



PALMDALE GENERAL PLAN UPDATE

Military Readiness + Aviation

FINAL REPORT | NOVEMBER 2020



Envision
PALMDALE 2045
a complete community

Chapter 8: Military Readiness + Aviation

The State of California and the military have a long, successful history of working together to build a stronger California and a more secure nation. California is home to an integrated network of installations, training ranges, and special use airspace. The state's varied climate, terrain and coastline provide unique training and testing opportunities for each of the armed services and the military benefits from California's aeronautical and technological heritage. In return, a strong military presence contributes significantly to the demographic and socioeconomic vitality of state.

Military Presence

Palmdale, California is home to U.S. Air Force Plant 42 (Plant 42), one of the premier aeronautical development and production installation in the nation. Plant 42 is used primarily as a production flight test installation by the United States Air Force (USAF). Edwards Air Force Base (AFB), located approximately 30 miles north of Plant 42, provides command and control of the airfield complex. The presence of these military installations offers benefits for the City by providing high-tech jobs and community investment opportunities. However, as an urban area in proximity to these vital military installations, there could be some land use conflicts that have negative impacts on military readiness activities, community safety, and economic development.

Plant 42 has a unique land use with planning challenges related to the airfield and test and research activities at the installation and surrounding airspace. The City of Palmdale supports current and future missions at Plant 42 and Edwards AFB.



Image Source: <https://media.defense.gov/2014/May/28/2000845381/-1/-1/0/140528-F-ZZ999-002.JPG>
accessed 12/11/2018

With approximately 9,000 employees^{1,2,3}, Plant 42 is the second largest employer in the Antelope Valley (after Edwards AFB), providing significant economic thrust and adding to the economic base of the City of Palmdale. Aerospace is the largest industry and employer in Palmdale, California. In addition to the direct employment of government personnel, Plant 42 employs contract civilians located both on and off the installation. In return, the City of Palmdale provides housing, support services, and a range of community services to these employees. Support for Plant 42 is also provided by the larger Antelope Valley including the nearby city of Lancaster.

The military influence area of Los Angeles County is illustrated in Figure 8.1.

Edwards Air Force Base

Edwards AFB is a 481-square-mile USAF installation located in Kern County in southern California. The base lies in the western Mojave Desert approximately 100 miles northeast of Los Angeles, 90 miles northwest of San Bernardino, 80 miles southeast of Bakersfield, and 15 miles east of Rosemond. The base is bounded by SR 14 to the west, SR 58 to the north, and SR 395 to the east, and county road Avenue E near the southern boundary of the base.

Rogers Dry Lake is the central part of Edwards AFB, as its hard surface provides a natural extension to the base's paved runways. This large landing area, combined with year-round excellent weather, makes the base ideal for flight testing.

Edwards AFB is the largest employer in the Antelope Valley. The base is home to the Air Force Test Center, Air Force Test Pilot School and National Aeronautics and Space Administration's (NASA) Armstrong Flight Research Center. Edwards AFB is the Air Force Materiel Command Center for conducting and supporting research and flight developments, as well as testing and evaluating aerospace systems from concept to combat. The base also hosts many test activities conducted by the United States commercial aerospace industry.

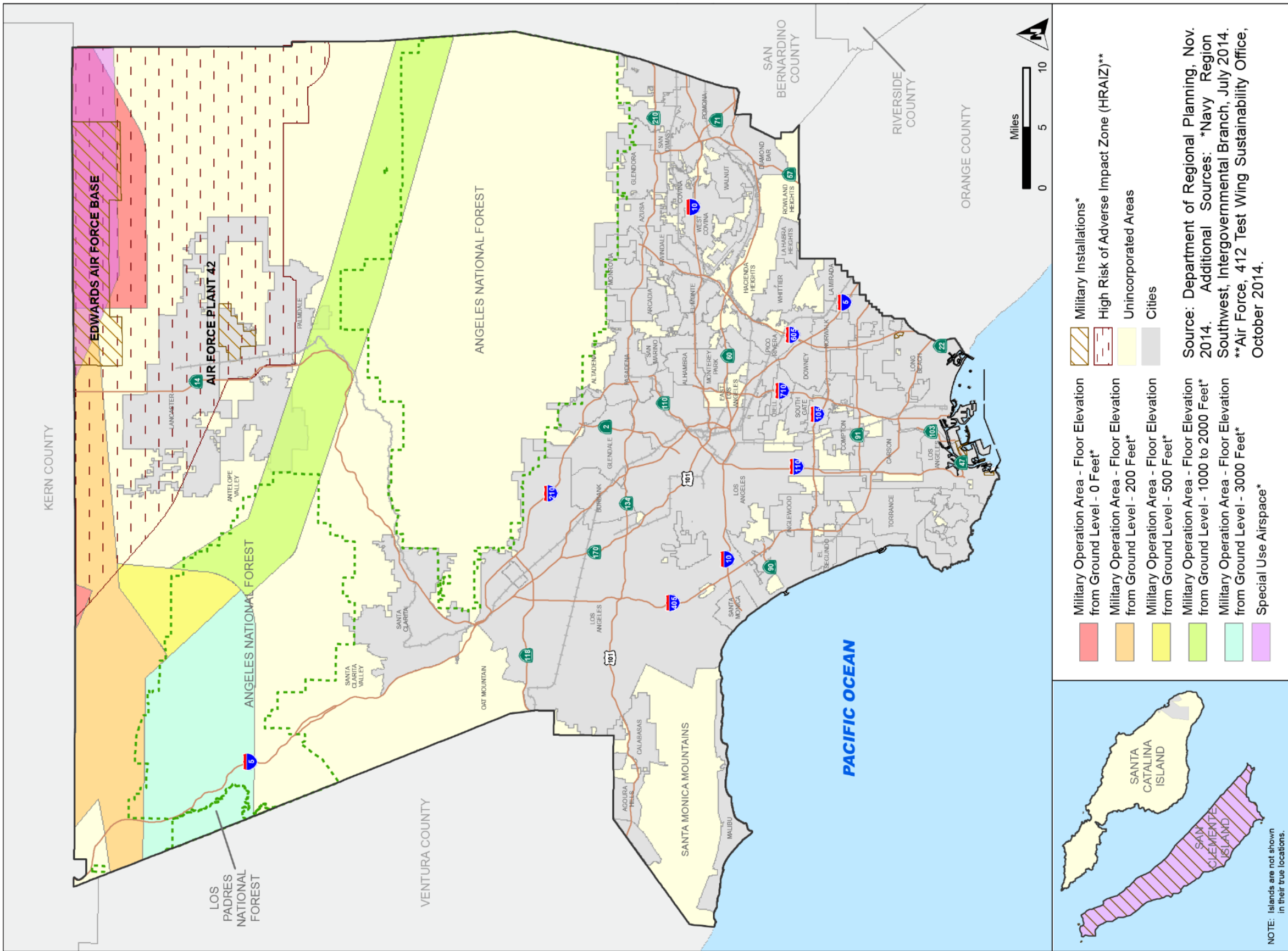
Edwards AFB operates like a modest-sized Mojave Desert town. Approximately 11,200 military and civilian personnel work at Edwards AFB, many of whom live either on the base or in the nearby larger communities of California City, Lancaster, Palmdale, and Rosamond. The base consists of largely undeveloped or semi-improved land used predominantly for aircraft test ranges and maintained and unmaintained landing sites (*i.e.*, Rogers and Rosamond dry lake beds). The developed portion of the base includes approximately six percent of the total area of the base concentrated on the west side of Rogers Dry Lake including North Base, South Base, Main Base, and Family Housing areas.

¹ The total number of employees at Plant 42 fluctuates between 7,500 to over 12,000 depending on contracting and project needs for both Military personnel and other operators.

² <https://www.edwards.af.mil/News/Article/829182/operating-location-af-plant-42-welcomed-into-412th-test-wing-family/>, May 28, 2014, accessed October 21, 2019

³ <https://www.stripes.com/news/us/edwards-air-force-base-tower-damaged-during-earthquake-crews-assessing-navy-s-china-lake-1.589472>, accessed October 24, 2019

Figure 8.1 Military Influence Areas in Los Angeles County



Source: (1) Department of Regional Planning, November 2014; (2) Navy Region Southwest, Intergovernmental Branch, July 2014; (3) Air Force, 412 Test Wing Sustainability Office, October 2014

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Many notable aeronautical achievements have taken place on Edwards AFB/ Rogers Lake. Chuck Yeager flew the experimental Bell X-1 rocket-plane to the first ever supersonic speed of Mach 1.07 (807.2 mph) in 1947, Lakebed Runway 18 was typically the landing facility for the X-15, where (in 1967) Captain William “Pete” Knight became "the fastest man alive" by flying Mach 6.7 in a specially modified X-15A-2, and NASA Space Shuttles launched from Kennedy Space Center used Lakebed Runway 23 as a landing strip.

United States Air Force Plant 42

Of the four USAF active plants located throughout the United States, Plant 42 is uniquely situated to fully support the newest and most advanced aerospace systems. Staffed by a mixture of civilian defense contractors and USAF personnel, Plant 42 provides industrial facilities for production, engineering, final assembly, modification, depot maintenance and flight testing of aerospace systems.

Plant 42 is a United States Government aircraft manufacturing plant used by the USAF and NASA. The plant, covering approximately 6,130 acres⁴, is located in Palmdale, California at the southwestern corner of the Antelope Valley on the western fringes of the Mojave Desert. Plant 42 is located approximately 65 miles north/ northeast of Los Angeles, 30 miles southwest of Edwards AFB, and is bounded by Columbia Way to the north, East Rancho Vista Boulevard to the south, Sierra Highway to the west, and 40th and 50th Street East to the east. The facility is situated at an elevation of 2,543 feet above mean sea level. Mountainous terrain to the south and west reaches elevations in excess of 5,000 feet within approximately 10 miles of Plant 42. Immediately north of Plant 42 is a series of four military restricted airspace areas reaching Edwards AFB and extending to the northeast beyond China Lake. Figure 8.2 presents an aerial view of Plant 42.

Figure 8.2 Plant 42 in Palmdale, California



⁴ United States Air Force

Plant 42 History

During the 1930's, crews with the Works Projects Administration built a small Los Angeles County emergency airport where Plant 42 now stands. Beginning in 1940, B-25 bomber and P-38 pilots used the small airfield for training; during World War II the property was leased to the U.S. Government and became known as Palmdale Army Airfield. In 1947, Los Angeles County bought the airport and subsequently added 400 acres to build an administration facility. In 1950, the county sold the airport to the USAF to use during the Korean Conflict; and in 1951, the USAF assumed control of the Palmdale Airport.

At the same time, the aircraft industry arrived in the Antelope Valley with Lockheed, McDonnell Douglas, Northrop, and Convair looking for air space to flight test their military jet aircraft away from heavily congested populated areas. Thus, the aircraft companies established their manufacturing hangars at the plant, becoming the principal sustaining business in the Antelope Valley through the economic peaks and valleys over the ensuing decades.

When the USAF purchased the site in 1951, they awarded a contract to Lockheed Aircraft to develop the Master Plan for the site. The plan was to construct a facility that would meet the requirements of full war mobilization and augment the industrial production potential of the major airframe manufacturing industry in Southern California.

Following approval of the Master Plan in 1953, when the Palmdale Airport officially became Air Force Plant 42, North American Aviation, Inc. was granted exclusive use of approximately 272 acres to support aircraft production and engineering flight testing programs. Northrop Corporation was also granted exclusive use of approximately 220 acres for a final mating, production and USAF acceptance testing facility. Lockheed Aircraft Corporation was authorized by the Government to construct joint-use facilities and secure engineering design and architectural services.

Ownership of the installation was transferred to the Federal Government in 1954. With encouragement from the USAF, Lockheed signed a lease in 1956 for 237 acres to use Palmdale Airport for final assembly and flight testing.

In 1961, the complex officially became known as "Production Flight Test Installation, Air Force Plant No. 42, Palmdale, California," which is the official name of the installation today.⁶ Beginning in the mid-1970s, Rockwell's assembly facility at Plant 42 is where all the individual parts, pieces and systems of the Space Shuttle came together and were assembled and tested.

During the 1980's, the complex was used by Boeing to construct and support NASA's Space Shuttle program and Lockheed Martin to produce the U-B/TR-1, L-1011 and support the SR-71. Among other projects, Northrop produced the F-5E and Rockwell supported the B-1B. Commercial airlines operated out of the Palmdale Regional Airport on and off since the 1990's.

For a further detailed history of Plant 42, see Appendix A.

Plant 42 Ownership and Composition

Plant 42 ownership responsibilities have been delegated to the Acquisition Environmental and Industrial Facilities Division through Air Force Material Command, based at Wright-Patterson AFB, Ohio. The site contains approximately 3.2 million square feet of industrial facilities. The industrial facilities serve primarily as manufacturing plants for the United States military and its military allies.

The plant supports some NASA operations and large aerospace contractors such as Northrop Grumman Corporation (Northrop Grumman), Lockheed Martin Aeronautics Company (Lockheed Martin), and Boeing Company (Boeing). The Air Force leases space to these contractors on Plant 42 for military and aircraft development with use of the Plant 42 runways permitted through lease agreements. Contractors at Plant 42 either lease building space from the Air Force or own their own buildings. The plant includes multiple high bay buildings with airfield access and flyaway capability.

Plant 42 is categorized by Sites 1-10 with Site 7 further divided into west and east halves. As detailed in the following section, Sites 1, 2, 3, 4, 7W, 7E, and 8 are leased among 3 contractor operators, while Sites 5 and 6 are operated and maintained through the 412th Test Wing / Operating Location at Air Force Plant 42. Site 9 is owned by NASA and Site 10 is owned by Lockheed Martin.

No lodging is available on Air Force Plant 42 but is widely available throughout the City of Palmdale and surrounding communities.

Figure 8.3 illustrates the site plan of Plant 42 and vicinity as of April 2018.

