Attachment A:

SFO ALUCP Airport Influence Areas

4.2 Airport Influence Area (AIA)

The AIA for SFO includes two parts: Area A and Area B. Area A is the larger of the two areas and encompasses all of San Mateo County. Area B lies within Area A and includes land exposed to aircraft noise above CNEL 65 dB or lying below critical airspace.

Area A, depicted on **Exhibit IV-1**, includes the entire county, all of which is overflown by aircraft flying to and from SFO at least once per week at altitudes of 10,000 feet or less above mean sea level (MSL). (Appendix L explains the rationale for defining the AIA Area A boundary.)

Area B of the AIA, depicted on **Exhibit IV-2**, is based on a combination of the outer boundaries of the noise compatibility and safety zones, the 14 CFR Part 77 conical surface, and the TERPS approach and One-Engine Inoperative (OEI) departure surfaces.[1] As depicted on Exhibit IV-2, the Area B boundary has been adjusted to follow streets, highways, and corporate boundaries to make it easier to identify and implement. See **Exhibit IV-3** for a close-up view of the northwestern half of Area B and **Exhibit IV-4** for a close-up view of the southeastern half.

The following AIA policies (IP) shall apply to the ALUCP.

IP-1 AIRPORT INFLUENCE AREA A – REAL ESTATE DISCLOSURE AREA

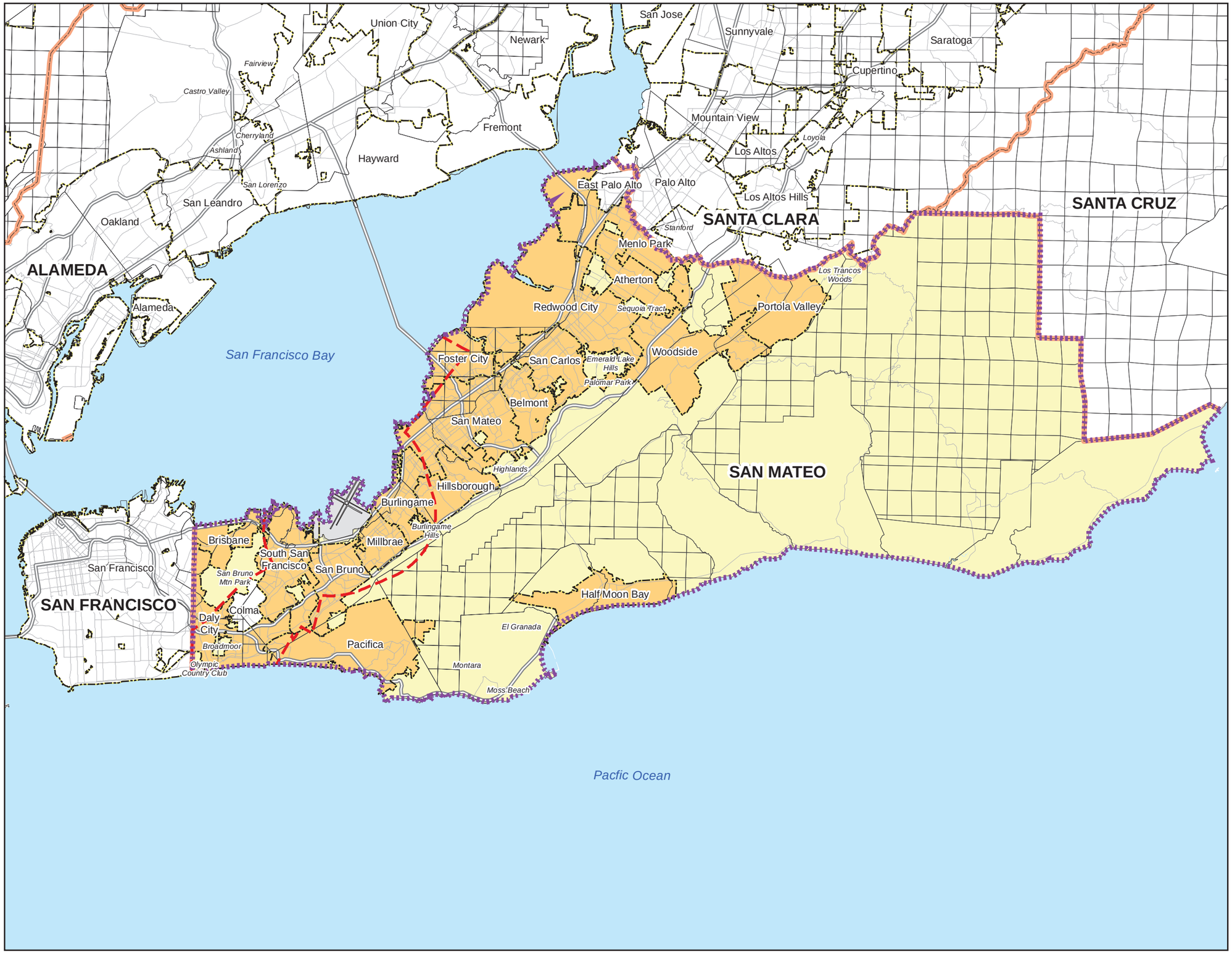
Within Area A, the real estate disclosure requirements of state law apply. Section 11010 of the Business and Professions Code requires people offering subdivided property for sale or lease to disclose the presence of all existing and planned airports within two miles of the property.[2] The law requires that, if the property is within an "airport influence area" designated by the airport land use commission, the following statement must be included in the notice of intention to offer the property for sale:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

[1] On the northwest side, the Area B boundary corresponds to the 800-foot elevation line of the TERPS approach surface and the OEI departure surface. On the southeast side, the Area B boundary corresponds with the transitional surfaces rising from the flat, central portion of the TERPS surface having an elevation of 210 feet MSL. See Exhibits IV-17 and IV-18 for a detailed depiction of the airspace surfaces.

[2] California Business and Professions Code, Section 11010(b)(13).



