Technical Report
LAX Master Plan EIS/EIR

15b. Wastewater Technical Report

January 2001

Prepared for:

Los Angeles World Airports

U.S. Department of Transportation
Federal Aviation Administration

Prepared by:

Camp Dresser & McKee Inc.

Table of Contents

List of Tables

List of Figures

1. INTRODUCTION

This Technical Report presents detailed information on baseline conditions related to wastewater generation associated with implementation of the Los Angeles International Airport (LAX) Master Plan. This report supports the Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the LAX Master Plan prepared pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

This Technical Report provides information regarding regional and local context, wastewater generation factors, and analysis results that are supplemental to the material presented in Section 4.25.2, *Wastewater,* of the EIS/EIR. Impacts associated with the information contained in this Technical Report are addressed in Section 4.25.2, *Wastewater*, of the EIS/EIR.

2. GENERAL APPROACH AND METHODOLOGY

This analysis compares the wastewater generation projected for the No Action/No Project Alternative and three build alternatives to baseline wastewater generation, characterized by existing wastewater sources, collection facilities, and methods of conveyance and treatment. The analysis estimates on-airport wastewater generation under baseline conditions, including wastewater generated at LAX as well as wastewater generated in areas proposed to be acquired as part of the LAX Master Plan or other airport programs -- collectively referred to as the Master Plan boundaries, as described below. This forms the "baseline" (see Section 3, *Affected Environment/Environmental Baseline*, below) against which impacts of the various alternatives are compared.

The acreage and location of land required for the proposed Master Plan improvements are unique to each of the three build alternatives. Consequently, each alternative would result in a different future footprint for LAX. In order for baseline conditions, the No Action/No Project Alternative, and the three build alternatives to be compared side by side, a single wastewater generation study area was used. This composite study area is referred to as the "Master Plan boundaries." Total wastewater generation within the study area was then calculated (as described below) for baseline conditions as well as all alternatives at both the 2005 and 2015 planning horizons.

The wastewater generation study area encompasses all of the land within the Master Plan boundaries. The Master Plan boundaries include the existing airport and the total (composite) area considered for acquisition under the three build alternatives, the Aircraft Noise Mitigation Program (ANMP) properties currently being acquired by Los Angeles World Airports (LAWA) known as Manchester Square and Belford, and the LAX Expressway alignments. Under baseline conditions, land within the ANMP acquisition areas is assumed to remain in its existing use; under the No Action/No Project Alternative, it is assumed to be vacant. For each of the build alternatives, it is assumed that all proposed acquisition has been completed and existing land uses demolished. Each alternative proposes a different configuration of land acquisition; thus, not all land within the Master Plan boundaries would be acquired by any one alternative. Land uses within areas not acquired would be unaffected by the Master Plan. The Alternative B off-site fuel farm sites are discussed separately from the Master Plan boundaries.

Several different sources, means, and factors were used for calculating wastewater generation. Wastewater generation factors are typically provided in terms of wastewater generation (in gallons per day or acre-feet per year) per unit (e.g., square foot of building space, hotel room, dwelling unit). Wastewater generation is projected by multiplying the factor by the appropriate number of units. The data regarding baseline wastewater generation in the region is generally reported for the 1996/1997 timeframe.

In order to determine whether the increase in wastewater generation associated with the LAX Master Plan would be significant, the total quantity of wastewater generated by each of the three build alternatives and the No Action/No Project Alternative was projected. Projected wastewater flows were compared to the anticipated capacity at the appropriate regional wastewater treatment facility. Total wastewater generation within the Master Plan boundaries was considered.

2.1 Airport Land Use Wastewater Generation Factors

For on-airport cargo, maintenance, and ancillary uses, wastewater generation factors were derived from Psomas and Associates in 1996 in *Utilities Consumption and Generation at LAX Technical Addendum*.[1] Wastewater generated at the Central Utility Plant (CUP) was calculated based on wastewater generated at the existing CUP.

Insufficient data was available to project wastewater generation for the terminal using the above method. Instead, wastewater flows were projected using factors included in the *Draft L.A. CEQA Thresholds Guide*.[2] The *Draft L.A. CEQA Thresholds Guide* does not include a factor for airport terminals. A comparison of activities conducted within a terminal to activities conducted at various other facilities suggested that the closest facility type for which the city has a factor is retail. An airport terminal attracts a similar type (e.g., food service, sanitary, and cleaning) and intensity of visitation as retail uses. **Table 1**, Airport Land Use Wastewater Generation Factors, shows the wastewater generation factors for airport land uses in gallons per day per square foot (gpd/sq ft) of building space.

Table 1

Airport Land Use Wastewater Generation Factors

Airport Land Use Category	Wastewater Factor (gpd/sq. ft.)
Terminal	0.080
Cargo	0.019
Maintenance	0.111
Ancillary	0.174

Source: Camp Dresser & McKee Inc., 2000.

Water use factors are typically based on facility type and square footage and represent average usage for each facility type. Under the No Action/No Project Alternative, passenger activity is anticipated to grow by 13.2 and 20.8 million annual passengers by 2005 and 2015, respectively, over baseline conditions. In order to account for the corresponding intensification of use of terminal facilities under the No Action/No Project Alternative, a factor correlating with the ratio of projected future passengers to baseline passengers was applied. Under the No Action/No Project Alternative, a factor of 123 percent was applied to the city generation factor for 2005 and 136 percent was applied for 2015. This ratio assumes that intensification of terminal use will be directly proportional to the increase in passengers. This is likely to produce an estimate of water use that is higher than would actually be encountered. As terminal facilities such as restaurants become more crowded, the associated decrease in convenience level would discourage or prevent the full increment of new passengers from using them.