Figure 8.3 Plant 42 Site Plan (as of April 2018)



Some of the work done at Plant 42 involves production of spare parts for military aircraft, maintenance and modification of aircraft such as the B-2 Spirit and production of the Global Hawk and other unmanned craft. Current projects include design, engineering, pre-production, production, modification, flight testing, servicing, and repair-related activities.

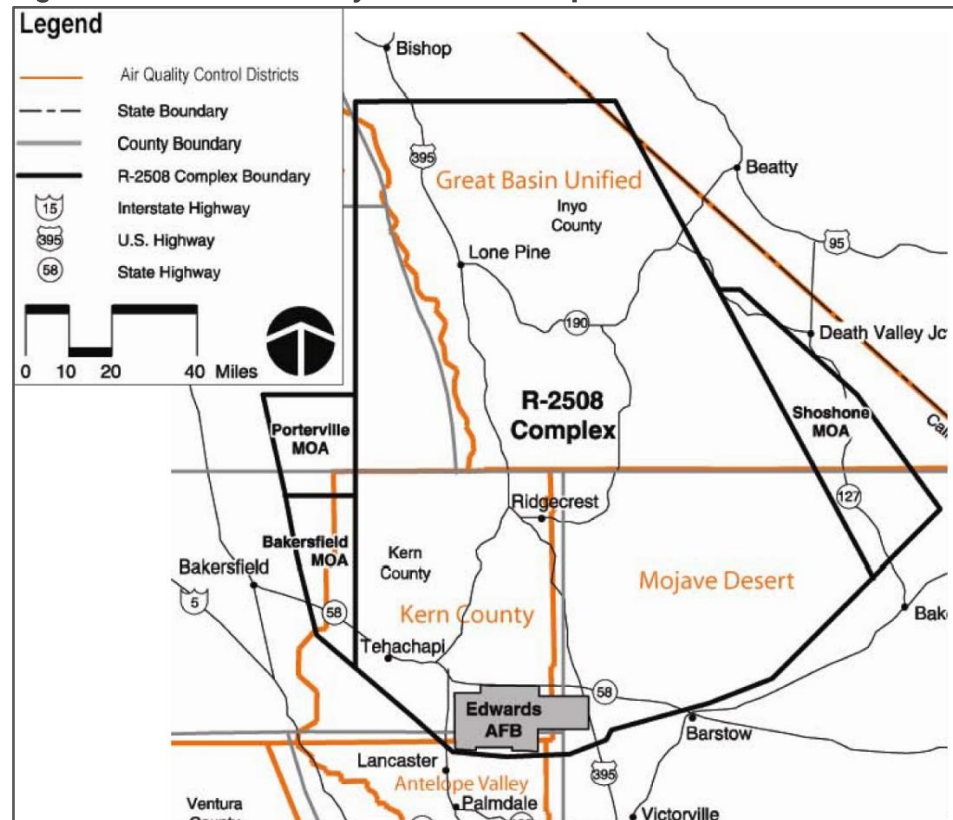
The airfield complex is operated as a geographically separated component of the 412th Test Wing located at Edwards Air Force Base.

Aircraft operating from Plant 42 have access to the runways and dry lakebeds at Edwards AFB, the restricted airspace of the R-2508 Complex (see Figure 8.4) and adjacent test ranges, and the largest overland supersonic flight test corridor in the country.

The facility has two runways: Runway 7/25 and Runway 4/22.

- Runway 7/25 is a concrete surface that is 12,000 feet long by 200 feet wide with a 1,000-foot asphalt overrun on each end (that is to be used for emergencies only). Runway 7/25 is one of the heaviest load-bearing runways in the world.
- Runway 4/22 is a concrete surface in good condition that is 12,000 feet long by 150 feet wide.

Figure 8.4 General Vicinity of R-2508 Complex



Source: 95th Air Base Wing, Environmental Management Directorate, Edwards Air Force Base, California, *Final Routine and Recurring Small Transient and New Test Missions Environmental Assessment*, April 2008.

Occupants of Plant 42 and the Surrounding Area

In addition to a regional airport, Plant 42 and the area surrounding is occupied by Department of Defense (DoD) contractors including Boeing, Lockheed Martin, and Northrop Grumman, NASA, and Federal Aviation Administration (FAA)-controlled air route traffic control center, two aviation museums, and a 17,500-acre vacant parcel of land owned by Los Angeles World Airports (LAWA).

Palmdale Regional Airport (PMD)

Palmdale Regional Airport and USAF Plant 42 are separate facilities that share common runways, but the leased 61.75-acre PMD site lies entirely within the boundaries of USAF Plant 42. Regional access to the airport is provided by SR 14, approximately three miles west of the airport. The airport terminal, located at the southwest corner of the airport on Avenue P, is comprised of a small airline terminal, a hangar, and a parking lot.

An airport influence area is the area within which current or future airport-related noise, over flight, safety, and/or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. Figure 8.5 illustrates the PMD airport influence area.

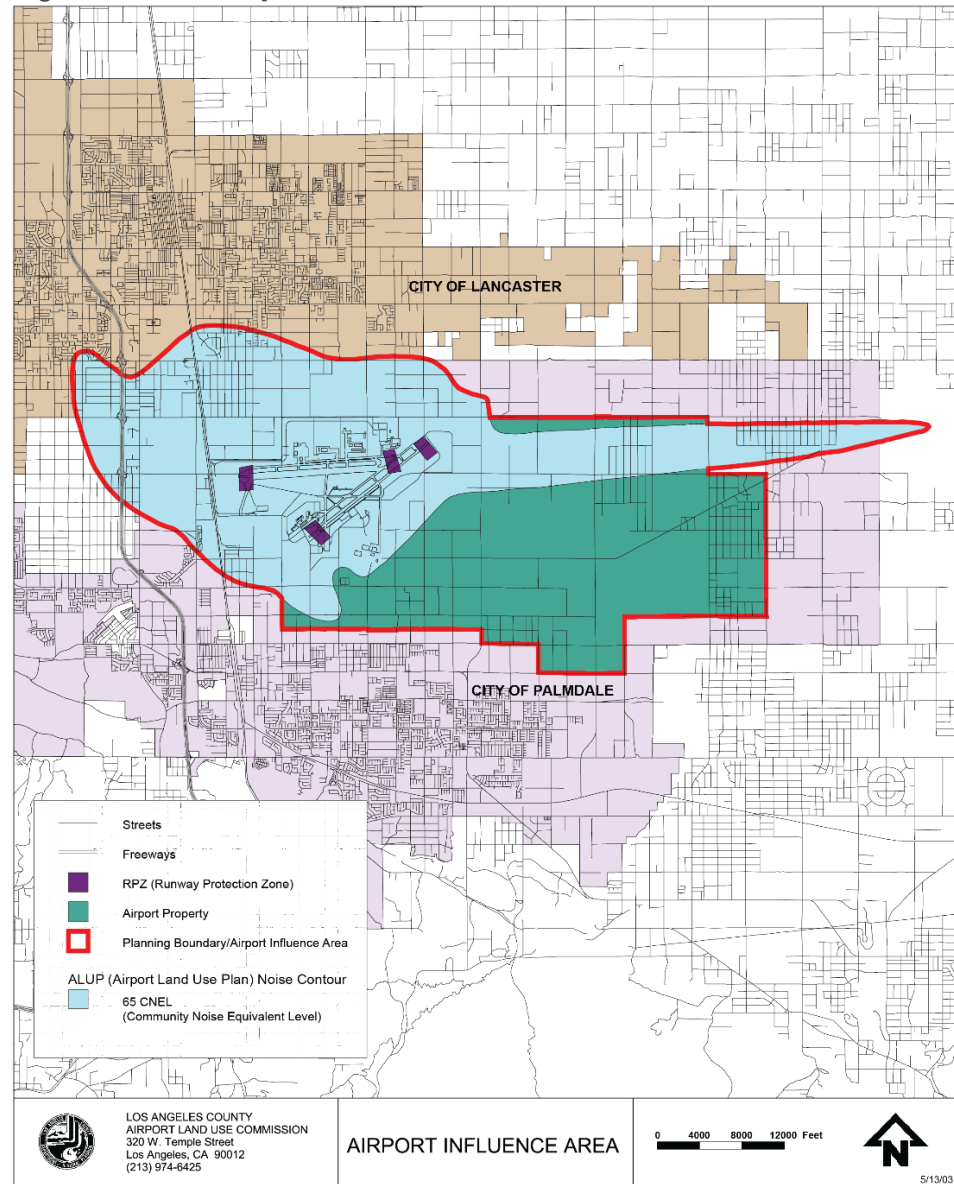
The Palmdale Regional Airport operated on and off for the last 20 years; however, passenger service was suspended in late 2008 due to low volume. In 2013, ownership of the airport building was transferred to the City of Palmdale.

The City of Palmdale also owns a 600-acre plot of land north and west of the perimeter of USAF Plant 42 where the City proposes to develop an air terminal at some point in time (see Figure 8.3). The property is bordered by Avenue M on the north, Sierra Highway on the west and USAF Plant 42 on the south and east. Once the City and the USAF have reached an agreement for access to the runways on Plant 42, the City will develop access routes from a new air terminal facility and access to a taxiway leading directly to the runways.

Boeing Corporation

Defense contractor Boeing Corporation flight tests new and renovated aircraft at Site 1 on USAF Plant 42. During the 1980's, Boeing was part of a team led by Northrop to design and build the B-2 stealth bomber. Boeing built the B-2's outer wing portion, aft center fuselage section, landing gear, fuel system, and weapons delivery system. The first B-2 rolled out of the final assembly facility at Plant 42 in November 1988 and flew for the first time on July 17, 1989. In 1991, the U.S.'s National Aeronautic Association awarded the B-2 design team the Collier Trophy for the greatest achievement in aerospace in America.

Figure 8.5 PMD Airport Influence Area



Source: http://planning.lacounty.gov/assets/upl/project/aluc_airport-palmdale.pdf accessed 12/10/2018, Los Angeles County Department of Regional Planning, Airport Land Use Commission

Lockheed Martin

Lockheed Martin has facilities on Plant 42 at Site 2 (developing the new low boom hypersonic aircraft for NASA) and off-site at Plant 10 (the famed “Skunk Works”). The Skunk Works is a 539.15-acre site located just north and east of the intersection of Avenue P and Sierra Highway with secure access to Plant 42. Lockheed Martin plans to construct an additional one million square feet of floor space at Site 10.

Lockheed Martin is updating their Specific Plan to include expansion plans.

Northrop Grumman Corporation

Northrop Grumman Corporation is expanding its footprint to build the Air Force's new B-21 Raider on USAF Plant 42. Plans include the addition of one million square feet of industrial facilities to the existing aircraft plant (a 50 percent increase).

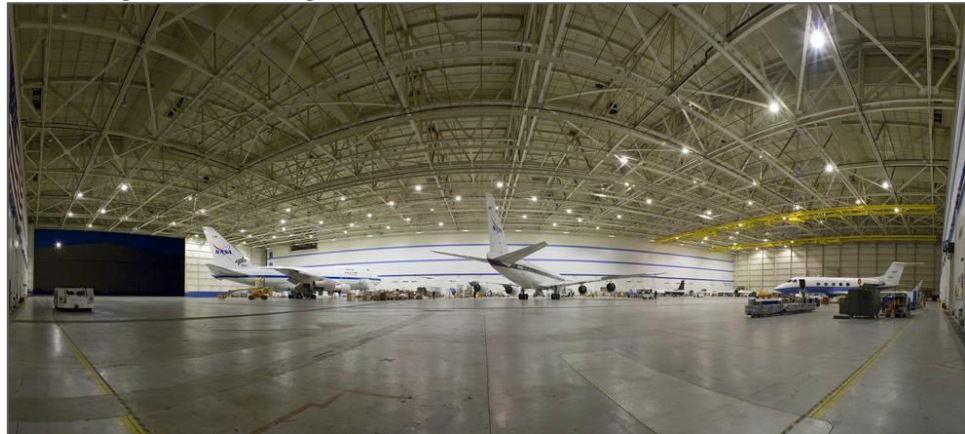
Northrop Grumman also produces high-altitude surveillance drones for the Air Force, the closely related Triton for the Navy, and the center fuselage for Lockheed Martin's F-35 Joint Strike Fighter at the facility.

National Aeronautics and Space Administration (NASA)

The National Aeronautics and Space Administration Armstrong Flight Research Center (AFRC) occupies Plant 9 adjacent to Plant 42. On property owned by the Los Angeles World Airports (LAWA). The LAWA Board of Airport Commissioners endorsed a 20-year lease agreement with NASA in 2007 for use of a large hangar and surrounding acreage.

AFRC Building 703 has direct access to Plant 42 and its runways, subject to Air Force procedures. The building contains about 422,000 square feet of floor space, including 210,000 square feet in the central hangar area and an equivalent amount of office space on four floors.⁵ Figure 8.6 displays the 220,000-square-foot hangar at Building 703 (home base).

Figure 8.6 NASA Armstrong Flight Research Center's 220,000-square-foot Hangar at Building 703



Source: https://www.nasa.gov/centers/armstrong/bldg_703/overview.html accessed 12/5/2018, NASA

Los Angeles Air Route Traffic Control Center (ARTCC)

The FAA's Los Angeles ARTCC is located at the northeast corner of 25th Street East and Avenue P, adjacent to the Palmdale's Blackbird Airpark. The Los Angeles ARTCC is one of 22 air route traffic control centers operated by the FAA. The center controls en-route air traffic over southern and central California, southwestern

⁵ http://www.nasa.gov/center/armstrong/bldg_703/overview.html accessed 11/28/2018, "Building 703 Facilities Overview," February 19, 2015

Nevada, southwestern Utah, western Arizona and portions of the Pacific Ocean Air Defense Identification Zone, with the exception of military airspace and lower-level airspace traffic that is controlled by local airport towers and TRACONS. TRACONS are terminal radar approach controls which handle traffic within a 30-to-50-nautical-mile radius from an airport. The Los Angeles ARTCC is the 10th busiest ARTCC in the United States—between January 1, 2017 and December 2017, the Los Angeles Center handled 2,255,026 aircraft operations.⁶

Aviation Museums/Airparks

The Blackbird Airpark Museum and the adjacent Joe Davies Heritage Airpark (formerly Palmdale Plant 42 Heritage Airpark) display the SR-71, U-2, Century Series fighters and other aircraft that were designed, engineered, manufactured, and flight tested at Plant 42. All aircraft have been carefully restored for public display. The two airparks are located at Avenue P and 25th Street East near the FAA’s Los Angeles Air Regional Traffic Control Center and are free to the public. (See Figure 8.7.)

