Appendix H:
Travis Air Force Base Land Use Compatibility Plan Consistency Evaluation

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memorandum

date	March 8, 2024
to	Joe Livaich, Vice President, Buzz Oates Construction, Inc.
cc	Neal Wolfe, Director of Aviation Sustainability and Resilience
from	Patrick Hickman, AICP, Managing Planner
subject	Suisun Logistics Center – Travis Air Force Base Land Use Compatibility Plan Consistency Evaluation

Introduction

The Suisun Logistics Center has been proposed for development on a site located within the airport influence area (AIA) for Travis Air Force Base as delineated in the Travis Air Force Base Land Use Compatibility Plan (Travis AFB LUCP) published by the Solano County Department of Resource Management.[1] The project site is approximately 6,440 feet (1.2 miles) from the 03L runway end and is offset approximately 1,300 feet from the extended Runway 03L/21R extended centerline. This memorandum discusses the compatibility of the proposed Suisun Logistics Center development (Proposed Project) with the aviation activities occurring on Travis AFB. Elements of the Proposed Project include approximately 2.1 million square feet of warehouses with associated vehicle circulation, parking, and stormwater infrastructure as well as approximately 47 acres of preserved open space on the 167-acre site.

Airport land use typically concerns four areas, or factors, of compatibility: noise, safety, airspace protection, and overflight notification.[2] Noise, safety, and airspace protection are generally applicable to all development proposals in the airport environs. However, overflight notification specifically relates to notifying potential purchasers of residential property that a prospective home is subject to frequent overflights and any associated annoyance. As the Proposed Project does not include a residential component, and therefore overflight notification does not apply, this evaluation focuses on the project's relationship to aviation noise, safety, and airspace protection with additional focus on wildlife and other hazard avoidance.

Noise

Noise compatibility policies and criteria are utilized to protect people on the ground from the harmful effects of exposure to high levels of aviation noise. Land uses of particular concern in noise compatibility planning include residences, children's schools, hospitals and similar facilities for the infirmed, and places of worship. Warehouses

1 County of Solano, Department of Resource Management, Travis Air Force Base Land Use Compatibility Plan, October 8, 2015. Available online at https://www.solanocounty.com/depts/rm/boardscommissions/solano_county_airport_land_use_commission/documents.asp

2 State of California Department of Transportation, California Airport Land Use Planning Handbook, October 2011, p. 3-1. Available online at https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf

and storage facilities are generally considered more compatible with airfields, as the storage of goods does not typically draw large numbers of people or sensitive receptors. The typical noise receptors for warehouse and storage facilities are employees. Warehouses are also frequently associated with industrial uses that generate their own ambient noise, which can render aviation noise less perceptible. For example, sounds associated with shipping trucks and loading and unloading equipment can diminish the effect of nearby aircraft noise.

