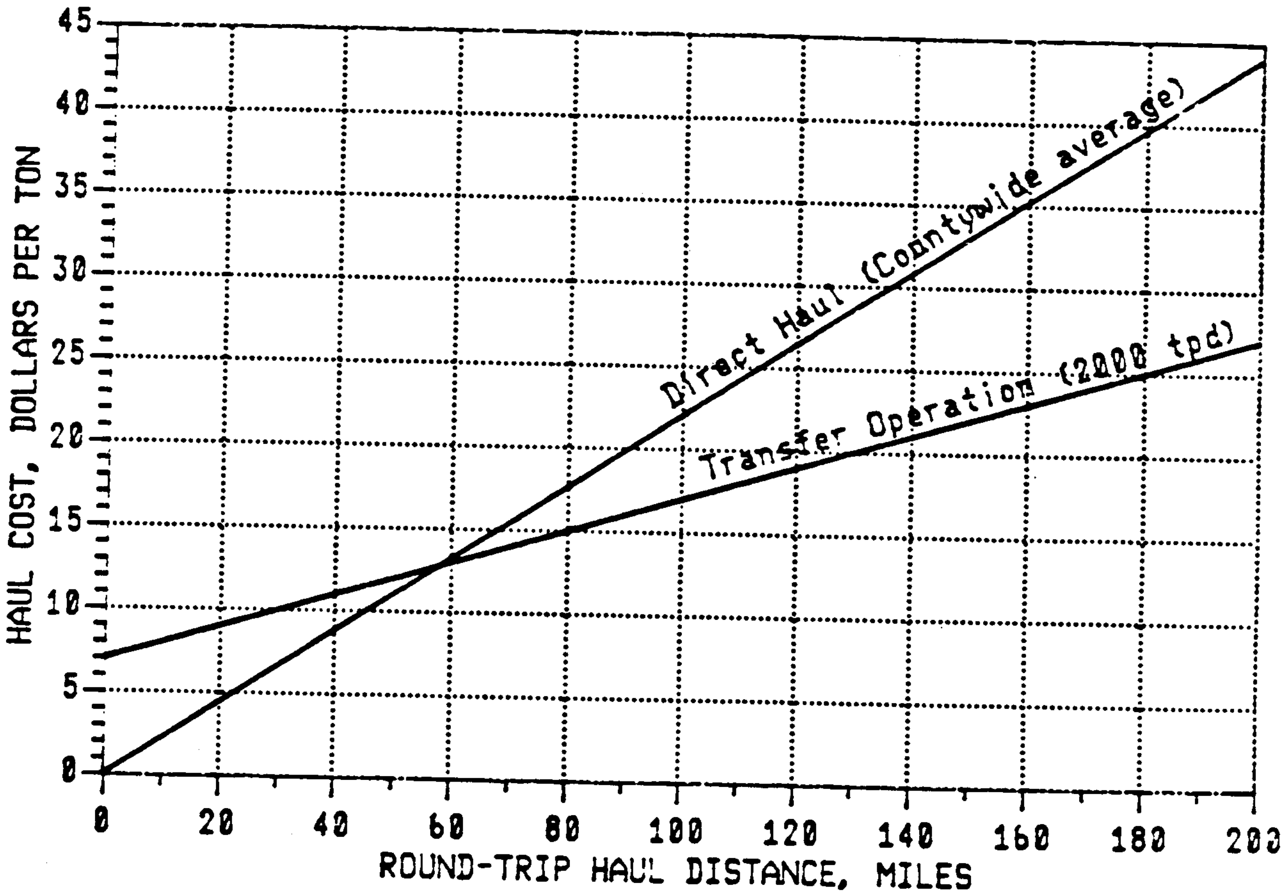


EXHIBIT 8

D. Rail Haul to New Disposal Site Outside of Los Angeles County

The removal and transport of solid waste from Los Angeles County to a remote out-of-County disposal site by use of a rail haul system has been considered in many studies over the past thirty years. Much of the difficulty in evaluating the economics of such a concept stems from economic and political uncertainties. One difficulty in determining the economics is the lack of technical specifics for loading and unloading of waste at generation points and rail destination points, as well as the means of transportation from the rail haul end point unloading facility to the ultimate disposal site. In addition, assumptions regarding the design of the rail car or container systems for transporting the waste including whether the refuse is compacted or uncompacted has a substantial impact on the economics. The length of required trains, storage space required, and loading schedules may make this option logistically difficult to implement successfully. For example, to handle just refuse produced by the City of Los Angeles would require a train between 4 and 10 miles in length, depending on compaction, crossing the County each day.

Politically, there are likely to be many obstacles to rail haul which could add to the cost of implementation. Initially, such a proposal faces the prospect of siting large refuse transfer facilities throughout Los Angeles County. Assuming a maximum level of landfill diversion due to recycling and composting programs, approximately 46,000 tpd-6 will be available for rail haul in the year 2000. If the average transfer facility is 1,000 to 2,000 tpd-6 then 23 to 46 such stations would have to be sited by that time. It is likely that there will be substantial public opposition to these facilities from the nearest residents. In addition, it would be necessary to obtain from the governing body for the ultimate disposal area a contractual commitment to receive the solid waste over a long period to amortize the capital costs of the rail haul system. Lastly, the implementation of rail haul may be contingent on provisions for visual and noise mitigation as well as traffic impact mitigation throughout the transport route, which could result in very large capital costs. For example, the County of Los Angeles Department of Public Works evaluated a light rail transit system between Los Angeles and Long Beach and concluded that grade separations alone could cost on the order of $10 to $15 million each for mitigation of surface street conflicts. Because of uncertainties which would require a detailed evaluation to resolve, these route mitigation costs were not factored into the basic assumptions of the cost for this option.

Assuming the aforementioned problems can be resolved, other ascertainable costs of implementing a rail haul system can be broken down into six components. One component is the cost of transporting the waste by rail car. This cost has been estimated at $15 to $20 per ton of refuse by proponents of the rail haul concept and reflects the rate charged by railroad companies to move waste from one location to another and return the empty cars to the starting point. The $15 to $20 per ton cost range is dependent on certain assumptions regarding the density of the waste on the rail car and the rail haul distance from transfer facility to disposal location (100-150 miles one-way). The actual cost may be more or less depending on the system employed to transfer and compact the waste onto the rail car. The second component of the overall cost is the capital cost associated with the construction of the transfer facilities at each end of the railroad track and the capital cost of equipment such as rail cars, transport containers, tractors, cranes, etc. The third cost component is the operation and maintenance cost associated with the transfer facilities and the rail haul equipment. The fourth component of the cost is the "export fee" the local jurisdiction would likely charge to dispose of Los Angeles County waste. No attempt was made to quantify this fourth cost component. The fifth component is the cost of financing a rail haul system, which was assumed to cost around 35 percent of the capital costs. The last component is the cost of route mitigation which, as previously discussed has not been quantified in this report, could actually be quite a large capital cost.

It should be noted that implementation of a rail haul system will not likely change the cost of refuse collection, nor will it change the cost of ultimate disposal. "Where" a disposal site is located (i.e., the City, unincorporated County, or remote non-County areas), will not materially impact the cost of disposal under today's stringent environmental regulations of landfills, although the cost of the raw land would obviously be lower the more remote the site. Therefore, the identified cost components of implementing the rail haul system when added together reflect the increase in costs over the present disposal system utilizing relatively close-in landfills. Depending on how many rail transfer stations are sited, some savings could be realized from the shorter transport distance from the end point of collection to the rail transfer station as opposed to the haul distance to existing landfills.

The capital costs of a 2,000 tpd-6 transfer station facility, including land, facililty construction, additional side track, rail cars, refuse containers, appurtenant utility engines, cranes, tractors to transport refuse containers from the rail destination point to the disposal site, would be approximately $19 to $22 million. Accounting for the different amortization periods of the facility and various equipment, and using an interest rate of 10 percent, the annualized capital cost would be $3 to $4 million for each transfer facility or approximately $5.00 to $6.50 per ton of refuse.

The last quantifiable component of total cost is the operation and maintenance costs of the facility and all the equipment. The annual operating and maintenance costs of each 2,000 ton per day transfer facility is estimated to be $5 to $7 million or approximately $8 to $11 per ton of refuse.

In summary, the rail haul alternative would result in an increase over existing solid waste management costs of approximately:

Cost Component	Cost Per Ton
1. Rail Transport Cost* (100-150 mile one-way distance)	$15.00 to 20.00
2. Capital Cost	$5.00 to 6.00
3. Operation & Maintenance Cost	$8.00 to 11.00
4. Export Fee	unknown
5. Financing (35% of Capital Costs)	$2.00
6. Route Mitigation	unknown (large cost)
	$30 to 38
	+ Export Fee
	+ Route Mitigation

*based on proponent's claims

IV. Economic Summary of Solid Waste Management Options

The solid waste management options discussed herein provide an array of possibilities for averting a disposal crisis, each with an associated cost and level of effectiveness. Table 4 summarizes the haul costs, where appropriate, and waste management cost or tipping fee for the various landfill diversion alternatives, transfer options and disposal options.

To reiterate, the objective of this report is not to present a recommendation on which options should be pursued, but to provide the governing bodies of the City, County and Sanitation Districts with a menu of feasible solutions for consideration.

TABLE 4
ECONOMIC SUMMARY OF SOLID WASTE MANAGEMENT OPTIONS
(All costs in 1987 dollars)

	Haul Cost[a] ($/ton)	Estimated Waste Management Fee ($/ton)	Added Capacity (million tons)
Landfill Diversion Alternatives			
Residential Recycling (1.3 million tpy)	---	25 to 50[b]	not applicable
Composting (2.2 million tpy)	---	40 to 60[c]	not applicable
Refuse-to-Energy (4.4 million tpy)	4[d]	16 to 50[e]	not applicable
Expansions of Existing Landfills			
Azusa Western	11 to 17	13 to 17	3
Chiquita Canyon	14 to 20	10 to 16	21
North Valley	12 to 18	12 to 16	215
Bradley West	9 to 15	16 to 20	15
Puente Hills	8 to 13	10 to 14	70
Scholl Canyon	7 to 13	12 to 16	6
New Disposal Sites Within City			
Mission/Rustic-Sullivan Cyns	7 to 12	10 to 16	250
La Tuna Canyon	11 to 17	15 to 20	14
Toyon II	6 to 12	10 to 14	5
Strathern Pit	9 to 15	16 to 20	6
New Disposal Sites in Metropolitan County Area			
Elsmere Canyon	12 to 18	15 to 20	225
Blind Canyon	14 to 20	15 to 20	120
Towsley Canyon	13 to 19	15 to 20	200
Browns Canyon	14 to 20	15 to 20	50
Remote Sites (100 mile round-trip via transfer stations)	4[d]	35 to 40	200
Remote Sites (rail haul 200 miles round-trip)	4[d]	40 to 60[f]	200

[a]Range of haul costs are for the same points of reference for all disposal sites (Central City of Los Angeles for the shorter haul and southwest County area for the longer haul). Each city and area in County would require a separate analysis. Analysis does not include collection costs nor consideration of disposal restrictions.

[b]Net cost determined by City of Los Angeles Bureau of Sanitation based on its pilot programs. It is estimated that $0 per ton could be approached depending on level of participation, type of source separation program employed, and ability to realize avoided disposal cost savings.

[c]Derived from "Municipal Composting Handbook", California Waste Management Board, May 1983.

[d]Assumes only a very short direct haul from end of collection route to facility is needed (i.e., well distributed facilities throughout County)

[e]Possible tipping fees based on existing facilities with SCE Standard Offer No. 4, to that for new facilities with energy payment based on current available avoided cost of energy.

[f]Does not include possible export fees to out-of-County jurisdiction for disposal rights or costs for mitigating potential traffic and aesthetic impacts, both of which could be significant.

APPENDIX I

Time to Crisis Analyses

Time-to-Crisis Analysis - Assumptions

1. No new disposal facilities are sited and permitted.

2. Disposal sites receive refuse from "reasonable" wastesheds within economical direct haul distances.

3. Incremental increases in disposal tonnages are regulated to prevent sudden unreasonable increases requiring large expenditures for equipment and manpower.

4. Refuse-to-energy is not implemented beyond existing programs.

5.	Puente Hills:	Daily tonnage limit under LUP = 12,000 tpd-6. LUP expiration on 10-31-93. Accepts no refuse generated in the City of Los Angeles that is outside of the Sanitation Districts.
6.	Spadra:	Daily tonnage under LUP = 3,000 tpd-6through 6-30-95, = 2,500 tpd-6 thereafter.
7.	BKK:	Operations cease in November 1995 (latest year possible under agreement with City of West Covina; could close as early as 1991 as discussed on page 12).
8.	Azusa Western:	Operational daily tonnage capacity = 4,000 tpd-6.
9.	Scholl Canyon:	City of Glendale limits use of site, imposes tonnage cap = 2,500 tpd-6 in 1988.
10.	Bradley West:	Existing tonnage limit under Waste Discharge Requirements = 7,000 tpd-6. LUP expiration on 12-29-93.
11.	Lopez Canyon:	Limited to waste generated in the City and collected by City's crews (Bureau of Sanitation, Bureau of Street Maintenance, etc.).
12.	North Valley:	Daily tonnage under State Solid Waste Facility Permit = 7,000 tpd-6. LUP expiration on 5-25-91.
13.	Chiquita Canyon:	Daily tonnage limit under LUP = 6,000 tpd-6.
14.	Calabasas:	Operational limit of 3,000 tpd-6.

DESCRIPTION OF TIME TO CRISIS SCENARIOS

Scenario A: No expansions or repermitting of existng sites allowed. No new sites are permitted. Current level of recycling/composting is maintained.

Scenario B-1: The following expansions and repermitting of existing sites are implemented to allow for continuity of landfilling operations: Chiquita Canyon (1991), North Valley (1992), Puente Hills (1994), Bradley West (1994), Azusa Western (1995), and Scholl Canyon (1995). No new sites are permitted. Current level of recycling/composting is maintained.

Scenario B-2: The following expansions and repermitting of existing sites are implemented to allow for continuity of landfilling operations: Chiquita Canyon (1991), North Valley (1992), Puente Hills (1994), Bradley West (1994), Azusa Western (1995), and Scholl Canyon (1995). No new sites are permitted. Addtional recycling/composting is implemented immediately, and linearly increased to moderate level of diversion (10% of total wastestream as defined in Appendix II) by the year 1992.

Scenario B-3: The following expansions and repermitting of existing sites are implemented to allow for continuity of landfilling operations: Chiquita Canyon (1991), North Valley (1992), Puente Hills (1994), Bradley West (1994), Azusa Western (1995), and Scholl Canyon (1995). No new sites are permitted. Additional recycling/composting implemented immediately and linearly increased to maximum level of diversion (27% of total wastestream as defined in Appendix II) by the year 2000.

Scenario C-1: Puente Hills Landfill is <u>not</u> expanded. All other potential expansions and repermitting of existing sites are implemented to allow for continuity of landfilling operations as follows: Chiquita Canyon (1991), North Valley (1992), Bradley West (1994), Azusa Western (1995), and Scholl Canyon (1995). No new sites are permitted. Current level of recycling/composting is maintained.

Scenario C-2: North Valley Landfill is <u>not</u> expanded. All other potential expansions or repermitting of existing sites are implemented to allow for continuity of landfilling operations as follows: Chiquita Canyon (1991), Puente Hills (1994), Bradley West (1994), Azusa Western (1995), and Scholl Canyon (1995). No new sites are permitted. Current level of recycling/composting is maintained.

TABLE 1A "TIME TO CRISIS" ANALYSIS:
SCENARIO A: No Expansions or Repermitting of Existing Sites; No New Sites;
Maintain Current Level of Recycling/Composting (i.e. Worst Case)

Expected Daily Tonnage, 6 Day Average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

OPERATING YEAR

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	11,333 / 0.5	-0- / 0.5	-0- / 0.5
Spadra	2,100 / 10.0	2,680 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,000 / -
Azusa	1,800 / 26.3	2,500 / 25.6	3,500 / 24.5	4,000 / 23.3	4,000 / 22.0	4,000 / 20.8	4,000 / 19.6	4,000 / 18.3	4,000 / 17.1
Scholl Canyon	4,300 / 15.9	2,500 / 15.2	2,558 / 14.4	2,616 / 13.6	2,674 / 12.8	2,732 / 12.0	2,790 / 11.2	2,848 / 10.3	2,906 / 9.5
Bradley West	1,400 / 19.7	3,000 / 18.9	3,200 / 17.9	3,200 / 16.9	3,900 / 15.1	7,000 / 12.9	7,000 / 10.7	-0- / 10.7	-0- / 10.7
Lopez	4,400 / 17.2	5,000 / 15.7	5,500 / 14.1	5,500 / 12.4	6,000 / 10.5	6,650 / 8.5	6,800 / 6.5	7,000 / 4.3	7,000 / 2.2
North Valley	6,800 / 6.2	6,500 / 4.2	5,000 / 2.7	5,000 / 1.2	4,400 / -	-0- / -	-0- / -	-0- / -	-0- / -
Chiquita	3,000 / 4.3	3,500 / 3.3	4,000 / 2.1	4,300 / 0.80	2,600 / -	-0- / -	-0- / -	-0- / -	-0- / -
Calabasas	2,600 / 19.1	2,750 / 18.2	2,900 / 17.3	3,000 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	6,400	8,100	27,400	29,300
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,900	46,900	48,000	49,100	50,300	51,500	52,700	54,000

LANDFILL	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Puente Hills	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5
Spadra	2,500 / 2.4	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
BKK	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Azusa	4,000 / 15.8	4,000 / 14.6	4,000 / 13.4	4,000 / 12.1	4,000 / 10.9	4,000 / 9.6	4,000 / 8.4	4,000 / 7.2	4,000 / 6.0	4,000 / 4.7
Scholl Canyon	2,964 / 8.6	3,022 / 7.7	3,080 / 6.8	3,138 / 5.9	3,196 / 5.0	3,254 / 4.0	3,312 / 3.0	3,360 / 2.0	3,418 / 1.0	3,476 / -
Bradley West	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7	-0- / 10.7
Lopez	7,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
North Valley	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Chiquita	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Calabasas	3,000 / 11.0	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	36,000	44,100	45,400	47,100	49,800	52,200	53,700	55,100	56,600	58,000
TOTAL In Need of Landfill Disposal (tpd-6)	55,300	56,600	58,000	59,500	61,000	62,500	64,000	65,500	67,000	68,500

TABLE 2A "TIME TO CRISIS" ANALYSIS:
SCENARIO B-1: All Expansions Permitted to Allow for Continuity of Landfilling Operations; No New Sites; Maintain Current Level of Recycling/Composting

Expected Daily Tonnage, 6 Day Average (tpd-6) / Remaining Landfill Capacity at Year's End, Million Tons

OPERATING YEAR

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	12,000 / 0.5	12,000 / *66.5	12,000 / 62.6	12,000 / 58.8
Spadra	2,100 / 10.0	2,680 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1	2,500 / 2.4
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,000 / -	-0- / -
Azusa	1,800 / 26.3	2,500 / 25.6	3,500 / 24.5	4,000 / 23.3	4,000 / 22.0	4,000 / 20.8	4,000 / 19.6	4,000 / 18.3	4,000 / *20.3	4,000 / 19.0
Scholl Canyon	4,300 / 15.9	2,500 / 15.2	2,558 / 14.4	2,616 / 13.6	2,674 / 12.8	2,732 / 12.0	2,790 / 11.2	2,848 / 10.5	2,906 / *15.5	2,964 / 14.6
Bradley West	1,400 / 19.7	3,000 / 18.9	3,200 / 17.9	3,200 / 16.9	4,500 / 15.5	4,300 / 14.1	4,200 / 12.8	5,100 / *11.2	6,300 / 9.2	7,000 / 7.1
Lopez	4,400 / 17.2	5,000 / 15.7	5,500 / 14.1	5,500 / 12.4	5,500 / 10.7	5,000 / 9.2	5,000 / 7.6	5,250 / 6.0	6,000 / 4.2	6,000 / 2.5
North Valley	6,800 / 6.5	6,500 / 4.2	5,000 / 2.7	5,000 / 1.2	4,400 / -	5,800 / *213.5	7,000 / 211.1	7,000 / 209.0	7,000 / 206.8	7,000 / 204.7
Chiquita	3,000 / 4.3	3,500 / 3.3	4,000 / 2.1	4,500 / 0.8	4,500 / *20.3	5,000 / 18.7	5,000 / 17.2	5,000 / 15.7	5,000 / 14.2	6,000 / 12.7
Calabasas	2,600 / 19.1	2,750 / 18.2	2,900 / 17.3	3,000 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9	3,000 / 11.0
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	---	---	---	---	4,850
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,900	46,900	48,000	49,100	50,300	51,500	52,700	54,000	55,300

LANDFILL	1997	1998	1999	2000	2001	2002	2003	2004	2005
Puente Hills	12,000 / 55.1	12,000 / 51.4	12,000 / 47.7	12,000 / 43.9	12,000 / 40.2	12,000 / 36.5	12,000 / 32.8	12,000 / 29.1	12,000 / 25.4
Spadra	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
BKK	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Azusa	4,000 / 17.8	4,000 / 16.6	4,000 / 15.3	4,000 / 14.1	4,000 / 12.8	4,000 / 11.6	4,000 / 10.4	4,000 / 9.2	4,000 / 7.9
Scholl Canyon	3,022 / 13.7	3,080 / 12.8	3,138 / 11.9	3,196 / 11.0	3,254 / 10.0	3,312 / 9.0	3,360 / 8.0	3,418 / 7.0	3,476 / 6.0
Bradley West	7,000 / 4.9	7,000 / 2.8	7,000 / 0.6	2,050 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Lopez	6,000 / 0.5	1,700 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
North Valley	7,000 / 202.5	7,000 / 200.3	7,000 / 198.1	7,000 / 195.0	10,000 / 192.0	10,000 / 188.9	10,000 / 185.8	10,000 / 182.7	10,000 / 179.6
Chiquita	6,000 / 11.2	6,000 / 8.6	6,000 / 6.8	6,000 / 4.9	6,000 / 3.0	6,000 / 1.2	3,800 / -	-0- / -	-0- / -
Calabasas	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	6,100	11,720	14,860	22,750	24,250	25,700	29,340	34,580	36,000
TOTAL In Need of Landfill Disposal (tpd-6)	56,600	58,000	59,500	61,000	62,500	64,000	65,500	67,000	68,500

*Expansion or repermitting assumed to take effect.

TABLE 3A "TIME TO CRISIS" ANALYSIS:
SCENARIO B-2: All Expansions Permitted to Allow for Continuity of Landfilling Operations;
No New Sites; Additional Recycling/Composting Implemented Immediately and Linearly Increased to 10%
of Total Wastestream by 1992

Expected Daily Tonnage, 6 Day Average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

OPERATING YEAR

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	12,000 / 0.5	12,000 / *66.3	12,000 / 62.6
Spadra	2,100 / 10.0	2,600 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,000 / –
Azusa	1,800 / 26.3	2,650 / 25.4	3,370 / 24.4	3,500 / 23.3	4,000 / 22.0	4,000 / 20.8	4,000 / 19.6	4,000 / 18.3	4,000 / *20.3
Scholl Canyon	4,300 / 15.9	2,465 / 15.2	2,490 / 14.4	2,510 / 13.6	2,530 / 12.8	2,550 / 12.0	2,600 / 11.2	2,654 / 10.4	2,710 / *15.6
Bradley West	1,400 / 19.7	3,000 / 18.9	3,500 / 17.8	3,500 / 16.8	4,370 / 15.5	4,000 / 14.1	4,000 / 12.9	4,400 / *11.5	5,200 / 9.9
Lopez	4,400 / 17.2	4,600 / 15.8	4,800 / 14.3	4,800 / 12.8	4,800 / 11.3	4,500 / 9.9	4,500 / 8.5	4,500 / 7.1	4,800 / 5.7
North Valley	6,800 / 6.3	6,500 / 4.3	5,200 / 2.8	3,200 / 1.2	4,000 / –	3,000 / *213.3	3,800 / 211.6	7,000 / 209.3	7,000 / 207.3
Chiquita	3,000 / 4.3	3,000 / 3.3	3,000 / 2.6	3,000 / 1.7	3,000 / *21.8	3,000 / 20.8	3,000 / 19.9	3,000 / 19.0	3,200 / 18.0
Calabasas	2,600 / 19.1	2,800 / 18.2	2,900 / 17.3	3,000 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	---	---	---	---
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,200	45,450	45,800	46,020	45,090	46,080	47,700	48,600

LANDFILL	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Puente Hills	12,000 / 58.8	12,000 / 55.1	12,000 / 51.4	12,000 / 47.7	12,000 / 43.9	12,000 / 40.2	12,000 / 36.5	12,000 / 32.8	12,000 / 29.1	12,000 / 25.4
Spadra	2,500 / 2.4	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –
BKK	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –
Azusa	4,000 / 19.0	4,000 / 17.8	4,000 / 16.6	4,000 / 15.3	4,000 / 14.1	4,000 / 12.8	4,000 / 11.6	4,000 / 10.4	4,000 / 9.2	4,000 / 7.9
Scholl Canyon	2,760 / 14.7	2,820 / 13.8	2,870 / 12.9	2,925 / 12.0	2,975 / 11.1	3,030 / 10.1	3,081 / 9.2	3,130 / 8.2	3,185 / 7.2	3,240 / 6.2
Bradley West	7,000 / 7.8	7,000 / 5.6	7,000 / 3.4	7,000 / 1.2	3,900 / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –
Lopez	6,000 / 3.5	6,000 / 1.6	3,200 / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –	-0- / –
North Valley	7,000 / 205.2	7,000 / 203.0	7,000 / 200.8	7,000 / 198.6	10,000 / 195.5	10,000 / 192.4	10,000 / 189.3	10,000 / 186.2	10,000 / 183.1	10,000 / 180.0
Chiquita	6,000 / 16.1	6,000 / 14.3	6,000 / 12.4	6,000 / 10.6	6,000 / 8.7	6,000 / 6.8	6,000 / 4.9	6,000 / 3.1	6,000 / 1.2	4,000 / –
Calabasas	3,000 / 11.0	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	---	---	2,650	9,125	12,025	18,220	19,520	20,820	22,120	23,410
TOTAL In Need of Landfill Disposal (tpd-6)	49,950	50,940	52,200	53,550	54,900	56,250	57,600	58,950	60,300	61,650

*Expansion or repermitting assumed to take effect.