The Blackbird Airpark Museum is an extension of the museum at Edwards AFB, while the Heritage Airpark is operated by the City of Palmdale. Both are manned by volunteer retirees who previously worked in the aerospace industry.

Figure 8.7 Location of the Blackbird Airpark Museum and Joe Davies Heritage Airpark



⁶ Federal Aviation Administration, (2018), Air Traffic Activity System retrieved from <http://aspm.faa.gov/opsnet/sys/Center.asp>

Los Angeles World Airports (LAWA) Land Holdings

LAWA is the airport authority that owns and operates Los Angeles International Airport (LAX) and Van Nuys Airport (VNY) for the city of Los Angeles, California. Los Angeles World Airports formerly owned and operated Ontario International Airport (ONT) and Palmdale Regional Airport (PMD), and currently provides oversight and operations for a 17,500-acre parcel of land immediately east of USAF Plant 42. Strategic plans for the property are currently undefined.

This area is within unincorporated Los Angeles County and the City of Palmdale's Sphere of Influence. The City's existing General Plan designation for these parcels is Airport and Related Uses and the City's pre-zoning for this area is Pre-Zone Airport Industrial.

Military Readiness

Military readiness activities are defined as:

- Training, support, and operations that prepare the men and women of the military for combat,
- Operation, maintenance, and security of any military installation,
- Testing of military equipment, vehicles, weapons, and sensors for proper operation or suitability for combat use.⁷

Pursuant to Government Code (GC) Section 65302 (a)(2), the land use element of the General Plan “shall consider the impact of new growth on military readiness activities carried out on military bases, installations, and operating and training areas, when proposing zoning ordinances or designating land uses covered by the general plan for land, or other territory adjacent to military facilities, or underlying designated military aviation routes and airspace.” When a development seriously impacts or hinders the capacity of military bases, installations, and operating and training areas to carry out their routine activities, it is considered encroachment.

The land use element is mentioned specifically in the statute, but the other elements of the General Plan including circulation, housing, conservation, open space, noise, safety, environmental justice, and air quality are closely related. Incompatible land use adjacent to military installations can produce serious conflicts, such as:

- Increased interference with air routes and communications through construction of cell towers, wind turbines, power lines, and other structures
- Increased competition for, and interference with, data and communications frequencies
- Displacement of threatened and endangered species to the remaining open space, including military ranges
- Increased need to alter training and testing due to residential neighbors’ concerns about noise and safety
- More rapid depletion of critical ground or surface water supplies, water treatment capacity, and other necessary resources
- Increased air emissions in areas that may have finite air emission thresholds.⁸

Understanding Military Assets and Operations

The military requires and utilizes large expanses of land, air, and sea space beyond installation boundaries to accomplish testing, training, and operational missions. These resources must be available and of a sufficient size, cohesiveness, and quality to accommodate effective training and testing. The demands of maintaining an extended operational reach require that military installations,

⁷ *Community and Military Compatibility Planning, Governor’s Office of Planning and Research, December 10, 2009, updated June 8, 2017*

⁸ *Ibid*

training areas, airspace, and sea space form a network of training and testing assets. This connected system is critical to sustain as requirements and capabilities of weapons and command/control systems continue to advance.

As development moves closer to military operational areas and mission footprints, the coordination required to maintain unencumbered testing and training environments becomes increasingly important. To foster cooperation and minimize encroachment, local governments, landowners, developers and other entities need to understand where the military operates and how they use designated operating areas to sustain military readiness and enhance national security.⁹

The following key terms identify specific issues and concepts encountered in compatibility planning between the City of Palmdale and USAF Plant 42.

Land Space

Installations

An installation is a military base, camp, post, station, yard, center, homeport facility for any ship, or any other activity under the jurisdiction of the Department of Defense (DoD). It may be situated on land owned by the DoD or on leased space that is controlled by or primarily supports the DoD's activities. Installations vary widely in terms of size, type, assigned mission, operational profile, command structure, tenant organizations, assigned personnel loading (both military and civilian), security and access control, and susceptibility to encroachment.

The mission and operational profile for any given installation and their associated operational areas will be the primary factor in determining the susceptibility of the installation to outside encroachment, and the level of concern about compatible land uses beyond the fence line.

Ranges

Testing and training ranges are expansive land areas that are set aside, managed, and used to conduct research, development, test and evaluation (RDT&E) of military munitions, explosives, and weapons systems, and to train military personnel in their use and handling. Ranges are often set up to include firing lines and positions, target arrays, test pads, detonation areas, and impact areas, with buffer zones, restricted access, and exclusionary areas established to promote safety during range operations. Range operations frequently involve intensive aircraft activity and widespread use of air-to-air and air-to-ground weapons throughout restricted airspace overlying the range, as well as ground operations involving tanks and other vehicles, artillery firing, and varying numbers of troops in both small- and large-scale warfighting maneuvers.

Anthropogenic challenges, typically associated with incompatible land use issues related to noise sensitivity, vertical obstructions, light and glare, alternative energy development, unauthorized access, etc., can be mitigated or avoided using

⁹ *Ibid*

collaborative planning efforts. Natural challenges, such as cultural sites, air quality, water quality, threatened and endangered species, and marine environments, can also present resource management challenges and regulatory constraints on range use.

Encroachment Planning Areas and Safety Buffers

Military Influence Area (MIA)

An MIA is a geographic planning area where military operations may impact the local community and, conversely, where local conditions may affect the military's ability to carry out its mission. The development of an MIA considers the current land uses and future development goals of a local community as well as the current and future operational characteristics and requirements of a military installation, range, or other training area. The purpose of establishing an MIA is to identify a focus area for effective implementation of planning strategies and land use controls that will help avoid or reduce encroachment by minimizing the influence of specific types of encroachment challenges.

Explosive Safety Quantity Distance (ESQD) Arcs

ESQD Arcs are a very specific safety zone for explosives. They vary in size and shape according to the quantity of explosive material and distance separation relationships that provide definitive types of protection. These relationships are based on the level of risk considered acceptable for each stipulated exposure. Separation distances are not absolute safe Generic ESQD Arc distances but are relative protective or safe distances. ESQD arcs are required to be contained entirely within installation or range boundaries.

Surface Danger Zone (SDZ)

Every weapon system and the ammunition/ordnance related to that weapon system requires a danger zone. Danger zones are three-dimensional areas derived from computer modeling and/or laboratory data. The size and shape of a danger zone are dependent on the performance characteristics of the weapon system, ammunition, training requirements, geographical location, and environmental conditions. Surface danger zones are exclusion areas that delineate the land footprint and overlying airspace in which personnel and/or equipment may be endangered by ground weapons firing or demolition activities. Surface danger zones are designed to make the probability of hazardous fragment or round escapement from installation boundaries unlikely and to minimize the danger to the public, installation personnel, facilities/equipment, or property. They are factored into decisions about where to establish live-fire areas and necessary buffer zones relative to the boundary of a range or installation to ensure that munitions and projectiles will not land outside the installation.

Weapons Danger Zone (WDZ)

A WDZ is a type of danger zone that encompasses the ground and airspace for lateral and vertical containment of projectiles, fragments, debris, and components from aviation delivered ordnance. This three-dimensional zone accounts for weapon accuracy (failures, ricochets, etc.) of a specific weapon/munition type delivered by a specific aircraft type. WDZs represent the minimum safety requirements designed for aviation weapons training on DoD

ranges and are calculated using sophisticated models to promote the safest testing and training environment possible.

Airfields

An airfield is a specific land use within some military installations that is designed for the accommodation, landing, and take-off of aircraft. Beyond the runway area, there are multiple safety zones with graduated restrictions on development to maintain a pristine operating area for the pilots, personnel on the ground, and aircraft. Surrounding the primary surface of an airfield are two different sets of airspace designations: accident potential zones (APZs) and imaginary surfaces. Accident potential zones (clear zones and accident potential zones I and II) are based on historical accident and operations data throughout the military and the application of margins of safety within those areas (which have been determined to be potential impact areas) if an accident were to occur. Imaginary surfaces are established in relation to airfields and runways to define volumes of airspace in order to conduct safe and unobstructed flight operations. Imaginary surfaces represent well-established criteria for air installations. Height restrictions of natural and anthropogenic structures proximate to military airports should be controlled to prevent obstructions to air navigation associated with airfield operations.

Clear Zones (CZ)

Clear zones are the area of highest accident potential beginning at the runway threshold and extending 3,000 feet. The width of the CZ is based on the class of runway.

Accident Potential Zone (APZ)

Accident potential zones are the areas immediately beyond the end of the clear zone that possess a high potential for accidents. The accident potential of each zone declines with distance. Accident potential zone I extends from the clear zone an additional 5,000 feet. Accident potential zone II extends an additional 7,000 feet beyond APZ I.

Approach Clearance Surface

This surface is symmetrical around the centerline of the runway and begins as an inclined plane 200 feet beyond, and at the centerline elevation of, the end of the runway and extends at a slope of 50:1 to an elevation of 500 feet above the established runway elevation. The surface continues horizontally at this elevation to a point 50,000 feet beyond the end of the runway. The surface is 2,000 feet wide at the end of the runway and flares uniformly to a width of 16,000 feet at 50,000 feet from the end of the runway.

Airspace

Designated areas of airspace are critical for military testing and training. Airspace corridors are also needed to provide airspace connectivity to and from military installations and operating areas.

Airspace Classification

“Controlled” and “uncontrolled” airspace are generic terms that broadly cover all airspace. These refer to the level of air traffic control required to operate within the airspace. Most controlled airspace has specific, predetermined dimensions whereas uncontrolled airspace can be of almost any size. Airspace classes are Class A, B, C, D, E, F and G. Class G is the only class of uncontrolled airspace. The airspace surrounding Plant 42 is Class D. Generally, Class D airspace is the space that surrounds airports that have an operating air traffic control tower, but does not have radar services (or at least the airport is not required to have radar). Class D airspace extends from the surface to 2,500 feet above the airport field elevation.

R-2508 Complex

The R-2508 Complex includes all airspace and associated land presently used and managed by the three principal military activities in the Upper Mojave Desert Region: the 412th Test Wing at Edwards AFB, the National Training Center at Fort Irwin, and the Naval Air Warfare Center Weapons Division at China Lake. Figure 8.3, shown previously, illustrates the R-2508 airspace complex. The R-2508 Complex provides the largest single area of special use airspace over land in the United States, covering 20,000 square miles. The complex consists of six restricted areas, 10 military operations areas, 10 air traffic control assigned airspace areas, controlled firing areas, and other special airspace.

Special Use Airspace (SUA)

The special use airspace (SUA) designation alerts users about areas of military activity, unusual flight hazards, or national security concerns and is used to segregate that activity from other airspace users. Special use airspace is established by the Federal Aviation Administration. Types of SUAs include restricted areas, warning areas, military operating areas, and military influence areas.

Restricted Areas

Restricted areas allow for the use of weapons for training and testing purposes. These areas are necessary for ground weapons and artillery firing, aerial gunnery, live and inert practice bomb drops, and guided missile testing. Restricted areas provide locations for training and testing to support combat readiness of aviation and ground combat units while separating these activities from the public and general aviation users.

Warning Areas

A warning area is airspace established for military use over domestic or international waters. These airspace areas are similar to a combination of restricted areas and military operating areas because the activities that occur can be hazardous, non-hazardous, or both. Within these areas, the military can conduct major exercises using aircraft performing an array of training and testing activities, such as aerial gunnery, guided missile exercises, and practice interceptions.

Military Operating Area (MOA)

A military operating area (MOA) is a three-dimensional airspace designated for military training and transport activities that has a defined floor (minimum

altitude) and ceiling (maximum altitude). Within Los Angeles County, there are several MOAs used by military aircraft to practice high and low altitude training exercises and travel routes between military installations. In addition to maintaining military readiness in the air, these areas are used to train student pilots. Testing is conducted to maintain military readiness.

In the R-2508 Complex, the MOAs range from 200 feet above ground level to the maximum ceiling of 17,999 feet above mean sea level (MSL). The minimum altitude varies above populated areas and wilderness areas.

Plant 42 is in the “Isabella” MOA, which covers the area from Rosamond (State Route 14) to Mojave, to California City, to Inyokern Airport and west toward the Tehachapi Pass. The southeast portion of the Isabella MOA is a high-density traffic area where a large variety of missions are conducted by multiple platforms simultaneously. These activities include, but are not limited to, air-to-air refueling in the Isabella Refueling Area, Edwards AFB arrival and departure traffic, Superior Valley Transitions, Plant 42 arrival and departure traffic, unmanned aerial vehicle and rocket operations, and Mojave Test Pilot School operations.

Military Influence Area (MIA)

An MIA is an official geographic planning or regulatory area where military operations impact local communities, and conversely, where local activities may affect the military’s ability to carry out its mission. Figure 8.1, shown previously, illustrates the MIA in the vicinity of Palmdale, California.

Air Traffic Control Assigned Airspace (ATCAA)

The air traffic control assigned airspace (ATCAA) is used to fill the airspace gap between the top of the MOA (Flight Level (FL) 180 or 18,000 feet) and the base of R-2508 (FL 200 or 20,000 feet). When R-2508 is not activated for military use, the ATCAAs may extend upward to FL 600 (60,000 feet). Air Traffic Control Assigned Airspaces are also located above the peripheral MOAs, outside the lateral boundaries of R-2508, to provide additional work areas up to FL 600 for segregation of military operations from instrument flight rules (IFR) traffic (comprised of commercial and general aviation users).

