Joint Technical Document
Sycamore Landfill

November 2011

Prepared for:

San Diego Landfill Systems, Inc.
8514 Mast Boulevard
Santee, CA 92071

Submitted by:

Shaw Environmental, Inc.
1230 Columbia Street, Suite 1200
San Diego, CA 92101

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CERTIFICATION OF JOINT TECHNICAL DOCUMENT

This Joint Technical Document, Sycamore Landfill, Santee, California, was prepared in accordance with 27 CCR 21769-21900 and 40 CFR 258.60–258.75 as certified by Mr. Leonard O. Yamamoto, a California Registered Civil Engineer, Registration No. C 33718, and Mr. Mark E. Unruh, a California Certified Engineering Geologist, Registration No. C.E.G. 1176.

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Acronyms and Abbreviations

ADC	Alternative Daily Cover
a.m.	ante meridiem
APCD	Air Pollution Control District
BAT	best available technology
Blvd	Boulevard
BMPs	best management practices
CAP	Corrective Action Program
CAT	Caterpillar
CCR	California Code of Regulations
CEDs	consumer electronic devices
CEQA	California Environmental Quality Act
CIWMP	Countywide Integrated Waste Management Plan \
CLS	composite liner system
CPR	Cardiopulmonary Resuscitation
CRTs	cathode ray tubes
CRWQCB	California Regional Water Quality Control Board
CUP	Conditional Use Permit
DMP	Detection Monitoring Program
EA	Enforcement Agency
EIR	Environmental Impact Report
EMP	Evaluation Monitoring Program
ESL	Environmentally Sensitive Lands
HEA	horizontal equivalent acceleration
HLP	Habitat Loss Permit
LEA	local environmental agency
LFG	Landfill Gas
MCL	maximum contaminant level
MHPA	Multiple Habitat Planning Area
MND	Mitigated Negative Declaration
MPE	maximum probable earthquake
MSCP	Multiple Species Conservation Program
MSDS	material safety data sheet
msl	mean sea level
MSW	municipal solid waste
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
PCS	protective cover soil
PDP	Planned Development Permit
PGA	peak ground acceleration
p.m.	post meridiem
ppmv	parts per million by volume
RDSI	Report of Disposal Site Information
RWQCB	Regional Water Quality Control Board

SBB&M	San Bernardino Base and Meridian
scfm	standard cubic feet per minute
SCS	Soil Conservation Service
SDG&E	San Diego Gas and Electric
SDP	Staged Development Plan
Shaw	Shaw Environmental, Inc.
SL	Sycamore Landfill
SLI	Sycamore Landfill, Inc.
SWFP	Solid Waste Facility Permit
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USDA	United States Department of Agriculture
WDR	waste discharge requirements

1.0 GENERAL

This Joint Technical Document (JTD) was prepared in accordance with Title 27, Sections 21585 and 21590 of the California Code of Regulations (27 CCR 21585 and 27 CCR 21590). As the landfill operator, Sycamore Landfill, Inc. (SLI) is responsible for preparing this JTD and submitting it to the appropriate State and local regulatory agencies.

1.1 Regulatory Background

Two state agencies regulate most aspects of landfills in California: 1) the State Water Resources Control Board (SWRCB) and its subsidiary Regional Water Quality Control Boards (RWQCBs), and 2) the California Department of Resources Recycling and Recovery (CalRecycle), formerly the California Integrated Waste Management Board. The Local Enforcement Agency (LEA), part of the municipal government in the case of the Sycamore Landfill (SL), carries out CalRecycle's regulatory functions. Originally, the SWRCB and CalRecycle enforced separate regulations in CCR Titles 23 and 14, respectively. Title 23 required landfill operators to submit a Report of Waste Discharge (ROWD) to the RWQCB in order for the site to receive or revise Waste Discharge Requirements (WDRs). Likewise, Title 14 required landfill operators to submit an RDSI to the LEA and CalRecycle in order for the site to receive or revise a SWFP.

In September 1993, the State Legislature passed Assembly Bill (AB) 1220 requiring CalRecycle and SWRCB to eliminate regulatory overlap, develop a streamlined permitting process, and consolidate all regulations concerning solid waste disposal facilities. AB 1220 became law in October 1993. After joint efforts by both agencies, input from other agencies and the public and an environmental-impact review, a new CCR Title 27 went into effect in July 1997. Title 27 addressed the requirements of AB 1220 by merging the solid waste disposal facility regulations of Titles 14 and 23 into one set of regulations and clarifying the roles of the RWQCB, CalRecycle, and the LEA.

The SWRCB requires landfill operators to submit a ROWD in the form of a JTD as part of an application for WDRs from the applicable RWQCB (27 CCR 21585). Likewise, CalRecycle requires landfill operators to submit a RDSI in the form of a JTD as part of an application for a SWFP from the applicable LEA and CalRecycle (27 CCR 21590). The JTD must include an index for the LEA and CalRecycle to use in reviewing its compliance with the RDSI requirements listed in 27 CCR 21600. Similarly, the JTD must include an index in the RWQCBs format for use in reviewing the JTD for compliance with 27 CCR 20240 *et seq.*, which specifies ROWD requirements. Table 1 in this document is the CalRecycle index, while Table 2 is the SWRCB index.

Sycamore Landfill, Inc. (SLI) operates the site as a Class III landfill in conformance with Title 27 of the CCRs in San Diego, California (Figure 1). It occupies a 491-acre tract (permitted site area) located in a dry canyon north of Santee, known as Little Sycamore Canyon. The site was owned by the County of San Diego from 1962 to 1997. The County operated the landfill from 1962 until 1982. A private contractor was hired by the County to operate the site from 1982 until 1997. In 1997, SLI purchased the property and business of SL as part of its purchase of all solid waste assets of the County of San Diego pursuant to a public competitive bid process. MSW from residential, commercial and industrial sources is received, placed in the landfill, and covered on a daily basis with soil or an approved alternative daily cover (ADC).

The facility currently operates under the authority of SWFP No. 37-AA-0023, issued on November 3, 1997 to SLI, a subsidiary of San Diego Landfill Systems. The SWFP was most recently revised in 2006, allowing an increase in daily waste tonnage of MSW to 3,965 tpd and adjusted the remaining disposal capacity as a result of CIWMB revisions in the methodology used to calculate capacity as well as more efficient compaction practices by the landfill operator.

Appendix A contains copies of the permits and other related documents that govern the SL, which include the following:

- Solid Waste Facilities Permit No. 37-AA-0023 Revision 2006
- Waste Discharge Requirements Order No. 99-74
- Waste Discharge Requirements Order No. 99-74 Addendum No. 1 (2005)
- Monitoring and Reporting Program No. 99-74
- City of San Diego Site Development Permit No. 9310 and Planned Development Permit No. 9309
- San Diego County Air Pollution Control District Title V Permit to Operate

Copies of other operating permits that are renewed on a regular basis are not included in this submittal but are kept on file at the landfill facility. These permits include the following:

- San Diego County Department of Agriculture Scale Device Registration
- San Diego County Department of Environmental Health Unified Program Facility Permit

- Storm Water Pollution Prevention Plan (SWPPP)

The following is a list of CEQA documents that have been prepared for this facility:

- EIR (SS6401) (November 1973) – San Diego County Environmental Review Board approved to expand the landfill by 380 acres, from 113 acres to 493 acres.
- EIR (SS6401) (May 1974) – City of San Diego Planning Commission approved an amendment of CUP No. 6066 for the above-noted expansion, relying on the County's EIR.
- Negative Declaration 80-0T-16 (October 1980) – The County Environmental Review Board recommended approval for private enterprise lease of a community recycling center north of Mast Boulevard.
- MND No. 83-0789 (August 1984) – The Planning Commission approved CUP No. 83-0789 to allow generation of electrical power from methane gases collected for the landfill.
- Draft EIR (April 1985) – Prepared for the Sycamore Gravel Recovery Project.
- Final EIR (SCH No. 90010305) (November 20, 1990) – The County certified a final EIR for Sycamore Landfill Modification and Power Line Relocation. The project was not implemented at that time, but the ultimate landfill height was approved to elevations above 900 feet AMSL, depths of the fill were increased to 434 feet and the total landfill capacity was authorized to 80 million cubic yards.
- Final EIR 88-14-63 (May 21, 1991) – The County Board of Supervisors certified this Final EIR, which addressed a proposed new entrance facility for Sycamore Landfill. That new entrance was required to accommodate Caltrans' planned construction of SR-52. No significant traffic or other environmental impacts were identified in the EIR.
- Subsequent EIR (April 1996) (SCH No. 90010305) – The County prepared a subsequent EIR for the Sycamore Landfill Transmission Line Relocation, but this EIR was later rescinded by the County in response to litigation.
- Negative Declaration 99021093 (April 1999) – The City of San Diego Local Enforcement Agency (LEA) issued this Negative Declaration.
- Negative Declaration 99-0071 (August 2, 1999) – The City of San Diego Local Enforcement Agency (LEA) issued a revised Solid Waste Facility Permit No. 37-AA-0023 for landfill operation. The permit allowed an increase in daily tonnage to 3,300 tpd for Sycamore Landfill based on a reduction in the permitted number of operation days per month, which retaining the 2,500 tpd average set in 1993.

- Mitigated Negative Declaration 40-0765 (July 2002) – The City of San Diego approved this MND, a Community Plan Amendment, Planned Development Permit (PDP)/Site Development Permit (SDP) No. 40-0765, and a Multi-Habitat Planning Area (MHPA) boundary adjustment to brush and clear existing sensitive biological resources in three phases, process aggregate on site, and begin landfilling operations at 6:00 a.m.

- Negative Declaration 2006061901 (July 2006) – The City of San Diego approved this ND, for an increase of 665 tons per day in the maximum daily tonnage of municipal solid waste for a total of 3,965 tons per day for disposal. With this approval, the City also approved a correction in the remaining capacity from 20,600,000 cubic yards to 48,124,462; resulting in an updated closure date from 2016 to 2031.

1.2 Facility Overview

The Sycamore Landfill is located in a dry canyon north of Santee, known as Little Sycamore Canyon. The site was formerly owned by San Diego County, and operated by the County from its beginning in 1962 until 1982, when a private contractor was hired to operate the site. Operations were contracted out from 1982 until 1997 when San Diego Landfill Systems purchased the property and business of Sycamore Landfill as part of its purchase of all solid waste assets of the County of San Diego pursuant to a public competitive bid process. The facility currently operates under the authority of Solid Waste Facilities Permit (SWFP) No. 37- AA-0023, issued on November 3, 1997 to Sycamore Landfill, Inc. (SLI), a subsidiary of San Diego Landfill Systems. The SWFP was most recently revised in September 2006, allowing an increase in daily waste tonnage to 3,965 tons per day (tpd) and adjusted the remaining disposal capacity as a result of California Integrated Waste Management Board (CIWMB) revisions to the methodology used to calculate capacity as well as using more effective compaction practices by the landfill operator (see Appendix A-1).

SLI operates the site as a conventional Class III landfill in conformance with Title 27 of the California Code of Regulations (27 CCR). Municipal solid waste from residential, commercial and industrial sources is received, discharged to the landfill and covered on a daily basis with soil or an approved alternative daily cover. Additional details of site operations are described in this Report. In accordance with 27 CCR 21600(b)(1)(A), the following identifies and describes the facility for which the document is being prepared. The required information includes the facility name, the owner and operator of the site, its physical description, its mode of operation, and its operating hours.

1.2.1 Name of Site

The name of the site is the Sycamore Landfill. This is the only name by which the landfill has been known.

1.2.2 Name of Site Owner and Operator

The facility is operated under permit by SLI. The owner, operator's contact, contact address and telephone number are:

Owner:	Sycamore Landfill, Inc.
Operator's contact:	Mr. Tom Gardner, Area Environmental Manager
Contact address:	Sycamore Landfill, Inc. 8514 Mast Blvd. Santee, CA 92071
Telephone number:	(619) 562-0530

1.2.3 Description of Waste Handling Operation Cycle

Upon acceptance of waste for disposal, vehicles are weighed at the scale house. Waste is unloaded from transport vehicles at the active disposal area. The SL uses the canyon- and area-fill methods for trash placement. A spotter diverts private customers to a separate area of the active face away from commercial unloading areas. After private loads are inspected, they are dumped and the waste is then pushed to the fill area by a wheeled compactor (or crawler tractor) for compaction in the active disposal face. Refuse is typically placed in lifts. The lifts are constructed to meet the desired grades, both intermediate and final.

The SL has uniform procedures for handling of non-hazardous special wastes. Handling procedures for special wastes are presented in Section 7.5.2**.** Special wastes that are required to be disposed in lined areas equipped with leachate collection systems will be disposed in these areas. Dewatered sewage sludge, water treatment sludge, pre-approved petroleum-contaminated soil, treated wood waste and dead animals are accepted for disposal in lined areas of the site. Industrial solid wastes of various types not containing hazardous materials, large bulky wastes that include demolition debris, large tree trunks, and tires that have been altered (shredded, quartered, or bagged) in accordance with 14 CCR 17355, are accepted.

Non-friable asbestos materials are accepted at the site during designated hours, subject to special handling procedures. Before such materials are accepted, the generators are required to complete a waste profile sheet in order to document the waste meets permit standards for acceptance. Machinery and personnel do not come in direct contact with the non-friable asbestos materials during dumping, covering and compacting the load. Section 7.0 includes a description of the waste handling operation for the SL.

1.3 Site Location

The Sycamore Landfill is located within the corporate boundaries and on the east side of the City of San Diego approximately 5 miles northwest of the City of Santee, at 8514 Mast Boulevard (Figure 1).

The site lies within Sections 13 and 14 of T15S, R2W and Sections 7, 18, and 19 of T15S, R1W San Bernardino Base & Meridian (SBB&M). As indicated on Figure 1, all traffic accesses the site from Mast Blvd. Mast Blvd. connects with Highway 52, less than 1 mile from the site entrance.

1.4 Site Plan

The Sycamore Landfill is located in a dry canyon northwest of the City of Santee. Figure 2 shows the permitted site boundary that encompasses an area of 491 acres. Figure 2 also shows the 324-acre area[1] within which waste disposal is permitted under the SWFP. The areas of the four defined disposal stages are as follows:

Stage I	136 acres
Stage II	88 acres
Stage III	37 acres
Stage IV	28 acres
Additional Permitted Disposal Area	35 acres
Total Permitted Disposal Area	324 acres

To date, filling has occurred in Stages I and III. The "additional permitted area", although not defined in available historical documents, primarily consists of areas lying between the identified "Stage" areas, in which landfill activity is limited by the presence of the SDG&E power transmission lines that are planned for relocation (see Section 4.1.6 below).

Figure 3 is a current plot plan and land use map showing the tax lot parcels making up the 491-acre permitted site and also the surrounding properties. Figure 4 is the current topographic map of the site as of March 19, 2010. Grading plans and final fill plans for the disposal area are addressed in Sections 4.3 and 4.4. The final grading plan is shown in Figure 5. The vertical limit of the site, or permitted maximum fill height, is 883 feet. Figure 6 shows the topography of the site prior to landfill development or disposal.

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[1] Previous site documents for Sycamore Landfill cite the permitted waste footprint area as 340 acres, which included approximately 16 acres of the Navy leased property within Stage II. This property is not currently under lease, reducing the available waste footprint to 324 acres.

The site development plans presented in this RDSI are consistent with plans contained in earlier site documents and maintain the same total disposal area of 324 acres.

1.5 Hours of Operation

The site is permitted to be open to the public 7 days per week, 362 days per year. The site is currently open 6 days per week, Monday through Friday from 6:00 a.m. to 4:30 p.m., and Saturday from 6:00 a.m. to 4:00 p.m. Site holidays are Thanksgiving, Christmas, and New Year's Day.

Placement of cover material, maintenance, and monitoring are routinely conducted outside of public-access hours.

1.6 Aggregate Extraction and Processing Operation

Pursuant to approvals issued by the City of San Diego (see Section 9.1.3 below) and other responsible agencies, an aggregate extraction and processing operation was established at Sycamore Landfill in February 2003. The operation is contracted to a company under an agreement with Sycamore Landfill, Inc. Excavation started within the area designated as Stage III. The material was processed to obtain commercially useful aggregate materials and cover soil for landfill use. Approximately 60 percent by volume of the excavated material is being supplied to SLI for daily cover.

The initial excavation and processing of aggregate in Stage III was completed in 2006. The aggregate operation was then relocated to the Stage II and Stage IV areas.

The aggregate contractor is responsible for obtaining permits and complying with all regulations applicable to the aggregate extraction and processing operation, including but not limited to air emissions, storm water pollution prevention, and health and safety.

2.0 WASTE CLASSIFICATION AND MANAGEMENT

The Sycamore Landfill primarily serves as a disposal point for residential and commercial non-hazardous municipal solid waste (MSW) generated by the residents of the eastern part of the San Diego metropolitan area, including the cities of Santee, El Cajon, San Diego, Poway, La Mesa and Lemon Grove, and the surrounding unincorporated areas. However, some "special wastes" are accepted, subject to SLI approval and special handling. SLI makes every effort to comply with the waste-diversion mandates of the Integrated Waste Management Act (AB 939). As such, waste diversion and recycling are integral parts of the SL operations.

2.1 Waste Types and Volumes

2.1.1 Municipal Solid Waste

The Sycamore site receives residential and commercial non-hazardous MSW as defined by 27 CCR 20220 and 20230. The Sycamore Landfill does not accept batteries, gas tanks or containers, hazardous waste, medical waste, chemical by-products, pressurized containers, friable asbestos, oils, pesticides, herbicides, untreated sewage, shock sensitive wastes, radioactive wastes, or liquids (bulk liquid, paint, oil, parts cleaners, etc.). Waste auto oil, and auto batteries are collected at the public drop-off and recycling area, and periodically sent off to an authorized recycling firm. In addition, enameled home appliances (white goods) and consumer electronic devices are accepted, temporarily stored on site, and then sent off site to an authorized recycling firm.

In addition to MSW, the Sycamore Landfill also receives, processes, and uses green material and inert rock, concrete, and asphalt rubble. Green material is shredded and used as alternative daily cover or shipped off site for use as mulch or energy production. The inert materials are used on site for the construction of roads and wet-weather operational areas. Certain special wastes are also accepted according to a special waste program as discussed in Section 2.1.4.

The Solid Waste Facility Permit (SWFP) issued in September 2006 established the following limits on maximum tonnage at the Sycamore Landfill:

Maximum daily	3,965 tons per day

The current average daily tonnage is 3,200 tons per day.

If the maximum daily tonnage were actually received for 362 days in a year (7 days/week, less three holidays), the maximum number of days the site could operate, the annual tonnage would be 1,435,330 tons per year.

Projected volumes for the next five years, assuming 362 days per year of operations, are as follows:

	Tons per Year
2011	1,435,330
2012	1,435,330
2013	1,435,330
2014	1,435,330
2015	1,435,330

MSW received by the Sycamore Landfill includes non-hazardous residential, commercial, and industrial solid wastes having the properties of Class III wastes as defined in 27 CCR 20220. Typical non-hazardous residential solid waste includes:

- Household waste,
- Tree and lawn clippings, leaves and brush,
- Scrap metal and lumber,
- Appliances,
- Furniture,
- Wood chips,
- Plastic containers,
- Newspapers and cardboard, and
- Glass containers.

Non-hazardous commercial, industrial, and inert solid wastes accepted at the SL include:

- Paper,
- Corrugated cardboard,
- Plastic and rubber,
- Glass,
- Mixtures of concrete, asphalt, wood, steel brick, and block from demolition work, and
- Some food wastes.

The site received an average of 83,865 tons per month of MSW (excluding recyclables) in 2010.

2.1.2 Beneficial Reuse Materials

In addition to MSW, Sycamore Landfill receives, processes, and uses green/wood material and C&D material (inert rock, concrete and asphalt rubble), which are not included in the daily disposal total. Green material is shredded and used as alternative daily cover or mulch, and the inert materials are used for construction of on-site roads and wet-weather operational areas. The site received the following volumes of beneficial reuse materials in 2010:

Unprocessed green material	9,425 tons per month (average)
Inert base materials	567 tons per month (average)

Landfill records indicate that incoming volumes of these materials vary widely from day to day, resulting in the averages listed above. On rare occasions, the volume of unprocessed green material has reached approximately 700 tons in one day. Daily volumes of clean inert base materials have on occasion been as high as 500 tons in one day. On other occasions, the site receives no volume of these materials for beneficial reuse.

Beneficial materials not utilized on site (e.g., contaminated loads of odorous green material), that are disposed of in the landfill are counted toward the daily disposal limit of MSW.

All vehicles transporting materials for beneficial reuse or disposal are counted toward the traffic permit limit. However, beneficial reuse materials that are utilized on site, although weighed at the scales, are not counted toward the daily disposal limit of MSW.

2.1.2.1 Green/Wood Material

SLI operates a green material recycling operation at various locations within the permitted landfill waste footprint. Source-separated loads of clean lawn and tree trimmings, brush, dimensional lumber, wood pallets and similar green and wood material are delivered to the site by collection vehicles, landscapers, contractors, municipalities and the general public. Green material is then processed within seven days and used for beneficial purposes. If treated wood is identified in a load, it is removed and stored temporarily until properly disposed. Treated wood and other contaminants are removed before the green material moves on to grinding. The acceptable material is stockpiled temporarily, ground or shredded, and used on site within seven days as ADC at the active disposal area or for mulch/erosion control on landfill slopes. A subcontractor may be used to process this material.