TABLE 4A "TIME TO CRISIS" ANALYSIS:
SCENARIO B-3: All Expansions Permitted to Allow for Continuity of Landfilling Operations;
No New Sites; Additional Recycling/Composting Implemented Immediately and Linearly Increased to 27%
of Total Wastestream by 2000

Expected Daily Tonnage, 6 Day Average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	OPERATING YEAR																		
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	12,000 / 0.3	12,000 / *66.3	12,000 / 62.6	12,000 / 58.8	12,000 / 55.1	12,000 / 51.4	12,000 / 47.7	12,000 / 43.9	12,000 / 40.2	12,000 / 36.5	12,000 / 32.8	12,000 / 29.1	12,000 / 25.4
Spadra	2,100 / 10.0	2,680 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1	2,500 / 2.4	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,500 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Azusa	1,800 / 26.3	2,500 / 25.6	3,000 / 24.7	3,000 / 23.8	3,500 / 22.7	3,500 / 21.6	3,000 / 20.7	3,000 / 19.8	3,000 / *22.1	4,000 / 20.9	4,000 / 19.7	4,000 / 18.5	4,000 / 17.3	4,000 / 16.1	4,000 / 14.9	4,000 / 13.7	4,000 / 12.5	4,000 / 11.3	4,000 / 10.1
Scholl Canyon	4,300 / 15.9	2,450 / 15.3	2,463 / 14.5	2,472 / 13.7	2,480 / 12.9	2,480 / 12.1	2,480 / 11.3	2,480 / 10.4	2,480 / *15.6	2,500 / 14.8	2,500 / 14.1	2,500 / 13.3	2,500 / 12.5	2,500 / 11.7	2,500 / 10.9	2,500 / 10.1	2,500 / 9.3	2,500 / 8.5	2,500 / 7.7
Bradley West	1,400 / 19.7	3,000 / 18.9	3,500 / 17.8	3,500 / 16.8	4,000 / 15.6	3,600 / 14.5	3,600 / 13.4	3,500 / *12.3	3,200 / 11.3	7,000 / 9.1	7,000 / 7.0	7,000 / 4.8	7,000 / 2.6	7,000 / 0.4	1,300 / -	-0- / -	-0- / -	-0- / -	-0- / -
Lopez	4,400 / 17.2	4,600 / 15.8	4,800 / 14.3	4,700 / 12.9	4,700 / 11.4	4,700 / 9.9	4,500 / 8.5	4,400 / 7.2	4,200 / 5.9	4,600 / 4.5	4,600 / 3.1	4,600 / 1.7	4,600 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
North Valley	6,800 / 6.3	6,550 / 4.3	5,200 / 2.8	5,200 / 1.2	4,000 / -	4,500 / *213.7	5,100 / 212.1	5,700 / 210.4	6,500 / 208.4	7,000 / 206.2	7,000 / 204.0	7,000 / 201.8	7,000 / 199.6	10,000 / 196.5	10,000 / 193.4	10,000 / 190.5	10,000 / 187.2	10,000 / 184.1	10,000 / 181.0
Chiquita	3,000 / 4.3	3,000 / 3.5	3,000 / 2.6	3,000 / 1.7	3,000 / *21.8	3,000 / 20.8	3,000 / 19.9	3,000 / 19.0	3,000 / 18.1	3,000 / 17.2	3,000 / 16.3	3,000 / 15.4	3,000 / 14.5	3,100 / 12.9	6,000 / 11.0	6,000 / 9.1	6,000 / 7.2	6,000 / 5.3	4,000 / 3.4
Calabasas	2,600 / 19.1	2,750 / 18.2	2,900 / 17.3	2,950 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9	3,000 / 11.0	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6,825	9,220	10,315	11,410	12,500
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,000	45,100	45,200	45,300	45,400	45,600	45,600	45,600	45,600	45,600	45,600	45,600	45,600	45,625	46,720	47,815	48,910	50,000

*Expansion or repermitting assumed to take effect.

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TABLE 5A "TIME TO CRISIS" ANALYSIS:
SCENARIO C-1: All Expansions Except Puente Hills are Permitted; No New Sites;
Maintain Current Level of Recycling/Composting

Expected Daily Tonnage, 6 Day Average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

OPERATING YEAR

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	11,333 / 0.5	-0- / 0.5	-0- / 0.5
Spadra	2,100 / 10.0	2,680 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,000 / -
Azusa	1,800 / 26.3	2,500 / 25.6	3,500 / 24.5	4,000 / 23.3	4,000 / 22.0	4,000 / 20.8	4,000 / 19.6	4,000 / 18.3	4,000 / *20.3
Scholl Canyon	4,300 / 15.9	2,500 / 15.2	2,558 / 14.4	2,616 / 13.6	2,674 / 12.8	2,732 / 12.0	2,790 / 11.2	2,848 / 10.3	2,906 / *15.6
Bradley West	1,400 / 19.7	3,000 / 18.9	3,200 / 17.9	3,200 / 16.9	4,500 / 15.5	4,300 / 14.1	4,200 / 12.8	7,000 / *10.7	7,000 / 8.6
Lopez	4,400 / 17.2	5,000 / 15.7	5,500 / 14.1	5,500 / 12.4	5,500 / 10.7	5,000 / 9.2	5,000 / 7.6	6,500 / 5.6	6,500 / 3.6
North Valley	6,800 / 6.3	6,500 / 4.2	5,000 / 2.7	5,000 / 1.2	4,400 / -	5,800 / *213.3	7,000 / 211.1	10,000 / 208.1	10,000 / 205.0
Chiquita	3,000 / 4.3	3,500 / 3.3	4,000 / 2.1	4,300 / 0.8	4,500 / *20.3	5,000 / 18.7	5,000 / 17.2	6,000 / 15.3	6,000 / 13.5
Calabasas	2,600 / 19.1	2,750 / 18.2	2,900 / 17.3	3,000 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	---	---	4,850	6,850
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,900	46,900	48,000	49,100	50,300	51,500	52,700	54,000

LANDFILL	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Puente Hills	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5	-0- / 0.5
Spadra	2,500 / 2.4	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
BKK	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Azusa	4,000 / 19.0	4,000 / 17.8	4,000 / 16.6	4,000 / 15.3	4,000 / 14.1	4,000 / 12.8	4,000 / 11.6	4,000 / 10.4	4,000 / 9.2	4,000 / 7.9
Scholl Canyon	2,964 / 14.6	3,022 / 13.7	3,080 / 12.8	3,138 / 11.9	3,196 / 11.0	3,254 / 10.0	3,312 / 9.0	3,360 / 8.0	3,418 / 7.0	3,476 / 6.0
Bradley West	7,000 / 6.4	7,000 / 4.2	7,000 / 2.1	7,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Lopez	6,500 / 1.6	5,300 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
North Valley	10,000 / 201.9	10,000 / 198.8	10,000 / 195.7	10,000 / 192.6	10,000 / 189.5	10,000 / 186.4	10,000 / 183.3	10,000 / 180.2	10,000 / 177.1	10,000 / 174.0
Chiquita	6,000 / 11.6	6,000 / 9.8	6,000 / 7.9	6,000 / 6.0	6,000 / 4.2	6,000 / 2.3	6,000 / 0.5	1,500 / -	-0- / -	-0- / -
Calabasas	3,000 / 11.0	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	13,340	15,780	22,420	23,860	33,800	36,250	37,650	43,650	46,580	48,020
TOTAL In Need of Landfill Disposal (tpd-6)	55,300	56,600	58,000	59,500	61,000	62,500	64,000	65,500	67,000	68,500

*Expansion or repermitting assumed to take effect.

TABLE 6A "TIME TO CRISIS" ANALYSIS:
SCENARIO C-2: All Expansions Except North Valley are Permitted; No New Sites;
Maintain Current Level of Recycling/Composting

Expected Daily Tonnage, 6 Day Average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

OPERATING YEAR

LANDFILL	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Puente Hills	12,000 / 22.5	12,000 / 18.8	12,000 / 15.0	12,000 / 11.3	12,000 / 7.6	12,000 / 3.9	12,000 / 0.3	12,000 / *66.3	12,000 / 62.6	12,000 / 58.8
Spadra	2,100 / 10.0	2,680 / 9.2	2,750 / 8.4	2,880 / 7.5	3,000 / 6.6	3,000 / 5.7	3,000 / 4.8	3,000 / 3.9	2,750 / 3.1	2,500 / 2.4
BKK	6,500 / 11.1	5,500 / 9.7	5,500 / 8.3	5,500 / 6.9	5,500 / 5.5	5,500 / 4.1	5,500 / 2.7	5,500 / 1.3	5,000 / -	-0- / -
Azusa	1,800 / 26.3	2,900 / 25.6	3,900 / 24.5	4,000 / 23.3	4,000 / 22.0	4,000 / 20.8	4,000 / 19.6	4,000 / 18.3	4,000 / *20.3	4,000 / 19.0
Scholl Canyon	4,300 / 15.9	2,500 / 15.2	2,558 / 14.4	2,616 / 13.6	2,674 / 12.8	2,732 / 12.0	2,790 / 11.2	2,848 / 10.3	2,906 / *15.5	2,964 / 14.6
Bradley West	1,400 / 19.7	3,000 / 18.9	3,200 / 17.9	3,200 / 16.9	4,500 / 15.5	7,000 / 13.3	7,000 / 11.2	7,000 / *9.0	7,000 / 6.8	7,000 / 4.7
Lopez	4,400 / 17.2	5,000 / 15.7	5,500 / 14.1	5,500 / 12.4	5,500 / 10.7	6,500 / 9.2	6,500 / 7.2	6,500 / 5.2	6,500 / 3.2	6,500 / 1.2
North Valley	6,800 / 6.3	6,500 / 4.3	5,000 / 2.8	5,000 / 1.2	4,400 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Chiquita	3,000 / 4.3	3,500 / 3.3	4,000 / 2.1	4,300 / 0.8	4,500 / *20.3	6,000 / 18.5	6,000 / 16.6	6,000 / 14.7	6,000 / 12.9	6,000 / 11.0
Calabasas	2,600 / 19.1	2,750 / 18.2	2,900 / 17.3	3,000 / 16.4	3,000 / 15.5	3,000 / 14.6	3,000 / 13.7	3,000 / 12.8	3,000 / 11.9	3,000 / 11.0
Disposal Capacity Shortfall (tpd-6)	---	---	---	---	---	970	1,710	2,850	4,850	11,340
TOTAL In Need of Landfill Disposal (tpd-6)	44,900	45,900	46,900	48,000	49,100	50,300	51,500	52,700	54,000	55,300

LANDFILL	1997	1998	1999	2000	2001	2002	2003	2004	2005
Puente Hills	12,000 / 55.1	12,000 / 51.4	12,000 / 47.7	12,000 / 43.9	12,000 / 40.2	12,000 / 36.5	12,000 / 32.8	12,000 / 29.1	12,000 / 25.4
Spadra	2,500 / 1.7	2,500 / 1.0	2,500 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
BKK	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Azusa	4,000 / 17.8	4,000 / 16.6	4,000 / 15.3	4,000 / 14.1	4,000 / 12.8	4,000 / 11.6	4,000 / 10.4	4,000 / 9.2	4,000 / 7.9
Scholl Canyon	3,022 / 13.7	3,080 / 12.8	3,138 / 11.9	3,196 / 11.0	3,254 / 10.0	3,312 / 9.0	3,360 / 8.0	3,418 / 7.0	3,476 / 6.0
Bradley West	7,000 / 2.5	7,000 / 0.3	1,000 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Lopez	3,900 / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
North Valley	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -	-0- / -
Chiquita	6,000 / 9.2	6,000 / 7.3	6,000 / 5.5	6,000 / 3.6	6,000 / 1.7	3,500 / -	-0- / -	-0- / -	-0- / -
Calabasas	3,000 / 10.1	3,000 / 9.2	3,000 / 8.2	3,000 / 7.3	3,000 / 6.4	3,000 / 5.5	3,000 / 4.5	3,000 / 3.6	3,000 / 2.7
Disposal Capacity Shortfall (tpd-6)	15,200	20,420	27,860	31,800	32,250	36,200	43,150	44,580	48,020
TOTAL In Need of Landfill Disposal (tpd-6)	56,600	58,000	59,500	61,000	62,500	64,000	65,500	67,000	68,500

*Expansion or repermitting assumed to take effect.

APPENDIX II

Recycling/Composting Assumptions

for Moderate and Maximum Levels of Diversion

RECYCLING/COMPOSTING ASSUMPTIONS FOR

MODERATE AND MAXIMUM LEVELS OF DIVERSION

Based on a review of a number of waste characterizations for various communities within Los Angeles County the following County-wide average waste composition for residential and commercial/industrial waste was assumed:

Material	Percent of Residential Waste		Percent of Comm./Ind. Waste
Newspaper	8	Readily Recyclables 20%	2
Glass	7		7
Tin cans	4		5
Aluminum cans	1		1
Plastic (all types)	5		7
Leather/Rubber/Textiles	6		8
Scrap Wood	5		12
Yard Waste	30		5
Ceramics/Stone	3		4
Garbage	6		5
Misc. Paper/Cardboard	20		40
Misc.	5		4
	100		100

MODERATE DIVISION

The moderate level of diversion is assumed to result from recycling/composting activities only and is defined as 10 percent of the total wastestream (this is in addition to the existing level of recycling/composting). In the year 2000, it is projected that 60,000 tpd-6 will need to be managed. The moderate level of recycling/composting, therefore, represents a diversion of approximately 6,000 tpd-6 from the wastestream going to landfills.

Although this level of diversion could be accomplished is many ways, for the purposes of this report the following assumptions were adopted to determine how this moderate diversion would occur in each of the three wastestreams (residential, commercial/industrial, (mixed) construction/demolition) comprising the total disposal burden:

A. Residential

1) Recycling: As shown above in the waste composition analysis, 20 percent of the residential wastestream is considered readily recyclable (newspaper, glass, metal cans) and can be efficiently recovered through curbside source separation programs. The moderate level assumes a recovery of 50 percent of these readily recyclables. This would require a county-wide participation level of 60 percent of the residences and a separation efficiency of approximately 80 percent (i.e. each participating resident consistently separating out 80 percent of the recyclables from his/her trash). In effect, this assumption would require almost every local jurisdiction in the County to institute a curbside program with a number of jurisdictions implementing mandatory curbside programs. Recovering 50 percent of the recyclables equates to approximately 10 percent of the residential wastestream or 2,000 tpd-6 in the year 2000.

2) Composting: Approximately 30 percent of the residential wastestream is composed of yard and garden waste. The moderate level assumes a diversion of approximately one-third of the yard and garden wastes as compost from land disposal. This equates to approximately 10 percent of the residential wastestream or 2,000 tpd-6 in the year 2000.

Based on these assumptions, the moderate level of diversion (due to both recycling and composting) of the residential wastestream is therefore 4,000 tpd-6 or 20 percent of this wastestream in the year 2000.

B. Commercial/Industrial

1) Recyling: It is clear that with the scrap values of certain recyclable materials recently reaching all time highs, significant quantities of these materials are currently being source separated and recycled in the commercial sector and, therefore, are not entering into the wastestream. However, there still remains a significant portion of the commercial/industrial wastestream that is potentially recoverable material. Unlike the residential wastestream, which is generated by relatively homogeneous sources and is usually collected by a single hauler within each city, thereby lending itself to an efficient source separation program, the commercial/industrial wastestream is characterized by wide differences in the types of wastes generated by industrial establishments (restaurants, office buildings, retail stores, manufacturing) and a large number of commercial waste haulers operating within each community. As a result, it can not be estimated how much commercial/industrial recycling is currently being done. All three agencies participating in the preparation of this report are currently evaluating various technologies for additional recovery of recyclables from mixed commercial. wastes and feasible methods of implementing commercial source separation

programs. No estimate of the percentage diversion possible through these potential recycling activities has been incorporated into this report.

In this report, it has been estimated that the wood fraction of the commercial wastestream (12 percent of commercial/industrial waste) could be recovered at the landfills. For the moderate level diversion it was assumed that approximately 45 percent of wood in the commercial/industrial wastestream, or 1,100 tpd-6 in the year 2000, could be recovered at the landfills.

2) Composting: Approximately 6 percent of the commercial/industrial wastestream is composed of garden wastes. However, for the moderate level of diversion it was assumed all composting efforts would first concentrate on the large fraction of this type of material in the residential sector and no composting of the commercial/industrial fraction would be undertaken.

C. Construction/Demolition/Solid Fill (Mixed)

This third component of the total wastestream which is received at the major Class III landfills is characterized by loads from construction, demolition and grading activities. Although consisting mostly of inert materials, these loads generally have some organic constituents mixed in and are not acceptable for disposal at unclassified landfills which can receive only pure loads of inert materials. A number of the major Class III landfills will accept at no charge fill dirt for use as cover soil or asphalt/ concrete which is crushed and used for roads or wet weather areas.

It is estimated that 2 percent of the mixed construction/demolition wastestream is asphalt and 5 percent recoverable wood. At the moderate diversion level it is assumed all of the asphalt and approximately half of the wood could be recovered at the landfills. This would result in a total of 4.5 percent of the construction/demolition wastestream being recovered or 900 tpd-6 in the year 2000.

In summary, the moderate diversion level would result in 10% diversion of the total wastestream or 6,000 tpd-6 comprised of:

- 20 percent or 4,000 tpd-6 of residential waste
- 5 percent or 1,100 tpd-6 of commercial/industrial waste
- 4.5 percent or 900 tpd-6 of construction/demolition waste

MAXIMUM DIVERSION

The maximum level of diversion is assumed to result from recycling/composting activities only and is defined as 27 percent of the total wastestream (this is in addition to the existing level of recycling/composting). The maximum level of recycling/composting, therefore, represents a diversion of approximately 16,000 tpd-6 from the wastestream going to landfills in the year 2000.

For the purposes of this report the following assumptions were adopted to determine how this maximum diversion would occur in each of the three wastestreams (residential, commercial/industrial, (mixed) construction/demolition) comprising the total disposal burden:

A. Residential

1) Recycling: The maximum level assumes 100 percent of the readily recyclables (newspaper, glass, and metal cans comprising 20 percent of the residential wastestream) or 4,000 tpd-6 in the year 2000 can be recovered through source separation programs. Additionally, as shown above in the waste composition analysis, it is estimated that approximately 5 percent of the residential wastestream is scrap wood. The maximum level assumes all of this wood fraction is recovered at the landfill thereby diverting an additional 1,000 tpd-6 from land disposal in the year 2000.

2) Composting: The maximum level assumes 100 percent of the compostables (approximately 30 percent of the residential wastestream) are diverted as compost from land disposal. This equates to approximately 6,000 tpd-6 in the year 2000.

Based on these assumptions, the maximum level of diversion through residential recycling/composting is approximately 55 percent or 11,000 tpd-6 of the residential wastestream in the year 2000.

B. Commerical/Industrial

1) Recycling: No estimate of the percentage diversion possible through source separation recyling activities has been incorporated into these analyses (see moderate diversion for explanation). However, the maximum level assumes all of the wood fraction of the commercial wastestream (12 percent of commercial/industrial waste), or 2,500 tpd-6 in the year 2000, is recovered at the landfill.

2) Composting: The maximum level assumes all of the compostables in the commercial/industrial wastestream (6 percent of commercial/ industrial waste) are diverted as compost from land disposal. This equates to approximately 1,200 tpd-6 in the year 2000.

Based on these assumptions, the maximum level of diversion through recycling/composting of commercial/industrial waste is approximately 18 percent or 3,700 tpd-6 of this wastestream in the year 2000.

C. Construction/Demolition/Solid Fill (mixed)

The maximum level assumes all of the asphalt/concrete (2 percent of the construction/demolition waste) and all of the recoverable wood (5 percent of the construction/demolition waste) is recovered at the landfill. This equates to approximately 1,300 tpd-6 in the year 2000.

In Summary, the maximum level would result in 27% diversion of the total wastestream or 16,000 tpd-6 in the year 2000 comprised of:

- 55 percent or 11,000 tpd-6 of residential waste
- 18 percent or 3,700 tpd-6 of commercial/industrial waste
- 7 percent or 1,300 tpd-6 of construction/demolition waste

APPENDIX III

Roles of Responsible Agencies and Participants in the County's Solid Waste Management System

RECYCLED PAPER

County Sanitation Districts: The County Sanitation Districts Solid Waste Management System accommodates the disposal of approximately 22,000 tons of non-hazardous residential, commercial, and industrial refuse each day, six days a week. The Districts currently operate four sanitary landfills, two recycle centers, one transfer station, and one refuse-to-energy facility. The Puente Hills Landfill, located in the San Gabriel Valley, is owned solely by the Sanitation Districts and was acquired to provide long term disposal capacity for the southern and eastern portions of the County. The Spadra Landfill, also located in the San Gabriel Valley, and the Calabasas Landfill in an unincorporated portion of western Los Angeles County, are owned by the County and operated by the Districts under Joint Powers Agreements. The Scholl Canyon Landfill is owned by the City of Glendale and the County of Los Angeles, and is operated by the Districts under a Joint Power Agreement. The two recycle centers, located at Puente Hills Landfill and the closed Palos Verdes Landfill, recover a total of approximately 5 to 7 tpd-6 of glass, aluminum, bi-metal cans, and newspaper.

In addition to sanitary landfills, the Districts have entered into Joint Powers Agreements with the City of Commerce and the City of Long Beach to create the Commerce Refuse-to-Energy Authority and the Southeast Resource Recovery Facility (SERRF) Authority. These authorities are responsible for the development of the Commerce Refuse-to-Energy Facility and SERRF which are designed to incinerate 300 and 1350 tons of refuse per day, respectively, using state-of-the-art technology. The Sanitation Districts operate the Commerce facility which has been in commercial operation since June, 1987. SERRF is scheduled to be placed into operation in 1988 and will be operated by the Districts after an initial period of operation by the turnkey contractor.

As indicated in previous sections, the next few years could bring about a refuse disposal crisis, as early as 1991, due to dwindling landfill capacity, permit expirations and closures, and increased solid waste tonnages. As a public agency that has extensive experience in siting, permitting, and operation of solid waste facilities, the Sanitation Districts have the capability to implement a large capacity, publicly operated landfill in the City of Los Angeles and/or in unincorporated portions of Los Angeles County, that could provide a significant portion of the long term disposal capacity for both the City of Los Angeles and Sanitation Districts' cities on the west side of the County.

City of Los Angeles: The City of Los Angeles produces for disposal, an average of approximately 18,000 tons of non-hazardous solid waste, six days a week (40 percent of the total County wastestream). Of this wastestream approximately 11,800 tpd-6 (65 percent of the City wastestream) is disposed of at three landfills located in the City (these sites also receive approximately 800 tpd-6 of non-City refuse, making the City's net export approximately 5,400 tpd-6). The remaining City refuse is exported to other public and private disposal sites in the San Gabriel Valley, San Rafael Hills, and northern and western portions of Los Angeles County.

The City owns and operates the Lopez Canyon Landfill exclusively for City collected wastes. Historically, the City operated landfills have not provided disposal capacity for the commerical wastestream generated in the City. In the near future, as existing landfills begin to close due to expired permits or exhausted capacity, the amount of City generated waste which will no longer have a disposal location within the City and presumably would be exported to more distant disposal facilities in the County will increase dramatically.

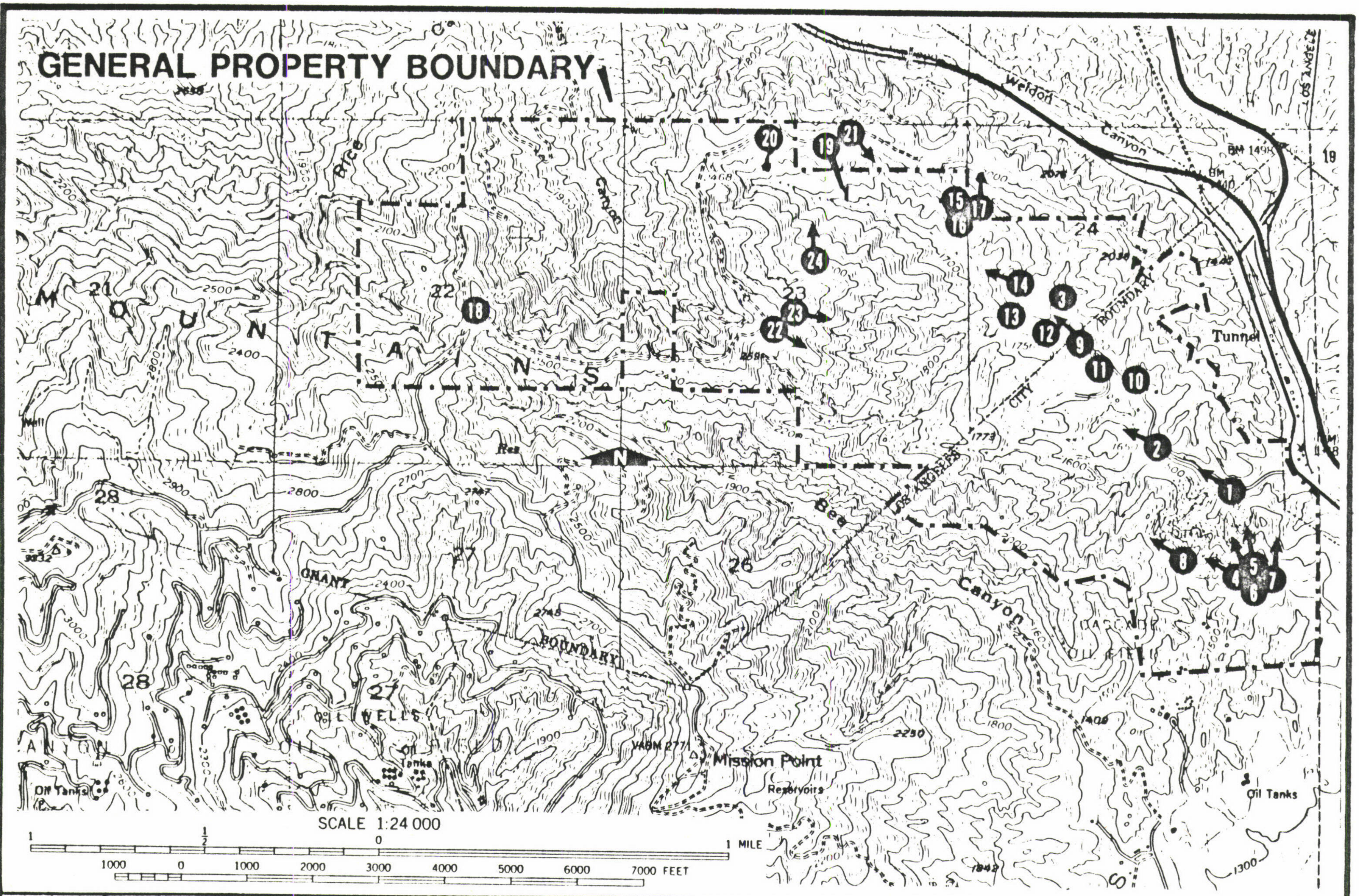
Private Haulers: The private sector plays an integral role in the Los Angeles County Solid Waste Management System and, therefore, will be a necessary part of the crisis solution. There are approximately 350 private companies involved in the collection of refuse in the County. Many small collection companies have been bought out in recent years by large regional or national companies such as Browning-Ferris Industries (BFI), Inc., Western Waste Industries, Laidlaw, Inc., and Waste Management, Inc..

In addition to collection and hauling services, several large private hauling companies currently operate disposal sites in Los Angeles County. On the west side of the County major Class III sites operated by the private sector are Bradley West Landfill (Waste Management, Inc.) and North Valley Landfill (BFI, Inc.) in the City, and Chiquita Canyon Landfill (Laidlaw, Inc.) in the unincorporated County. In the San Gabriel Valley major disposal sites operated by large private waste management companies are BKK Landfill (BKK Corporation) and Azusa Western Landfill (BFI, Inc.). Additionally, two of the most frequently considered management options to increase the County's disposal capacity involve the private sector. BFI, Inc. has proposed a 215 million ton expansion at North Valley Landfill with most of the expansion occurring in County jurisdiction and the BKK Company is proposing a new site located at Elsmere Canyon several miles northeast of North Valley, also in unincorporated County.

It is important to point out that tipping fees in Los Angeles County are among the lowest in the United States, due primarily to the presence and influence of publically operated disposal sites in the regional network. The establishment of tipping fees at publically operated sites is cost driven as opposed to market driven, which results in lower rates than that which could be substantiated by market forces. Private operators, in an attempt to stay competitive within the regional system, have set tipping fees at comparable levels. In effect, publically operated facilities have served to impose tipping fee caps, resulting in countywide rates lower than what would certainly be realized in a system totally operated by the private sector. As landfill capacity declines, making the resource more scarce, this factor could be important in keeping disposal costs from increasing as dramatically as they have in other parts of the country.