Military Training Routes (MTRs)

Military Training Routes are similar to complex systems of interrelated and interdependent highways in the sky that connect military installations, ranges, and operation areas. They are used by the DOD to conduct low-altitude navigation and tactical training at airspeeds in excess of 250 knots and at altitudes as low as just above surface level. These low-level, high-speed routes allow pilots to develop the skills necessary to avoid detection by enemy radar. In California law (AB 1108, Pavley, Chapter 638, Statutes of 2002), a low-altitude MTR is defined as a route where aircraft operate below 1,500 feet above the mean sea level (MSL).

Challenges to Sustaining Military Readiness

Anthropogenic Challenges¹⁰

Most compatibility challenges that contribute to encroachment are anthropogenic. They can include issues originating from the civilian community that impact military readiness and/or issues generated from military activities that can impact a community's development patterns and quality of life. The City of Palmdale already considers compatibility when establishing zoning ordinances (e.g., to avoid placing residential developments too close to industrial areas). Likewise, the DoD has compatible land use standards around airfields relative to noise and safety issues.

Sensitive Land Uses

Sensitive land uses may include residential housing, schools, nursing homes, retirement communities, and health care facilities, among others. The most common sensitivity relative to military activities are concerns about noise and safety in the vicinity of installations. As these land uses become more prevalent in a high-noise area and public complaints about military noise sources increase, impacts to military operations and readiness may include the creation of avoidance areas, prohibition of training events, restricted flight altitudes/airspeeds/timing, and suspensions or delays in conducting testing or training events. Sensitive land uses in the area immediately surrounding USAF Plant 42 include the following health care facilities and schools:

- Palmdale Regional Medical Center
- Antelope Valley Urgent Care
- South Valley Health Care Center
- Los Angeles County Children's Services
- Just Plane Kids Preschool.

Most USAF Plant 42 flights take off to the east and land along the same flight path. The health care facilities and schools named above are all situated to the south, west and north of USAF Plant 42, alleviating safety, and noise concerns.

Vertical Obstructions (Height of Structures)

The height of buildings and other structures may encroach into the navigable airspace used by military operations (airfield surfaces, SUAs, MTRs, radar operations), presenting a safety hazard to both the public and military personnel and potentially impacting military readiness. Designated airspaces defined by SUAs and MTRs are intended to give pilots safe, navigable airspace to conduct training while limiting potential harm to themselves or those on the ground.

Noise

The central issue of noise is the impact, or perceived impact, on people, animals (both wild and domestic), structures, and land use. Exterior noise can have a significant impact on human activity, health, and safety. The magnitude of the

¹⁰ *California Advisory Handbook for Community and Military Compatibility Planning*, 2016 Update, Governor's Office of Planning and Research, State of California

noise problem, resulting complaints, pressure to modify or suspend operations, and threats of litigation are directly related to the degree to which there are people, wildlife, and noise-sensitive land uses in the vicinity of military installations, ranges, airfields, SUAs, and MTRs. See *Noise Due to Aircraft Operations* on page 8-25 for more information. *Chapter 13: Noise* contains noise contour maps illustrating areas of impact.

Vibration

Vibration generated from military aircraft and ground training exercises can impact buildings and other structures. In some cases, vibration impacts from these exercises can occur in areas where a military presence may not be obvious, such as under SUAs and MTRs. In addition, vibration from industrial land uses adjacent to an installation may impact the development and testing of sensitive equipment. These impacts can compromise the development of new technologies and inhibit new tactics.

Dust and Sand

Dust can reduce visibility and thereby impact military operations. While air quality impacts are usually temporary and intermittent, the fact that they are unpredictable can create concerns for pilots. Palmdale is situated in California's High Desert, which experiences dust and sand storms severe enough to shut down local roads due to poor visibility.

Light and Glare

Light sources from commercial, industrial, and residential uses at night can cause excessive glare and illumination, which impact the use of military night vision devices, nighttime aircraft operations and other light-sensitive activities. Light emissions, either direct or indirect (reflective) could interfere with pilot vision. Conversely, nighttime military operations may disturb the community.

Public Trespassing

Military areas that are located on other federal lands or are adjacent to federal lands designated for public recreation often experience issues related to public trespassing into training ranges and other areas with safety hazards related to military operations. When trespassing occurs within these areas, military training and operations can be suspended from a few hours to several days.

Alternative Energy Development

With natural resources become increasingly scarce, there is an increased need to develop alternative energy sources to meet energy needs. Renewable energy is a national imperative, as well as a national security issue. However, renewable energy, whether developed on or off DoD land or waters, has the potential to negatively impact critical test and training missions. Renewable energy comes in many forms including wind, solar, geothermal, hydrologic, and biomass. Alternative energy sources are often located in open areas where military operations might also occur. Impacts to military operations may include reduced operational security, training distractions, and reduced training flexibility as a

result of factors such as noise, light pollution and glare, increased human presence, vertical obstructions, and radar interference.

An example of a conflicting energy use is a wind energy farm consisting of tall wind turbines that might obstruct the military airspace. Some types of solar facilities incorporate towers more than 600 feet tall, and some facilities have been planned with towers more than several thousand feet tall. Glint/glare from solar facilities could cause unwanted visual impacts to pilots from flash blindness to retinal burn.

All renewable energy plants require transmission lines, which can limit the military's ability to fly at low altitude in those areas, create electromagnetic interference, and limit buffer zones. All renewable energy projects should be coordinated with military planners from the early stages of planning and with the City to evaluate any impacts.

Frequency Spectrum Impedance and Interference

In carrying out readiness activities, the military relies on a range of frequencies for communications and support systems. Public uses also rely on a range of frequencies to support daily life. As the use of the frequency spectrum increases (such as the rapid increase in cellular phone technology) and as development expands near military installations and operating areas, the issue of frequency spectrum impedance, interference, and competition increases.

Key issues to consider relative to frequency spectrum impedance include the construction of buildings or other facilities that block or impede the transmission of signals from antennas, satellite dishes, or other transmission/reception devices affected by line-of-sight requirements. Some transmission/reception devices have what are called "look angles." Look angles relate to a transmission or reception source that is targeted to another device in a specific direction and angle (both horizontal and vertical). For some systems, this look angle is fixed (like a microwave relay tower); for others, such as a satellite tracking facility, the look angles change over time.

Frequency interference is related to other transmission sources. Interference can result from a number of factors, including new transmissions using a frequency that is near an existing frequency, moving an antennae transmitting on a similar frequency to a closer location, increasing the power of a similar transmission signal, use of poorly adjusted transmission devices that transmit outside their assigned frequency, or production of an electromagnetic signal that interferes with a signal transmission.

Local Housing Availability

Plant 42 currently has no on-base housing. Given the high cost of living in California, and limited housing supplies in some areas, it may be difficult for military personnel to find affordable housing in neighboring communities. Also, changes in personnel assigned to an installation can impact local housing supplies. For instance, a large reduction in personnel of a certain type (e.g., unaccompanied personnel or married personnel or a large deployment) may

reduce demand in the market for a period of time, thereby affecting local housing prices. The opposite occurs when increases result in short- to long-term shortages of housing and increases in prices.

Infrastructure Extensions

Infrastructure plays an interesting role in compatibility. In many areas, the DoD is looking at the viability of obtaining infrastructure services from off-installation providers. For instance, an installation may look at connecting to a community's water system instead of operating an independent system of wells, storage, and treatment facilities on the installation. For this to work, the installation needs to work with communities, service districts, and other utility providers to ensure that adequate plans are in place to service future demand.

Another example of coordinated planning relates to roadway systems. The military and local governments can work together to plan for adequate capacity and to deal with issues such as delays at installation entrance gates.

The extension or expansion of infrastructure to the installation, or to areas near an installation, also raises the issue of growth inducement. If infrastructure is extended toward military areas, growth may be directed to these areas, causing a potential conflict with sustaining military readiness.

Anti-Terrorism Force Protection Requirements

Since September 11, 2001, military installations have been required to meet new restrictive standards for anti-terrorism and force protection. Among these new standards are new entry gate design criteria and vehicle search procedures for all military installations. These new design standards have created long queues that can impact local roadways and circulation adjacent to some installations and ranges. Land development and structures adjacent to military installation perimeters can, without coordination, cause challenges with antiterrorism and force protection measures ultimately putting the installation and local community at risk. Coordination between the local community and the military installation is necessary to work proactively to avoid or mitigate these types of situations.

Natural Challenges

In addition to anthropogenic compatibility factors, natural compatibility factors also are potential sources of conflict with military readiness activities. Natural challenges are not as easily mitigated because they are not predictable. However, advance planning may minimize impacts when conflicts arise.

Threatened and Endangered Species

Development near military installations or operating areas can cause the natural areas being managed by the military to become the last refuge for wildlife and native vegetation. The diminishing quantity and quality of habitat in a developing area increases the value of the habitat on the military lands. As development continues, regulations designed to protect species and habitat can reduce the military value of the installation, range, or special use airspace by limiting the types of permissible activities in terms of composition, magnitude, or timing.

Air Quality

As a federal agency, the military is required to conform to the CAA, which is governed in California by the California Air Resources Board. Air quality permits are issued at a regional level by the Regional Air Quality Control Boards. Air quality issues, such as dust and exhaust generated from testing and training operations, can impact adjacent communities. When these air impacts are generated by operational, training, and testing missions in nonattainment areas, conformance with individual State Implementation Plans can restrict existing mission requirements or preclude the execution of new missions or the deployment and use of new weapon platforms. Locally, the Antelope Valley Air Quality Management District (AVAQMD) has primary authority for air quality. AVAQMD regulates stationary source and construction air pollutant emissions. Regional planning and attainment of air quality goals also involve air quality agencies in neighboring San Bernardino, Kern, and Riverside counties.

Water Quality

Discharge permit requirements and prohibited or restricted access to wetlands or their buffer zones can restrict existing mission training, preclude or restrict the integration of new technology and weapons systems into existing missions and training, or prevent the future growth and execution of new missions in amphibious, riverine, estuarine, and other salt and fresh water areas.

The historic uses of Plant 42 resulted in polluted soil and groundwater in some areas. Plant 42 has been subject to multiple hazardous materials cleanup plans including remediation of contaminated soils and groundwater. For example, in the last decade, Plant Site 1 underwent a groundwater remediation action to remove trichloroethylene using an extraction, treatment, and reinjection method. Currently, several monitoring wells in the mid-airfield area are actively tracking groundwater transport of soil pollution.

Well Water Production withdrawals for AFP-42 and Edwards AFB from the underground aquifer for the Air Force is limited by the Antelope Valley Well Water Production Adjudication Agreement.

Department of Defense Land Use Compatibility

The Air Installation Compatible Use Zone (AICUZ) is a DoD-developed program to protect aircraft operational capabilities at its military airfields, assisting local government officials in protecting and promoting the public health, safety and quality of life. The goal of the program is to promote compatible land development in areas subject to increased noise exposure and accident potential from ongoing aircraft operations, as well as to protect military airfields and navigable airspace near them from encroachment by incompatible uses and structures.

Air Space Control Surfaces, Land Use Hazards, and Controlled Air Space

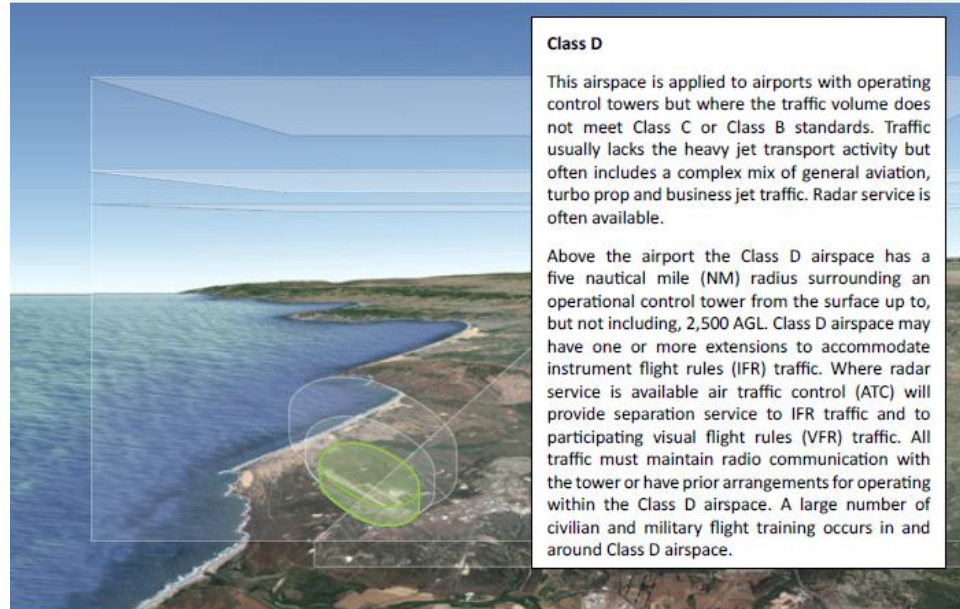
The first constraint affecting flight operations, air space control surfaces and land use hazards, is defined as areas identified by the FAA and DoD where height limitations on structures exist to prevent obstructions to air navigation. The following uses should be restricted or prohibited in the vicinity of any airfield.

- Uses that result in structures whose height compromise the ability of aircraft to land in adverse weather or to safely conduct military training maneuvers.
- Uses which release into the air any substance which would impair visibility or otherwise interfere with the operation of aircraft (i.e., steam, dust, or smoke from industrial operations).
- Uses which produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.
- Uses which produce electrical emissions which would interfere with aircraft communications systems or navigational equipment.
- Uses which would attract birds or waterfowl including, but not limited to, operation of sanitary landfills, maintenance of feeding stations, sand and gravel dredging operations, storm water retention ponds, created wetland areas, or the growing of certain vegetation.
- Uses that provide for structures within ten feet of aircraft approach-departure and/or transitional surfaces outlined above.