2.2 Non-Airport Land Use Wastewater Generation Factors

For non-airport land uses, including planned and proposed uses within LAX Northside/Westchester Southside area, the ANMP acquisition areas, and the acquisition areas for each build alternative, wastewater generation factors from the *Draft L.A. CEQA Thresholds Guide* were used. These factors are

[1] Psomas and Associates, Utilities Consumption and Generation at LAX Technical Addendum, October 31, 1996.

[2] City of Los Angeles, Draft L.A. CEQA Thresholds Guide, May 14, 1998. Although not required by CEQA, the Draft L.A. CEQA Thresholds Guide was prepared by the City of Los Angeles to provide standards for the preparation of EIRs within the City. Although not formally adopted at the time of this writing, the wastewater generation use factors contained in the guide were based on City of Los Angeles, Los Angeles Bureau of Sanitation wastewater generation factors, which were updated in the 1990s to reflect wastewater generation trends, and remain valid.

provided in terms of gpd per 1000 square feet of building space for uses such as office, retail, and light industrial. Residential generation factors are in gpd per dwelling unit (DU) and hotel generation factors in gpd per room. **Table 2**, Non-Airport Land Uses Wastewater Generation Factors, lists the wastewater generation factors used for non-airport land uses.

Table 2

Non-Airport Land Uses Wastewater Generation Factors

Non-Airport Land Use Category	Units	Factor (gpd/unit)
Residential (Single Family)	DU	180
Residential (Multi Family)	DU	160
Hotel	Rooms	130
Office	Sq. Ft.	0.15
Retail	Sq. Ft.	0.08
Light Industrial	Sq. Ft.	0.08
Institutional	Sq. Ft.	0.15
Restaurant	Sq. Ft.	0.92

Source: City of Los Angeles, Draft L.A. CEQA Thresholds Guide, May 14, 1998.

3. AFFECTED ENVIRONMENT/ENVIRONMENTAL BASELINE

The subsections below present information regarding regional and local wastewater conveyance and treatment for LAX.

3.1 Regional Wastewater Conveyance and Treatment

The city of Los Angeles operates four wastewater facilities for most of the city's incorporated area and for several other cities and unincorporated areas in the Los Angeles region. The primary elements of the city's existing wastewater system are two treatment plants, two water reclamation plants, approximately 6,500 miles of major interceptor and mainline sewers, and 46 pumping plants. **Figure 1,** Regional Wastewater Treatment Facilities, presents wastewater treatment facilities operated by the city of Los Angeles and neighboring jurisdictions. The city's sewer system comprises two separate and independent subsystems, referred to as the Terminal Island Service Area and the Hyperion Service Area. LAX lies within the Hyperion Service Area. The Hyperion Service Area is the larger of the two subsystems, serving the majority of the city of Los Angeles, in addition to several other municipalities and agencies that have contracts with the city. The major components of the Hyperion Service Area collection system include several large diameter collector, interceptor, and outfall sewers, and three treatment/reclamation plants: Hyperion Treatment Plant (HTP), the Tillman Water Reclamation Plant, and the Los Angeles-Glendale Water Reclamation Plant.

Sanitary wastewater generated by activities at LAX is treated at HTP, which is on a 144-acre site adjacent to Santa Monica Bay. The facility is adjacent to the southwest boundary of LAX, approximately two miles southwest of the CTA. Presently, HTP has a secondary treatment capacity of 450 million gallons per day (mgd). Policy 9.2.3 of the *City of Los Angeles Citywide General Plan Framework* states that adequate treatment plant capacity will be developed as necessary.[3] The city of Los Angeles is developing a Wastewater Facilities Plan, the first, current phase of which is its Integrated Plan for the Wastewater Program (IPWP). Through this program, which features a public involvement process, the city is

[3] Envicom Corp., City of Los Angeles Citywide General Plan Framework, prepared for the City of Los Angeles, December 1996.

assessing Los Angeles's wastewater needs, identifying tools available for meeting those needs, and developing a technical framework for development of policies and a facilities plan for meeting the needs, identifying tools available for meeting those needs, through the 2020 planning horizon. The city of Los Angeles will follow the IPWP with a detailed Wastewater Facilities Plan, environmental documentation, and a financial plan. Based on IPWP projections (described in more detail below), wastewater flows to HTP will exceed its capacity in 2020.[4] The IPWP planning effort is analyzing the projections to determine when the shortfall in capacity will occur, so that the plan will effectively meet Los Angeles' wastewater treatment needs through the planning horizon.

The IPWP's projected needs for wastewater facilities will be compared to the capacities of existing facilities to determine the projected shortfall. The shortfall analysis is in progress. The next phase of the IPWP will involve selecting a preferred set of options (an alternative), with input from the public, that addresses the shortfall. Viable alternatives that the City of Los Angeles has for meeting its projected shortfall include combinations of increasing capacity at HTP, building new reclamation capacity upstream of HTP, conservation, and infiltration/inflow reduction.

The IPWP has projected wastewater flows for the city's two service areas for the year 2020. These projections include forecasts of residential, commercial, industrial, and groundwater infiltration flows, along with projected flows associated with dry weather diversions from the storm drainage system. The IPWP regional projections used SCAG-94 demographic projections along with a residential per capita flow rate of 87 gallons per capita day (gpcd) and a commercial flow rate of 24 gpcd. The IPWP projections for industrial flows were based on the number of permitted dischargers and their flow rates. Groundwater infiltration flows were based on infiltration rates identified in the city's Infiltration/Inflow Reduction Plan. IPWP projections for dry weather diversions from the storm drainage system were based on current discharges. **Table 3**, 2020 Regional Wastewater Flow Projections, shows the resulting forecast. The growth associated with No Action/No Project Alternative and Alternative C is lower than the growth factor used in SCAG-94 projections; the growth associated with Alternatives A and B is higher than the growth factor used in the SCAG-94 projections.