LEGEND

- Boundary for Airport Influence Area B
- Airport Influence Area A Boundary
- County Boundary
- City Boundary
- Range/ Township/ Section and Rancho Lines
- Freeways
- Roads
- Municipal Members of SFO/Community Roundtable
- Unincorporated San Mateo County

NORTH

0 1 2 4 Miles

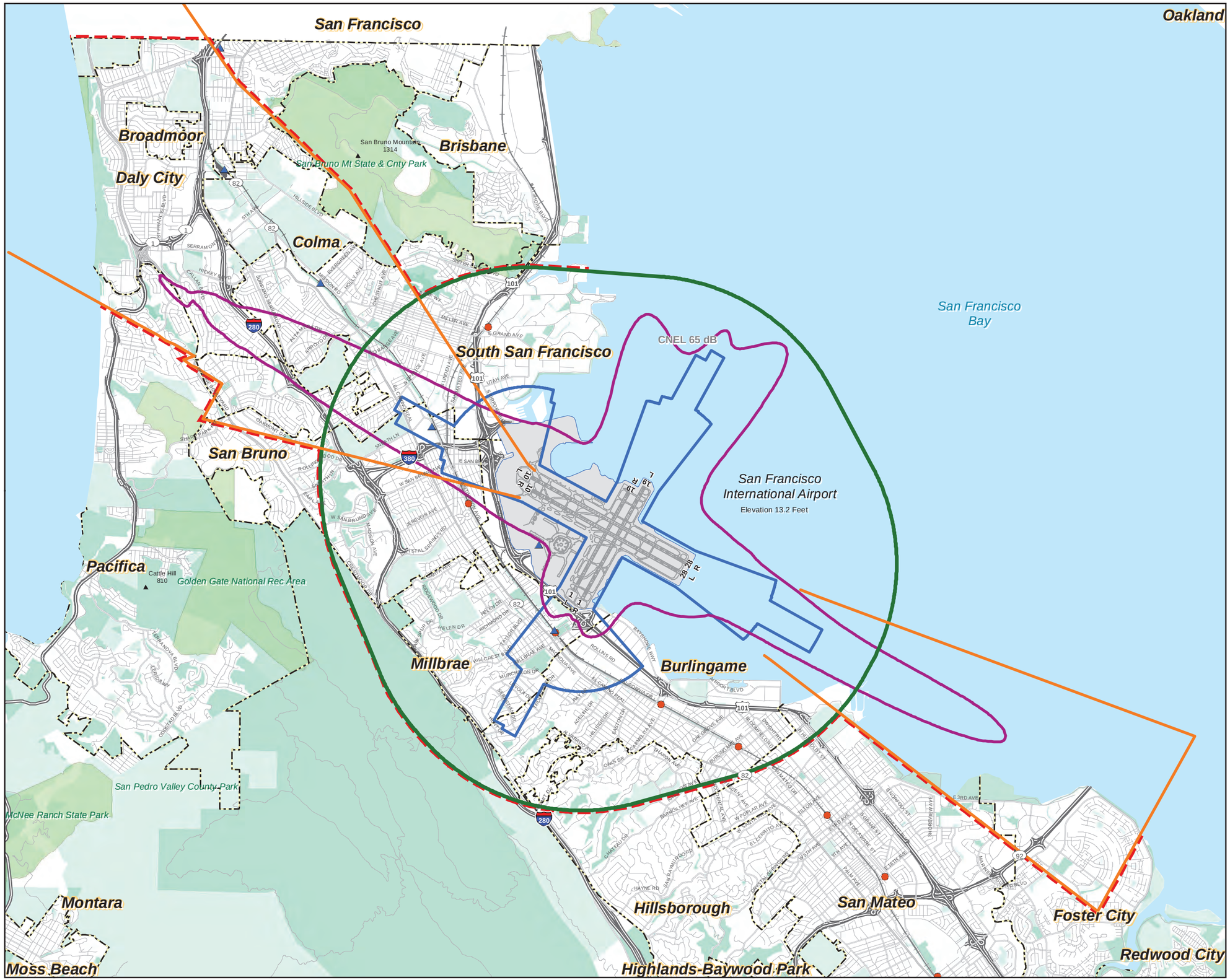
Exhibit IV-1

AIRPORT INFLUENCE AREA A - REAL ESTATE DISCLOSURE AREA

Comprehensive Airport Land Use Plan
For The Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California



LEGEND

- Boundary for Airport Influence Area B
- Outer Boundary of Safety Zones
- CNEL Contour, 2020 Forecast
- 14 CFR Part 77 Conical Surface
- Outer Boundary of TERPS Approach and OEI Departure Surfaces
- Airport Property
- BART Station
- CALTRAIN Station
- Municipal Boundary
- Railroad
- Freeway
- Road
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

Sources:

100:1 FAA Notification Zone: Ricondo & Associates, Inc. and Jacobs Consultancy, based on 14 CFR Part 77, Subpart B, Section 77.9.

Outer Boundary of TERPS Approach and OEI Departure Surfaces: San Francisco International Airport, Jacobs Consultancy, and Planning Technology Inc., 2009

Safety Compatibility Zones: Jacobs Consultancy Team, 2009; Ricondo & Associates, Inc., 2011

Noise Contour: URS Corporation and BridgeNet International. Draft Environmental Assessment, San Francisco International Airport Proposed Runway Safety Area Program, June 2011

