CHAPTER 3
Existing and Future Airport and Environs Conditions

3.1 Existing Airport Facilities

LAX is located in Los Angeles County, California, approximately nine miles southwest of downtown Los Angeles near the Pacific Ocean coast. The Airport lies just west of Interstate 405, north of Interstate 105, east of S. Pershing Drive, and south of Westchester Parkway. The Airport is located within the city limits of the City of Los Angeles and is bound by the communities of Playa Del Rey and Westchester (City of Los Angeles) to the north, the city of Inglewood and the community of Lennox (unincorporated Los Angeles County) to the east, the city of Hawthorne and the community of Del Aire (unincorporated Los Angeles County) to the southeast, the City of El Segundo to the south, and the Pacific Ocean to the west (see **Exhibit 3-1**).

Existing facilities at LAX include runways, taxiways, passenger terminals, cargo facilities, general aviation support areas, an airport traffic control tower, navigation aids, and airport support facilities. The configuration of the major airfield and landside facilities at LAX is described in the following sections and shown on **Exhibits 3-2** and **3-3**.

3.1.1 Airfield Facilities

Airport Runways

LAX has four parallel runways oriented in an east-west direction. The four runways can be further divided into the north and south runway complexes of which two runways are located north of the main terminal facilities (Runways 06L-24R and 06R-24L); and two runways are located south of the main terminal facilities (Runways 07L-25R and 07R-25L). **Table 3-1** presents additional information regarding the runways at LAX.

According to LAWA's website for LAX, the airport reference code (ARC) is D-V which reflects large aircraft operations such as the Boeing 747-400 aircraft; however, LAX also operates under an FAA approved modification to standards that requires additional management of airfield operations to ensure safety whenever design group VI aircraft including Airbus 380 or Boeing 747-800 aircraft land or depart at LAX as the current runway configuration does not comply with current FAA runway and taxiway spacing standards prescribed for these aircraft.[1]

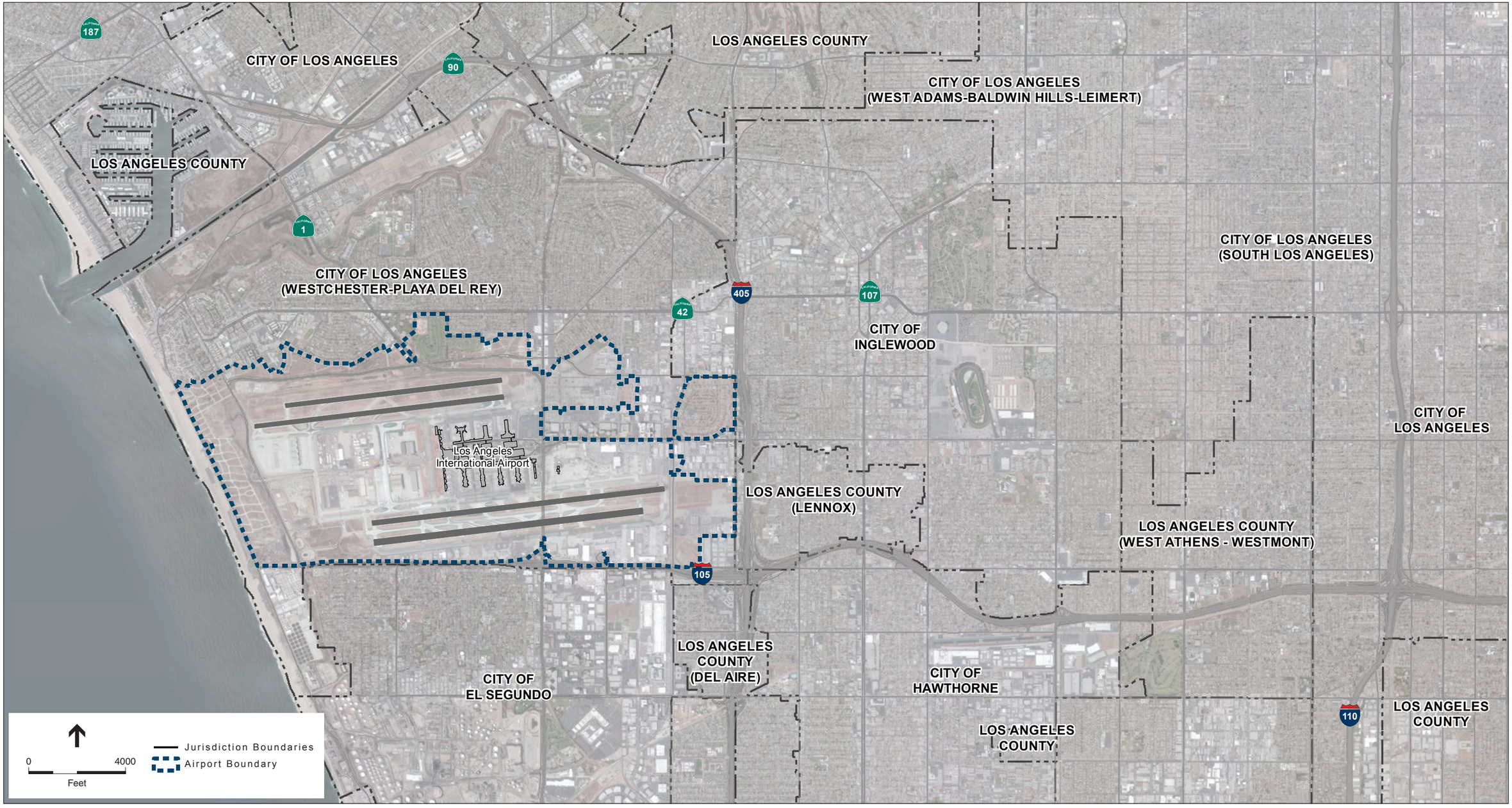
[1] http://www.lawa.org/ourLAX/ourLAX.aspx?id=9143

TABLE 3-1
EXISTING RUNWAY CHARACTERISTICS, LOS ANGELES INTERNATIONAL AIRPORT

	Runway 06L-24R		Runway 06R-24L		Runway 07L-25R		Runway 07R-25L	
Runway Characteristics	**06L**	**24R**	**06R**	**24L**	**07L**	**25R**	**07R**	**25L**
Runway Length (Feet)	8,926	8,926	10,285	10,285	12,091	12,091	11,095	11,095
Runway Width (Feet)	150	150	150	150	150	150	200	200
Displaced Arrival Threshold (Feet)	0	0	331	0	0	957	0	0
Runway Landing Distance Available (Feet)	8,926	8,926	9,954	10,285	12,091	11,134	11,095	11,095
Approach Surface Slope	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1
Runway End Elevation (Feet above MSL)	113.1	118.9	109.9	112.9	120.4	94.0	121.7	97.8
Runway Markings	Precision	Precision	Precision	Precision	Precision	Precision	Precision	Precision
Runway Lighting	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI	HIRL, CL, PAPI	HIRL, CL, PAPI	HIRL, CL, TDZ, PAPI
Part 77 Runway Category and Navigational Aids	Precision ILS CAT I	Precision ILS CAT IIIb	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT I	Precision ILS CAT IIIb
Runway Approach Lighting	MALSR	ALSF-II	MALSR	MALSR	MALSR	MALSR	MALSR	ALSF-II

NOTES:
MSL = Mean Sea Level
HIRL = High Intensity Runway Lighting; CL= Centerline Lighting
PAPI = Precision Approach Path Indicator; TDZ = Touchdown Zone lighting
REIL = Runway End Identifier Lights; ALSF-II = Approach Lighting System with Sequenced Flashing Lights
MALSR = Medium Intensity Approach Light System with Runway Alignment Indicator Lights; ILS CAT = Instrument Landing System Category

SOURCES: Airnav.com accessed December 5, 2014; HNTB. *Airport Layout Plan, Airport Data Sheet, Los Angeles International Airport*. September 5, 2012.