2.1.2.2 Construction and Demolition Material

At the present time, the SL accepts only source-separated untreated wood, pieces of concrete and asphalt. The concrete and asphalt are set aside and used for wet-weather pads at the landfill working areas. Other than some breakup of the concrete and asphalt during handling and placement, no other crushing is performed. The wood is chipped and turned into mulch, along with mulched landscaping greens described above.

2.1.3 Liquid, Designated or Hazardous Wastes

Sycamore Landfill does not accept liquid, designated or hazardous wastes as defined in Title 27 CCR. The hazardous waste exclusion/load checking program (Appendix B) described in Section 8.11 below is implemented to ensure such prohibited wastes are not inadvertently accepted.

2.1.4 Special Wastes

Wastes which, because of physical characteristics, chemical make-up, or biological nature require both special handling procedures and permitting, or which pose an unusual threat to human health, equipment, property, or environment, are generally referred to as "Special Wastes." Generators of these types of wastes are typically commercial or industrial businesses. Sycamore Landfill requires evaluation, characterization, and approval of all Special Wastes by Sycamore Landfill personnel prior to acceptance for disposal. Customers desiring to dispose of Special Wastes must contact the SLI regarding specific requirements and information needed to make a determination regarding acceptance for disposal. A copy of the Sycamore Landfill Special Waste Policy is available at the landfill. The types of special wastes acceptable at the Sycamore Landfill include, but are not limited, to the following:

- Non-friable asbestos or material containing non-friable asbestos,
- Treated medical waste,
- Contaminated soil or residue from spill clean-up work,
- Sandblast grit and other powdered or highly dusty materials,
- Dead animals,
- Off-specification products (i.e., large quantities of food, consumer and industrial products),
- Ash from fires, furnaces, boilers, or incinerators,
- Sludges from water or wastewater treatment facilities,
- Treated wood (i.e., power utility poles and railroad ties),
- Cleaned empty drums or containers that contained hazardous materials, and
- Other commercial/industrial wastes requiring special handling.

As noted above, and consistent with its current WDR, the Sycamore Landfill accepts contaminated soils and treated wood for disposal in lined areas of the site. Contaminated soils may also be used as daily cover in lined areas. Specific sampling and testing procedures are followed to ensure that contaminant levels do not exceed limits established for California non-hazardous wastes.

Generators desiring to dispose of such special wastes must submit a Special Waste Disposal Request (SWDR) to SLI. An inspector will then review the request and any supporting documentation, and approve or disapprove the disposal request. If the request is approved, the generator will obtain a copy of the approved SWDR form and will be scheduled on a specific day to bring the waste to the SL for disposal. The load must be accompanied by a Special Waste Manifest obtained from the landfill office after approval of the disposal request.

2.2 Waste Treatment, Storage, and Disposal Methods

The treatment, storage, and disposal methods used at the Sycamore Landfill are relatively conventional and reflect the current standard of practice for municipal solid-waste landfills in Southern California.

2.2.1 Treatment Methods

There are no proposed treatment procedures for the wastes before landfilling. Interim daily cover is placed over the waste after placement. The final cover will be placed over all landfill areas once waste placement is completed and the landfill has reached final permitted elevations.

2.2.2 Storage Methods

Waste storage at a landfill typically involves waste that is separated as recyclable or compostable and stored on site before processing. However, bulky wastes, such as tree stumps or empty tanks, may be stored for short periods if they cannot be properly handled when received. For example, bulky waste is best placed near the bottom of a lift. If a lift is near final grade, the bulky waste will be stored until another lift is started. Most stored bulky waste is inert or decomposes slowly.

2.2.3 Disposal

Section 7.5 includes a description of the disposal operations at the Sycamore Landfill.

2.3 Waste Decomposition Processes and Products

Solid waste undergoes chemical and biological decomposition after landfilling. Decomposition begins when organic wastes undergo aerobic decomposition during storage and transport, after placement in the landfill, and until aerobic processes deplete the available oxygen. As oxygen is depleted, anaerobic decomposition becomes dominant. The duration of decomposition can vary from a few years to over 100 years, depending on the amount of oxygen, moisture content of the waste, pH, and temperature. Factors influencing decomposition include the moisture and density of the waste, temperature, soil cover permeability, rainfall, and waste composition.

Biological decomposition of organic wastes produces solids, liquids, and gases. Typical primary products of aerobic decomposition include carbon dioxide, water, and nitrates. Typical primary products of anaerobic decomposition include methane, carbon dioxide, water, organic acids, nitrogen, ammonia, iron sulfides, manganese, and hydrogen. Degradation of inorganic wastes occurs primarily through chemical oxidation and results in solid, liquid, and gaseous products.

Leachate is formed when infiltrating surface water and free liquids within the waste migrate through the waste mass to the landfill floor. The Sycamore Landfill is designed and operated to minimize the formation of leachate by minimizing the infiltration of rain water. In addition, the landfill is designed to capture leachate formed within the landfill through the use of various containment collection systems. Leachate quantities to be generated within the lined part of the landfill are estimated based on measurements from current operations. Leachate generation should decrease over time after the final cover is placed, because that cover should effectively minimize the infiltration of precipitation into the landfill.

Landfill gas (LFG) generation and composition depends on the waste types in the landfill and the conditions that exist during decomposition. A LFG control and monitoring system has been installed on and around the waste disposal areas at the Sycamore Landfill and will be expanded to incorporate the currently proposed expansion. LFG control and LFG monitoring are discussed in Section 4.9.

Post-closure settlement of the waste will result from its subsidence due to waste decomposition and due to both its self-weight and the external loads imposed by the final cover. The post-closure period is assumed to be 30 years. The waste thickness typically increases from the landfill boundary to the landfill interior, with a corresponding increase in anticipated settlement. The final waste slope is expected to be maintained from the top deck towards the boundaries by adding soil as the waste settles. Larger settlements typically occur

in the center of the top deck. Final surface slopes of the landfill will be constructed with a minimum slope of 5 percent. Therefore, surface drainage should not be adversely affected during the post-closure maintenance period.

Post-closure settlement and final cover maintenance are discussed in the Preliminary Closure and Post-Closure Maintenance Plan (Appendix C).

3.0 WASTE MANAGEMENT UNIT CLASSIFICATION AND SITING

The following section address the requirements of 27 CCR 21600(b)(3). This regulation requires information regarding the site location, surrounding land uses and zoning, proximity of the site to airports, site service life and capacity, and ancillary facilities at the landfill. This section also addresses waste management unit characteristics regarding potential for impairment and support for the unit classification. Sections 1.3 and 1.4 contain additional information pertaining to the location of the SL

3.1 Airport Safety

Sycamore landfill is located approximately 3.0 miles northwest of the end of runway 9L/27R at Gillespie Field, a County-owned airport in El Cajon. Gillespie Field is a major general aviation airport with about 726 based aircraft and an average of 573 aircraft operations per day, including jet aircraft. It is not certified for commercial airline operations.

The distance from the landfill to the airport exceeds 10,000 feet, therefore, SLI is not subject to the location restrictions or bird hazard demonstration provisions of 27 CCR 20270(a). However, the landfill site is within 5 miles of the airport and the airport operator and the Federal Aviation Administration must be notified in the event SLI proposes lateral expansion in the future, as provided in 27 CCR 20270(b).

3.2 Volumetric Capacity

The total volumetric capacity of the permitted disposal area was originally estimated to be 40,200,000 cubic yards, assuming no excavation of the subgrade to create lined disposal cells and provide soil for daily, intermediate and final cover. Computations documented in the 2006 RDSI submittal, based on current design grades for existing and future lined disposal areas in Stages I-IV, resulted in an estimated gross capacity of 71,233,171 cubic yards, including final cover. The estimated gross capacity does not include 35 acres of “additional permitted areas,” as discussed in Section 1.4.

As of February 28, 2011, an estimated volume of approximately 28,986,620 cubic yards was filled, leaving a remaining gross capacity of approximately 42,246,551 cubic yards. The net remaining volume, estimated by reducing the gross capacity by the volume that will be occupied by protective cover soil over future liners (2 feet thick) and final cover over the entire landfill, is estimated to be approximately 40,355,079 cubic yards available for solid waste and daily cover soil. Appendix D contains details of the capacity estimates.

3.3 Site Life Estimate

At the proposed maximum daily tonnage of 3,965 tons per day, the maximum annual disposal volume would be 1,435,330 tons per year. With a remaining compacted density of 1472 lbs/cubic yard (0.736 ton per cubic yard, based on aerial survey data from February 2005 through March 2010), the site would have a life of 20.7 years from February 2011, or until October 2031. A disc containing the topographic surfaces used to calculate the volume is included in Appendix D.

3.4 Site Location and Access

The site is located approximately 5 miles northwest of the City of Santee, at 8514 Mast Boulevard (see Figure 1). The site lies within the corporate boundaries of the City of San Diego, consisting of several parcels as shown in Figure 3. The following assessor's parcel numbers are located within the permitted site boundary: 366-041-01 and 366-080-57.

The site lies within Sections 13 and 14 of T15s, R2W and Sections 7, 18, and 19 of T15S, R1W SBB&M.

As indicated on Figure 1, all traffic accesses the site from Mast Blvd. Freeway access from east and west is via the 52 Freeway, which interchanges with Mast Blvd., less than 1 mile from the site entrance.

3.5 Land and Water Use

3.5.1 Surrounding Land Uses

Per 27 21600(b)(3)(E), land use on the properties surrounding the SL are shown on Figure 3. Undeveloped Marine Corps Air Station (MCAS) Miramar lands used for military training and habitat conservation are located to the north of the site, SR-52 and Mission Trails Regional Park lands are located to the south. Undeveloped private lands lie immediately to the west and east. In addition West Hills Park and West Hills High School are located approximately 0.75 mile southeast of the landfill area. The Santee Lakes and Recreation Area are located approximately three-quarters of mile to the east. Existing residential areas are located approximately 0.7 mile from the landfill to the east, 0.75 mile to the southeast, and one mile to the south.

Private land near the landfill are designated Open Space use in the current Community Plan but are zoned RS-1-8 residential (City of San Diego, 2008). Although nobody lives there now and no development applications other than Castlerock have been formally proposed, it is assumed that residential development could occur in the future. It is also assumed that development of the Marine Family Housing project, less than two miles west of the landfill,

might occur. The closest structure to the site boundary is a school facility about 3,000 feet southeast of the southeastern boundary as shown in Figure 3.

3.5.2 Proposed End Use of Site

The proposed end use of the closed landfill is vegetated open space. The site will be secured by fencing, gates, and signs.

3.5.3 Water Use Within One Mile of the Site

Both surface water and groundwater are limited in quality and quantity. Their use is unattractive since economical municipal supplies of better quality and reliability are available. There are no identified current beneficial uses of groundwater down-gradient within one mile of the SL site as described below.

Beneficial Uses of Water

The San Diego RWQCB adopted the *Comprehensive Water Quality Control Plan Report, San Diego Region* (Basin Plan) in 1975 (last revised in 1994) to define beneficial uses for the groundwater and surface water in each hydrologic unit within the San Diego Region. Incorporating statewide plans and policies by reference, the Basin Plan presents strategies for protecting those beneficial uses. The beneficial uses are the uses of water necessary for the survival and well being of man, plants and wildlife. The SL is located within the Santee Hydrologic Subarea of the Lower San Diego Hydrologic Area of the San Diego Hydrologic Unit basin number 7.12. The Basin Plan and its subsequent updates designate beneficial uses, water quality objectives, and prohibitions for the Santee Hydrologic Subarea. The following beneficial uses for the Little Sycamore Canyon and Santee are:

Beneficial Uses	Surface Water	Groundwater
Municipal and Domestic Supply	Exempted	✓
Agricultural Supply	✓	✓
Industrial service supply (potential beneficial use)	✓	✓
Industrial Process Supply	N/A	✓
Water contact recreation	✓	N/A
Noncontact water recreation	✓	N/A
Warm fresh water habitat	✓	N/A
Cold fresh water habitat	✓	N/A
Wildlife habitat	✓	N/A
Preservation of rare and endangered species	✓	N/A

✓ Existing Beneficial Use

The San Diego Regional Board's Basin Plan also sets narrative and numerical water-quality objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy. The constituents and quality of water needed to protect varies to beneficial uses. These are numerical values for analytical constituents that are critical indicators of groundwater quality. The following water-quality objectives apply:

Constituent	Concentration Not To Be Exceeded More Than 10% of the Time	
	Surface Water	Groundwater
Total Dissolved Solids	1000 mg/L	1000 mg/L
Chloride	400 mg/L	400 mg/L
Percent Sodium	60 %	60 %
Sulfate	500 mg/L	500 mg/L
Nitrate	N/A	45 mg/L
Nitrogen & Phosphorus	*	N/A
Iron	1.0 mg/L	0.3 mg/L
Manganese	1.0 mg/L	0.05 mg/L
Methylene Blue Active Substances	0.5 mg/L	0.5 mg/L
Boron	1.0 mg/L	0.75 mg/L
Odor	None	None
Turbidity	20 NTU	5 NTU
Color	20 Units	15 Units
Fluoride	N/A	1.0 mg/L

* Maintain concentrations of nitrogen (N) and phosphorus (P), by themselves or combined with other nutrients, at levels below those which stimulate algae and emergent plant growth. Threshold total P concentrations shall not exceed 0.05 mg/L in any stream where it enters any standing body of water. A desired goal to prevent plant nuisances in streams and other flowing waters appears to be 0.1 mg/L total P. These values are not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for N compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P=10:1 shall be used.

However there are no identified current beneficial uses of groundwater within one-mile down-gradient of the SL site. The facility's Solid Waste Assessment Test (SWAT) investigation (IT, 1992) identified two water wells that were within one-mile of the SL. However both of these wells are located upgradient of the SL and are included in the SWAT (IT, 1992). No new potable water wells since 1992 are known to have been created within one-mile radius of the SL (City of San Diego, 2008).

Surface Water

Little Sycamore Creek flows into the San Diego River only mile south of the landfill. The streams that drain the Canyon are considered ephemeral with surface water that flows only in direct response to moderate or large rainfall event (City of San Diego, 2008).

3.6 Impairment Potential

Under 27 CCR 21750(a), dischargers must analyze how groundwater and surface water could affect the WMU, and how groundwater and surface water could be adversely affected if waste escapes the WMU. This analysis is provided to the RWQCB for its determination of the WMUs suitability with respect to groundwater protection and avoidance of geologic hazards, and to demonstrate the WMUs compliance with 27 CCR 20240 *et seq*.

In general, MSW landfills can potentially affect underlying groundwater through liquid (leachate) or LFG migration processes. For leachate to affect groundwater, the fluid must flow by gravity through the unsaturated zone and into the saturated zone. Leachate impacts to groundwater may include contamination by several chemical compounds, including volatile organic compounds (VOCs), semi-volatile organic compounds, pesticides, and by increased concentrations of metals and minerals. LFG can affect groundwater if the gas migrates through the unsaturated zone to groundwater. LFG impacts to groundwater may include elevated concentrations of VOCs and changes in inorganic water chemistry caused by carbon dioxide and methane in LFG.

Minimal potential exists for the SL to affect beneficial uses of groundwater, as siting, design, and operational factors tend to limit the migration of leachate or LFG to groundwater. These factors include the following:

- All landfill expansions are constructed with a liner and a leachate collection and removal system (LCRS) which meet the requirements of 27 CCR and the WDRs in Order No. 99-74.
- The SL is in a semiarid area where the average precipitation for the 1979-2010 period of record is 12.17 inches, as measured at the El Cajon station. The rainy period for the area occurs from October through April. Such limited precipitation is associated with low infiltration because evaporation and plant transpiration are

sufficient to minimize infiltration below the rooting zone which would be especially applicable at final closure.

- The landfill drainage network is designed to divert storm water run-on from off the site, around the landfill, and toward the natural drainage course south of the site so that the run-on discharge does not enter the landfill area.
- Groundwater monitoring wells are located for early detection in the event of a release.
- The LFG collection system minimizes the quantity of LFG migrating from the landfill that could impact groundwater.

The operational elements are as follows:

- No liquid wastes are accepted for disposal in the landfill,
- Wastes are compacted to decrease permeability and increase their ability to shed water,
- Wastes are graded to direct run-off away from active disposal areas, thus limiting the volume of storm water that enters the waste,
- Daily cover is placed on the waste to minimize water from entering the waste,
- The intermediate and final covers are placed and graded to promote run-off from the landfill and minimize water entering the landfill.

Potential impairment to surface water would likely not occur (a) if wastes, or pollutants derived from them, escaped from the disposal area during the operations period, or (b) if erosion, slope failure, or human incursion were to breach the final cover and expose wastes, or pollutants derived from them, to the elements. Any such waste materials not intercepted, removed, or contained, would drain to channels defined by earthen berms or ditches, which would flow into a sedimentation basin located south of the landfill. Further, impairment of surface water would be limited because:

- Wastes disposed at the SL are limited to non-hazardous solid wastes having the properties of Class III wastes (27 CCR 20220), including some “special” wastes,
- No designated, liquid, and hazardous wastes, pesticides, or other toxic wastes are accepted for disposal in the landfill,
- The landfill is located in a dry canyon and 0.8 miles from the nearest floodplain, limiting the potential for off-site transport of landfill wastes,

- The storm water sedimentation basin that intercepts sediment during run-off events will also intercept wastes that escape the landfill, either during operations or after closure.

During operations, the operating criteria cover procedures, waste handling procedures, and environmental controls described in Sections 5.0 through 8.0 of this document will be in place specifically to prevent the escape of wastes from the landfill. During and after closure, it is the purpose of all of the final closure elements, primarily the final cover, to prevent both the escape of wastes from the landfill and their exposure to the external environment. It is the purpose of post-closure maintenance to prevent failure of final closure elements and to put in place procedures that allow for the prompt detection, containment, and repair of any such failure.

3.7 Unit Classification

The SL is classified as a Class III landfill. No change to the waste types accepted for disposal at the SL is planned. Therefore, the current landfill classification will not change.

3.8 Ancillary Facilities

Figure 2 illustrates the locations of the significant ancillary facilities at Sycamore Landfill, including:

- Entrance facility, consisting of a scale house and office trailers
- A steel storage container to accumulate intercepted hazardous materials
- Equipment maintenance area, where routine maintenance is performed from mobile service vehicles. Major maintenance is performed off site.
- 12,000 gallon above-ground diesel fuel tank near the landfill gas recovery facility. The double walled tank was constructed on a concrete slab with a six (6) inch curb.
- Methane recovery facility, located south of the permitted waste disposal area. As detailed in Section 4.9 below, this facility contains the blowers, condensate collection tanks and flare system used to manage landfill gas.

4.0 DESIGN AND CONSTRUCTION STANDARDS

4.1 General Design Parameters

4.1.1 Service Area

Sycamore Landfill primarily meets the waste disposal needs of the eastern part of the San Diego metropolitan area, including the cities of Santee, El Cajon, San Diego, Poway, La Mesa, and Lemon Grove, and the surrounding unincorporated areas. As a privately owned and operated facility, the site is also available for use by commercial waste haulers and transfer station operators in north San Diego County.

4.1.2 Climatological Factors

The site is located in a semi-arid region within the costal inland zone. Based on records from El Cajon for the period 1979-2010, mean monthly temperatures range from a high of 76.4°F in August to a low of 55.4°F in December (Table 3). Average annual rainfall is about 12.2 inches occurring primarily from October to April (Table 4). Wind speeds average about 7 miles per hour year-round, with prevailing winds from the west, based on data from San Diego (Table 5).

4.1.3 Physical Setting

The site is located in Little Sycamore Canyon, a dry canyon with a base elevation (pre-landfill) of about 600 feet above sea level and an upper elevation of approximately 800 feet at the northerly part of the site. Canyon walls sloped at a grade of approximately 3H:1V (horizontal:vertical) prior to landfill development.

The site is located approximately 0.8 mile from the San Diego River floodplain, and is therefore not within the 100-year floodplain.

A major physical feature affecting the development of the site is the San Diego Gas and Electric power transmission lines that traverse through the center of the site. This issue is addressed in Section 4.1.6 below. Another significant aspect of the site physical setting is the predominant native vegetation, generally characterized as Costal Scrub Sage. This plant community has been determined to be prime habitat for several threatened and protected wildlife species. As a result, its development is subject to controls of the City of San Diego regulations governing environmentally sensitive lands, which require a Habitat Loss Permit. Habitat Loss Permits issued for development activities at Sycamore Landfill in the past have required the operator to acquire and conserve equivalent off-site habitat at a ratio of two acres for each acre of habitat disturbed at the site. Sycamore Landfill has purchased all mitigation lands needed for the remaining development of the site, including Stages II, III and IV. Additional Habitat Loss Permits will not be required.

4.1.4 Geology

The site is located in the Peninsular Range geomorphic province of southern California on the west side of the mountainous southern California batholiths that dominates the province. The southern California batholith is characterized by diverse topography ranging from rolling hills to rugged terrain. The stratigraphic units identified at the site are, from youngest to oldest, Quaternary stream alluvium; Eocene deposits of the Pomerado Conglomerate, Mission Valley Formation, Stadium Conglomerate, and the Friars Formation; and Cretaceous granitic rocks of the California batholith.