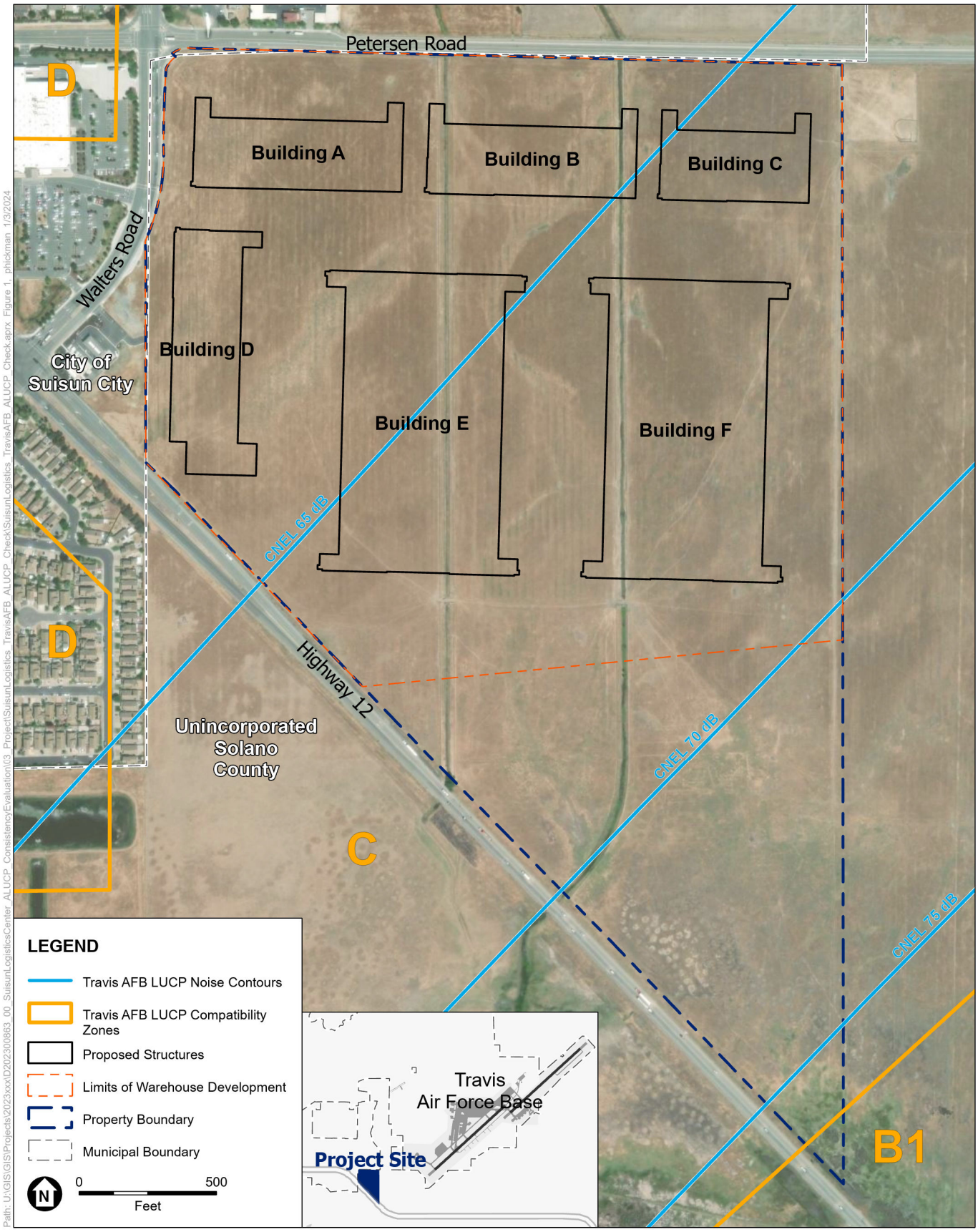
The Travis AFB LUCP noise policies and criteria are applicable within the Community Noise Equivalent Level (CNEL) 60 decibel (dB) contour based on the 2015 forecast maximum mission aircraft activity scenario for the air base.[3] The outer boundary of Compatibility Zone C, one of six compatibility zones surrounding Travis Air Force Base, generally encompasses the CNEL 60 dB contour. As depicted in **Figure 1**, the area of the project site which would accommodate human activity would be located within Travis AFB LUCP Compatibility Zone C and would be exposed to noise levels up to CNEL 70 dB. Of the six proposed warehouse buildings, two (Buildings A and D) would be exposed to noise CNEL 60-65 dB, and four (Buildings B, C, E, and F) would be exposed to noise CNEL 65-70 dB. Table 2: *Noise Compatibility Criteria* of the Travis AFB LUCP enumerates the criteria applicable to the CNEL 60-65 and 65-70 dB contour ranges and indicates "warehousing" is "Normally Acceptable" in the CNEL 60-65 dB contour range and "Marginally Acceptable" in the CNEL 65-70 dB contour range. Per the Travis AFB LUCP, "Normally Acceptable" means conventional construction materials and practices will prevent outdoor aviation noise from interfering with indoor activities.[4] Therefore, as the project will employ conventional construction materials and practices, Buildings A and D within the CNEL 60-65 contour range would not present any incompatibilities with the LUCP noise criteria. Buildings B, C, E, and F, located within or partially within the CNEL 65-70 dB contour range, would be "Marginally Acceptable" in this area meaning a warehouse would be "acceptable on the condition that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used".[5] Examples of noise attenuating construction features meeting this criterion would include closeable windows and climate controls adequate to maintain indoor temperatures sufficiently comfortable to keep windows closed.[6] Buildings B, C, E, and F would meet this criterion by incorporating closable doors and windows along with inclusion of air conditioning. No special sound insulation would be required under this criterion. Furthermore, no noise-sensitive activities, such as outdoor theaters, residences, schools, or libraries, are proposed for the warehouse complex. Thus, the Proposed Project is compatible with the Travis AFB LUCP noise compatibility criteria.