SOURCE: ESRI ArcGIS, 2011; PCR Services Corporation, 2012; ESA Airports, 2014

Exhibit 3-1

Los Angeles International Airport and Surrounding Jurisdictions

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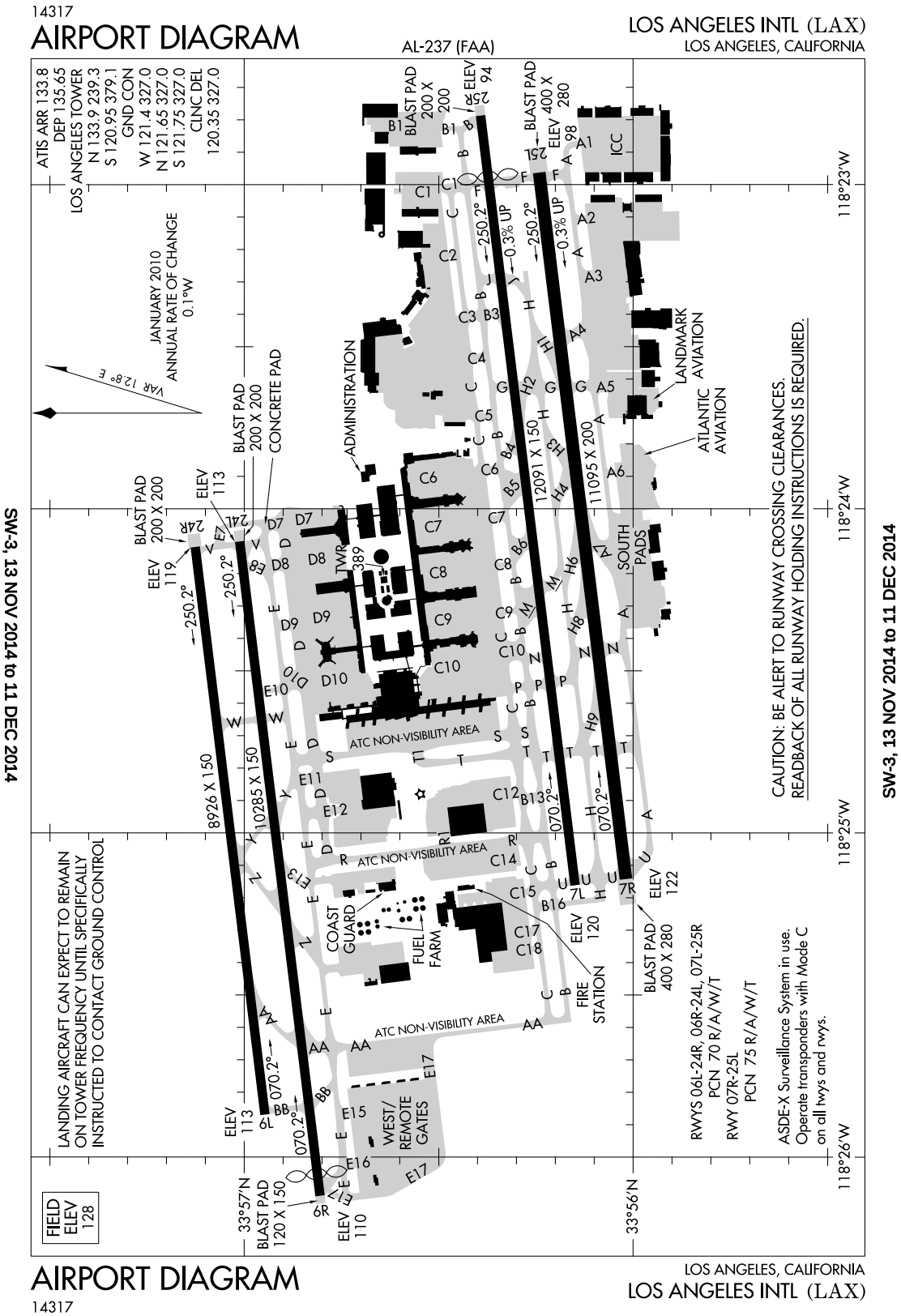


SOURCE: Federal Aviation Administration, 2014; ESA, 2014
NOTE: Not for Navigational Use

Exhibit 3-2
Airport Diagram for Los Angeles International Airport

North Complex

Runway 06L-24R is the northernmost runway and is 8,926 feet long by 150 feet wide. Runway 06L-24R is primarily used for aircraft arrivals for safety and efficiency. Runway 06L-24R is constructed of concrete and is grooved.

Runway 06R-24L is located north of the main terminal complex, but south of Runway 06L-24R. Runway 06R-24L is 10,285 feet long by 150 feet wide and is primarily used for aircraft departures due to its longer length and LAWA's preferential runway use program, which designates the inboard runways as the preferred departure runways. Runway 06R has a displaced threshold of 331 feet that reduces the available landing distance for Runway 06R to 9,954 feet. Runway 06R-24L is constructed of concrete and is grooved.

South Complex

Runway 07L-25R is 12,091 feet long by 150 feet wide and is primarily used for aircraft departures as prescribed in LAWA's preferential runway use program. Runway 25R has a displaced threshold of 957 feet that reduces the available landing distance for Runway 25R to 11,134 feet. Runway 07L-25R is constructed of concrete and is grooved.

Runway 07R-25L is 11,095 feet long by 200 feet wide and is primarily used for aircraft arrivals. Runway 07R-25L is constructed of concrete and is grooved.

Taxiways

The existing taxiway system at LAX is also depicted on Exhibit 3-2. As shown on Exhibit 3-2, a series of taxiways connect the four runways to the passenger terminal complex, the air cargo aprons, fixed base operator (FBO) facilities, and general aviation areas. There are a series of taxiways that run parallel to the main runways that include taxiways: 'A', 'B', 'C', 'D', 'E', and 'H'. These taxiways move aircraft parallel to the active runways when departing aircraft position for takeoff, or when arriving aircraft taxi to their gates after arrival. Each of these primary taxiways also has individual connectors that connect the main runway with the parallel taxiway. There are also a series of taxiways that move aircraft from the north complex to the south complex and vice-versa. Individual taxiways and locations can be seen on Exhibit 3-2.

3.1.2 Passenger Terminal Facilities

There are nine terminals including the Tom Bradley International Terminal in the terminal complex located between the north and south runway complexes. Terminals One through Three are located on the north side of the terminal complex, while Terminals Four through Eight are located on the south side of the terminal complex. The Tom Bradley International Terminal is located west of Terminals One through Eight, and runs parallel to Taxiway 'S'. Passenger access to these terminals is via the two-level World Way roadway that runs counter-clockwise and allows departing/arriving passengers to be dropped off on the upper level or picked up on the lower level, respectively. There is also a West/Remote Gate area located just south of the end of Runway 06R, and an American Eagle Gate complex located east of Terminal Eight. Passenger access to these remote gate areas is via shuttle buses.

EXISTING AIRPORT FACILITIES		
No.	FACILITY	ELEVATION FEET MSL
101	Swissport Cargo Services	132.0
102	Delta Airlines Cargo Building	146.6
103	China Airlines Cargo Building	146.1
104	Air France Cargo Building	134.1
105	Air New Zealand / Air China Cargo Building	147.9
106	Lufthansa Cargo Building	144.2
107	Air Canada Cargo Building	149.3
108	Swissport Cargo Services	132.1
109	DHL Cargo	135.8
110	DHL	152.5
111	AMB LAX Cargo Center	138.0
112	FedEx Building	149.4
113	Japan Air Lines / Continental / Polar Cargo	145.3
114	Korean Air Cargo Building	159.4
115	Singapore Airlines Cargo Building	154.5
116	Landmark Aviation (FBO)	148.4
117	Atlantic Aviation (FBO)	145.3
118	Nippon Cargo Airways Building	163.6
119	Qantas Freight	149.3
120	LAX Police	128.7
121	Imperial Terminal / Flight Path Museum	135.5
122	Gate Gourmet	153.7
123	Flying Food Group	144.0
124	Mercury Air Cargo Services / Eva Air Cargo	159.8
125	Clark McCarthy	147.8
126	Gate Gourmet	135.6
127	Facilities & Engineering	129.5
128	Swissport	129.5
129	Servisair	132.2
130	LAWA Inspector's Office	124.7
131	LAWA Pistol Range	119.3