Alluvium consisting of unconsolidated stream deposits of silt, sand, and cobbles forms deposits a few feet thick in the narrow canyon midway through the site. Underlying the alluvium are the Pomerado and Stadium Formations, which are essentially indistinguishable at the site. This conglomerate formation is a massive cobble conglomerate with clasts of mildly metamorphosed, rhyolitic to dacitic, volcanic and volcanic clastic rocks and granitic quartzite. Arkose and siltstone beds, lenses, and tongues of light-brown, medium-grained sandstone constitute up to 20 percent of the formation (Kennedy and Peterson, 1975).

The Friars Formation is a non-marine, lagoonal sandstone with interbeds of claystone. The sandstone is massive, yellowish gray, medium-grained, poorly indurated, and caliche rich. The claystone is dark greenish gray, well indurated, and expansible (Kennedy and Peterson, 1975).

Cretaceous granitic rocks are exposed 2,000 feet southeast of the landfill. These rocks consist of quartz diorite and gabbro and form large, rounded outcrops in the area. Reconnaissance mapping and review of the available geologic maps reveal no faults on site or within 1 mile of the site.

Surface solids at the site form a thin mantle covering the massive conglomerate underlying the site. The thin soil covering is formed by arkosic sand partially altering to clay in the weathered zone. The conglomerate formation consists of partially clay-altered, angular sand that forms a weak matrix between conglomerate clasts.

The USDA Soil Conservation Service (SCS) (now the Natural Resources Conservation Service) defines the thin site soils as part of the Redding series (USDA, 1973, Map 55). Redding series soils consist of well-drained, gravelly loams. The landscape surrounding the Redding soils is characterized by V-shaped valley bottoms and steep side slopes. The soil typically consists of 20 to 35 percent cobblestones and has a moderate erosion hazard (USDA, 1973, Part I, p. 72). The permeability of the soil is moderate, in the range of 0.6 to 2 inches per hour, owing to the bedding of arkosic sands (USDA, 1973, Part II p.59).

4.1.5 Drainage

The surface water management system at Sycamore Landfill is designed to direct storm water runoff toward the natural drainage course south of the site with minimum soil erosion or flow concentration. Landfill top deck areas are finished with a minimum slope of 3 percent to promote drainage to channels defined by earthen berms or ditches, which direct flow into two sedimentation basins located at the southwest corner of the Stage I area.

4.1.6 Other - Power Transmission Line Easement

As noted above, high-voltage power lines of San Diego Gas & Electric Company (SDG&E) bisect the Sycamore Landfill site in a 200-foot wide easement. Agreement was reached in 1990 with SDG&E to relocate the lines to a new easement running along the west perimeter of the site, but the relocation has not yet been implemented.

Until the transmission lines are relocated, the site's staged development plan (SDP), upon which the City of San Diego has relied in issuing the Conditional Use Permits for the site, specifies that waste will not be placed closer than 40 feet from power line sag points. This limits the utilization of the central part of the site for waste disposal.

4.2 Design Responsibility

Design of all aspects of the disposal facilities at Sycamore Landfill has been conducted by or under the supervision of registered civil engineers. Drawings contained or referenced in this document were prepared by professional engineers associated with Emcon Associates, Inc., GeoSyntec Consultants, Inc., A-Mehr, Inc., IT Corporation, and Shaw Environmental, Inc. All design activities, plus construction, will be conducted under the direction of a registered civil engineer and appropriately registered professionals in other disciplines such as hydrology or geology, as needed.

4.3 Construction Sequencing Plans

Sycamore Landfill constructed the first lined disposal cell at the site during 1999-2000, in an area designated "I-B North Cell". This area of approximately 17 acres comprises the northern extent of Stage I-B, bordering the SDG&E transmission line right-of-way. Filling commenced in the new area in June 2000.

During 2002 a new disposal area designated "Stage I South Cell" was constructed in the southeast corner of Stage I. As shown on Figure 2, this lined cell covers approximately 6 acres and includes a leachate collection sump and collection point. It is the last area to be developed in the Stage I area.

In 2008, the Stage III-A cell was constructed. As shown in Figure 2, this lined cell covers approximately 14.4 acres and includes two leachate collection sumps. The construction of the Stage III-A cell is documented in the Construction Quality Assurance Report (A-Mehr, 2008).

Subsequent development will occur in the remainder of Stage III, in Stage IV and, finally in Stage II as designated in Figure 2.

4.4 Grading Plan

Figure 5 presents the current conceptual final grading plans for development of Stages I through IV. Prior to the construction of each new Stage, a Design Report will be submitted for approval by the RWQCB and the LEA.

4.4.1 Base Grading Plan

Native soil and rock material will be excavated to create the disposal areas. Depths of excavation will vary. The floor of the new disposal areas will slope at a minimum two percent within each LCRS mainline draining toward leachate collection sumps. Soils present in the landfill excavation area will continue to be separated from rock and aggregate materials and used for daily or interim cover. The rock and aggregate materials will be transported off site to construction sites throughout the region.

Landfill base grades will maintain a minimum five-foot separation between landfilled waste and the highest anticipated elevation of underlying groundwater 27 CCR 20240(c).

4.4.2 Excavation Sideslope Grading

Internal side slopes in the excavated area will have grades of 1.5H:1V between benches, with an overall gradient of about 2H:1V. The slope stability of various excavation and fill slopes at the site were previosuly evaluated by Diaz-Yourman & Associates (2003), the results of which are contained in a report entitled *Preliminary Geotechnical Investigation, Sycamore Landfill Supplemental Grading.* The report states that existing excavation slopes at 1.5H:1V or steeper appear to have performed well during the past 30 years. The report concluded that cut slopes at 1.5H:1V up to a maximum depth of 290 feet height would be stable. Similar conclusions were drawn by Hushmand Associates (1999).

4.4.3 Soil Excavation and Stockpiling

The native soil material excavated to create the new disposal areas contains extensive deposits of gravel and rock that can be processed and exported from the site for use as construction materials in the San Diego region. The residual fine soils is retained on site and used for landfill daily or intermediate cover, or stockpiled for use as final cover material. SLI has entered into an agreement with a major aggregate producer for the processing of this

material. Stockpiles are graded to promote lateral run-off away from active disposal areas. Interim drainage and erosion control features such as silt fences will be installed at all stockpile areas as needed.

4.5 Liner System

All new disposal areas will be equipped with liners and leachate collection systems meeting current federal 40 CFR Part 258 Subtitle D (Subtitle D) and state 27 CCR 20320. All new landfill disposal areas beyond the existing waste footprint will be lined. Liner systems may change from time to time based on future technological or regulatory developments, but at a minimum they would be equivalent to existing systems approved and installed consistent with RWQCB Order 99-74. This system consists of the following components listed from bottom to top:

- Compacted subgrade
- 40-mil thick high density polyethylene (HDPE) geomembrane (textured both sides)
- Geosynthetic clay liner (GCL) with permeability less than 5.0×10^{-9} cm/sec
- 60-mil thick HDPE geomembrane (textured both sides)
- Non-woven geotextile over the HDPE geomembrane if the following granular drainage is angular (this geotextile is not needed if granular drainage is subrounded)
- 12 inches of granular drainage material on the floor only
- Non-woven geotextile over the granular drainage material on the floor and over the geomembrane on the side slopes
- Two feet of protective cover soil over the floor and side slopes

This liner system satisfies the standards of Subtitle D. A detailed description of the liner components is provided below.

Base Composite Liner

As required by regulation, the SL base composite system is to be designed and constructed with a containment system which meets regulations defined under 27 CCR, Division 2, Chapter 3, and federal non-hazardous MSW regulations, as specified in 40 CFR, Parts 257 and 258 (also known as Subtitle D) for Class III landfills. The liner system as proposed for the SL groundwater protection system is described as a Composite Liner System (CLS). The base liner CLS consists of a 6-inch layer of compacted select material (yellow fill), covered

by a 40-mil HDPE geomembrane (textured both sides), GCL, 60-mil HDPE geomembrane (textured both sides), 1-foot gravel drainage layer for leachate collection with non-woven geotextile as described above, which drains to an LCRS trench with a 12-inch perforated LCRS pipe, and LCRS drainage gravel covered by a separator geotextile and a 2-foot protective cover soil (PCS) layer.

Side Slope Composite Liner

The slope sides of the CLS proposed for the SL includes a 6-inch soil layer of compacted subgrade soil covered by a 40-mil HDPE geomembrane (textured both sides), GCL, 60-mil HDPE geomembrane (single-sided textured, textured side against the GCL), and a 2-foot PCS layer.

4.6 Leachate Collection and Removal System

Leachate will be collected in sumps designed to hold twice the maximum anticipated weekly leachate production. The landfill currently collects leachate in sumps and periodically pumps the leachate into temporary holding tanks or directly into transport trucks. Trucks transport the leachate off site to a public wastewater treatment plant for disposal as non-hazardous wastewater. This process will continue unless SLI is successful in obtaining RWQCB and San Diego Air Pollution Control District (SDAPCD) approval of an alternative. Under the alternative, landfill leachate and would be returned to lined areas of the landfill that have an LCRS. Existing spill containment and response plans will be maintained on site to respond to accidental releases of leachate.

4.6.1 Design Criteria and Objectives

The LCRS design was based on then-current State and Federal regulations governing municipal solid-waste landfills. These criteria resulted in a design that:

- Limits leachate head to no more than 1 foot at all points on the liner system
- Collects and removes twice the predicted maximum daily volume of leachate
- Maintains a minimum gradient of 1 percent in the mainline
- Preserves long-term performance compatibility in the leachate environment and under the expected maximum conditions of landfill loading.

Furthermore, the LCRS was designed in accordance with the following objectives.

- To rapidly transport collected leachate from the liner to the collection point
- To maintain a reasonable and effective collection pipe spacing over the landfill base

4.6.2 LCRS Design

The existing LCRS in Stage III includes two leachate collection sumps and perforated 12-inch diameter mainline leachate collection HPDE pipes that will serve the expanded Stage III footprint. The 12-inch diameter pipe is placed in a gravel layer. The LCRS gravel is specified to be clean, hard, sound, and durable. A geotextile is placed over the gravel to separate it from the protective soil layer.

Leachate flows through the gravel blanket until a collection pipe, intercepts it, and carries it to one of two leachate collection sumps. The leachate collection sumps store the leachate until it is pumped and disposed of by transport to a wastewater treatment plant.

The geotextile used in the bottom drainage systems is constructed of polyester or polypropylene, needle-punched, non-woven, and ultraviolet light stabilized material. Geotextile associated with the LCRS is intended to function as a filter layer to minimize fines from entering the LCRS gravel, while allowing liquids to pass through. And, if angular drainage rock is used, an underlying geotextile will function as a cushion.

4.7 Precipitation and Drainage Controls

An active storm water management system approved by the RWQCB and LEA will be implemented during all phases of site development. The principal features of the storm water management system will be perimeter roads and drainage channels to intercept run-off from upland areas outside the waste footprint, temporary diversion ditches in areas within the planned footprint that have not yet been excavated for liner construction, and temporary retention ponds and drainage channels associated with each successive new disposal cell. These will prevent and control storm water run-on to the facility.

4.7.1 Existing and Proposed Drainage Systems

Surface water from the landfill will be routed to sedimentation basins that will allow suspended solids to settle before the water is discharged to the existing natural drainage course. As new stages are developed, the drainage system will be modified as necessary.

In conformance with 27 CCR 20365, surface water management structures and systems will be designed to manage the 100-year frequency 24-hour duration storm event.

4.7.2 Details of Proposed Final Drainage System

Storm water control facilities proposed for the SL consist of drainage diversion ditches, pipe downdrains, culverts, and drain inlets. Most of the ditches on the landfill top deck and benches are proposed to be grassed-lined. Drainage ditches along the perimeter of the landfill were modeled with roughness coefficient for concrete-lined channels.

Drainage ditches on the landfill benches were modeled to have a minimum slope of 2 percent. Drainage inlets at slope benches were ignored to simplify the hydraulic modeling were modified accordingly to account for hydraulic grade changes at benches.

Final landfill grades are designed to promote runoff and minimize erosion damage. The completed landfill will be provided with drainage facilities designed to control and convey runoff from the top deck and side slope areas down to the perimeter drainage ditches. Surface runoff from the landfill will be routed through a sedimentation basin for discharge to the natural watercourse at the southern boundary of the site.

The final grading plan, Figure 5 shows the proposed final grading and drainage plan.

Downdrains

The downdrains are laid perpendicular to slope contours and located on top, and anchored into, the final landfill surface. They are extended up completed side slopes of the landfill as the filling progresses. The downdrains also have inlets at each bench to accommodate f1ows along the inside edge of the intermediate benches resulting from storm water from the landfill side slopes.

Perimeter Drainage Channels

Compacted earth berms around the deck perimeter, the working face, and the intermediate benches will be configured as shallow V-shaped channels directing storm water to the downdrain inlets along the perimeter of the top deck. Both lined and unlined channels will be used around the landfill perimeter. The perimeter channels typically will have gradients of 1 to 3 percent.

Off-Site Drainage

Off-site drainage features are intended to control storm water that would flow onto the landfill site and divert flows around the landfill perimeter. The existing topography around the boundary of the landfill typically slopes parallel or away from the site and will not require off-site run-on control. Run-on flows will be contained in the perimeter drainage channel.

4.8 Final Cover

This section describes the proposed final cover design for the SL and identifies potential borrow areas where the quality and quantity of soil needed to complete the closure can be obtained. The purpose of a final cover is to provide long-term minimization of surface water intrusion, to accommodate settlement and subsidence, to isolate wastes from the ground surface, and to reduce the potential for odors and gas emissions. It also provides a growth medium for vegetation which will reduce drainage velocities and minimize erosion of the

cover. The final cover design for the SL conforms to the requirements for Class III municipal solid waste landfills in 27 CCR 21090, 27 CCR 21140, and 40 CFR 258.60.

4.8.1 Prescriptive Design Standards and Alternative Cover Designs

The final cover for the landfill will be designed to meet or exceed the requirements of 27 CCR 21090 which requires the following components from bottom to top, or an approved equivalent alternative design:

- A foundation layer consisting of minimum of two feet of soil;
- A low-hydraulic-conductivity layer consisting of compacted soil or geosynthetic material with hydraulic conductivity no greater than that of any bottom liner system or underlying geologic materials whichever is less permeable; and
- An erosion resistant layer consisting either of minimum of one foot of soil suitable for sustaining vegetation or layer of rock or rubble capable of providing erosion resistance.

However, because the climate and setting of Southern California favor alternative final cover designs from both cost and performance standpoints, SLI proposes to install a monolithic alternate earthen final cover that would be approved under the provisions of 27 CCR 21090. The final cover will likely consist of the following components listed from bottom to top:

- A foundation soil layer of compacted waste and/or interim cover,
- A soil layer consisting of a minimum of 24 inches of natural soil materials with a permeability of about 1.0×10^{-6} cm/sec (anticipated to consist of "yellow fill" and rock dust produced as by-product of the aggregate processing operation being conducted on site by a contractor under an agreement with SLI), and
- 12-inch thick erosion control/vegetative soil layer.

4.8.2 Evapotranspiration Cover Design Concept

The purpose of the final cover is to prevent direct contact of the outside environment with the landfill material, protect the landfill material from erosion, and minimize the amount of surface water infiltration to the landfill material. These purposes will be accomplished through the use of an evapotranspiration (ET) cover system (Vector, 2008). A copy of the evaluation report is provided as an appendix to the Preliminary Closure and Post-Closure Maintenance Plan contained in Appendix C of this JTD.

The proposed alternative cover system is a type of water-balance or ET cover design that is often used in Southern California because of its relative economy and history of successful performance. Briefly, an ET cover relies on a thick layer of vegetated soil to control

infiltrating water by means of storage in soil pores and extraction via evapotranspiration. In contrast, the prescriptive cover controls water infiltration by means of a low-permeability barrier layer, through which water can pass only slowly and in limited quantities. Figure 7 in Appendix C shows a typical section of the proposed monolithic final cover system proposed for the SL.

The desired borrow source for the ET cover at the SL is known as the yellow fill stockpile, which is a readily available and abundant soil source located onsite. The yellow fill stockpile is currently in use by landfill operations for daily and intermediate cover material. Approximately 60 percent of all excavated material at the site is yellow fill. Yellow fill is described as a sandy clay (SC). Specific properties of the yellow fill are described in a report that is appended to the Vector (2008) report provided in Appendix C of this JTD.

It is assumed that 1 foot of interim soil cover is in place over the waste and is constructed as part of the normal operations of the landfill. The intermediate cover material will be suitable for the evapotranspiration (ET) cover. The remaining 3 feet (resulting in a 4-foot ET cover) will be placed as follows. The lower 2 feet, the water-storage layer, will be compacted to a medium density at water contents somewhat below the soil's field capacity. At the surface, the uppermost 1 foot of soil will be a vegetative layer. It will be less densely compacted and, if necessary, will be amended with soil nutrients to support the growth of vegetation. The 4-foot monolithic cover will rest on a proof-rolled surface formed from the existing landfill waste. This surface corresponds to the foundation layer described in 27 CCR 21090(a).

To enhance slope protection and erosion control, the final cover surfaces will be planted with native vegetation compatible with the site end-use as non-irrigated, open space. The plant parameters are specified in the "Vegetative Cover Plan" that is appended to the ET cover evaluation (Vector, 2008) which is contained in Appendix C of this JTD.

The final cover will be designed to require minimum maintenance. Grading will be designed to prevent ponding and provide for a deck area gradient of at least three percent on open, unchannelized slopes, and to minimize wind and water erosion in surface drainage ways.

4.9 Landfill Gas Management

The landfill gas management system is composed of a methane recovery system and a landfill gas flare system.

The methane recovery system was installed at Sycamore Landfill in 1989. Another company operates the facility independent from SLI. The system is composed of three turbines, two

with a capacity of 540 cfm each and a third with a capacity of 1,600 cfm for a total of 2,680 cfm. The methane recovery system currently processes about 1.9 million cubic feet of landfill gas daily or about 1,300 cfm, from a network of landfill gas extraction wells ranging in depth from 30 to 150 feet. Gas is burned continuously in the gas turbines to produce electrical power that is sold to San Diego Gas and Electric (SDG&E). Additional turbines will be added as landfill gas volume increases. A figure showing the existing system of extraction wells and piping used to deliver gas to the gas recovery system is provided in Appendix E.

The landfill gas flare system was constructed and began operating in 2001 to manage landfill gas generated in excess of the capacity of the electrical generating system. There are two enclosed flares, each having a gas combustion capacity of 1,800 standard cubic feet per minute (scfm). During 2010, the flare processed an average of approximately 1,200 cfm. With the cogeneration facility processing an average of approximately 1,300 cfm, the Sycamore Landfill gas management system processed a combined average of approximately 2,500 cfm during 2010.

Condensate collected from the LFG extraction system is stored temporarily in tanks at the gas recovery plant, and then incinerated in the respective combustion units. Operations of the gas recover plant and flares are conducted pursuant to conditions of permits issued by the San Diego County Air Pollution Control District.

As future stages are developed, additional vertical LFG extraction wells along with horizontal LFG extraction wells will be installed to control LFG migration and emissions. LFG header pipes will be extended as needed to convey the gas to the gas recovery and flare facilities. Additional blowers, turbines and flares will be added as needed to manage increased gas volumes in the future.

A network of permanent perimeter gas monitoring probes around the landfill is used to ensure that landfill gas does not migrate beyond the site boundaries. As required by 27 CCR, Article 6, Section 20921, all probes must be below 5.0 percent methane by volume which is its lower explosive limit (LEL). Perimeter probe monitoring is conducted on a quarterly basis. If readings are greater than 5 percent by volume, the Local Enforcement Agency (LEA) will be notified and appropriate mitigation measures will be taken. Typical mitigation measures include adjustments to the LFG collection system. A figure showing the current network of gas perimeter probes is included in Appendix E. Structures on site (presently limited to the gas recovery plant building) are also monitored. SLI also complies with current surface emission monitoring requirements. SLI performs the monitoring quarterly to ensure compliance. Landfill gas monitoring is discussed further in Section 4.13.4

4.10 Construction and Inspection Procedures

This section describes the construction and inspection procedures to be followed including the preparation of a Construction Quality Assurance (CQA) Plan in accordance with 27 CCR 21760(a)(4).

4.10.1 CQA Plan

The CQA Plan provides a definition of the materials and procedures to be used during construction and provides the owner and agencies with the knowledge that the landfill construction materials will be tested, installed and monitored as specified in the design plans and specifications. And that accepted civil engineering practices and applicable CQA requirements of the RWQCB, CIWMB, and the LEA wil be incorporated and followed. For each staged development, a CQA Plan will be prepared by a registered civil engineer or certified engineering geologist and will present the requirements and procedures that will be implemented during construction in accordance with 27 CCR 20324. The final construction documents will include detailed plans and specifications and specify the minimum experience requirements for contractors, work crews, and inspectors. The specifications will include detailed requirements for all major contract elements. A registered engineer, engineering geologist, or civil engineer designated as the CQA Officer will be in charge of observing the installation of the work, reviewing the materials for conformance with the plans and specifications and all testing completed for the project.

4.10.2 Responsibility and Authority

The CQA Officer will be responsible for monitoring implementation of the improvement plans. The CQA Officer will:

- Review design plans and specifications for accuracy and completeness,
- Schedule CQA monitoring activities and coordinate necessary CQA monitoring staff,
- Review and interpret data and reports prepared by CQA monitoring staff,
- Monitor the contractor's quality control program.