Table 3

2020 Regional Wastewater Flow Projections[1] (mgd)

Service Area	Residential Flow	Commercial Flow	Industrial Flow	Ground Water Infiltration	Diversions from Storm Drainage System	Total
Hyperion	425	65	29	97	17	633
Terminal Island	11	<1	4	8	0	24
Total	436	66	33	105	17	657

[1] Average dry weather flows, with conservation.

Source: City of Los Angeles, Department of Water and Power, Integrated Plan for the Wastewater Program, Baseline Needs Technical Memorandum, April 2000.

Wastewater is delivered to HTP by gravity flow through five major sewer lines. These five major sewer lines are:

- Coastal Interceptor Sewer (CIS)
- North Outfall Sewer (NOS)
- North Central Outfall Sewer (NCOS)
- North Outfall Relief Sewer (NORS)
- Central Outfall Sewer (COS)

[4] City of Los Angeles, Department of Water and Power, Integrated Plan for the Wastewater Program, Baseline Needs Technical Memorandum, April 2000.

Los Angeles International Airport Master Plan	**Regional Wastewater Treatment Facilities**	Figure 1

As illustrated in **Figure 2**, Location of Existing Sanitary Sewer Facilities, of the five outfalls, the latter three pass under LAX. In particular, the COS crosses Sepulveda Boulevard at a depth of 10 feet, the Central Terminal Area (CTA) at 10 to 25 feet, and Imperial Highway at 5 to10 feet.[5] Four of the five outfalls presently, or are scheduled to, receive wastewater discharges from LAX. **Table 4**, Capacity and Flow of Outfall Sewers Serving LAX, provides capacities and flow information for these four outfalls. The design capacities identified in the table represent the volume of flow the outfalls were originally designed to convey. Through use and age, the interiors of the pipelines have deteriorated and debris has accumulated, reducing the effective capacities of the outfalls. As indicated in **Table 4**, all four of the outfalls have remaining excess capacity.

Table 4

Capacity and Flow of Outfall Sewers Serving LAX

Outfall Sewer	Design Capacity	Effective Capacity	Flow[1]
Central Outfall Sewer (COS)	91 mgd	65 mgd	2 mgd[2]
North Outfall Sewer (NOS)[3]	405 mgd	268 mgd	3 mgd
North Outfall Relief Sewer (NORS)	557 mgd	381 mgd	129 mgd
North Central Outfall Sewer (NCOS)	353 mgd	259 mgd	220 mgd

1 Average Daily Dry Weather Flow.
2 COS flows are currently being diverted into the NORS, with the exception of some local flows from LAX and the City of El Segundo, in order to rehabilitate the lower portion of the COS beneath LAX.
3 The NOS is currently "off line" with the exception of some local flows that cannot be bypassed. All flow is being diverted into the NORS in order to rehabilitate the lower portion of the NOS.

Source: City of Los Angeles, Department of Public Works, Bureau of Sanitation; City of Los Angeles, Department of Public Works, Integrated Plan for Wastewater Program, Tools Memorandum, June 2000.

3.2 Master Plan Boundaries Wastewater Generation and Conveyance

3.2.1 LAX Sanitary Sewer System

Wastewater generated at LAX and discharged to the sanitary sewer is treated at HTP. Sanitary sewage collected at LAX is currently conveyed to HTP through the COS; with the completion of improvements currently underway, in the future, some wastewater will also be conveyed through the NORS. In addition, some dry- and wet-weather storm water flows are conveyed to HTP through the NCOS.

The airport wastewater collection system can be divided into several subareas, each of which has a small network of collector sewers which discharge at a discrete point to one of the outfall sewers. These subareas are as follows:

- An 18-inch diameter sewer located on Falmouth Avenue services the northwestern portion of the airport. The sewer runs north on Falmouth and discharges to the NOS near the Ballona Wetlands.
- Sewage from the hangars and buildings located along World Way West is discharged into the COS at a point on the north side of Runway 25R, near its west end.
- The buildings located along Imperial Highway, west of Sepulveda Boulevard, discharge to the COS at a point on the west end of Runway 25L.
- The CTA discharges to the COS at two locations: in front of Terminal 2 on World Way North, and on Center Way near the CUP.
- From the buildings located along Century Boulevard and Imperial Highway, east of Sepulveda Boulevard, the collected sewage is taken north toward Sepulveda Boulevard via Vicksburg Avenue for discharge into the NORS. LAWA has not conducted recent measurements to determine the flows in