EXISTING AIRPORT FACILITIES		
No.	FACILITY	ELEVATION FEET MSL
202	Continental Airlines Maintenance Hangar	207.0
203	Chelsea Catering	177.0
204	Former Continental Airlines Training Cntr. (Vacant)	147.8
205	American Airlines Maintenance Hangar	249.9
206	American Airlines Maintenance Hangar	177.0
209	LSG Sky Chefs Flight Kitchen	177.0
210	Aircraft Rescue and Fire Fighting	151.4
211	American Airlines Maintenance Hangar	226.1
215	U.S. Coast Guard Building	158.5
216	Electrical Vault #2	130.5
217	Southwest Airlines Flight Kitchen Storage	132.6
218	LAWA	142.4
219	U.S. Airways Maintenance Building	157.6
221	Airfield Badging	177.5
222	LAWA Administration	281.3
223	LAWA LNG/CNG Refueling Station	120.1
224	FedEx Aircraft Maintenance Facility	186.2
225	Remote Gate	135.1
226	Remote Gate	135.2
227	Remote Gate	135.4
228	Remote Gate	135.7
229	Remote Gate	136.4
230	Remote Gate	129.3
231	Remote Gate	128.6

EXISTING AIRPORT FACILITIES		
No.	FACILITY	ELEVATION FEET MSL
301	Passenger Terminal 1	170.6
302	Passenger Terminal 2	190.7
303	Passenger Terminal 3	184.6
304	Tom Bradley International Terminal (TBIT)	206.3
305	Passenger Terminal 4	196.8
306	Passenger Terminal 5	192.2
307	Passenger Terminal 6	173.3
308	Passenger Terminal 7	182.2
309	Passenger Terminal 8	166.1
310	FAA Air Traffic Control Tower (ATCT)	383.8
311	Central Utility Plant	167.5
312	LAWA Administration Building	279.5
313	Fire Station 51	134.4
314	Pacific Telephone	131.6
315	Communication Center	147.2
316	LAX Police Headquarters	136.1
317	Cardinelli Medical Facility	158.6
318	Sepulveda Tunnel Ventilation Building	130.3
319	Taxi Staging Area Facilities	123.4
320	Tom Bradley International Terminal Bus Gates	152.9
401	Delta Airlines Ground Service Equipment Building	136.1
402	American Eagle Commuter Terminal	122.3
403	LAWA/Delta Airlines	199.9
404	Mercury Air Group Cargo	199.9
405	United Airlines Maintenance Hangars	142.7
407	Air Freight Building #11 / American Airlines	140.8

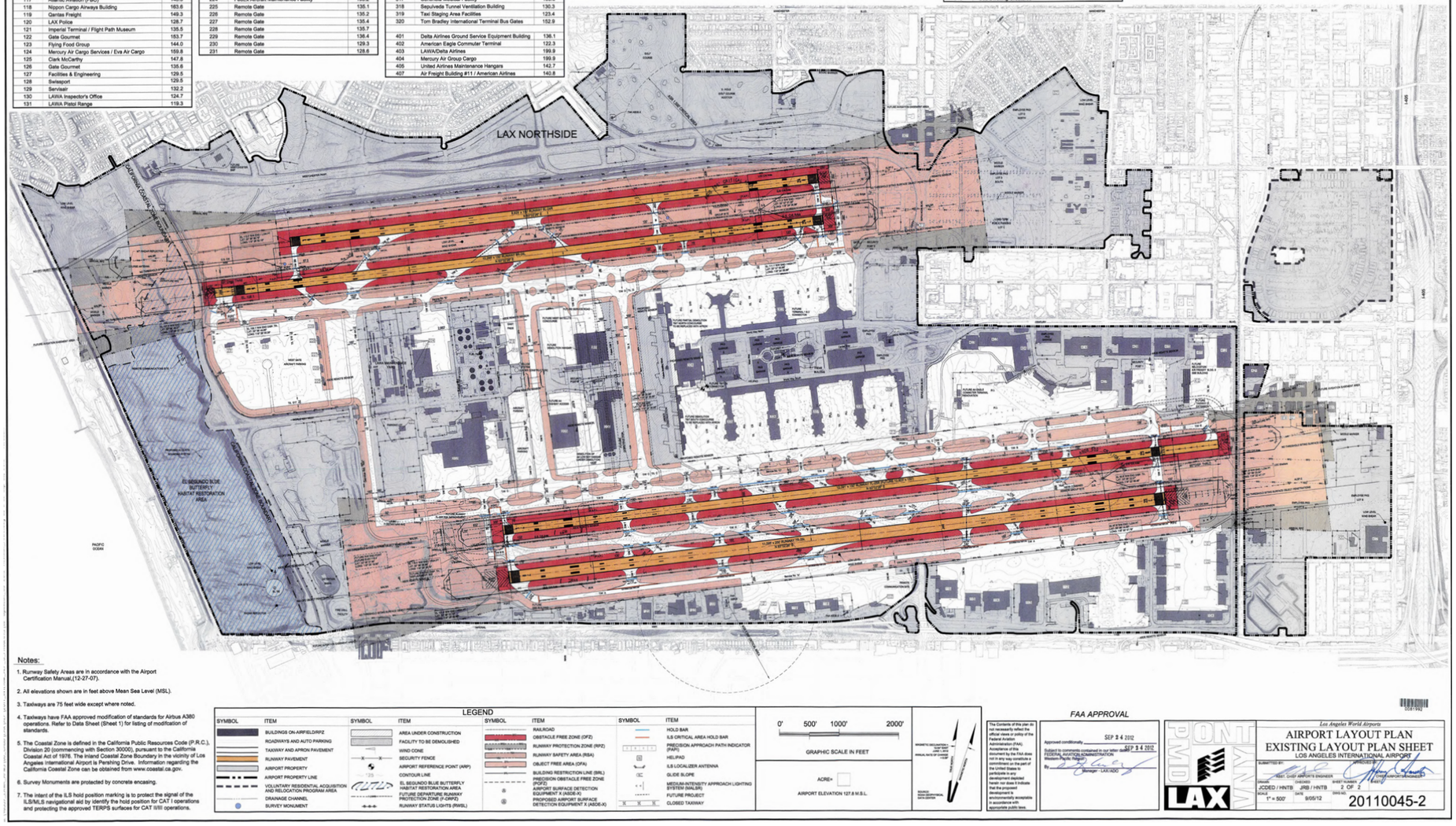
EXISTING AIRPORT FACILITIES		
No.	FACILITY	ELEVATION FEET MSL
408	Air Freight Building #10 / American Airlines	130.7
409	United States Postal Service (USPS)	165.5
410	Air Freight Building #8	130.1
411	US Airways Cargo Building	134.8
412	Air Freight Building #1	133.1
413	Fire Station 95	122.8
414	United Cargo Building	152.7
415	Asiana Cargo/United Airlines	149.1
416	Proud Bird Restaurant	122.6
417	U.S. Customs & Border Patrol (CBP)/AMB	136.6
418	Isaac Holdings	119.7
419	Travelodge Hotel/Denny's Restaurant	119.7
420	Greene's Ready Mix (Cal Portland)	152.7
421	Cubic Cargo	126.5
422	Centra Cargo	117.0

EXISTING AIRPORT FACILITIES		
No.	FACILITY	ELEVATION FEET MSL
501	Carl E. Nielsen Youth Park	134.4
502	United States Postal Service (USPS) Post Office	128.8
503	Avis Car Rental Facility	130.2
504	National Car Rental Facility	141.3
601	Jet Pets	120.6
602	First Flight Child Development Center	163.4
603	Fire Station 5	167.4

OFF-AIRPORT PROPERTIES WITHIN RPZ		
No.	FACILITY	ELEVATION FEET MSL
900	In-n-Out Burger	134.8
901	Parking Spot Parking Structure	146.5
902	Commercial Buildings 9100-9220 Sepulveda Blvd.	152.3
903	Commercial Buildings 8900-8938 Sepulveda Blvd.	168.2
904	Office Space (Vacant)	140.4
905	LA Turners Non-profit Organization Center	131.3
906	Apartment Complex 8910 Sepulveda Eastway	137.2
907	Private Residence 8957 Kitty Hawk Ave.	126.4
908	Private Residence 8950 Kitty Hawk Ave.	132.3
909	Private Residence 8951 Kitty Hawk Ave.	128.7
910	Private Residence 8944 Kitty Hawk Ave.	126.6
911	Private Residence 8943 Kitty Hawk Ave.	128.1
912	Private Residence 8938 Kitty Hawk Ave.	127.3
913	Private Residence 8937 Kitty Hawk Ave.	127.3
914	Clean Energy CNG Station	113.6
915	Customs Air Warehouse Inc.	122.7
916	Sea Dwelling Creatures	119.9