The CQA monitoring staff will perform various tests and observations during construction activities such as the following:

- Regularly verifying and documenting that test equipment is properly calibrated
- Accurately recording test data and organizing it in a manner that allows easy reference

- Evaluating the contractor's construction quality control plans to see that they meet or exceed the CQA Plan requirements
- Reporting observations and test results as the work progresses

The CQA monitoring staff will work under the supervision and guidance of the CQA Officer, who is responsible for verifying that all testing is conducted in accordance with ASTM International (ASTM) standards or other specified test methods, and that proper test equipment is used. The results of monitoring and testing activities, including work that is unacceptable, will be reported to the CQA Officer.

4.10.3 Personnel Qualifications

The CQA team will consist of a CQA Officer and monitors having the following qualifications:

CQA Officer

The CQA Officer will have formal academic training in engineering or geology and be a registered professional engineer or certified engineering geologist in the State of California. The CQA Officer should have practical, technical, and managerial experience that will allow the CQA Plan to be properly implemented. The CQA Officer must be able to communicate effectively with the landfill personnel, design engineers, and contractors to facilitate a clear understanding of construction activities and the CQA Plan.

CQA Monitoring Personnel

CQA monitoring personnel must have formal training and practical experience in monitoring and testing construction work relative to solid waste disposal sites, including conducting and recording monitoring activities, preparing daily reports, and performing field testing.

4.10.4 Monitoring Activities

The CQA team will perform monitoring activities throughout construction at the SL. These activities are divided into pre-construction, construction, and post-construction activities.

Pre-Construction

Pre-construction monitoring activities of the CQA team will generally include the following:

- Review of design criteria, drawings, and specifications for the construction work
- Observation of the handling and storage of materials proposed for construction

Construction

Construction monitoring activities of the CQA team will generally include the following:

- Review of contractor's submittals, samples, and supporting test reports

- Review of the contractor's work schedules
- Verifying that materials are as specified in the plans and specifications or as approved by the engineer for earthen fill materials and geosynthetic materials
- Observing all phases of construction and documenting the contractor's compliance or noncompliance with the approved plans, specifications, and directions of the engineer. Field tests and visual observations will be used to evaluate construction practices
- Communicate observed construction deficiencies to the engineer
- Accommodate seasonal conditions, if warranted

Testing Program

A testing program will be implemented during construction to check that all components are constructed according to the design plans and specifications. Tests will be conducted by CQA personnel or qualified laboratories under the supervision of the CQA staff.

Daily Record-Keeping and Reporting

A summary report will be prepared daily throughout the construction period by each CQA monitor with supporting inspection data sheets and records of any problems that occur or corrective measures that are implemented. A daily chronological summary will then be prepared by the CQA Officer that includes the following, as applicable:

- Date, name of project, and location
- Weather and site conditions
- Summaries of any meetings conducted
- Results of meetings other than formal periodic meetings
- Location of daily construction activities and progress
- Record of equipment and personnel working areas
- Location of work being tested and areas accepted
- Description and condition of any materials received at the site
- Record of equipment calibration or recalibration and actions taken due to recalibration
- Site visits by others
- Identification of construction problems and their solution or disposition
- Signature of the CQA Officer or monitor

Monitoring Data Sheets

Field observations and testing will be recorded on inspection data sheets which in combination with the technician's daily reports will be used to formulate the daily summary report. All field testing will follow ASTM standard test procedures or other appropriate and recognized test methods. Observations in the field may take the form of the ASTM notes, charts, drawings or sketches, photographs, or any combination of the above. Monitoring data sheets will contain the following information as applicable:

- Description and title of the monitoring activity
- Time the activity was performed
- Location of the monitoring activity
- Weather conditions
- Site conditions
- Standard test method used or type of monitoring activity
- Test equipment used
- Record of observation and/or test data, with all calculations completed and checked
- Comparison of test results and observations with specification requirements
- Names and titles of all persons involved in the inspection activity
- Record of unacceptable materials or workmanship, with corrective actions and results
- Signature of appropriate inspection personnel and the CQA Officer

Acceptance of Completed Components

The CQA Officer shall review all daily monitoring reports, monitoring data sheets, and documenting photographs for internal consistency, accuracy, and completeness. These reports will be included in the project files and will be available to regulatory agencies upon request.

Document Control and Storage

During construction, the CQA Officer will be responsible for all CQA documents and organizing on-site documents for easy access. The CQA Officer will keep duplicates of all documentation at another location. The CQA Officer will incorporate revisions to the CQA Plan and distribute revised copies to construction contractors and other relevant parties. All documentation will be stored and protected from damage throughout the post-closure maintenance period of the facility.

Post-Construction Final Documentation

At the completion of each construction phase of the landfill the CQA Officer shall prepare a final report that will include the following elements:

- Daily monitoring summary reports
- Monitoring data sheets
- Photographs
- As-built drawings
- Compliance with and deviations from design and material specifications (with justifying documentation)

A statement that the construction was completed in general conformance with the design specifications, the approved plans, and approved modifications of the plans and specifications will be provided and included in the final documentation submitted to regulatory agencies. The final report will be signed and stamped by a registered professional.

4.11 Slope Stability Analyses

For each stage of development, a Design Report will be submitted for regulatory approval. As part of the Design Report, results of slope stability analyses will be presented that are applicable for the particular development stage. Previous analyses prepared for Stage III-B was performed by Golder (2008). Similar analyses will be performed for future stages as described below.

The slope stability of both the permanent waste slopes (global slope stability) and temporary waste slopes (interim slopes stability) were analyzed under both static and seismic conditions. The results showed that the shear strength of the landfill liner system control the factors of safety against landfill slope stability. Since the shear strength of the liner system is variable depending on the actual soil and geosynthetic materials used in the field, the design approach used was to compute the minimum liner shear strength required to satisfy the static and seismic design criteria. The liner shear strength requirements were then estimated based on the slope stability of both temporary and permanent waste slopes, and under both static and seismic conditions. These computed minimum shear strengths were incorporated into the construction specification for the landfill stage and verified prior to installation of the liner components. Had any of the shear strength values fallen below the minimum specification (at a specific normal load), the slope stability analyses could have been recalculated to verify the adequacy of the shear strength values.

Based on traditional geotechnical practice, a minimum static factor of safety of 1.5 is considered acceptable for global slope stability of the permanent waste slopes. Since the temporary waste slopes may remain un-buttressed for a relatively long time (more than one year), a minimum static factor of safety of 1.5 was also used as the minimum requirement for the interim waste slopes.

Title 27 requires that Class III landfills be designed to resist peak ground acceleration (PGA) anticipated at the site during the MPE.

27 CCR 21750(f)(5)(D) requires that a dynamic factor of safety of 1.5 or greater must be achieved for the critical slope, unless a more rigorous method of analysis is used that provides a quantified estimate of the magnitude of slope movement. A rigorous seismic slope stability analysis was performed to estimate the potential for permanent displacement of the landfill slopes during the MPE.

CCR Title 27 does not specify an acceptable value for permanent displacement. Therefore, based on U.S. Environmental Protection Agency (USEPA) (1995) and Seed and Bonaparte (1992), a maximum allowable permanent displacement of 6 inches along the liner system has been used as the seismic design criterion.

For Stage III-B, the static slope stability analysis was performed using the computer program SLIDE© (Version 5) developed by Rocscience, Inc. SLIDE© performs two-dimensional limit equilibrium analysis. The Morgenstern-Price method with half-sine interslice force function was used in the static slope stability analyses.

Seismic slope stability analyses performed to satisfy 27 CCR 21750(f)(5)(D) included:

1. Use of a site-specific seismic hazard evaluation that estimated the MPE values for faults that can impact this site and the corresponding magnitudes of the peak horizontal ground acceleration (PHGA) values.

2. Use of spectrum-compatible acceleration time histories in the site response analyses.

3. Pseudo-static slope stability analyses using the SLIDE© computer program to estimate the yield acceleration values for the critical cross sections analyzed for global and interim slope stability.

4. Seismic response analyses using the SHAKE91 computer program to estimate the average horizontal equivalent acceleration (HEA) time histories within the critical failure surfaces associated with the critical yield acceleration values.

5. Newmark-type displacement analyses using the computer program DISPLMT, which involves the double-integration of the average HEA values that exceed the

yield acceleration value, to estimate the potential magnitude of seismically induced permanent displacement of slopes during the MPE.

The results of the permanent displacement analyses using DISPLMT showed that none of the HEA values exceeded the corresponding yield acceleration values. Therefore, no permanent displacement was predicted. Liner materials to be used in future stages will be tested

4.12 Other Seismic Hazards

Other seismic hazards such as liquefaction, lateral spreading, and seismically-induced settlement, are not credible causes of significant damage. These hazards generally require the presence of relatively loose, granular, saturated soils in the subsurface, in addition to strong ground motion. The landfill excavation penetrates conglomerate typically composed of relatively large particle sizes that are cemented together. Under these conditions, significant liquefaction, lateral spreading, or seismically-induced settlement are very unlikely.

4.13 Environmental Monitoring Programs

Systems exist at the SL to monitor regional groundwater and perched zones in accordance with the requirements of 27 CCR 20380 to 20435. The SL also monitors leachate, storm water discharges, and landfill gas emissions. SLI also keeps site records which provide daily vehicle counts, tonnage, results of hazardous waste exclusion program (visual load screening), and observations of the waste unit and perimeter areas including drainage facilities and landfill surfaces. The compliance period for environmental monitoring is the active life of the landfill plus the closure period as defined in 27CCR 20410. Monitoring systems are designed by a registered geologist or registered civil engineer. Water quality monitoring is performed in accordance with the RWQCB Monitoring and Reporting Program No. 99-74.

4.13.1 Groundwater and Vadose Monitoring Program

The groundwater and vadose zone monitoring system at the SL is currently in a Detection Monitoring Program (DMP) and Corrective Action Program (CAP). Monitoring of the groundwater wells is performed in accordance with the requirements of the California RWQCB, Order No. 99-74 and listed in the Monitoring and Reporting Program (M&RP); vadose monitoring is not performed at the SL. Locations of existing groundwater monitoring wells are shown in Figure 2. No additional groundwater monitoring wells are proposed. The compliance period for groundwater monitoring as defined in 27CCR 20410 as the active life of the landfill plus the

The groundwater monitoring network at the SL consists of seven groundwater wells and three piezometers (Figure 2) and is summarized in the following table:

Sycamore Landfill Groundwater Monitoring Program		
Monitoring Point	**Monitoring Point I.D.**	**Aquifer**
Groundwater Monitoring Well - Compliance	ITSY-5, ITSY-7, ITSY-9, ITSY-11	Bedrock
Groundwater Monitoring Well - Compliance	ITSY-6R*, ITSY-10*	Bedrock
Groundwater Monitoring Well - Background	SLMW-12	Alluvium
Piezometer	BRG-3, BRG-8, BRG-l0**	Bedrock

* - Corrective Action Program (CAP) Well

****** - Historically Dry

The upgradient well SLMW-12 provides control data for use in comparison with wells located downgradient from the landfill. The Point of Compliance is shown on Attachment No. 2 to Monitoring and Reporting Program, No.99-74 and extends down through the zone of saturation.

Monitoring Frequency:

Water levels – Semiannually

Groundwater Sampling – Semiannually in June and December (Reported Apr. 30 and Oct. 30)

Leachate – Annually in October - due Jan. 31 (retests in April if a new COC is identified) due August 1.

Per the M&RP No. 99-74, samples from the background and compliance wells at the SL are tested semiannually for indicator parameters, including chloride, nitrate as nitrogen, sulfate, total dissolved solids (TDS), pH, and VOCs. In addition to the indicator parameters, all groundwater monitoring wells are analyzed every five years for Constituents of Concern (COCs) for water-bearing media listed in Appendices I and II to 40 CFR Part 258. COCs include cyanide, sulfide, 17 metals, semi-volatile organic compounds (SVOCs), organochlorine pesticides, chlorinated herbicides, and polychlorinated biphenyls (PCBs).

Corrective Action Program

VOCs were first identified in samples from groundwater monitoring wells during the Solid Waste Assessment Test, when the County of San Diego operated the site. An Evaluation

Monitoring Program (EMP) was conducted and interim corrective action measures were initiated in April 1996. The EMP indicated that organic impacts observed in well ITSY-6 appeared to be associated with landfill gas, while intermittent storm water runoff from the desilting basin might be the potential source of inorganic impacts. A Report of Waste Discharge recommended construction of a landfill gas extraction system, and using well ITSY-6 as an extraction well. CAP monitoring points have included wells ITSY-6 and ITSY-10, sampled concurrently with other groundwater monitoring wells. Impacted groundwater is pumped from well ITSY-6 to an aboveground storage tank equipped with an automated float sensor to prevent overflows. Extracted groundwater is transferred from the tank to water trucks, and the water is used for dust control at the site. In August 2008, well ITSY-6 was abandoned and replaced by well ITSY-6R due to well deterioration and subsequent pump failure. Well ITSY-6R was redeveloped, and a new pump and controller were installed near the end of 2009.

Water Quality

Existing groundwater quality at SL is generally similar to that of the regional aquifer in the Santee hydrologic subarea. This Santee hydrologic subarea has been characterized as containing relatively high concentrations of dissolved solids (from 800 to more than 1000 milligram per liter [mg/L]), chloride, sulfate, and nitrate. Geo-Logic (2008) concludes that these exceedances are generally consistent with the historical database for the SL, including similar and/or higher chloride and TDS concentrations in background well SLMW-12 compared to the other site wells.

Constituent of Concern (COC) analysis is performed every 5 years. Wells consistently impacted by organic compounds are the CAP wells (ITSY-6/6R and ITSY-10). The most common VOCs detected in well ITSY-6/6R have been 1,2-DCB, 1,4-DCB, and chlorobenzene; and PCE and TCE in well ITSY-10. However, none of the measured concentrations approaches an MCL.

4.13.2 Leachate Monitoring

The SL is in a semiarid region with an average annual precipitation of about 12 inches. Also, SLI has installed surface-water control facilities to divert run-on from the waste cells, and has graded these areas to promote drainage away from the disposal area. Furthermore, the SL does not accept liquid waste. These measures limit the volume of liquid entering the waste, thereby reducing the amount of leachate generated.

Existing Leachate Control and Removal Measures

Phase I is unlined and lacks an internal system for leachate collection and removal. SLI installed its first lined cell (Stage 1B-North Cell) with a leachate collection and removal system (LCRS) in June 2000. The LCRS system allows for leachate to collect into a nearby

sump, where a pump system transfers the leachate to an above ground polyethylene holding tank. The leachate collected from this sump is identified as LCRS-N1B. A second cell (Stage 1B-South Cell) was constructed with an LCRS in October 2002. It was designed and constructed in a similar manner to the first LCRS system and leachate collected from this second south cell is identified as LCRS-S1B. The latest cell constructed is located at the south end of the permitted boundary and was completed in 2008. This cell has an LCRS consistent with RWQCB Order No. 99-74 and was constructed with two LCRS sumps. The leachate is pumped either to a holding tank or directly to a transport truck for disposal at a public wastewater treatment plant.

Leachate Monitoring

Pursuant to RWQCB Order No. 99-74, leachate is sampled and tested annually in October. Samples are analyzed for COCs. The COC list consists of all waste constituents listed in Monitoring and Reporting Program 99-74 plus any additional constituent listed in Appendix II to 40 CFR Part 258. Two new COCs were identified in the leachate sample collected in October 2009 (acetophenone and 2-methylnaphthalene). Accordingly, retest samples were collected for analysis of SVOCs in April 2010. Only a trace concentration of 2-methylnaphthalene was measured in the retest and this compound was added to the COC list.

4.13.3 Storm Water Monitoring

The discharge of storm water-borne pollutants from the SL to waters of the United States must be limited pursuant to SWRCB Water Quality Order 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, “Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities”. A copy of the current SWPPP for the SL is available on site. Run-on/run-off control facilities are designed to accommodate the 100-year, 24-hour storm event as required by CCR Title 27. The SWPPP defines Best Management Practices (BMPs) for controlling storm water pollution that SLI and contractors must implement at the SL. These BMPs include provisions to maintain and repair equipment and facilities that affect storm water quality. The SWPPP also defines inspection, monitoring, and sampling activities to assess the performance of BMPs and measure pollutant loads during run-off events, as required by the Permit.

4.13.4 Landfill Gas Monitoring

CalRecycle has adopted regulations for LFG monitoring that conform to the Federal Subtitle D regulations. 27 CCR 20920 requires owners or operators of all municipal solid waste landfill units routinely monitor landfill methane to ensure that methane concentrations neither exceed 25 percent of the lower explosive limit in on-site structures, nor do they exceed the lower explosive limit at the facility boundary. The monitoring program is based

on site-specific factors, including soil conditions, hydrogeologic and hydraulic conditions, and the location of facility structures and property boundaries.

A network of permanent perimeter gas monitoring probes surround the SL to verify that subsurface migration of landfill gas is not occurring. Appendix E provides a figure that shows the existing monitoring probes and the planned future probes.

For the safety of landfill staff, methane concentrations are monitored in the operations facilities using permanently mounted methane detectors. These devices sound an alarm whenever the concentration of methane in air exceeds one-quarter of the lower explosive limit. The detectors do not record methane concentrations continuously, nor do they produce a permanent record. However, SLI does inspect them quarterly to check if they are functioning properly and to perform any needed maintenance. SLI keeps records of these inspections and their results.

In addition to the LFG monitoring required under 27 CCR 20290, the SDAPCD administers Title V Permit to Operate (Appendix A-4). The following tasks are performed to monitor LFG:

- Perimeter probe monitoring. As required by CCR 27, Article 6, Section 20921, concentrations at probes must be below 5.0 percent methane by volume which is its lower explosive limit (LEL). Perimeter probe monitoring is conducted on a quarterly basis. If readings are greater than 5 percent by volume, the Local Enforcement Agency (LEA) will be notified and appropriate mitigation measures will be taken. Typical mitigation measures include adjustments to the LFG collection system.
- Surface emissions are monitored in accordance with SDAPCD Rule 59. Maximum allowable emissions are 500 ppmv. Monitoring is conducted quarterly.

5.0 OPERATING CRITERIA

5.1 Records

The following records are maintained on site as required by 27 CCR 20510 and 20515:

- Records of waste volumes received based on scale readings for commercial and contract haulers and operational use of K factors (see Table 6)
- Log book of unusual occurrences
- Records of excavations (27 CCR 20510(b))
- Records of personnel training
- Copies of written notifications to the LEA, local health agency and fire authority of names, addresses and telephone numbers of site supervisory personnel
- Records related to the hazardous waste screening program under 27 CCR 20870
- Gas monitoring results
- Preliminary closure and post-closure plans
- Cost estimates and financial assurance documentation

In addition, the site maintains complete records of its groundwater monitoring program being conducted according to current requirements of the RWQCB. The following periodic monitoring activities are conducted at Sycamore Landfill:

- Depth-to-groundwater measurements
- Groundwater gradient and flow velocity calculations
- Quarterly or semi-annual collection and analysis of groundwater samples
- Semi-annual evaluation of resulting water quality data.

The groundwater monitoring well network is inspected quarterly and maintained according to a RWQCB-approved monitoring and well preventative maintenance program.

5.2 Security

The site is surrounded by a wire fence or inaccessible terrain. The fences and gates control unauthorized access to the site. A camera monitors and records gate to scale transactions 24-hours per day. Monitors are located in the operations office. Remote video cassette recorders log on a continuous basis.

The facility identification sign is located adjacent to the access road near the entrance gate. The sign indicates the name of the facility operator and the hours of operation. Additional signs are located on the driveway prior to the scale house indicating the schedule of charges,

hours of operation, and the general types of waste which will not be accepted at the site. Beyond the scale house, signs are posted along the access road to direct customers to the landfill operating areas, and to advise visitors of site safety rules.

5.3 Sanitary Facilities

Sanitary facilities, consisting of an adequate number of toilets and handwashing facilities are provided to personnel at or in the immediate vicinity of the work areas. Commercially bottled water is provided for site personnel pursuant to 27 CCR 20550 and 20560.

5.4 Water Supply

Pressurized water lines supply potable water to the restrooms at the fee booth entrance area, the restrooms and showers at the Operations Center, and the restroom for the Engineering trailer. Bottled drinking water is available in the Engineering and Operations office trailers and the administrative trailer at the fee booth entrance area.

5.5 Communications Systems

Telephones are available on site at the scale house and administrative office trailer. On-site personnel communication and emergency communication are accomplished with mobile radios and cell phones.

5.6 Lighting

Portable lighting fixtures with attached diesel powered generators are positioned at several locations in the operations area during winter hours when operations may be required to begin before sunup or continue until after sundown. The site maintains on average approximately four light plants ready for use at all times, and will add additional units as needed. Permanent external lighting is provided at the scale house and office trailer.

5.7 Safety Equipment

Site personnel are provided personal protective equipment, including hard hats, reflective vests or shirts, gloves, safety glasses, ear protection, and filtration masks. All workers on the landfill are required to wear a hard hat, safety vest or shirt and safety boots. Workers who handle waste with their hands (load checkers) are required to wear gloves and safety glasses. Ear protection and dust filtration masks are provided for worker comfort. Liquids (e.g., Gatorade, water) are provided in the summer to help guard operations personnel against heat stress.

Fire extinguishers and first aid kits are located throughout the site in the buildings/trailers, operating equipment and other vehicles. Continuous gas monitors for the presence of methane are located in all occupied structures.

Operating and maintenance personnel wear safety equipment pursuant to 27 CCR 20590. Training records for site personnel emphasizing site safety, health and environmental controls, and emergency procedures have been placed in the site operating records in accordance with 27 CCR 20610.