Plant 42 lies within controlled airspace, specifically the Class D airspace associated with the air traffic control (ATC) tower at Plant 42. See Figure 8.8 for a description of Class D airspace as provided in the *California Advisory Handbook for Community and Military Compatibility Planning* published by the Governor's Office of Planning and Research. This airspace extends outward from the center of the airfield 4.3 nautical miles and upward from the surface to 5,000 above MSL (approximately 2,500 feet above ground level). The term "controlled airspace" refers to airspace within which aircraft separation is provided by the FAA or Air Force controllers. Access to this airspace requires establishing two-way communication prior to entry. The communication requirement allows ATC to provide in-flight separation service to aircraft operating instrument flight rules, permitting operations to occur during periods of less favorable weather as well as runway separation service (clearance to land or take off) to aircraft operating

under visual flight rules during periods of good weather. Other controlled airspace in the area includes Class D areas of similar size and shape associated with the control towers at General Williams Fox Field and Edwards AFB.

Figure 8.8 Class D Airspace



Source: *California Advisory Handbook for Community and Military Compatibility Planning*, 2016 Update, Governor's office of Planning and Research, State of California, 2016

Apart from airspace designated for purposes of providing air traffic control services, the FAA designates special use airspace to segregate activities that may be hazardous (Restricted [R-] Areas) or have unusual levels or types of flight maneuvers (Military Operations Areas [MOA]). The nearest special use airspace to Plant 42 are the Restricted Areas and MOAs associated with Edwards AFB.

Noise due to Aircraft Operations

The second constraint regards the potential effects from noise exposure resulting from aircraft overflight and ground engine runs. The DoD metric for noise is expressed in terms of the DNL (day-night average sound levels). The DNL metric is the average noise level over a 24-hour period with a 10 dB increase made for events occurring between 10:00 p.m. and 7:00 a.m. California adopted an alternative aircraft noise metric, CNEL (community noise equivalent level). The difference between DNL and CNEL is that DNL employs two time periods, while CNEL employs three time periods. In California, a 5 dB increase is made for events that occur between 7:00 and 10:00 p.m. (evening). Like the DNL, the CNEL increases by 10 dB between the hours of 10:00 p.m. and 7:00 a.m. (nighttime).

No persons are exposed to a DNL of 65 dB(A) or greater. The total land area underlying an area of noise exposure of 65 dB(A) DNL or greater is 2,897 acres, with 1,084 of those acres located off base (in the area surrounding Plant 42).

Chapter 13: Noise contains noise contour maps illustrating areas of impact.

Clear Zones and Accident Potential Zones

Areas around military airfields are exposed to the possibility of aircraft accidents. While the maintenance of aircraft and training of aircrews are rigorous, military flights at Plant 42 are primarily for flight test and proficiency training. Accidents occur. Accidents of military aircraft differ from accidents of commercial air carriers and general aviation due to the variety of aircraft flown, the type of missions and the number of training flights.

Based on an analysis of 834 Air Force accidents at Air Force bases between 1968 and 1995, within 10 miles of the associated base, three planning zones were established: the control zone (CZ), the accident potential zone I (APZ I), and the accident potential zone II (APZ II).

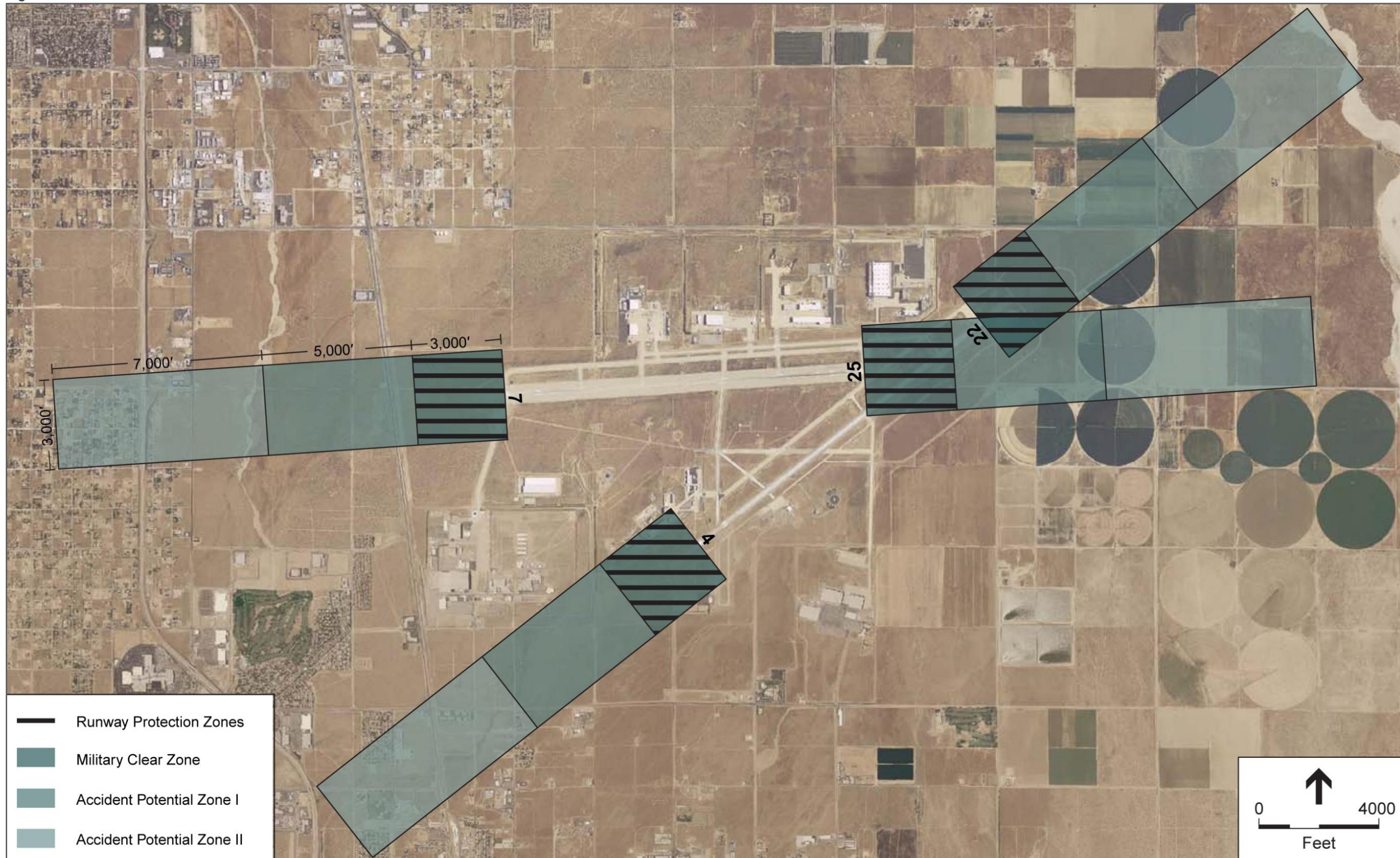
Each end of runway has a CZ that starts at the runway threshold and extends outward 3,000 feet (see Figure 8.9). The width of the CZ is based on the class of the runway. Of the three safety zones, the CZ has the highest potential for accidents (27 percent of the accidents studied). The Air Force has adopted a policy of acquiring property rights through purchase or easement to areas designated as CZs.

The APZ I extends outward from the CZ an additional 5,000 feet. This area has a significant, though reduced, accident potential (10 percent of the accidents studied). The APZ I is 3,000 feet wide and 5,000 feet long beginning 3,000 feet from the runway endpoint along and centered on the extended runway centerline.

The APZ II extends from the outer end of the APZ I an additional 7,000 feet. This is an area having a lesser, but still significant potential for accidents (five percent of the accidents studied). The APZ II is 3,000 feet wide and 7,000 feet long beginning 8,000 feet from the runway endpoint along and centered on the extended runway centerline.

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Figure 8.9 Plant 42 Clear Zones and Accident Potential Zones I and II



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While the aircraft accident potential in APZs I and II does not warrant land acquisition by the Air Force, land use planning and controls are strongly encouraged in these areas for the protection of the public. Of the Air Force accidents studied, 15 percent occurred in APZs I and II. The area extending 1,000 feet out from each side of the runway centerline for the length of the runway accounted for 25 percent of the accidents analyzed. The remaining 33 percent occurred outside APZ II but were dispersed within 10 miles of the associated airfield.

Plant 42 CZs and APZs are based on the configuration of the runways (see Figure 8.9). Just as population estimates and areas were derived within noise contours, population and areas associated with CZs and APZs can be estimated. It is estimated that no persons reside within the CZs or APZIs for either Runway 04/22 or for Runway 07/25; however, 564 persons are estimated to reside within the APZIIIs associated with Runway 04/22 and 268 persons reside within the APZIIIs associated with Runway 07/25.

Legislative Drivers for Military Readiness Planning¹¹

The general plan must consider the impact of any new development on military readiness activities carried out on military bases, installations, and in operating and training areas. The following is an overview of existing Federal legislation, State legislation, and local goals, objectives, and policies that impact military readiness planning.

Federal Regulations

Federal Aviation Regulation 49 CFR Part 77

Establishes (a) the requirements to provide notice to the FAA of certain proposed construction, or the alteration of existing structures; (b) the standards used to determine obstructions to air navigation, and navigational and communication facilities; (c) the process for aeronautical studies of obstructions to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and (d) the process to petition the FAA for discretionary review of determinations, revisions, and extensions of determinations.

Refer to <https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=14:2.0.1.2.9> for the entire regulation.

Assembly and Senate Bills

AB 1108

Requires a CEQA lead agency to submit notices to the military service if a project includes a general plan amendment and is within specific boundaries of a low-level

¹¹http://oper.ca.gov/docs/2016_CA_Handbook_Final.pdf accessed 11/27/2018, "California Advisory Handbook for Community and Military Compatibility Planning," 2016 Update, Governor's Office of Planning and Research

flight path, military impact zone, or special use airport. Amends Section 21083.9 of and adds Sections 21098 and 21098.1 to the Public Resources Code.

California Assembly Bill (AB) 1108 (Chapter 638, Statutes of 2002) amends CEQA law to require CEQA lead agencies to notify military installations when a project meets certain criteria. The criteria include property located within an established operational area, a general plan amendment, or is of statewide, regional, or area-side significance, or is required to be referred to the local ALUC. The purpose of AB 1108 is to ensure military notification of proposed projects potentially impacting military operations through the CEQA process.

AB 1108 amends CEQA to provide military agencies with early notice of proposed projects within two miles of installations or underlying training routes and special use airspace (SUA).

AB 2776

Provides for real estate disclosure for residences with airport influence areas.

The Aviation Noise Disclosure legislation (AB 2776) was passed in the 2002-2003 regular legislative session and was signed by the Governor. It amends the real estate disclosure statute (California Civil Code, Division 2 – Property, Part 4 – Acquisition of Property, Title 4, Chapter 2 – Transfer of Real Property) to require sellers or lessors to disclose the fact that a house for sale or lease is near an airport if the house falls within an airport influence area (that could be several miles from an existing or proposed airport). An airport influence area is defined as the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. The intent of the legislation is to notify buyers that they could experience airport noise, vibration, odor, annoyances, or other inconveniences at some time in the future as a result of the normal operation of an existing or proposed airport.

SB 1462

Requires the planning agency, during preparations to adopt or substantially amend a general plan, to refer the proposed action to branches of the U.S. Armed Forces when the proposed action lies within 1,000 feet of a military installation, within special use airspace, or beneath a low-level flight path. Amends Sections 65352, 65404, 65940, and 65944 of the Government Code.

In 2004, SB 1462 (Kuehl, Chapter 907, Statutes of 2004) expanded the requirements for military notifications regarding proposed development and planning activities. This law requires that before a legislative body adopts or substantially amends a general plan, the planning agency shall notify a designated point of contact at the applicable military branch when a proposed project is located:

- Within 1,000 feet of a military installation
- Beneath a low-level flight path
- Within special use airspace (Government Code 65352(a)(6)).

The military is responsible for providing the Governor’s Office of Planning and Research with electronic maps of SUA, low-level flight paths, and military installations. The Office of Planning and Research is then responsible for notifying cities and counties about how to access the information via the Internet.

SB 1462 also requires local jurisdictions to revise their application checklists to require the applicant to identify when a proposed project is located within one of the three areas identified above (Government Code 65940(b)). In turn, the local jurisdiction is required to provide a copy of the completed application to the affected branches of the United States Armed Forces (Government Code 65944(d)). Any branch of the United States Armed Forces is authorized “to request consultation” to avoid potential conflict and to discuss “alternatives, mitigation measures, and the effects of the proposed project on military installations.” SB 1462 also requires military review of proposed actions potentially impacting mission operations of the installation.

In compliance with SB 1462, the military provided electronic maps of SUAs, low-level flight paths, and military installations to assist local governments in complying with SB 1462. A simple to use project locator (the California Military Land Use Compatibility Analyst or CMLUCA) was developed by the California Natural Resources Agency in conjunction with OPR. This project locator tool is available for use by local planners, permit applicants and developers to easily determine if a project triggers military notification. CMLUCA also allows local governments to map military airspace routes within their boundaries.¹²

SB 1468

Requires specified elements (land use, open space, circulation) to incorporate consideration of military facilities and readiness activities. SB1468 also requires that in counties with a military airport, the county’s general plan and any applicable specific plans be consistent with safety and noise standards in the Air Installation Compatible Use Zone prepared for that military airport. Amends Sections 65040.2, 65302, 65302.3, 65560, and 65583 of, and adds Section 65040.9 to the Government Code, amends Section 21675 of the Public Utilities Code.