OFF-AIRPORT PROPERTIES WITHIN RPZ		
No.	FACILITY	ELEVATION FEET MSL
917	Pacific Air Freight	120.8
918	Ventura Highway / Senderex Cargo	120.1
919	Pacific Aqua Farm	116.4
920	Pro Labs Digital Imaging	118.5
921	Rock-It Cargo	117.7
922	Springfield Storage and Packing	121.2
923	Sound Moves	119.0
924	Quality Marine	118.5
925	Mayesh Wholesale Florist	119.4
926	Vacant	118.6
927	ABLE Freight Service	113.9
928	Apartment Complex 770 Imperial Ave.	172.2
929	Apartment Complex 732 Imperial Ave.	160.4
930	Apartment Complex 720 Imperial Ave.	166.4
931	L.A. County Lifeguard Operations Center	48.6

Properties 900-931 are not owned by the Airport (LAWA)



Notes:

1. Runway Safety Areas are in accordance with the Airport Certification Manual,(12-27-07).
2. All elevations shown are in feet above Mean Sea Level (MSL).
3. Taxiways are 75 feet wide except where noted.
4. Taxiways have FAA approved modification of standards for Airbus A380 operations. Refer to Data Sheet (Sheet 1) for listing of modification of standards.
5. The Coastal Zone is defined in the California Public Resources Code (P.R.C.), Division 20 (commencing with Section 30000), pursuant to the California Coastal Act of 1976. The Inland Coastal Zone Boundary in the vicinity of Los Angeles International Airport is Pershing Drive. Information regarding the California Coastal Zone can be obtained from www.coastal.ca.gov.
6. Survey Monuments are protected by concrete encasing.
7. The intent of the ILS hold position marking is to protect the signal of the ILS/MLS navigational aid by identify the hold position for CAT I operations and protecting the approved TERPS surfaces for CAT II/III operations.

SOURCE: HNTB. *Airport Layout Plan, Existing Layout Plan Sheet.* FAA Approved July 18, 2013

Exhibit 3-3

Airport Layout Plan, Los Angeles International Airport

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3.1.3 Airport Traffic Control Tower

The Airport is serviced by an active FAA airport traffic control tower (ATCT) located in the center of the Terminal Complexes. The ATCT operates 24 hours a day, 365 days a year. Radar approach and departure control is operated by the Southern California Terminal Radar Approach Control (SOCAL TRACON) located in San Diego, California.

3.1.4 Other Facilities

General Aviation Facilities

General aviation includes all facets of aviation flying excluding military, cargo, and scheduled commercial passenger air carriers. Some of the major categories of general aviation include business/corporate aviation, air taxi operations, flight training, personal flying, and traffic reporting.

There are two fixed base operators (FBOs) at the Airport located south of Runway 07R-25L. These FBOs include Landmark Aviation and Atlantic Aviation, and offer general aviation services such as: aviation fuel, oxygen service, aircraft parking (ramp or tie-down), hangars, GA passenger terminal and lounge, aircraft maintenance, etc.

There is also a military/Coast Guard facility located at the center of the airport west of Taxiway ‘R’.

Air Cargo Facilities

Air cargo and maintenance facilities are located sporadically around the Airport, however, the major cargo facilities, including the Imperial Cargo Complex and the South Pads, are located south of Runway 07R-25L. Other cargo and maintenance facilities are located just north of Runway 25R including the B-1 Cargo Area, and in the center of the Airport between the north and south runway complexes.

Other Aviation-related facilities

In addition to the passenger terminal, cargo facilities, and general aviation facilities, a number of aviation related support facilities are located on airport property. These facilities include:

- Aircraft Rescue and Firefighting Facility (ARFF)
- Aircraft Fueling Facility
- Airport Maintenance Facility
- Airport Surveillance Radar
- Airport Police Department and Pistol Range
- Police/ARFF Training Auditorium
- Airport Training and Conference Center

3.2 Future/Planned Airport Facilities

An analysis was conducted to determine if there are any planned projects at LAX that will be constructed and operational by 2020 that would have an influence on runway use, or may in some way have the potential to alter aircraft noise exposure patterns in the vicinity of LAX in 2020. Recent studies prepared by LAWA that were reviewed as part of this analysis included the LAX Master Plan Alternative D Report (2004), the LAX Specific Plan Amendment Study (SPAS) and Environmental Impact Report (EIR), the LAX Federal Aviation Regulations Part 161 Study, the Midfield Satellite Concourse North Draft EIR, the LAX Runway 06L-24R and 06R-24L Safety Area and Associated Improvements Draft EIR and Draft Environmental Assessment (EA), the LAX Runway 07L-25R Runway Safety Area (RSA) Project and Associated Improvements EA and EIR, and the West Aircraft Maintenance Area Draft EIR.

Based on this evaluation it was determined that there are two projects that will be operational by 2020 and that may affect future aircraft noise exposure in the vicinity of LAX: the proposed Runway 07L-25R and Runway 06R-24L Runway Safety Area (RSA) improvements.

> **Runway 07L-25R RSA improvements**: The extension of Runway 07L-25R 832 feet to the west will result in a shift of the Runway 07L departure threshold 832 feet to the west. The Runway 07L landing threshold will remain in its current location (i.e., 832 feet east of the new end of pavement). The Runway 25R departure and landing thresholds will remain unchanged. The existing 957-foot displacement of the Runway 25R landing threshold will remain unchanged.
>
> **Runway 06R-24L RSA improvements**: The proposed Runway 06R-24L RSA improvements will result in an approximately 800-foot eastward shift of the Runway 24L departure threshold. The Runway 24L landing threshold will remain in its existing location. The Runway 06R departure threshold will shift approximately 200 feet to the east and the Runway 06R landing threshold will shift approximately 420 feet to the east.

The runway threshold shifts described above were incorporated into the noise analysis conducted for future (2020) conditions and are reflected on the 2020 Noise Exposure Map presented in Chapter 5 (See Exhibit 5-2).

The FAA is currently assessing and addressing airspace inefficiencies to make the Southern California Metroplex airspace more efficient. The Metroplex project is a separate and independent project led by the FAA. On June 10, 2015, the FAA released a draft environmental assessment (EA)[2] that analyzes the potential environmental impacts of the recommended Metroplex changes including the effects on aircraft noise. The Draft Metroplex EA concludes that the noise analysis ". . . results indicate the Proposed Action would not result in a significant noise exposure impact on population exposed to DNL 65 dB or higher levels under the Proposed Action. . .".[3] Based on this conclusion in FAA's Draft Metroplex EA, LAWA has concluded that

[2] Draft Environmental Assessment for the Southern California Metroplex Project, United States Department of Transportation Federal Aviation Administration (June 2015)

[3] *Ibid*., Section 5.1.3, Potential Impacts – 2015 and 2020, p. 5-6.

implementation of the Metroplex procedure changes will not result in significant changes to the 2020 NEM for LAX.

3.3 Navigational Aids

Navigational aids, airport lighting, and airport markings help users of LAX to safely navigate around the Airport and through LAX airspace. The navigational aids include: Instrument Landing Systems (ILS), Area Navigation (RNAV)/Global Positioning Systems (GPS), and a VORTAC which is the combination of a Very High Frequency (VHF) Omni-Directional Range (VOR) and Tactical Air Navigation facility (TACAN).

An ILS is an electronic system that helps guide pilots to runways during periods of limited visibility or inclement weather. An ILS includes a localizer, which provides lateral course guidance to the runway, and a glide slope, which provides vertical course guidance.

The GPS uses a network of satellites that create reference points to enable aircraft equipped with GPS receivers to determine their latitude, longitude, and altitude. GPS systems can be used by aircraft during all phases of flight.

Area Navigation or RNAV is a method of navigation that permits aircraft operation on any desired flight path using the combination of both GPS and ground-based navigational aids. RNAV routes and terminal procedures, including departure procedures and standard terminal arrivals, are designed with RNAV systems in mind to save time and fuel, reduce aircraft dependence on air traffic control (ATC) vectoring, and provide for more efficient use of the airspace.

