

Technical Report
LAX Master Plan EIS/EIR

15a. Water Use Technical Report

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1. INTRODUCTION

This Technical Report presents detailed information on baseline conditions related to water use associated with implementation of the Los Angeles International Airport (LAX) Master Plan. This report provides data and analysis in support of 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, water use factors, and analysis results that are supplemental to the material presented in Section 4.25.1, *Water Use*, of the EIS/EIR. Impacts associated with the information contained in this Technical Report are addressed in Section 4.25.1, *Water Use*, of the EIS/EIR.

2. GENERAL APPROACH AND METHODOLOGY

The objectives of the EIS/EIR analysis are to compare water use associated with the No Action/No Project Alternative and three build alternatives to water use associated with baseline conditions. The analysis characterizes existing water supply sources and treatment and distribution facilities. The analysis also estimates existing on-airport water use, as well as that associated with areas proposed to be acquired as part of the 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 were 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 water use study area was used. This composite study area is referred to as the "Master Plan boundaries." Total water use 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 water use 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, and two areas currently being acquired by the Los Angeles World Airports (LAWA) under the Aircraft Noise Mitigation Program (ANMP) 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.

Data regarding current water use in the region, and within the various cities and counties that comprise the Master Plan boundaries, varies by date due to the individual jurisdictions' planning intervals, but are generally reported for the 1996/1997 timeframe.

In order to determine whether the increase in water use associated with the LAX Master Plan would be significant, the total water use associated with each of the three build alternatives and the No Action/No Project alternative was projected. Projected water demands were compared to the projected supply from local and regional suppliers. Total water use within the Master Plan boundaries was considered.

2.1 Airport Land Use Water Use Factors

For on-airport cargo, maintenance, and ancillary uses, water use factors were derived from Psomas and Associates in 1996 in *Utilities Consumption and Generation at LAX Technical Addendum*.¹ Water used at the central utility plant (CUP) was calculated based on the water use of the existing CUP.

Insufficient data was available to project water use for the terminal using the above method. Water use for the terminals was projected using factors included in the *City of Los Angeles Administrative Draft*

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

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Citywide Thresholds Technical Guide (CEQA Technical Guide).² The *CEQA Technical 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 Water Use Factors, shows the water use factors for airport land uses in gallons per day (gpd) and acre-feet per year (AF-yr) per square foot of building space.

Table 1
Airport Land Use Water Use Factors

Airport Land Use Category	Water Use Factor (gpd/S.F.)	Water Use Factor (AF-yr)
Terminal	0.08	8.96×10^{-5}
Cargo	0.02	2.42×10^{-5}
Maintenance	0.12	1.38×10^{-4}
Ancillary	0.19	2.16×10^{-4}

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 Water Use Factors

For non-airport land uses, including planned and proposed uses within LAX Northside/Westchester Southside area, and those in the ANMP and acquisition areas, water use factors from the *CEQA Technical Guide*³ were used. These factors are supplied in terms of gpd per square feet of building space for uses such as office, retail, and light industrial. Residential water use factors are in gpd per dwelling unit (DU) and hotel generation factors in gpd per room. **Table 2**, Non-Airport Land Use Water Use Generation Factors, lists the water use factors used for non-airport land uses.

2.3 Reclaimed Water Factors

For reclaimed water,⁴ current and future reclaimed water use were estimated using a factor for reclaimed water use per acre of landscaping from the *CEQA Technical Guide*.⁵ This factor is 2,600 gpd/acre.

² City of Los Angeles, Environmental Affairs Department, *Administrative Draft Citywide CEQA Technical Guide*, December, 1995. Although not required by CEQA, the *Administrative Draft Citywide Thresholds Technical Guide* was prepared by the City of Los Angeles as a precursor to the *Draft L.A. CEQA Thresholds Guide*, whose purpose is to provide standards for the preparation of EIRs within the city. (The *Administrative Draft* is referenced herein as it contains water consumption factors, while the *Draft L.A. CEQA Thresholds Guide* does not.) Although not formally adopted, the water use factors contained in this document were developed based upon City of Los Angeles Department of Public Works historical data and remain valid.

³ City of Los Angeles, Environmental Affairs Department, *Administrative Draft Citywide CEQA Technical Guide*, December, 1995.

⁴ Reclaimed water is wastewater that has been treated to the tertiary level. It meets the water quality standards specified by the California Department of Health Services (Title 22), but is not considered potable. Reclaimed water can be used for irrigation and industrial processes to reduce the demand for potable water.

Landscaped acreages considered in this analysis were limited to areas of major landscaping. Pockets of landscaping, such as those around terminal areas, are not included in the values. Additionally, potential reclaimed water use for CUP cooling, toilet flushing, or other uses, such as watering down airplanes, is not quantified. Estimated future use was compared with future reclaimed water supply.

Table 2
Non-Airport Land Use Water Use Generation Factors

Non-Airport Land Use Category	Units	Factor (gpd/unit)	Factor (AF/yr/unit)
Residential (Single Family)	DU	180	0.202
Residential (Multi Family)	DU	160	0.179
Hotel	Rooms	130	0.146
Office	s.f.	0.15	168×10^{-4}
Retail	s.f.	0.08	8.96×10^{-5}
Light Industrial	s.f.	0.08	8.96×10^{-5}
Institutional	s.f.	0.15	1.68×10^{-4}
Restaurant	s.f.	0.92	1.03×10^{-3}

Source: City of Los Angeles, Administrative Draft Citywide CEQA Technical Guide, December, 1995;
City of Los Angeles, Environmental Affairs Department, Administrative Draft Citywide Thresholds Technical Guide, December, 1995.