NORTH

0 0.325 0.65 1.3 Miles

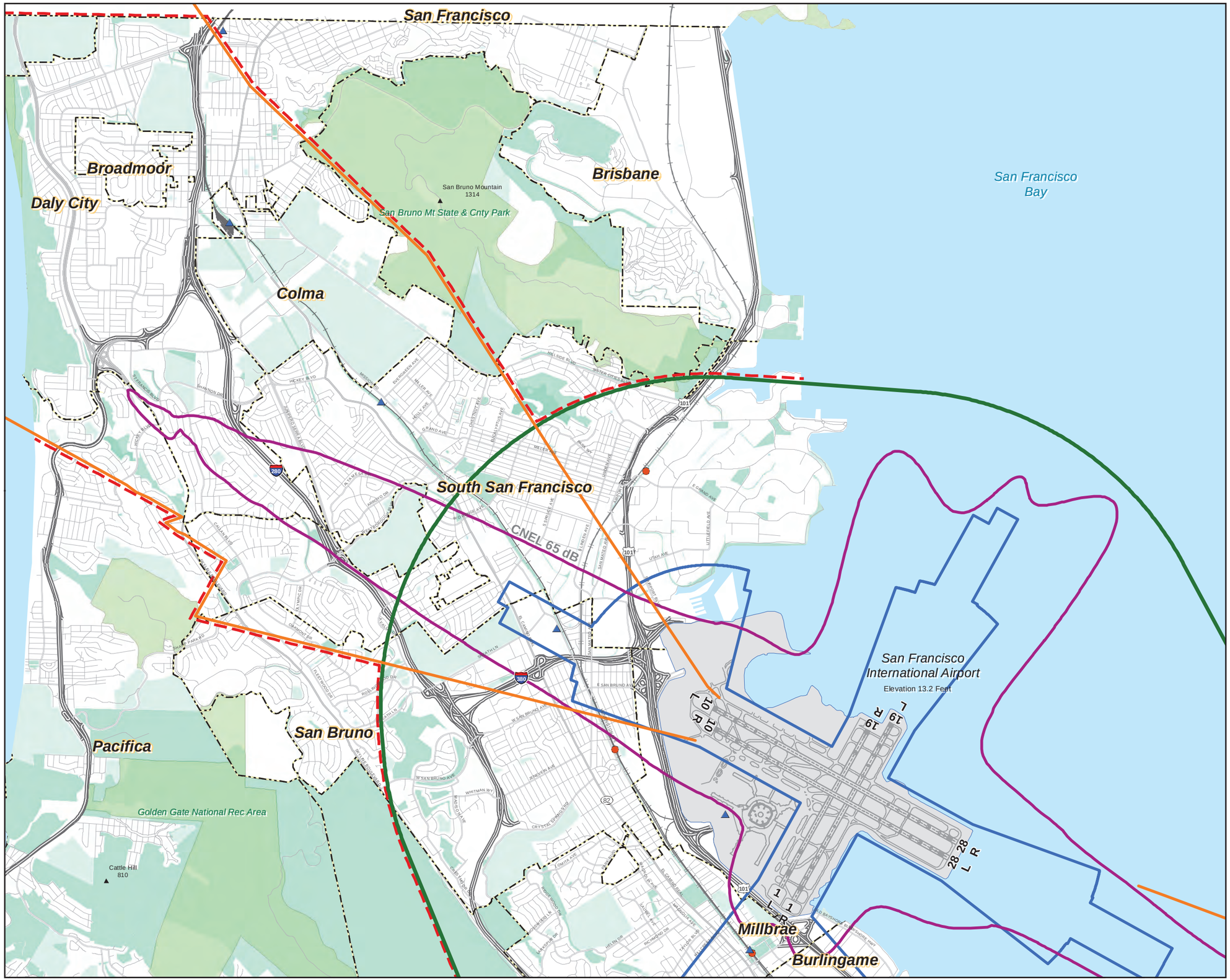
Exhibit IV-2

AIRPORT INFLUENCE AREA B --
LAND USE POLICY ACTION/PROJECT REFERRAL AREA

Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California



LEGEND

- Boundary for Airport Influence Area B
- Outer Boundary of Safety Zones
- CNEL Contour, 2020 Forecast
- 14 CFR Part 77 Conical Surface
- Outer Boundary of TERPS Approach and OEI Departure Surfaces
- Airport Property
- BART Station
- CALTRAIN Station
- Municipal Boundary
- Railroad
- Freeway
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- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

Sources:

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Outer Boundary of TERPS Approach and OEI Departure Surfaces: San Francisco International Airport, Jacobs Consultancy, and Planning Technology Inc., 2009

Safety Compatibility Zones: Jacobs Consultancy Team, 2009; Ricondo & Associates, Inc., 2011

Noise Contour: URS Corporation and BridgeNet International. Draft Environmental Assessment, San Francisco International Airport Proposed Runway Safety Area Program, June 2011

NORTH

0 0.2 0.4 0.8 Miles

Exhibit IV-3

AIRPORT INFLUENCE AREA B -- NORTH SIDE

Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments of San Mateo County, California

IP-2 AIRPORT INFLUENCE AREA B – POLICY/PROJECT REFERRAL AREA

Within Area B, the Airport Land Use Commission (the C/CAG Board) shall exercise its statutory duties to review proposed land use policy actions, including new general plans, specific plans, zoning ordinances, plan amendments and rezonings, and land development proposals. The real estate disclosure requirements in Area A also apply in Area B. For the purposes of this policy, parcels along the edge of the Area B Boundary that are split by the boundary shall be considered as fully being within Area B.

Portions of unincorporated San Mateo County and the following municipalities are located within Area B:

- Daly City – small part of the city in the Serramonte area
- Colma –the entire town
- Pacifica – north and northeast of the city
- South San Francisco – all but north and west sides of the city
- San Bruno – all but northwest corner of the city
- Millbrae – the entire city
- Burlingame – the entire city
- Hillsborough – the northern part of the town, north of Chateau Drive
- San Mateo – a few blocks in the City of San Mateo
- Foster City – the northern part of the City
- Unincorporated San Mateo County: California Golf Club, Country Club Park, Burlingame Hills, and San Francisco International Airport

The following special districts are located within Area B of the AIA:

- North San Mateo County Sanitation District
- Peninsula Health Care District
- San Mateo County Flood Control District
- San Mateo County Harbor District
- San Mateo County Mosquito & Vector Control District
- Westborough County Water District

The following school districts and community college district are located within Area B:

- Bayshore Elementary School District
- Brisbane Elementary School District
- Burlingame Elementary School District

- Hillsborough City Elementary School District
- Jefferson Elementary School District
- Jefferson Union High School District
- Millbrae Elementary School District
- Pacifica School District
- San Bruno Park Elementary School District
- San Mateo County Community College District
- San Mateo Foster City Elementary School District
- San Mateo Union High School District
- South San Francisco Elementary School District

4.3 Noise Compatibility Policies

The airport noise compatibility policies described in this section have a two-fold purpose:

1. To protect the public health, safety, and welfare by minimizing the exposure of residents and occupants of future noise-sensitive development to excessive noise.

2. To protect the public interest in providing for the orderly development of SFO by ensuring that new development in the Airport environs complies with all requirements necessary to ensure compatibility with aircraft noise in the area. The intent is to avoid the introduction of new incompatible land uses into the Airport's "noise impact area" so that the Airport will continue to be in compliance with the State Noise Standards for airports (California Code of Regulations, Title 21, Sections 5012 and 5014).[3]

The following noise compatibility policies (NP) shall apply to the ALUCP.