A VORTAC is a facility consisting of two components, VOR and TACAN, which provide three individual services: VOR azimuth, TACAN azimuth and TACAN distance at one site. This navigational aid works for civilian aircraft by using a VHF radio to project straight line courses (radials) from the station in all directions that pilots can use to navigate to and from the VORTAC stations. As mentioned above, VORTACs also have distance capability or distance measuring equipment (DME) that lets the pilot know their slant range distance from the station usually shown in the aircraft in nautical miles from the station. The TACAN part of the VORTAC is mostly used by military aircraft, but basically provides the same function as a VOR.

An FAA-operated VORTAC is located approximately 4,000 feet west of the end of Runway 07R. The VORTAC is a Class ‘H’ VORTAC, which has a standard service volume limit of 100 nautical miles (nm) between 14,500 feet and 60,000 feet. Between 18,000 feet and 45,000 feet, the service volume extends to 130 nm. Below 14,500 feet down to 1,000 feet above ground level (AGL), the standard service volume is 40 nm. The LAX VORTAC is not used to perform instrument approaches, but is utilized by aircraft executing missed approach procedures, or aircraft on Departures Procedures or Standard Terminal Arrivals.

3.4 Runway Instrument Procedures, Lighting, and Markings

Runway instrument procedures are published procedures that pilots use to navigate their aircraft to the runway. Runway instrument procedures fall into two categories, precision, and non-precision approaches. The ILS is a precision approach that has several categories of approaches including Category (CAT) I, CAT II, or CAT III A, B, or C. The category of approach that can be flown is based on airport capability (lighting, markings, etc.), aircraft capability, and pilot certification. The higher the category of approach, the lower the approach minimums (runway visual range (RVR) and cloud ceilings) the aircraft can fly before having to have the runway in sight, or executing a missed approach. At LAX, each runway end has a CAT I ILS; only Runways 24R and 25L have CAT II and CAT III ILS capability. **Table 3-2** presents visibility conversions for RVR values. Below the table is a brief description of each of the categories of ILS approaches that LAX employs.

TABLE 3-2
RUNWAY VISUAL RANGE VALUE CONVERSIONS

RVR	Visibility in Statute Miles
1600	1/4
2400	1/2
3200	5/8
4000	3/4
4500	7/8
5000	1
6000	1 1/4

SOURCE: U.S. Department of Transportation. Federal Aviation Administration. *Federal Aviation Regulations/Aeronautical Information Manual 2014*. August 23, 2013.

The CAT I ILS is the simplest of the ILS approaches that virtually all instrument rated pilots and aircraft can perform. The basic CAT I ILS allows aircraft to descend to an altitude, usually 200 feet above runway altitude, and usually requires a visibility of 2400 RVR or 1/2 statute miles. Some CAT I ILS will have lower visibility requirements such as 1800 RVR or 3/8 of a statute mile, or could have increased visibility requirements such as 1 statute mile depending on runway approach lighting, runway length, terrain, etc.

A CAT II ILS allows aircraft to fly the instrument approach to lower minimums than the CAT I ILS. Special aircraft and pilot certifications are required prior to executing a CAT II ILS approach. Generally, CAT II ILS approach minimums allow aircraft to descend to 100 feet above airport elevation, and have a visibility requirement of 1200 RVR at most airports.

CAT III ILS' allow aircraft to fly to the lowest visibility requirements of which there is no cloud ceiling requirement. There are three categories of CAT III ILS': CAT IIIA, CAT IIIB, and CAT IIIC. The ability to perform these categories of approaches is based on pilot and aircraft

certification, as well as specific runway capability (approach lighting, runway lighting, etc). The CAT IIIA ILS approach allows aircraft to execute the approach to 700 RVR at LAX. The CAT IIIB ILS approach allows aircraft to execute the approach down to 600 RVR at LAX. Lastly, the CAT IIIC ILS approach has no visibility requirement allowing aircraft to execute the approach down to zero visibility conditions. Aircraft capable of performing this CAT III approaches are able to autoland and track the runway centerline throughout the landing and rollout via the autopilot.

Non-Precision approaches including RNAV (GPS), VOR, and non-directional beacon (NDB) have higher approach minimums than ILS approaches due to their lower level of precision. Pilots utilize RNAV (GPS) non-precision approaches to LAX's runways when weather conditions permit.

3.4.1 Runway 06L

Runway 06L has precision approach markings and is in good condition. Runway 06L is served by a CAT I ILS approach that provides approach minima of 250-foot ceilings above the runway threshold, and 1 statute mile visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 06L has High Intensity Runway Lighting (HIRL) and Centerline Lighting (CL), as well as a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). A 3.0° Precision Approach Path Indicator (PAPI) is located on the left side of the approach end of Runway 06L for aircraft navigating to the runway visually.

3.4.2 Runway 06R

Runway 06R has precision approach markings and is in good condition. Runway 06R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 3/8 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 06R has HIRL, touchdown zone lighting, and CL; as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 06R for aircraft navigating to the runway visually.

3.4.3 Runway 07L

Runway 07L has precision approach markings and is in good condition. Runway 07L is served by a CAT I ILS approach that provides approach minima of 201-foot ceilings above the runway threshold, and 3/8 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 07L has HIRL, touchdown zone lighting, and CL; as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 07L for aircraft navigating to the runway visually.

3.4.4 Runway 07R

Runway 07R has precision approach markings and is in good condition. Runway 07R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway

threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 07R has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 07R for aircraft navigating to the runway visually.

3.4.5 Runway 24L

Runway 24L has precision approach markings and is in good condition. Runway 24L is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 24L has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the right side of the approach end of Runway 24L for aircraft navigating to the runway visually.

3.4.6 Runway 24R

Runway 24R has precision approach markings and is in good condition. Runway 24R is served by a CAT IIIB ILS approach that provides approach minima down to zero visibility conditions. There is also a non-precision RNAV (GPS) instrument approach. Runway 24R has HIRL, CL, and touchdown zone lighting, as well as an Approach Lighting System with Sequenced Flashing Lights (ALSF-II). When the airfield is operating under visual flight rules (VFR) (ceilings greater than 1,000 feet and greater than 3 statute miles visibility), the approach lighting system operates as a simplified short approach lighting system with runway alignment indicator lights (SSALR). A 3.0° PAPI is located on the left side of the approach end of Runway 24R for aircraft navigating to the runway visually.

Runways 24L and 24R have a visual approach procedure called the Stadium Visual for when weather conditions permit (3,000 foot-ceilings and more than 3 statute miles visibility); aircraft follow reference landmarks and altitudes to navigate to the runway ends.

3.4.7 Runway 25R

Runway 25R has precision approach markings and is in good condition. Runway 25R is served by a CAT I ILS approach that provides approach minima of 200-foot ceilings above the runway threshold, and 1/2 statute miles visibility. There is also a non-precision RNAV (GPS) instrument approach. Runway 25R has HIRL and CL, as well as a MALSR. A 3.0° PAPI is located on the left side of the approach end of Runway 25R for aircraft navigating to the runway visually.

Runways 25L and 25R have a visual approach procedure called the Harbor Visual for when weather conditions permit (3,000 foot-ceilings and more than 3 statute miles visibility); aircraft follow reference landmarks and altitudes to navigate to the runway ends.

3.4.8 Runway 25L

Runway 25L has precision approach markings and is in good condition. Runway 25L is served by a CAT IIIB ILS approach that provides approach minima down to zero visibility conditions. There is also a non-precision RNAV (GPS) instrument approach. Runway 25L has HIRL, CL,

and touchdown zone lighting, as well as an ALSF-II. When the airfield is VFR, the approach lighting system operates as a SSALR. A 3.0° PAPI is located on the right side of the approach end of Runway 25L for aircraft navigating to the runway visually.

3.5 Runway Assignments and Operational Flows

The runway assigned to an arriving or departing aircraft depends primarily on the wind direction and velocity, ATC procedures, air traffic demand, gate location, as well as other local factors such as aircraft performance and size. Typically, however, aircraft depart from the inboard runways (Runway 06R-24L and 07L-25R), and land on the outboard runways (Runways 06L-24R and 07R-25L) at LAX, which is in adherence to LAWA's preferential runway use program.

There are three basic operating patterns or flows at LAX including westerly operations, easterly operations, and over-ocean operations. The primary flow is westerly operations due to the onshore ocean breezes that flow from west to east (aircraft depart and land into the wind) as well as the preferential runway use program that specifies a preference for westerly departures over the Pacific Ocean for noise abatement purposes.