APPENDIX K

Site Photos



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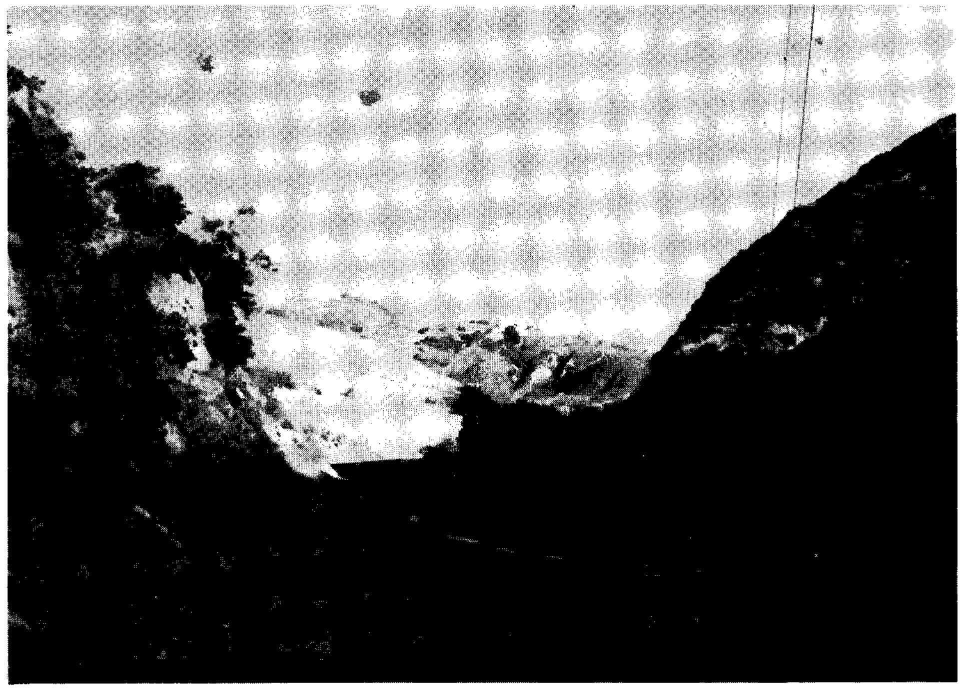
BASE MAP U.S.G.S.

Title: PHOTOGRAPH LOCATION MAP

K1



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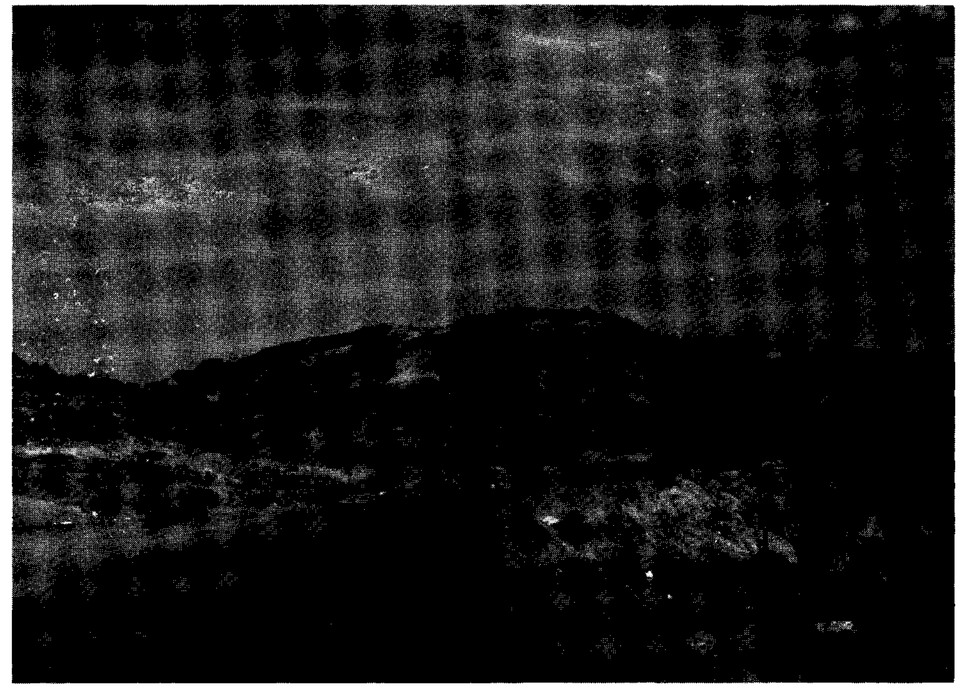

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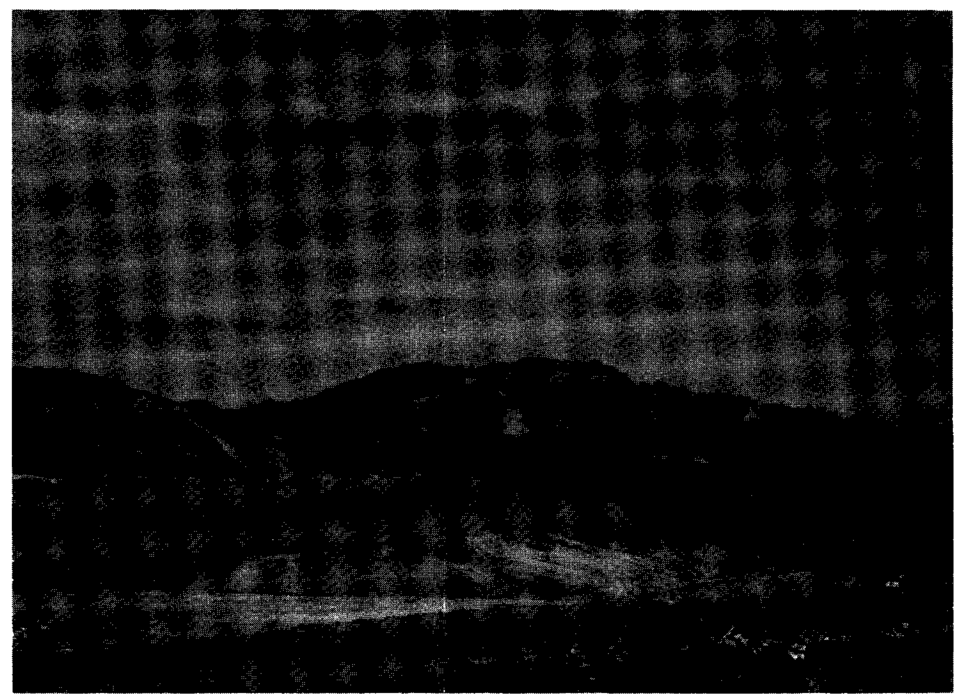

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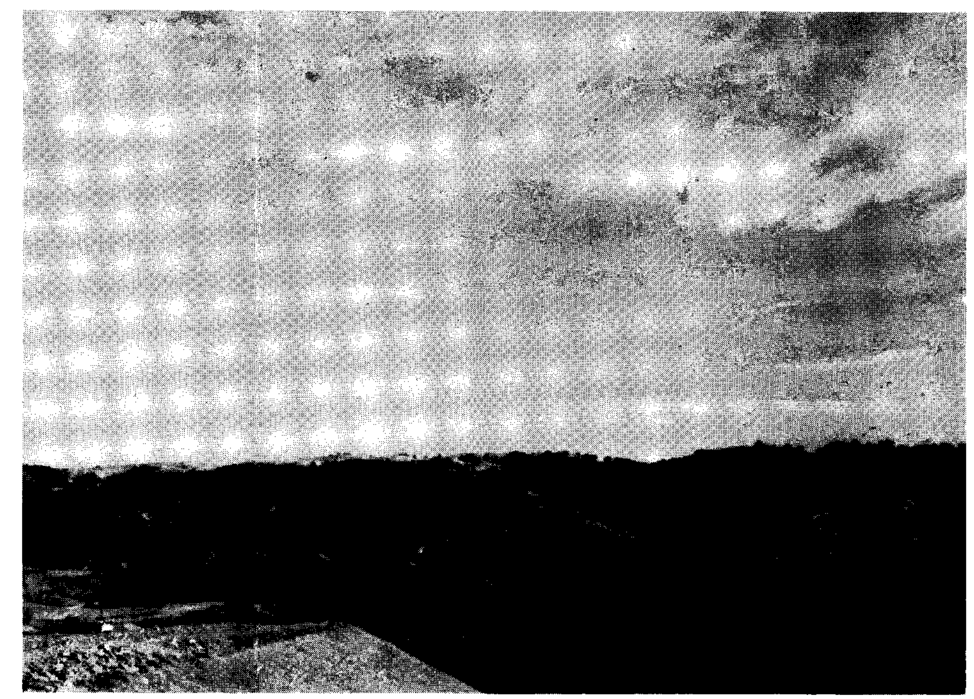

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Source: ULTRASYSTEMS, INC.

Title: SITE VEGETATION PHOTOGRAPHS

K2

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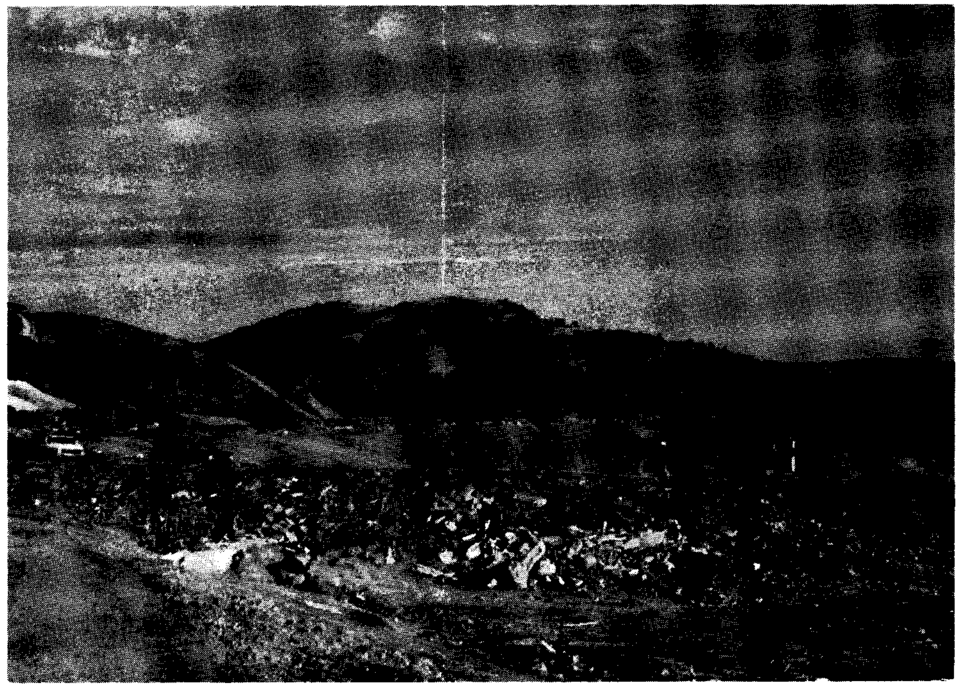

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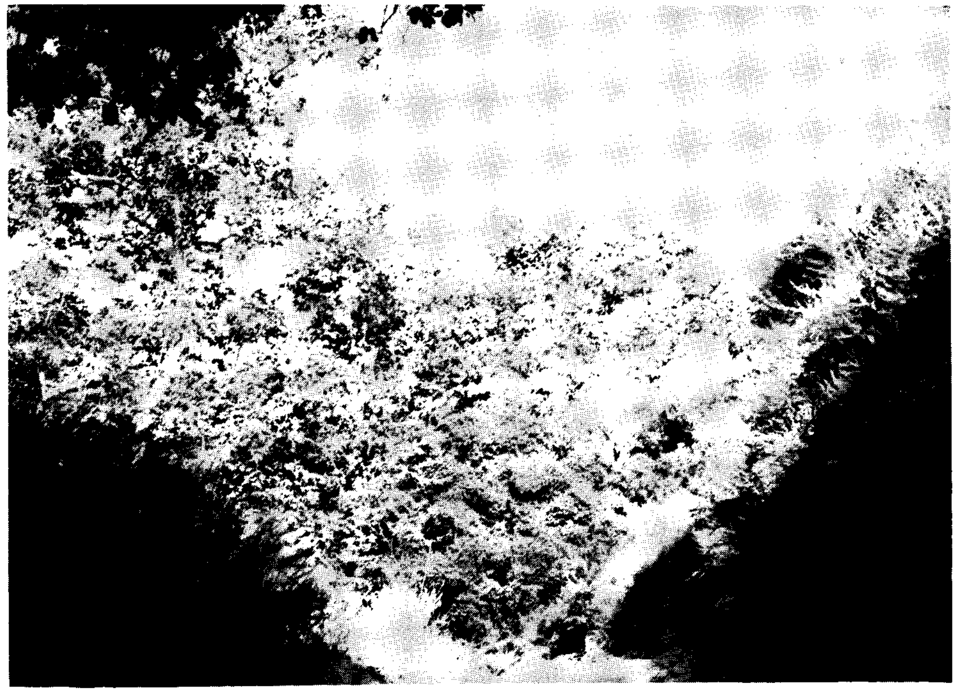

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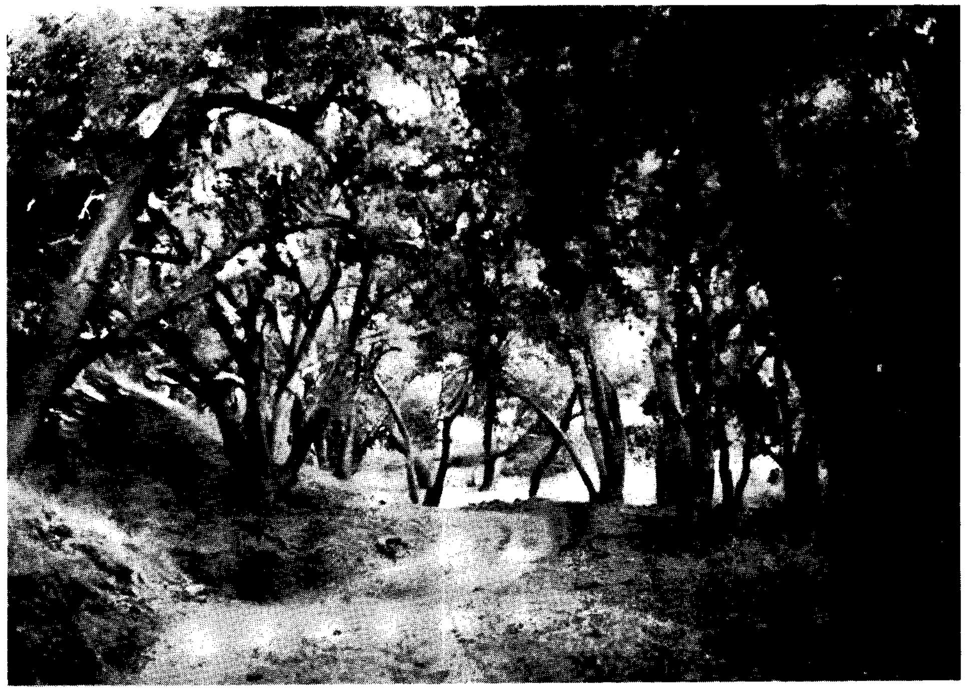

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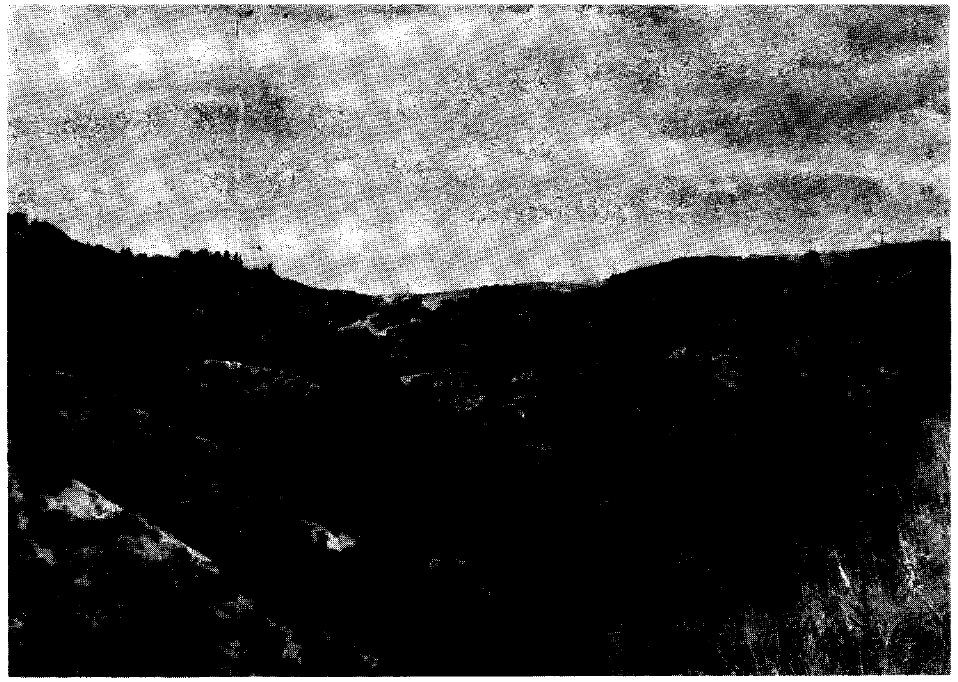

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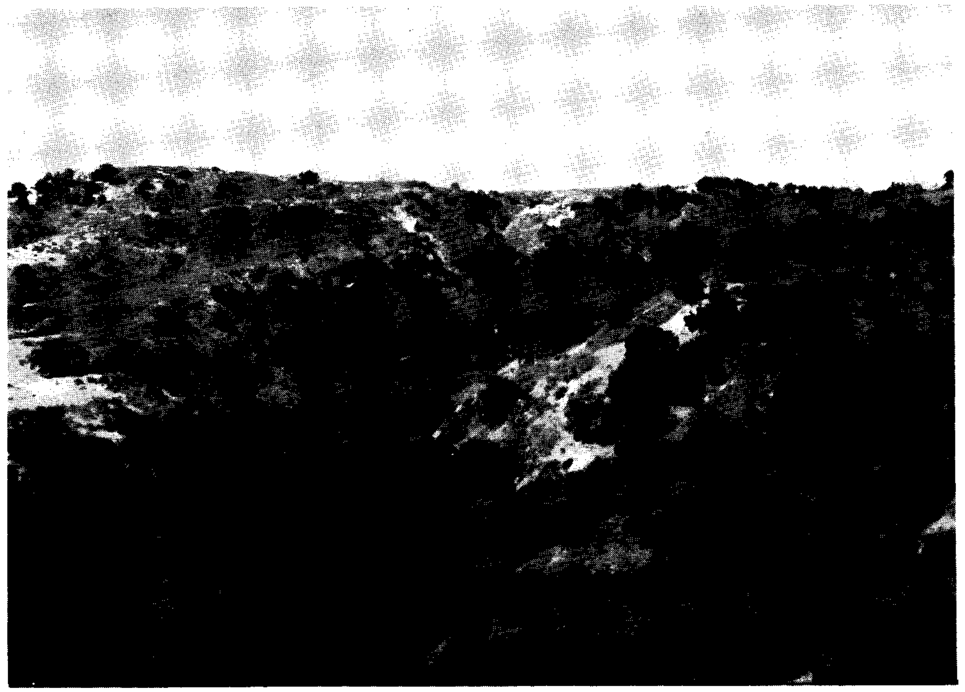

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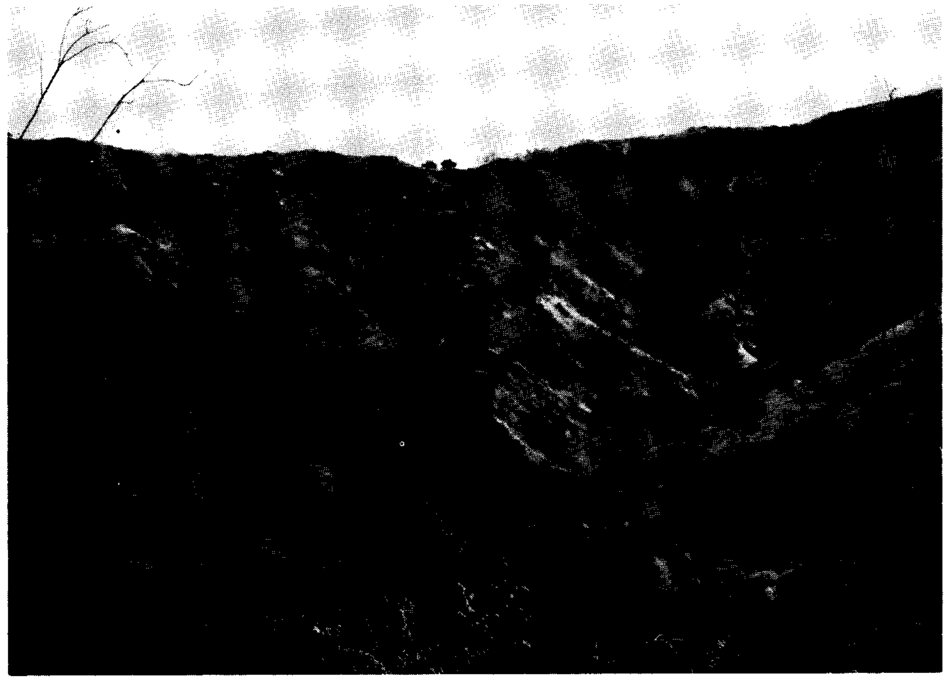

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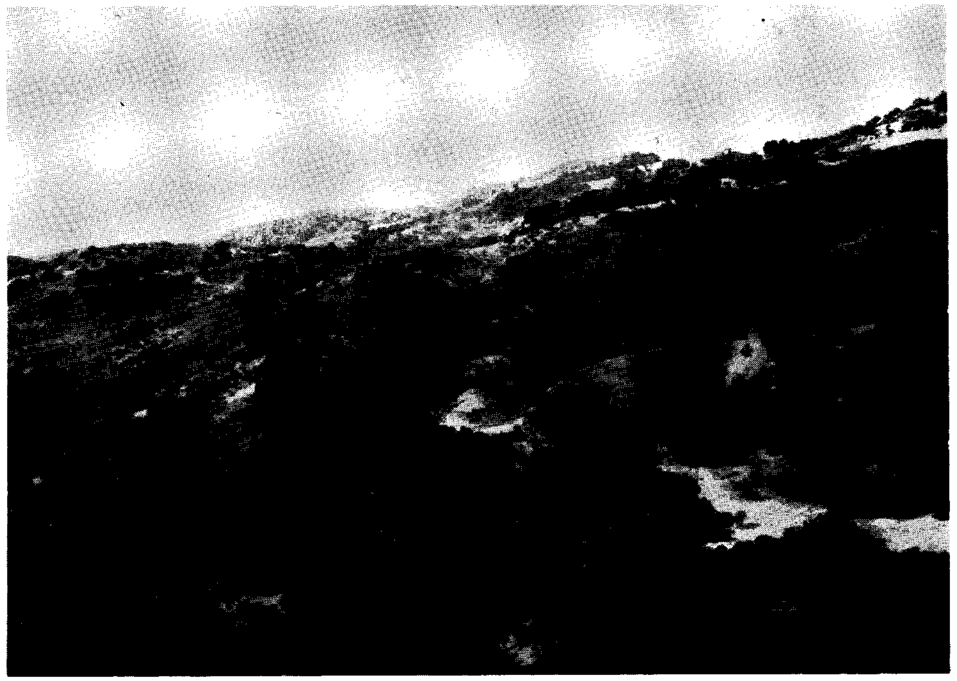

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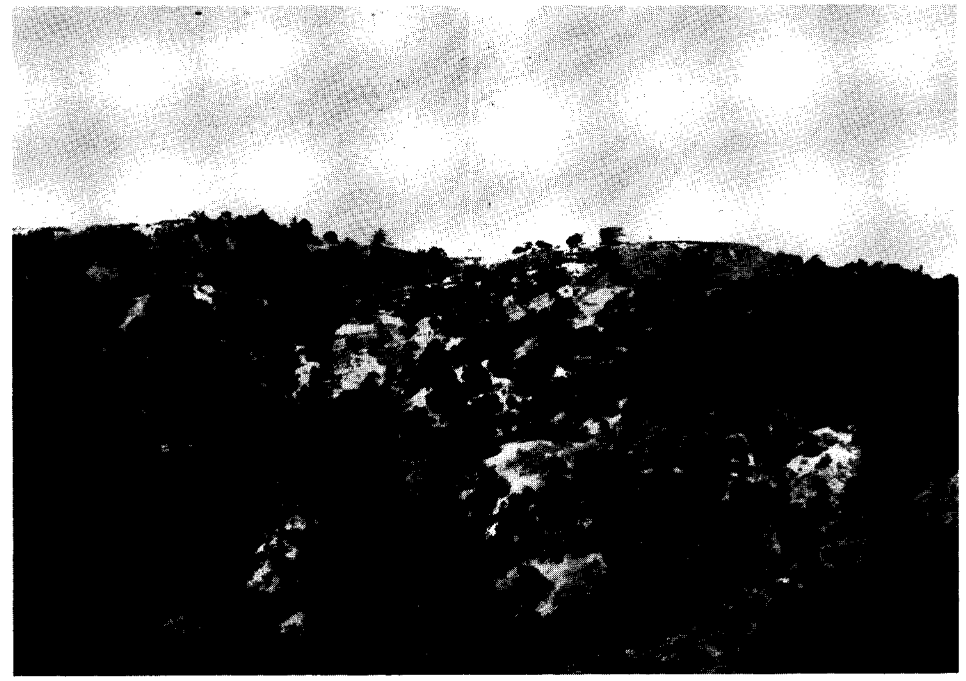

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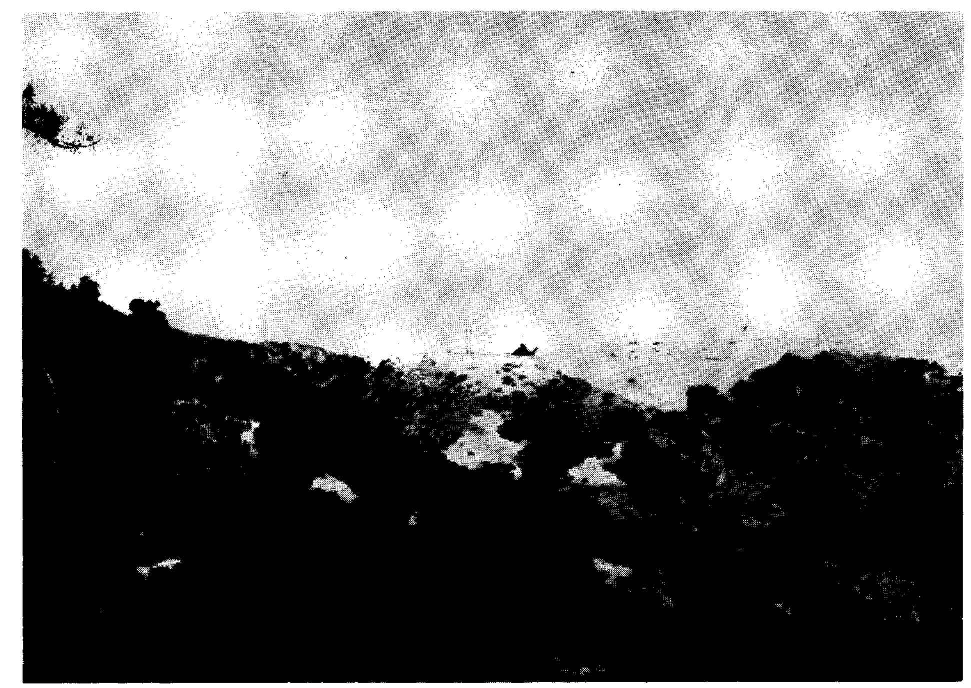

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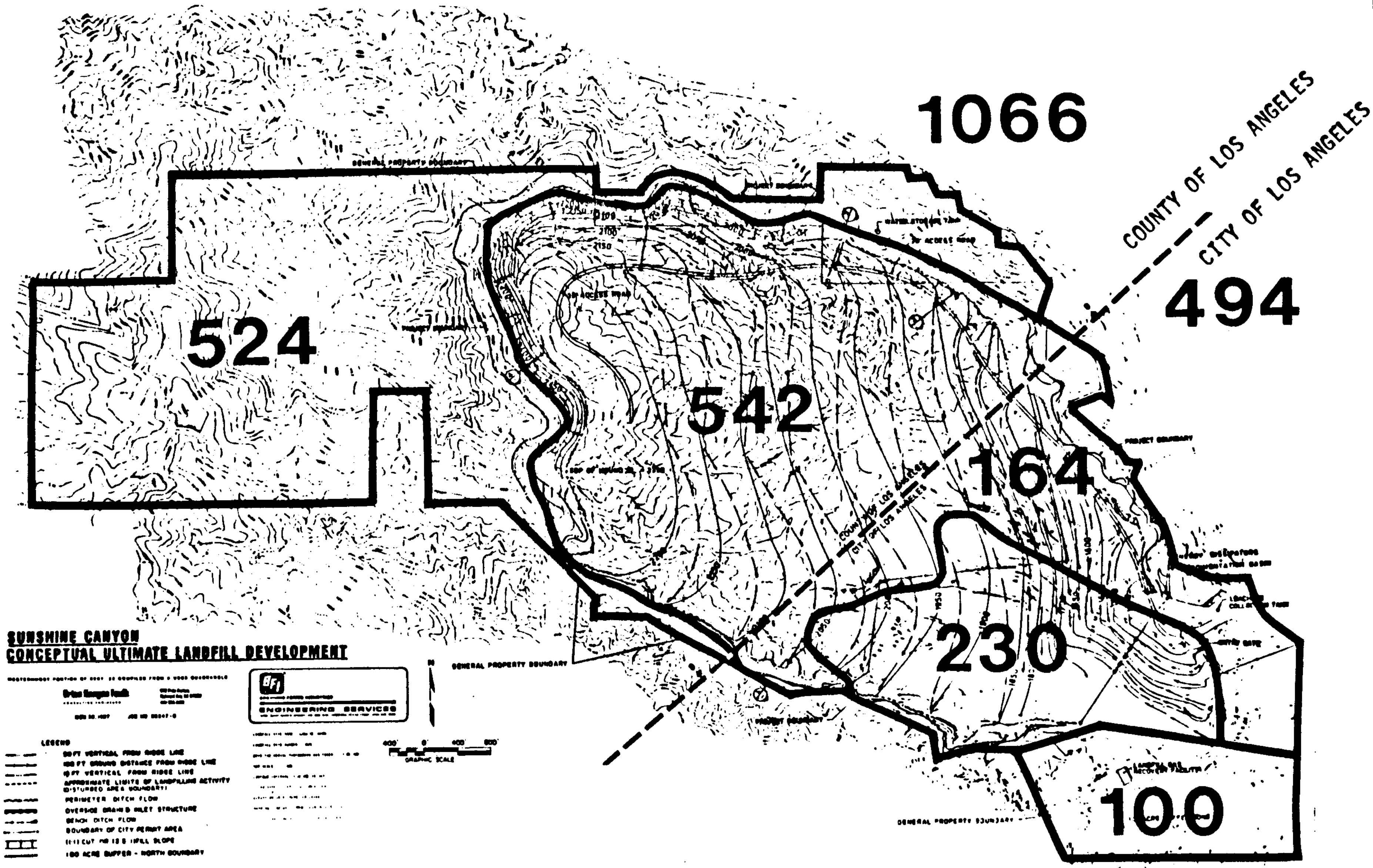
Source: ULTRASYSTEMS, INC.