5 Bechtel Infrastructure Corporation, LAX Master Plan Phase II Interim Report Sanitary Sewers, January 22, 1998.

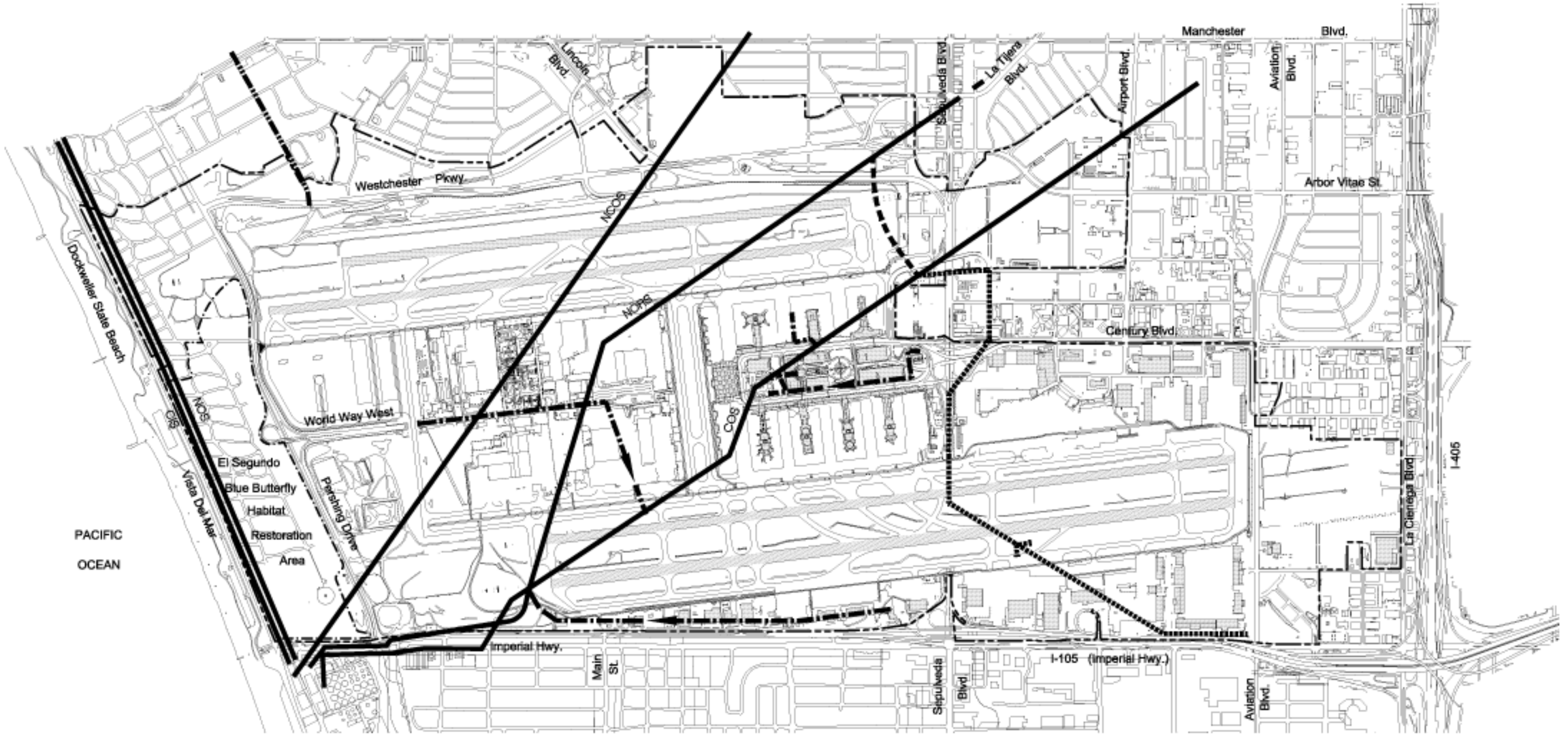
the various collector sewers at LAX, however, there are no known collector sewer capacity problems.

3.2.2 Industrial and Septic Flows

While sanitary sewage generated at LAX is conveyed directly to HTP for treatment, industrial and septic wastewater generated at LAX requires special treatment on-site before discharge. The subsections below provide an overview of industrial and septic wastewater treatment at LAX.

3.2.2.1 Industrial Flows and Treatment

Several airport tenants discharge industrial wastewater to the sewer system. As industrial dischargers, they are subject to regulation, permitting, and pretreatment requirements as specified by the *City of Los Angeles Industrial Waste Control Ordinance*. Twenty-seven facilities, including LAWA and airport tenants, hold industrial waste discharge permits for discharges to the sewer system. Together, they are permitted to discharge up to 385,000 gallons of industrial waste per day. Discharges are typically attributed to a combination of activities, including washing and/or steam cleaning of equipment, aircraft and ground vehicles, and floors; food preparation; refrigeration and air conditioning recirculation; boiler blowdown; and garbage can washing. Many of these discharges require some form of pretreatment, the most common of which is clarification. **Table 5**, Permitted Industrial Waste Discharges to the Sanitary Sewer System, provides a summary of the permitted industrial dischargers at LAX, the activities associated with the discharges, and the pretreatment required.



Source: Camp Dresser & McKee Inc., 2000.

Los Angeles International Airport Master Plan	**Location of Existing Sanitary Sewer Facilities**	Figure **2**