NP-1 NOISE COMPATIBILITY ZONES

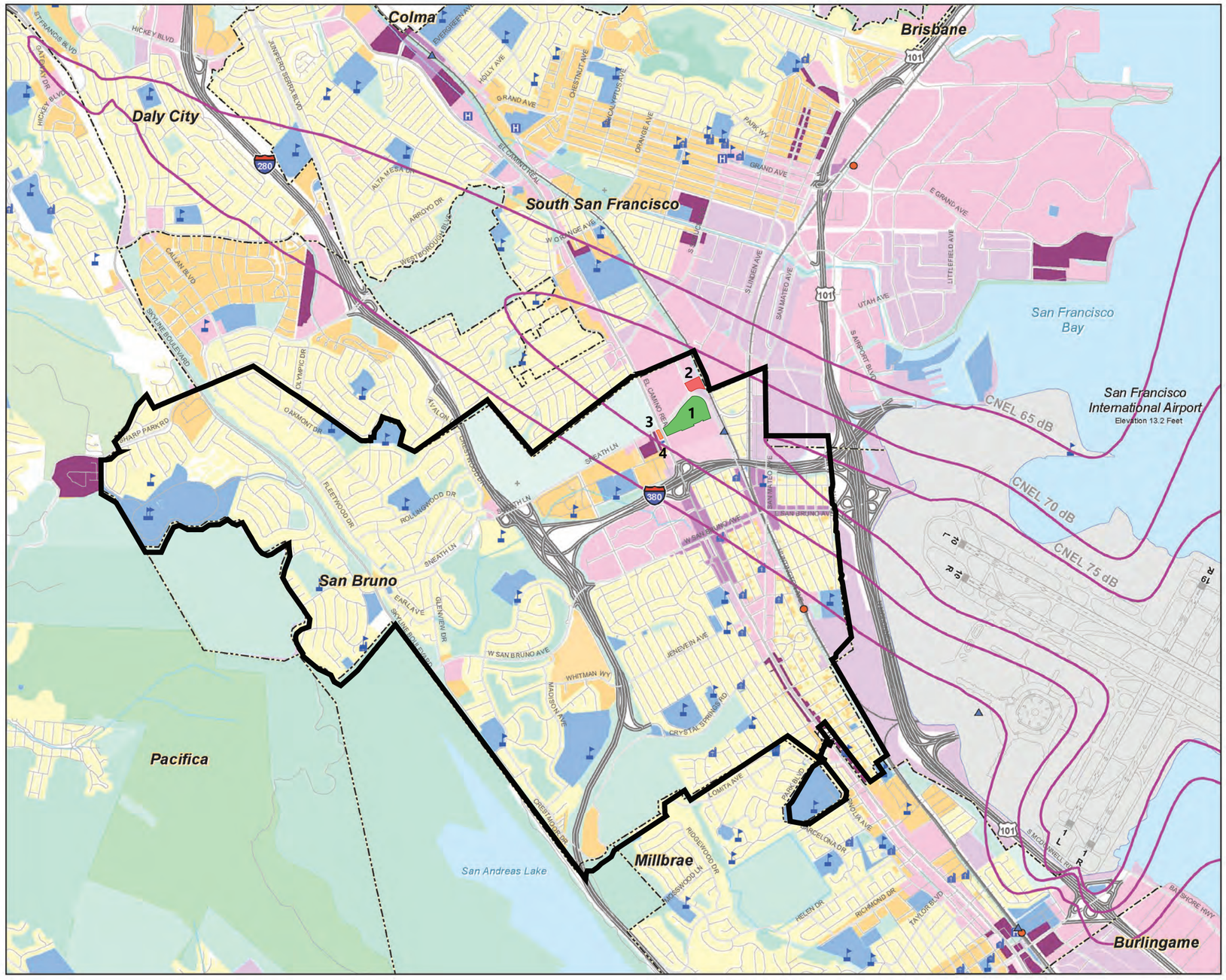
For the purposes of this ALUCP, the projected 2020 CNEL noise contour map from the Draft Environmental Assessment for the Proposed Runway Safety Area Program shall define the boundaries within which noise compatibility policies described in this Section shall apply.[4] **Exhibit IV-5** depicts the noise compatibility zones. More detail is provided on **Exhibit IV-6**. The zones are defined by the CNEL 65, 70 and 75 dB contours.

[3] In 2002, the San Mateo County Board of Supervisors declared that the Airport had eliminated its "noise impact area," as defined under state law -- California Code of Regulations, Title 21, Sections 5012 and 5014.

[4] URS Corporation and BridgeNet International. *Draft Environmental Assessment, Proposed Runway Safety Area Program, San Francisco International Airport*, June 2011.

Attachment B:

SFO ALUCP Noise Compatibility Policies



San Bruno Draft 2023- 2031 Housing Element Update Suitable Sites

Site No.	APN	Address	Existing General Plan Land Use	Proposed General Plan Land Use	Existing Zoning	Proposed Zoning
1	014316330	1150 El Camino Real	Regional Commercial	Transit-Oriented Development	P-D	P-D
2	014311060	1292 Huntington Ave.	Transit-Oriented Development	Transit-Oriented Development	TOD-1	TOD-1
3	020013100	1151 El Camino Real	Neighborhood Commercial	Transit-Oriented Development	C-N	TOD-2
4	020213200 020013170	1101 El Camino Real	High-Density Residential	Transit-Oriented Development	P-D	P-D

LEGEND

- CNEL Contour, 2020 Forecast
- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Road

Planned Land Use Per General Plans:

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space
- Planned use not mapped

Sources:

Noise Contour Data:
- Draft Environmental Assessment, Proposed Runway Safety Area Program, San Francisco International Airport. URS Corporation and BridgeNet International, June 2011

County Base Maps:
- San Mateo County Planning & Building Department, 2007

Local Plans:
- Burlingame Bayfront Specific Area Plan, August 2006
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- Burlingame General Map, September 1984
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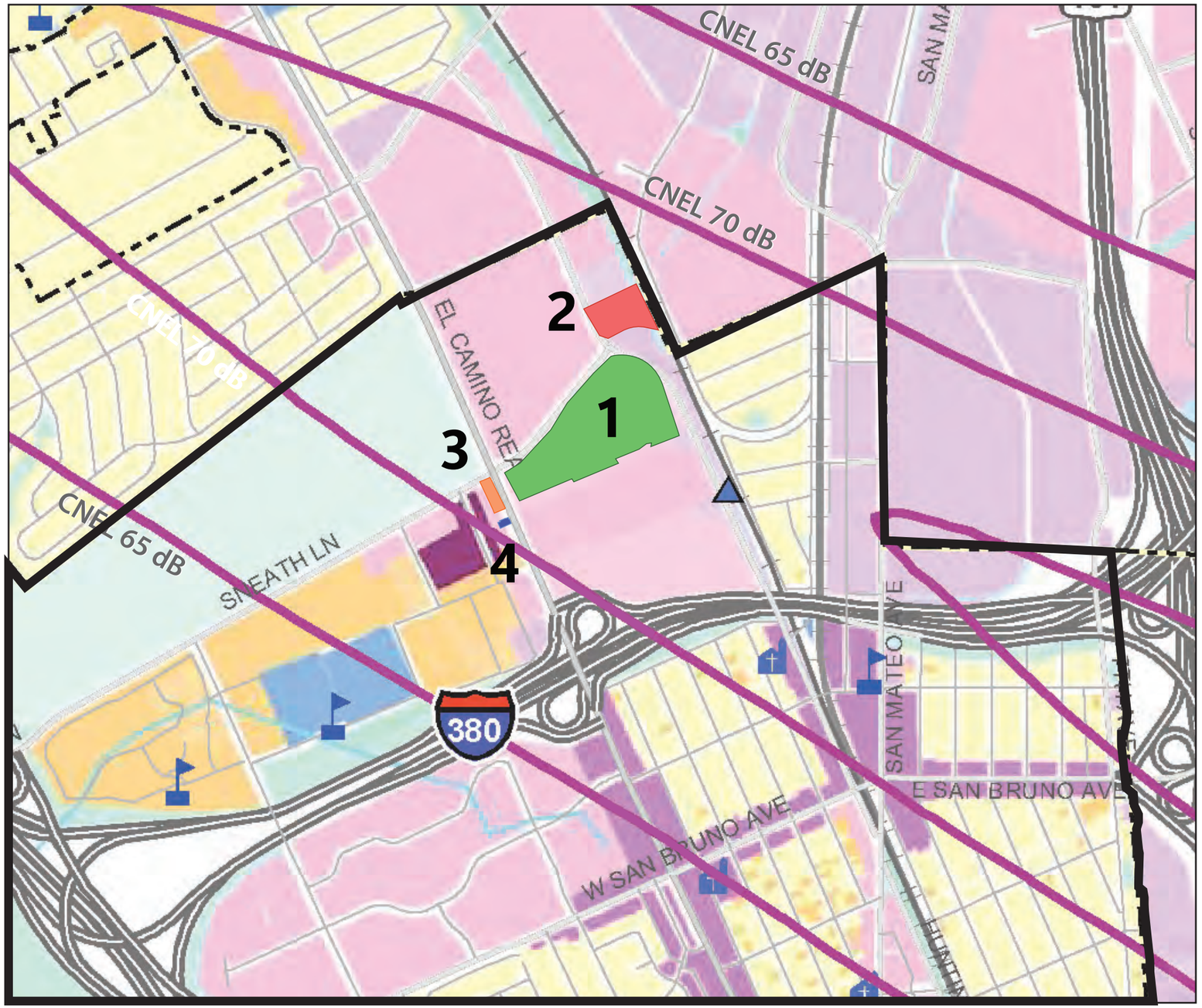
- Colma Municipal Code Zoning Maps, December 2003
- Daly City General Plan Land Use Map, 1987
- Hillsborough General Plan, March 2005
- Millbrae Land Use Plan, November 1998
- Pacifica General Plan, August 1996
- San Bruno General Plan, December 2008
- San Mateo City Land Use Plan, March 2007
- San Mateo County Zoning Map, 1992
- South San Francisco General Plan, 1998