3 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, Appendix F, October 8, 2015.

4 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 28.

5 *Ibid*.

6 *Ibid*.



SOURCE: ESA, 2023; Solano County, 2015, 2023; ESRI, 2023.

Suisun Logistics Center – Travis Air Force Base ALUCP Consistency Evaluation

Figure 1
Noise Contour Ranges and Compatibility Zones
Suisun Logistics Center Project Site

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Safety

Safety compatibility policies and criteria are intended to avoid concentrations of people on the ground in locations where aircraft accident risk is greatest.[7] Historically, aircraft accident crash sites have tended to cluster along the extended runway centerline with increasing concentration toward the runway end. In addition to avoiding concentrations of people generally, land uses of special concern for safety compatibility include children's schools, hospitals, nursing homes, and other facilities accommodating potentially vulnerable low-mobility users. The Travis AFB LUCP measures concentrations of people, or use intensity, in people per acre. Warehouses are typically considered a low-intensity land use presenting fewer safety compatibility concerns in areas of otherwise moderate risk.

The Travis AFB LUCP safety compatibility criteria are encompassed in Compatibility Zones. As depicted in Figure 1, the southernmost 0.41 acres of the overall Proposed Project site is located in Compatibility Zone B1 where indoor uses should be limited to an intensity of 15 people per acre and outdoor uses would be limited to 20 people per acre.[8] This area is of the project site would remain open space, and little or no intensity of use would be anticipated. The remainder of the approximately 120-acre site is situated in Compatibility Zone C where indoor uses should be limited to an intensity of 75 people per acre, and outdoor uses should be limited to 100 people per acre.[9] An intensity limit of 300 people per acre on any single acre would also apply. The only uses prohibited by the Compatibility Zone C criteria include uses associated with vulnerable users. Thus, warehouses are compatible uses subject to the use intensity limits.

The developed portion of the site would cover approximately 73 acres. The Proposed Project is anticipated to accommodate 2,843 employees once fully operational. Assuming warehouse operations would be conducted in a single shift with all 2,843 employees occupying the site at once, this would result in an intensity of 41 people per acre. This would be well below the 75 people per acre limit for indoor uses. However, warehouse operations are likely to occur in multiple continuous shifts among which the total employees would be divided. When assuming employees would work in two 12-hour shifts, this would result in approximately 1,500 employees on site under typical conditions. This would equate to an overall intensity of 22 people per acres with much of it anticipated to occur indoors and would be well below the 75 people per acre limit for Compatibility Zone C and a significant reduction in intensity from the conservative single-shift scenario.

The warehouse operations would be distributed across six buildings encompassing 1.2 million square feet (27.5 acres) which would equate to approximately 55 people per acre in the two-shift scenario, and under normal operating conditions, no single acre would experience the maximum concentration of 300 people per acre. Thus, the Proposed Project is compatible with the Travis AFB LUCP safety compatibility criteria.