Table 5

Permitted Industrial Waste Discharges to the Sanitary Sewer System

Tenant	No. of Permits	Waste Generating Processes	Pretreatment Unit Operation
Aircraft Service International Inc.	1	Equipment washing	Clarifier; Rain diversion valve
American Airlines	5	Cooling tower repair/service, floor cleaning, aircraft steam cleaning, vehicle steam cleaning, aircraft washing, floor washing, equipment washing	Screening recirculation; Clarifier; Rain diversion valves
Avis Rent-A-Car	1	Automobile Washing	Clarifier
Caterair	1	Produce and meat processing, produce washing, garbage can washing, vehicle washing, equipment washing	Clarifier
City of Los Angeles Fire Department	1	Vehicle washing	Clarifier; Rain diversion valve
Continental Airlines	4	Floor cleaning, general cleaning, solvent cleaning/vapor degreasing, deburring, ion exchange/water softening, boiler repair/service, aircraft steam cleaning, aircraft washing, floor washing, equipment washing, vehicle washing, contact cooling, boiler repair/service	Clarifier; Chemical oxidation; Neutralization; Rain diversion valves
Delta Airlines	1	Floor washing, aircraft steam cleaning, aircraft washing, equipment washing	Clarifier
Dobbs International Services	1	Produce waste grinding, floor washing, garbage can washing, equipment washing	Clarifier with grease interceptor; Grinding
Federal Express Corporation	2	Cooling towers, floor washing, equipment washing	Clarifier
Garrett Aviation	1	Aircraft washing, floor washing, equipment washing	Clarifier; Rain diversion valves
Hudson Aviation Services	1	Vehicle washing	Clarifier
LAWA	4	Floor cleaning, aircraft steam cleaning, aircraft washing, floor washing, equipment washing, vehicle washing, wet air pollution control	Clarifier; Sludge dewatering
LAWA – Central Utility Plant	6	Ion exchange/water softening, deionization/demineralization, floor washing, boiler repair/servicing, cooling tower repair/servicing, solvent cleaning/vapor degreasing, deburring/tumbling/barrel finishing	Clarifier
LAWA – Customs Area	1	Garbage grinding	
LAWA –TBIT	1	Floor washing, equipment washing	Clarifier with grease interceptor
LAWA – Administration Building	1	Cooling tower repair/service	Recirculation
LAXFUEL Corporation	2	Equipment service/repair, tank farm service/repair, floor washing	Clarifier with grease interceptor
LSG-Lufthansa/Skychefs	2	Vehicle washing, equipment washing, floor washing, cooling tower repair/service	Clarifier; Recirculation; Rain diversion valves
Marriott/Host International Inc.	6	Floor washing, garbage can washing, equipment washing, water softening, boiler repair/service, vehicle washing	Clarifier; Grinding; Screening
National Car Rental	1	Automobile washing	Clarifier
Nikko Inflight Catering Company	1	Floor washing, equipment washing	Screening
Northwest Airlines	1	Floor washing, equipment washing	Clarifier
Ogden Aviation Services	1	Ion exchange/water softening, floor washing, garbage can washing, equipment washing	Clarifier; Rain diversion valves
Ogden Ground Services	1	Vehicle washing, equipment washing	Clarifier
The Proud Bird	1	Floor washing, garbage can washing, equipment washing	
TWA	2	Aircraft steam cleaning, aircraft washing, floor washing, equipment washing	Clarifier; Rain diversion valves
United Airlines	7	Floor washing, aircraft steam cleaning, aircraft washing, equipment washing	Clarifier

Source: City of Los Angeles, Department of Public Works, Permit Files.

3.2.2.2 Discharges To The Storm Water System

In addition to the industrial waste discharges that are permitted to the sanitary sewer system, there are three permits for industrial discharges to the Imperial drainage sub-basin, a combined sewer/storm drain system, and one for discharges to the Dominguez Channel sub-basin. For the most part, these discharges consist of wash water from apron, airplane, and equipment wash downs. **Table 6**, Permitted Industrial Waste Discharges to the Storm Drain System, provides details of these permits. As indicated in the table, three of the permitted discharges receive pretreatment before release.

Table 6

Permitted Industrial Waste Discharges to the Storm Drain System

Permittee	Waste Generating Process	Pretreatment	Drainage Sub-Basin
American Airlines	Floor washing	Clarifier	Imperial/water quality retention basin
Delta Airlines	Testing and inspection	Clarifier	Dominguez Channel
LAWA	Heliport operations	None	Imperial/water quality retention basin
LAXFUEL Corporation	Tank farm equipment servicing and repair	Clarifier with grease interceptor	Imperial/water quality retention basin

Source: City of Los Angeles, Department of Public Works, Permit Files.

All dry weather flows within the Imperial drainage sub-basin, as well as the initial portion ("first flush") of wet weather flows, are collected and treated by an on-site water quality retention basin. The primary purpose of the retention basin is capture potentially polluted runoff before it enters Santa Monica Bay. The detention basin collects runoff from portions of the CTA and the World Way West maintenance area. Flows are pretreated by an oil-water separator, and are then discharged to the NCOS via a 15-inch diameter sewer located on Pershing Drive for conveyance to HTP for further treatment. Industrial discharges within the Imperial drainage area are routed to the on-site water quality retention basin and discharged. If the detention basin is full, the overflow is discharged to the Imperial Storm Drain, which empties in Santa Monica Bay. Section 4.7, *Hydrology and Water Quality*, addresses the potential impacts of these discharges to surface water quality. In addition to the permitted dry weather discharges, there are also dry weather flows from unknown sources. LAWA has an ongoing program to eliminate these discharges, as discussed in the Section 4.7, *Hydrology and Water Quality*.

3.2.2.3 LAX Septic Wastes

Wastewater discharges from LAX include septic wastes emptied from airplane restrooms by vacuum truck. The septic wastes are passed through grinders and then discharged into specified maintenance holes that lead directly into the outfall sewers for conveyance to HTP. The discharges are performed under permits issued by the City of Los Angeles Department of Public Works, Bureau of Sanitation. The Bureau of Sanitation does not have data indicating the total volume of septic waste discharged at LAX.