Title: SITE VEGETATION PHOTOGRAPHS

K5

APPENDIX L

Site Acreage Figure



Source: ULTRASYSTEMS/P.R.A. (Storm)

Title: ACREAGE FIGURES REFERENCED IN DRAFT EIR

APPENDIX M

Summary Letter of Fault Investigation

Purcell, Rhoades & Associates

Consultants in the Applied Earth Sciences

2504 Technology Drive
Hayward, CA 94545
(415) 732-9890
Please Reply to This Office ☐

1041 Hook Avenue
Pleasant Hill, CA 94523
(415) 932-1177
☐ *Please Reply to This Office*

No. 2-0118/3040-01
April 4, 1982
Revised September 30, 1982

Browning-Ferris Industries of California
14747 San Fernando Road
Sylmar, CA 91342

Attention: Mr. Dean Wise

SUBJECT: Phase II, Fault Evaluation and Seismic Hazard Study - Proposed Landfill Expansion Site, Sunshine Canyon, Los Angeles, California

Gentlemen:

Enclosed is our report concerning a seismic hazards study for the Proposed Landfill Expansion Site in the City and County of Los Angeles. This study included: detailed field mapping; records research; four seismic lines; the excavation and detailed logging of 1070 linear feet of trenches; consultation with State Division of Mines and Geology personnel, and previous workers in the area; and the writing of this report.

Based upon the information developed to date, we are of the opinion that there is no evidence that bedrock faults encountered at this site are active according to the provisions of the Alquist-Priolo Special Studies Zone Act (1972). We are also of the opinion that the site can expect strong levels of ground shaking from earthquakes on major active faults of the region, but this level is consistent with the regional area.

We refer you to the text of this report for a detailed discussion of our geotechnical evaluation of the Sunshine Canyon site. If you have any questions or if we may be of further service, please contact the undersigned.

Very truly yours,

PURCELL, RHOADES & ASSOCIATES

Irving D. Affeldt, C.E.G.
Associate

Reviewed by:

Daniel J. Rhoades, G.E.
Principal

GE-7?? EXP 6/30/89 GEOTECHNICAL STATE OF CALIFORNIA

pl

APPENDIX N

List of Bird Species Seen in O'Melveny Park

San Fernando Valley Audubon Society

"For the Conservation of Wild Life and Natural Resources"

January 18, 1988

For the last several years the San Fernando Valley Audubon Society has been conducting bird walks in O'Melveny Park.

The following species have been sighted:

Turkey Vulture
Sharp-shinned Hawk
Cooper's Hawk
Red-tailed Hawk
Red-shouldered Hawk
Kestrel
California Quail
Band-tailed Pigeon
Rock Dove
Mourning Dove
Spotted Dove
Roadrunner
White-throated Swift
Anna's Hummingbird
Red-shafted Flicker
Acorn Woodpecker
Red-breasted Sapsucker
Downy Woodpecker
Nuthall's Woodpecker
Western Kingbird
Ash-throated Flycatcher
Black Phoebe
Say's Phoebe
Western Wood Pewee
Rough-winged Swallow
Scrub Jay
Raven
Mountain Chickadee
Plain Titmouse
Common Bushtit
Wrentit
House Wren
Bewick's Wren
Canyon Wren
Mockingbird
California Thrasher
Robin
Hermit Thrush
Western Bluebird
Blue-gray Gnatcatcher
Ruby-crowned Kinglet
Water Pipit
Cedar Waxwing
Phainopepla
Loggerhead Shrike
Starling
Solitary Vireo
Warbling Vireo
Orange-crowned Warbler
Nashville Warbler
Yellow Warbler
Yellow-rumped (Audubon's)Warble
Yellow-rumped (Myrtle) Warbler
Black-throated gray Warbler
Townsend's Warbler
Hermit Warbler
Yellowthroat
Wilson's Warbler
House Sparrow
Western Meadowlark
Hooded Oriole
Bullock's Oriole (Northern)
Brewer's Blackbird
Brownheaded Cowbird
Western Tanager
Black-headed Grosbeak
Purple Finch
House Finch
American Goldfinch
Lesser Goldfinch
Lawrence's Goldfinch
Rufous-sided Towhees
Brown Towhee
Dark-eyed Junco
White-crowned Sparrow
Golden-crowned Sparrow
Song Sparrow

Stan Livingston

Stan Livingston
O'Melveny ParkBird Walk Leader
San Fernando Valley Audubon Society

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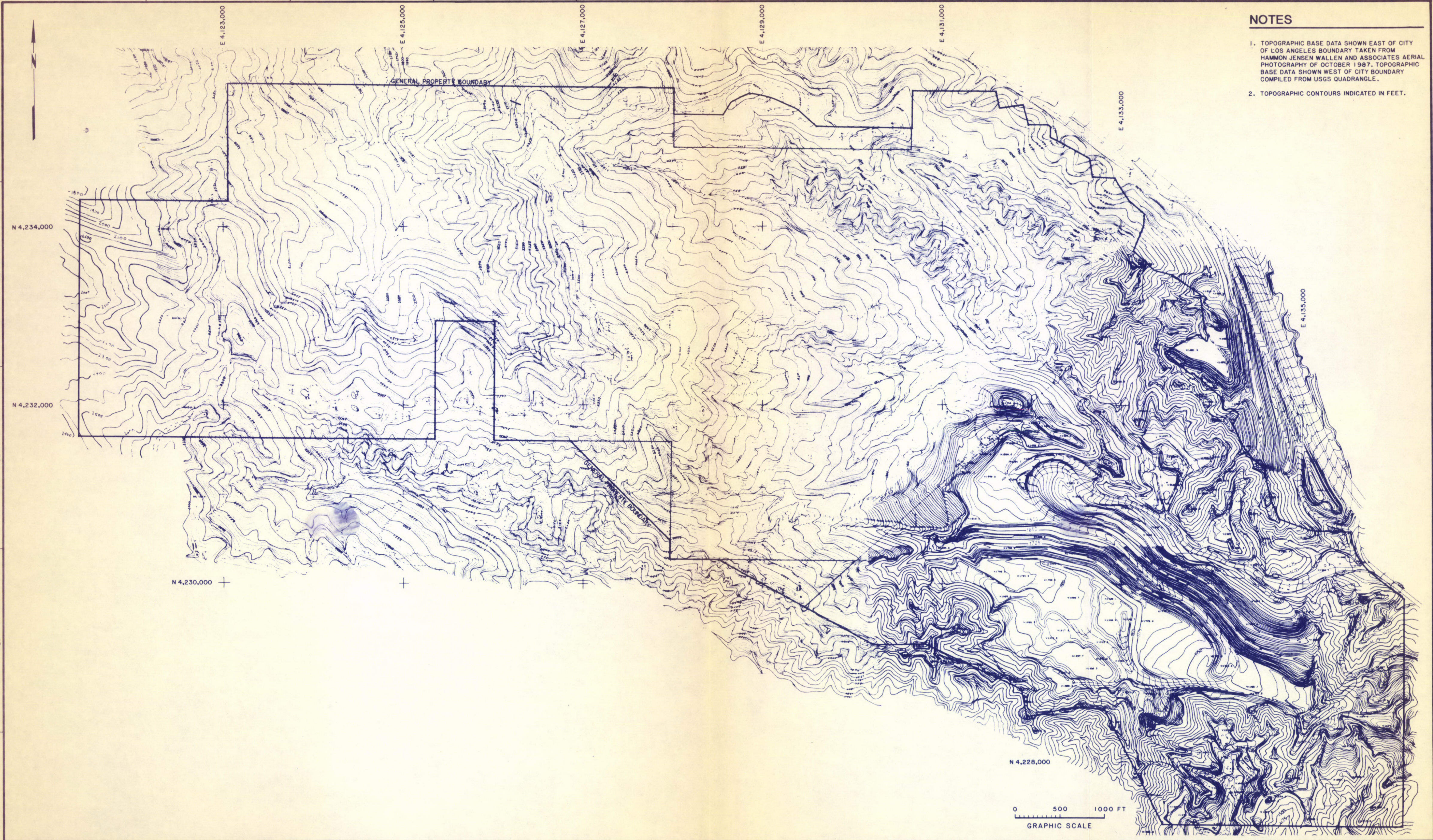
APPENDIX O

Site Topography Map



NOTES

1. TOPOGRAPHIC BASE DATA SHOWN EAST OF CITY OF LOS ANGELES BOUNDARY TAKEN FROM HAMMON JENSEN WALLEN AND ASSOCIATES AERIAL PHOTOGRAPHY OF OCTOBER 1987. TOPOGRAPHIC BASE DATA SHOWN WEST OF CITY BOUNDARY COMPILED FROM USGS QUADRANGLE.
2. TOPOGRAPHIC CONTOURS INDICATED IN FEET.

NO.	DATE	ZONE	DESCRIPTION	DRAWN	APPROVED

REVISIONS

DATE	
JOB NO.	3040-01
DESG'D	
DRAWN	
CHK'D	
APP'D	

Purcell, Rhoades & Associates
Consultants in the Applied Earth Sciences
2504 Technology Drive, Hayward, CA 94545, (415) 732-9890
1041 Hook Avenue, Pleasant Hill, CA 94523, (415) 932-1177

SITE PLAN

SUNSHINE CANYON SANITARY LANDFILL, LOS ANGELES COUNTY, CALIFORNIA

BROWNING-FERRIS INDUSTRIES

FIGURE NO.

REV NO.

APPENDIX P

CALINE 4 Air Quality Modeling Results

REPORT FOR FILE : BFI

1. Site Variables

U=	0.5 M/S	Z0=	6.0 CM
BRG=	0.0 DEGREES	VD=	0.0 CM/S
CLASS=	6 STABILITY	VS=	0.0 CM/S
MIXH=	1000.0 M	AMB=	15.0 PPM
SIGTH=	60.0 DEGREES	TEMP=	24.0 DEGREE (C)

2. Link Description

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. SF NORTH	0	0	200	0	AG	67	6.3	0.0	14.0

LINK	MIXW L (M)	R (M)	STPL (M)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0

3. Receptor Coordinates

	X	Y	Z
RECEPTOR 1	100	27	1.3

MODEL RESULTS FOR FILE BFI

RECEPTOR	PRED CONC (PPM)	WIND BRG (DEG)	CONC/LINK (PPM) A
RECPT 1	15.0	180	0.0

REPORT FOR FILE : BFI

1. Site Variables

U=	0.5 M/S	ZO=	6.0 CM
BRG=	0.0 DEGREES	VD=	0.0 CM/S
CLASS=	G STABILITY	VS=	0.0 CM/S
MIXH=	1000.0 M	AMB=	15.0 PPM
SIGTH=	60.0 DEGREES	TEMP=	24.0 DEGREE (C)

2. Link Description

LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
		LINK COORDINATES (M)									
A. SF SOUTH		0	0	200	0		AG	490	6.3	0.0	14.0

LINK	*	MIXW L (M)	R (M)	STPL (M)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.		0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0

3. Receptor Coordinates

	X	Y	Z
RECEPTOR 1	100	27	1.3

MODEL RESULTS FOR FILE BFI

RECEPTOR	* PRED CONC (PPM)	*WIND BRG (DEG)	* COCN/LINK (PPM) A
RECPT 1	15.1	180	0.1

REPORT FOR FILE : BFI

1. Site Variables

U=	0.5 M/S	ZO=	6.0 CM
BRG=	0.0 DEGREES	VD=	0.0 CM/S
CLASS=	6 STABILITY	VS=	0.0 CM/S
MIXH=	1000.0 M	AMB=	15.0 PPM
SIGTH=	60.0 DEGREES	TEMP=	24.0 DEGREE (C)

2. Link Description

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CUMMULATIVE	0	0	200	0	AG	667	6.7	0.0	14.0

LINK	MIXW L (M)	MIXW R (M)	STPL (M)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0

3. Receptor Coordinates

	X	Y	Z
RECEPTOR 1	100	27	1.3

MODEL RESULTS FOR FILE BFI.CAL

RECEPTOR	PRED CONC (PPM)	WIND BRG (DEG)	COCN/LINK (PPM) A
RECPT 1	15.2	180	0.2

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APPENDIX Q

Noise Analysis CNEL Modeling

****

TITLE : SUNSHINE CANYON: EXIST.ADT(NORTH)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
66.09671	63.24416	58.02752	61.25898

CNEL(24-HR) = 65.01914

ADT(AVERAGE DAILY TRAVEL) 21579
PEAK HOUR ADJUSTMENT(YES=1/NO=2).......... 1
PERCENT AUTO 96.1
PERCENT MEDIUM DUTY TRUCK................. 2.3
PERCENT HEAVY DUTY TRUCK.................. 1.6
>>>>> DISTANCE(FEET) 220
AVERAGE SPEED(MPH) 45
GROUND TYPE (SOFT=1/HARD=2) 2

****

****

TITLE : SUNSHINE CANYON: EXIST.ADT (SOUTH)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
67.64175	61.26782	59.94122	65.44162

CNEL(24-HR) = 65.01273

ADT(AVERAGE DAILY TRAVEL) 23392
PEAK HOUR ADJUSTMENT(YES=1/NO=2).......... 1
PERCENT AUTO 88.7
PERCENT MEDIUM DUTY TRUCK................. 5.2
PERCENT HEAVY DUTY TRUCK.................. 6.1
>>>>> DISTANCE(FEET) 347
AVERAGE SPEED(MPH) 45
GROUND TYPE (SOFT=1/HARD=2) 2

****

****

****

TITLE : SUNSHINE CANYON:EX.ADT+PROJECT(NORTH)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
66.50978	62.63599	58.65057	62.83646

CNEL(24-HR) = 65.00455

ADT(AVERAGE DAILY TRAVEL) 21961
PEAK HOUR ADJUSTMENT(YES=1/NO=2)......... 1
PERCENT AUTO 94.4
PERCENT MEDIUM DUTY TRUCK................ 3
PERCENT HEAVY DUTY TRUCK................. 2.6
>>>>> DISTANCE(FEET) 253
AVERAGE SPEED(MPH) 45
GROUND TYPE (SOFT=1/HARD=2) 2

****

****

TITLE : SUNSHINE CANYON:EX.ADT+PROJECT (SOUTH)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
68.91556	59.8306	61.32934	67.39793

CNEL(24-HR) = 65.00354

ADT(AVERAGE DAILY TRAVEL) 26190
PEAK HOUR ADJUSTMENT(YES=1/NO=2)......... 1
PERCENT AUTO 79.2
PERCENT MEDIUM DUTY TRUCK................ 8.899999
PERCENT HEAVY DUTY TRUCK................. 11.9
>>>>> DISTANCE(FEET) 483
AVERAGE SPEED(MPH) 45
GROUND TYPE (SOFT=1/HARD=2) 2

****

****

TITLE : SUNSHINE CANYON:EX.ADT+PROJECT+FUTURE(N)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
66.36429	62.59199	58.45017	62.61296

CNEL(24-HR) = 65.00763

```
      ADT(AVERAGE DAILY TRAVEL) ............... 23923
      PEAK HOUR ADJUSTMENT(YES=1/NO=2)......... 1
      PERCENT AUTO ............................ 94.6
      PERCENT MEDIUM DUTY TRUCK................ 2.9
      PERCENT HEAVY DUTY TRUCK................. 2.5
>>>>> DISTANCE(FEET) .......................... 279
      AVERAGE SPEED(MPH) ...................... 45
      GROUND TYPE (SOFT=1/HARD=2) ............. 2
```

****

****

TITLE : SUNSHINE CANYON:EX.ADT+PROJECT+FUTURE(S)

PEAK HR LEQ(DBA)	AUTO LEQ(DBA)	M TRUCK LEQ(DBA)	H TRUCK LEQ(DBA)
66.94413	58.08471	59.38551	65.37835

CNEL(24-HR) = 65.00733

ADT(AVERAGE DAILY TRAVEL)	28261
PEAK HOUR ADJUSTMENT(YES=1/NO=2)..........	1
PERCENT AUTO	80.1
PERCENT MEDIUM DUTY TRUCK.................	8.600001
PERCENT HEAVY DUTY TRUCK..................	11.3
>>>>> DISTANCE(FEET)	788
AVERAGE SPEED(MPH)	45
GROUND TYPE (SOFT=1/HARD=2)	2

****

APPENDIX R

Drainage, Sedimentation and Leachate Collection System
(from Report of Waste Discharge, September 16, 1988)

Note: This Appendix consists of an excerpt from the Report of Waste Discharge, which is available in complete form as a reference document for public review (see EIR Preface). Other "Exhibits" referenced in this Appendix can be found in that document.

2596(a)(1) Leachate Collection and Removal System (LCRS)

As stated in Section 2543(a), "Leachate collection and removal systems are required"..."for Class III landfills which have a liner or accept sewage or waste treatment sludge. This system shall be installed directly above underlying containment features for landfills and waste piles." "Where leachate collection and removal systems are used, they shall be". . ."designed, constructed, maintained and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit." (2543(b)).

Leachate Production Estimates

In order to estimate a maximum volume of leachate for purposes of LCRS carrying capacity design, two Environmental Protection Agency (EPA) models were applied to the Sunshine Canyon Landfill extension, the HELP model and the method in EPA SW-168 (1975). Both methods are described in the Preliminary Design Report prepared by TETC, Exhibit C. The Hydrologic Evaluation of Landfill Performance (HELP) model analyzed two conditions, one when the landfill is operating, and the second after closure and placement of a final cover. EPA Method SW-168 is applied to conditions after closure only. The HELP model overpredicts leachate quantities based on observations of empirical data and was used as the basis for a conservative design of the LCRS system only. That design will also handle the maximum estimates of leachate production after closure of the landfill.

The HELP model was developed by the U.S. Army Corps of Engineers' Waterways Experiment Station in Vicksburg, Mississippi. HELP was developed for the EPA Municipal Environmental Research Laboratory.

HELP facilitates quick estimation of the amounts of runoff, drainage and leachate that might develop resulting from the operation of a wide variety of landfill designs (CSM, 1986). HELP is a quasi-two-dimensional hydrologic model of water movement across, into, through and out of landfill. The model uses climatologic, soil and design data to simulate open, partially closed or fully closed landfills. The model simulates the effects of hydrologic processes including precipitation, surface storage, runoff, infiltration, percolation, evapotranspiration, soil moisture storage and lateral drainage. Landfill systems including various combinations of vegetation, cover soils, waste cells, special drainage layers, relatively impermeable barrier soils, and synthetic membrane covers and liners can be modeled with HELP (CSM, 1986).

Input data for the HELP computer model were assigned to simulate anticipated conditions of the proposed Sunshine Canyon Landfill Extension. A 5-year long simulation was analyzed for the landfill during operation (Interim Cover) and at the time of closure (Final Cover).

Climatological data, including daily precipitation values, mean monthly temperatures, mean monthly solar radiation values, leaf area indices, evaporative zone depth and winter vegetative cover factors, are required input data for the HELP model. Measured daily climatological data for a landfill site or HELP database values from a nearby city may be used. HELP contains a complete database of values for 102 cities located throughout the United States (CSM, 1986).

Daily precipitation data for 1974 and 1978 were selected from the HELP database of Los Angeles and Santa Maria areas to represent precipitation conditions at Sunshine Canyon. The precipitation data from the two cities and years were combined to provide 5 years of precipitation for use in the simulation. The average annual precipitation resulting from this method is 23.55 inches per year, slightly higher than the 22.78 inches per year estimated for Sunshine Canyon from local rainfall records reported by PRA (1987).

Results from the Sunshine Canyon Landfill Extension HELP model simulation are presented in Table 3-7 of Exhibit C. Given the precipitation data combined with the assumptions of an operating landfill with designed interim covers in place, the HELP model indicates that approximately 5.2 to 9.2 inches of precipitation may percolate through the landfill during a year. If closure conditions are assumed with the same 5-year rainfall pattern, results from the HELP model indicate approximately 4.6 to 7.6 inches of precipitation percolating through during a year. The HELP model simulates only the percolation for the relatively flat landfill surface areas.

The steeper slopes of the landfill which will be built with surface drainage facilities will not be subject to significant percolation due to the rapid rate of runoff. As such, the major contributors of percolation is expected to be the surface area that is at the top of the landfill, which is relatively flat. It is estimated that the total acreage of relatively flat landfill surface will be less than 250 acres during any time of landfill operation, including closure due to construction of landfill slopes and partial site use.

For purposes of estimating maximum quantities of leachate, a 250-acre area of percolation has been assumed for Sunshine Canyon combined with the maximum annual percolation of precipitation derived from the HELP model. Based on HELP model results, the maximum quantity of percolation occurs during the operation of the landfill and not after closure. For purposes of estimating a design value of leachate generation, 9.2 inches of leachate per year was assumed to represent a maximum annual percolation value. For the 250-acre surface area, this converts to approximately 120 gpm. It should be noted that models such as HELP tend to be very conservative and overestimate the potential quantity of leachate from landfills. The maximum quantity estimated for Sunshine Canyon Landfill Extension is used for sizing the LCRS piping only and is not intended to represent actual leachate generation quantities expected. In contrast to the model results, experience shows that little leachate is observed at landfills located in dry climate regions such as found in Southern California.

The EPA SW-168 water balance method is a type of mathematical accounting process which considers precipitation, evapotranspiration, surface runoff and soil moisture storage, all of which have a bearing on the extent of how much infiltration can be expected to occur. Since infiltration is the major contributor to leachate generation, knowing how much infiltration can be expected under a given set of site conditions is critical to the analysis.

Three factors of critical importance in a water balance calculation are precipitation, evapotranspiration and surface water runoff. Soil moisture storage is important in short-term studies because a cover soil that has exceeded its field capacity (the maximum amount of water a soil can retain in a gravitational field without downward percolation) becomes a source of infiltration to the refuse. However, in a long-term study, change in soil moisture may be neglected since it simply fluctuates up and down, whereas the precipitation, actual evapotranspiration and runoff terms all increase because they are cumulative over the extended time period.

The amount of water that can be added to solid waste before it reaches field capacity depends upon the moisture content of the waste at the time of placement in the landfill. Moisture content at the time of placement is not a constant, but a function of waste composition, density and climatic conditions. As a rule of thumb, moisture content of a typical waste at the time of placement has been found to range from 10-20% by volume (Fenn, et al, 1975).

MOISTURE CONTENT OF REFUSE[a]

(Average Values)

	Percent by Volume	Equivalent inches H_2O/ ft of refuse	Equivalent gallons H_2O/ yd^3 of refuse
Placement	10-20	1.8	30
Field Capacity	25-35	3.6	60
Saturation[b]	---	6.6	100

a. Adapted from Fenn, et al, 1975.
b. Based on a 0.4 porosity for refuse.

As the table indicates, refuse has a large capacity to absorb moisture before leachate is produced. Leachate production will not occur at rates equal to infiltration of rainfall until saturation is exceeded, a condition above field capacity.

A second important variable, actual evapotranspiration, represents the amount of water present in the soil that is lost to the atmosphere from a given area through direct evaporation from the soil and transpiration from plant tissues. When soil moisture is at or near field capacity, evapotranspiration occurs at its maximum potential rate. However, as soil moisture approaches the wilting point (the moisture content below which moisture is unavailable for withdrawal by plants), the amount of water available begins to restrict the rate of evapotranspiration, resulting in reduced actual water losses.

The third parameter of major importance is surface runoff, i.e., that portion of rainfall which will run off the site in lieu of entering the cover soil. Variables affecting runoff include intensity and duration of rainfall, existing soil moisture, soil permeability, slopes and type of vegetative cover. Runoff includes surface interflow runoff and the active groundwater flow.

In brief, the basic equation for determining the amount of percolation anticipated at the given site is as follows:

$$PERC = P - R/O - ST - AET$$

where,

PERC = Percolation, i. e., the liquid that permeates the refuse.

P = Precipitation for which the mean value per time period is used.

R/O = Surface runoff.

ST = Soil moisture storage, i.e., moisture retained in the soil after a given amount of accumulated potential water loss or gain has occurred.