Airspace Protection

Airspace Protection strategies focus on two types of hazards to flight: 1) airspace obstructions and 2) wildlife and other hazards to flight. The compatibility of the proposed Suisun Logistics Center with the airspace protection policies of the Travis AFB LUCP is discussed in the context of each of these strategies in the sections below.

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7 California Department of Transportation, Airports Division, *California Airport Land Use Planning Handbook*, October 20ll, p. xi.

8 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 16.

9 *Ibid*.

Airspace Obstructions

Protecting airports and air installations from airspace obstructions is accomplished by limiting the heights of structures and other objects such as trees to heights not exceeding certain imaginary airspace projection surfaces[10] associated with the facility. One such set of imaginary surfaces is established in Title 14 Code of Federal Regulations Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* (Part 77). The Part 77 surfaces are incorporated into the Compatibility Zones discussed under the Safety section above. As depicted in Figure 1, the structures proposed for development are located in Compatibility Zone C where development conditions require ALUC review for any objects higher than 100 feet.[11] The Notice of Preparation issued for the Proposed Project indicates the highest proposed structure would be 42 feet,[12] falling significantly below the 100-foot threshold. Since the ground elevation for the portion of the site proposed for development of structures is generally within a range of 10 to 20 feet above mean sea level (AMSL),[13] this height would also be well below the Part 77 horizontal surface which, at 213 feet AMSL, is the lowest Part 77 imaginary surface under which a building is proposed. Meteorological towers are specifically cited as presenting hazards to pilots, and any meteorological towers higher than 100 feet must be reviewed by the Solano County Airport Land Use Commission when proposed in Compatibility Zone C.[14] However, no meteorological towers are proposed as part of the warehouse development. Thus, no incompatibility regarding airspace obstructions would occur.

As depicted in **Figure 2**, the portion of the Proposed Project site to be developed is situated outside of all approach glide slopes for Travis AFB. The Assault Landing Zone (AZL) Training Area Overlay overlaps the Proposed Project site on the southeast and intersects the proposed locations for three warehouse buildings (Buildings C, E, and F). Structures higher than 200 feet above ground level are prohibited within the AZL Training Area Overlay. However, as just discussed, the Proposed Project does not feature any structures exceeding 42 feet in height. Thus, the Proposed Project would not obstruct airspace or otherwise be incompatible with applicable obstruction regulations.

Wildlife and Other Flight Hazards

Wildlife

The Travis AFB LUCP establishes two wildlife hazard zones around the airfield: the 1) Bird Strike Hazard Zone and 2) the Outer Perimeter. The Bird Strike Hazard Zone represents the area within a 14,500-foot distance measured outward from the Travis AFB runway centerlines, and the Outer Perimeter marks the boundary of an area encompassing a 5-mile distance measured outward from the air operations area (AOA) perimeter of the base. As such, the Bird Strike Hazard Zone is situated entirely within the Outer Perimeter. Per Section 5.8.2(a) of the Travis AFB LUCP, a wildlife hazard analysis (WHA) must be prepared for "*new or expanded land uses involving discretionary review [with] potential to attract wildlife and cause bird strikes*". This policy specifies that reviewing agencies are responsible for WHA preparation for projects with potential to attract birds which could imperil aircraft in flight. Per Section 5.8.2(b) of the Travis AFB LUCP, any proposed new or expanded land uses within the Outer Perimeter, but outside the Bird Strike Hazard Zone with potential to attract movement of wildlife and cause bird strikes, require a WHA. A new or expanded land use in these cases refers to "*newly created areas and increases in enhanced or restored areas*". Section 5.8.2 goes on to establish requirements for including

[10] Imaginary airspace surfaces refer to areas in space delineated in relation to an airfield and the applicable runway ends in which an object extending above the surface would be an obstruction to aircraft in flight.

[11] County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 16.

[12] City of Suisun City, *Suisun Logistics Center Project - Notice of Preparation*, January 6, 2021.