3. **AFFECTED ENVIRONMENT/ENVIRONMENTAL BASELINE**

The subsections below present supplemental information regarding regional and local water supply for LAX.

3.1 **Regional Water Supply and Transmission**

The City of Los Angeles Department of Water and Power (DWP) is the water purveyor for most areas in the City of Los Angeles, including the entire Master Plan boundaries, with the exception of the oil refinery fuel farm site located south of the airport, which is served by the West Basin Municipal Water District. DWP is responsible for supplying, treating, and distributing water within the city, serving residential, commercial, industrial, and agricultural users. DWP’s service area is divided into 36 pressure zones. The DWP distribution system comprises over 7,000 miles of distribution pipelines and 105 tanks and reservoirs, including more than 20 open reservoirs. Through periodic updates of its Urban Water Management Plan, and as part of a current Integrated Plan for the Wastewater Program (IPWP), DWP engages in long-range planning in order to meet increasing demands in its service area.

3.1.1 **Existing and Projected Regional Water Supply**

DWP obtains its water supplies from three major sources: (1) the Owens Valley and Mono Basin via the Los Angeles Aqueduct; (2) northern California and Colorado River imports from the Metropolitan Water District of Southern California (MWD); and (3) local groundwater basins. In addition to these sources, some wastewater within the DWP service area is reclaimed for reuse as irrigation or industrial water. DWP also has a water conservation program in effect.

The percentage of water supplied by the three primary water sources has varied over time. Throughout the 1970s and most of the 1980s, the Los Angeles Aqueduct provided the majority (74 percent) of the city’s water, with local groundwater and MWD sources providing the remainder. This distribution has varied significantly from year to year, both during the drought of 1987 to 1992 and subsequently, due to

⁵ As with potable water factors, the reclaimed water factors contained in the *CEQA Technical Guide* are based on City of Los Angeles Department of Public Works historical data and remain valid.

litigation over water diversions from the Owens Valley and the Mono Basin.⁶ In addition, groundwater contamination in the San Fernando Valley areas has reduced the availability and usability of local groundwater supplies. In fiscal year 1996-97, imported water from MWD supplied about 12 percent of the DWP water demand, the Los Angeles Aqueduct supplied approximately 70 percent, and groundwater supplied the remaining 18 percent.⁷ The subsections below describe these sources in more detail.

3.1.1.1 Owens Valley and Mono Basin

DWP uses the Los Angeles Aqueduct to transport water from Owens Valley to the city. Generally, Owens Valley water provides about two thirds of Los Angeles' supply, or about 400,000 AF-yr.⁸ Los Angeles Aqueduct deliveries were curtailed significantly in the last three years of the 1987-1992 drought. Court decisions requiring DWP to provide additional water for environmental needs in the Mono Basin and Owens Valley will also limit future Los Angeles Aqueduct deliveries. Long term projections for future deliveries from the Los Angeles Aqueduct are 260,000 AF-yr in normal years and 235,000 AF-yr in dry years.

3.1.1.2 Metropolitan Water District of Southern California

MWD serves 27 member agencies comprising 14 cities, 12 municipal water districts and one county water authority. MWD imports water from the Colorado River Aqueduct (CRA) and the State Water Project (SWP) and distributes it to member agencies.

Based on projected growth, MWD expects that water demands under normal conditions in its service area will rise from 3.6 million AF-yr in 1996 to 5.0 million AF-yr in 2020. Above-normal demands in hot and dry weather can be about 7 percent higher.⁹ In order to accommodate this projected growth in water demands, MWD developed an Integrated Water Resources Plan (IRP), which was approved by its Board in 1996. The IRP is a 25-year comprehensive water resources plan for Southern California. Its objective is to ensure the reliability, affordability, quality, diversity, and adaptability of the regional water supply. MWD believes that implementation of the IRP will allow it to provide for all the firm wholesale water demands of its member agencies in 98 out of 100 years, with the remaining years requiring a shortage allocation plan. The water demand forecast in the IRP is based upon population projections from the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG).

Currently, Los Angeles is part of the MWD "Common Pool." This means that it can receive treated water from any or all of MWD's Los Angeles County treatment plants: Jensen, Diemer or Weymouth. Other areas that are part of the Common Pool include Beverly Hills, Burbank, Compton, Long Beach, and the western portion of the Municipal Water District of Orange County.

Based on MWD's projections, between 2010 and 2015, demands in Orange County and the Los Angeles Basin areas of the Common Pool will exceed the treated water capacity available to them and additional treated water capacity will be needed. In response to these projected needs, MWD proposes to build a new outlet structure to feed water from Lake Matthews to a new water treatment plant and facilities that would transport the water to Orange County. This additional source of treated water for the Orange County portion of the Common Pool would allow other Common Pool water to meet the increasing needs in the Los Angeles portion of the Common Pool, including Santa Monica, Torrance, Los Angeles, and the West Basin Municipal Water District (WBMWD).