AET = Actual evapotranspiration, i.e., actual amount of water loss during a given period.

The following considerations are for the post closure period. Percolation through the cover would be calculated assuming the following:

1. No contribution is made to the leachate from groundwater sources.
2. Site precipitation (P) is 22.78 inches per year (PRA 1987 - Report of Waste Discharge For Sunshine Canyon).
3. The runoff coefficient is 0.15.
4. Change in soil moisture storage of the cover can be neglected since the period of the study is large.

The results of the simplified method are shown on Table 3-8 of Exhibit C. The table indicates that no percolation will occur below the 2-foot thick vegetative soil cover that consists of sandy loam. As such, the simplified method would suggest that no leachate will be generated from precipitation at Sunshine Canyon. This contrasts with the HELP model although both methods have been widely used for water balance analyses.

LCRS Piping Requirements

As required by Subchapter 15, the size of the LCRS piping was selected to handle twice the maximum leachate generation potential.

A 6-inch pipe is recommended as a practical size to handle in the field during LCRS construction and as a conservative design. The flow-carrying capacity was checked as follows. The flow-carrying capacity was checked using Manning's formula assuming a 3% gradient of the pipe.

$$Q = \frac{0.463}{n} D^{8/3} S^{1/2}$$

where: N = roughness coefficient, taken as 0.010 for PVC pipe
D = inside diameter of pipe, taken as 0.5 feet
S = slope of energy grade line, taken as 3% (minimum)
Q = flow for a pipe flowing full, expressed in cfs

This yields a flow capacity of:

Q = 1.26 cfs or 567 gpm

A similar flow-carrying capacity was estimated using the Hazen-Williams formula. Given that the maximum leachate production based on the HELP model simulation is 120 gpm, as stated above, it is concluded that a 6-inch pipe will be sufficient to carry the estimated leachate volume, even under the most conservative set of assumptions for leachate production. This conclusion is valid both for operating conditions and post-closure for water percolating through the Sunshine Canyon Landfill Extension cover.

LCRS Design and Construction

In accordance with Table 4.12 of Article 4 of Subchapter 15, the LCRS will be of the blanket and dendritic type. Based on waste characteristics, the landfill will receive only "permeable waste that allows free drainage of percolating fluid," in accordance with 2543(f).

The LCRS system will consist of 6-inch (Schedule 80 PVC or HDPE with SDR = 21 or equivalent) slotted pipes embedded into a blanket of free-draining material. The drainage blanket will be a minimum of 1-foot thick and will cover the bottom (or floor) of the canyon abutted against the break-in-slope. The soil liner will be sloped toward the LCRS drains to prevent ponding and reduce the potential for leachate percolation through the liner as discussed in the previous section.

Paragraph 2543(e) requires that the LCRS system be of "sufficient strength and thickness to prevent collapse under the pressure exerted by overlying waste, waste cover materials and by any equipment used at the waste management unit."

The LCRS piping was analyzed for three conditions:

- o Thermal stresses
- o Overburden pressure
- o Construction equipment loads.

It was concluded that the LCRS piping (PVC, HDPE or equivalent) could easily sustain a ΔT^{o} of $+ 60^{o}F$. A bell and spigot type of joint on 20-foot joints of pipe will easily accommodate the possible thermal contraction or expansion movements of the LCRS piping.

Analyses of the LCRS pipe performance under the overburden pressure induced by a maximum thickness of refuse of 375 feet with a conservatively assumed unit weight of 55 pcf, confirmed that a PVC Schedule 80 or an HDPE with an SDR of 21 would sustain the design overburden pressures with an adequate factor of safety when placed within a trench within bedrock of the Towley Formation.

The LCRS piping was finally checked to withstand the loads from waste hauling equipment, maintenance traffic and earthmoving construction equipment. A 6-inch diameter, HDPE pipe with SDR=21 was analyzed under a single concentrated 16,000-pound wheel load representative of an H-20 live load as may be produced by a 20-ton waste hauling truck. It was concluded that a 6-inch diameter SDR=21 HDPE pipe or equivalent PVC Schedule 80 pipe would adequately resist the design wheel load when protected by a minimum earth fill cover of 2 feet.

<u>2596(a)(1) Leachate Monitoring and LCRS Testing</u>

In 2543(d), it is specified that the LCRS "be designed and operated to function without clogging through the scheduled closure of the waste management unit and during the post-closure maintenance period", and "the system shall be tested at least annually to demonstrate proper operation." Test methods and test requirements are not specified in Subchapter 15. It is suggested that the LCRS piping could be "tested" by closely monitoring leachate volume changes or by installing monitoring wells in the drainage blanket at the base of the landfill.

The most practical method is generally monitoring leachate volumes. Leachate collected by the LCRS network will be directed by gravity to a holding tank at the toe berm immediately downstream of the landfill slope. The leachate volume can be monitored closely at the holding tank. Leachate samples will be periodically obtained and analyzed to monitor leachate production and characteristics.

2596(a)(1) Leachate Treatment System

The leachate produced from refuse is a highly complex liquid mixture. The quality of the leachate depends on the composition of the refuse, periods of landfill operation and the combined physical, chemical and biological activities.

Leachate produced from new landfills is typically recycled to the landfill through landfill irrigation to enhance biodegredation in the landfill and to reduce the quantity or quality of leachate.

The leachate treatment system proposed by TETC and described in their preliminary design report (see Exhibit C) includes an air stripper, a filter system and a granular activated carbon adsorption system. The basis for treatment design is assumed at a flow of 55 gpm. This system will treat volatile and semivolatile organics, reducing total toxic organics (TTO) to acceptable discharge levels.

2596(a)(1) Underdrain System

A number of springs have been located on-site. To control the water from these springs and reduce potential hydrostatic pressures, it is recommended that an underdrain system be constructed below the soil liner to capture and carry out spring water and other groundwater seeps. Such a dendritic system is shown on Sheet 10, Appendix A of Exhibit C, including the details of spring capture schemes and underdrain drainage blanket and collection pipe. The underdrain dendritic system will generally mimic the patterns of the LCRS system discussed previously, although it may be somewhat less extensive, especially if excavation of the alluvium layer and weathered rock indicates dry conditions.

Leak Detection System Components (Upstream of Grout Curtain)

A berm will be constructed at each toe of the landfill in which a leak detection system and a leak cutoff system will be located as described in Section 4.0 of Exhibit C. In order to monitor potential leakage of leachate into the groundwater, three monitoring wells will be located immediately downstream of the landfill face toe. The monitoring wells will allow monitoring of the groundwater level and the sampling for water quality analysis. One of the proposed monitoring wells will be located along the center line of the canyon, with the other two on either side from the center line of the canyon.

Leachate Extraction System

It is proposed to install three leachate extraction wells immediately downstream from the toe of the landfill, one located directly on the center line of the canyon and two located on either side away from the center line.

Grout Curtain

To further protect the groundwater of the State, a grout curtain is proposed at the toe of the landfill slope. The grout curtain will typically penetrate into the bedrock a depth of 20 to 25 feet. A detailed procedure regarding the construction of the grout curtain is presented as Exhibit D (1988).

Leak Detection Monitoring Wells (Downstream of Grout Curtain)

A row of three monitoring wells is proposed immediately downstream of the grout curtain. One of the wells will be installed in alluvium at the center line of the canyon's channel, with the other two installed in sedimentary rock on either side of the center line. The well screens in sedimentary rock will be located to monitor a depth interval covering the expected range in groundwater level variation and a zone from the tip of the grout curtain to 10 feet below it. Water samples will be obtained periodically and analyzed to check on the quality of the groundwater downstream of the grout curtain.

Surface Water Design Measures

Design Storm

As directed by Article 2546 of Subchapter 15, the drainage and sediment control structures or devices were designed to manage the 100-year recurrence interval, 24-hour storm as described in Section 2.0 of Exhibit C. All designs discussed in this report for drainage and sediment control are based on the estimated peak runoff and total volume of runoff for this event. Data from the Aliso Canyon-Oat Mountain climatological station, which is very close to Sunshine Canyon, gives 9.8 inches as the 100-year, 24-hour precipitation.

Surface Runoff

The design storm precipitation was used as an input value and actual runoff was estimated using the TR-55 method (SCS, 1986). A discussion of the application of this method to the Sunshine Canyon watershed is included in Section 2.0, Exhibit B. Estimated peak discharges and total runoff volumes for the existing conditions (undisturbed) and ultimate conditions (within proposed landfill) were utilized for sizing of the sediment basin, ditches and energy dissipators for surface water drainage.

Sediment Basin and Embankment

The sediment basin is designed for a dual purpose, and is located just upstream from the Los Angeles County/City line where three canyons have joined. The basin is designed to control both sediment load transported by surface runoff and the ultimate peak discharge from the 100-year, 24-hour storm. Therefore, it has a capacity to hold both the predicted sediment load and also to hold the amount of storage necessary to maintain the existing peak discharge with the greater surface runoff from proposed conditions.

The required sediment storage volume is 13.3 acre-feet. The required detention storage for peak flow regulation is estimated using a Soil Conservation Service method. This method uses a design inflow rate (ultimate peak flow), a design outflow rate (existing peak flow) and the volume of runoff (as estimated by TR-55) to estimate the required storage. The estimated flood storage necessary is 23.7 acre-feet, add to this the necessary sediment storage volume, 13.3 acre feet and the total required basin volume is 37 acre feet. The actual volume of the structure as designed is 39 acre-feet.

Design of the embankment structure and outlet works follows standards and specifications in the Los Angeles County Department of Public Works "Manual on Design of Debris Structures". The embankment has an upstream facing of reinforced concrete, a concrete outlet pipe, a corrugated metal pipe riser and a concrete rectangular-shaped spillway. As described earlier, the spillway will be designed to release water at the existing condition even during a 100-year, 24-hour storm peak discharge. During lower rainfall periods, lower discharge flows will be consistent with natural conditions.

Drainage Control Facilities

Drainage control includes surface runoff from precipitation, flow in the tributary channels, and any erosion caused by these flows or excessive sediment loads carried by the streams when flowing. Surface runoff will be managed through careful grading to promote drainage while minimizing potential erosion-causing situations. A system of temporary and permanent drainage ditches will be employed to collect, direct and safely convey surface runoff around the landfill. Permanent facilities include perimeter drainage ditches and bench drainage.

ditches. These will be installed as the final covers are placed in the completed portions of the landfill which will be progressing up the canyons in stages. These ditches will be lined and energy dissipators employed to reduce stream power. Temporary drainage facilities consist of diversion ditches which will intercept natural surface runoff directly and any intermittent channel flow in the existing canyon bottom. Diversion ditches will convey surface runoff from the upcanyon undisturbed areas to the permanent perimeter ditches for safe transport around the landfill. Surface covers of various types from mulches to vegetation will be used to retard erosion from areas of disturbance. In addition, areas of disturbance will be kept at a minimum during active filling operations.

As filling operations progress from the toe berms at the base of the canyon, upward in elevations and laterally upcanyon, both permanent and temporary drainage facilities will be employed in conjunction to provide appropriate drainage protection. The lower elevation portions of the landfill face will be placed under final cover conditions and bench ditches will be installed which will connect to adjacent, permanent perimeter ditches. The permanent perimeter ditches will be installed prior to commencing any of the filling operations. They will connect directly to the temporary diversion drainage ditches which will protect the active landfill areas from natural runoff. Final landfill drainage system configuration is shown on Sheet 3 of the Design Report (see Exhibit C). Final contours, perimeter ditches and bench ditches are shown on this drawing.

Specific components of the drainage system are given in drawings and details shown on Plate 2.6 in Exhibit C. Additional specifications are given below.

<u>Interim Cover</u>

Interim cover (defined as daily and intermediate cover by the California Waste Management Board) at the subject site will be constructed to minimize percolation of precipitation through the waste pile and promote efficient runoff during precipitation events. The daily cover will consist of a minimum of 9 inches of loose, on-site soil, which will be spread and applied over the top of each cell consisting of ramped and compacted refuse received during the daily operation.

Those areas not receiving additional wastes for a period of 180 days will be provided with a minimum 12-inch interim soil cover, and will be properly graded to prevent ponding and reduce erosion. The interim cover will consist of on-site soils compacted to the maximum achievable density as approved by the Geotechnical Engineer.

The daily cover will be applied for the purpose of discouraging vermin, minimizing odors, controlling landfill fires and minimizing percolation of precipitation through the refuse. Those areas not receiving additional wastes for a period of 180 days will be provided with a minimum 12-inch interim soil cover, and will be properly graded to prevent ponding and reduce erosion.

Interim cover materials will originate from the excavation of soil and weathered rock material underlying the designated disposal cells. Soil brought to the site for disposal by private individuals and construction companies will be examined for suitability as cover material before use, and will be stockpiled on-site. Stockpiling of cover during wet-weather operations will be maintained as close as possible to the existing haulage road and working face.

APPENDIX S

Erosion Control Plan

EROSION CONTROL PLAN

FOR THE

SUNSHINE CANYON SANITARY LANDFILL

INTRODUCTION

The following Erosion Control Plan addresses the control of accelerated erosion on landfill slopes at the subject site. The principles, procedures and standards that are necessary to minimize soil erosion and sedimentation are outlined in this Plan. Both interim or temporary measures and permanent measures are addressed.

Erosion control and sediment management will be attained through prudent application of erosion control measures combined with an on-going monitoring program during grading. The surface cover soils on the landfill slopes are subject to accelerated erosion when disturbed or left barren during winter periods. The construction process will effectively mix the shallow top soils with relatively infertile subsurface materials, hence, professional erosion control prescriptions are required.

This plan is intended to be conceptual in order to be utilized at various locations where needed until ground cover is established. Prior to winter wet periods, the site should be prepared by utilizing the concepts in this report and implimental preferably by thorough inspection of the property to predetermine where silt fences, waterbar or netting would best be applied. Where existing drainage slopes are moderate and past sedimentation has not been a problem, then less protective measures are requried. It is good practice to have on inventory of erosion protection materials on hand to accomodate the unusual conditions that might occur during an especially wet winter season.

SLOPE STABILIZATION

Slope stabilization will be accomplished utilizing both permanent and temporary methods, including, but not limited to, waterbars, drainage structures, mulching, slope blankets, seeding, and jute netting. Application of these materials and techniques will be based on the site characteristics and the effectiveness of each method. Many applications will be a combination of such things as waterbars, drainage structures and seeding.

A local landscape contractor should be contacted for detailed recommendations concering local practice. Where site personnel are limited, it is best to contract out the main work and use site personnel for wet season maintenance.

Mulching with straw or excelsior mulch blankets will substantially reduce raindrop impact and subsequent soil movement. Mulch depends on local practice, irrigations and climatic conditions. Methods to be used include:

1. Mulch blankets such as "Curlex" excelsior blankets rolled over the slope to provide mulch value and still allow the erosion grasses to root and fully develop.

2. Visqueen or matt sheeting may be required in critical areas where steeper drainage areas need protection from down cutting.

3. Hand broadcast or machine-blown grain straw, at 3000 to 4000 pounds per acre tacked in place with adhesive, provides an excellent alternate to hand laid or sheet rolled mulch material.

SEEDING

1. Temporary seeding will consist of quick growing annuals such as annual rye grass at very high seeding rates (50-100 pounds per acre) to provide short term rooting and soil stability. The type of seed and rate of placement should conform to local practice, again dependent upon irrigation methods and climatic conditions.

2. Permanent seeding shall consist of quick growing annuals plus deep-rooted perennials mixed with legumes such a sub-clover and crimson-clover for nitrogen build-up and enhancement of the growth for all species on the treated slopes.

FERTILIZER

1. Fertilizer applications will be based on soil analysis on the excavated materials.

2. Typical rates for the soils found in this area are between 150 to 250 pounds of 12-12-12 granular fertilizer per acre.

STORM WATER MANAGEMENT

1. All road surface areas must be sloped to provide proper road drainage. Run-off must be directed to culverts and drainage structures or stable, undisturbed slopes. Typical waterbar spacings placed upon drainage swales shall not exceed the following:

Slope Gradient:	10 percent or less	11-25%	26% plus
Waterbar Spacing:	100 feet	75 feet	50 feet

The above table conforms to the California Forest Practice Act as stated for extreme erosion conditions.

SEDIMENT CONTROL

1. Silt fencing such as Mirafi 100X may be utilized to control downward movement of silt from the slopes and generally are placed at main exit points prior to flow into the local stream exit drainage channel. This fabric has been specifically designed to allow for high rates of water passage and to halt the movement of sediments. These structures are typically installed at the lower limits of slope benches and at terminal flow exit areas.

2. Straw bale dikes may also be located at the toe of landfill slope areas to effectively control sediment in a similar fashion as the silt fences. These straw bale dikes are quick to install, effective, and easy to maintained.

MAINTENANCE AND MONITORING

It is recommended that an on going program be established during the entire winter seasons.

1. After each major storm incident a foot or vehicle patrol must review all field drainage swales and silt control fences. Minor corrections will be made by hand during this field patrol.

2. Equipment may be utilized only where hand-labor will not suffice. If excessive added disturbance might occur from equipment operations, hand-labor must be utilized to correct minor developing problems.

SCHEDULE

The following monthly cycle is recommended as a planned program in preparation of the annual wet season. Where slopes are currently being reworked to comply with good construction practice and is in accordance with regulatory directives, it may be prudent to protect the raw slopes with the curlex blankets in preparation for the fall schedule. This would assist in reducing the dust problem and would help hold the seed inplace if some irrigation could be provided to the raw slopes. Water truck spray or portable irrigation systems may be utilized for late Spring and Summer wattering to induce plant growth prior to the winter wet period.

August & September

- Finalize site specific control plans.
- Coordinate with initial regrading program.
- Field locate silt fencing sites.
- Clean out existing drainage facilities and complete all

repairs.

October

- Obtain mulch materials.
- Obtain silt fencing materials.
- Obtain needed seed and fertilizer.
- Coordinate erosion control activities with on-going construction
- Stabilize and provide full treatment for already completed slopes.

November - March

- Apply control measures to already completed slopes as grading progresses.
- Monitor all conditions following winter storms.
- Promptly correct all remedial work.
- Monitor and empty all sediment structures.

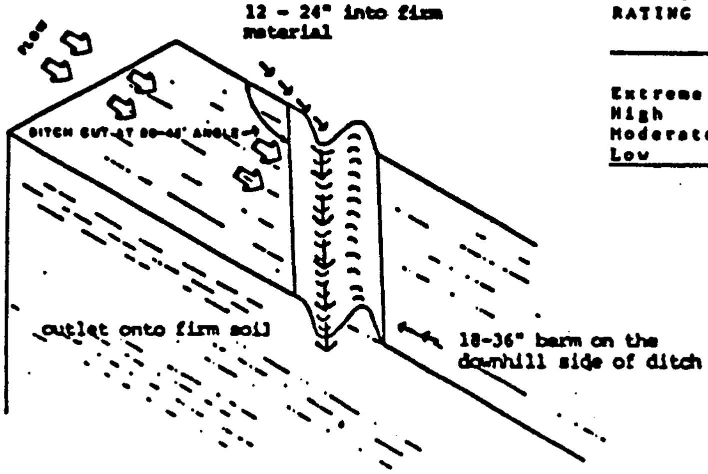
Future erosion control scheduling will be guided by construction progress.

TYPICAL DESIGNS

Included are several typical designs for waterbar installation, and other erosion control measures. These designs are based on California Department of Forestry Standards, the California Department of Conservation, USDA-Soil Conservation Service and Industry Standards.

The enclosed brochure by the Soil Stabilization Company lists several erosion control blankets that have been very effective for slope erosion purpose prior to good ground cover stabilization.

TYPICAL WATERBAR



MAXIMUM DISTANCE BETWEEN WATERBARS

EST. HAZARD RATING	ROAD OR TRAIL GRADIENT PERCENT			
	10 or less	11-25	26-50	50 or more
	Feet	Feet	Feet	Feet
Extreme	100	75	50	50
High	150	100	75	50
Moderate	200	150	100	75
Low	300	200	150	100

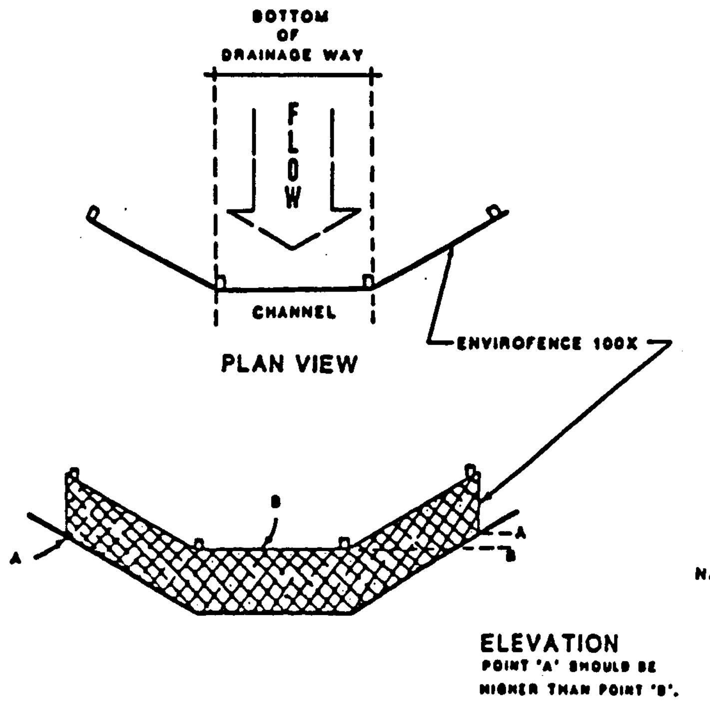
NOTE:

All runoff shall be directed away from loose fill material onto firm ground.

PURCELL, RHOADES & ASSOCIATES Foundation Engineering • Soil Engineering • Geology		SUNSHINE CANYON SANITARY LANDFILL	FIGURE 1
JOB NO. 3040-01	DATE 4-24-87		
DRAWN BY CJS	APPROVED BY DJR		

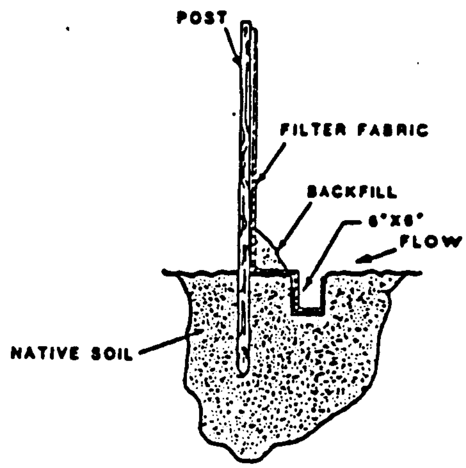
RECYCLED PAPER

TYPICAL SILT FENCE



NOTES:

1. EXCAVATE 6"X6" TRENCH AT AT LOWER EDGE OF RIGHT-OF-WAY.
2. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS APPROXIMATELY 2 INCHES FROM THE TRENCH BOTTOM.
3. BACKFILL OVER FLAP ON GROUND AND TAMP FIRM.



PURCELL, RHOADES & ASSOCIATES Foundation Engineering • Soil Engineering • Geology		SUNSHINE CANYON SANITARY LANDFILL	FIGURE 2
JOB NO. 3040-01	DATE 4-24-87		
DRAWN BY CJS	APPROVED BY DJR		

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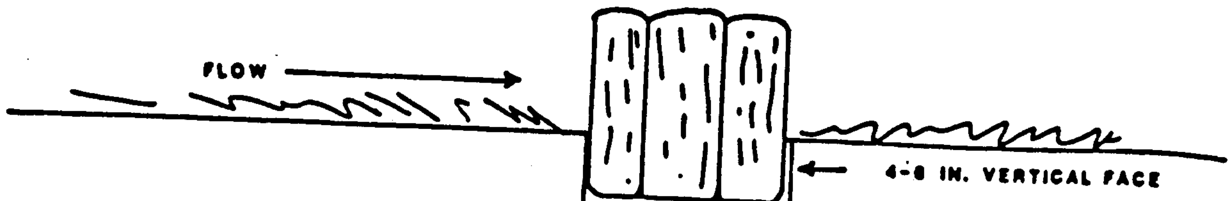
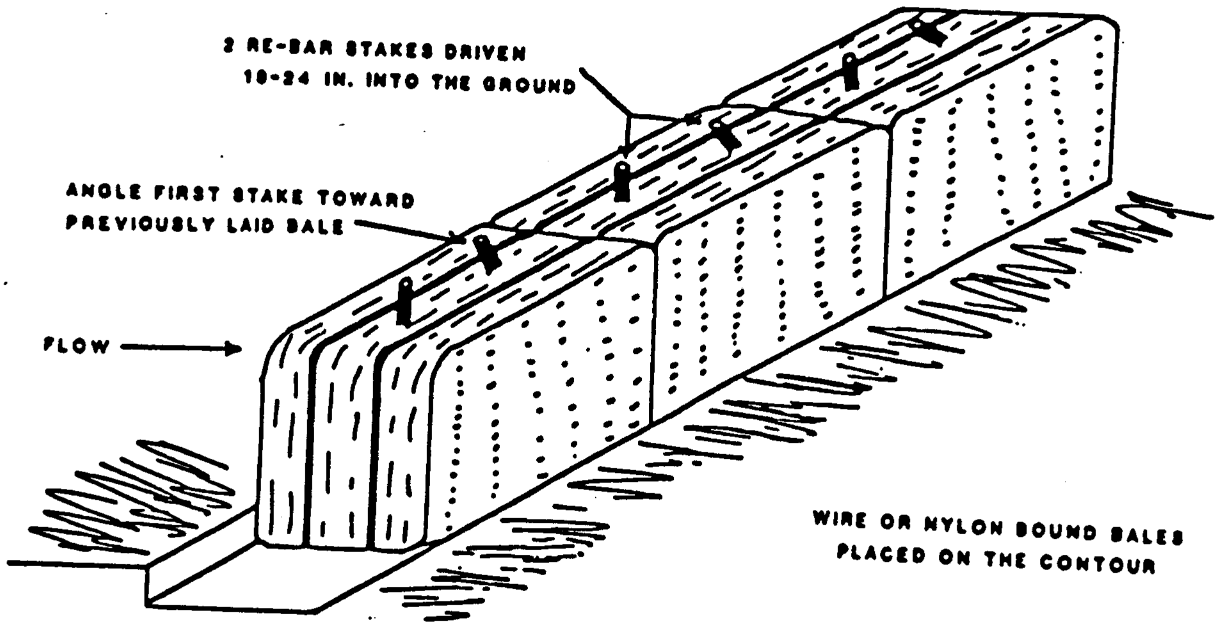
TYPICAL STRAW BALE DIKE



Embedding Detail



PURCELL, RHOADES & ASSOCIATES
Foundation Engineering • Soil Engineering • Geology