[13] U.S. Geological Survey, *The National Map*, https://apps.nationalmap.gov/viewer/ accessed October 3, 2023.

[14] County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 39.

evaluations for potential to attract wildlife hazardous to aircraft be included in applicable project California Environmental Quality Act documentation.

The Proposed Project site is situated within the Bird Strike Hazard Zone and includes approximately 47 acres of retained open space and 7.6 acres of stormwater management infrastructure including bioswales and detention basins. In March of 2021, a WHA was completed and concluded none of the site features would exacerbate bird activity potentially hazardous to Travis AFB operations.[15]

Agriculture and water treatment are the primary land use types associated with the Proposed Project that are known to attract wildlife in the vicinity of Travis AFB.[16] Because the 167-acre site is currently managed for cattle grazing, the proposed reduction to a 47-acre open space parcel for continued cattle grazing is not expected to increase hazards to Travis AFB flight operations— in fact it could decrease hazards associated with birds from existing conditions by reducing the amount of agricultural land. Furthermore, preservation of 47 acres of open space would not present any unusual or novel circumstance surrounding an air installation. Examples of military air installations with similar operations and fleets with off-installation parks and/or preserved open space located within two miles of a runway end include Joint Base McGuire-Dix-Lakehurst, Dover Air Force Base, and Joint Base Lewis-McChord. Other similar facilities such as Scott Air Force Base, Pope Army Airfield, and Joint Base Andrews also feature undeveloped open space and riparian areas that are not part of formal parks or preserves and that are located near runway ends.

In keeping with Federal Aviation Administration (FAA) recommendations for new stormwater management facilities within 5 miles of airports, the proposed stormwater basins have been designed to drain within 48 hours of a storm event.[17] The stormwater management infrastructure would be maintained to be kept free of vegetation and would remain dry between rain events. By minimizing or eliminating standing water and vegetative growth, the basins are less likely to attract hazardous wildlife such as waterfowl.[18]

During construction of the developed portion of the property, species such as gulls, ravens, and crows may be temporarily attracted to the site immediately following major ground disturbances such as excavation and grading, because these types of construction activities often expose prey such as insects and rodents that attract these bird species. However, the attractiveness of disturbed soil to these bird species would be temporary and would become negligible following the initial ground movement and with continued use of heavy equipment in the vicinity. Attraction of wildlife to the construction area would be further minimized by implementing standard construction best management practices such as properly containing and disposing of garbage, which are measures anticipated to be included as part of the stormwater pollution prevention plan to be prepared for the Proposed Project. A planting plan would be developed and include landscape design elements to prevent congregations of birds, such as sufficiently spacing tree plantings to prevent dense roosting or nesting cover. Furthermore, tree and shrub varieties that are attractive to wildlife (i.e., dogwood, elderberry, or other species that produce seeds, fruits, or berries) would not be used for landscaping. Post-construction, features of the proposed structures that have potential to attract birds such as rooftops and exterior light fixtures would be designed and maintained as to minimize attractiveness for roosting and nesting (i.e., installing deterrents or exclusion devices such as spikes or wire on gutters, eaves or peaked roof ridges, and avoiding use of flat platforms on pole lighting fixtures). Thus, the Proposed Project would not increase or otherwise exacerbate wildlife activity that could be potentially hazardous to Travis AFB operations, and in fact would decrease bird-related hazards by decreasing agricultural acreage that currently attracts birds.