Westerly Operations

During Westerly Operations aircraft utilize Runways 24L, 24R, 25L, and 25R. Westerly operations are the normal traffic pattern at LAX between 6:30 a.m. and midnight. Aircraft approach and depart the Airport to the west due to prevailing westerly winds off of the Pacific Ocean. Departing aircraft primarily depart from the two inner runways and are routed over the Pacific Ocean, while arriving aircraft land to the west over several communities, primarily on the two outboard runways. This is the preferred runway use pattern during the daytime for noise abatement purposes. For nighttime operations (operations occurring between 10:00 p.m. and 7:00 a.m.), the preferential runway use program specifies that the use of inboard runways is to be maximized for both arrivals and departures.

Easterly Operations

During Easterly Operations aircraft utilize Runways 06L, 06R, 07L, and 07R. Easterly operations are implemented when wind conditions (generally during rainstorms and Santa Ana winds) require reversing the normal traffic flow of the Airport, so that aircraft arrive from the west and depart to the east. Departing aircraft are routed to the east and overfly communities to the north, east and south, while arriving aircraft approach from the west over the Pacific Ocean. Again, the inboard runways are primarily used for aircraft departures, while the two outboard runways are primarily used for arrivals.

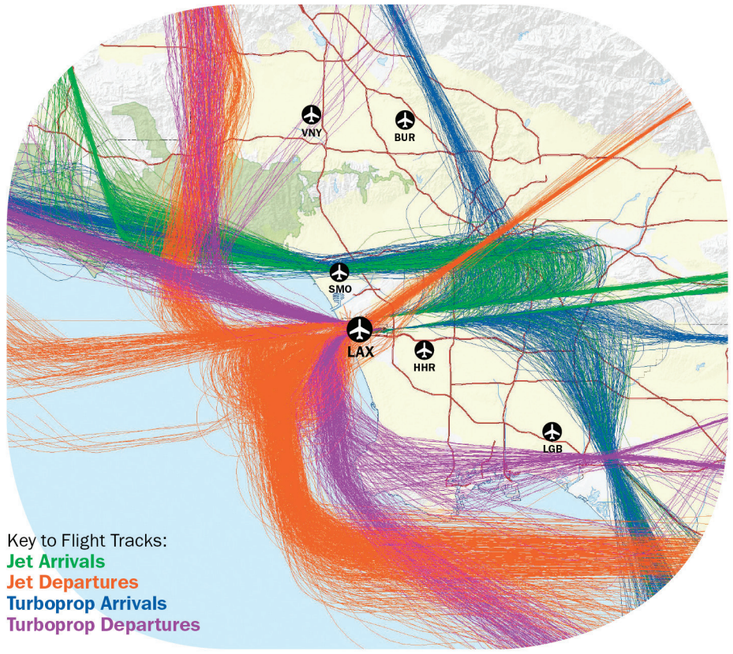
Over-Ocean Operations

During the more noise-sensitive time periods, usually between midnight and 6:30 a.m., LAX is normally operated in accordance with the Over-Ocean Operations. In this flow, departures and arrivals primarily utilize the inboard runways at LAX. Aircraft continue to depart to the west over

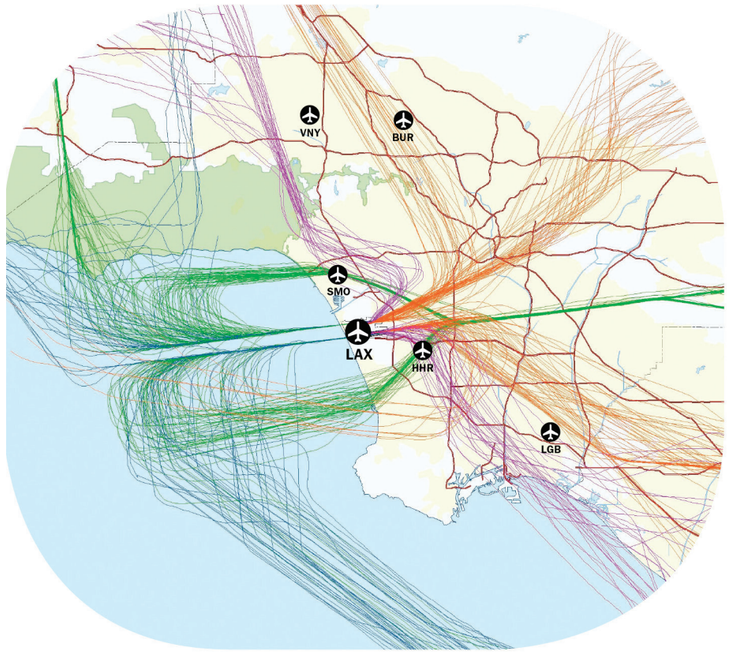
the Pacific Ocean as in westerly operations, but arrivals also arrive from the west over the Pacific Ocean. This reduces the potential for noise impacts to communities located to the east of the Airport during the most noise-sensitive time periods.

The three operational flows at LAX are shown on **Exhibit 3-4**.