The IRP proposes that a preferred resource mix of imported and local supplies be used to meet projected needs. The future supply sources for MWD include local production (groundwater pumping and surface water diversion), water recycling, groundwater recovery, the CRA, the SWP, and storage and water transfers. **Table 3**, Preferred Resource Mix for MWD, presents the proposed resource mix of these supplies. The MWD Board's control over regional water supply extends to regional imports, however, it

⁶ City of Los Angeles, Department of Water and Power, Urban Water Management Plan, July 1995.

⁷ City of Los Angeles, Department of Water and Power, Urban Water Management Plan Annual Update Report, February 1997.

⁸ City of Los Angeles, Department of Water and Power, Integrated Plan for the Wastewater Program, Baseline Needs Technical Memorandum, March 2000.

⁹ Metropolitan Water District of Southern California, Southern California's Integrated Resources Plan, March 1996.

cannot exert control over local production, such as that projected to be available through projects planned by DWP.

Table 3
Preferred Resource Mix for MWD

	Dry Year Supply (Million Acre-Feet)		
	2000	2010	2020
Locally Developed Supplies			
Local Production ¹	1.43	1.48	1.53
Water Recycling ²	0.27	0.36	0.45
Groundwater Recovery	0.04	0.05	0.05
Local Groundwater Storage Production ³	0.25	0.30	0.33
MWD Regional Supplies			
Colorado River Aqueduct	1.20	1.20	1.20
State Water Project	0.75	0.97	1.35
MWD Storage and Water Transfers	0.34	0.49	0.46
Total Demand with Conservation BMPs⁴	4.28	4.85	5.37

¹ Includes groundwater and surface production and imported supplies from the Los Angeles Aqueduct.

² Does not include upstream Santa Ana recharge (which is included in local production).

³ Represents the annual production, and not the total storage capacity (which is about 1.0 million AF).

⁴ Represents retail water demands under hot and dry weather conditions, assuming full implementation of conservation Best Management Practices (BMPs).

Source: Metropolitan Water District of Southern California, Integrated Resources Plan, 1996.

3.1.1.3 Groundwater

The City of Los Angeles is entitled to 110,000 AF-yr of groundwater from four basins: the San Fernando, Central, Sylmar, and Eagle Rock Basins. Since 1970, local wells have produced about 95,000 AF-yr, with 80 percent of that coming from the San Fernando Basin. The availability of groundwater for Los Angeles is expected to increase to 152,000 AF-yr by 2015, as a result of additional projected replenishment from reclaimed water recharge projects. Additional groundwater can be extracted from the San Fernando Basin in emergencies or during prolonged drought. As of October, 1998, Los Angeles had credit for approximately 300,000 AF in underground storage.¹⁰

3.1.1.4 Reclaimed Water

The City of Los Angeles uses reclaimed water primarily for landscape irrigation purposes in parks and golf courses and for the management of wildlife habitat. Reclaimed water is also planned to be used for groundwater recharge, which will enhance water production in local wells. The current sources of reclaimed water include the Donald C. Tillman Water Reclamation Plant, Los Angeles-Glendale Water Reclamation Plant, and the West Basin Water Reclamation Plant (WBWRP).

In the early 1990s, DWP initiated an aggressive reclaimed water program as the result of increasing imported water costs and diminishing water rights in the Mono Basin. DWP established a goal of providing 32,000 AF-yr of reclaimed water by the year 2000. By 1999, four DWP reclaimed water projects (Sepulveda Basin, Greenbelt, East Valley, and Westside) provided an estimate 36,000 AF-yr. As part of its plan for meeting future water demands, DWP's reclaimed water goal for the year 2015 is 85,000 AF-yr. This goal will be met by developing and expanding reclaimed water projects in the future.

The Westside Water Recycling Project (WWRP), a joint effort between DWP and WBMWD, will deliver as much as 1,850 AF/yr for irrigation and industrial uses in the West Los Angeles area. Four miles of distribution trunk line have been constructed to provide up to 700 AF-yr to Westchester and LAX. This pipeline will provide a backbone for expansion of the system. During fiscal year 1998-99, this system

¹⁰ City of Los Angeles, Department of Water and Power, Integrated Plan for the Wastewater Program, Baseline Needs Technical Memorandum, March, 2000.

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delivered 137 acre-ft.¹¹ The funding for this project is shared equally by the State of California (under AB 444) and DWP. The source of reclaimed water for the project is the WBWRP.

The WBWRP, located near the intersection of El Segundo and Sepulveda Boulevards in the city of El Segundo and completed in December 1994, is a tertiary treatment plant that receives secondary effluent from the Hyperion Treatment Plant. It has a current capacity of 37.5 million gallons per day (42,000 AF-yr). The capacity will be expanded to over 41 mgd (46,000 AF-yr) in 2001. The WBWRP serves industrial and landscape irrigation customers in addition to the West Coast Seawater Intrusion Barrier. Secondary treated effluent is provided with tertiary treatment for irrigation uses, nitrified tertiary treatment for cooling tower uses, and reverse osmosis treatment for groundwater injection. Reclaimed water pipelines provide service to the Scattergood Generating Station; portions of El Segundo; areas north of LAX, including Loyola Marymount University; and the eastern portion of LAX. LAX uses reclaimed water from the WBWRP for landscape irrigation.