3.2.3 Baseline LAX Sanitary Wastewater Flows

Site-specific wastewater generation data are not collected at LAX. In order to calculate existing wastewater generation, usage-based factors, as described above in Section 2, *General Approach and Methodology*, were applied to land use building areas. The baseline wastewater generation at LAX is estimated to be 797,672 gpd (**Table 7**, Baseline Wastewater Generation).

Table 7

Baseline Wastewater Generation

Land Use	Wastewater Factor (gpd/S.F./yr or gpd/unit/yr)	Building S.F. or Units	Wastewater Generation (gpd)
LAX			
Airport Land Uses			
Terminal (S.F.)	0.08	3,997,119	319,770
Cargo (S.F.)	0.02	1,900,000	37,002
Maintenance (S.F.)	0.11	1,440,000	159,406
Ancillary (S.F.)	0.17	1,294,000	224,794
CUP (S.F.)	N/A	N/A	56,700
Subtotal Airport Uses			**797,672**
Non-Airport Uses			
Belford			
Residential (Multi Family DUs)	160	583	93,280
Subtotal Belford			**93,280**
SUBTOTAL AIRPORT AND NON-AIRPORT USES			**890,952**
Non-Project Uses Within Master Plan Boundaries			
Manchester Square			
Residential (Single Family DUs)	180	280	50,400
Residential (Multi Family DUs)	160	1,706	272,960
Subtotal Manchester Square			**323,360**
Land Within Acquisition Areas			
Residential (Single Family DUs)	180	57	10,260
Residential (Multi Family DUs)	160	69	11,040
Hotel (Rooms)	130	2,083	270,790
Office (S.F.)	0.15	1,108,312	166,247
Retail (S.F.)	0.08	148,219	11,858
Light Industrial (S.F.)	0.08	3,789,292	303,143
Institutional (S.F.)	0.15	156,178	23,427
Subtotal Acquisition Areas			**796,764**
SUBTOTAL NON-PROJECT USES			**1,120,124**
TOTAL MASTER PLAN BOUNDARIES			**2,011,076**

N/A = Not Applicable

Notes: Information in table may not always total, due to rounding.
There is no baseline wastewater generation associated with Continental City or LAX Northside.

Source: Camp Dresser and McKee Inc., 2000.

4. ENVIRONMENTAL CONSEQUENCES

To determine projected wastewater generation under each of the alternatives, the appropriate wastewater generation factor for each airport land use was multiplied by the building square footage of that land use type included in the alternative. **Table 8,** Land Uses Included in the Alternatives, presents a comparison of the land use types included in the alternatives. Wastewater generated by the CUP (through boiler blowdown) was calculated based on the generation of the existing CUP. **Tables 9** through **12** below present projected wastewater generation for each of the alternatives. A discussion of the environmental consequences of the wastewater generation projected for each alternative is included in Section 4.25.2, *Wastewater*, of the EIS/EIR.

Table 8

Land Uses Included in the Alternatives

Land Use	Baseline Conditions	No Action/No Project 2005	No Action/No Project 2015	Alternative A 2005	Alternative A 2015	Alternative B 2005	Alternative B 2015	Alternative C 2005	Alternative C 2015
LAX									
Airport Land Uses									
Terminal (S.F.)	3,997,119	3,997,000	3,997,000	8,311,000	10,419,000	8,333,000	9,712,000	6,654,000	7,319,000
Cargo (S.F.)	1,900,000	2,328,064	2,328,064	3,694,000	4,518,000	4,192,000	4,871,000	3,664,000	5,075,000
Maintenance (S.F.)	1,440,000	1,440,000	1,440,000	584,000	841,000	889,000	859,000	1,011,000	834,000
Ancillary (S.F.)	1,294,000	1,294,000	1,294,000	1,987,000	2,260,000	2,389,000	1,720,000	2,499,000	3,198,000
Non-Airport Uses									
Belford									
Residential (Multi Family DUs)	583								
LAX Northside Development									
Office (S.F.)		632,000	1,580,000						
Hotel (rooms)		600	1,400						
Retail (S.F.)		24,000	60,000						
Airport Related (S.F.)		300,000	750,000						
R/D Business Park (S.F.)		470,000	1,170,000						
Restaurant (S.F.)		28,000	70,000						
Continental City									
Office (S.F.)		1,200,000	3,000,000						
Retail (S.F.)		40,000	100,000						
Westchester Southside									
Hotel (rooms)				523	1,308	523	1,308	523	1,308
Office (S.F.)				260,000	650,000	260,000	650,000	260,000	650,000
Retail (S.F.)				44,000	110,000	44,000	110,000	44,000	110,000
R/D Business Park (S.F.)				388,000	970,000	388,000	970,000	388,000	970,000
Restaurant (S.F.)				16,000	40,000	16,000	40,000	16,000	40,000
Non-Project Uses Within Master Plan Boundaries									
Manchester Square[1]									
Residential (Single Family DUs)	280								
Residential (Multi Family DUs)	1,706								
Hotel (rooms)				50,000	50,000				
Office (S.F.)				385	770				
Industrial (S.F.)				860,000	1,720,000				
Land Within Acquisition Areas[2]									
Residential (Single Family DUs)	57	57	57						
Residential (Multi Family DUs)	69	69	69	42	42	42	42		
Hotel (rooms)	2,083	2,083	2,083	154	154			1,354	1,354
Office (S.F.)	1,108,312	1,108,312	1,108,312	142,064	142,064			509,218	509,218
Retail (S.F.)	148,219	148,219	148,219	45,737	45,737	60,221	60,221	73,002	73,002
Light Industrial (S.F.)	3,789,292	3,789,292	3,789,292	1,196,544	1,196,544	83,329	83,329	1,958,314	1,958,314
Institutional[3] (S.F.)	156,178	156,178	156,178	85,902	85,902	85,902	85,902		

1 Under the No Action/No Project Alternative, existing uses would be demolished. For purposes of this EIS/EIR, no development is assumed. Under Alternative A, Manchester Square would be redeveloped with commercial/light industrial uses independent of the Master Plan. Under Alternatives B and C, existing uses would be demolished, and the area would be incorporated into the overall Master Plan development.