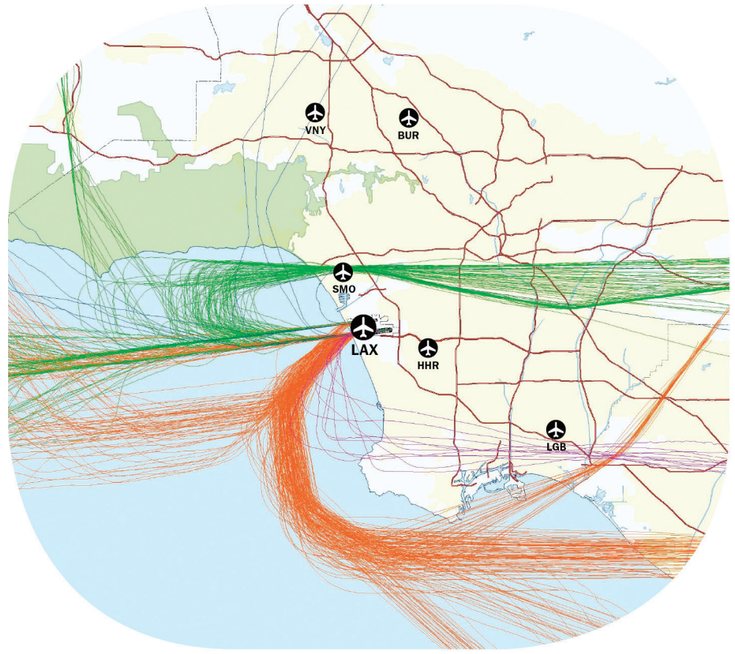
WESTERLY OPERATIONS



EASTERLY OPERATIONS



OVER-OCEAN OPERATIONS



SOURCE: Los Angeles World Airports, 2014

Los Angeles International Airport 14 CFR Part 150 Study . 130072.02

Exhibit 3-4

Air Traffic Flows - Los Angeles International Airport

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3.6 Airspace

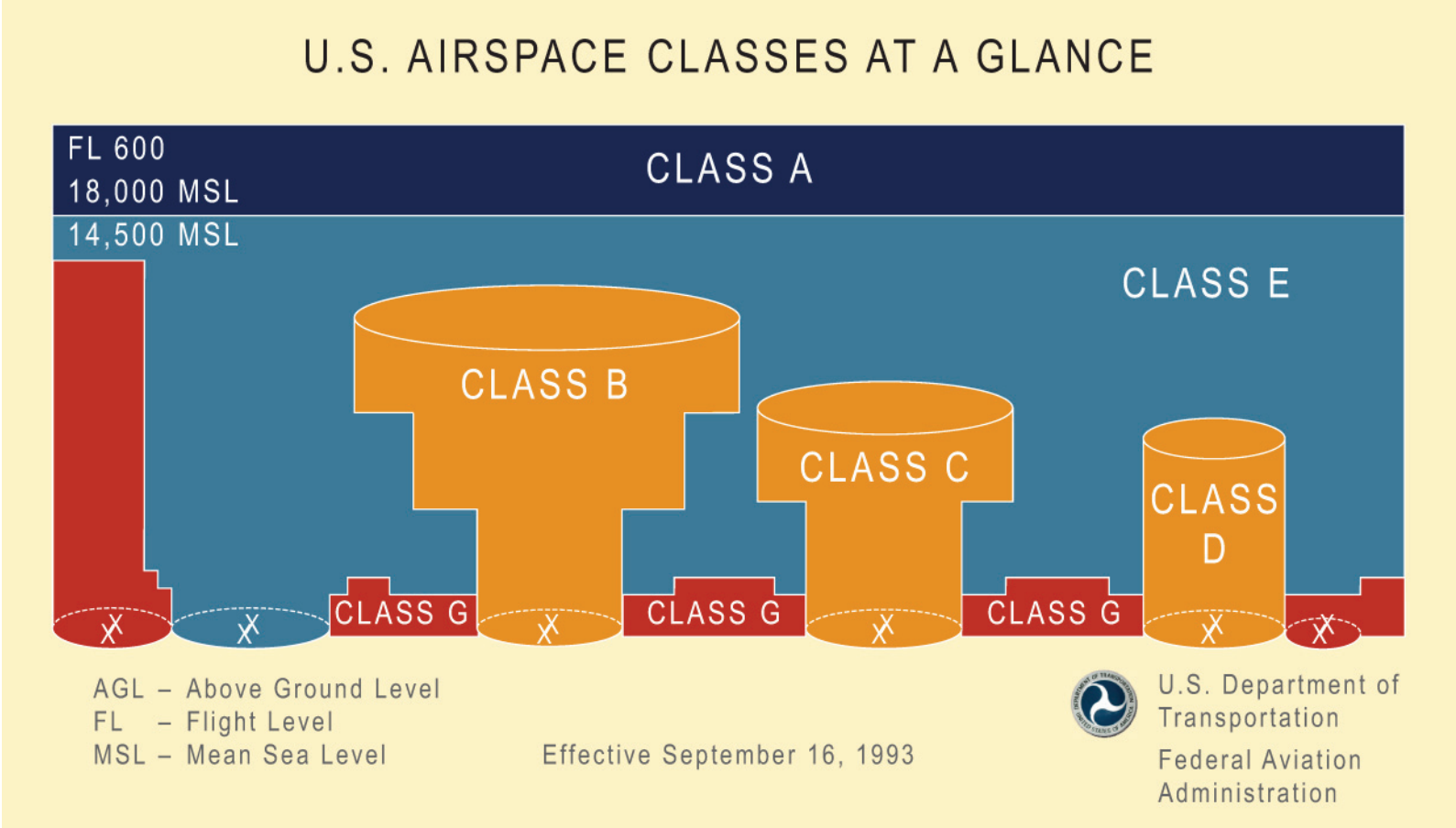
The FAA has six classifications of airspace under the National Airspace System (NAS). These classifications, which are designated Class A, B, C, D, E, and G and shown on **Exhibit 3-5**, are critical to the safety of all flights and to the efficient operation of all air traffic control facilities. Based on the level of activity and type of operations, airports receive a classification of B, C, D, E, or uncontrolled airspace.

The following paragraphs describe each airspace classification in greater detail, as well as the applicability of each classification to airspace in the vicinity of LAX. Additional information is provided in **Appendix H**. **Exhibit 3-6** depicts the airspace in the vicinity of LAX.

Class A airspace is designated for positive control of aircraft and ranges from 18,000 feet above mean sea level (MSL) to 60,000 feet MSL. Within Class A airspace, only aircraft operating under instrument flight rules (IFR) that are on instrument flight plans are authorized. The aircraft must have specific equipment and ATC clearance before entering the airspace.

Class B airspace is generally defined as that airspace from the surface up to 10,000 feet above MSL. This airspace usually surrounds the nation's busiest airports, and is individually tailored consisting of a surface area and two or more layers. The airspace immediately surrounding Los Angeles International Airport is classified as Class B airspace as designated by solid blue lines shown on Exhibit 3-6. As shown on Exhibit 3-6, the layers are identified with blue numbers representing the base altitude of the airspace such as the surface (SFC) or 5,000 feet (50) which is shown as the bottom of the airspace. The upper limit of the airspace for LAX is 10,000 feet MSL designated by (100) as the upper number. Class B airspace can sometimes be described as an "upside down wedding cake" designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the airspace, and all aircraft that are so cleared receive separation services from other aircraft within the airspace.

Aircraft operating under VFR or IFR are permitted into Class B airspace; however, the aircraft must be equipped with a two-way radio capable of communicating with ATC on appropriate frequencies, and an operable radar beacon transponder with automatic altitude reporting equipment. For IFR operations, the aircraft must have an operable VOR or TACAN receiver. The pilot must hold at least a private pilots certificate. Further surrounding the Class B airport is a 30 nm mode C veil designated by a thin, solid magenta line that circles the Class B airspace and extends from the surface upward to 10,000 feet MSL. Unless otherwise authorized, an aircraft operating within the mode C veil must be equipped with automatic pressure altitude reporting equipment having Mode C radar capability so that the SOCAL TRACON can see all aircraft operating close to the Class B airspace and provide adequate aircraft separation minimums. As shown on Exhibit 3-6, the airspace in the Los Angeles region is highly complex with many airports, both commercial service and general aviation, surrounding LAX. These airports and airspaces that lie beneath, abeam, or above the LAX Class B airspace include Class C, D, and E airspace.



SOURCE: FAA Aeronautical Information Manual, 2014

Exhibit 3-5
U.S. National Airspace System

SOURCE: Federal Aviation Administration, 2013
NOTE: Not for Navigational Use

Exhibit 3-6
Los Angeles International Airport Airspace

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Class C airspace is the airspace from the surface up to 4,000 feet above the airport elevation charted in MSL surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Class C airspace is represented by solid magenta lines, examples of which include John Wayne Orange County (SNA), LA/Ontario International (ONT), and Bob Hope (BUR) airports as shown on Exhibit 3-6. Like Class B airspace, Class C airspace is individually tailored to meet the needs of the respective airport. The airspace usually consists of a surface area with a 5 nm radius from the surface up to 4,000 feet above airport elevation, and a 10 nm radius that extends from 1,200 feet to 4,000 above airport elevation. An example of the extent of Class C airspace is ONT where magenta numbers represent the altitudes of the airspace. The extent of ONT's 5 nm radius is shown from the SFC to 5,000 feet MSL (50). Pilots must establish two-way radio communications with the ATC facility providing air traffic control services prior to entering the airspace. VFR aircraft are separated from IFR aircraft in Class C airspace.

Class D airspace is generally that airspace from the surface to 2,500 feet AGL. The configuration of Class D airspace are individually tailored and shown as a dashed blue line with an altitude representing the extent of the airspace from the surface. When instrument procedures are published, the airspace will normally be designed to contain the procedures with either Class D or E airspace. Class D airspace only surround airports that have an operational control tower of which pilots are required to establish and maintain two-way radio communication with the ATC facility. Examples of Class D airspace throughout the Los Angeles area include Long Beach/Daugherty (LGB), Santa Monica (SMO), Zamperini (TOA), and Northrop/Hawthorne (HHR) airports. For example, LGB's airspace is shown as a dashed blue circle and extends from the surface up to 2,600 feet AGL.

Class E airspace is generally controlled airspace that is not Class A, B, C, or D. Class E airspace extends upward from either the surface or designated altitude to the overlying or adjacent controlled airspace. Also in this class are Victor airways (airspace beginning at either 700 feet or 1,200 feet AGL used to transition to/from the terminal or en route environments) and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 feet MSL over the United States, including that airspace overlying the water within 12 nm off the coast of the 48 contiguous states and Alaska. It does not include airspace at or above 18,000 feet MSL. Class E airspace ensures that IFR aircraft remain in controlled airspace when approaching airports without Class D airspace or when flying on Victor airways that are below 18,000 feet MSL.

Most of the country has a Class E airspace limit of 1,200 feet AGL. Where it decreases to 700 feet AGL is depicted on Exhibit 3-6 by a shaded magenta line. The floor of Class E airspace near LAX is 700 feet AGL as depicted along the southern edge of the San Gabriel Mountains north of the City of Los Angeles, and along the Pacific coast line. The more defined side of the magenta line indicates areas where the floor of Class E airspace rises to 1,200 feet AGL. When Class E extends down to the surface, it is depicted by a dashed magenta line usually off-shooting a Class D airport such as HHR.