3.1.1.5 Regional Water Conservation

DWP implements water conservation measures wherever possible. The city is currently implementing all the Best Management Practices for water conservation in accordance with the September 1991 *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) signed by urban water suppliers, public advocacy organizations, and other interest groups. The MOU was established to expedite implementation of reasonable water conservation measures in urban areas and to establish assumptions for use in calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures. Water conservation programs that DWP has sponsored since the 1987-1992 drought include:

- ◆ Ultra-Low-Flow Toilet Replacement Program
- ◆ Home Survey and Loan Program
- ◆ High Efficiency Washing Machine Rebate Program
- ◆ Gray Water Systems (1994 Ordinance)
- ◆ The Retrofit-on-Resale Ordinance
- ◆ New Rate Structure
- ◆ Indoor Conservation/Hardware Distribution (low-flow showerheads)
- ◆ Support Measures (full metering, education)
- ◆ Infrastructure Replacement Program
- ◆ In Concert with the Environment Program
- ◆ Technical Assistance Program for Industrial Users¹²

The demand projections used in this analysis account for the effects of these programs. LAWA has not adopted any formal policies regarding water conservation. However, in June 1994, the LAWA Environmental Management Bureau (EMB) prepared a "Street Frontage and Landscape Plan for LAX." EMB uses this plan to evaluate landscape proposals for LAX projects. The Plan includes requirements pertaining to water conservation, including a requirement that all landscaped areas be provided with a fixed automatic method of irrigation, and that drip irrigation systems be provided with an adequate number of outlets within landscaped areas. In addition to these actions, during the drought cycle of 1987-1992, LAWA replaced all the faucets in the Central Terminal Area (CTA) with low-flow faucets. LAWA also installs low-flow toilets and urinals as remodeling takes place or new restroom facilities are built.

3.1.2 Existing and Projected Regional Water Use

In 1989-90, the per capita water use by the City of Los Angeles was 180 gallons gpd serving a population of about 3.5 million. This per-capita consumption has been reduced to 134 gpd as a result of water conservation efforts implemented in 1991 and 1992, in response to the extended drought of the late 1980s

¹¹ City of Los Angeles, Department of Water and Power, Urban Water Management Plan, Fiscal Year 1998-99 Update.

¹² City of Los Angeles, Department of Water and Power, Integrated Plan for the Wastewater Program, Baseline Needs Technical Memorandum, March, 2000.

and early 1990s. In the 1996-97 fiscal year, the total citywide consumption of water was approximately 635,300 AF¹³ or approximately 150 gpd per person.

As part of the *Urban Water Management Plan*, water use projections were made based on the MWD MAIN computer model, which was customized to meet DWP's needs. This model used SCAG-94 projections of the numbers of users by customer class in the DWP service area. **Table 4**, Los Angeles Water Use Projections, lists projected Los Angeles water demands for the years 2005, 2010, and 2015. DWP has, in its *Urban Water Management Plan*, designated a plan for supplying all of this demand. The development and use of reclaimed water resources is central to DWP's plan for meeting water demands through 2020, and is being examined in detail as part of the Integrated Plan for the Wastewater Program (IPWP), which is currently being developed. The IPWP will include a plan to ensure that projected demands are met.

Table 4

Los Angeles Water Use Projections

Year	Water Use (AF)
2005	694,500 AF
2010	724,800 AF
2015	749,900 AF

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

The projected demands shown in **Table 4**, are based on regional growth projections prepared by the SCAG. SCAG projections include a growth factor for LAX. The growth associated with the No Action/No Project Alternative and Alternative C is lower than the growth factor used in the SCAG-94 projections; the growth associated with Alternatives A and B is higher than the growth factor used in the SCAG-94 projections.

3.1.3 Regional Water Transmission

3.1.3.1 Regional Water Distribution System

DWP's distribution system consists of over 7,000 miles of pipelines. The majority of the existing pipelines, approximately 6,400 miles, range from 4 inches to 12 inches in diameter. The remaining lines consist of large diameter pipes up to 120 inches in diameter. Most of the existing pipes are constructed of steel, cast iron and concrete. DWP's water system includes 105 tanks and reservoirs, including over 20 open reservoirs ranging from 168 AF to almost two million AF in capacity, and 10 large tanks ranging from over 15 AF to over 98 AF in capacity. The total storage capacity in DWP's system is approximately 353,000 AF or 115 billion gallons.¹⁴ Water from the large open reservoirs is conveyed to smaller tanks within the service area for distribution within the system.

DWP has divided its service area into four major planning regions (Metro-South, North San Fernando Valley, South San Fernando Valley, and Westside), with these areas divided into 11 different planning subregions. The 11 planning subregions are divided into 36 pressure zones, also referred to as Community Planning Areas, with close to 700,000 connections. Each pressure zone is numbered based on its governing hydraulic grade; the numbering system is established such that water pressure at any place in the city can be determined by subtracting the elevation of the site from the pressure zone number.¹⁵ LAX is located within the 325 pressure zone of the Westside planning region.

¹³ City of Los Angeles, Department of Water and Power, Urban Water Management Plan Annual Update Report, February 1997.