2 Only a portion of the land within the acquisition areas would be acquired for each individual build alternative. No land within the acquisition areas would be acquired under the No Action/No Project Alternative. The land within the Master Plan boundaries that would not be acquired under a particular alternative is assumed to remain in its current use.

3 Includes college, high school, elementary school and library land use.

Source: Landrum & Brown, 2000.

Table 9

Projected Wastewater Generation Within the Master Plan Boundaries Under the No Action/No Project Alternative

Land Use	Wastewater Factor (gpd/S.F.) or gpd/unit)	2005 Building S.F. Or Units	2005 Wastewater Generation (gpd)	2015 Building S.F. or Units	2015 Wastewater Generation (gpd)
LAX					
Airport Land Uses					
Terminal[1] (S.F.)	0.08	3,997,000	392,533	3,997,000	434,433
Cargo (S.F.)	0.02	2,328,064	45,338	2,328,064	45,338
Maintenance (S.F.)	0.11	1,440,000	159,406	1,440,000	159,406
Ancillary (S.F.)	0.17	1,294,000	224,794	1,294,000	224,794
CUP (S.F.)	N/A	N/A	56,700	N/A	56,700
Subtotal Airport Uses			**878,772**		**920,671**
Non-Airport Uses					
LAX Northside					
Office (S.F.)	0.15	632,000	94,800	1,580,000	237,000
Hotel (Rooms)	130	600	78,000	1,400	182,000
Retail (S.F.)	0.08	24,000	1,920	60,000	4,800
Airport Related[2] (S.F.)	0.15	300,000	45,000	750,000	112,500
R/D Business Park[2] (S.F.)	0.15	470,000	70,500	1,170,000	175,500
Restaurant (S.F.)	0.92	28,000	2,240	70,000	5,600
Subtotal Northside			**292,460**		**717,400**
Continental City					
Office (S.F.)	0.15	1,200,000	180,000	3,000,000	450,000
Retail (S.F.)	0.08	40,000	3,200	100,000	8,000
Subtotal Continental City			**183,200**		**458,000**
SUBTOTAL AIRPORT AND NON-AIRPORT USES			**1,354,432**		**2,096,071**
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas[3]					
Residential (Single Family DUs)	180	57	10,260	57	10,260
Residential (Multi Family DUs)	160	69	11,040	69	11,040
Hotel (Rooms)	130	2,083	270,790	2,083	270,790
Office (S.F.)	0.15	1,108,312	166,247	1,108,312	166,247
Retail (S.F.)	0.08	148,219	11,858	148,219	11,858
Light Industrial (S.F.)	0.08	3,789,292	303,343	3,789,292	303,143
Institutional (S.F.)	0.15	156,178	23,427	156,178	23,427
Subtotal Acquisition Areas			**796,764**		**796,764**
SUBTOTAL NON-PROJECT USES			**796,764**		**796,764**
TOTAL MASTER PLAN BOUNDARIES			**2,151,196**		**2,892,836**

N/A = Not Applicable

1 Wastewater generation for the terminal is multiplied by the proportion of MAP in 2005 and 2015 (over baseline conditions) to account for intensification of terminal use. For 2005, factor = 71.2/58 = 1.23. For 2015, factor = 78.8/58 = 1.36

2 Used office factor.

3 No land would be acquired under the No Action/No Project Alternative. All land within the acquisition areas is assumed to remain in its current use.

Source: Camp Dresser and McKee Inc., 2000.

Table 10

Projected Wastewater Generation Within the Master Plan Boundaries Under Alternative A

Land Use	Wastewater Factor (gpd/S.F.) or gpd/unit)	2005 Buildings S.F. or Units	2005 Wastewater Generation (gpd)	2015 Buildings S.F. or Units	2015 Wastewater Generation (gpd)
LAX					
Airport Land Uses					
Terminal (S.F.)	0.08	8,311,000	664,880	10,419,000	833,520
Cargo (S.F.)	0.02	3,694,000	71,940	4,518,000	87,987
Maintenance (S.F.)	0.11	584,000	64,648	841,000	93,098
Ancillary (S.F.)	0.17	1,987,000	345,182	2,260,000	392,608
CUP (S.F.)	N/A	N/A	85,050	N/A	113,400
Subtotal Airport Land Uses			**1,231,700**		**1,520,612**
Non-Airport Land Uses					
Westchester Southside					
Hotel (Rooms)	130	523	68,000	1,308	170,000
Office (S.F.)	0.15	260,000	39,000	650,000	97,500
Retail (S.F.)	0.08	44,000	3,520	110,000	8,800
R/D Business Park[1] (S.F.)	0.15	388,000	58,200	920,000	145,500
Restaurant (S.F.)	0.15	16,000	14,664	40,000	36,660
Subtotal Westchester Southside			**183,384**		**458,460**
SUBTOTAL AIRPORT AND NON-AIRPORT USES			**1,415,084**		**1,979,072**
Non-Project Uses Within Master Plan Boundaries					
Manchester Square					
Office (S.F.)		50,000	7,500	50,000	7,500
Hotel (Rooms)	0.15	385	50,050	770	100,100
Industrial (S.F.)	0.08	860,000	68,800	1,720,000	137,600
Subtotal Manchester Square			**126,350**		**245,200**
Land Within Acquisition Areas					
Residential (Single Family DUs)	180		-		-
Residential (Multi Family DUs)	160	42	6,720	42	6,720
Hotel (Rooms)	130	154	20,020	154	20,020
Office (S.F.)	0.15	142,064	21,310	142,064	21,310
Retail (S.F.)	0.08	45,737	3,659	45,737	3,659
Light Industrial (S.F.)	0.08	1,196,544	95,724	1,196,544	95,724
Institutional (S.F.)	0.15	85,902	12,885	85,902	12,885
Subtotal Acquisition			**160,317**		**160,317**
SUBTOTAL NON-PROJECT USES			**286,667**		**405,517**
TOTAL MASTER PLAN BOUNDARIES			**1,701,751**		**2,384,590**