JOB NO. 3040-01	DATE 4-24-87	SUNSHINE CANYON SANITARY LANDFILL	FIGURE 3
DRAWN BY CJS	APPROVED BY DJR		

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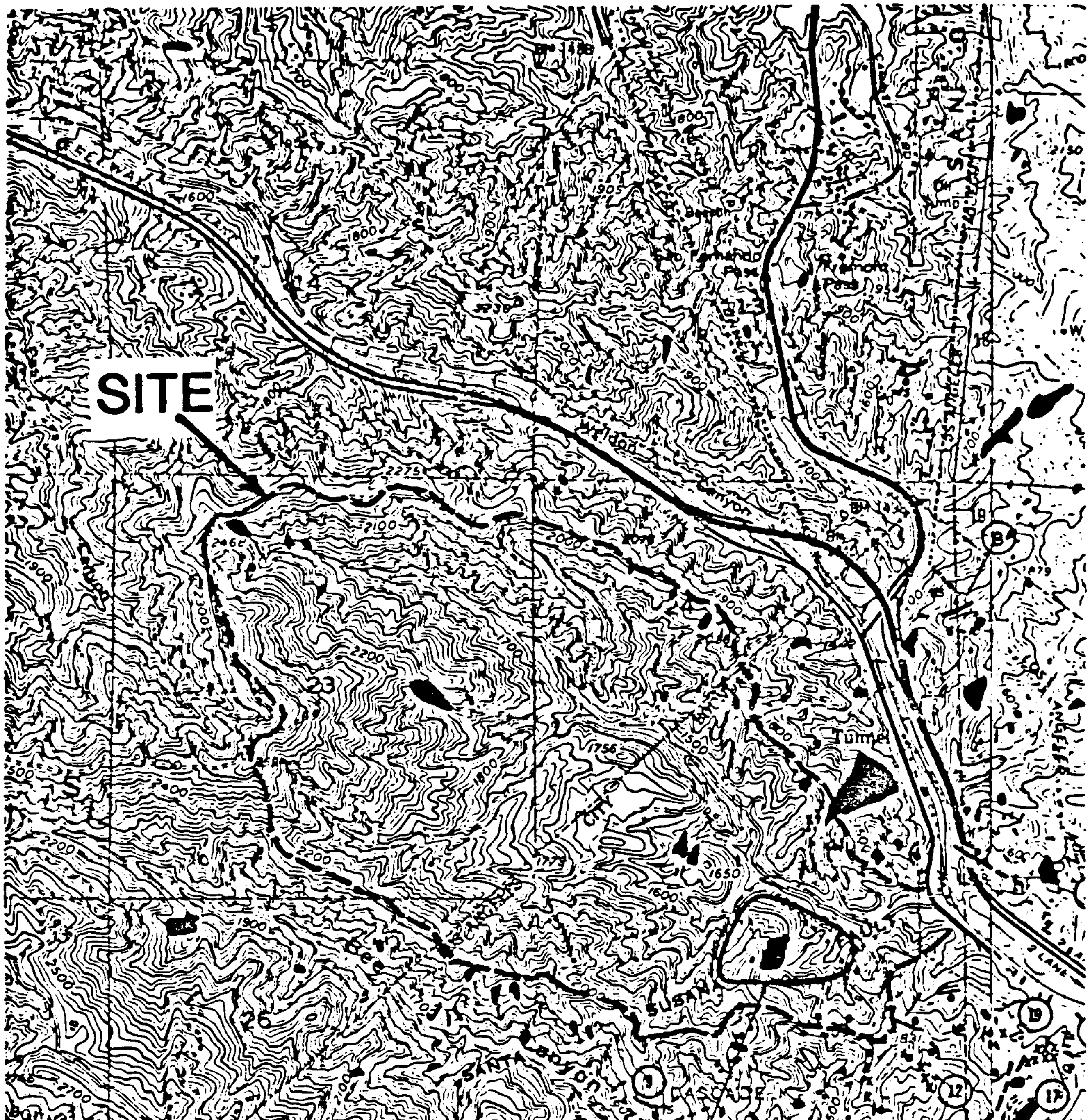
APPENDIX T

Outline of Landfill Operations in 1971



(Barrows and Others, 1975b)

EXPLANATION

Sunshine Canyon Watershed Boundary

Seismically Induced Landslide during San Fernando Earthquake of 1971

LANDFILL OPERATIONS IN 1971

Source:	Title:
PURCELL, RHOADES & ASSOCIATES	OUTLINE OF LANDFILL OPERATIONS IN 1971

RECYCLED PAPER

APPENDIX U

Wildlife Corridor Design: A Case for
Los Angeles and Ventura Counties

Part III in the Series: Biogeography and the Zoo
Donna FitzRoy Hardy and Elliot McIntire, Series Editors

Wildlife Corridor Design:
A Case Study for Los Angeles and Ventura Counties

Terry Lieberstein, General Editor
Katie Nava, General Editor
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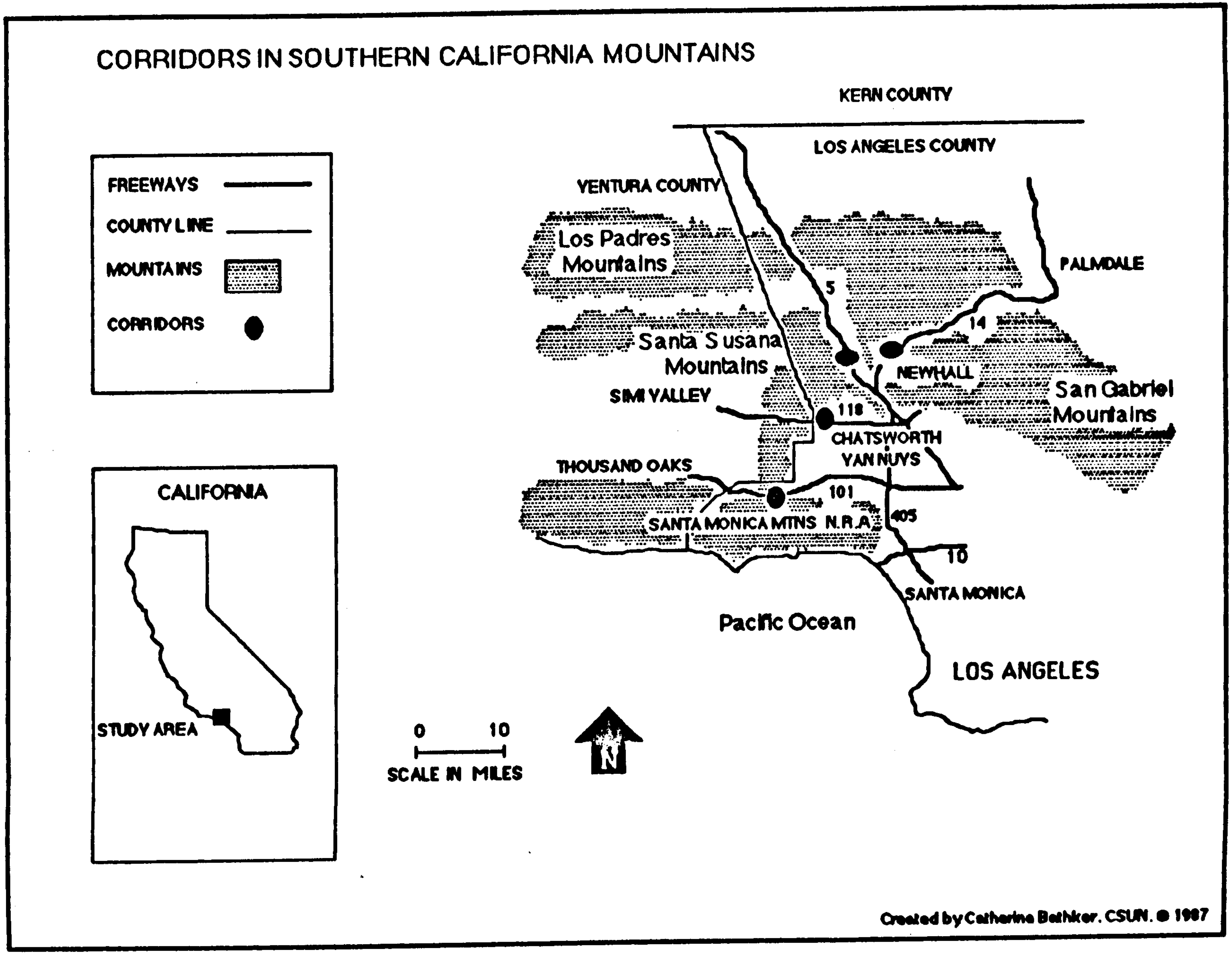

Figure 2

From Lieberstein et al 1987. Wildlife Corridor Design. Biogeography and The Zoo Series. Calif. State Univ., Northridge. Donna Hardy Series Editor

APPENDIX V

Data from "Los Angeles County Solid Waste Siting Project," County Department of Public Works, May 1987

TABLE I
SOLID WASTE CAPACITY
MAJOR CLASS III LANDFILL FACILITIES IN LOS ANGELES COUNTY

Facility Name/ Operator	Current Tonnages Handled (TPD)			Operation Days/Week	Capability to Handle Additional Quantities With Existing Equipment and Staff (TPD)	Projected Remaining Permitted Capacities		Proposed Landfill Expansions					Comments
	Solid Waste	Inert Waste	Total			Capacity (million tons)	Years of Operation	Capacity (million tons)	Permits Required WDR	SWFP	LUP	FOC	
Antelope Valley/ Palmdale Disp. Co.	700	-	700	6	200	1.09	5	No Estimate	X	X	X	X	.Proposed Site Expansion approximately 100 acres. Existing site in the City of Palmdale. Proposed site in the County of Los Angeles.
Azusa Western/ Azusa Land Reclamation Co.	2,000	1,000	3,000	5	No Estimate	1.3	2.5	25.6 (City of Azusa) 3.2 (City of Irwindale)	X X	X X	 X	X X	.Proposed capacity contingent upon completion of quarry mining operations located in Cities of Azusa and Irwindale. .Facility in process of obtaining necessary permits for site expansion of a 5.3 million ton area in the City of Azusa.
BKK/ BKK Corp.	3,000 (see comments)	-	3,000	5	2,000-3,000	0.8	Closure June 30, 1987	12 (see comments)		X	X	X	.Operation at the new canyon (proposed expansion) is proposed to start on July 1, 1987, with daily capacity of 5,000 TPD to 6,000 TPD. .Landfill operation to cease November 1995 per Memorandum of Understanding with City of West Covina.
Bradley West/ Waste Management of California Inc.	1,500 (see comments)	-	1,500	5	5,500 (see comments)	19.6	50 (see comments)	0.4	X				.Remaining years of operation based on 1,500 TPD. However; daily tonnage will be increased shortly to 7,000 TPD subject to clearance from the Los Angeles Regional Water Quality Control Board. This would reduce remaining years of operation to 10.8 years. .LUP expires December 29, 1993.
Burbank/ City of Burbank	240	-	240	5	Not Permitted by LUP	0.19	3	6.32	X	X			.Limited to solid waste generated in the City and collected by the City's crews. .LUP expires on January 1, 2001.

TABLE I
SOLID WASTE CAPACITY
MAJOR CLASS III LANDFILL FACILITIES IN LOS ANGELES COUNTY
PAGE 2

Facility Name/ Operator	Current Tonnages Handled (TPD)			Operation Days/Week	Capability to Handle Additional Quantities With Existing Equipment and Staff (TPD)	Projected Remaining Permitted Capacities		Proposed Landfill Expansions					Comments
	Solid Waste	Inert Waste	Total			Capacity (million tons)	Years of Operation	Capacity (million tons)	Permits Required: WDR	SWFP	LUP	FOC	
Calabasas/ County Sanitation Districts of Los Angeles County (CSD)	2,020	500	2,520	6	500-800	12	16	7	X	X		X	.Approximately 126 TPD (5%) of waste stream is assumed generated in County of Ventura.
Chiquita/ Laidlaw Waste Systems, Inc.	3,000	- (see comments)	3,000	7	500	5.3	5.5	21	X	X	X	X	.Facility handles 3,000 TPD, Monday through Saturday, and 500 tons on Sundays. 5,000 TPD is permitted 7 days/week, 365 days per year.
Lancaster/ Waste Management of California Inc.	500	-	500	6	250	0.42	5	1.5	X	X	X	X	.LUP expires on November 30, 1989.
Lopez Canyon/ City of Los Angeles	4,200	1,500	5,700	5	None	15	10	3.3	X	X		X	.Limited to residential waste generated in the City and collected by City's crews. .Proposed capacity based on increasing the height of the fill area. .Upon approval of landfill expansion, City plans to reserve 12 million tons for refuse and 6.3 million tons for ash generated from proposed LANCER I Waste-To-Energy facility.
Puente Hills/ CSD	10,800	1,200	12,000	6	None	16.2	4.5	10 70	X X	 X	 X	 X	.Limited by LUP to 72,000 tons per week. LUP expires October 31, 1993.
Scholl Canyon/ CSD	4,500	1,100	5,600	6	500-800	2.5	1.5	15	(see comments)				.Subject to renegotiation of Joint Powers Agreement between City of Glendale, County of Los Angeles, and CSD.

TABLE I
SOLID WASTE CAPACITY
MAJOR CLASS III LANDFILL FACILITIES IN LOS ANGELES COUNTY
PAGE 3

Facility Name/ Operator	Current Tonnages Handled (TPD)			Operation Days/Week	Capability to Handle Additional Quantities With Existing Equipment and Staff (TPD)	Projected Remaining Permitted Capacities		Proposed Landfill Expansions					Comments
	Solid Waste	Inert Waste	Total			Capacity (million tons)	Years of Operation	Capacity (million tons)	Permits Required WDR	SWFP	LUP	FOC	
Spadra/ CSD	2,380	300	2,680	6	320	5.4	5.7	5.3	X				.Limited by LUP to 18,000 tons/week through June 30, 1995 and to 15,000 tons/week thereafter. .LUP expires May 1, 2010 if proposed waste-to-energy facility is not implemented.
Sunshine Canyon/ Brown-Ferris Industries	5,408	954	6,362	6	4,000	8.3	4.2	215	X	X	X	X	.LUP expires May 25, 1991. .Existing site in the City of Los Angeles. Proposed site in the County of Los Angeles.
Whittier/ City of Whittier	300	50	350	6	None	1.06	9.7	5.9	X	X	X	X	
TOTAL	40,548	6,604	47,152		13,770-15,370	89.2		401.5					

WDR = Regional Water Quality Control Board's Waste Discharge Requirements Permit
SWFP = California Waste Management Board/Local Enforcement Agency's Solid Waste Facility Permit
LUP = County or City Land Use Permit/Conditional Use Permit
FOC = Los Angeles County Solid Waste Management Committee's Finding of Conformance

NOTE:
1. Data shown in this table is based on the results of a survey conducted by the Los Angeles County Department of Public Works, February 1987.
2. Permitted capacity means that the facility has obtained all necessary permits and findings.
3. Major landfills are defined as those facilities which receive more than 50,000 tons of solid waste per year.

TABLE II
MAJOR CLASS III SOLID WASTE LANDFILL CAPACITY
BASED ON LOCAL LAND USE PERMITS

Facilities	Remaining Permitted (1) Capacity (Tons)	Remaining Capacity Permitted (2) Under Local Land Use Permit (Tons)
Antelope Valley	1.09×10^6	1.09×10^6
Azuza Western	1.3×10^6	26.9×10^6
BKK	0.8×10^6	0.8×10^6
Bradley West	19.6×10^6	20.0×10^6
Burbank	0.19×10^6	6.51×10^6
Calabasas	12.0×10^6	19.0×10^6
Chiquita Canyon	5.3×10^6	5.3×10^6
Lancaster	0.42×10^6	0.42×10^6
Lopez Canyon	15.0×10^6	18.3×10^6
Puente Hills	16.2×10^6	26.2×10^6
Scholl Canyon	2.5×10^6	17.5×10^6
Spadra	5.4×10^6	10.7×10^6
Sunshine Canyon	8.3×10^6	8.3×10^6
Whittier	1.06×10^6	1.06×10^6
TOTAL	89.2×10^6	162.08×10^6

(1) Permitted capacity means that the facility has obtained all necessary permits and findings (i.e. Land Use Permit, Waste Discharge Requirements, Finding of Conformance, and Solid Waste Facility Permit).

(2) Capacity granted under a county or city Land Use Permit/Conditional Use Permit.

Note:
1. Data shown on this table is based on the results of a survey conducted by the Los Angeles County Department of Public Works, February 1987.
2. Major landfills are defined as those facilities which recieve more than 50,000 tons of solid waste per year.
3. Scholl Canyon has all necessary solid waste permits. However, Joint Powers Agreement between City of Glendale, County of Los Angeles, and County Sanitation Districts of Los Angeles County must be renegotiated upon site's acceptance of additional 2.5 million tons of refuse.

TABLE III
SOLID WASTE CAPACITY
MINOR CLASS III LANDFILL FACILITIES IN LOS ANGELES COUNTY

FACILITY NAME	FACILITY OPERATOR	TONNAGES HANDLED (TPD)	OPERATION DAYS/WEEK	REMAINING PERMITTED CAPACITY	
				CAPACITY (TONS)	YEARS OF OPERATION
Brand Park (1)	City of Glendale	100	5	46,000	2
Pebbly Beach Santa Catalina Island (2)	Catalina Disposal Company	4 (Ash)	6	65,000	LUP expires 1999
Pitchess Honor Rancho (3)	County of Los Angeles Sheriff Department	65	6	149,100	7.4
San Clemente Island	U.S. Navy	3	5	19,600	25
Two Harbors Santa Catalina Island	Catalina Cove & Camp Agency	1	5	1,600	6
TOTAL		173		281,300	

(1) Limited to use by the City of Glendale maintenance crews only.
(2) Facility currently incinerating all in-coming refuse (approximately 20 tons daily), land disposal of residual ash is approximately 4 TPD.
(3) For use by the Pitchess Honor Rancho Facility only.

Note: a. Data shown in this table is based on the results of a survey conducted by the Los Angeles County Department of Public Works, March 1987.
b. Minor landfills are defined as those facilities which receive less than 50,000 tons of solid waste per year.
c. LUP = County Land Use Permit.
d. TPD = Tons per day.

TABLE IV
SOLID WASTE CAPACITY
UNCLASSIFIED (INERT) LANDFILL FACILITIES IN LOS ANGELES COUNTY

FACILITY NAME	FACILITY OPERATOR	DAILY TONNAGES HANDLED	OPERATION DAYS/WEEK	REMAINING PERMITTED CAPACITY	
				CAPACITY [Million Tons]	YEARS OF OPERATION
Chandler's Landfill	Chandler's Sand & Gravel	2,225	5	6.69	11.7
Irwindale Disposal Site (1)	Cal-Mat Co.	150	5	0.029	0.7
Livingston - Graham	Livingston - Graham	200	5	0.21	4
Nu-way Industries	Nu-Way Industries	4,490	6	8.40	6
Pendleton Disposal Site (2)	Los Angeles Department of Water and Power	1	5	0.0078	26
San Marino Disposal Site (3)	City of San Marino	1	5	0.0078	30
South Gate Fill (4)	City of South Gate	3	5	0.0050	7.8
Stone Canyon Reservoir (2)	Los Angeles Department of Water and Power	200	5	0.16	3
Valley Reclamation Co.	Cal - Mat Co.	3,000	5	69	80
West Valley Base Materials	West Valley Base Material	550	5	6.9	48
TOTAL		10,820		91.41	

(1) Private disposal only.
(2) Limited to waste collected by City of Los Angeles Department of Water and Power.
(3) Limited to waste collected by the City of San Marino crews (per Carlos Alvarado, City Engineer).
(4) Limited to waste collected by the City of South Gate crews.

Note: Data shown in this table is based on the results of a survey conducted by the Los Angeles County Department of Public Works, March 1987.

APPENDIX W

Precipitation Records and Mean
Annual Precipitation

ALISO CANYON - OAT MOUNTAIN PRECIPITATION RECORDS

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Total
1938-39	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	3.53	3.53
1939-40	0.30	0.28	1.17	7.23	7.39	2.10	2.61	0.09	0.00	0.00	0.00	0.00	21.17
1940-41	1.97	0.20	9.13	6.21	17.94	10.33	6.70	0.00	0.00	0.08	0.00	0.00	52.56
1941-42	2.73	0.17	6.30	0.56	1.05	1.41	3.70	0.07	0.00	0.00	0.39	0.00	16.38
1942-43	1.40	1.09	1.63	18.53	4.92	7.48	1.32	0.00	0.00	0.00	0.00	0.00	36.37
1943-44	0.31	0.31	7.94	1.47	11.88	4.55	0.84	0.00	0.00	0.00	0.00	0.00	27.30
1944-45	0.00	7.19	0.93	0.15	5.88	5.67	0.44	0.00	0.00	0.00	1.89	0.00	22.15
1945-46	1.37	0.39	7.67	0.43	1.45	5.30	1.07	0.20	0.00	0.00	0.00	0.00	17.88
1946-47	1.15	8.44	5.25	0.65	0.68	2.66	0.17	0.57	0.00	0.00	0.00	0.33	19.90
1947-48	0.53	0.20	1.28	0.00	0.99	3.18	2.32	0.00	0.28	0.00	0.00	0.00	8.78
1948-49	0.16	0.00	2.94	3.43	2.23	2.13	0.03	1.18	0.00	0.00	0.00	0.00	12.10
1949-50	0.02	2.02	3.97	3.66	2.96	1.27	1.12	0.07	0.10	0.00	0.00	0.00	15.19
1950-51	1.27	2.97	0.31	4.55	1.02	1.23	2.43	0.27	0.00	0.00	0.58	0.00	14.63
1951-52	0.67	1.72	8.96	14.80	0.64	8.46	3.20	0.00	0.00	0.00	0.00	0.00	38.45
1952-53	0.00	4.21	4.77	2.76	0.05	1.50	2.92	0.04	0.11	0.00	0.00	0.00	16.36
1953-54	0.00	2.65	0.19	8.50	3.39	4.38	0.47	0.00	T	T	0.00	T	19.58
1954-55	0.00	2.00	1.59	5.11	1.88	0.48	3.79	1.62	0.00	0.00	0.04	0.00	16.51
1955-56	0.00	2.02	3.39	11.27	1.28	0.00	4.66	2.45	0.00	0.00	0.00	0.00	25.07
1956-57	0.37	0.00	0.81	7.72	3.29	2.10	1.66	2.55	0.42	0.00	0.00	0.00	18.92
1957-58	2.95	1.08	8.42	3.39	9.59	8.56	6.71	T	0.00	0.00	0.23	0.41	41.34
1958-59	1.08	0.36	T	2.67	5.80	0.00	0.89	0.00	0.00	0.00	T	0.03	10.83
1959-60	0.07	0.00	1.63	4.51	4.40	1.23	2.98	0.00	0.00	0.01	0.00	0.00	14.83
1960-61	0.00	4.83	0.25	2.29	0.00	1.05	0.68	0.02	0.00	0.00	0.06	0.15	9.33
1961-62	0.00	3.74	2.41	3.28	19.22	2.02	T	0.14	0.06	0.00	0.00	T	30.87
1962-63	0.79	0.02	0.00	1.44	5.21	3.68	3.41	0.22	0.36	0.00	T	0.57	15.70
1963-64	0.71	4.51	0.10	2.80	T	2.86	2.29	0.24	0.41	0.00	0.05	0.00	13.97
1964-65	0.53	2.09	6.25	0.91	0.83	2.28	8.35	0.00	0.11	0.00	0.27	1.19	22.81
1965-66	0.00	18.98	6.56	1.12	1.97	0.34	0.00	0.60	0.00	T	0.00	0.26	29.83
1966-67	0.07	6.11	11.00	6.91	0.45	3.31	5.53	0.42	0.00	0.00	T	0.44	34.24
1967-68	0.00	9.42	1.71	1.90	1.30	4.48	0.75	0.06	0.00	T	0.10	0.03	19.75
1968-69	0.82	0.58	2.12	21.59	10.03	1.22	1.10	0.20	0.30	0.20	0.00	0.00	38.16

T = trace

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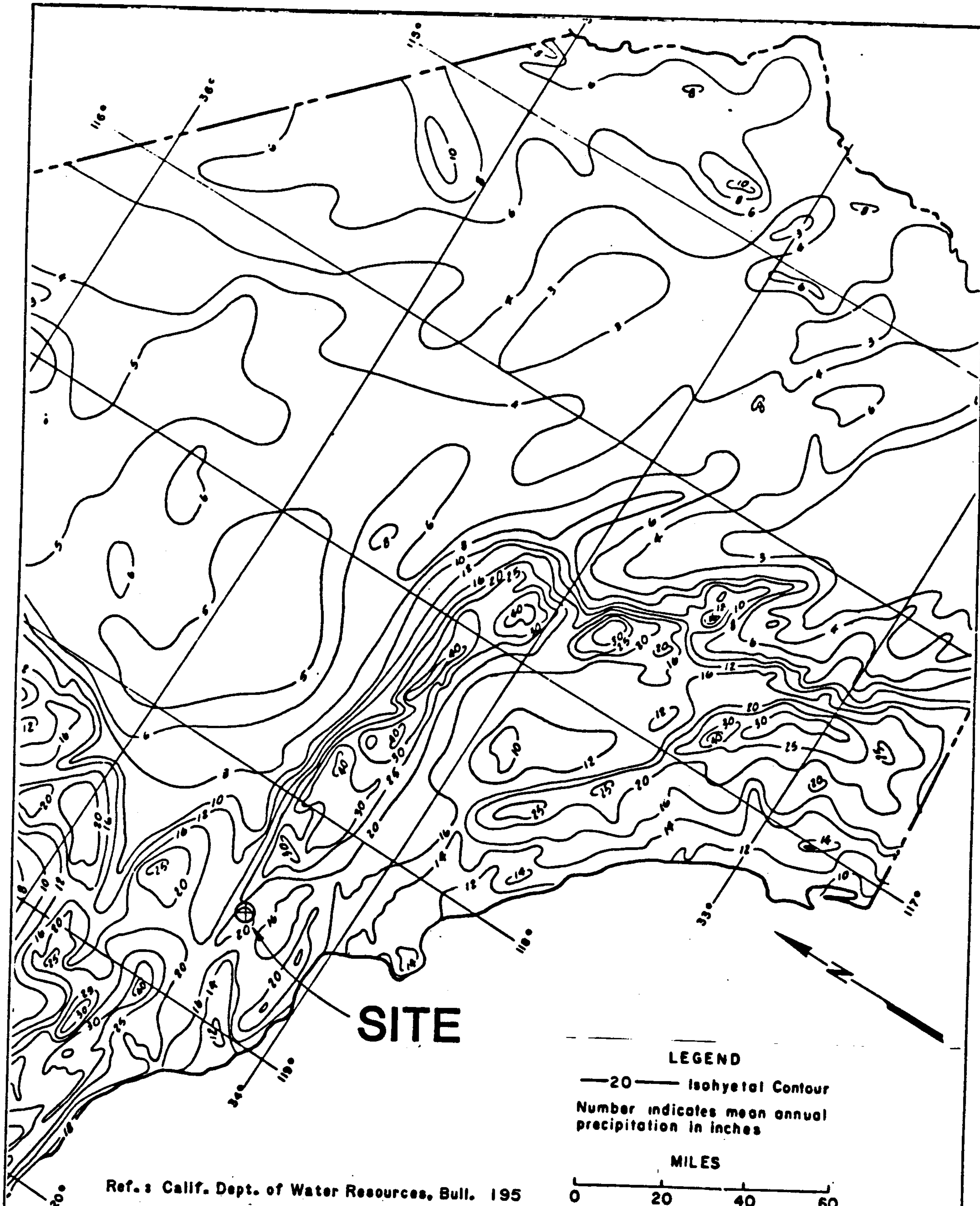
ALISO CANYON - OAT MOUNTAIN PRECIPITATION RECORDS