¹⁴ City of Los Angeles, Department of Water and Power, Facts and Figures—Fiscal Year 1992-93, 1993.

¹⁵ Envicom Corporation, et al, Draft Environmental Impact Report for the Los Angeles Citywide General Plan Framework, January 1995.

3.2 LAX Master Plan Area Water Supply and Distribution

As indicated above, the 325 pressure zone in the DWP system serves the LAX area. LAX is served by a 36-inch trunk line in Sepulveda Boulevard that distributes water to a combination of 12-inch and 16-inch transmission lines running along the airport perimeter. LAX receives water via three connections from the 325 pressure zone transmission lines. The northern portions of LAX are served by a 10-inch connection from a 16-inch transmission line in Westchester Parkway. This connection is located approximately 1,100 feet east of Falmouth Avenue. The westerly portions of LAX are served by a 10-inch connection from a 12-inch transmission line in Pershing Drive near World Way West. The eastern areas of LAX are served by a 12-inch connection from a 16-inch transmission line in Sepulveda Boulevard just south of Century Boulevard. **Figure 1**, illustrates the water distribution lines serving LAX, as well as other DWP lines in the vicinity. A series of pressure regulator valves located along the 36-inch trunk line maintains LAX water pressure at 88 to 97 pounds per square inches (psi).

3.2.1 Baseline LAX Water Use

Site-specific water use data is not collected at LAX. In order to calculate baseline water use, usage-based factors were used, as described in Section 2, *General Approach and Methodology*. Baseline water use for LAX on-airport land uses is approximately 953 AF-yr. Total baseline water use within the Master Plan boundaries is approximately 2,311 AF-yr (**Table 5**, Baseline Water Use).

As indicated previously, the WBWRP supplies reclaimed water to LAX. The reclaimed water is used for landscape irrigation near the north soundwalls and in remote parking Lot C. LAX is anticipated to ultimately use approximately 450 AF-yr of reclaimed water without implementation of the LAX Master Plan.¹⁶

The use of reclaimed water for irrigation at LAX will be expanded as infrastructure allows. Future locations to be irrigated with reclaimed water include the western portion of the airport near Pershing Drive and the Westchester Parkway area. Currently, due to water quality requirements, reclaimed water cannot be used in the cooling towers at the CUP. Reclaimed water could only be used in the cooling towers if an additional level of treatment is provided or the copper piping in the CUP is replaced.

3.2.2 Off-Site Fuel Farm Sites

Two sites in close proximity to LAX are being considered for the construction of an off-site fuel farm under Alternative B: Scattergood Electric Generating Station and the oil refinery located south of the airport. Scattergood Electric Generating Station is located in the City of Los Angeles and is therefore served by DWP. The proposed site currently is occupied by four inactive above ground storage tanks and does not require any water. The site has existing fire flow facilities and distribution lines from previous fuel storage uses. The retail water purveyor to the oil refinery is the City of El Segundo, with the water supplied by the WBMWD. The refinery's water use is estimated to be about 12,000 AF-yr, which is approximately 60 percent of El Segundo's water use.¹⁷ The refinery uses reclaimed water in a number of its processes. The site has existing fire flow facilities and distribution lines for the existing fuel transfer uses.