Notes: Information in table may not always total, due to rounding.

N/A = Not Applicable

[1] Used office factor.

Source: Camp Dresser and McKee Inc., 2000.

Table 11

Projected Wastewater Generation Within the Master Plan Boundaries Under Alternative B

Land Use	Wastewater Factor (gpd/S.F.) or gpd/unit)	2005 Building S.F. or Units	2005 Wastewater Generation (gpd)	2015 Buildings S.F. or Units	2015 Wastewater Generation (gpd)
LAX					
Airport Land Uses					
Terminal (S.F.)	0.08	8,333,000	666,640	9,712,000	776,960
Cargo (S.F.)	0.02	4,192,000	81,638	4,871,000	94,861
Maintenance (S.F.)	0.11	889,000	98,411	859,000	95,090
Ancillary (S.F.)	0.17	2,389,000	415,017	1,720,000	298,799
CUP (S.F.)	N/A	N/A	85,050	N/A	113,400
Subtotal Airport Uses			**1,346,757**		**1,379,111**
Non-Airport Uses					
Westchester Southside					
Hotel (Rooms)	130	523	68,000	1,308	170,000
Office (S.F.)	0.15	260,000	39,000	650,000	97,500
Retail (S.F.)	0.08	44,000	3,520	110,000	8,800
R/D Business Park[1] (S.F.)	0.15	388,000	58,200	970,000	145,500
Restaurant (S.F.)	0.15	16,000	14,664	40,000	36,660
Subtotal Westchester Southside			**183,384**		**458,460**
SUBTOTAL AIRPORT AND NON-AIRPORT USES			**1,530,141**		**1,837,571**
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas					
Residential (Single Family DUs)	180		-		-
Residential (Multi Family DUs)	160	42	6,720	42	6,720
Hotel (Rooms)	130		-		-
Office (S.F.)	0.15		-		-
Retail (S.F.)	0.08	60,221	4,818	60,221	4,818
Light Industrial (S.F.)	0.08	83,329	6,666	83,329	6,666
Institutional (S.F.)	0.15	85,902	12,885	85,902	12,885
Subtotal Acquisition Areas			**31,089**		**31,089**
SUBTOTAL NON-PROJECT USES			**31,089**		**31,089**
TOTAL MASTER PLAN BOUNDARIES			**1,561,230**		**1,868,660**

N/A = Not Applicable

[1] Used office factor.

Source: Camp Dresser & McKee Inc., 2000.

Table 12

Projected Wastewater Generation Within the Master Plan Boundaries Under Alternative C

Land Use	Wastewater Factor (gpd/S.F. or gpd/unit)	2005 Building S.F. or Units	2005 Wastewater Generation (gpd)	2015 Buildings S.F. or Units	2015 Wastewater Generation (gpd)
LAX					
Airport Land Uses					
Terminal (S.F.)	0.08	6,654,000	532,320	7,319,000	585,520
Cargo (S.F.)	0.02	3,664,000	71,355	5,075,000	98,834
Maintenance (S.F.)	0.11	1,011,000	111,917	834,000	92,323
Ancillary (S.F.)	0.17	2,499,000	434,127	3,198,000	555,557
CUP (S.F.)	N/A	N/A	85,050	N/A	113,400
Subtotal Airport Land Uses			**1,234,769**		**1,445,634**
Non-Airport Land Uses					
Westchester Southside					
Hotel (Rooms)	130	523	68,000	1,308	170,000
Office (S.F.)	0.15	260,000	39,000	650,000	97,500
Retail (S.F.)	0.08	44,000	3,520	110,000	8,800
R/D Business Park[1] (S.F.)	0.15	388,000	58,200	970,000	145,500
Restaurant (S.F.)	0.15	16,000	14,664	40,000	36,660
Subtotal Westchester Southside			**183,384**		**458,460**
Subtotal Airport and Non-Airport Uses			**1,418,153**		**1,904,094**
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas					
Residential (Single Family DUs)	180				
Residential (Multi Family DUs)	160				
Hotel (Rooms)	130	1,354	176,020	1,354	176,020
Office (S.F.)	0.15	509,218	76,383	509,218	76,383
Retail (S.F.)	0.08	73,002	5,840	73,002	5,840
Light Industrial (S.F.)	0.08	1,958,314	156,665	1,958,314	156,665
Subtotal Acquisition Areas			**414,908**		**414,908**
SUBTOTAL NON-PROJECT USES			**414,908**		**414,908**
TOTAL MASTER PLAN BOUNDARIES			**1,833,061**		**2,319,002**

N/A = Not Applicable

[1] Used office factor.

Source: Camp Dresser & McKee Inc., 2000.