5.8 Personnel Requirements

Based on the current average daily waste stream, the qualified personnel listed below operate and maintain the facility efficiently and in compliance with the state minimum standards. The number of personnel may fluctuate depending on-site conditions, daily volumes and as other job duties are defined.

- One Site Manager. Responsible for all aspects of site operations, including customer relations, personnel management and compliance programs.
- One Lead Person (per shift). Operates equipment as needed, carries out safety policies as they pertain to the working area. Investigates and reports all accidents, incidents or injuries within the area of supervision. Assists Operations Supervisor as needed.
- Five to Eight Operators (per shift). Operate equipment in the disposal areas.
- Three to Five Laborers. Perform litter control and other site maintenance.
- Two Spotters/Load Checkers (per shift). Direct traffic in the working area, monitors loads for unacceptable wastes.
- Four Cashiers/Clerks. Operate the scales; provides administrative assistance as required.
- Three Service Technicians. Perform necessary maintenance and repairs on the landfill equipment.

Site supervision is maintained by qualified personnel to ensure the safety and efficient management of site operations, as well as compliance with applicable regulatory requirements and permit conditions. At a minimum, one Lead Person is on site at all times during facility operations. Employee logs are maintained on site.

5.9 Personnel Training

All new landfill employees are given an initial training session regarding safety procedures and potential hazards, and are issued appropriate personal protective equipment. A series of health and safety and environmental training videos, as well as discussions, may be used during training. Training records are located in the operating records files. New employees are prohibited from operating equipment until the appropriate training has been completed.

In addition, required training for each type of personnel listed in Section 5.8 above is as follows:

- Focus 6 Topics Training. This training is conducted monthly by showing third-party-produced videos that were prepared specifically for Republic Services. Each of the six topics are reviewed twice per year and consist of the following:

    1. Employee Safety
    2. Backing of Equipment
    3. Rear Collisions
    4. Intersections
    5. Heat Considerations
    6. Pedestrians

- Monthly Safety Training. In addition to the Focus 6 Topics Training described above, Republic's Division Safety Officer or his representative conducts monthly training sessions. These Power Point presentations cover a variety of subjects, including the following: emergency response, first aid/CPR, hazardous materials, "Right to Know"/MSDS review, flammables, personal protective equipment, hot loads, proper lifting techniques, slips and proper dismounting techniques, reporting of accidents, heat stress, hearing conservation, operation of loaders, pre-operation inspections, housekeeping, load check requirements, and lockout/tagout procedures.

After each of the above training sessions, Republic's Division Safety Officer or his representative conducts a discussion of the topic covered and provides a quiz to the employees.

5.10 Supervisory Structure

The following full-time supervisors are located either on site or at the nearby office of San Diego Landfill Systems, and are available to assist the Sycamore Landfill Site Manager with all aspects of site operations:

- General Manager. Responsible for overall site management.
- Site Manager. Responsible for all aspects of site operations, including customer relations, personnel management and compliance programs.
- Environmental Manager. Responsible for environmental compliance, monitoring and reporting, engineering and construction.

5.11 Spreading and Compaction

Compactors and dozers push and spread the refuse in layers which are a maximum of 2 feet thick, compacting the waste in three passes, and providing a stable base from which to operate. The refuse fill is placed in lifts 12 to 20 feet thick with perimeter slopes of 3 horizontal to 1 vertical. The active working face for each day is typically one lift, approximately 200 feet wide, but multiple working disposal faces are utilized if necessary due to high rates of disposal volume or operational constraints. Utilizing this procedure, Sycamore Landfill achieves an in-place refuse density approximately 1,400 to 1,600 pounds per cubic yard. This is calculated based on the previous year and current year aerial topographic survey and the waste receipts for the same time period.

In advance of the rainy season, a wet weather pad area and road is chosen each year based on filling plan progress and the approximate waste volume expected during the rainy season. The area is covered with concrete and asphalt demolition base material, allowing it to be used when rainy weather will not permit vehicle access to the normal working refuse face or when mud would be a nuisance to roads located off site.

6.0 COVER

6.1 Cover Materials

Waste is covered at the end of each operating day with 6 to 12 inches of soil or approved alternative daily cover (ADC) as discussed in Section 6.4 below. Intermediate cover material of at least 24 inches of soil and/or mulch is placed on areas that will not be overfilled for 180 days or more. Final cover will be placed as required by state regulations.

Soil used for daily and intermediate cover material is excavated from on-site borrow areas located in the remainder of Stage III and future Stages II and IV disposal cells. Geosynthetic materials used for daily cover are purchased from a manufacturer and stored on site for use. Green waste used for ADC is produced by the on-site green waste processing operation. Final cover material will be generated and stockpiled as a by-product material from the on-site aggregate processing operation. Figure 7 is a plot plan that shows the areas remaining to be excavated from which cover soil will be obtained. The figure also shows areas used for stockpiling of cover soil. Historically, 60 percent of the excavated material is soil, with the balance being aggregate. The suitability of the excavated on-site soils for use as cover materials were documented by Vector (2008). With an estimated remaining excavation volume of 33 mcy, there is an estimated 19.8 mcy of soil available for cover material. The total amount of cover material needed can be estimated by calculating the amount of cover soil needed for both the daily and intermediate cover, and the 4-foot final cover. Based on current site operations, the amount of soil needed for daily and intermediate cover is estimated by assuming 15 per cent of the remaining capacity will be composed of cover soil. With an estimated remaining capacity of 29 mcy as of February 2011, an estimated 4.4 mcy of daily and intermediate cover materials will be needed. Plus, an estimated 2.3 mcy of final cover materials will be needed to construct the 4-foot final cover over the 350-acre disposal area (includes 8 percent slope factor). Therefore, a total of 6.7 mcy of cover materials will be needed for both daily operations and final closure of the landfill. Because this is less than the estimated 19.8 mcy that will be available from the on-site excavation, no import of soil cover materials is expected.

6.2 Alternative Daily Cover

Geotextile blankets (tarps) and processed green waste have been approved by CalRecycle for use as alternative daily cover (ADC) materials at Sycamore Landfill. In conformance with 27 CCCR 20690(b), geosynthetic blanket materials are removed from the waste within 72 hours after placement, and the waste is covered with additional new waste, cover soil, or processed green waste as ADC.

Green waste is received and processed for ADC use as described in Section 7.3.1 below. It is hand-picked before grinding to remove trash and contaminants. The grinding achieves a reasonable uniform particle size such that approximately 90 percent of the material is six inches in size or smaller. The processed green waste is spread over the advancing waste slopes in a layer 8 to 12 inches thick, and then compacted to a minimum thickness of six inches. After the green waste layer is compacted, laborers inspect the surface and remove loose paper, plastic or other potential litter.

At the maximum permitted waste disposal volume, Sycamore Landfill would use a maximum of approximately 22,400 tons per month of processed green waste as alternate daily cover based on the following:

- Monthly waste volume: 119,600 tons (3,965 tons/day, 362 days/year)
- Compacted density of refuse and processed green waste: 1400 lb/cubic yard
- Overall refuse-to-cover ratio: 4:1 (volume:volume)
- Fraction of overall cover provided by processed green waste: 75 percent

The calculation of monthly processed green waste ADC volume is as follows:

119,600 tons/month x (1/4) x 75% = 22,400 ton/month

This is significantly more than the volume of green waste currently received or expected at SLI. Approximately 98 percent of processed green waste is used as ADC, with the balance used for slope mulch on completed exterior waste fill slopes and other areas of the site and also may be exported.

6.3 Cover Frequency

Minimum cross-fall for the top of the lift is approximately 3 percent, providing drainage away from the working face. The advancing face is covered daily with a minimum of 6-inch compacted thickness of soil, or an alternative daily cover (ADC) material. Daily cover placement is effective in controlling vectors, preventing nuisance conditions, and preventing landfill fires.

6.4 Intermediate Cover

Areas of the site in which no additional waste is to be placed for 180 days or more are covered with a minimum of 12 inches of intermediate soil cover. As required by current Waste Discharge Requirements, an additional 12 inches of cover soil, for a total of 24 inches of intermediate cover is placed over areas that are exposed for longer than two rainy seasons.

Areas that have been brought to projected final grades are vegetated after the cover soil is applied. This intermediate cover and vegetation effectively control erosion and minimize rainwater intrusion to the waste.

7.0 WASTE HANDLING

7.1 Public Health Design Parameters

Sycamore Landfill is designed, constructed and operated in a manner to protect public health at all times. Controls relative to vectors, nuisance, noise, and other potential health issues are addressed in Section 8.0 below.

7.2 Salvaging Activities

No scavenging is permitted at the site. Recyclable materials are diverted to the adjacent recycling center before loads are brought to the landfill for disposal. White goods and scrap metals are placed in bins for recycling.

7.2.1 Electronic Waste

SLI has established a recycling program for cathode ray tubes (CRTs) and other consumer electronic devices (CEDs), in accordance with 22 CCR 66273. Electronic waste, including television sets, computer monitors, fax machines, printers and computer hard drives are received and stored temporarily in a bin near the scale house. At the end of each working day, an SLI employee transfers the deposited items to pallets or boxes inside a locked 40-cubic yard bin located near the fee booth, where they are stored until they are transported off site for recycling at an approved electronics waste processor. The materials are shrink-wrapped in plastic before being picked up and transported by a licensed transporter and handler of electronic wastes. Shipments of electronic wastes are documented and records are maintained in the landfill office. SLI personnel involved in handling electronic waste receive annual training in safe handling procedures of electronic wastes and required administrative procedures.

7.2.2 Tires

Tires found in the waste stream that are accessible and can be removed safely are stored temporarily and sent off site for recycling.

7.2.3 White Goods and Scrap Metal

White goods and scrap metal are collected in separate, labeled storage bins provided for customer drop-off. White goods and scrap metal are shipped off site for recycling.

7.3 Volume Reduction Activities

7.3.1 Green Waste

SLI provides an area on site for wood processing operations where green and wood waste is chipped into reusable mulch. This wood processing may be performed by a third-party contractor. A full-time spotter directs off-loading of wood/green waste into stockpiles. Mobile diesel-powered grinders are located on site to chip the wood waste. Contaminants are removed before the green material is ground or shredded. During grinding operations, a third employee (in addition to the spotter and grinder operator) loads stockpiled material into the grinder with a rubber-tired loader. Ground material is carried away from the grinder along a conveyor belt. Material is managed in a way so that it is ground and then used on site or exported within seven days from when it was received. The material is then temporarily stockpiled up to seven days to be primarily used for alternative daily cover, with some also used on site for erosion control or other landscaping purposes, or is exported.

7.4 Equipment

SLI generally uses a combination of the following equipment to meet site operational and maintenance needs:

Equipment	Minimum Number Required
Scraper	1
Dozer	1
Compactor	2
Water Truck	1
Motorgrader	1
Service Truck	1

The scrapers are used to transport soil for cover material and site maintenance. The dozers are used to handle and compact incoming waste at the working face, and assist the scrapers

in the borrow area. The compactors are used (in conjunction with the dozer) to spread and compact waste at the working face. The water truck is used for dust control. The motorgrader is used for various site maintenance tasks. The service truck is used for equipment maintenance. As the waste stream increases or decreases, equipment may be increased or decreased to continue to operate the site both efficiently and in compliance with applicable regulations.

The equipment listed above is adequate to ensure that current operations will not be hampered during routine equipment maintenance or major repairs. In the event that additional equipment is needed, SLI has a compiled list of local owners/operators and contractors who can provide additional assistance if demand warrants. In addition, rental units are available from several local vendors, and the site has a reciprocal agreement with other San Diego Landfill Systems facilities for standby equipment. Equipment can be obtained from the above sources for an emergency or unusual circumstance within 24 hours.

All operating equipment is maintained per the company's preventative maintenance program, with minor repairs generally being performed on site by personnel to ensure proper and continual operation. In addition, local suppliers have been identified to support the SLI equipment service group to ensure that necessary equipment is readily available.

7.5 Waste Handling Practices

The following section is a generalized summary of current practices.

7.5.1 General Handling

Upon acceptance of waste for disposal, vehicles are weighed at the scale house. Signs are posted along the internal haul roads to guide customers to the designated unloading areas. The spotter directs commercial and private vehicles to the disposal face. After loads are visually inspected, they are dumped and the waste is then pushed to the fill area by a dozer for compaction at the active disposal face.

The commercial unloading area is generally maintained at the toe of the working face so that wastes can be immediately spread and compacted. This also provides maximum protection from winds thus reducing litter.

The Sycamore Landfill uses the canyon- and area-fill methods for trash placement. Waste is typically placed in lifts up to 25 feet in height. Each lift is made up of numerous cells of a designated width placed across the lift. Successive lifts are constructed layer upon layer until the desired grades are obtained. Each lift is made up of a series of adjoining cells. The lifts are constructed to meet the desired grades, both intermediate and final.

Solid waste is unloaded from vehicles and then pushed into the active face. Waste is spread and compacted in 2-foot thick layers on a 100- to 150-foot wide working face sloped no steeper than 3H:1V in order to achieve maximum compaction. Waste may be deposited at either the base or top of the working face. All waste is spread and compacted to decrease voids in the waste, inhibit vectors, and minimize settlement. To compact the waste, heavy equipment traverses the length of the working face, making a minimum of three passes over each 2-foot thick layer of waste.

At the end of each working day, the advancing face is covered with ADC or a minimum 6-inch thick layer of compacted daily cover soil. Portions of the landfill that remain inactive for 180 days or more receive a long-term intermediate cover of a minimum of 12 inches of compacted soil and/or mulch. As required by current Waste Discharge Requirements, an additional 12 inches of cover soil, for a total of 24 inches of intermediate cover is placed over areas that are exposed for longer than two rainy seasons.

7.5.2 Special Waste Handling

Special waste, as described in Section 2.1.4, is any waste material which, because of its physical characteristics, chemical makeup, or biological nature requires special handling procedures and permitting, or poses an unusual threat to human health, equipment, property, or the environment. These wastes are not usually found in normal waste streams, but are acceptable for disposal in a Class III Landfill. A list of special wastes acceptable at the Sycamore landfill is provided in Section 2.1.4. A copy of the Sycamore Landfill Special Waste Policy which describes the procedures for handling special wastes is available at the landfill.

Prior screening and approval is required for receipt of special wastes because these waste are to be handled immediately. During the review and approval process, special handling requirements are identified.

Once accepted under special waste procedures, special wastes will be disposed in accordance with the appropriate provisions of the site's WDR or Title 27 CCR. Special wastes that are required to be disposed only in lined areas equipped with a leachate collection and removal system will be disposed in the lined areas. The following provides a description of special handling procedures for various wastes.

Dewatered Sewage Sludge

Dewatered sewage sludge and water treatment sludge are accepted for disposal in lined areas of the site as provided in 27 CCR 20220 (c). When accepted, the sludge is unloaded near the active landfill face and mixed with solid waste to maintain a minimum solids-to-liquid ratio of at least 5:1 as provided in 27 CCR 20220 (c) (3).

Dead Animals

Dead animals are accepted for disposal at the Sycamore Landfill. When single large carcasses are received, they are buried immediately at the active working face.

Large Bulky Wastes

Large bulky wastes include demolition debris, large tree trunks, and similar materials. These materials are placed at the base of an advancing lift, separated from one another to minimize bridging of the overlying waste, and crushed by compaction equipment to the extent practical.

Tires

In general, whole tires are not accepted for disposal. They are usually diverted to a recycling center, which will accept them upon payment of a fee. An exception to this policy is for tires that have been altered (shredded, quartered, or bagged) in accordance with 14 CCR 17355.

Non-Friable Asbestos

Non-friable asbestos waste materials are accepted at the site during designated hours and are subject to special handling procedures. Before such waste materials are accepted, the generators are required to complete a waste profile sheet in order to document that the waste meets permit standards for acceptance. Scale house attendants notify the spotter and operators at the working face to direct the customer to a designated location at the active face. At this location, operators excavate a trench in the waste sufficient to hold the load. The customer dumps the load in the trench, and the waste is covered and compacted with the other waste using landfill equipment.

Treated Wood Wastes

Treated wood wastes are disposed only in lined areas and are considered a profiled waste. This is in accordance with the San Diego RWQCB Addendum No. 2 to Order No. 93-86 "Amending Waste Discharge Requirements, Class III Municipal Solid Waste Landfills, San Diego County" that allows the discharge of treated wood wastes into lined waste management units. This waste must be approved prior to acceptance due to the special handling requirements and falls under the company's special waste program. Following acceptance, treated wood wastes are handled as ordinary solid waste as described in Section 7.5.1 but are disposed of only in lined portions of the landfill.

Petroleum-Contaminated Soil

Disposal of petroleum-contaminated soil requires pre-approval. The generator of the contaminated soil will submit documentation to SLI for review to ensure the waste meets disposal requirements. Once approved, petroleum-contaminated soil may be used as cover soil in the lined portions of the landfill with an LCRS.

Industrial Solid Wastes

Periodically, the landfill receives industrial solid wastes of various types. Provided that they do not contain hazardous materials, these wastes are landfilled with ordinary solid waste materials.

7.5.3 Inclement Weather Operations

Rain and high winds are the major inclement weather conditions that may cause the operator to alter on-site waste handling and disposal procedures. Vehicle access to the unloading areas is via paved roads and tightly compacted dirt roads. When heavy rains render the unloading area muddy and unusable, operations will move to a designated wet-weather area to allow continuous operation in wet weather. Soil stockpiles are maintained near the working face and the designated wet-weather area so that adequate supplies of cover material are readily available.

Additional equipment may be used to expedite spreading and compacting of the waste as soon as it is unloaded. Cover operations may also begin earlier in the day to reduce the area of exposed waste on the working face. In addition, portable litter fencing is available on site and may be used down-wind around the unloading areas. Litter control procedures are discussed in Section 8.7.

7.5.4 Load Checking for Hazardous Waste

Liquid wastes and white goods (appliances) are not accepted for disposal. Other prohibited wastes include designated wastes, hazardous waste, universal waste, pesticides, and any other toxic waste.

A waste acceptance and control program is in effect at the landfill to control the receipt of hazardous and prohibited wastes. The program involves the random inspection of waste vehicle loads entering the site and visually inspecting the waste as it is being unloaded. Spotters stationed at the tipping area observe the refuse as it is being unloaded to monitor for prohibited wastes. These activities are conducted in accordance with an approved Hazardous Waste Exclusion Program (see Appendix B).

Additionally, SLI personnel conduct load-checks which involve the random selection of commercial refuse vehicles, which are directed to a designated area adjacent to the active face for waste load inspection. This area is generally located adjacent to the commercial tipping area so as not to interfere with unloading operations. This load-check program involves spreading refuse from the identified commercial load in the designated area and visually inspecting for prohibited materials. Vehicles identified as carrying prohibited wastes (i.e., hazardous materials, liquid wastes, and other non-Class III wastes) are rejected.

Detailed information regarding hazardous waste screening procedures is included in Section 8.11.

The Hazardous Waste Exclusion Program includes procedures, policies and the necessary reporting forms (Appendix B). The program includes procedures for load checking and the management and proper disposal of prohibited wastes. Handling of a hazardous material release is described in the Sycamore Landfill Emergency Response Plan kept on site.

8.0 ENVIRONMENTAL CONTROLS

SLI maintains environmental controls to minimize public nuisances such as odor, fire, dust, litter, and noise.

8.1 Nuisance

Sycamore Landfill operates in a manner to avoid creation of nuisance conditions. As described below, systems are in place to prevent dust, odors, litter and unsightly conditions. Bird and vector control programs prevent the attraction of insects or animals that could create objectionable impacts on neighboring properties. Staff and management are directed by company policy to respond effectively and immediately to complaints or other comments from the public.

Odor is controlled by operating the landfill in a manner which identifies odorous refuse loads and minimizes the amount of time these materials are not covered with soil or non-odorous refuse. Incoming refuse is placed in the active landfill face and compacted rapidly. Compacted soil or an approved alternative daily cover is used to cover the waste at the end of each working day to minimize odors. A comprehensive program for odor control is contained in the Sycamore Landfill Odor Management Plan (see Section 8.10 below).

8.2 Fire

The site has a fire extinguisher training and fire/spill response manual. Employees are trained in operational procedures to be followed when dealing with hot loads and fires detected in unloading areas. In the event that a waste load is received that is smoking or on fire, landfill personnel direct it to be unloaded in a pre-designated, un-vegetated area away from the working face. This location for hot loads may change as disposal operations progress. Appropriate fire fighting activities are implemented immediately thereafter.

The vehicles, scale house, and maintenance area are equipped with suitable fire extinguishers for minor fire suppression. A stockpile of soil to be used for firefighting purposes is maintained near the working face.

In the event of a major fire, fire protection is coordinated with local authorities consistent with the site's fire protection program. San Diego Fire Department units, stationed within 3 miles of the site, assisted as needed by Santee City units, respond to major fire and medical incidents.

8.3 Leachate

Although HELP modeling has predicted there will be no leachate generated from the unlined cell, procedures for managing leachate in lined cells have been developed and implemented to ensure the site will not experience a surface release of leachate that could affect the public. Leachate that is produced in areas of the site equipped with leachate collection and removal systems is collected in sumps designed to hold twice the maximum anticipated leachate production. Leachate is periodically pumped from the sumps to holding tanks.

Leachate is handled in tanker trucks and enclosed tanks and vessels as it is removed from landfill sumps, stored temporarily in tanks and transported off site to a public wastewater treatment plant for disposal as non-hazardous wastewater. Spill containment and response plans are in place to respond to accidental releases of leachate.