When the lower level of Class E airspace is not depicted, the airspace is considered uncontrolled or **Class G airspace**. Class G airspace begins at ground level and, in very remote areas, it has an upper limit of up to but not including 14,500 feet MSL. The top of Class G airspace is usually where Class E airspace begins, usually either 700 foot AGL depicted by magenta shading, or 1,200 foot AGL areas depicted by blue shading. Class G airspace begins at the surface throughout much of the area surrounding the Class B, C, D, and E airspaces throughout the Los Angeles area. Uncontrolled airports located in Class G airspace are depicted in magenta since they do not have a control tower. An example airport in the Los Angeles area located in Class G airspace would be the Compton Woodley Airport (CPM) on Exhibit 3-6. While VFR aircraft can operate in Class G airspace, IFR aircraft are not permitted.

Special Use airspace consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed on aircraft operations that are not a part of those activities, or both. There are currently no special use airspaces in the immediate vicinity of LAX.

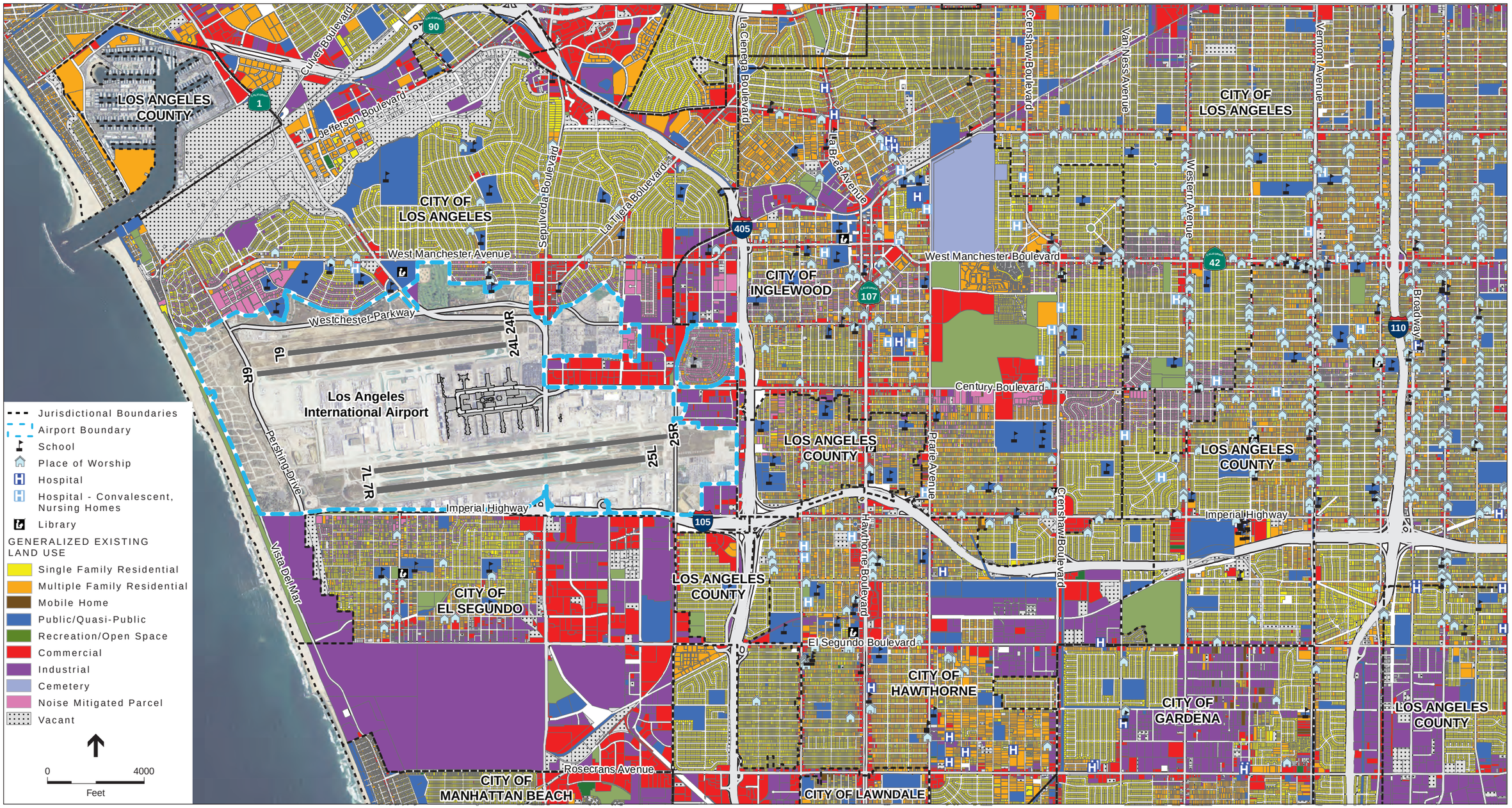
3.7 Generalized Existing Land Uses in the Airport Environs

The Airport is located within the city limits of the City of Los Angeles and is bound by the communities of Playa Del Rey and Westchester (City of Los Angeles) to the north, the city of Inglewood and the community of Lennox (unincorporated Los Angeles County) to the east, the city of Hawthorne and the community of Del Aire (unincorporated Los Angeles County) to the southeast, the City of El Segundo to the south, and the Pacific Ocean to the west. **Exhibit 3-7** presents generalized existing land uses in the vicinity of LAX.

Portions of unincorporated Los Angeles County located closest to LAX include the communities of Lennox, Del Aire, and West Athens-Westmont. The community of Del Aire is broken into two distinct areas; a northern portion located to north of El Segundo Boulevard and west of Interstate 405 and a southern area located south of El Segundo Boulevard and east of Interstate 405. Del Aire consists primarily of residential uses, with a mix of office, commercial, and public (i.e., schools and a park) uses located along major roadways. West Athens-Westmont consists mostly of residential uses, with a variety of public, commercial, and office uses also included within its planning area.

LAX is located within the borders of the City of Los Angeles, and is located in close proximity to the following City of Los Angeles planning areas: South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey. The communities of South Los Angeles, West Adams-Baldwin Hills-Leimert, and Westchester-Playa del Rey can all be characterized as consisting predominately of residential land uses.

Existing land uses closest to LAX and within the City of Inglewood include office uses west of Interstate 405 and north of W. Arbor Vitae Street. East of Interstate 405, existing land uses within the City of Inglewood consist largely of residential uses, with commercial, industrial, and public uses making up the balance of existing uses within the City.



SOURCE: ESRI World Imagery - Aerial; ESRI ArcGIS Online, 2011; PCR Services Corporation, 2012; Los Angeles World Airports, 2014; ESA Airports, 2014

Exhibit 3-7
Generalized Existing Land Uses in the Vicinity of
Los Angeles International Airport

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The City of El Segundo is characterized by existing residential uses in the northwestern portions of its planning area. The northeastern and eastern portions of El Segundo are made up predominately of office and commercial uses, and the central and southern portions of the City are made up of residential, industrial, and manufacturing uses. Existing land uses closest to LAX in the northwestern portions of the City of Hawthorne's planning area predominately consist of residential uses. Existing uses towards the central portions of Hawthorne are also predominately residential, with commercial uses clustered along major streets and transportation corridors. Towards the eastern side of the City, uses are predominately commercial and light industrial. Hawthorne Municipal Airport is also located in the northeastern portion of the City.

3.8 Generalized Planned Land Uses in the Airport Environs

Land use plans adopted by the County of Los Angeles, and the cities of Los Angeles, Inglewood, Hawthorne, and El Segundo are summarized in **Appendix B**. Generally, the planned land use pattern for the region surrounding LAX represents a continuation of the existing land use pattern.

3.9 Land Use Control Regulations

Zoning is the traditional mechanism used by local governments to control land use and implement the goals and policies of their general plans. Zoning controls the location, type, and intensity of new land uses, and is an important tool for preventing incompatible land uses from locating around airports. The legal basis for zoning powers is to protect the health, safety, and welfare of the public. Since the establishment of zoning powers in the early 1900s, the courts have been consistent in confirming broad discretion to local governments in exercising their zoning powers, provided that zoning designations are based on sound land use policy and plans. Zoning regulations adopted by jurisdictions in the vicinity of LAX are also summarized in **Appendix B**.