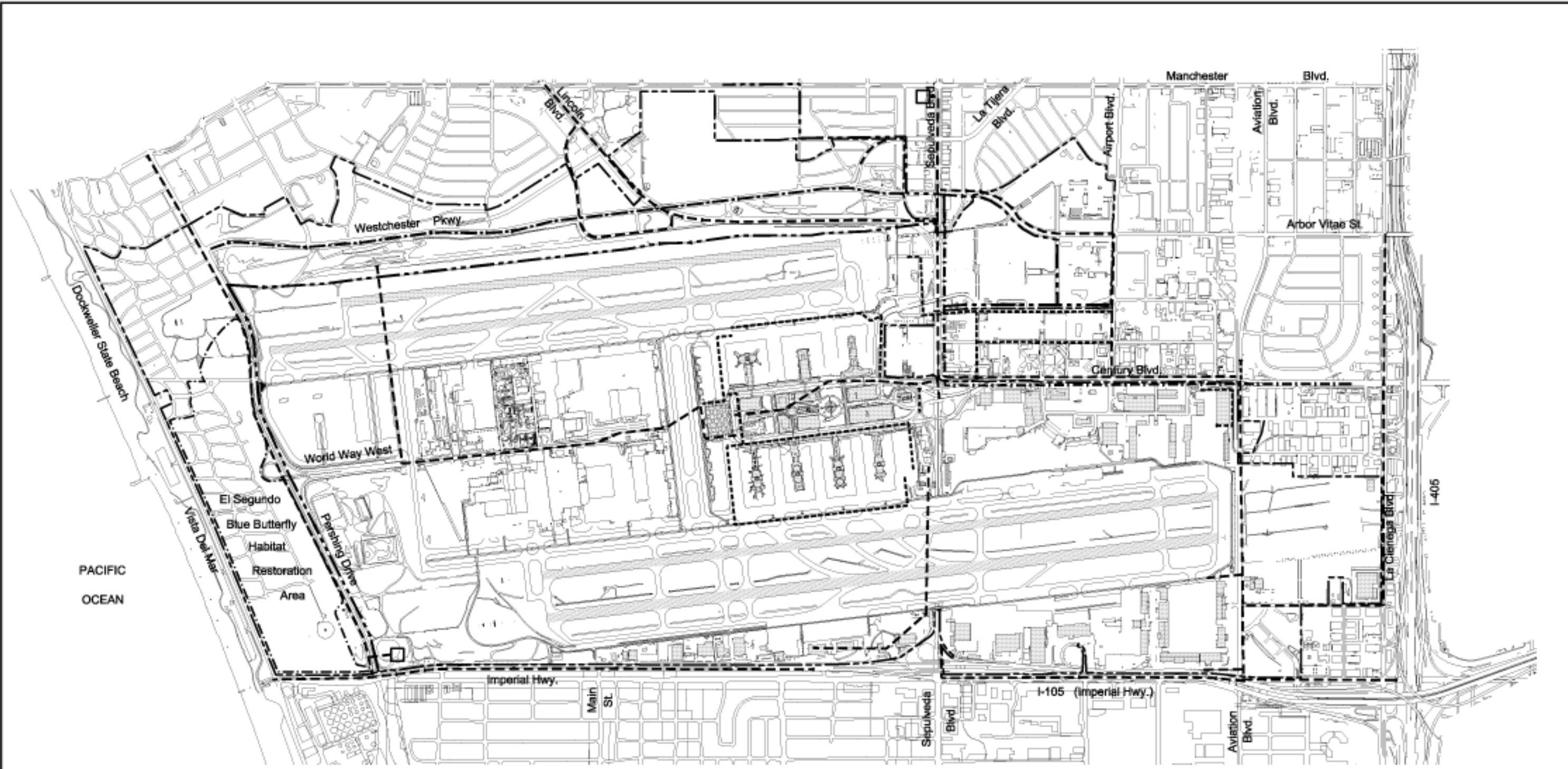
4. ENVIRONMENTAL CONSEQUENCES

To determine projected water use under each of the alternatives, the appropriate water use factor for each airport land use was multiplied by the building square footage of that land use type included in the alternative. **Table 6**, Land Uses Included in the Alternatives, presents a comparison of the land use types included in the alternatives. Water used by the CUP (through boiler blowdown) was calculated based on the use of the existing CUP. **Table 7** through **Table 10** below present projected water use for each of the alternatives. **Table 11**, Reclaimed Water Use, presents the reclaimed water consumption for landscaping at LAX under baseline conditions and the alternatives. A discussion of the environmental consequences of the water use projected for each alternative is included in Section 4.25.1, *Water Use*, of the EIS/EIR.

¹⁶ City of Los Angeles, Department of Water and Power, Urban Water Management Plan, July 1995.

¹⁷ SCAQMD, Revised Draft Environmental Impact Report Chevron Refinery – El Segundo, Reformulated Gasoline Projects, December 16, 1994.

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Source: Camp Dresser & McKee Inc., 2000.

LEGEND

- LAX Existing Property Line
- - - - El Segundo Blue Butterfly Habitat Restoration Area
- 8" and 10" Pipelines
- - - - 12" Pipeline
- - - - 16" Pipeline
- - - - 24" Reclaimed Water Line
- - - - 36" Trunkline
- Regulator Station

Table 5
Baseline Water Use

Land Use	Water Factor (AF/S.F.)	Building S.F. or Units	Water Use (AF/yr)
LAX			
Airport Land Uses			
Terminal (S.F.)	8.96E-05	3,997,119	358.0
Cargo (S.F.)	2.42E-05	1,900,000	46.0
Maintenance (S.F.)	1.38E-04	1,440,000	198.3
Ancillary (S.F.)	2.16E-04	1,294,000	279.7
CUP (S.F.)	N/A	N/A	70.5
Subtotal Airport Uses			953
Non-Airport Land Uses			
Belford			
Residential (Multi Family DUs)	0.18	583	104.4
Subtotal Belford			104.4
SUBTOTAL AIRPORT AND NON-AIRPORT USES			1,057
Non-Project Uses Within Master Plan Boundaries			
Manchester Square			
Residential (Single Family DUs)	0.20	280	56.4
Residential (Multi Family DUs)	0.18	1,706	305.6
Subtotal Manchester Square			362
Land Within Acquisition Areas			
Residential (Single Family DUs)	0.20	57	11.5
Residential (Multi Family DUs)	0.18	69	12.4
Hotel (Rooms)	0.15	2,083	303.2
Office (S.F.)	1.68E-04	1,108,312	186.1
Retail (S.F.)	8.96E-05	148,219	13.3
Light Industrial (S.F.)	8.96E-05	3,789,292	339.4
Institutional (S.F.)	1.68E-04	156,178	26.2
Subtotal Acquisition Areas			892
SUBTOTAL NON-PROJECT USES			1,254
TOTAL MASTER PLAN BOUNDARIES			2,311

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

N/A = Not Applicable

Source: Camp Dresser and McKee Inc., 2000.