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Total
1969-70	0.00	2.65	0.04	3.14	3.85	4.71	0.00	0.00	0.18	0.00	0.00	0.00	14.57
1970-71	0.11	7.04	4.92	2.07	1.24	1.13	0.97	0.85	0.07	0.02	0.00	0.45	18.87
1971-72	0.71	0.67	9.69	T	0.34	0.00	0.00	0.06	0.08	0.00	0.05	0.00	11.60
1972-73	0.00	3.50	1.98	5.45	10.54	3.45	0.00	0.01	0.00	0.00	0.00	0.00	24.93
1973-74	0.55	2.46	1.38	10.37	0.00	5.29	0.43	0.00	0.00	T	0.00	0.00	20.48
1974-75	1.78	0.10	3.94	0.30	4.20	6.81	3.30	0.03	0.08	0.00	0.00	0.00	20.54
1975-76	0.77	0.00	0.35	0.00	4.55	1.94	0.82	0.16	0.37	0.00	0.58	3.14	12.68
1976-77	0.60	0.80	0.98	5.98	0.17	2.29	0.00	3.35	0.00	0.00	3.47	0.00	17.64
1977-78	0.10	0.30	5.70	10.70	13.90	13.90	2.10	0.00	0.00	0.00	0.00	1.60	48.30
1978-79	0.00	3.10	2.00	10.30	4.40	5.90	0.00	0.10	0.10	0.00	0.00	0.00	25.90
1979-80	1.70	0.60	0.60	13.40	16.50	5.30	0.60	1.10	0.00	0.00	0.00	0.00	39.80
1980-81	0.00	0.00	1.70	5.40	1.50	6.10	0.90	0.00	0.00	0.00	0.00	0.00	15.60
1981-82	0.40	3.40	1.40	3.30	1.10	7.10	2.90	0.10	0.10	0.00	0.00	1.90	21.70
1982-83	0.40	6.90	4.10	9.80	9.60	12.80	5.40	0.20	0.00	0.00	2.60	1.80	53.60
1983-84	2.10	6.10	6.20	0.00	0.10	0.50	0.60	0.00	0.20	0.00	0.00	0.10	15.90
1984-85	0.25	3.56	6.42	1.11	2.41	2.88	0.31	0.09	0.01	0.01	0.00	0.10	17.15
1985-86	0.57	5.45	0.22	4.07	7.38	5.81	0.96	0.00	0.00	0.04	0.00	1.75	26.25
1986-87	0.13	1.50	0.05	1.98	1.54	1.68	0.14	0.05	0.02	0.08	0.00	0.00	7.17
AVERAGE	0.16	2.83	3.34	4.94	4.40	3.81	1.91	0.36	0.07	0.01	0.21	0.36	22.78



PURCELL, RHOADES & ASSOCIATES
Foundation Engineering • Soil Engineering • Geology

JOB NO. 3040-01	DATE 4-1-87	MEAN ANNUAL PRECIPITATION ISOHYETAL CONTOURS	FIGURE
DRAWN BY CJS	APPROVED BY BJM / DRS	Sunshine Canyon Sanitary Landfill Los Angeles, California	

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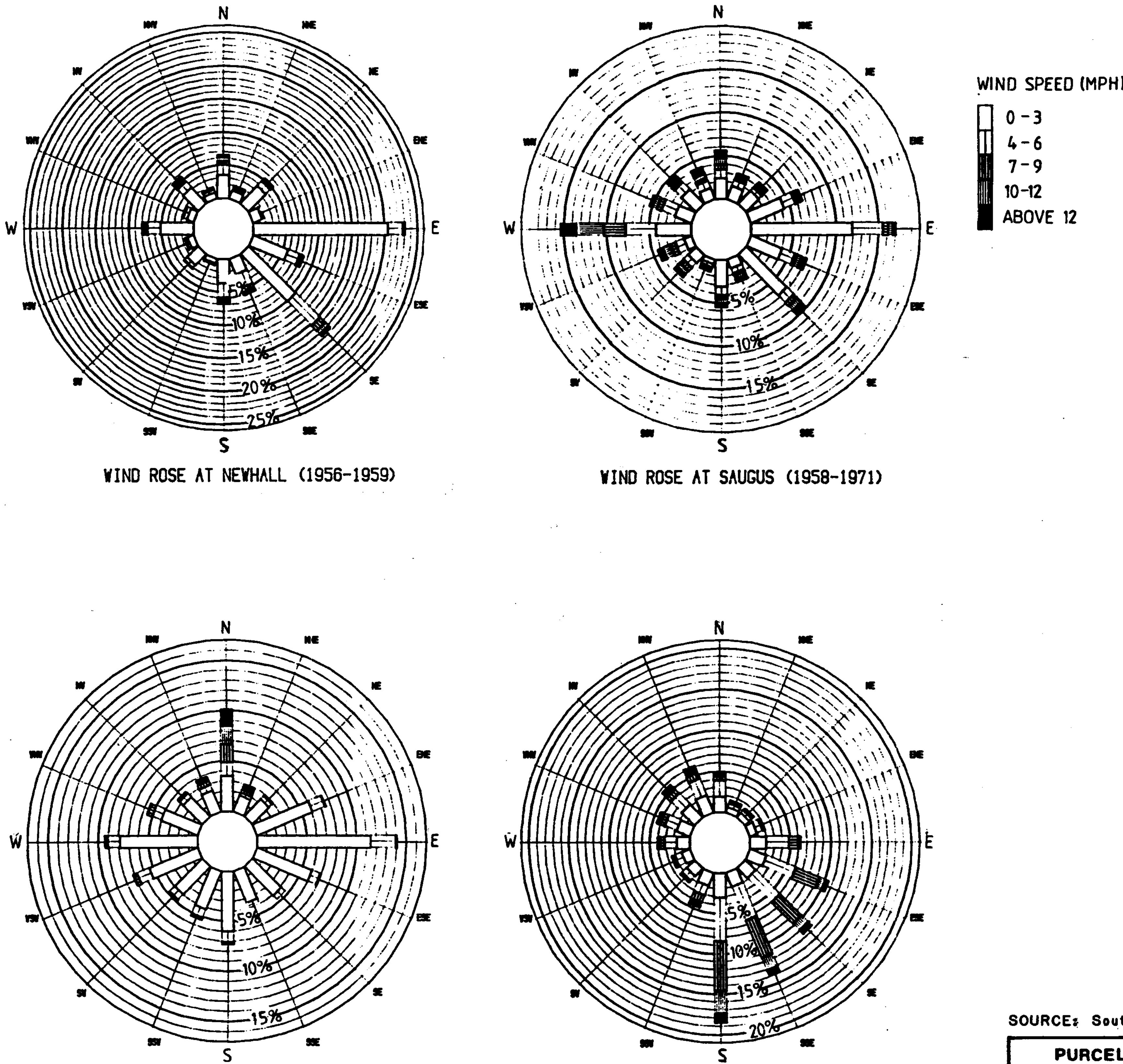
APPENDIX X

Wind Rose Diagrams

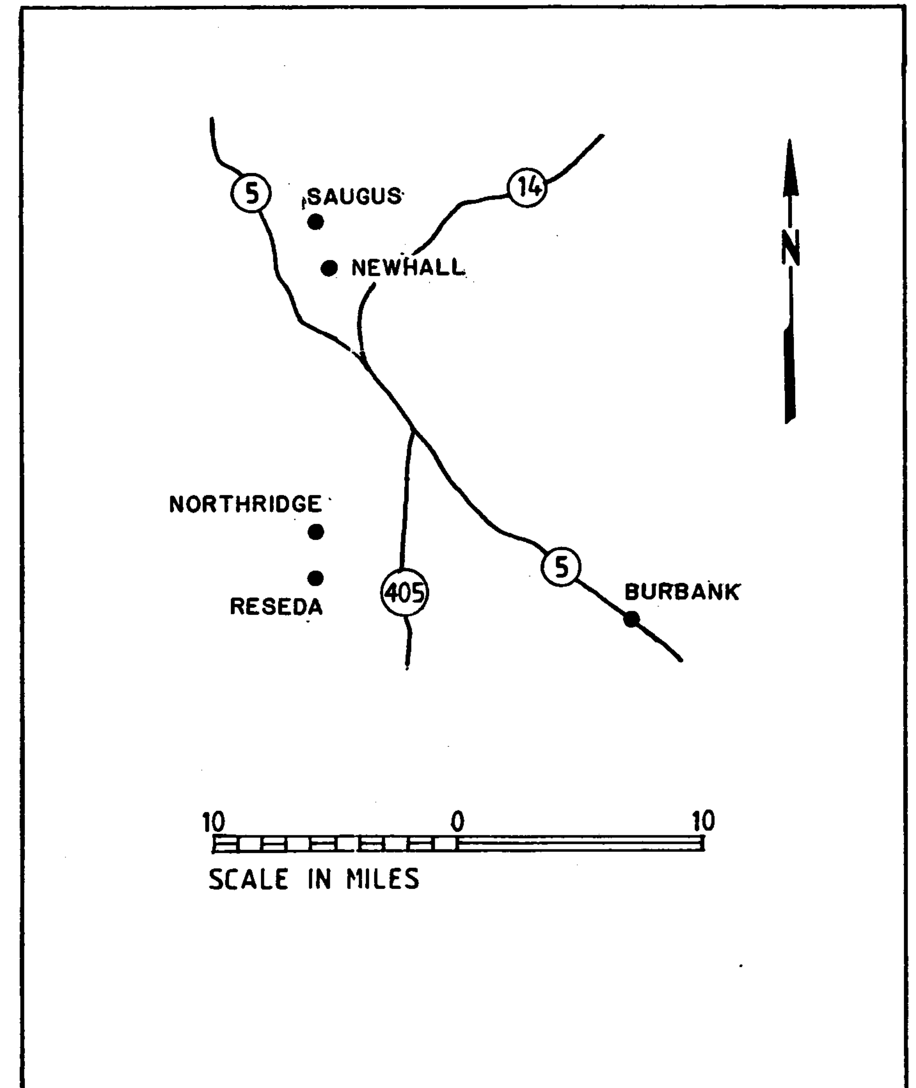


WIND ROSE AT NEWHALL (1956-1959)

WIND ROSE AT SAUGUS (1958-1971)

WIND ROSE AT RESEDA (1965-1975)

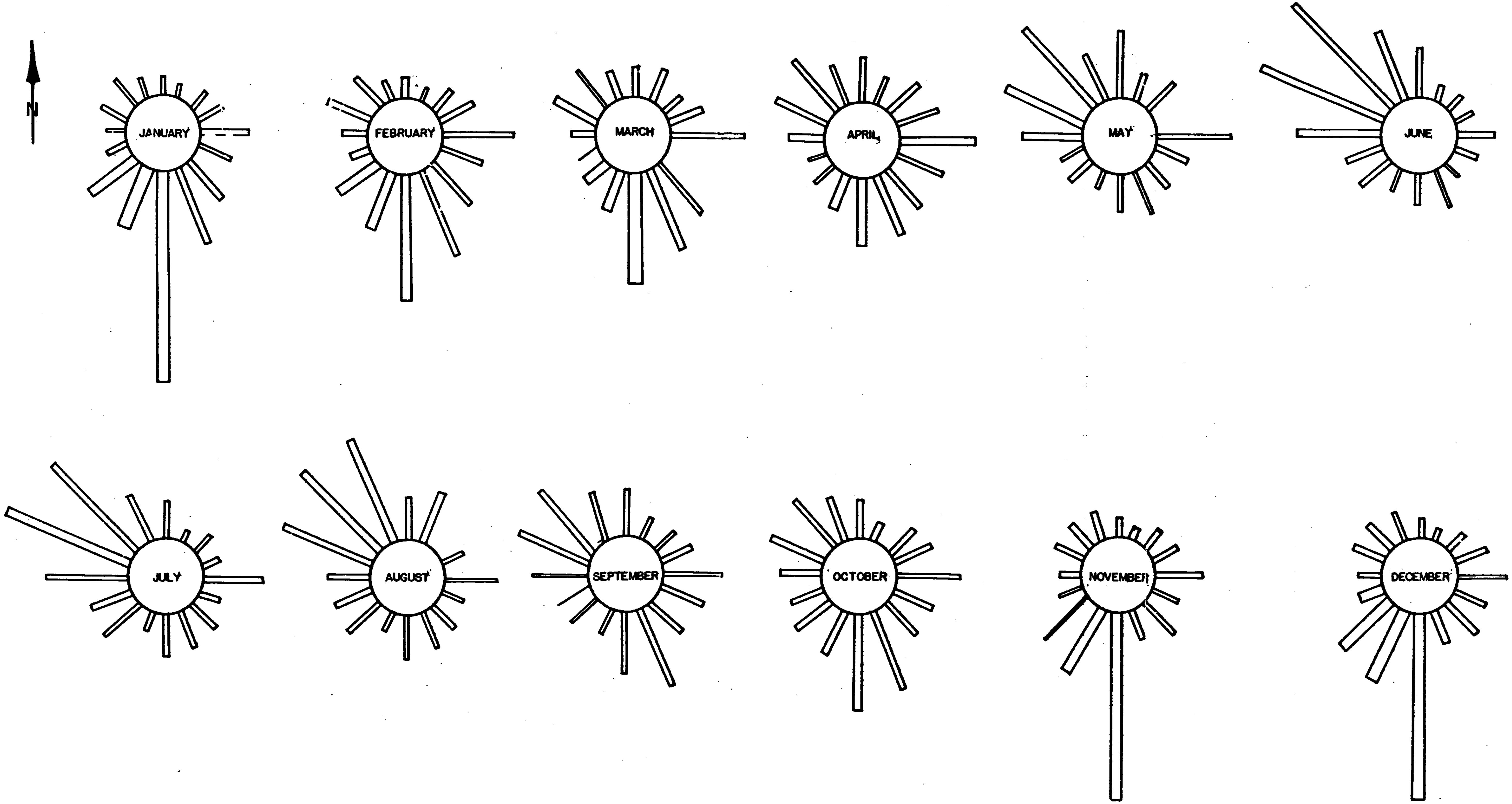
WIND ROSE AT BURBANK (1956-1979)

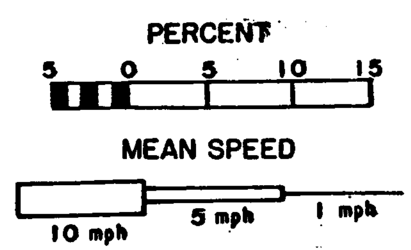


INDEX MAP

SOURCE: South Coast Air Quality Management District, Planning Div., 1987

PURCELL, RHOADES & ASSOCIATES Foundation Engineering • Soil Engineering • Geology JOB NO. 3040-01 DATE DRAWN BY CJS APPROVED BY BJM / DRS	WIND ROSE DIAGRAMS ANNUAL AVERAGES Sunshine Canyon Sanitary Landfill Los Angeles California	FIGURE **1**





WIND ROSE

L.A.C.A.P.C.D. STATION #083W
AT CALIFORNIA STATE UNIVESITY, NORTHRIDGE
PERIOD OF RECORD 1956-1966

PURCELL, RHOADES & ASSOCIATES Foundation Engineering • Soil Engineering • Geology		WIND ROSE DIAGRAM MONTHLY AVERAGES Northridge Climatic Section Sunshine Canyon Sanitary Landfill Los Angeles, California	FIGURE **2**
JOB NO. 304001	DATE 2-27-87		
DRAWN BY PHK	APPROVED BY BJM/DJR		

ultrasystems

APPENDIX Y

Litter Control Program

BROWNING-FERRIS INDUSTRIES
SUNSHINE CANYON LANDFILL
LITTER CONTROL PROGRAM

The Sunshine Canyon Landfill is operated in a manner which strives to minimize the possibility of stray litter either being blown out of the landfill during heavy winds or falling out of waste hauling trucks using the facility. A litter control program has been established to ensure effective preventative and response measures to effectively maintain this operation objective.

Vehicle Tarping

Vehicle tarping requirements at Sunshine Canyon Landfill are in accordance with Sections 23114 and 23115 of the Vehicle Code of the State of California.

> Section 23114:
>
> No vehicle shall be driven or moved on any highway unless the vehicle is so constructed, covered, or loaded as to prevent any of its contents or load other than clear water or feathers from live birds from dropping, shifting, leaking, blowing, spilling, or otherwise escaping therefrom.
>
> Section 23115:
>
> No vehicle loaded with garbage, swill, cans, bottles, wastepaper, ashes, refuse, trash, or rubbish, or any other noisesome, nauseous, or offensive matter, or anything being transported to a dump site for disposal shall be driven or moved upon any highway unless the load is totally

> covered in a manner which will prevent the load or any part of the load from spilling or falling upon the highway. This section does not prohibit a rubbish vehicle from being without cover while in the process of acquiring its load in circumstances wherein no law, administrative regulation, or local ordinance requires such cover.

Private vehicles driven by occasional users of the landfill are considered the most likely offenders of vehicle tarping requirements and are the most difficult to control. Each driver is informed of the requirements for covered loads and asked to have his next load covered. Regular users of the landfill who repeatedly violate this requirement will not be allowed to dispose of their loads.

Landfill Litter Control

The landfill operator will designate a remote disposal area for use during heavy wind conditions. Controlled placement of waste materials in a wind-shielded area will control off-site migration of stray wind-blown litter. Litter and debris is also contained within the landfill properties by litter fences located along the perimeter of the landfill, as well as portable fences placed adjacent to the daily operating area. A major portion of the landfill is in remote and low portions of Sunshine Canyon which minimizes high wind conditions within the operating area.

Litter Cleanup Program

On a once a week basis, or more frequently if needed, the landfill operator mobilizes cleanup crews to provide litter control pick-up service in O'Melveny Park, along Balboa Boulevard and San Fernando Road and in other areas in proximity to the landfill. On a daily basis, a BFI employee inspects the surrounding area to assess whether a more frequent clean-up is required. This program is provided to clean up any stray litter or debris which may have dropped in the surrounding area, whether or not its source is related to the landfill operations.

The landfill is equipped with a radio dispatch system which is utilized by the site operator to quickly engage crews to respond to litter complaints and other complaints from the surrounding neighborhoods. Stray litter or debris should be reported to the Sunshine Canyon Landfill office at (818)362-1567.

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APPENDIX Z

Oak Tree Survey Report

APPENDIX Z

Oak Tree Survey Report

SUNSHINE CANYON OAK REPORT

FOR

BROWNING FERRIS INDUSTRIES

Prepared by,

Ralph S. Osterling, Inc.

March 26, 1989

RALPH OSTERLING
CONSULTANTS, INC.
PHONE (415) 573-8733
1650 BOREL PLACE SUITE 204
SAN MATEO, CA 94402

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Procedure Detail..............................Appendix A

Data Summary..................................Appendix B

RALPH OSTERLING
CONSULTANTS, INC.

Sunshine Canyon Oak Report

PURPOSE

The purpose of this report is to fulfill the requirements of the Los Angeles County Code Section 22.56.2050. This code section addresses the enhancement and protection of the oak tree resources in Los Angeles County. The ordinance specifically states the following:

> "The oak tree permit is established (a) to recognize oak trees as a significant historical, aesthetic and valuable ecological resources, and as one of the most picturesque trees in Los Angeles, lending beauty and charm to the natural and manmade landscape, enhancing the value of property and the character of the communities in which they exist; and (b) to create favorable conditions for the preservation and propagation of this unique, threatened plant heritage for the benefit of current and future residents of Los Angeles....
>
> The stated objective of the oak tree permit is to preserve and maintain healthy oak trees in the development process."

SETTING

Sunshine Canyon is located immediately north of Sylmar and west of Interstate 5 at the north end of the San Fernando Valley. The site consists of a main drainage which divides into three spur drainages ranging in elevation from approximately 1470 to 2456 feet. Slopes in the canyon range from the nearly flat and narrow canyon bottoms to vertical cliffs found on the upper slopes. The majority of the area is steep to very steeply sloping topography. Woody vegetation in Sunshine Canyon is dominated by the coast live oak (Quercus agrifolia). The oak is mixed with the big cone Douglas-fir (Pseudotsuga macrocarpa) at the higher elevations and is found in nearly pure stands at the mid and lower slope elevations. Canyon live oak (Quercus chrysolepis) is widely scattered on the ridge tops. The stands of trees range in density from open and widely dispersed to dense, fully closed crown groupings. The oak trees on the project area have been strongly influenced by the historic and repeated fires that have swept through the canyons over time. Many of the trees show evidence of fire from the most recent plus other fires in the form of burned and rotten branch stubs and multiple trunks resulting from roots crown sprouting following the intensive burns. The latest burn is the Weldon Fire which occurred in 1969. Of interest, very few young trees in the seedling and sapling sizes (less than 2" in diameter and 10' high) were noted in the field. Instead, the understory is dominated by the ubiquitous poison oak (Rhus toxicodendron) and other chapparal brush and herbaceous species intermixed. The open or scattered tree covered areas may have an understory of annual grasses mixed with some chapparal brush and herbaceous species.

Beyond the stands of oaks, non-oak land areas are dominated by thick chaparral growth. Species include the native sages and chamise intermixed with grasslands and bare areas. Occasional openings of pure grasslands are also found on the site.

PROCEDURE

Given the overall size of the oak covered portion of the project area, 234 acres, a scientific sampling program was used. To assure conformance with the ordinance and with the Los Angeles County Forester and Fire Warden, discussions were held to outline procedures. Following field meetings and discussions the procedure was set (Appendix A). This program utilized vegetative type mapping and detailed survey plots with random plot locations (described in

Appendix A). Expansion of the plot data and evaluation of the plot count gives the total number of trees within each type of the study area. Vegetative type mapping based on recent aerial photography was completed by the independent firm of Hammon, Jensen, and Wallen (HJW). Plots were located by HJW within the three oak cover types identified on the map. Following the map locations of the plots and office engineering, the field work began. In addition to the individual specific dimensions, the recorded field evaluation data includes the following:

TABLE 1

Guide for judging the condition of a shade tree

Factor	Variation of condition factor
Trunk Condition	Sound and solid (5)
	Sections of bark missing (3)
	Extensive decay and hollow (1)
Growth rate	More than 6-inch twig elongation (3)
	2 to 6-inch twig elongation (2)
	Less than 2-inch twig elongation (1)
Structure	Sound (5)
	One major or several minor limbs dead, (3)
	Two or more major limbs dead (1)
Insects and diseases	No pests present (3)
	One pest present (2)
	Two or more pests present (1)
Crown development	Full and balanced (5)
	Full but unbalanced (3)
	Unbalanced and lacking a full crown (1)

Life expectancy	Over 30 years (5) 15 to 20 years (3) Less than 5 years (1)
Location	Stand alone with significant offsite view (3) Some offsite visibility (2) Inside a clump or in a canyon bottom, no offsite visibility (1)

Each measured stem was individually tagged with sequentially numbered weather proof tags. Plots were marked and staked for easy relocation and verification of data. Distances from known starting points to the plots were determined in the field with hip chain equipment. Other pertinent data regarding the oaks and locations were noted for future reference.

RESULTS

A total of 136 one-fifth acre plots were taken on the 234 acre oak wooded portions of the project area. These wooded portions were determined by the HJW and verified in the field. All summary data notes are found in Appendix B. Overall, the average tree count per plot (one fifth acre) was 6.54 with a high of 9.12 trees in the dense oak and a low in the scattered oak type of 4.18. Expanding this field data shows a statistical mean of 7,742 trees are located within the project area. With a 10% standard error a count of 6,871 trees is at the lower statistical limit and 8,613 trees is the upper limit. Table 2 summarizes the data for each of the oak cover types and for the total.

TABLE 2 - SUMMARY

TYPE	#PLOTS	TREE COUNT	STEM * COUNT	BA/AC**	DIAMETER DISTRIBUTION IN PERCENT <12	12-18	18-24	24-36	>36
Dense Oak	41	9.12	12.93	66.02	37	48	11	3	0
D-Fir Oak	50	6.32	7.96	42.53	39	47	11	3	0
Scattered Oak	45	4.18	5.78	36.53	42	43	13	2	0
Average:		6.54	8.89	48.36	39	46	12	3	0

*Includes multiple stems per tree

**Units in square feet

UPPER	8613	53.29
MEAN	7742	48.36
LOWER	6871	43.43

RALPH OSTERLING CONSULTANTS, INC.

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APPENDIX A

RALPH OSTERLING
CONSULTANTS, INC.

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DRAFT
SUNSHINE CANYON
OAK TREE INVENTORY
SAMPLING METHODOLOGY AND FIELD PROCEDURES

Prepared for:

Browning Ferris Industries, Inc.

by:

Ralph Osterling Consultants, Inc.

August 19, 1988

INVENTORY OBJECTIVES

The objective of the Sunshine Canyon oak tree inventory is to verify the total oak tree population for those trees located within the future landfill expansion area. Sample estimates are for trees greater than 8 inches in diameter. The estimate is to be with 10 percent of the true number, with 95 percent confidence. In addition, information is to be gathered to allow valuation of the oak tree resource based on the standards prescribed by the International Society of Arboriculture (ISA).

SAMPLING DESIGN

A stratified random sampling program will be used to sample the oak tree population. The total landfill expansion area is comprised of approximately 500 acres; approximately 150 acres supports oak trees. The area supporting oak trees was presampled and has an estimated coefficient of variation of 40 percent. The sample area was stratified into three types namely,scattered oak, dense oak, and Douglas-fir-oak.

A total of 57 plots will be required to achieve the desired level of accuracy as determined by the formula* for a finite population (areas less than 640 acres) as follows:

$$n = Nt^2C^2 \;/\; NA^2+t^2C^2$$

When: n = number of plots
t = number of standard errors
N = possible number of plots
C = coefficient of variation
A = acceptable error

*See attached reference.

$$n = (750)(2)^2(40)^2 / (750)(10)^2 + (2)^2(40)^2$$

$$n = 57 \text{ plots}$$

These plots will be allocated among the three stand types (strata) using the proportional allocation method. The proportional allocation method distributes the plots based on the size of each type (i.e. the larger the type, the greater the number of sample plots allocated to the type).

The location of the individual plot centers will be established by random selection from all possible plot centers. The desired number of plot centers will be chosen through the use of a table of random numbers. These plot centers (p.c.) will then plotted on the 1"=400' topographic map of the site.

FIELD PROCEDURES

Plot Location and Identification. The location of each plot center is referenced by distance and bearing from easily identifiable landmarks. The landmarks are used as start points for the plots. In many cases the starting point for the next plot will the plot center of the completed plot. All starting points are to be flagged with the distance, bearing, and plot number written on the flagging with water proof ink. The distance from the starting point to the plot center is to be chained and the line flagged with flourescent colored flagging.

Once the plot center has been located, it is to be marked with a 1"X2"X12" wooden survey stake with an aluminum plot number tag nailed to the top of the stake. Each 1/5 acre plot will be a 1X2 chain rectangle with the long axis of the plot oriented north and south. The sides of the plot are to be visibily marked with flagging. When necessary, the plot dimensions will be corrected for slope using the formula:

slope distance = horizontal distance/cosine of the vertical angle

Tree Measurements and Identification. All trees within a sample plot are to be tagged with an identification number located on the uphill side of each tree. The tags are to be stapled to the tree at approximately the same location at which the diameter measurement is taken. To assure that all trees are tagged and measured, the trees should be measured systematically.

The following measurements and observations will be made for each sample tree:

1) diameter
2) single or multiple trunk
3) total tree height
4) tree crown diameter
5) trunk condition
6) growth rate
7) crown structure
8) insect and disease damage
9) crown development
10) life expectancy
11) location

Diameter. The d.b.h. (diameter breast high) of each tree will be measured at a point 4.5 feet above the natural ground on the uphill side of the tree. Single trunk trees 8 inches d.b.h. or larger and multiple trunk trees having two or more trunks with a combined diameter greater than 12 inches, will be tagged and tallied. All trees are to be taped for measurement. Diameters are to be recorded to the nearest one-tenth of an inch. If there are abnormal swellings or other obstacles that prevent measurement at 4.5 feet, the measurement will be taken immediately above or below and so noted in the field notes. The tree number tag will be placed at the point of diameter measurement on the uphill side of the tree.

Single and Multiple Trunks. Trees having only one main trunk with no forking below 4.5 feet are to be tallied as a single trunk. Those trees which fork above 4.5 feet and have two or more trunks above the fork, are to be tallied as multiple trunk trees. Diameter measurements will be taken on all trunks greater than 8 inches d.b.h. for multiple trunk trees. The I.S.A. evaluation procedures will be conducted only on the largest of the multiple trunks. Trees and forks less than 8 inches d.b.h. will not be tallied.