8.4 Dust Control

Dust is controlled by (1) grading and watering the haul roads, (2) applying a fine water spray on soil cover in work areas when conditions may generate fugitive dust, (3) applying water and planting temporary vegetative cover when possible on the intermediate soil cover where wind-blown dust may be generated, (4) applying water with a chemical additive, and (5) vegetative cover on the completed landfill slopes.

8.5 Vectors

The following bird deterrent techniques have been implemented at Sycamore Landfill:

- Reducing availability of food supply by minimizing the work area and compacting and covering refuse with daily cover.
- Eliminating sources of water and nesting by utilizing drainage controls which prevent ponding of water effectively eliminate potential water sources for birds.
- Using noise-making bird guns through the use of blank-firing guns and other noise making devices by landfill personnel to intimidate birds and minimize their desire to land at the landfill.
- Killing seagulls that fail to respond to other methods in accordance with SLI's federal wildlife depredation permit which allows SLI to use shotguns to kill up to 20 Western Gulls annually, as a last resort.

In addition, the following landfill maintenance activities are implemented to discourage rodent and insect propagation and habitation:

- Compaction and daily cover of refuse with soil to eliminate rodent habitat and food.
- Covering wastes with compacted soil or an approved alternative, and minimizing the work area over which refuse is spread to prevent the emergence of fly from eggs present in household wastes.
- Periodic site inspections for signs of rodent activity.
- Mosquito abatement procedures, including grading the site to prevent accumulation of standing water, and draining sedimentation basins following each rain event, using a skimmer dewatering device.

8.6 Drainage and Erosion

All top-deck areas are graded to drain at a minimum slope of 3 percent. Drainage is directed by berms and natural channels toward storm drainage inlets. Side slope benches (draining to inlets) are constructed at 50-foot maximum vertical intervals. As shown in Figure 5, site storm water is collected in a system of pipes and channels and routed to unlined desilting basins to remove suspended soil particles prior to offsite discharge. Flows in excess of basin design are relieved over spillways. The basin and other drainage structures are based on the studies summarized in Appendix F.

SLI employs practices to minimize or prevent storm water pollution. Best Management Practices (BMPs) are employed to control on-site erosion. The sedimentation basins are adequately sized to desilt storm water and minimize its impact on off-site waterways. The storm water management system is designed to handle precipitation resulting from the 100-year return frequency, 24-hour storm in accordance with 27 CCR 20365. The design also reduces storm water pollution potential and prevents water inundation off site.

8.7 Litter Control

Pursuant to 27 CCR 20830, litter is controlled by confining exposed waste to a minimal area. SLI uses sufficient site personnel to collect scattered litter on site, along the access road, and within a ¼-mile radius of the site on an as-needed basis. Additional temporary workers are used as conditions warrant.

SLI places temporary litter fences along the rim of the top deck and the access road to intercept blowing debris during frequent windy periods. The litter fences are constructed with 4-foot polyethylene netting attached to 6-foot-high steel T-posts. The location and length of the litter fences are adjusted as needed to optimize litter interception. Portable wind fences are used by SLI near the active-face area.

8.8 Noise Control

Pursuant to 27 CCR 20840, equipment noise is controlled by maintaining manufacturer-specified mufflers on site equipment. Site personnel are required to wear ear protection at the working face, borrow area, the recycling buyback center, and at the green waste processing area. Hand-unloading users are protected from noise hazards by stationing them away from areas with operating equipment.

8.9 Traffic Control

All traffic enters and leaves the site on Mast Boulevard. Mast Boulevard connects to Highway 52, less than 1 mile from the entrance. Vehicles entering the site can proceed either to the scale facility, or to the recycling/buyback center.

A 32-foot-wide site access road is paved 1.5 miles beyond the scale facility as shown in Figure 1. Beyond the pavement, unpaved segments of the road terminate at the working face. The locations of the internal roads (intended for public use) will vary as the fill progresses. Public internal roads are maintained in a smooth, dust-free condition, marked clearly; posted for speed limit; graded to less than 6 percent; and cut at a 30-foot minimum width with minimum turning radii of 100 feet.

Access to the site and scale facilities is controlled by a steel gate that is locked during non-operating hours. Fencing and topographical barriers surrounding the site prevent unauthorized access. Operating hours, types of prohibited waste, and site operator emergency contacts are posted near the entrance gate and at the fee booth.

8.10 Odor Control

Odors associated with municipal solid waste are mainly caused by the decay of organic materials in the waste. The characteristic odor of waste may be apparent immediately downwind of the landfill. Odor is controlled by operating the landfill in a manner which identifies odorous refuse loads and minimizes the amount of time these materials are not covered with soil or non-odorous refuse. Incoming refuse is placed in the active landfill face and compacted. Compacted soil or an approved alternative daily cover is used to cover the waste at the end of each working day to minimize odors. A comprehensive program for odor control is contained in the site's Odor Management Plan (see Appendix G).

8.11 Hazardous Waste/Load Checking

A hazardous waste exclusion program has been implemented to reduce the potential for illegal or inadvertent disposal of hazardous materials at the site. A copy of the program is presented in Appendix B. Briefly, the program provides for: public notification of types of hazardous wastes prohibited at the site; training of site personnel in recognition and

interception of prohibited wastes; random load checking procedures; procedures and facilities for proper labeling and storage of intercepted materials.

Intercepted hazardous materials are properly containerized, labeled, and stored for a maximum of 90 days pending removal by a permitted hazardous materials transporter. Materials are stored in the designated hazardous waste storage area.

8.12 Incidents Requiring Deviation from Solid Waste Facility Permit

Rare and infrequent events occur that require the landfill to deviate from specified state minimum standards and/or terms or conditions of its solid waste facility permit in order to facilitate the protection of public health and safety and the environment. Past incidents of this sort have included fires at transfer stations, temporary closure of an operating landfill, and homicide investigations. In order to serve the needs of the community in times of an undeclared emergency and as a result of an order by a governmental agency, SLI will implement the following procedures in response to unusual incidents similar to the above:

1. Immediate verbal notification, followed up in writing within 24 hours, will be made to the LEA to explain the situation, convey the directive issued by a governmental agency, and request LEA approval;
2. Identify the specific deviation requested from the solid waste facility permit term or condition or state minimum standard;
3. Specify and estimate of the time that would be needed to resolve the incident. The time period shall not exceed seven days unless an additional time extension is granted by the LEA depending on the specific incident resolution needs (i.e. homicide investigation may take longer than seven days);
4. Verify that ample operational resources are available for dealing with the incident needs (personnel, equipment, lighting, etc);
5. Acknowledge that all other state minimum standards and permit conditions will remain in effect and that all reasonable attempts will be made to minimize potential impacts from a deviation of a state minimum standard; and
6. Submit a final report within thirty days upon conclusion of incident, if required. The final report will include the daily amount of incident debris received, diverted, and disposed of at the landfill; the jurisdiction of origin of wastes received at landfill; the increase in tonnage or volume of waste received per day during the effective period of the unusual incident; and any facilities used to divert materials. If the unusual incident does not involve the receipt of additional waste, the final report will summarize the management of the unusual incident including but not

limited to, duration of event, any impacts to normal operations, any complaints received, agencies involved, and points of contact (i.e., police action and contact information of the incident commander).

If the management of an unusual incident is determined by the LEA or other regulatory agency to cause or contribute to a public health and safety or environmental problem, or if the above procedures are not being used expressly to handle the incident and are not in the best interest of public health and safety, the deviation from the specified state minimum standards and/or solid waste facility permit terms or conditions will immediately cease upon notification by the regulatory agency.

9.0 APPROVALS

9.1 Compilation of Approvals

Two state agencies regulate most aspects of landfills in California: 1) the State Water Resources Control Board (SWRCB) and its subsidiary Regional Water Quality Control Boards (RWQCBs), and 2) CalRecycle, formerly known as the California Integrated Waste Management Board. The Local Enforcement Agency (LEA), part of the municipal government in the case of the Sycamore Landfill carries out CalRecycle's regulatory functions. The major permits and related documents listed below provide the primary regulatory framework within which Sycamore Landfill operates. Copies of the permits are contained in Appendix A for reference only; current copies are maintained in the facility operating record at Sycamore Landfill. A summary of the major permits are summarized below:

Agency	Permit	Date	Appendix
City of San Diego – Department of Development Services	Solid Waste Facilities Permit No. 37-AA-0023	September 15, 2006	A-1
California Regional Water Quality Control Board	Waste Discharge Requirements, Order No. 99-74 Amendment 1	October 13, 1999 June 8, 2005	A-2
City of San Diego Planning Department	Planned Development Permit/Site Development Permit No. 40-0765; Conditional Use Permit No. 6066-PC	April 9, 2002 May 1, 1986	A-3
County of San Diego Air Pollution District	Title V Permit No. 971226	October 2, 2008	A-4

9.1.1 Solid Waste Facilities Permit

The most recent revision to SWFP No. 37-AA-0023 was issued on September 15, 2006 by the City of San Diego, Development Services Department, the responsible Enforcement Agency (EA), after concurrence by CalRecycle. The SWFP contains a summarized description of the facility, how it will be operated, and specific restrictions and parameters with which the facility must comply. The EA has primary responsibility for disposal site inspections and SWFP enforcement actions.

9.1.2 Waste Discharge Requirements

The California State Water Resources Control Board (SWRCB) implements its responsibilities under 27 CCR Division 2 through the issuance of Waste Discharge Requirements (WDRs) by the California Regional Water Quality Control Board (CRWQCB). The WDRs constitute a major operating permit which specifies acceptable and unacceptable waste types for disposal, criteria for landfill containment structures, and environmental monitoring and reporting requirements.

The current WDRs for Sycamore Landfill are set forth in Order No. 99-74, adopted by the San Diego Region of the CRWQCB on October 13, 1999 and amended on June 8, 2005. This order updated and replaced the previous WDRs established by Order No. 76-40 and a series of amendment thereto. The order also established Monitoring and Reporting Program No, 99-74 as the requirements for monitoring groundwater and leachate.

9.1.3 Conditional Use Permit / Planned Development Permit

The local planning agency for the site is the City of San Diego. The City of San Diego is also the lead agency under the California Environmental Quality Act (CEQA) enacted in 1970, which required the consideration of the short-term, long-term, and cumulative environmental impacts of projects prior to the issuance of governmental agency permits or approvals.

The Conditional Use Permit (CUP) is a major permit for the site. It implements land use zoning changes and general plan amendments, as required, to allow the approved land uses and activities subject to permit conditions.

The basic land use approval for the site is City of San Diego CUP No. 6066 – Conditional Use Permit for the Sycamore Landfill on 113 acres, adopted November 6, 1963. The basic CUP has been amended from time to time, as follows:

- CUP No. 6066-PC/AMENDMENT 1 – Amendment to Conditional USE Permit No. 6066 for operation, maintenance and expansion to 493 acres (January 16, 1974).
- CUP No. 6066/AMENDMENT 2 – Amendment to Conditional Use Permit No. 6066 for composting, mixing and recycling poultry waste (September 9, 1976).
- CUP No. 83-0789 – Amendment to Conditional Use Permit No. 6066 for Methane Recovery System (August 2, 1984).
- CUP No. 6066-PC, land use jurisdiction enforcement to County letter dated May 1, 1986 stated an amendment to the CUP we not required for “increased capacity and subsequent extension of the life of the landfill brought about by relocation of existing transmission lines.”

On April 9, 2002, the San Diego City Council approved Planned Development/Site Development Permit (PDP/SDP) No. 40-0765 permitting the continuing operation of Sycamore Landfill under the terms and conditions of CUP No. 6066-PC as amended, with the addition of the following permitted activities:

- Landfill operations are permitted from 6:00 a.m. to 4:30 p.m. Monday through Friday, and 6:00 a.m. to 4:00 p.m. Saturday and Sunday.
- Brush removal and clearing activities are permitted in three phases as defined by the site's staged development plan, impacting 205 acres of habitat.
- An aggregate processing operation is permitted to operate within the boundaries of the existing landfill.

The PDP/SDP was approved subject to a Mitigated Negative Declaration (MND) pursuant to the California Environmental Quality Act. The MND sets forth numerous mitigation measures and conditions of approval for ongoing development in Stages II, III and IV of the site. Among the potential impacts addressed by the PDP/SDP and MND are wildlife and plant habitat, air quality and noise.

Appendix A-3 contains copies of the City of San Diego Planned Development Permit/Site Development Permit No. 40-0765 and City of San Diego Mitigated Negative Declaration No. 40-0765.

9.1.4 Air Pollution Control District Permits

The County of San Diego Air Pollution Control District (APCD) enforces state and federal air pollution control laws and regulations in San Diego County. In this capacity the APCD issued Title V Operating Permit No. 971226 (Appendix A-4). The Title V Permit is issued pursuant to a federal Environmental Protection Agency program delegated to the San Diego County APCD.

9.1.5 Other Operating Permits

Other operating permits that are renewed on a regular basis are not included in this submittal but are kept on file at the landfill facility. These permits include the following:

- San Diego County Department of Agriculture Scale Device Registration
- San Diego County Department of Environmental Health Unified Program Facility Permit
- State Water Resources Control Board Storm Water Discharge Permit. SLI filed the Notice of Intent (NOI) in compliance with the General Order No. 91-13-DWQ. SLI updates the Storm Water Pollution Prevention Plan annually. In addition, SLI maintains a Spill Prevention, Control and Countermeasure (SPCC) Plan as well as

a Hazardous Materials Business Plan. These documents are updated annually or as needed to reflect current operating conditions.

9.2 CEQA Information

An Environmental Impact Report (EIR) was prepared in 1974 for the expansion of Sycamore Landfill to a total size of 493 acres. Subsequent amendments to the Conditional Use Permit have followed the preparation of initial studies and the issuance of a Negative Declaration or Mitigated Negative Declaration, as provided under the California Environmental Quality Act.

9.3 Conformance Finding Information

The California Integrated Waste Management Board (CIWMB) approved the San Diego Countywide Integrated Waste Management Plan 5 Year Review (CIWMP) on September 21, 2005. Sycamore Landfill is listed in the sitting element of the CIWMP as one of five facilities that accept municipal solid waste in San Diego County.

10.0 FINANCIAL RESPONSIBILITY AND FINANCIAL ASSURANCE

An estimate of acceptable funding levels for financial assurance, closure and post-closure costs for the SL is included in Closure and Post-Closure Maintenance Plan in Appendix C. Financial assurance for closure and post-closure maintenance costs is being provided by a corporate guarantee. Estimated costs also include the costs for the current corrective action program.

11.0 REFERENCES

A-Mehr Inc., 2000 (revised 2006; Report *of Disposal Site Information for Sycamore Landfill, Inc*., prepared for San Diego Landfill Systems, October (revised April).

A-Mehr, Inc., 2008, *Final Report of Construction Quality Assurance for Sycamore Landfill Stage III Cell Liner and Leachate Collection System*, November.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SAN DIEGO REGION see RWQCB.

Diaz, Yourman & Associates, 2003, *Preliminary Geotechnical Investigation*, Sycamore Landfill Supplemental Grading, San Diego California, prepared for: Sycamore Landfill, Inc.

Hushmand Associates, Inc., 1999, *Slope Stability Evaluation (DRAFT), Sycamore Landfill Expansion*, prepared for EMCON.

Golder Associates Inc., 2008, *Static and Seismic Slope Stability Analyses Phase 1, Part 1, Sycamore Landfill,* San Diego County, California, prepared for San Diego Landfill Systems, Inc., December.

IT Corporation, 1992. *Water Quality Solid Waste Assessment Test, Sycamore Sanitary Landfill.* Prepared for County of San Diego, Department of Public Works, October.

RWQCB, 1994, Water *Quality Control Plan for the San Diego Basin (9), San Diego, California,* September, variously paginated.

RWQCB, 1999, *Waste Discharge Requirements No. 99-74 for the Sycamore Landfill Inc*., A Subsidiary of Allied Waste Industries Inc., Sycamore Landfill, San Diego County.

Vector, 2008, *Evapotranspirative (ET) Final Cover Evaluation Report for the Sycamore Landfill, Santee, California*, prepared for Allied Waste, Inc., June.

Tables

Table 1 CalRecycle Index to Joint Technical Document

Table 2 SWRCB Index to Joint Technical Document

Table 3 Climatic Data – Temperatures

Table 4 Annual Rainfall – Precipitation

Table 5 Wind Data

Table 6 K-Factor Table

Table 1
CalRecycle Index to Joint Technical Document

CalRecycle JTD Requirements	Cal Recycle Section No.	SWRCB Section No.	JTD Section(s)
General			
Name of Facility, Site Operator and Owner	21600(b)(1)(A)		1.2.1, 1.2.2
Description of the Operation Cycle	21600(b)(1)(A)		1.2.3, 7.5
Site Plan Including Boundaries, Acreage, and Buffer Zones	21600(b)(1)(B)		1.3, 1.4, 4.3, 4.4, Figs 1, 2, 3, 6
Hours of Operation	21600(b)(1)(C)		1.5
Waste Classification and Management			
Types and Quantities of Waste	21600(b)(2)(A)	21740(a)(1)	2.1
Waste Management Unit Classification and Siting			
Airport Safety	21600(b)(3)(A)		3.1
Volumetric Capacity	21600(b)(3)(B)		3.2, App D
Site Life Estimate	21600(b)(3)(C)		3.3
Site Location *(vicinity map)*	21600(b)(3)(D)		3.4, Figs 1, 2
Surrounding Land Use and Zoning *(plot plan)*	21600(b)(3)(E)	21750(h)4	3.5.1, Fig 3
Ancillary Facilities *(include on plot plan)*	21600(b)(3)(F)		3.8, Fig 2
Design and Construction Standards for All Waste Management Units			
General Design Parameters *{Describe how the site design provides for the surrounding physical setting}*	21600(b)(4)(A)	21750(a-h)	4.1
Design Responsibility *{New disposal sites shall be designed under a civil engineer}*	21600(b)(4)(B)		4.2
Construction Sequencing Plans	21600(b)(4)(C)		4.3, Figs 2, 4
Grading Plan *{Include existing and proposed final contours for disposal and borrow areas}*	21600(b)(4)(D)	21090(b)-(b)(3)	4.4, Fig 5
Gas Management Plan *{Demonstrate the ability to comply with T27 20919, 20919.5 and gas control for closure plans}*	21600(b)(4)(E)		4.9, 4.13.4 App E
Operating Criteria {Demonstrate the ability to comply with the following:}			
Disposal Site Records	21600(b)(5)(A)		5.1
Site Security	21600(b)(5)(B)		5.2
Sanitary Facilities	21600(b)(5)(C)		5.3, 5.4
Communications Systems	21600(b)(5)(D)		5.5
Lighting *{for facilities which operate during darkness}*	21600(b)(5)(E)		5.6
Safety Equipment	21600(b)(5)(F)		5.7
Personnel Requirements	21600(b)(5)(G)		5.8

Table 1
CalRecycle Index to Joint Technical Document

CalRecycle JTD Requirements	Cal Recycle Section No.	SWRCB Section No.	JTD Section(s)
Personnel Training	21600(b)(5)(H)		5.9
Supervisory Structure	21600(b)(5)(I)		5.10
Spreading and Compacting	21600(b)(5)(J)		5.11
Cover			
Cover Materials	21600(b)(6)(A)		6.1, Fig 7
ADC and Beneficial Use	21699(b)(6)(B)		6.2
Cover Frequency	21600(b)(6)(B)		6.3
Intermediate Cover	21600(b)(6)(C)		6.4
Handling			
Public Health Design Parameters	21600(b)(7)(A)		7.1
Salvaging Activities	21600(b)(7)(B)		7.2
Volume Reduction Activities	21600(b)(7)(C)		7.3
Equipment	21600(b)(7)(D)		7.4
Waste Handling	21600(b)(7)(E)	21740(a)(1)	7.5
Environmental Controls			
Nuisance	21600(b)(8)(A)		8.1
Fire Control	21600(b)(8)(B)		8.2
Leachate Control *(for purposes of public health)*	21600(b)(8)(C)		8.3
Dust Control	21600(b)(8)(D)	21090(a)(5)(B)	8.4
Vector Control	21600(b)(8)(E)	20425(d)(3)	8.5
Drainage & Erosion Control	21600(b)(8)(F)	21090(c)(4)	8.6, Fig 5, App F
Litter Control	21600(b)(8)(G)		8.7
Noise Control	21600(b)(8)(H)		8.8
Traffic Control *(within the facility)*	21600(b)(8)(I)		8.9
Hazardous Waste and Loadchecking	21600(b)(8)(J)		8.11, App B
Approvals			
Compilation of Approvals	21600(b)(9)		9.1

Table 1
CalRecycle Index to Joint Technical Document

CalRecycle JTD Requirements	Cal Recycle Section No.	SWRCB Section No.	JTD Section(s)
Requirements for JTD amendments and/or complete application package [21600(a)]			
CEQA Information	21570(f)(3)(4)		9.2
Conformance Finding Information	21570(f)(5)		9.3
Complete Closure and Post-Closure Maintenance Plan	21570(f)(6)		App C (all)
Financial Assurances Operating Liability Information	21570(f)(7 and 8)		10.0, App C (6.0)
Land Use and Conditional Use Permits	21570(f)(9)		3.5.1, Fig 3, App A
Closure/Post-Closure Maintenance Plan Requirements if part of JTD - Preliminary Closure Plans			
Closure Cost Estimate	21790(b)(1)	20950(f)	App C (6.1, Table 9)
Location Maps (property boundaries, existing, permitted and final waste limits, road, structures, general location, current monitoring systems, LCRS, drainage, LFG systems)	21790(b)(2 & 4)		Figs 1, 2, 3, 5, App E
Post-Closure Land Uses	21790(b)(5)		App C (5.1)
Estimate of Required Closure	21790(b)(6)		App C (4.2, Fig 5)
Estimated Closure Date	21790(b)(7)		App C (4.1.2)
Closure Activities	21790(b)(8)	21090(d)	App C (4.4)
Site Security and Structure Removal	21790(b)(8)(A)		App C (4.4.1)
Final Cover and Grading	21790(b)(8)(B)	21090(a)-(a)(2), (a)(6), (b)-(b)(3), 21750 (f)(5)	4.8, App C (4.4.2, Fig 6)
Construction Quality Assurance	21790(b)(8)(C)		App C (4.4.4)
Drainage and Erosion Control	21790(b)(8)(D)	21090(a)(3)-(a)(3)(B)	4.7, App C (4.4.3)
Gas Monitoring	21790(b)(8)(E)	20425(d)(3)	4.9, 4.13.4, App C (4.4.5), App E
Leachate Monitoring	21790(b)(8)(F)	21090(c)(2)	8.3, App C (4.4.6)
Items Under 21790 (Preliminary Plans)	21800(c)	20425(d)(3), 20950(f), 20909(a)-(a)(3)(A)(3), 21090	App C (4.0)
Sequence of Closure Stages With Dates	21800(c)	21090(a)-(a)(2), (d)	App C (4.2, Fig 5, Table 8)
Schedule for Disbursement	21800(d)		App C (6.3, Table 10)
Description of Planned Uses per 21190	21825(b)(1)	21769(b)	App C (5.1)

Table 1
CalRecycle Index to Joint Technical Document

CalRecycle JTD Requirements	Cal Recycle Section No.	SWRCB Section No.	JTD Section(s)
Description of Maintenance per 21180	21825(b)(2)	21769(b)	App C (5.2)
Closure/Post-Closure Maintenance Plan Requirements if part of JTD -- Final Post-Closure Maintenance Plans			
Emergency Response Plans per 21130	21830(b)(1)	21769(c)	NA
List of Responsible Parties	21830(b)(2)	21769(c)	NA
Post-Closure Planned Uses per 21190	21830(b)(3)	21769(c)	NA
As-builts for Monitoring and Control Systems, etc.	21830(b)(4)	21769(c)	NA
Description of Maintenance per 21180	21830(b)(5)	21769(c)	NA
Operations and Maintenance Plan for Gas Control System	21830(b)(6)	21769(c)	NA
Plan to Report Results of Monitoring and Control per 21180	21830(b)(7)	21769(c)	NA
Post-Closure Maintenance Cost Estimates per 21840	21830(b)(8)	21769(c)	NA
NOTE: For submitting amendments of Closure and Post-Closure Maintenance Plans as part of a JTD, use Section 21780 and include the requirements of Section 21865 (b)(1)-(4).			