SB 1468 (Knight, Chapter 971, Statutes of 2002) requires cities and counties to consider military readiness challenges ... in their general plans and to ensure early and systematic awareness of potential land use conflicts. The purpose of SB 1468 was to address the need for better collaborative planning between local jurisdictions and military installations and operational areas. The goal of SB 1468 is to “integrate balanced and compatible land use development in areas where military readiness activities occur. This would include military installations, ranges, and associated airspace.” Any development that seriously impacts or hinders the capacity of military bases, installations, and operating and training areas to carry out their routine activities is considered “encroachment” or

¹² *Community and Military Compatibility Planning, Governor’s Office of Planning and Research, December 10, 2009, updated June 8, 2017*

incompatible land use. Incompatible land use adjacent to military installations can produce serious conflicts, such as:

- Increased interference with air routes and communications through construction of cell towers, wind turbines, power lines, and other structures
- Increased competition for, and interference with, data and communication frequencies
- Displacement of threatened and endangered species to the remaining open space, including military ranges
- Increased need to alter training and testing due to residential neighbors' concerns about noise and safety
- More rapid depletion of critical ground or surface water supplies, water treatment capacity, and other necessary resources
- Increased air emissions in areas that may have finite air emission thresholds.

Government Code §65352, §65404, §65940, and §65944, amended by Senate Bill 1462 (Kuehl 2004) requires local planning agencies to notify the military whenever a proposed development project or general plan amendment meets one or more of the following conditions:

- Is located within 1,000 feet of a military installation
- Is located within special use airspace
- Is located beneath a low-level flight path.

State Regulations

65302(a)(2)

Considers the impact of new growth on military readiness activities carried out on military bases, installations, and operating and training areas, when proposing zoning ordinances or designating land uses covered by the general plan for land, or other territory adjacent to military facilities, or underlying designated military aviation routes and airspace.

The general plan shall include a statement of development policies and a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals. The plan shall include the following elements:

(a) A land use element that designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, greenways, as defined in Section 816.52 of the Civil Code, and other categories of public and private uses of land. The location and designation of the extent of the uses of the land for public and private uses shall consider the identification of land and natural resources pursuant to paragraph (3) of subdivision (d). The land use element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall identify and

annually review those areas covered by the plan that are subject to flooding identified by flood plain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources. The land use element shall also do both of the following: ...

(2) Consider the impact of new growth on military readiness activities carried out on military bases, installations, and operating and training areas, when proposing zoning ordinances or designating land uses covered by the general plan for land, or other territory adjacent to military facilities, or underlying designated military aviation routes and airspace.

(A) In determining the impact of new growth on military readiness activities, information provided by military facilities shall be considered. Cities and counties shall address military impacts based on information from the military and other sources.

(B) The following definitions govern this paragraph:

(i) "Military readiness activities" mean all of the following:

(I) Training, support, and operations that prepare the men and women of the military for combat.

(II) Operation, maintenance, and security of any military installation.

(III) Testing of military equipment, vehicles, weapons, and sensors for proper operation or suitability for combat use.

(ii) "Military installation" means a base, camp, post, station, yard, center, homeport facility for any ship, or other activity

under the jurisdiction of the United States Department of Defense as defined in paragraph (1) of subsection (g) of Section 2687 of Title 10 of the United States Code.

65352(a)(5) and 65352(a)(6)(A)

Ensures early notification to the military of proposed discretionary development projects within Military Operating Areas (MOAs), California Government Code §65352 (a)(5) and (6)(A) require the exchange of project related information pertinent to military operations.

(a) Before a legislative body takes action to adopt or substantially amend a general plan, the planning agency shall refer the proposed action to all of the following entities: ...

(5) A federal agency, if its operations or lands within its jurisdiction may be significantly affected by the proposed action, as determined by the planning agency.

(6) (A) The branches of the United States Armed Forces that have provided the Office of Planning and Research with a California mailing address pursuant to subdivision (d) of Section 65944, if the proposed action is within 1,000 feet of a military installation, or lies within special use airspace, or beneath a low-level flight path, as defined in Section 21098 of the Public Resources Code, and if the United States Department of Defense provides electronic maps of low-level flight paths, special use airspace, and military installations at a scale and in an electronic format that is acceptable to the Office of Planning and Research.

65940

Ensures early notification to the military of proposed discretionary development projects within Military Operating Areas (MOAs), California Government Code §65940 requires the exchange of project related information pertinent to military operations. (Amended by Stats. 2004, Ch. 906, Sec. 4. Effective January 1, 2005.)

(a) Each state agency and each local agency shall compile one or more lists that shall specify in detail the information that will be required from any applicant for a development project. Each local agency shall revise the list of information required from an applicant to include a certification of compliance with Section 65962.5, and the statement of application required by Section 65943. Copies of the information, including the statement of application required by Section 65943, shall be made available to all applicants for development projects and to any person who requests the information.

(b) (1) The list of information required from any applicant shall include, where applicable, identification of whether the proposed project is located within 1,000 feet of a military installation, beneath a low-level flight path or within special use airspace as defined in Section 21098 of the Public Resources Code, and within an urbanized area as defined in Section 65944.

(2) The information described in paragraph (1) shall be based on information provided by the Office of Planning and Research pursuant to paragraph (2) of subdivision (d) as of the date of the application. Cities, counties, and cities and counties shall comply with paragraph (1) within 30 days of receiving this notice from the office.

(c) (1) A city, county, or city and county that is not beneath a low-level flight path or not within special use airspace and does not contain a military installation is not required to change its list of information required from applicants to comply with subdivision (b).

(2) A city, county, or city and county that is entirely urbanized, as defined in subdivision (e) of Section 65944, with the exception of a jurisdiction that contains a military installation, is not required to change its list of information required from applicants to comply with subdivision (b).

(d) (1) Subdivision (b) as it relates to the identification of special use airspace, low-level flight paths, military installations, and urbanized areas shall not be operative until the United States Department of Defense provides electronic maps of low-level flight paths, special use airspace, and military installations, at a scale and in an electronic format that is acceptable to the Office of Planning and Research.

(2) Within 30 days of a determination by the Office of Planning and Research that the information provided by the Department of Defense is sufficient and in an acceptable scale and format, the office shall notify cities, counties, and cities and counties of the availability of the information on the Internet.

65944(d)(1) and 65944(d)(2)

Ensures early notification to the military of proposed discretionary development projects within Military Operating Areas (MOAs), California Government Code

§65944(d)(1) and 65944(d)(2) require the exchange of project-related information pertinent to military operations.

(d) (1) After a public agency accepts an application as complete, and if the project applicant has identified that the proposed project is located within 1,000 feet of a military installation or within special use airspace or beneath a low-level flight path in accordance with Section 65940, the public agency shall provide a copy of the complete application to any branch of the United States Armed Forces that has provided the Office of Planning and Research with a single California mailing address within the state for the delivery of a copy of these applications. This subdivision shall apply only to development applications submitted to a public agency 30 days after the Office of Planning and Research has notified cities, counties, and cities and counties of the availability of Department of Defense information on the Internet pursuant to subdivision (d) of Section 65940.

(2) Except for a project within 1,000 feet of a military installation, the public agency is not required to provide a copy of the application if the project is located entirely in an “urbanized area.” An urbanized area is any urban location that meets the definition used by the United State Department of Commerce’s Bureau of Census for “urban” and includes locations with core census block groups containing at least 1,000 people per square mile and surrounding census block groups containing at least 500 people per square mile.

Los Angeles County Airport Land Use Commission Policies¹³

The following policies and programs apply to all Los Angeles County airports¹⁴, including PMD.

General Policies

G-1

Requires new uses to adhere to the Land Use Compatibility table (see Table 8.1).

G-2

Encourage the recycling of incompatible land uses which are compatible with the airport, pursuant to the Land Use Compatibility table.

G-3

Consider requiring dedication of an aviation easement to the jurisdiction owning the airport as a condition of approval on any project within the designated planning boundaries.

G-4

Prohibit any uses which will negatively affect safe air navigation.

¹³ Los Angeles County Land Use Plan, Los Angeles County Airport Land Use Commission, Department of Regional Planning, adopted 1991, revised 2004.

¹⁴ Except Fox Airfield, which has a separate compatibility plan with its own policies and programs.

G-5

Airport proprietors should achieve airport/community land use compatibility by adhering to the guidelines of the California Noise Standards.

Table 8.1 Land Use Compatibility Table

	Satisfactory				
	Caution. Review noise insulation needs				
	Avoid land use unless related to airport services				
Land Use Category	Community Noise Exposure				
	55	60	65	70	75
Residential					
Educational facilities					
Commercial					
Industrial					
Agriculture					
Recreation					

Source: Los Angeles County Land Use Plan, revised 2004

Policies Related to Noise

N-1

Use the Community Noise Equivalent Level (CNEL) method for measuring noise impacts near airports in determining suitability for various types of land uses.

N-2

Require sound insulation to ensure a maximum interior 45 decibels (db) CNEL in new residential, educational, and health-related uses in areas subject to exterior noise levels of 65 CNEL or greater.

N-3

Utilize the table listing Land Use Compatibility for airport noise environments in evaluating projects within the planning boundaries.

N-4

Encourage local agencies to adopt procedures to ensure that prospective property owners in aircraft noise exposure areas above a current or anticipated 60 db CNEL are informed of these noise levels and of any land use restrictions associated with high noise exposure.

Policies Related to Safety

S-1

Establish “runway protection zones” contiguous to the ends of each runway. These runway protection zones shall be identical to the FAA’s runway protection zone (formally called clear zone).

S-2

Prohibit above ground storage of more than 100 gallons of flammable liquids or toxic materials on any one net acre in a designated runway protection zone. It is recommended that these materials be stored underground.

S-3

Prohibit within a runway protection zone any use which would direct a steady light or flashing light of red, white, green or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following take-off or toward an aircraft engaged in a final approach toward landing at an airport.

S-4

Prohibit within a designated runway protection zone the erection or growth of objects which rise above an approach surface unless supported by evidence that it does not create a safety hazard and is approved by the FAA.

S-5

Prohibit uses which would attract large concentrations of birds, emit smoke, or which may otherwise affect safe air navigation.

S-6

Prohibit uses which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

S-7

Comply with the height restriction standards and procedures set forth in FAR part 77.

City of Palmdale General Plan

The *City of Palmdale General Plan*¹⁵ contains goals, objectives and policies for circulation, environmental resources, safety, and noise specifically relating to USAF Plant 42.

Policies Related to Land Use

Policy L1.4.4

Establish the following land use policies adjacent to airport uses:

1. On the Land Use Plan, designate uses adjacent to airport uses which minimize land use conflicts with future expansion of airport operations.
2. When considering land use proposals adjacent to airport uses, evaluate such proposals with respect to the policies developed by the Joint Land Use Committee which have been incorporated into the Noise and Safety Elements.

¹⁵ <http://www.cityofpalmdale.org/Businesses/Economic-and-Community-Dev/Planning-and-Zoning/General-Plan>; City of Palmdale, *General Plan* adopted January 25, 1993

Policy L5.1.1

On the Land Use map, establish destinations to meet the City's long-term industrial and manufacturing needs, as follows:

4. **Airfield and Related Use:** The Airfield and Related Use (A & R) designation is intended to permit public and private airfields and support facilities, aerospace related industries, transportation related industries, and commercial facilities necessary to support military and commercial air traffic. This designation will primarily apply to U.S. Air Force Plant 42 and the Palmdale Regional Airport site as designated by the City of Los Angeles Department of Airports. Future development within this designation will be required to employ appropriate performance standards and design features to minimize impacts on nearby residential neighborhoods. Maximum floor area ratio within this designation is 0.5.

Policies Related to Circulation**Policy C5.1.1**

Adopt land use designations and policies which minimize encroachment of incompatible uses into space utilized by air operations.

Policy 5.1.2

Implement noise and safety policies as developed by the Joint Land Use committee and as incorporated into various elements of the General Plan.

Policy C5.1.3

Coordinate development policies and decisions with Air Force Plant 42 representatives.

Policy C5.2.1

Promote economic development of land surrounding the airport for large-scale commercial uses, so as to support a market demand for airport services.

Policy C5.2.2

Restrict encroachment of incompatible uses into land affected by future airport operations.

Policy C5.2.3

Promote and support regional transportation planning for routes serving the airport facility, including SR 14 and SR 138.

Policies Related to Environmental Resources**Policy ER9.1.3**

Ensure that there is no potential conflict between the operational mission of USAF Plant 42 or other airport related used and proposed solar facilities.

Policies Related to Safety**Policy S2.2.1**

Require all development to be consistent with Department of Defense regulations as outlined in the Air Force Plant 42 Air Installation Compatibility Use Zone

(AICUZ) Report and to comply with applicable FAA regulations which affect development in the Accident Potential Zones. (*General Plan Amendment 04-01, adopted by City Council April 14, 2004.*)

Policy S2.2.2

Through the design review process, ensure that new buildings are located in a manner which will promote clear linear corridors through the developed area within any Accident Potential Zones, to create potential pilot options in the event of an aircraft emergency.

Policy S2.2.3

Review and evaluate currently existing areas within the low altitude overflight area, ..., which are occupied by incompatible uses, to determine the potential of the redevelopment process to convert those land uses to airport compatible uses. (*General Plan Amendment 04-01, adopted by City Council April 14, 2004.*)

Policies Related to Public Safety

Policy SB.5.a(1) Clear Zone

All Clear Zones are currently within the boundaries of Plant 42 and are not within the jurisdiction of either city (city of Palmdale or city of Lancaster) or the county.

Policy SB.5.a(2) General Policies for the Accident Potential Zone

- (a) This Safety Element hereby incorporates by reference the FAA Part 77 Regulations and Tab No. B-2 of the Master Plan Vicinity Map, Zoning Plan for Air Force Plant 42 for height regulations as they affect the air space around U.S. Air Force Plant 42.
- (b) All development shall comply with applicable FAA regulations which affect development in these zones [Clear Zone, Accident Potential Zone 1, Accident Potential Zone 2].
- (c) The General Plan Land Use Element Hazard Zones Exhibit and the Safety Element Aircraft Crash Zones Exhibit have identified the areas which are included within the Accident Potential Zones.
- (d) Open space uses which are low intensity and passive, such as Joshua tree and nature preserves shall be encouraged.
- (e) Aviation easements shall be obtained wherever possible in this zone [Accident Potential Zone].
- (f) Disclosure statements which declare that the property is located within the accident potential zone and is exposed to aircraft noise shall be required on the sale or transfer of property in this zone.
- (g) Currently existing areas occupied by incompatible uses shall be examined to determine the potential of the redevelopment process to convert those land uses to airport compatible uses.
- (h) New buildings shall be located in a manner which will promote clear linear corridors through the developed areas to create potential pilot options in the event of an aircraft emergency.