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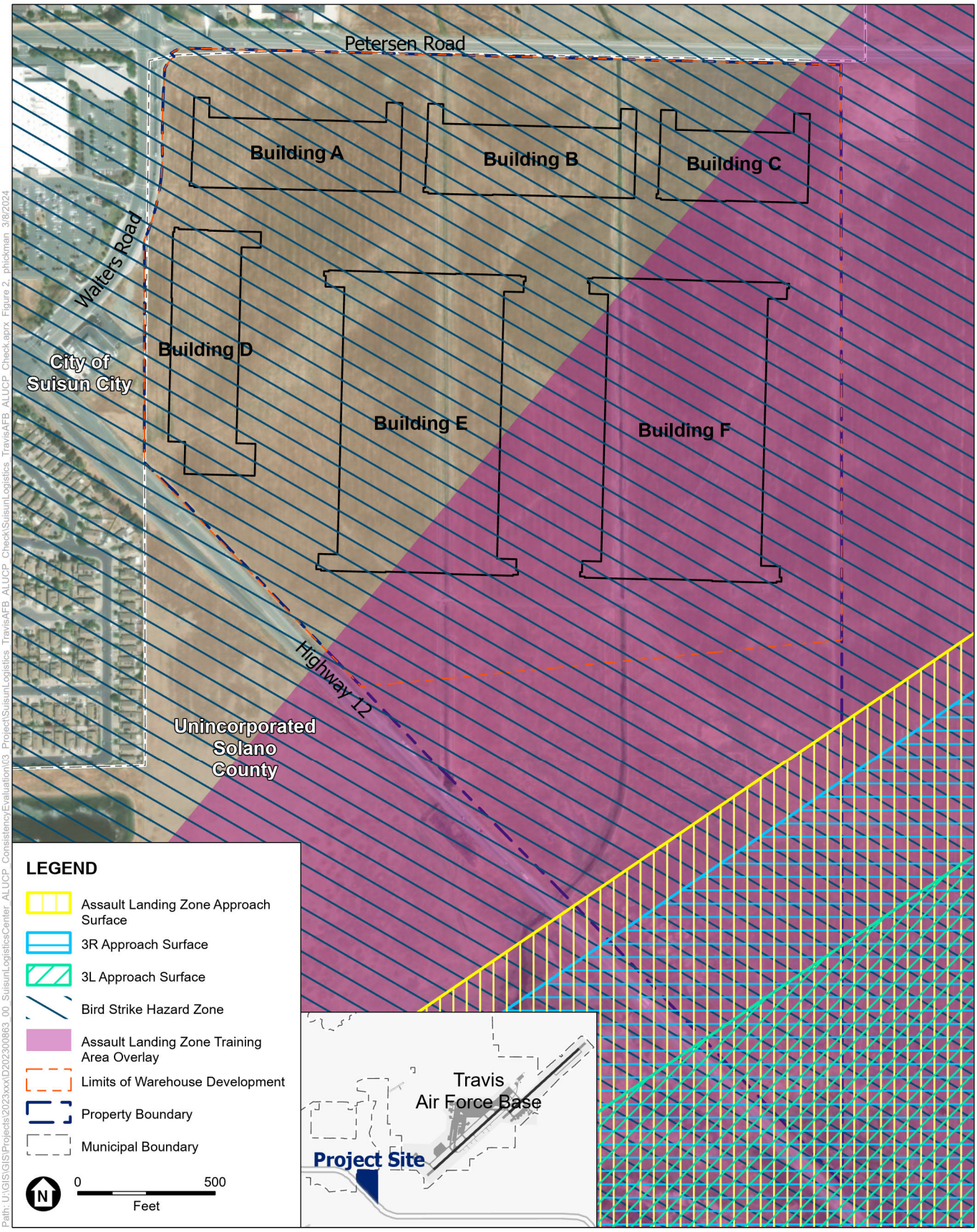
15 AECOM, *Wildlife Hazards Assessment for the Suisun Logistics Center Property*, March 29, 2021.

16 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 43.

17 U.S. Department of Transportation, Federal Aviation Administration, *Advisory Circular 150/5200-33C: Hazardous Wildlife Attractants on or near Airports*, February 21, 2020.

18 AECOM, *Wildlife Hazards Assessment for the Suisun Logistics Center Property*, March 29, 2021.



SOURCE: ESA, 2023; Solano County, 2015, 2023; ESRI, 2023.