Table 2
SWRCB Index to Joint Technical Document

SWRCB JTD Requirement	SWRCB Section No.	Related CalRecycle Section No.	JTD Page(s)
Chapter 1. General Article 1. Purpose, Scope and Applicability of this Subdivision			
General Requirements. *[engineered alternatives to prescriptive standards]*	20080(b-c)		4.8
Chapter 3. Criteria for All Waste Management Units, Facilities, and Disposal Sites Subchapter 2. Siting and Design Article 2. SWRCB - Waste Classification and Management § 20200. SWRCB - Applicability and Classification Criteria			
Concept *(describes possible exemption)*	20200(a)		N/A
Demonstration proposing to allow discharge of a particular waste to a particular landfill of lower classification	20200(a)(1)		N/A
Dedicated units or cells for certain wastes	20200(b)-(b)(2)(C)		N/A
Waste characterization	20200(c)		2.0
Management of liquids	20200(d)-(d)(3)		2.1, 8.3, App C (4.4.6)
§ 20220. Nonhazardous Solid Waste			
Demonstration by discharger	20220(b)-(b)(2)		2.1, 7.5, 8.11
Dewatered sludge *(describes conditions for discharge)*	20220(c)-(c)(3)		2.1.4, 7.5
Ash (*allows discharge of non-hazardous ash to Class III landfills without determining if ash is designated waste)*	20220(d)		2.1.4
Article 3. Waste Management Unit, Facility, or Disposal Site Classification and Siting			
Classification and Siting Criteria	20240		3.0, 4.1
Class II: Waste Management Units for Designated Waste	20250		N/A
Class III: Landfills for Nonhazardous Solid Waste	20260		2.1, 3.4, 3.5, 4.1, 4.5
Article 4. SWRCB - Waste Management Unit Construction Standards			
General Construction Criteria	20310		4.0
General Criteria for Containment Structures	20320		4.1, 4.4, 4.5, 4.6, 4.7, 4.8
CQA Plan and Requirements	20323 & 20324		4.10
Liners	20330		4.5
Leachate Collection and Removal Systems (LCRS)	20340		4.6
Subsurface Barriers	20360		N/A
Precipitation and Drainage Controls	20365		4.7, 8.6
Seismic Design	20370		4.11, 4.12, App C (3.4.3)
Special Requirements for Surface Impoundments	20375		N/A

Table 2
SWRCB Index to Joint Technical Document

SWRCB JTD Requirement	SWRCB Section No.	Related CalRecycle Section No.	JTD Page(s)
Subchapter 3. Water Monitoring Article 1. SWRCB - Water Quality Monitoring and Response Programs for Solid Waste Management Units § 20380. SWRCB – Applicability			
Corrective action financial assurance	20380(b)		4.13.1, App C (App E)
Duration of applicability	20380(c)-(c)(2)	21900	App C (5.0)
Limitations on engineered alternatives	20380(e)-(e)(3)		N/A
Required Programs	20385		4.13, Fig 2
Water Quality Protection Standard *(Water Standard)*	20390		4.13.1
§ 20395. Constituents of Concern (COCs)			
Constituents of Concern	20395(a)		4.13.1, 4.13.2
Municipal Solid Waste Constituents of Concern	20395(b)		4.13.1
§ 20400. Concentration Limits			
Proposing COCs	20400(a)-(a)(3)		N/A
Adoption of concentration limits	20400(b)-(b)(3)		N/A
Establishing a CLGB *(for corrective action only)*	20400(c-h)		4.13.1
Decreasing a CLGB *(in DMP following a CAP)*	20400(i)		N/A
Monitoring Points and the Point of Compliance	20405(a-b)		4.13.1
Compliance Period	20410(a-c)		4.13
§ 20415. General Water Quality Monitoring and System Requirements			
Section applies to all monitoring programs	20415(a)		4.13
Ground Water Monitoring System *(general)*	20415(b)-(b)(4)(D)		4.13.1, Fig 2
Surface Water Monitoring *(general)*	20415(c)-(c)(2)(D)		4.13.3
Unsaturated Zone Monitoring *(general)*	20415(d)-(d)(4)		4.13.1
Monitoring systems designed by RG or RCE	20415(e)(1)		4.13
Logging of borings	20415(e)(2)-(e)(2)(C)		Available on request
Shared monitoring system demonstration for contiguous Units	20415(e)(3)		N/A
Monitoring sample QA/QC	20415(e)(4)-(e)(4)(D)		4.13
Sampling & analytical methods *(performance standard for)*	20415(e)(5)		4.13
Monitoring data procurement, analysis, and submittal	20415(e)(6)-(c)(15)		4.13
Detection Monitoring Program	20420		4.13.1, Fig 2

Table 2
SWRCB Index to Joint Technical Document

SWRCB JTD Requirement	SWRCB Section No.	Related CalRecycle Section No.	JTD Page(s)
SWRCB - Evaluation Monitoring Program	20425	re § (d)(3): 20919 et seq., 21600(b)(8)(E), 21790(b)(8)(E), 21800(c)	N/A
Corrective Action Program	20430		4.13.1
Subchapter 4. Criteria for Landfills and Disposal Sites Article 2. CIWMB - Daily and Intermediate Cover			
Standards for Daily and Intermediate (Interim) Cover	20705		6.1 – 6.4
Subchapter 5. Closure and Post-Closure Maintenance Article 1. General Standards For All Waste Management Units			
General Closure and Post-Closure Maintenance Standards Applicable to Waste Management Units for Solid Waste	20950	re § (f): 21780(a)(3), 21790(b)(1), 21800(c), 21820, 21840	4.8, App C (all)
Article 2. Closure and Post-Closure Maintenance Standards for Disposal Sites and Landfills § 21090. Closure and Post-Closure Maintenance Requirements for Solid Waste Landfills			
Final cover requirements *(general)*	21090(a)-(a)(2)	21140, 21790(b)(8)(B), 21800(c)	4.8, App C (4.4.2, 4.6)
Erosion control layer	21090(a)(3)-(a)(3)(A)3.	21140, 21150, 21790(b)(8)(D), 21800(c)	4.8, App C (4.4.2)
Maintenance *(and plan for)*	21090(a)(4)-(a)(4)(D)		App C (5.0)
Discharges of liquids to covers *(leachate and condensate)*	21090(a)(5)(A)		2.3, 4.9, 4.13.2, 8.3, App C (2.5, 2.6.1, 4.4.6, 5.2)
Discharges of liquids to covers *(other liquids)*	21090(a)(5)(B)	20800, 21600(b)(8)(D)	5.2, App C (4.4.6)
Stability analysis	21090(a)(6)	21145, 21790(b)(8)(B)	4.11
Grading requirements *(performance standards)*	21090(b)-(b)(3)	20650, 21142(a), 21150, 21600(b)(4)(D), 21790(b)(8)(B)	4.4, App C (4.4.2, Fig 6)

Table 2
SWRCB Index to Joint Technical Document

SWRCB JTD Requirement	SWRCB Section No.	Related CalRecycle Section No.	JTD Page(s)
General post-closure duties	21090(c)-(c)(5)	re (c)(2): 21150, 21160, 21180, 21790(b)(8)(F) // re (c)(4): 21600(b)(8)(F)	App C (5.0 all)
Landfill closure deadline and extension	21090(d)	21110, 21790(b)(8), 21800(c)	App C (4.6)
Final cover survey(s)	21090(e)-(e)(4)	21142(b)	App C (5.3.3)
Optional clean closure	21090(f)-(f)(2)	21810	N/A
Landfill Emergency Response Plan Review	21132		App C (5.4)
Closure Requirements for Surface Impoundments	21400		N/A
Closure Requirements for Waste Piles	21410		N/A
Chapter 4. Documentation and Reporting For Regulatory Tiers, Permits, WDRs, and Plans Subchapter 3. Development of Waste Discharge Requirements (WDRs) and Solid Waste Facility Permits Article 2. CIWMB - Applicant Requirements			
Joint Technical Document *[format for submittal of § 21710, 21750, and 21760 information]*	21585		Table 1
Article 4. SWRCB - Development of Waste Discharge Requirements (WDRs)			
Report Of Waste Discharge and Other Reporting Requirements *[see also 21585]*	21710	re § (c)(1-2): 21145(b), 21200, 21630	Entire JTD
Waste Discharge Requirements	21720(d-f)	re § (f): 20510, 20515	1.1, App. A
Public Participation *[proposed listing of potentially interested parties]*	21730(a)		1.1, App. A
Waste Characteristics	21740	re § (a)(1): 21600(b)(2)(A) & (b)(7)(E)	2.1
§ 21750. SWRCB - Waste Management Unit (Unit) Characteristics and Attributes to be Described in the ROWD			
Analysis of potential for impairment	21750(a)	21600(b)(4)(A)	3.6
Support for proposed Unit classification	21750(b)	21600(b)(4)(A)	3.7
Listing and incorporation of supporting documents	21750(c)	21600(b)(4)(A)	9.0, App A
Topographic map	21750(d)(1)	21600(b)(4)(A)	1.4, Fig 4
Floodplain analysis	21750(d)(2)-(d)(2)(C)2.	21600(b)(4)(A)	4.1.3
Climate	21750(e)-(e)(6)	21600(b)(4)(A)	4.1.2, Tables 3, 4, 5

Table 2
SWRCB Index to Joint Technical Document

SWRCB JTD Requirement	SWRCB Section No.	Related CalRecycle Section No.	JTD Page(s)
Geology	21750(f)-(f)(7)	21600(b)(4)(A) // re (f)(5): 21145, 21790(b)(8)(B)	4.1.4
Hydrogeology	21750(g)-(g)(7)(D)	21600(b)(4)(A)	App C (3.5.2)
Land and Water Use	21750(h)-(h)(5)	21600(b)(4)(A) re ¶(h)(4): 21600(b)(3)(E)	3.5
Preliminary closure plan	21750(i)		App C (4.0)
§ 21760. SWRCB - Design Report and Operations Plan			
Design Report preliminary and as-built plans	21760(a)(1)		4.4, 4.11
Design Report	21760(a)(3)-(a)(4)		4.4, 4.11
Operation Plan	21760(b)-(b)(3)		4.13.1, 5.0, 8.0
Subchapter 4. Development of Closure/Post-Closure Maintenance Plans § 21769. SWRCB - Closure and Post-Closure Maintenance Plan Requirements			
Preliminary Closure and Post-Closure Maintenance Plan purpose	21769(b)(1)		App C (1.0)
Preliminary Closure and Post-Closure Maintenance Plan Contents and cost analysis	21769(b)(2)-(b)(2)(B)5.		App C (Table of Contents, App E)
Final Closure and Post-Closure Maintenance Plan	21769(c)-(c)(2)(H)3.		N/A
Chapter 5. Enforcement Article 4. Enforcement by Regional Water Quality Control Board (RWQCB)			
Mandatory Closure *(Cease and Desist Orders)*	22190(b)		N/A
Chapter 6. Financial Assurances at Solid Waste Facilities and at Waste Management Units for Solid Waste Subchapter 2. Financial Assurance Requirements Article 1. Financial Assurance for Closure			
Closure Funding Requirements	22207(a)		App C (6.0)
Article 2. Financial Assurance for Postclosure Maintenance			
Post-Closure Funding Requirements	22212(a)		App C (6.0)
Article 4. Financial Assurance Requirements for Corrective Action			
Corrective Action Funding Requirements	22222		App C (6.0)

Table 3
CLIMATIC DATA - TEMPERATURE
EL CAJON, CALIFORNIA
Station: (042706) EL CAJON from Year = 1979 to Year = 2010

Month	Monthly Average			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F		F		# Days	# Days	# Days	# Days
January	69.7	42.3	56.0	92	31/2003	26	17/1987	61.8	2003	52.5	2001	0	0	1.2	0
February	69.8	44.3	57.1	95	22/2002	28	15/1990	60.5	1995	52.8	1990	0.2	0	0.5	0
March	71.3	47.3	59.3	98	26/1988	30	16/1988	62.9	1997	55.3	1991	0.4	0	0	0
April	75.4	50.4	62.9	104	06/1989	36	10/1999	67.3	1989	59.4	1999	1.5	0	0	0
May	77.4	55.4	66.4	104	03/2004	43	01/1999	72.2	1997	61.7	1995	1.6	0	0	0
June	81.7	58.5	70.1	106	27/1990	46	05/1999	75.1	2006	67.2	1991	3.3	0	0	0
July	87.5	62.8	75.2	113	22/2006	50	02/2004	80.8	2006	70.3	1987	11.1	0	0	0
August	88.9	64	76.5	107	13/1994	50	06/2000	79.1	2003	73	1987	13.6	0	0	0
September	87.5	61.2	74.4	109	02/1982	49	30/1982	80.3	1984	68.3	1986	12.5	0	0	0
October	81.2	54.9	68.1	106	10/1991	40	31/1981	72	1999	65.2	2002	4.9	0	0	0
November	74.9	46.1	60.5	99	07/2008	29	21/1979	66.7	2008	55.1	1994	1.3	0	0.3	0
December	69.4	41.3	55.4	93	04/1979	25	25/1987	58.8	1980	51	1987	0	0	1.8	0
Annual	77.9	52.4	65.2	113	20060722	25	19871225	65.9	2000	64.2	1985	50.6	0	3.8	0
Winter	69.6	42.6	56.1	95	20020222	25	19871225	59	1981	53.4	1985	0.3	0	3.4	0
Spring	74.7	51.0	62.9	104	19890406	30	19880316	66.1	1997	60.1	1999	3.6	0	0	0
Summer	86.0	61.8	73.9	113	20060722	46	19990605	77.7	2006	70.9	1987	28	0	0	0
Fall	81.2	54.1	67.6	109	19820902	29	19791121	70	1995	65	1986	18.7	0	0.3	0

Table updated on Jan 14, 2011

Winter = Dec., Jan., and Feb.
Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug.
Fall = Sept., Oct. & Nov.

For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological, not calendar seasons

Source: Western Regional Climate Center

Table 4
PRECIPITATION DATA
EL CAJON, CALIFORNIA
Period of Record General Climate Summary - Precipitation
Station: (042706) EL CAJON From Year=1979 To Year=2010

Month	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days
January	2.41	11.43	1993	0	2000	2.09	05/1995	5	4	2	1
February	2.77	10.35	1998	0	1989	2.52	21/1980	6	4	2	1
March	2.31	9.66	1983	0	1984	2.11	05/1995	5	4	2	1
April	0.82	2.42	1988	0	1989	1.2	05/2006	4	2	1	0
May	0.15	1.21	1998	0	1984	0.77	13/1998	1	0	0	0
June	0.08	0.91	1990	0	1980	0.47	10/1990	0	0	0	0
July	0.09	0.78	2003	0	1980	0.7	19/2003	1	0	0	0
August	0.02	0.13	1986	0	1980	0.13	17/1986	0	0	0	0
September	0.16	0.86	1986	0	1980	0.75	25/1986	1	1	0	0
October	0.58	5.22	2004	0	1984	1.9	10/1986	2	1	0	0
November	1.28	7.21	1985	0	1980	2.4	25/1985	3	2	1	0
December	1.48	5.38	2008	0.01	2000	2.2	17/2008	4	3	1	0
Annual	12.17	23.15	1983	1.51	1989	2.52	19800221	34	22	9	3
Winter	6.66	17.43	1993	0.72	2002	2.52	19800221	16	11	5	2
Spring	3.29	11.51	1983	0.02	2000	2.11	19950305	10	6	2	1
Summer	0.19	0.94	1990	0	1980	0.7	20030719	1	1	0	0
Fall	2.03	7.53	1985	0.02	1999	2.4	19851125	6	4	1	1

Table updated on Jan 14, 2011
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological, not calendar seasons

Winter = Dec., Jan., and Feb.
Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug.
Fall = Sep., Oct., and Nov.
Source: Western Regional Climate Center

Table 5
Wind Data - San Diego
Normals, Means & Extremes
Latitude: 32 Deg. 44 Min. N Longitude: 117 Deg. 10 min. W
WBAN: 23188

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Mean Speed (mph)	6.0	6.6	7.5	7.8	7.9	7.8	7.5	7.4	7.1	6.5	5.9	5.6	7.0
Prevailing Direction through 1694	NE	WNW	WNW	WNW	WNW	SSW	WNW	WNW	NW	WNW	NE	NE	WNW
Fastest Mile													
Direction	SE	S	SW	S	S	S	NW	NW	S	N	SE	NW	SE
Speed (mph)	56	45	46	37	30	26	23	23	31	31	51	39	56
Year	1980	1980	1945	1958	1977	1948	1968	1982	1978	1961	1944	1982	JAN 1980
Peak Gust													
Direction	W	SW	S	SW	NW	NW	SW	SW	W	NW	SW	NW	W
Speed (mph)	64	44	44	40	40	28	30	29	35	32	37	44	64
Year	1988	1993	1995	1988	1988	1988	1985	1991	1994	1991	1985	1991	JAN 1988

Deg. – Degrees
Min. – Minutes
Mph – Miles per hour
N – North
W – West
WBAN – Weather Bureau Army Navy

Normals – Based on the 1961- 1990 record period.