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Table 6

Land Uses Included in the Alternatives

Land Use	Baseline Conditions	Alternative							
		No Action/No Project		A		B		C	
		2005	2015	2005	2015	2005	2015	2005	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 Square¹									
Residential (Single Family DUs)	280								
Residential (Multi Family DUs)	1,706								
Office (S.F.)				50,000	50,000				
Hotel (rooms)				385	770				
Industrial (S.F.)				860,000	1,720,000				
Land Within Acquisition Areas²									
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 7

Projected Water Use Within the Master Plan Boundaries Under the No Action/No Project Alternative

Land Use	Water Factor (AF/S.F./yr or AF/Unit/yr)	2005		2015	
		Building S.F. or Units	Water Use (AF/yr)	Building S.F. or Units	Water Use (AF/yr)
LAX					
Airport Land Uses					
Terminal ¹ (S.F.)	8.96E-05	3,997,000	439.5	3,997,000	486.4
Cargo (S.F.)	2.42E-05	2,328,064	56.4	2,328,064	56.4
Maintenance (S.F.)	1.38E-04	1,440,000	198.3	1,440,000	198.3
Ancillary (S.F.)	2.16E-04	1,294,000	279.7	1,294,000	79.7
CUP (S.F.)	N/A	N/A	70.5	N/A	70.5
Subtotal Airport Uses			1,044		1,091
LAX Northside					
Office (S.F.)	1.68E-04	632,000	106.1	1,580,000	265.4
Hotel (Rooms)	0.15	600	90.0	1,400	203.8
Retail (S.F.)	8.96E-05	24,000	2.2	60,000	5.4
Airport Related ² (S.F.)	1.68E-04	300,000	50.4	750,000	126.0
R/D Business Park ² (S.F.)	1.68E-04	470,000	78.9	1,170,000	196.5
Restaurant (S.F.)	1.03E-03	28,000	28.7	70,000	71.8
Subtotal LAX Northside			354		869
Continental City					
Office (S.F.)	1.68E-04	1,200,000	201.5	3,000,000	503.8
Retail (S.F.)	8.96E-05	40,000	3.6	100,000	9.0
Subtotal Continental City			205		513
SUBTOTAL AIRPORT AND NON-AIRPORT USES			1,603		2,473
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas³					
Residential (Single Family DUs)	0.20	57	11.5	57	11.5
Residential (Multi Family DUs)	0.18	69	12.4	69	12.4
Hotel (Rooms)	0.15	2,083	303.2	2,083	303.2
Office (S.F.)	1.68E-04	1,108,312	186.1	1,108,312	186.1
Retail (S.F.)	8.96E-05	148,219	13.3	148,219	13.3
Light Industrial (S.F.)	8.96E-05	3,789,292	339.4	3,789,292	339.4
Institutional (S.F.)	1.68E-04	156,178	23.2	156,178	26.2
Subtotal Acquisition Areas			892		892
SUBTOTAL NON-PROJECT USES			892		892
TOTAL MASTER PLAN BOUNDARIES			2,495		3,365

¹ Water use 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.

N/A = Not Applicable

Source: Camp Dresser and McKee Inc., 2000.

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Table 8

Projected Water Use Within the Master Plan Boundaries Under Alternative A

Land Use	Water Factor (AF/S.F./yr or AF/unit/yr)	2005		2015	
		Buildings S.F. or Units	Water Use (AF/yr)	Buildings S.F. or Units	Water Use (AF/yr)
LAX					
Airport Land Uses					
Terminal (S.F.)	8.96E-05	8,311,000	744.4	10,419,000	933.2
Cargo (S.F.)	2.42E-05	3,694,000	89.5	4,518,000	109.5
Maintenance (S.F.)	1.38E-04	584,000	80.4	841,000	115.8
Ancillary (S.F.)	2.16E-04	1,987,000	429.4	2,260,000	488.4
CUP (S.F.)	N/A	N/A	106.0	N/A	141.1
Subtotal Airport Uses			1,450		1,788
Non-Airport Land Uses					
Westchester Southside					
Hotel (Rooms)	0.15	523	76.1	1,308	190.3
Office (S.F.)	1.68E-04	260,000	43.7	650,000	109.2
Retail (S.F.)	8.96E-05	44,000	3.9	110,000	9.9
R/D Business Park ¹ (S.F.)	1.68E-04	388,000	65.2	920,000	162.9
Restaurant (S.F.)	1.03E-03	16,000	16.4	40,000	41.0
Subtotal Westchester Southside			205		513
SUBTOTAL AIRPORT AND NON-AIRPORT USES			1,655		2,301
Non-Project Uses Within Master Plan Boundaries					
Manchester Square					
Office (S.F.)	1.68E-04	50,000	8.4	50,000	8.4
Hotel (Rooms)	0.15	385	56.0	770	112.1
Industrial (S.F.)	8.96E-05	860,000	77.0	1,720,000	154.1
Subtotal Manchester Square			142		274
Land Within Acquisition Areas					
Residential (Single Family DUs)	0.20				
Residential (Multi Family DUs)	0.18	42	7.5	42	7.5
Hotel (Rooms)	0.15	154	22.4	154	22.4
Office (S.F.)	1.68E-04	142,064	23.9	142,064	23.9
Retail (S.F.)	8.96E-05	45,737	4.1	45,737	4.1
Light Industrial (S.F.)	8.96E-05	1,196,544	107.2	1,196,544	107.2
Institutional (S.F.)	1.68E-04	85,902	14.4	85,902	14.4
Subtotal Acquisition Areas			180		180
SUBTOTAL NON-PROJECT USES			322		454
TOTAL MASTER PLAN BOUNDARIES			1,977		2,755

¹ Used office factor.