NORTH

0 0.1 0.2 0.4 Miles

Exhibit IV-6
NOISE COMPATIBILITY ZONES -- DETAIL
Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG
City/County Association of Governments
of San Mateo County, California



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NORTH

0 0.1 0.2 0.4 Miles

Exhibit IV-6

NOISE COMPATIBILITY ZONES -- DETAIL

Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California

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[3] In 2002, the San Mateo County Board of Supervisors declared that the Airport had eliminated its "noise impact area," as defined under state law -- California Code of Regulations, Title 21, Sections 5012 and 5014.

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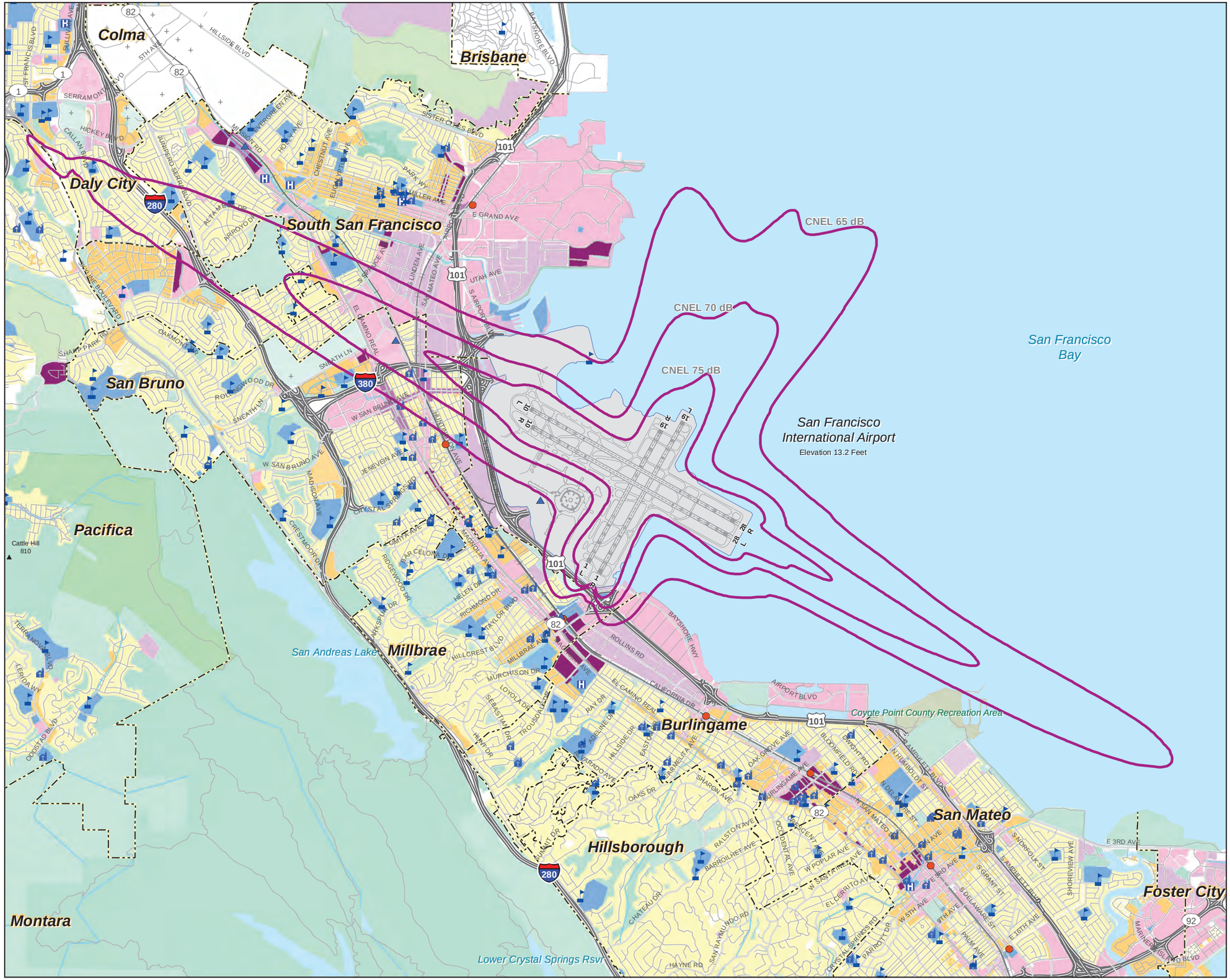

LEGEND

- CNEL Contour, 2020 Forecast
- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Road

Planned Land Use Per General Plans:

- Public
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- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
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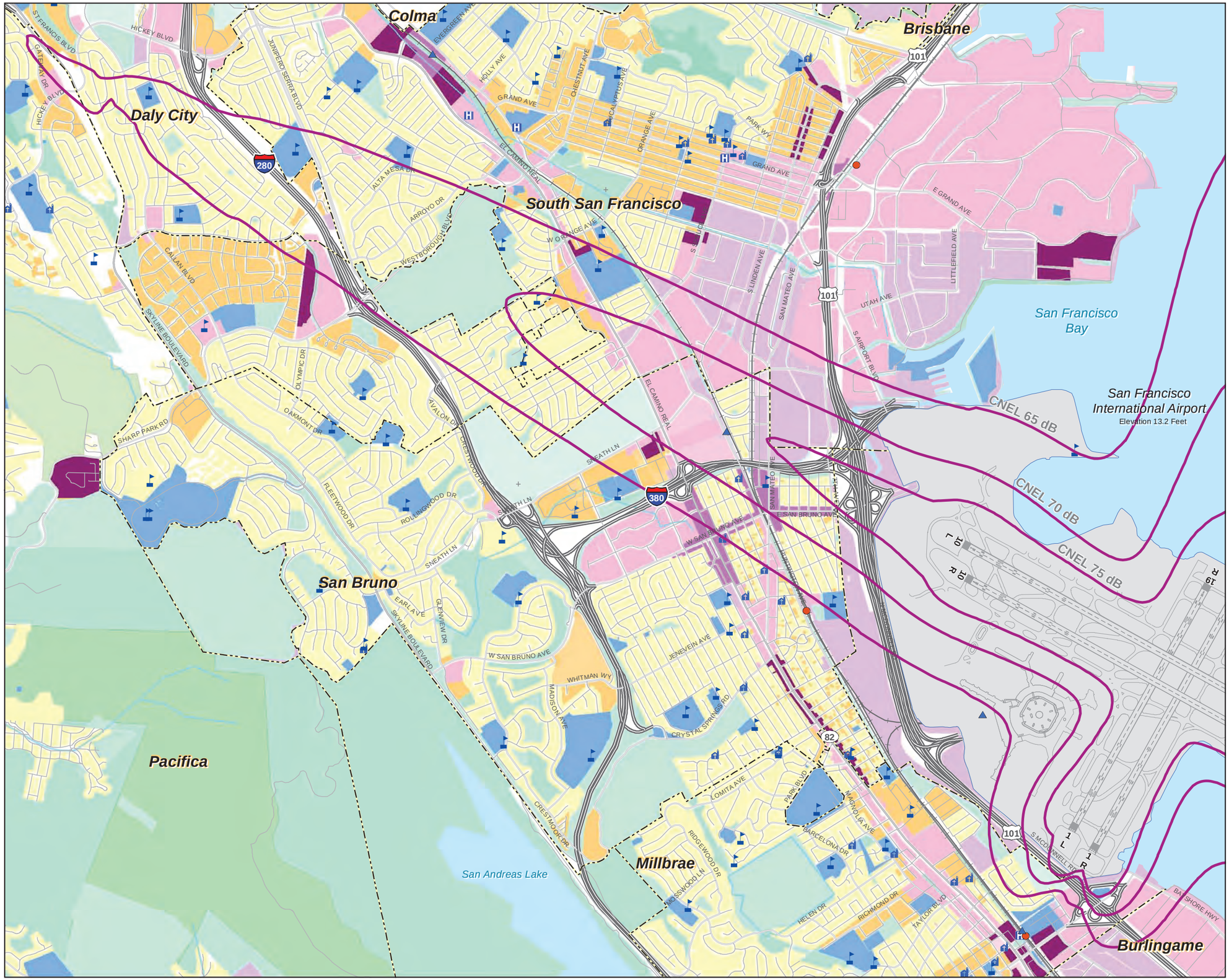
- South San Francisco General Plan, 1998

NORTH

0 0.275 0.55 1.1 Miles

Exhibit IV-5
NOISE COMPATIBILITY ZONES
Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG
City/County Association of Governments
of San Mateo County, California



LEGEND

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- San Bruno General Plan, December 2008
- San Mateo City Land Use Plan, March 2007
- San Mateo County Zoning Map, 1992
- South San Francisco General Plan, 1998

NORTH

0 0.1 0.2 0.4 Miles

Exhibit IV-6

NOISE COMPATIBILITY ZONES -- DETAIL

Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California

The CNEL noise contours presented in Exhibit IV-6 designate the area where noise exposure is great enough to warrant land use controls to promote noise compatibility. It is acknowledged that aircraft noise at levels below CNEL 65 dB can be disturbing to some people.

Although the contours were established using the best available information at the time, noise contours are subject to changes that can be difficult to predict over long periods of time. The primary causes of change in the noise contours at SFO are most likely to be changes in the numbers of operations (arrivals and departures) and in the mix of aircraft using the airport. The patterns of runway use and flight tracks are unlikely to change substantially due to the nature of local weather patterns, topography, and the presence of other airports and air traffic in the metropolitan area.

NP-2 AIRPORT NOISE/LAND USE COMPATIBILITY CRITERIA

The compatibility of proposed land uses located in the Airport noise compatibility zones shall be determined according to the noise/land use compatibility criteria shown in **Table IV-1**. The criteria indicate the maximum acceptable airport noise levels, described in terms of Community Noise Equivalent Level (CNEL), for the indicated land uses. The compatibility criteria indicate whether a proposed land use is "compatible," "conditionally compatible," or "not compatible" within each zone, designated by the identified CNEL ranges.

- "Compatible" means that the proposed land use is compatible with the CNEL level indicated in the table and may be permitted without any special requirements related to the attenuation of aircraft noise.
- "Conditionally compatible" means that the proposed land use is compatible if the conditions described in Table IV-1 are met.
- "Not compatible" means that the proposed land use is incompatible with aircraft noise at the indicated CNEL level.

Table IV-1 Noise/Land Use Compatibility Criteria

	COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)			
LAND USE	**BELOW 65 dB**	**65-70 dB**	**70-75 dB**	**75 dB AND OVER**
Residential				
Residential, single family detached	Y	C	N *(a)*	N
Residential, multi-family and single family attached	Y	C	N *(a)*	N
Transient lodgings	Y	C	C	N
Public/Institutional				
Public and Private Schools	Y	C	N	N
Hospitals and nursing homes	Y	C	N	N
Places of public assembly, including places of worship	Y	C	N	N
Auditoriums, and concert halls	Y	C	C	N
Libraries	Y	C	C	N
Outdoor music shells, amphitheaters	Y	N	N	N
Recreational				
Outdoor sports arenas and spectator sports	Y	Y	Y	N
Nature exhibits and zoos	Y	Y	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N
Golf courses, riding stables, and water recreation	Y	Y	Y	Y
Commercial				
Offices, business and professional, general retail	Y	Y	Y	Y
Wholesale; retail building materials, hardware, farm equipment	Y	Y	Y	Y
Industrial and Production				
Manufacturing	Y	Y	Y	Y
Utilities	Y	Y	Y	Y
Agriculture and forestry	Y	Y *(b)*	Y *(c)*	Y *(c)*
Mining and fishing, resource production and extraction	Y	Y	Y	Y

Notes:

CNEL = Community Noise Equivalent Level, in A-weighted decibels.