Source: Western Regional Climate Center

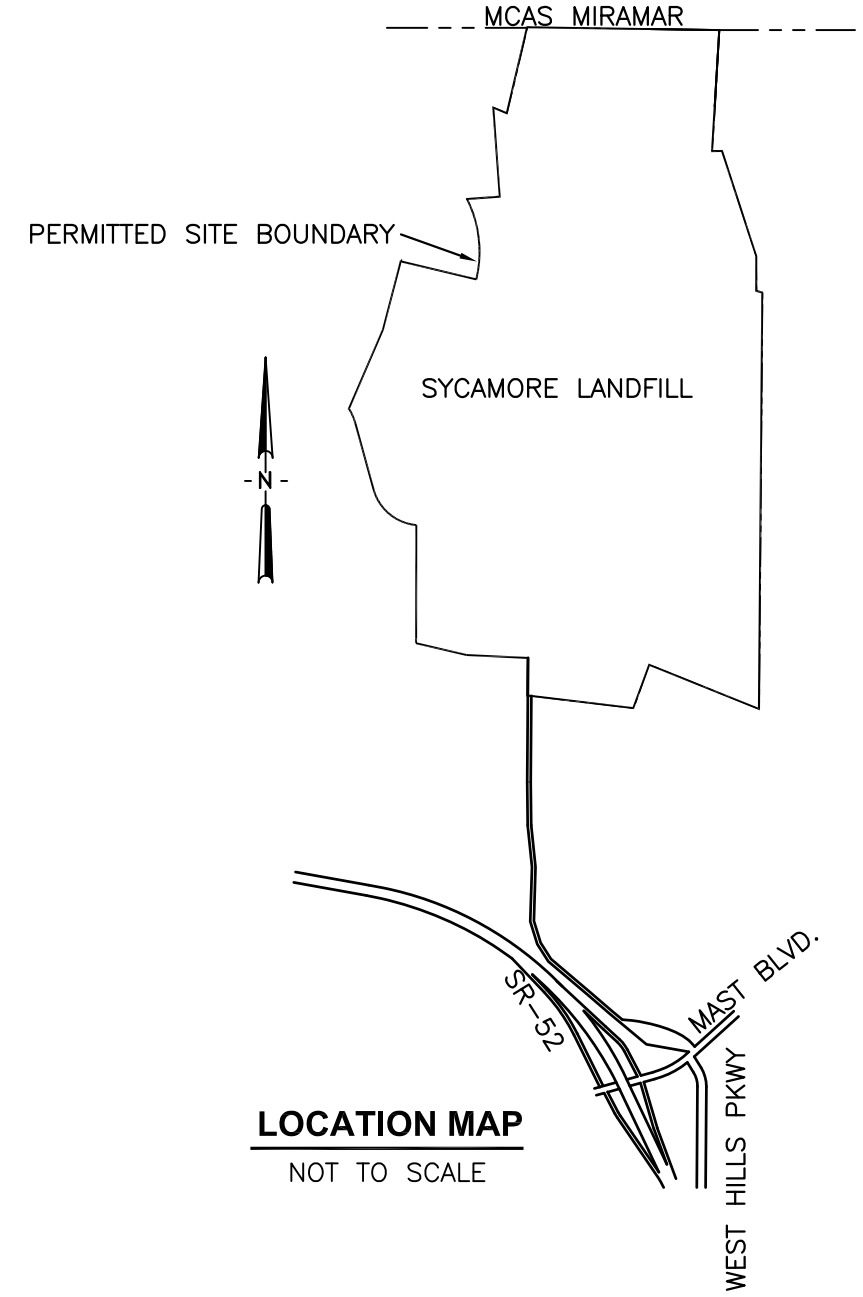
Table 6
Sycamore Landfill K-Factor Table

VEHICLE DESCRIPTION	K-FACTOR (tons)
Waste Passenger Vehicle	0.19
Green Waste Passenger Vehicle	0.19
Waste Pick Up Truck	0.40
Green Waste Pick Up Truck	0.40
Waste Modified Pick Up	0.75
Green Waste Modified Pick Up	0.75
Waste Trailer < 8’	0.75
Green Waste Trailer < 8’	0.75
Waste Trailer > 8’	1.0
Green Waste Trailer > 8’	1.0
Waste Trailer > 12’	1.5
Green Waste Trailer > 12’	1.5

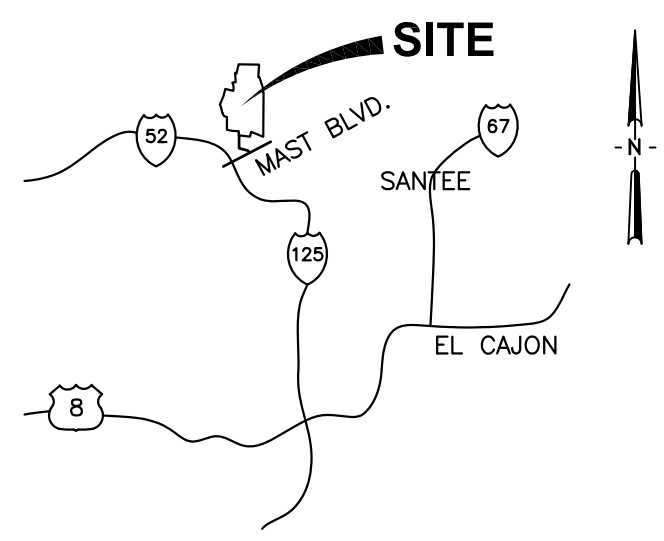
Figures

Figure 1 Site Location Map
Figure 2 Site Plan
Figure 3 Site Parcel and Land Use Map
Figure 4 Existing Topography
Figure 5 Final Grading Plan
Figure 6 Pre-Disposal Topographic Map
Figure 7 Plot Plan of Cover Material Quantities

ACCESS MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

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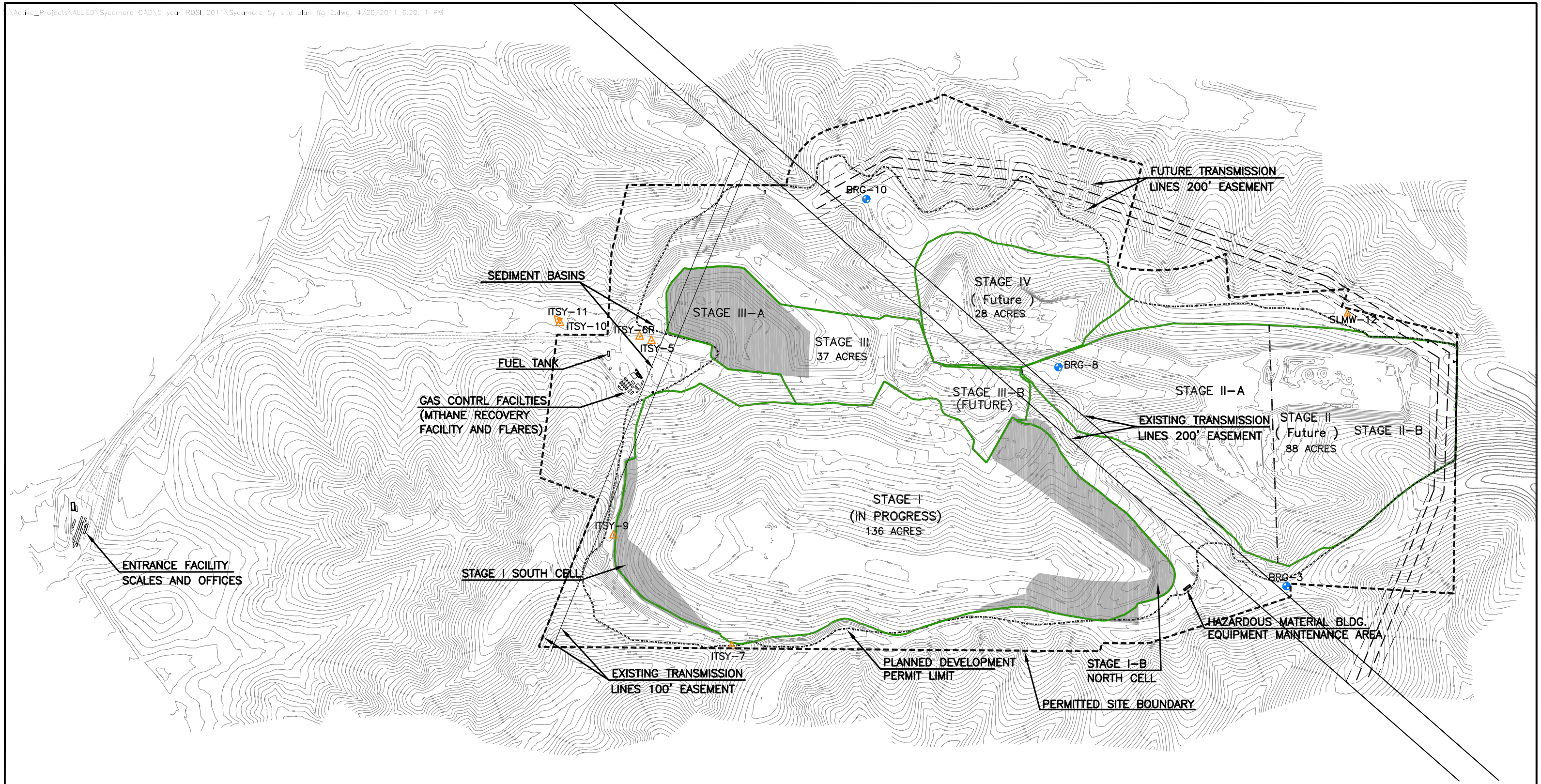
SYCAMORE LANDFILL
SAN DIEGO, CALIFORNIA

SITE LOCATION MAP
FIGURE 1

S:\Active_Projects\ALLIED\Sycamore CAD\5 year ROSI 2011\SITE PLAN-LTD-IB 1-.dwg, 4/19/2011 10:18:56 AM

:\Active_Projects\ALLIED\Sycamore CAD\5 year RDSI 2011\Sycamore 5y site plan fig 2.dwg, 4/20/2011 6:20:11 PM



LEGEND:

- ACCESS ROAD
- STAGE BOUNDARY
- PLANNED DEVELOPMENT PERMIT LIMIT
- PERMITTED SITE BOUNDARY
- LINED AREA
- GROUNDWATER MONITORING WELL (7 EACH)
- PIEZOMETER (3 EACH)

N

700 0 700 1400

SCALE IN FEET

NOTE:
STAGES II AND IV FROM
A-MEHR (2006) RDSI

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SYCAMORE LANDFILL
SAN DIEGO, CALIFORNIA

SITE PLAN
FIGURE 2

MCAS/Miramar

San Diego

San Diego

366-041-01

vacant

EXISTING WASTE

1000' OFFSET

1000' OFFSET

366-030-27
366-030-46
366-031-17
366-031-20
366-030-28
366-030-30
366-031-18
366-031-16
366-031-14
366-031-15
366-030-29
366-030-32
366-030-31
366-031-12
366-030-35
366-031-11
366-030-36
366-031-10
366-030-40
366-070-34
366-070-32
366-030-41
366-070-33
366-070-31
366-030-48
366-070-18
336-070-13
366-070-37
366-070-30
366-070-19
366-070-12
366-070-57
366-070-29
366-070-23
366-071-24
366-071-12
366-071-34
366-071-27
366-071-33
366-080-57
366-080-25
366-080-27
366-080-26
366-080-29
366-080-16
366-080-24
366-080-30
366-080-20
366-080-21
366-080-23
366-080-22
366-080-31
SDG&E Substation
366-040-32
366-040-34
366-040-20
366-040-21
366-040-23
366-040-22
366-040-38
366-040-24
366-040-37
366-040-28
366-050-29
366-050-24
366-050-25
366-050-23
366-050-21
366-050-22
366-050-16
366-050-17
366-050-18
366-050-20
366-050-19
366-090-28
366-090-27
366-090-25
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366-090-24
366-090-29
366-090-22
366-090-21
366-081-20
366-081-19
366-081-05
366-081-04
366-081-25
366-081-02
366-081-03
366-081-08
366-081-07
366-081-09
366-081-10
366-081-23
366-081-28
366-081-26
366-081-29
366-081-27
383-060-20

SR-52

West Hills Park

Mission Trails Regional Park

Mission Trails Equestrian Ctr.

Sycamore Landfill Entrance and Scales

Kumeyaay Lake

MAST BLVD.

West Hills High School

Santee

Carlton Oaks School

Residential

100 0 1000 2000

SCALE IN FEET

LEGEND

- PERMITTED SITE BOUNDARY
- EXISTING WASTE
- PLANNED DEVELOPMENT PERMIT LIMIT
- 1000' WASTE FOOTPRINT OFFSET
- Residential
- Parks and Golf Courses
- Lakes
- Public
- Commercial
- Industrial

Source: Aerial Fotobank, 1999; San Diego County Assessor, 2003; and BRG Consulting, Inc., 2003-2008.

N

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SYCAMORE LANDFILL
SAN DIEGO, CALIFORNIA

PARCEL MAP AND
EXISTING LAND USE MAP
FIGURE 3

NOTE:
STAGES II AND IV FROM
A–MEHR (2006) RDSI

STAGE IV
(Future)

STAGE III–A

STAGE III

STAGE III–B
(FUTURE)

STAGE II–A

STAGE II
(Future)

STAGE II–B

Stage I

PROPOSED RIP RAP
LINED CHANNEL

PROPOSED
48" HDPE

EXISTING
60" PIPE

EXISTING
48" CMP

EXISTING (2)
36" CMP

(2) 36" CMP

36"DOWNDRAIN

30"DOWNDRAIN

24"DOWNDRAIN

EXISTING (2)
36" CMP

PROPOSED
(2) 36" HDPE

APPROVED STAGE
DEVELOPMENT PLAN

PERMITTED SITE BOUNDARY

400 0 400 800
SCALE IN FEET

LEGEND:
- PROPOSED PAVED DITCH
- LINED AREA
- DIRECTION OF FLOW
- PERMITTED SITE BOUNDARY
- PLANNED DEVELOPMENT PERMIT LIMIT

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SYCAMORE LANDFILL
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FINAL GRADING PLAN
FIGURE 5

STAGE III–A

EXISTING WASTE LIMIT

STAGE I
(IN PROGRESS)

EXISTING WASTE LIMIT

PLANNED DEVELOPMENT PERMIT LIMIT

PERMITTED SITE BOUNDARY

LEGEND:

- ACCESS ROAD
- EXISTING WASTE LIMIT
- PLANNED DEVELOPMENT PERMIT LIMIT
- PERMITTED SITE BOUNDARY
- LINED AREA

500 0 500 1000

SCALE IN FEET

GRAPHIC SCALE

TOPOGRAPHIC INFORMATION SHOWN IS DERIVED FROM PHOTOGRAMETRIC MAPPING PERFORMED BY RICK ENGINEERING, INC. DATED 3/19/2010.

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SYCAMORE LANDFILL
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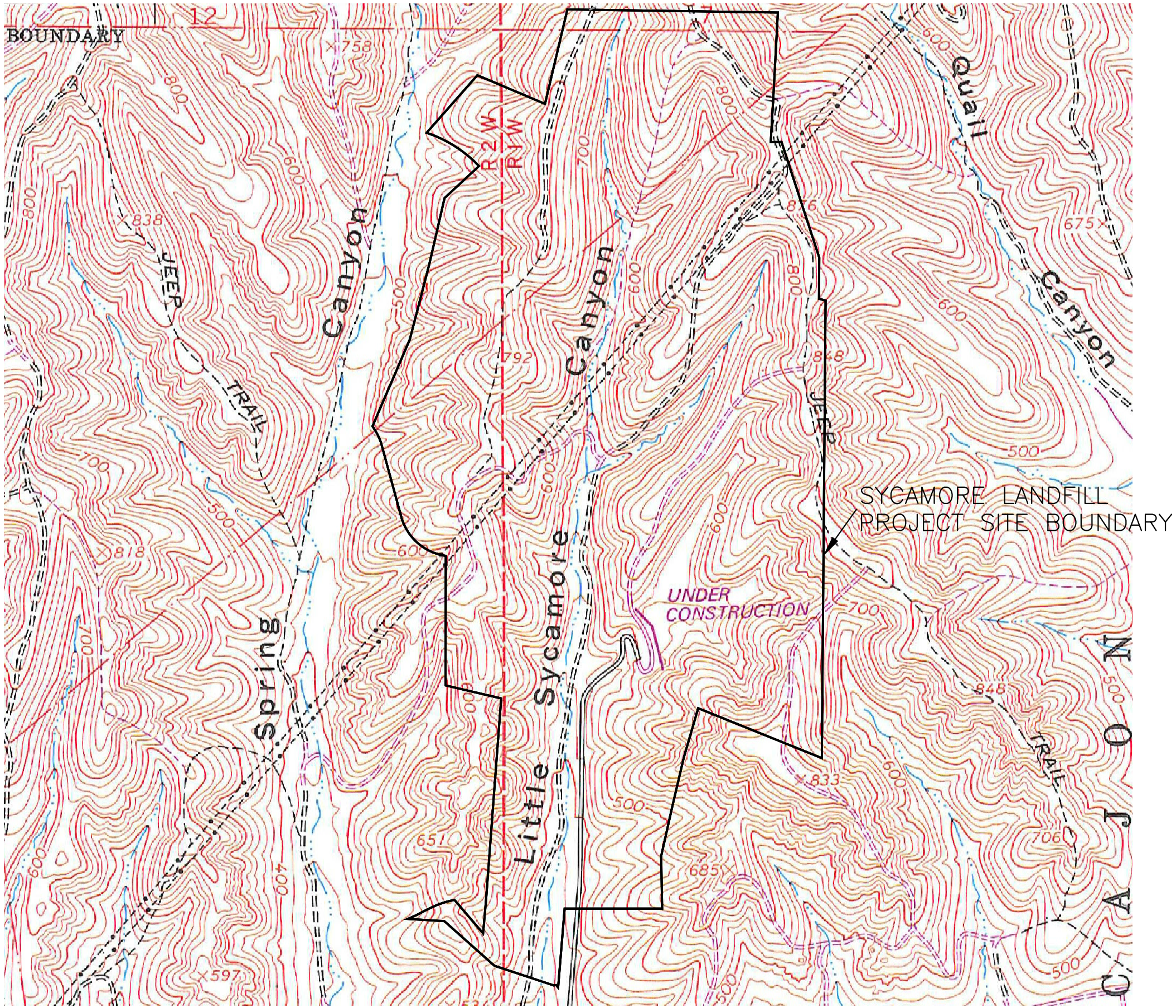
EXISTING TOPOGRAPHY AS OF 3/19/2010

FIGURE 4



1967 REVISED 1975 MAP, BY
GEOLOGIC SURVEY CONTROLLED
BY USGS AND USC & GS
GEOLOGY OF THE LA MESA QUADRANGLE
SAN DIEGO COUNTY, CALIFORNIA

N

1000 0 1000 2000

SCALE IN FEET

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SYCAMORE LANDFILL
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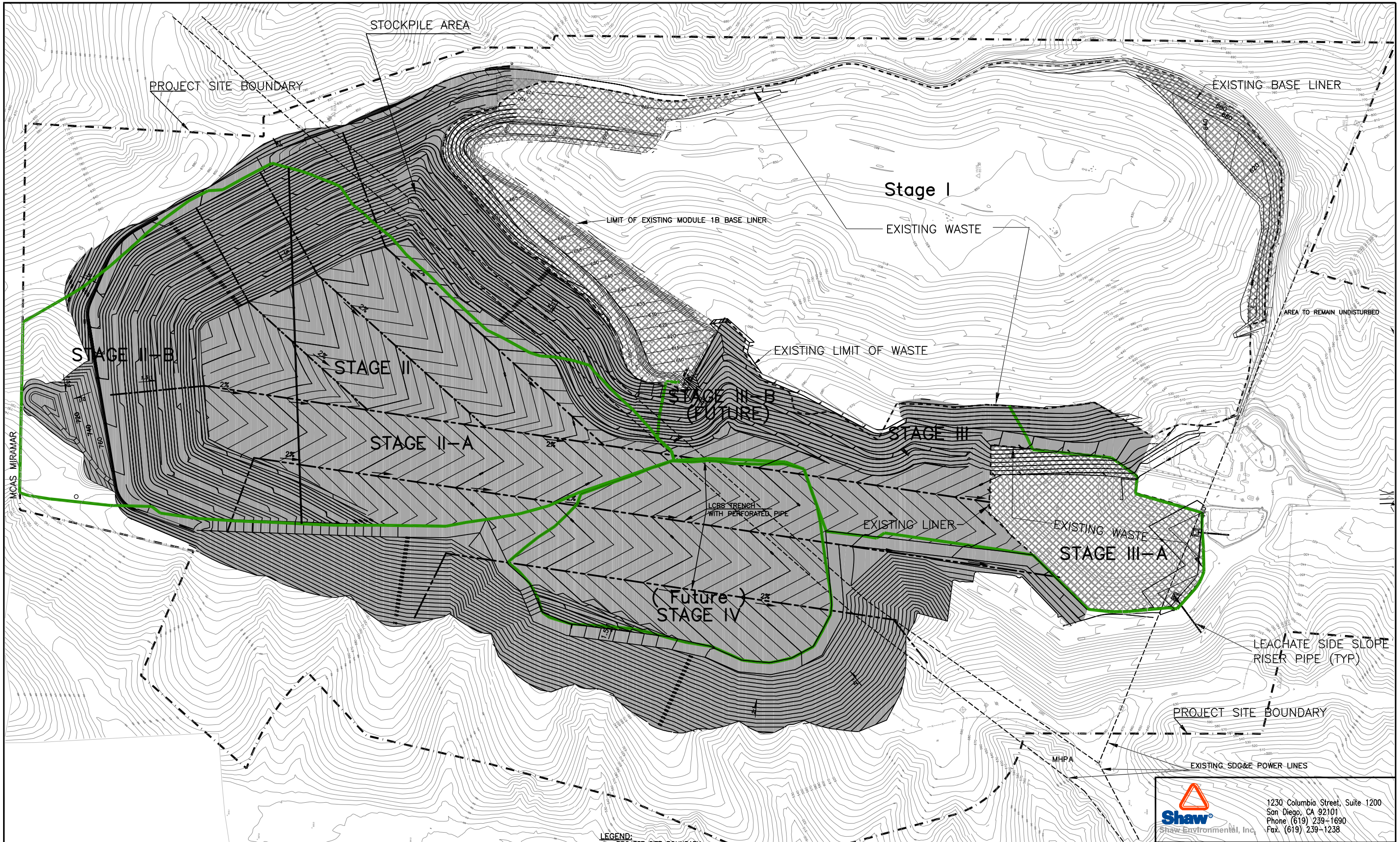
PRE-DISPOSAL TOPOGRAPHIC MAP

FIGURE 6



DATE OF TOPOGRAPHY: 7/16/02 AND 3/19/11
TOPOGRAPHY PROVIDED BY OTHERS