Suisun Logistics Center – Travis Air Force Base ALUCP Consistency Evaluation

Figure 2
Airspace Protection Surfaces and Overlays
Suisun Logistics Center Project Site

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Other Flight Hazards

Per Section 5.4.6 of the Travis AFB LUCP, other hazards to flight, aside from wildlife, include sources of electromagnetic and visual disturbances. Specific characteristics cited include:

- Glint, glare, and flashing lights
- Dust, steam, smoke, and thermal plumes
- Electrical interference affecting aircraft communications or navigation
- Radar interference

Wind turbines and solar facilities are specifically addressed as potentially problematic for Travis AFB operations in Sections 5.6.1 and 5.6.2, respectively. Wind turbines are noted as potential generators of radar interference, and solar facilities are described as potential sources of glint and glare. To address these hazards, any wind turbines or commercial-scale solar facilities proposed in Compatibility Zone C are required to meet special conditions to demonstrate compatibility.[19] Specifically, new or expanded commercial-scale solar facilities require an analysis based on the Solar Glare Hazard Analysis Tool (SGHAT) model developed by Sandia National Laboratories to be submitted for ALUC review. As the Proposed Project would potentially introduce rooftop solar arrays for energy generation, such an analysis would be required. The glint and glare analysis would need to demonstrate the following:

- No potential for glint or glare in an existing or planned Airport Traffic Control Tower cab at Travis AFB
- No potential for glare or more than a low potential for after-image along the final approach path for any existing landing threshold or future landing threshold (including any planned interim phases of the landing thresholds) as shown on the Layout Plan for Travis AFB

The SGHAT and other similar models can recommend mitigation measures and design alternatives to avoid impacts related to glare.[20] Therefore, a glint and glare study using the SGHAT, or other similar model[21], will be performed as part of the design review submittal requirements for the Proposed Project. The proposed facilities will be assessed for potential to emit glint, glare, or distracting lights which could impair pilot visibility. Any such potential for hazard identified during this analysis would be addressed by modifications to the proposed design. Thus, no proposed characteristics of the development would significantly contribute to any visual or communications interference, and there would be no conflicts with the Travis AFB LUCP airspace protection policies regarding other hazards to flight.

Summary

The proposed Suisun Logistics Center development would not present any new incompatibilities or conflicts with the Travis AFB LUCP. Standard sound attenuating construction features like climate control systems and closeable windows would need to be incorporated into the design of four warehouse buildings. However, inclusion of these features would meet the applicable noise compatibility criteria. The Proposed Project would also be compatible with the safety criteria based on its planned use intensity. No concentrations of vulnerable populations would be accommodated on the site, and the number of occupants reasonably expected on the site would not exceed the specified people-per-acre limits at any time. The Proposed Project would not introduce any new obstructions that would conflict with airspace protection policies of the Travis AFB LUCP, and the

19 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 16.

20 County of Solano, Department of Resource Management, *Travis Air Force Base Land Use Compatibility Plan*, October 8, 2015, p. 38.

21 The FAA no longer specifically endorses use of the SGHAT model per policy guidance enacted in May 2021 (86 Federal Register 25802). The FAA notes there are several glint and glare analysis tools available on the market.

preserved open space and stormwater management features have been assessed in a WHA that determined the project would have no significant potential to attract hazardous bird activity. Also, open space and stormwater management features would be maintained in a manner to avoid attractiveness to birds. Any other features which could pose a hazard to aircraft in flight such as sources of glare, steam, smoke, or electromagnetic or radar interference are either not proposed or would be addressed by incorporating any necessary mitigation measures prescribed during the glint and glare analysis. All compatibility factors considered, the Suisun Logistics Center development would be consistent with the policies and criteria enumerated in the Travis AFB LUCP and compatible with aviation operations at the base. Furthermore, the establishment of a logistics center proximate to Travis AFB could also potentially be utilized to expedite resupply of needed materials at Travis AFB in emergencies. Thus, the Proposed Project could provide a benefit to the base by supplying a critical supply chain node.

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