Policy SB.5.a(3) Accident Potential Zone 1

- (a) New residential uses shall not be approved in this zone.
- (b) Commercial uses shall be prohibited.

- (c) Industrial uses should be encouraged with the restriction that average employee density shall not exceed 25 persons per acre per hour and lot coverage by buildings shall not exceed thirty percent of the site.

Policy SB.5.a(4) Accident Potential Zone 2

- (a) Residential uses should be discouraged but, if allowed, shall not exceed one dwelling unit per 2.5 gross acres.
- (b) Commercial uses which do not draw large numbers of customers to the site shall be encouraged. Customer intensive retail operations are excluded. Average employee density should not exceed 25 persons per acre per hour.
- (c) Industrial uses should be encouraged with the restriction that average employee density shall not exceed 25 persons per acre per hour and lot coverage by buildings shall not exceed forty percent of the site.

Policies Related to Noise

Policy N2.1.1

Designate and permit land uses within the 65 CNEL contour and the Frequent Overflight Area which are primarily industrial, business park, commercial and recreational uses which are not noise sensitive; permit other uses only when it is found that no adverse noise impacts will result.

Policy N2.1.2

Restrict noise sensitive land uses (such as residential uses, churches, schools, rest homes or similar uses) within areas designated as within both the 65 CNEL contour and the Frequent Overflight Area.

Policy N2.1.3

In areas which are outside of the 65 dBA CNEL contour but which are within the Frequent Overflight Area, encourage establishment of compatible uses to the extent feasible.

Policy N2.1.4

Through the development review process, require that all new projects within the Accident Potential Zone (APZ) of Air Force Plant 42 provide an avigation easement. A disclosure statement indicating that the property is subject to frequent overflight and aircraft noise should be required upon sale of property within the APZ.

Policy N2.1.5

Through conditions of approval, require that any owner of developed or undeveloped property within the 65 CNEL noise contour or the low altitude overflight area which is seeking a land use action from the City, provide an avigation easement to the Los Angeles Department of Airports, the U.S. Air Force, and the City.

Policy N2.1.6

Investigate various means of obtaining avigation easements from all properties within the 65 CNEL noise contour and the low altitude overflight area and obtain those easements to the extent feasible.

Summary

The City of Palmdale recognizes the importance of Plant 42 to the vitality of the city and the Antelope Valley region in general. Air Force Plant 42 is surrounded by multiple jurisdictions having land use controls to guide development in the region. A 2011 review of existing land use, current zoning, and future land use planning efforts indicated a strong awareness of the mission of Plant 42 and its role in the Greater Antelope Valley.

Land Use

The City of Palmdale is proactive in preventing land use conflicts with the mission of Plant 42. The *Palmdale General Plan* specifically has as one of its goals to “protect and promote a variety of air transportation services within the City of Palmdale.” Supporting objectives include “Protect[ing] opportunities for full utilization and expansion of Air Force Plant 42.”

Several factors limit the development potential of the area’s vacant and underutilized sites. The Air Force Plant 42 California Air Installation Compatible Use Zone (AICUZ) limits development around Plant 42 due to the effects of aircraft noise and accident potential on the surrounding area. A portion of the study area is located in an Accident Potential Zone (APZ) II. In APZ II, residential uses are recommended to be limited to one or two dwellings per acre. Certain types of industrial activities are not recommended because of the risks they could pose in the case of accident. Retail, service, and office uses should be low-intensity in terms of the number of people and structures, and meeting places are not recommended. For most non-residential uses, buildings should be limited to one story, and lot coverage should not exceed 20 percent.

In general, the vast majority of real estate underlying the noise and accident potential zones of Plant 42 are compatible. No incompatible land uses with respect to noise were noted.

Zoning

Palmdale’s zoning ordinances are cognizant of and serve to protect the military mission from incompatible development.

In Palmdale, no incompatible residential zoning exists with respect to noise at current operational levels; however, should missions change, areas southwest and west of the installation have residential zoning that may become incompatible.

Local Community Responsibilities

Agencies involved with approvals of permits for construction require developers to submit calculations which show that projects meet the height restriction criteria of FAR Part 77, Objects Affecting Navigable Airspace, Subpart C (Obstruction Standards) as described in part by the information in the following table.

Table 8.2. Plant 42 Coordinates and Elevations

Airport Elevation:	2,543 feet (MSL)
Coordinates:	
Runway 04	Latitude 35° 37.014033N Longitude 118° 05.496700W
Runway 22	Latitude 35° 38.23726N Longitude 118° 03.616100W
Runway 07	Latitude 34° 37.835100N Longitude 118° 06.78381W
Runway 25	Latitude 35° 37.96651N Longitude 118° 04.39571W

Local community responsibilities also include the following:

- Incorporate AICUZ policies and guidelines into future comprehensive plans of the City of Palmdale. Use overlay maps of the AICUZ noise contours and Air Force Land Use Compatibility Guidelines to evaluate existing and future land use proposals.
- Continue to support compatible land uses as existing zoning ordinance and subdivision regulations are modified over time.
 - Recommend against public assembly or high intensity uses in APZ I or II
 - Recommend against residential uses in APZ I or II or in high noise areas
 - Require a site-specific review process for noise sensitive uses (e.g., schools, hospitals, housing) to assess proposed noise level reduction techniques
 - Discourage noise sensitive development clustered adjacent to, but not within, a noise zone (because contours shift over time and noise does not stop at a noise zone boundary)
 - Provide for specific review recommendation on tall structures in the airfield vicinity.
- Ensure that height and obstruction ordinances reflect current Air Force and FAA FAR Part 77 requirements and require that project proponents demonstrate their actions will not compromise the utility of the Plant 42 airfield.
- Ensure that future building codes continue to require that new construction within the AICUZ area adheres to the recommended noise level reductions incorporated into the design and construction.
- Continue to inform Plant 42 of planning and zoning actions that have the potential to affect base operations.
- Implement procedures that require project proponents to notify Plant 42 regarding any temporary construction activity which could require the use of cranes within the vicinity of the airfield, to allow the installation to analyze impacts on flight operations.

Glossary of Terms¹⁶

Installations

Air Force installations (Air Force Base, Air Base, Air Reserve Base, Air Guard Base, Air Force Station, Air Station, Air Reserve Station, or Air Guard Station), support sites, and other activities, and those facilities to which the Air Force, in overseas locations, has complete or partial access to on a temporary or standby basis.

Installation Commander

The commander of a base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the DoD, including any leased facility. It does not include any facility used primarily for civil works, rivers and harbors projects, flood control, or other projects not under the primary jurisdiction or control of the DoD. For the purpose of this regulation, the term ‘installation commander’ denotes that person ultimately responsible for the provision and integration of all the installation’s base support services and infrastructure. On a Joint Base, this will be the supporting service’s commander. However, the mission commander for supported services shall be included in the approval process for installation documents that affect the supported service, such as Installation Development Plans.

Installation Complex

The land, facilities, airspace, and ranges which provide direct mission support to and /or are managed by the installation. This includes a combination of land and facilities comprised of a main installation and its noncontiguous properties (auxiliary airfields, annexes, and missile fields) that provide direct support to or are supported by that installation. Installation complexes may comprise two or more properties.

¹⁶ Terms and definitions provided by the U.S. Air Force. References include AFPD 10-5 and AFI 32-1015 definitions.

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Appendix A: Environmental Baseline Survey

Derived from 2011 CH2MH

The U.S. Army activated the Palmdale Air Terminal in 1940. The Works Progress Administration later constructed concrete runways for the Palmdale Air Terminal. During World War II, the installation was used for emergency landings by B-25s. In 1946, the installation was declared a surplus facility and was purchased by Los Angeles County and used as a municipal airport. The installation was reactivated in 1950 by the Air Force and used for final assembly and flight testing of jet aircraft. It was later repurchased from Los Angeles County in 1954 (Ref. 299, CH2M-Hill 2011).

In 1953, exclusive use of approximately 272 acres was granted to North American Aviation, Inc. (North American) to support airport aircraft production and engineering flight-testing programs. Northrop Grumman was also granted exclusive use of approximately 220 acres for use as a final production facility and Air Force acceptance flight test facility. In 1953, the federal government authorized Lockheed Aircraft Corporation to construct joint-use facilities and to provide engineering design and architectural services. A 5,000-foot extension was added to the existing 7,000-foot northeast-southwest runway (Runway 4-22) due to the contract (Ref. 299, CH2M-Hill 2011).

The Palmdale Air Terminal officially became AFP 42 in 1953 and the federal government assumed ownership in 1954. In 1961, the installation was assigned to the Aeronautical Systems Division and was renamed the Production Flight Test Installation, AFP 42, Palmdale, California. Since 1953, AFP 42 has supported facilities involved with production engineering, final assembly, and flight testing of high performance aircraft, including the U-2, B-1, B-2, and F-117 (Ref. 324, CH2M-Hill 2011).

Historic Facility Operations and Land Use at Plant Site 1

Operations at Plant Site 1 began in 1953. Plant Site 1 has been occupied by the following five contractors (Refs. 297, 324, CH2M-Hill 2011):

North American: 1954 to 1968

Lockheed: 1968 to 1971

Rockwell International (Rockwell): 1971 to 1996 (Note: North American was purchased by Rockwell)

Boeing: 1996 to present

NASA: 1973 to approximately 2011

Plant Site 1 is in the northwestern portion of AFP 42. Construction at Plant Site 1 began in 1953 with Building 145, which was completed in 1954. Building 145 is in the southern portion of Plant Site 1.

Construction of Building 150, located in the northern portion of Plant Site 1, was started in 1955 and completed in 1958. North American Aviation performed activities at Plant Site 1 associated with aircraft production, modification, and testing from 1954 to 1968. Activities conducted by North American included

testing of the F-86H Sabre, F-100 Super Sabre, and UTX Sabreliner aircraft and modifications to B-52s and A-5 Vigilante aircraft. During this time, Plant Site 1 was also used for wing production for the XB-70 Valkyrie aircraft. In 1968, North American Aviation changed its name to North American Rockwell and vacated Plant Site 1 in October 1968 (Ref. 297). Former operations included an aircraft firing range where F-100s fired into a backdrop located within Building 148 (currently the Tooling Shop) (Ref. 476, CH2MHill 2011).

Plant Site 1 was occupied by Lockheed-California from October 1968 to October 1971. Onsite activities during this period included tooling fabrication for the L-1011 TriStar Aircraft Production Program. In

October 1971, Rockwell began B-1A aircraft production in Building 145 while Lockheed continued to use Building 150 in support of a flight test program for the Navy S-3A Viking aircraft (Ref. 297, CH2M-Hill 2011). From 1972 to 1978, Rockwell used Building 145 for B-1A aircraft production; production ceased in Building 145 in 1978 but Rockwell retained occupancy of the building (Ref. CH2M Hill 2011).

In late 1973, Lockheed transferred occupancy of Building 150 to NASA who had contracted Rockwell for the Space Shuttle Program. In 1973, NASA and Rockwell began a modification program on Building 150 to extend and heighten the roof to accommodate the tail of the space shuttle (Ref. 297, CH2M-Hill 2011).

The expansion on the north side of Building 150 is referred to as the High Bay. In December 1996, Rockwell was acquired by Boeing-North American (Refs. 297, 324, CH2M-Hill 2011). Rockwell used the north side of Plant Site 1 for Space Shuttle construction and modification from 1973 to early 2002, when the program for Space Shuttle modifications was relocated to NASA's Kennedy Space Center in Florida. Operations at Plant Site 1 included assembly of the entire Space Shuttle fleet, with follow up operations associated with modification and maintenance of these Space Shuttles. Processes associated with the Space Shuttle involved machining and tooling, manufacturing of ceramic tiles, bonding and curing, foam production, heat treatment, sewing, and surface coating (Ref. 324, CH2M-Hill 2011). Plant Site 1 manufactured replacement components for the Space Shuttle fleet and has also worked on other classified projects (Refs. 481, 482, 483, CH2M-Hill 2011).

At the time of the last SS-EBS (Ref. CH2M Hill, 2011), Site 1 was divided into a northern and southern portion, and security fencing separated these two areas of Plant Site 1. The northern portion of Plant Site 1 was occupied by the Boeing DSS operations and NASA, and the southern portion was occupied by the Boeing High Desert Assembly, Integration, and Test (BHDAIT) unit, which performed activities related to the testing of the X-37 prototype and testing of the BCA 747-8 Freighter. To accommodate the expanded operations associated with the BCA 747-8 Freighter, Plant Site 1-South was increased by 12 acres in the ramp area north of Building 143. Also, additional infrastructure improvements to Plant Site 1-South were made to include new fueling facilities south of Building 127 consisting of two 30,000-gallon ASTs for Jet-A and a self-contained washrack located north of Building 143.

Since the 2011 SS-EBS, Plant Site 1 has been made into one site (without separation) and is fully occupied by Boeing. The Boeing Company Palmdale operates industrial facilities performing flight test program support for both commercial and military aircraft.

Historic Facility Operations and Land Use at Plant Site 2

Operations at Plant Site 2 began in 1954. Plant Site 2 has been occupied by the following four contractors (Refs. 297, 324, CH2M-Hill 2011):

Northrop Aviation: 1954 to 1958

Douglas Aircraft: 1958 to 1963

Rockwell: 1963 to 1964

Lockheed Martin: 1964 to present

When Northrop Aviation began leasing the land from Los Angeles County in 1954, work began on the F-89 Scorpion Program (Ref. 297, CH2M-Hill 2011). In 1954, the first buildings were constructed at Plant Site 2, Building 210 was used for aircraft production, Building 211 was used as an aircraft paint shop, and Building 212 was the garage and service station.