Total Tree Height. Total tree height will be estimated to the nearest 5 feet.

Tree Crown Diameter. The crown diameter of each tree will be measured at its widest and narrowest points to determine the average crown diameter.

Trunk Condition. The condition of each tree trunk will be rated as follows:

Sound and solid ....5 points
Sections of bark missing ....3 points
Extensive decay and hollow.........1 point

Growth Rate. The growth rate of each tree will be evaluated as follows:

More than 6-inch twig elongation...3 points
2-to 6-inch twig elongation........2 points
Less than 2-inch twig elongation...1 point

Structure. The structure of each tree will be evaluated as follows:

Sound..............................5 points
One major or several minor limbs
dead...............................3 points
Two or more major limbs dead.......1 point

Insects and Disease. Insect and disease pest will be rated for each tree as follows:

No pests present...................3 points
One pest present...................2 points
Two or more pests present..........1 point

Crown Development. The crown development of each tree will be rated as follows:

Full and balanced..................5 points
Full but unbalanced................3 points
Unbalanced and lacking a full
crown..............................1 point

Life Expectancy. The life expectancy of each tree will be evaluated as follows:

Over 30 years......................5 points
15 to 20 years.....................3 points
Less than 5 years..................1 point

Location. The location of each tree will be rated as follows:

A stand alone tree with significant
offsite visibility.................3 points

Some offsite visibility............2 points

Inside of a clump - canyon bottom -
no offsite visibility..............1 point

The above rating factors were adapted from the I.S.A. Guide for Establishing Values of Trees and Other Plants.

COUNTY OF LOS ANGELES
FIRE DEPARTMENT
POST OFFICE BOX 3009, TERMINAL ANNEX
LOS ANGELES, CALIFORNIA 90051
(213) 267-2481

JOHN W. ENGLUND
FIRE CHIEF
FORESTER & FIRE WARDEN

October 17, 1988

Mr. Ralph Osterling
Ralph Osterling Consultants, Inc.
1650 Borel Place, Suite #204
San Mateo, CA 94402

Dear Mr. Osterling:

SUBJECT: PROPOSED STATISTICAL SAMPLING PROCEDURES FOR SUNSHINE CANYON OAK TREES

Foresters of the Los Angeles County Department of Forester and Fire Warden have reviewed your sampling methodology and field procedures to inventory the oak trees in Sunshine Canyon. The sampling techniques in no way compromise the purpose of the Oak Tree Permit and may allow vectoring of cost saving monies towards mitigation measures should this permit be approved. All items of the Los Angeles County Oak Tree Ordinance will be adhered to. Inventory sampling will be used to determine the number and make-up of the oak trees on the proposed project site.

The attached is a revised sampling methodology and field procedure guidelines adapted from your draft August 19, 1988 and incorporating items to satisfy the credibility of the sample and ensure total alignment with the Oak Tree Ordinance of Los Angeles County.

Projected cost estimates to conduct a quality check on thirty of your sample plots is $7,428.60. This is necessary to verify the accuracy of your field measurements. Per past conversations this cost will be born by Browning-Ferris Industries. Explanation of these cost figures are enclosed.

Potential mitigation measures, should this Oak Tree Permit be approved, are still in the planning stages.

If you are in agreement with the proposal please have Browning-Ferris Industries (BFI) initiate a letter to Fire Chief John Englund requesting our services and agreeing to bear the cost as indicated. Upon the Fire Chief's approval, BFI's request will be submitted for approval to the Los Angeles County Board of Supervisors.

Additional questions may be directed to Senior Deputy Forester John Haggenmiller or Deputy Forester Mike Wilkinson at (213) 267-2481.

INVENTORY OJECTIVES

The objective of the Sunshine Canyon oak tree inventory is to verify the total oak tree population for those trees located within the future landfill expansion area.

SAMPLING DESIGN

A stratified random sampling program will be used to sample the oak tree population. The total landfill expansion area is comprised of approximately 500 acres; approximately 150 acres supports oak trees. The area supporting oak trees was presampled, and will be divided into basic vegetation types; scattered oak, dense oak, and Big-Cone Spruce (Douglas Fir)/Oak.

A minimum of 75 total plots are necessary to achieve a 10 percent sample. Depending on the number of acres comprising the smallest stand type, this number may need to be increased.

These plots will be allocated among the three stand types (strata) using the proportional allocation method. The proportional allocation method distributes the plots based on the size of each type (i.e., the larger the type, the greater the number of sample plots allocated to the type).

The location of the individual plot centers will be established by random selection from all possible plot centers. The desired number of plot centers will be chosen through the use of a table of random numbers. These plot centers (p.c.) will then be plotted on a 1"=400' topographic map of the site.

An additional 1"=400' topographic map of the site will also be provided showing all possible plot centers.

Vegetative typing (strata) will be done using aerial photographs. These will be verified on the ground by the Los Angeles County Department of Forester and Fire Warden. Vegetation type maps, selection of random plot centers, and plotting of plot centers on 1"=400 topographic maps will be provided by a third party firm of Hammon, Jensen & Wallin.

FIELD PROCEDURES

Plot Location and Identification: The location of each plot center is referenced by distance and bearing from easily identifiable landmarks. The landmarks are used as start points for the plots. In many cases the starting point for the next plot will be the plot center of the completed plot. All starting points are to be flagged with the distance, bearing, and plot number written on the flagging with water proof ink. The distance from the starting point to the plot center is to be chained and the line flagged with fluorescent colored flagging.

Location of the plot center is to be marked with a 1"x2"x12" wooden survey stake with an aluminum plot number tag nailed to the top of the stake. Each 1/5 acre plot will be a 1x2 chain rectangle with the long axis of the plot oriented north and south. The sides of the plot are to be visibly marked with flagging. When necessary, the plot dimensions will be corrected for slope using the formula:

Slope distance = horizontal distance/cosine of the vertical angle.

<u>Tree Measurements and Identification</u>: All trees within a sample plot are to be tagged with an identification number located on the north side of each tree. The tags are to be stapled to the tree at the same height at which the diameter measurement is taken. To assure that all trees are tagged and measured, the trees should be measured systematically.

The following measurements and observations will be made for each sample tree:

1. Diameter
2. Single or multiple trunk
3. Total tree height
4. Tree crown diameter
5. Trunk condition
6. Growth rate
7. Crown structure
8. Insect and disease damage
9. Crown development
10. Life expectancy
11. Location
12. Diameter of protected zone (crown diameter + 5)

The d.b.h. (diameter breast high) of each tree will be measured at a point 4.5 feet above the natural ground on the uphill side of the tree. Single trunk trees 8 inches d.b.h. or larger and multiple trunk trees having two or more trunks with a combined diameter greater than 12 inches, will be tagged and tallied. All trees are to be taped for measurement. Diameters are to be recorded to the nearest one-tenth of an inch. If there are abnormal swellings or other obstacles that prevent measurement at 4.5 feet, the measurement will be taken immediately above or below and so noted in the field notes. The tree number tag will be placed at the height of diameter measurement on the north side of the tree.

Single and Multiple Trunks: Trees having only one main trunk with no forking below 4.5 feet are to be tallied as a single trunk. Those trees which fork above 4.5 feet and have two or more trunks above the fork, are to be tallied as multiple trunk trees. Diameter measurements will be taken on all trunks greater than 8 inches d.b.h. for multiple trunk trees. The International Society of Arboriculture evaluation procedures will be conducted only on the largest of the multiple trunks. Trees and forks less than 8 inches d.b.h. will not be tallied.

Total Tree Height: Total tree height will be estimated to the nearest 5 feet.

Tree Crown Diameter: The crown diameter of each tree will be measured at its widest and narrowest points to determine the average crown diameter.

Trunk Condition: The condition of each tree trunk will be rated as follows:

Sound and solid..........................5 points
Sections of bark missing..................3 points
Extensive decay and hollow................1 point

Growth Rate: The growth rate of each tree will be evalutated as follows:

More than 6-inch twig elongation...........3 points
2 to 6-inch twig elongation................2 points
Less than 2-inch twig elongation...........1 point

Structure: The structure of each tree will be evaluated as follows:

Sound.....................................5 points
One major or several minor limbs dead.....3 points
Two or more major limbs dead..............1 point

Insects and Disease: Insect and disease pest will be rated for each tree as follows:

No pests pesent...........................3 points
One pest present..........................2 points
Two or more pests present.................1 point

Crown Development: The crown development of each tree will be rated as follows:

Full and balanced.........................5 points
Full but unbalanced.......................3 points
Unbalanced and lacking a full crown........1 point

<u>Life Expectancy</u>: The life expectancy of each tree will be evaluated as follows:

Over 30 years..............................5 points
15 to 20 years.............................3 points
Less than 5 years..........................1 point

<u>Location</u>: The location of each tree will be rated as follows:

A stand alone tree with significant
offsite visibility.........................3 points
Some offsite visibility....................2 points
Inside of a clump - canyon bottom -
no offsite visibility......................1 point

The above rating factors were adapted from the International Society of Arboriculture Guide for Establishing Values of Trees and Other Plants.

COST ESTIMATES FOR VALIDATION OF OAK TREE REPORT
TO BE PREPARED FOR SUNSHINE CANYON LANDFILL EXPANSION PROPOSAL

<u>Job Description</u>:
Random sampling of thirty (30) 1/5 acre oak tree inventory plots and recorded parameters to verify the accuracy of the information contained in the Oak Tree Report to be submitted by Ralph Osterling Consultants for Browning-Ferris Industries in connection with the proposed expansion of Sunshine Landfill. Weather permitting, the job will be completed within forty-five (45) days of the receipt of an Oak Tree Permit request and completed Oak Tree Report.

<u>COST BREAKDOWN</u> - Based on billing rates of Fiscal Year 1988-89, Group III classification.

<u>Overhead</u>:

Deputy Forester	-	20 Hrs. @ $62.86/Hr.	=	$1,257.20
Forestry Assistant	-	70 Hrs. @ $46.92/Hr.	=	3,284.40

<u>Labor</u>:

Forestry Technician -	120 Hrs.	@ $22.93/Hr.	=	$2,751.60

<u>Equipment</u>:

¾ Ton Pick-Up Truck -	120 Hrs.	@ $00.50/Hr.	=	$ 60.00
	180 Mi.	@ $00.42/Mi.	=	75.60

TOTAL: $7,428.60

Very truly yours,

JOHN W. ENGLUND

BY
JOSEPH FERRARA
HEAD DEPUTY FORESTER
FORESTRY DIVISION

JF:lc

Enclosure

APPENDIX B

RALPH OSTERLING
CONSULTANTS, INC.

DO PLOT	ACRES # PLOTS	76.60 TREE COUNT	STEM COUNT	BA/AC	8-12	12-18	18-24	24-36	>36
A-8	DO	0	0	.0	0	0	0	0	0
C-9	DO	1	3	24.2	1	1	1	0	0
C9-A	DO	0	0	.0	0	0	0	0	0
D-7	DO	8	11	36.5	9	2	0	0	0
D7-B	DO	17	33	103.8	24	9	0	0	0
D-8	DO	25	27	135.4	10	15	2	0	0
D-9	DO	4	6	31.5	2	4	0	0	0
D9-A	DO	19	21	94.3	10	10	1	0	0
D9-B	DO	3	4	20.5	1	3	0	0	0
E-8	DO	6	7	30.5	4	3	0	0	0
E8-B	DO	15	18	85.0	11	6	0	1	0
E-9	DO	15	20	112.9	4	12	5	0	0
E9-B	DO	8	12	53.7	7	3	2	0	0
E-10	DO	5	6	60.3	1	2	1	2	0
E10-A	DO	11	12	131.7	3	5	1	2	1
E-11	DO	8	8	48.3	2	5	1	0	0
F-8	DO	2	4	14.0	3	1	0	0	0
F-9	DO	11	14	45.1	11	3	0	0	0
F9-A	DO	8	13	56.3	6	6	1	0	0
F9-B	DO	11	19	77.3	13	3	3	0	0
F-10	DO	14	21	98.2	8	11	2	0	0
F-11	DO	6	8	57.2	1	5	2	0	0
F-12	DO	11	14	98.7	4	6	2	2	0
F12-A	DO	23	27	139.5	10	15	1	1	0
F12-B	DO	6	8	29.7	5	3	0	0	0
G-13	DO	9	13	56.0	7	5	1	0	0
H-8	DO	5	8	79.7	0	4	3	1	0
H-13	DO	7	12	82.5	2	8	1	1	0
H-14	DO	11	14	63.0	9	3	1	1	0
H14-A	DO	16	27	116.6	1	0	0	0	0
I-14	DO	2	7	54.5	1	3	3	0	0
I-15	DO	8	12	53.5	4	7	0	0	0
I-18	DO	2	3	40.4	0	1	1	1	0
J-11	DO	6	7	46.3	2	4	0	1	0
J-13	DO	2	7	26.4	5	2	0	0	0
J-14	DO	14	19	103.1	5	12	2	0	0
J-15	DO	11	13	86.0	3	6	1	2	0
J-16	DO	10	11	75.6	7	3	0	0	0
J16-A	DO	18	34	125.9	25	7	2	0	0
J-17	DO	11	20	65.5	16	4	0	0	0
J-18	DO	5	7	47.1	0	5	2	0	0
AVERAGE		9.12	12.93	66.02	5.78	5.05	1.02	.37	.02
STANDARD ERROR		.10	.10	.09					
STANDARD DEVIATION		6.07	8.43	36.87					
COEFF. VAR		66.51	65.24	55.85					
NUMBER OF PLOTS TAKEN		41							
NUMBER OF PLOTS NEEDED		38							

UPPER	3857	5455	72
MEAN	3494	4951	66
LOWER	3131	4447	60

RALPH OSTERLING & CONSULTANTS, INC.

DFO	ACRES	89.20							
PLOT	# PLOTS	TREE COUNT	STEM COUNT	BA/AC	8-12	12-18	18-24	24-36	>36
B-1	DFO	2	2	7.2	1	1	0	0	0
B-12	DFO	2	5	18.6	4	1	0	0	0
B12-A	DFO	1	1	6.8	0	1	0	0	0
C-1	DFO	2	3	22.3	1	0	2	0	0
C1-A	DFO	7	7	33.5	2	4	1	0	0
C-2	DFO	1	2	14.6	0	2	0	0	0
C-3	DFO	13	15	71.4	7	7	1	0	0
C3-A	DFO	2	3	24.0	0	2	1	0	0
C-4	DFO	15	16	90.1	7	7	2	0	0
C-13	DFO	2	2	25.9	0	0	1	1	0
C13-A	DFO	1	2	12.0	0	2	0	0	0
D-1	DFO	5	7	20.1	7	0	0	0	0
D1-A	DFO	1	1	2.5	1	0	0	0	0
D-2	DFO	6	7	34.2	3	3	1	0	0
D-3	DFO	15	16	90.6	3	11	2	0	0
D-5	DFO	8	10	37.3	6	3	1	0	0
D-6	DFO	15	17	81.0	8	8	1	0	0
D7-A	DFO	6	9	52.4	3	4	2	0	0
D-14	DFO	10	10	46.3	5	4	1	0	0
E3-A	DFO	5	7	40.0	1	4	2	0	0
E-5	DFO	9	11	77.3	3	5	3	0	0
E-6	DFO	20	23	124.3	7	14	2	0	0
F-4	DFO	13	16	95.4	5	9	1	1	0
F-5	DFO	10	13	77.5	7	4	0	2	0
F-6	DFO	12	13	91.5	1	9	3	0	0
G-2	DFO	1	1	6.1	0	1	0	0	0
G-3	DFO	2	2	27.3	0	1	0	1	0
G-4	DFO	14	16	80.9	6	8	2	0	0
G-5	DFO	6	6	45.4	1	3	1	1	0
H-3	DFO	6	7	42.5	2	4	1	0	0
H-4	DFO	2	2	9.5	0	2	0	0	0
I-2	DFO	5	7	39.5	2	3	2	0	0
I-7	DFO	1	1	7.9	0	1	0	0	0
I-8	DFO	1	1	6.9	0	1	0	0	0
I-9	DFO	6	8	53.7	3	4	0	1	0
J-7	DFO	0	0	.0	0	0	0	0	0
K-6	DFO	8	10	43.8	4	6	0	0	0
K-7	DFO	6	12	52.4	4	8	0	0	0
K-8	DFO	2	2	7.2	2	0	0	0	0
M-4	DFO	18	29	105.7	18	9	2	0	0
M-6	DFO	4	6	29.0	1	5	0	0	0
M-8	DFO	9	15	67.1	5	10	0	0	0
N-3	DFO	10	14	57.6	8	5	1	0	0
N-4	DFO	1	1	11.9	0	0	1	0	0
N-5	DFO	4	7	31.1	2	5	0	0	0
N5-A	DFO	2	3	13.6	1	2	0	0	0
N-6	DFO	7	8	48.5	4	2	2	0	0
N-9	DFO	1	2	25.9	0	0	1	1	0
N9-A	DFO	9	11	73.2	3	5	1	0	0
O-6	DFO	8	9	42.6	4	4	1	0	0
AVERAGE		6.32	7.96	42.53	3.04	3.88	.84	.16	0

RALPH OSTERLING
& CONSULTANTS, INC.

RECYCLED PAPER

STANDARD ERROR	.11	.11	.10
STANDARD DEVIATION	5.11	6.36	31.13
COEFF. VAR	80.90	79.86	73.18
NUMBER OF PLOTS TAKEN	50		
NUMBER OF PLOTS NEEDED	45		
UPPER	3141	3951	47
MEAN	2819	3550	43
LOWER	2496	3149	38

SO PLOT	ACRES TYPE	68.43 TREE COUNT	STEM COUNT	BA/AC	8-12	12-18	18-24	24-36	>36
A-3	SO	4	5	30.8	3	1	1	0	0
A-4	SO	0	0	.0	0	0	0	0	0
B-6	SO	1	2	16.5	0	1	1	0	0
B-7	SO	0	0	.0	0	0	0	0	0
C-6	SO	0	0	.0	0	0	0	0	0
C6-A	SO	0	0	.0	0	0	0	0	0
D-4	SO	8	9	64.4	0	7	2	0	0
E-2	SO	10	11	70.0	4	4	2	1	0
E2-A	SO	2	2	25.2	0	1	0	1	0
E2-B	SO	3	4	45.9	1	1	0	2	0
E-3	SO	3	7	30.2	4	3	0	0	0
E3-B	SO	11	16	108.7	5	8	2	1	0
E-4	SO	5	6	39.7	1	4	1	0	0
E4-A	SO	10	12	78.8	6	3	2	1	0
F-2	SO	3	6	33.9	3	2	1	0	0
F2-A	SO	2	5	25.1	2	3	0	0	0
F2-B	SO	7	12	35.9	10	2	0	0	0
F-3	SO	5	6	50.2	1	3	1	1	0
F3-A	SO	1	1	5.0	0	1	0	0	0
F11-A	SO	1	3	20.3	0	3	0	0	0
G-10	SO	5	5	24.0	2	3	0	0	0
G10-A	SO	2	3	27.4	0	1	2	0	0
G-11	SO	9	13	74.7	5	5	2	0	0
G-12	SO	3	5	22.6	2	3	0	0	0
J-9	SO	3	6	21.0	4	2	0	0	0
J9-A	SO	0	0	.0	0	0	0	0	0
K-9	SO	9	10	52.7	6	2	2	0	0
K9-A	SO	2	2	10.8	0	2	0	0	0
K-10	SO	7	8	41.6	5	1	2	0	0
K10-A	SO	1	2	8.3	1	1	0	0	0
L-8	SO	12	15	103.[illegible]	6	2	6	1	0
L-9	SO	4	6	44.4	2	[illegible]	0	1	0
L-10	SO	4	6	41.3	2	3	1	0	0
L10A	SO	2	4	44.9	1	1	0	2	0
L-11	SO	0	0	.0	0	0	0	0	0
L11-A	SO	5	10	87.4	2	4	3	1	0
L11-B	SO	12	15	67.4	6	9	0	0	0
M-9	SO	8	15	116.9	4	5	4	1	0
M9-A	SO	1	2	9.8	0	2	0	0	0
M10-A	SO	8	9	57.2	1	6	2	0	0
M-11	SO	2	4	24.7	1	3	0	0	0
N-7	SO	6	6	36.6	1	3	2	0	0
N-8	SO	0	0	.0	0	0	0	0	0
N-10	SO	0	0	.0	0	0	0	0	0
O-5	SO	7	7	41.3	5	1	0	1	0
AVERAGE		4.18	5.78	36.53	2.13	2.42	.87	.31	0
STANDARD ERROR		.13	.12	.13					
STANDARD DEVIATION		3.64	4.69	31.03					
COEFF. VAR		87.10	81.25	84.93					
NUMBER OF PLOTS TAKEN		45							
NUMBER OF PLOTS NEEDED		34							

UPPER	1615	2216	41
MEAN	1429	1977	37
LOWER	1244	1737	32

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TOTAL SUMMARY

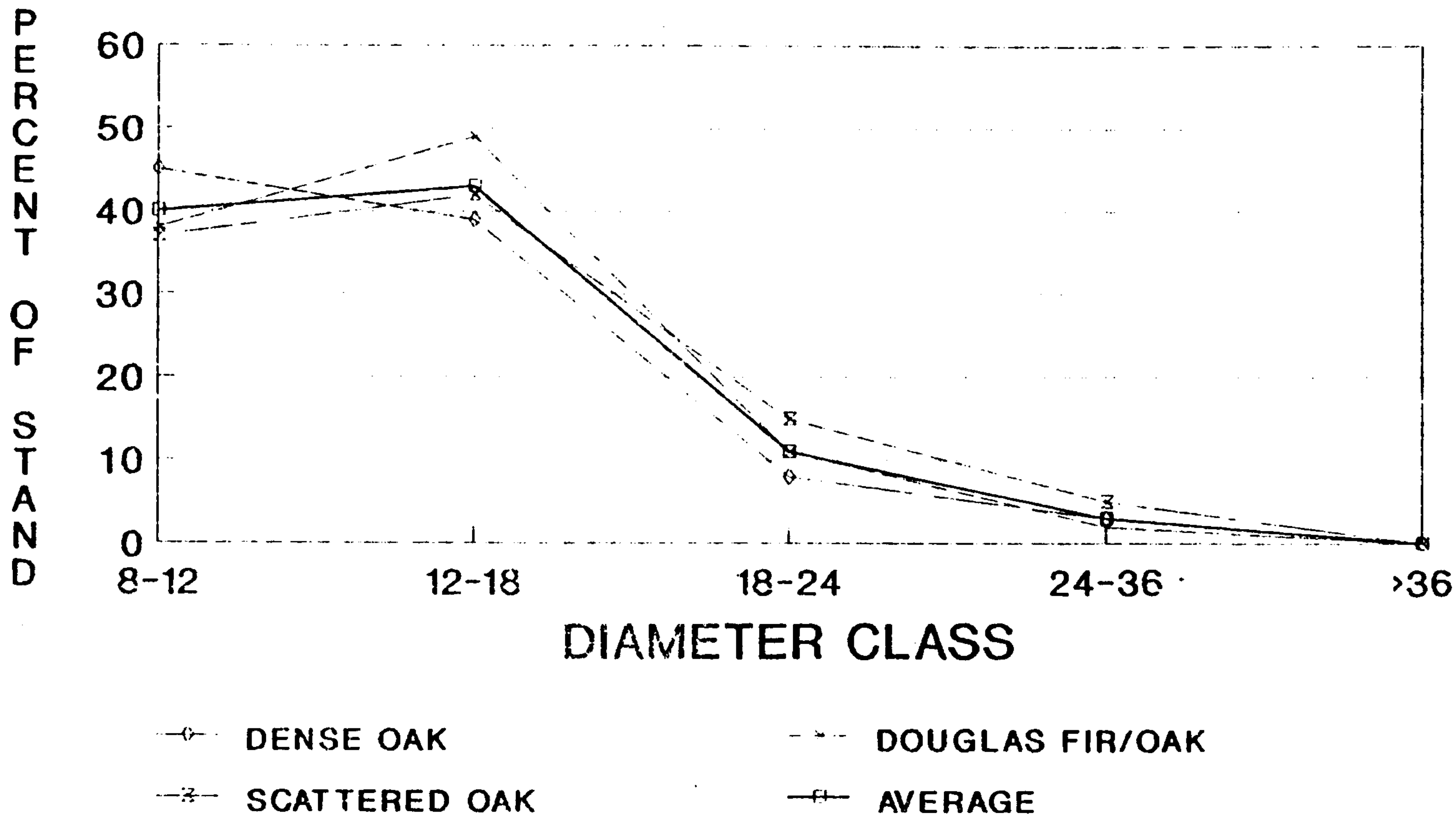
TYPE	# PLOTS	TREE COUNT	STEM COUNT	BA/AC	8-12	12-18	18-24	24-36	>36
DO	41	9.12	12.93	66.02	5.78	5.05	1.02	.37	.02
DFO	50	6.32	7.96	42.53	3.04	3.88	.84	.16	0
SO	45	4.18	5.78	36.53	2.13	2.42	.87	.31	0
	136	6.54	8.89	48.36	4	4	1	0	0

PLOTS NEEDED 117

ACRES	UPPER	8612.83	11622.82	53.29	DEC. 88 PLOTS	89
234.23	MEAN	7741.85	10478.00	48.36	FEB 89 PLOTS	47
	LOWER	6870.88	9333.18	43.43	TOTAL PLOTS TAKEN	136

RALPH OSTERLING
CONSULTANTS, INC.

SUNSHINE CANYON
OAK SUMMARY OF DIAMETERS



APPENDIX AA

Minutes of SEATAC Meeting - March 6, 1989

RECEIVED
APR 10 1989
ENVIRONMENTAL S...

- a comprehensive discussion of the cumulative impacts on all habitats in the immediate area, in Box Canyon, along the County Boundary and the Simi Valley Frwy.
- a comprehensive discussion of the rare plant transplantation program with its success and failure rates.
- adjust project design to provide an adequate buffer zone and measures to prevent the longterm loss of the Santa Susanna tarweed (Hemizonia Minthornii).
- detailed cumulative impacts on regional resources and the extension of Roscoe Blvd.
- Redesign of wildland linkages in the project to provide adequate

  widths for wildlife movements and gene flows between substantial open space areas in the Santa Monica and Santa Susana Mountains.

- consideration of dwelling unit density reduction to enhance the carrying capacity of natural resources in SEA-14

- provision of additional aerial photos showing the extent of existing land uses along the northerly easterly and westerly boundaries of the project site. Supplement photos to Exhibit 4 of the Biota Report.

Further SEATAC review will be required.

d. Project Description: 86312 (Sunshine Canyon Landfill) is an expansion proposed for an existing landfill, into SEA 20.

SEA 20 (Santa Susana Mountains) Resources): The vegetation consists of coastal sage scrub on south-facing slopes, dense chaparral on north -facing slopes, and valleys of riparian and oak woodland. The oak woodland habitat is extremely diverse, supporting six species of oaks. These include coast live oak (Quercus agrifolia), valley oak (Q. lobata) Canyon live oak (Q. chrysolepis), scrub oak (Q. dunosa), interior live oak (Q. chrysolepis), interior live oak (Q. Wislizenii), Dunn's oa (Q. Dunnii). The latter species being known only from this area in Los Angeles County.

Recommendation/Action: The Committee agreed to support the project only if East Canyon which is adjacent to the proposed landfill extension area will be dedicated or deed restricted to remain as Open Space.

No further SEATAC review will be required.

3. New Business:

a. Project 88371 (PM 20108) and Project 88416 (PM 20148).
Both twenty acre parcels are each to be subdivided into three parcels
Both parcel maps lie within the buffer area of SEA-23
(Santa Clara River).