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

N/A = Not Applicable

Source: Camp Dresser and McKee Inc., 2000.

Table 9

Projected Water Use Within the Master Plan Boundaries Under Alternative B

Land Use	Water Factor (AF/S.F./yr or AF/unit/yr)	2005		2015	
		Building S.F. or Units	Water Use (AF/yr)	Buildings S.F. or Units	Water Use (AF/yr)
LAX					
Airport Land Uses					
Terminal (S.F.)	8.96E-05	8,333,000	746.4	9,712,000	869.9
Cargo (S.F.)	2.42E-05	4,192,000	101.6	4,871,000	118.0
Maintenance (S.F.)	1.38E-04	889,000	122.4	859,000	118.3
Ancillary (S.F.)	2.16E-04	2,389,000	516.3	1,720,000	371.7
CUP (S.F.)	N/A	N/A	106.0	N/A	141.1
Subtotal Airport Uses			1,593		1,619
Non-Airport Land Uses					
Westchester Southside					
Hotel (Rooms)	0.15	523	76.1	1,308	190.3
Office (S.F.)	1.68E-04	260,000	43.7	650,000	109.2
Retail (S.F.)	8.96E-05	44,000	3.9	110,000	9.9
R/D Business Park ¹ (S.F.)	1.68E-04	388,000	65.2	970,000	162.9
Restaurant (S.F.)	1.03E-03	16,000	16.4	40,000	41.0
Subtotal Westchester Southside			205		513
SUBTOTAL AIRPORT AND NON-AIRPORT USES			1,798		2,132
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas					
Residential (Single Family DUs)	0.20				
Residential (Multi Family DUs)	0.18	42	7.5	42	7.5
Hotel (Rooms)	0.15				
Office (S.F.)	1.68E-04				
Retail (S.F.)	8.96E-05	60,221	5.4	60,221	5.4
Light Industrial (S.F.)	8.96E-04	83,329	7.5	83,329	7.5
Institutional (S.F.)	1.68E-04	85,902	14.4	85,902	14.4
Subtotal Acquisition Areas			35		35
SUBTOTAL NON-PROJECT USES			35		35
TOTAL MASTER PLAN BOUNDARIES			1,833		2,167

¹ Used office factor.

N/A = Not Applicable

Source: Camp Dresser & McKee Inc., 2000.

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Table 10

Projected Water Use Within the Master Plan Boundaries Under Alternative C

Land Use	Water Factor (AF/S.F./yr or AF/unit/yr)	2005		2015	
		Building S.F. or Units	Water Use (AF/yr)	Buildings S.F. or Units	Water Use (AF/yr)
LAX					
Airport Land Uses					
Terminal (S.F.)	8.96E-05	6,654,000	596.0	7,319,000	655.6
Cargo (S.F.)	2.42E-05	3,664,000	88.8	5,075,000	123.0
Maintenance (S.F.)	1.38E-04	1,011,000	139.2	834,000	114.9
Ancillary (S.F.)	2.16E-04	2,499,000	540.1	3,198,000	691.1
CUP (S.F.)	N/A	N/A	106.0	N/A	141.1
Subtotal Airport Uses			1,470		1,726
Non-Airport Uses					
Westchester Southside					
Hotel (Rooms)	0.15	523	76.1	1,308	190.3
Office (S.F.)	1.68E-04	260,000	43.7	650,000	109.2
Retail (S.F.)	8.96E-05	44,000	3.9	110,000	9.9
R/D Business Park ¹ (S.F.)	1.68E-04	388,000	65.2	970,000	162.9
Restaurant (S.F.)	1.03E-03	16,000	16.4	40,000	41.0
Subtotal Westchester Southside			205		513
SUBTOTAL AIRPORT AND NON-AIRPORT USES			1,675		2,239
Non-Project Uses Within Master Plan Boundaries					
Land Within Acquisition Areas					
Residential (Single Family DUs)	0.20				
Residential (Multi Family DUs)	0.18				
Hotel (Rooms)	0.15	1,354	197.1	1,354	197.1
Office (S.F.)	1.68E-04	509,218	85.5	509,218	85.5
Retail (S.F.)	8.96E-05	73,002	6.5	73,002	6.5
Light Industrial (S.F.)	8.96E-05	1,958,314	175.4	1,958,314	175.4
Subtotal Acquisition Areas			465		465
SUBTOTAL NON-PROJECT USES			465		465
TOTAL MASTER PLAN BOUNDARIES			2,140		2,704

¹ Used office factor.

N/A = Not Applicable

Source: Camp Dresser & McKee Inc., 2000.

Table 11

Reclaimed Water Use

	Baseline Conditions	No Action/ No Project	Alternatives					
			A		B		C	
			2005	2015	2005	2015	2005	2015
Landscaped Acreage	80.2	103.4	80.7	131.6	80.7	124.5	104.6	121.7
Reclaimed Water Use (gpd)	208,520	268,840	209,820	342,160	209,820	323,700	271,960	316,420
Reclaimed Water Use (AF-yr)	233	301	235	383	235	362	394	354

Source: Camp Dresser and McKee Inc., 2000.