During the late 1950s, Douglas Aircraft occupied Plant Site 2 to start the production of the Navy A-4D

Skyhawk jet attack aircraft (Ref. 324). Douglas Aircraft remained at the site until 1963 when Plant Site 2 was transferred over to Rockwell for production of the B-70 tubing and forward immediate fuselage, production of the F-100 aft fuselage, and painting of all F-100s manufactured at that time (Ref. 297, CH2MHill 2011). Lockheed assumed control of Plant Site 2 in 1964 for production of the SR-71A Blackbird and U-2 aircraft. From 1968 to 1977, the SR-71 and U-2 aircraft projects were considered classified and the Air Force was not allowed access to Plant Site 2 during that time. The SR-71 program was cancelled in 1989. In 1995, the SR-71 program was reactivated by Lockheed Martin and cancelled again in 1997 (Ref. 297, CH2M-Hill 2011). Lockheed Martin currently modifies U-2 aircraft at Plant Site 2.

Historic Facility Operations and Land Use at Plant Site 3

Operations at Plant Site 3 began in 1954. Plant Site 3 has been occupied by five contractors (Refs. 297,324):

General Dynamics (Vultee Aircraft Company [Convair]): 1954 to 1961

North American: 1961 to 1966 (Note: North American was purchased by Rockwell International)

Douglas Aircraft: 1966 to 1972 and 1987 to 1989

Rockwell International: 1972 to 1993

Northrop Grumman: 1993 to present

In July 1954, temporary buildings at Plant Site 3 were initially occupied by Consolidated Vultee Aircraft Company (Convair), a division of General Dynamics. Convair occupied Plant Site 3 until 1961 and made improvements to the site by constructing permanent facilities. In 1956, several buildings were constructed including Building 301 (Manufacturing Building) and supporting facilities (Refs. 297, 324, CH2M-Hill 2011).

In 1961, North American began production of the XB-70 aircraft at Plant Site 3. Although North American occupied the majority of Plant Site 3, Building 301 was occupied by Douglas Aircraft for production of the A4-D aircraft. Douglas Aircraft assumed full control of Plant Site 3 in 1966 (Refs. 297, 324, CH2M-Hill 2011).

In June of 1972, Douglas Aircraft transferred its operations to Plant Site 7 and Rockwell International assumed responsibility for Plant Site 3. Rockwell International added modifications to buildings and began production of the B-1A aircraft, which continued until 1979. The site was then primarily used for storage of tools and fixtures for the B-1A (Refs. 297, 324, CH2M-Hill 2011). Plant Site 3 was occupied at a minimal level by Rockwell International until 1983. A portion of Plant Site 3 (west half of Building 301 and Building 305 [Model Storage]) that was no longer being used by Rockwell International was allocated to McDonnell

Douglas from 1987 to 1989 for the assembly of T-45 aircraft. Building 333 was constructed by Rockwell International and was used as a paint hanger for the B1-B until August 1989 when Rockwell International transferred use of Building 333 to Northrop Grumman.

In 1993, Rockwell International performed small-scale painting operations on three B-1B aircraft located in Hush House 3B. The coatings used during this process included polyurethane unicoat, a radome coating, and a wing coating. Coatings applied to the aircraft were solvent based, with the exception of the radome coating, which had a metal content. The metal content of the radome coating included Chrome III, titanium dioxide, cadmium sulfide, and cobalt aluminate. Less than 1 gallon of this radome coating was used for each aircraft. Painting operations by Rockwell International at this facility were reportedly performed in compliance with South Coast Air Quality Management District (SCAQMD) regulations (Ref. 444, CH2MHill 2011).

Historic Facility Operations and Land Use at Plant Site 4

Construction of Plant Site 4 began in 1984 and completed in 1986. The main operations at Plant Site 4 occurred in Building 401 for the assembly of the Northrop Grumman Advanced Technology Bomber, which is known as the B-2A Spirit or more popularly known as the B-2 or “Stealth Bomber” (Ref. 324, CH2M Hill 2011). Building 401, at approximately 947,000 square feet, is the largest structure on AFP 42. Other buildings at Plant Site 4 include Building 415, Building 430, Building 435, and several support buildings.

Historic Facility Operations at Plant Sites 5 and 6

Plant Site 5. Plant Site 5 is the oldest portion of AFP 42. It was originally used as the Palmdale Airport. The Palmdale Airport was established in January 1935 and served as a bivouac site for Army aviation units training at Muroc Dry Lake (Rodgers Dry Lake associated with Edwards AFB). The airport at that time consisted of a field cleared of vegetation and a small grouping of buildings along the runway’s flank. In 1940, a concrete runway was constructed by the Works Progress Administration for use by the U.S. Army Corps of Engineers (Ref. 324, CH2M Hill 2010).

The Army obtained control of Palmdale Airport during the period of World War II and renamed it Palmdale Army Airfield. Runways were modified and structures and a housing area were added at that time. In 1944, the additions included three runways with associated taxiways and parking aprons, a prefabricated metal hangar (Building 531), a control tower, a fire station, a trainer facility, a school facility, an operations facility, and a bomb storage area (Ref. 324, CH2M Hill 2010).

The original structures located at Plant Site 5 to support the Palmdale Airport no longer exist, except for Building 531, which is currently the Maintenance Hangar for Plant Site 5. This structure is the oldest facility located at AFP 42. Building 531 is a “Butler- type” steel hangar that was built in 1944. Building 531 was leased by North American in 1953 for a short period until construction at Plant Site 1 was completed in 1954. Then, Convair leased the building until facilities at Plant Site 3 were constructed. The Hughes Aircraft Company used Building 531 periodically from 1956 through 1960 for aircraft testing purposes. From 1960 to the 2010, this building has been used by the contractors responsible for the maintenance of the common areas of AFP 42 (Ref 324, CH2M Hill 2010). From 2010 to the present, this building is used by 412 TW OL-AFP 42 staff responsible in maintaining the site. The Air Force Administration Building (Building 552) was constructed in 1951 to be used as the Palmdale Airport’s air terminal. The Air Force took over this building in 1953 and it has been used for administrative purposes since that time (Ref. 324, CH2M Hill 2010).

A former fire training facility was constructed in 1988 in the central portion of AFP 42. This facility was removed in 2000. An OWS (OWS2PS5) was used to separate the unburned jet fuel (JP-4 and JP-8) from the water generated through the fire training exercises. The unburned fuel was reused for the next fire training exercise. A holding tank was used for the water that was diverted from the OWS. The excess water was then analyzed for the presence of hydrocarbons as required by the Lahontan Region Water Quality Control Board. Water effluent that was found to be within the acceptable analytical limits was discharged into the AFP 42 sanitary sewer (Ref. 466, CH2M Hill 2010).

The AFP 42 runways are associated with the Plant Site 5 common use area. These runways are substantially larger than the original runways associated with the Palmdale Airport. The original northeast-southwest runway (Runway 4/22) was extended from 7,000 to 12,000 feet in 1954. A second 12,000-foot east-west runway (Runway 7/25) was constructed in 1956 (Ref. 324, CH2M Hill 2010).

A 3,300-foot underground drainage culvert, called the Anaverde Tunnel, is located under Runway 7/25. This tunnel served as an emergency fallout shelter for a short time in the Cold War era. In 1963, supplies stockpiled in this tunnel included enough food, medical, and sanitation kits to accommodate 3,400 people for two weeks. Frequent stormwater flooding of this tunnel caused problems with the stored supplies and it was deactivated. The Anaverde Tunnel is still used to channel stormwater from the southwest portion of AFP 42 to the Stormwater Retention Ponds located along Avenue M (Ref. 324, CH2M Hill 2010).

The Palmdale Air Terminal was constructed in 1970 as a commercial passenger terminal located south of Runway 4/22. The building is approximately 9,800 square feet. This facility occupies approximately 61.75 acres within Plant Site 5. The Palmdale Air Terminal was operated by Los Angeles World Airports (Ref. CH2M Hill, 2010). In 2013, Palmdale Air Terminal was outgranted to the City of Palmdale. The City of Palmdale used the management services of Palmdale Airport Authority to operate the Palmdale Air Terminal. A 345-acre land parcel located west of AFP 42 was purchased by the Air Force in the 1950s for use as an Aircraft Over-Run Area for Runway 7/25 (Emergency Landing Area). This area is located adjacent to the west-central portion of AFP 42, and extends from Sierra Highway to Highway 14 (Ref. CH2M Hill 2010).

Historic Facility Operations and Land Use at Plant Site 7

Operations at Plant Site 7 began in 1950, and there have been three different contractors operating the site. In 2012, Plant Site 7 was divided into Plant Site 7 West and Plant Site 7 East. The following is a list of contractors operating at Plant Site 7:

1950 to 1971: Lockheed

1971 to 1987: McDonnell Douglas/Northrop (jointly occupied)

1988 to 2012: Lockheed

2012 to February 2015: Lockheed transfers Plant Site 7 West property back to Air Force and assumed Caretaker Status.

February 2015 to May 2017: Northrop assumed Caretaker status for Plant Site 7 West

2017 to Present: Plant Site 7 West Northrop

2012 to Present: Plant Site 7 East: Lockheed

Lockheed leased the land from Los Angeles County in 1950 and worked on the F-94C Starfire interceptors, T-33, T-21, and Constellation (Ref. 297, CH2M Hill, 2011). Building 740 (Engineering Flight Test), Building 720 (Final Assembly), Building 730 (Production Flight Hangar), and Building 722 (Maintenance) were constructed in 1954. The F-104, F-5 Freedom Fighter, and T-38 were aircraft programs that Lockheed supported until 1971. In 1971, McDonnell Douglas assumed responsibility of Plant Site 7 (Ref. 324, CH2M

Hill, 2011). During the 1970s, McDonnell Douglas and Northrop jointly occupied Plant Site 7. Building 720 was used by McDonnell Douglas to support the A-4, while Buildings 740 and 730 were used to support the F-5 program (Ref. CH2M Hill, 2011).

Lockheed re-assumed control of Plant Site 7 in 1988 for production of the TR-1 aircraft. Lockheed initiated rehabilitation of Buildings 721, 730, 731 (removed), 740, 750, 751, and 752. Testing and modifications of the F-117 Nighthawk (Stealth Fighter) began in 1992 (Ref. 297,324, CH2M Hill, 2011). In 2009, the F-117 Periodic Depot Maintenance (PDM) program ended. The site was used sporadically for ADP projects and small engine test stand activities

Current Facility Operations and Land Use at Plant Site 7

Plant Site 7 is divided by a fenceline dividing Plant Site 7 into East and West. Plant Site 7 West is currently operated by Northrop, and Plant Site 7 East is currently operated by Lockheed. Generally, site operations and processes have remained the same since 2011 at Plant Site 7 East. Plant Site 7 West was taken over by Northrop in 2017 and is in a transitional state with all of the buildings not being occupied. The Northrop Global Hawk Operations are currently conducted at Plant Site 7 West. The current facility operations at Plant Site 7 West support operations related to assembly, maintenance, repair, and upgrades to the Global Hawk. The current facility operation at Plant Site 7 East is to conduct research and development activities (Ref. EGC, 2017).

Historic Facility Operations and Land Use at Plant Site 8

Operations at Plant Site 8 began in 1954. Plant Site 8 has been occupied by five contractors (Ref. 297, 324):

Machine Overhaul Company: 1956 to 1966

Rockwell: 1966 to 1967

ITT Technical Services: 1968 to 1971

Lockheed Aircraft Corporation: 1971 to 1992

Rockwell North American Aircraft Operations (NAAO): 1983 to 1992

Northrop: 1992 to 1997

Lockheed Martin: 1997 to 2015

Northrop Grumman: 2015 to present

In 1954, construction of Building 870 for material storage began at Plant Site 8. Machine Overhaul Company was issued a contract in 1956 upon completion of construction. Machine Overhaul Company operated Building 870 as a machine tool storage facility (Ref. 324, CH2M Hill, 2011). This company reportedly operated an engine shop that included a parts-cleaning operation using alkaline and acid bath treatments and water rinsing through 1966 (Ref. 427, CH2M Hill, 2011). An engineering drawing dated December 1955 identified the presence of a paint booth and photographic laboratory in Building 870 (Ref. 433, CH2M Hill, 2011).

Rockwell operated the plant site from 1966 to 1967 for the overhaul of the J-57 jet engine used in the F-100, B-52, KC-135, F-101, and F-102 aircraft. The engines were disassembled, cleaned, and inspected, and then reassembled and tested (Ref. 324, CH2M Hill, 2011). Since 1968, warehousing of dry goods has been the primary use of Building 870. The Building 870 warehouse was transferred to ITT Technical Services (the common facility contractor) in 1968 and was used as a storage facility for the AFP 42 Plant Site contractors, including Rockwell, Northrop, and Lockheed, through 1971. In August 1971, Lockheed assumed control and used the west half of Building 870 for the F-104 modification program. Rockwell and Northrop continued to use the other half of the building for storage (Ref. 324, CH2M Hill, 2011).

In 1973, Lockheed stored materials used on the L-1011 program at Plant Site 8. Northrop occupied 10,000 square feet to support the F-5E program. In 1983, Rockwell assumed responsibility of Plant Site 8 to support B-1B work, and Northrop and Lockheed continued to use portions of Building 870 for storage. Northrop managed Plant Site 8 from 1992 through 1997. In 1997, management of Plant Site 8 was transferred to Lockheed Martin, with Northrop occupying approximately the eastern quarter of Building 870 (Ref. 324, CH2M Hill, 2011). Plant Site 8 was the central location for Lockheed Martin shipping, crating, receiving, warehousing, and chemical storage at AFP 42 until 2015. Plant Site 8 was in caretaker status from 2015 to May 2017. Northrop assumed control of Plant Site 8 in May 2017.