Y (Yes) = Land use and related structures compatible without restrictions.

C (conditionally compatible) = Land use and related structures are permitted, provided that sound insulation is provided to reduce interior noise levels from exterior sources to CNEL 45 dB or lower and that an avigation easement is granted to the City and County of San Francisco as operator of SFO. See Policy NP-3.

N (No) = Land use and related structures are not compatible..

(a) Use is conditionally compatible only on an existing lot of record zoned only for residential use as of the effective date of the ALUCP. Use must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources. The property owners shall grant an avigation easement to the City and County of San Francisco prior to issuance of a building permit for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO shall record a notice of termination of the avigation easement.

(b) Residential buildings must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources.

(c) Accessory dwelling units are not compatible.

SOURCES: Jacobs Consultancy Team 2010. Based on State of California General Plan Guidelines for noise elements of general plans; California Code of Regulations, Title 21, Division 2.5, Chapter 6, Section 5006; and 14 CFR Part 150, Appendix A, Table 1.

PREPARED BY; Ricondo & Associates, Inc., June 2012.

NP-3 GRANT OF AVIGATION EASEMENT

Any action that would either permit or result in the development or construction of a land use considered to be conditionally compatible with aircraft noise of CNEL 65 dB or greater shall be subject to this easement requirement. The determination of conditional compatibility shall be based on the criteria presented in Table IV-1 "Noise/Land Use Compatibility Criteria."

The San Mateo County Airport Land Use Commission (the C/CAG Board) deems it necessary to: (1) ensure the unimpeded use of airspace in the vicinity of SFO; (2) to ensure that new noise-sensitive land uses within the CNEL 65 dB contour are made compatible with aircraft noise, in accordance with California Code of Regulations, Title 21, Section 5014; and (3) to provide notice to owners of real property near the Airport of the proximity to SFO and of the potential impacts that could occur on the property from airport/aircraft operations. Thus, C/CAG shall condition its approval of proposed development upon the owner of the subject property granting an avigation easement to the City and County of San Francisco, as the proprietor of SFO. The local government with the ultimate permitting and approval authority over the proposed development shall ensure that this condition is implemented prior to final approval of the proposed development. If the approval action for the proposed development includes construction of a building(s) and/or other structures, the local permitting authority shall require the grant of an avigation easement to the City and County of San Francisco prior to issuance of a building permit(s) for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO shall record a notice of termination of the avigation easement.

The avigation easement to be used in fulfilling this condition is presented in **Appendix G**.

NP-4 RESIDENTIAL USES WITHIN CNEL 70 dB CONTOUR

As described in Table IV-1, residential uses are not compatible in areas exposed to noise above CNEL 70 dB and typically should not be allowed in these high noise areas. .

NP-4.1 Situations Where Residential Use Is Conditionally Compatible

Residential uses are considered conditionally compatible in areas exposed to noise above CNEL 70 dB only if the proposed use is on a lot of record zoned exclusively for residential use as of the effective date of the ALUCP. In such a case, the residential use must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources. The property owner also shall grant an avigation easement to the City and County of San Francisco in accordance with Policy NP-3 prior to issuance of a building permit for the proposed building or structure.

NP-4.2 Construction of Additional Dwellings on Lots Occupied by Residential Uses is Incompatible within CNEL 70 dB Contour

The construction of second homes on lots occupied by residential uses and the creation of additional housing units in existing buildings within the CNEL 70 dB contour shall be incompatible and inconsistent with this ALUCP.

NP-4.3 Residential Subdivisions and Lot Splits are Incompatible within CNEL 70 dB Contour

The subdivision of land and the splitting of lots to enable the construction of additional housing within the CNEL 70 dB contour shall be incompatible and inconsistent with this ALUCP.

NP-4.4 Residential Rezonings are Incompatible Within CNEL 70 dB Contour

The rezoning of land for residential use within the CNEL 70 dB contour shall be considered incompatible and inconsistent with this ALUCP.

4.4 Safety Compatibility Policies

The safety compatibility policies are established with a twofold purpose:

1. To protect the public health, safety, and welfare by minimizing the public's exposure to the risk associated with potential aircraft accidents in the Airport vicinity.
2. To protect the public interest in providing for the orderly development of SFO by preventing the creation of new safety problems in the Airport environs.

Compared to noise, safety is a much more difficult concern to address in airport/land use compatibility policies. A major reason is that safety policies address uncertain events that may occasionally occur with aircraft operations, whereas noise policies deal with known, more or less predictable, events that occur with every aircraft operation.

Because aircraft accidents happen infrequently, and the time, place, and consequences of their occurrence cannot be accurately predicted, the concept of risk is central to the assessment of safety compatibility. In terms of airport/land use compatibility planning, two questions must be addressed to determine the relative degree of risk posed by potential aircraft accidents in various locations:

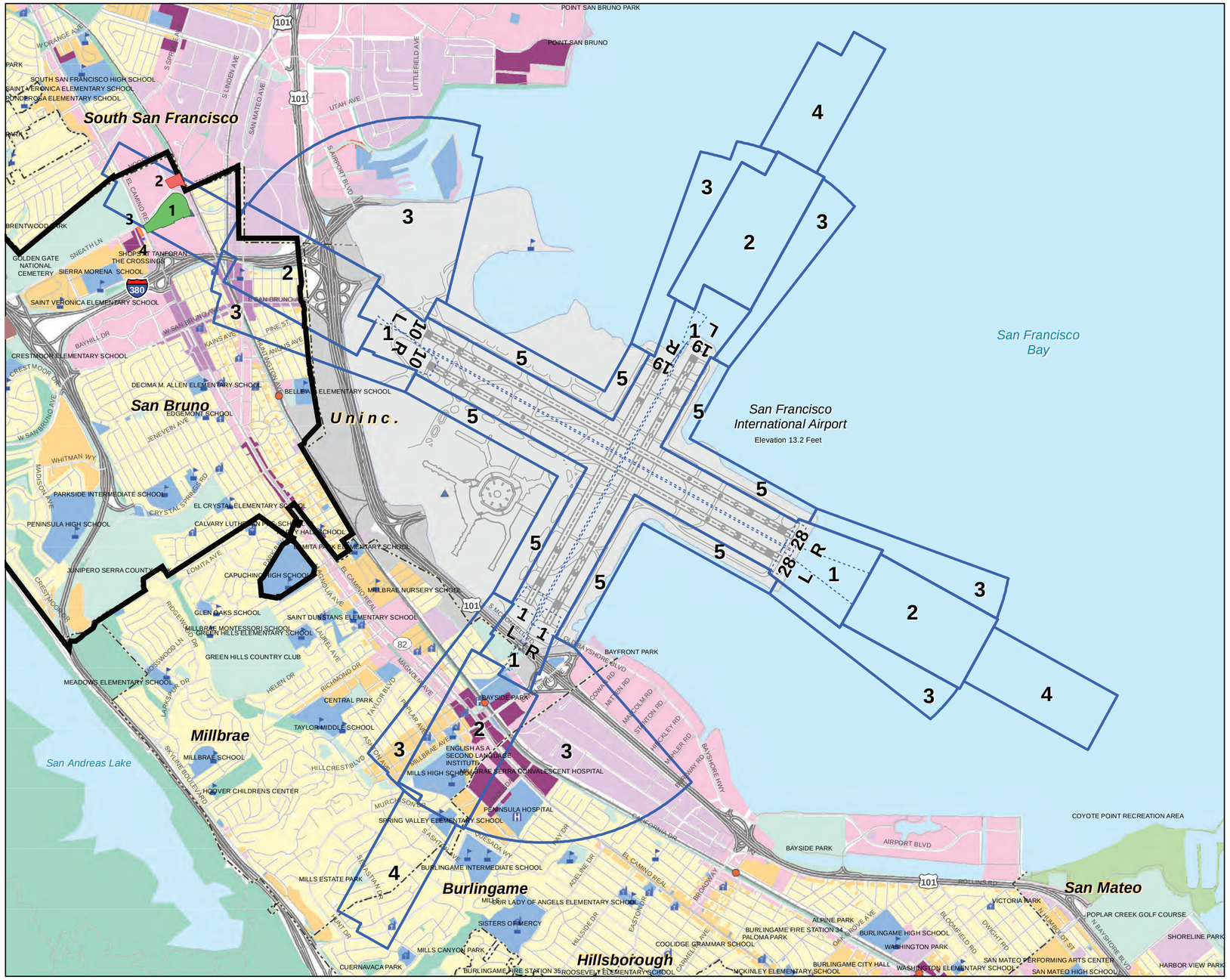
- Accident Frequency – Where and when do aircraft accidents typically occur in the vicinity of an airport?
- Accident Severity – What aircraft and land use characteristics contribute to the consequences of an accident when one occurs?

The overall objective of safety compatibility guidelines is to minimize the risks associated with potential aircraft accidents. There are two components to this objective:

- Safety of Persons on the Ground – The most fundamental safety compatibility component is to provide for the safety of people and property on the ground in the event of an aircraft accident near an airport.
- Safety of Aircraft Occupants – The other safety compatibility component is to enhance the chances of survival of the occupants of an aircraft involved in an accident that occurs beyond the runway environment.

Attachment C

SFO ALUCP Safety Compatibility Policies



San Bruno Draft 2023- 2031
Housing Element Update Suitable Sites

Site No.	APN	Address	Existing General Plan Land Use	Proposed General Plan Land Use	Existing Zoning	Proposed Zoning
1	014316330	1150 El Camino Real	Regional Commercial	Transit-Oriented Development	P-D	P-D
2	014311060	1292 Huntington Ave.	Transit-Oriented Development	Transit-Oriented Development	TOD-1	TOD-1
3	020013100	1151 El Camino Real	Neighborhood Commercial	Transit-Oriented Development	C-N	TOD-2
4	020213200 020013170	1101 El Camino Real	High-Density Residential	Transit-Oriented Development	P-D	P-D

LEGEND

Safety Compatibility Zones

- 1 - Runway Protection Zone-Object Free Area
- 2 - Inner Approach/Departure Zone
- 3 - Inner Turning Zone
- 4 - Outer Approach/Departure Zone
- 5 - Sideline Zonee

- Internal boundaries of ALP-defined areas
- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Road

Planned Land Use Per General Plans:

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space
- Planned use not mapped

Safety Compatibility Zones:
- Jacobs Consultancy Team, 2009; Ricondo & Associates, Inc., 2011

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- Burlingame General Map, September 1984
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- Colma Municipal Code Zoning Maps, December 2003
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- Pacifica General Plan, August 1996
- San Bruno General Plan, December 2008
- San Mateo City Land Use Plan, March 2007
- San Mateo County Zoning Map, 1992
- South San Francisco General Plan, 1998

NORTH

0 0.125 0.25 0.5 Miles

Exhibit IV-7
SAFETY COMPATIBILITY ZONES
Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG
City/County Association of Governments
of San Mateo County, California

NP-4.3 Residential Subdivisions and Lot Splits are Incompatible within CNEL 70 dB Contour

The subdivision of land and the splitting of lots to enable the construction of additional housing within the CNEL 70 dB contour shall be incompatible and inconsistent with this ALUCP.

NP-4.4 Residential Rezonings are Incompatible Within CNEL 70 dB Contour

The rezoning of land for residential use within the CNEL 70 dB contour shall be considered incompatible and inconsistent with this ALUCP.

4.4 Safety Compatibility Policies

The safety compatibility policies are established with a twofold purpose:

1. To protect the public health, safety, and welfare by minimizing the public's exposure to the risk associated with potential aircraft accidents in the Airport vicinity.
2. To protect the public interest in providing for the orderly development of SFO by preventing the creation of new safety problems in the Airport environs.

Compared to noise, safety is a much more difficult concern to address in airport/land use compatibility policies. A major reason is that safety policies address uncertain events that may occasionally occur with aircraft operations, whereas noise policies deal with known, more or less predictable, events that occur with every aircraft operation.

Because aircraft accidents happen infrequently, and the time, place, and consequences of their occurrence cannot be accurately predicted, the concept of risk is central to the assessment of safety compatibility. In terms of airport/land use compatibility planning, two questions must be addressed to determine the relative degree of risk posed by potential aircraft accidents in various locations:

- Accident Frequency – Where and when do aircraft accidents typically occur in the vicinity of an airport?
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- Safety of Persons on the Ground – The most fundamental safety compatibility component is to provide for the safety of people and property on the ground in the event of an aircraft accident near an airport.
- Safety of Aircraft Occupants – The other safety compatibility component is to enhance the chances of survival of the occupants of an aircraft involved in an accident that occurs beyond the runway environment.

The Caltrans *Airport Land Use Planning Handbook* provides guidance on the delineation of safety zones and the application of land use policies in those zones. [5] The safety zones at SFO are based on the *Handbook* guidance, with adjustments to reflect the specific operating characteristics of the Airport. The safety compatibility policy framework is also based on *Handbook* guidance. The safety compatibility policies of this ALUCP were designed to work in tandem with the airspace protection policies, described in Section 4.5. The land use compatibility standards established in Table IV-2 restrict the development of land uses that could pose particular hazards to the public or to vulnerable populations in case of an aircraft accident.[6] The maximum building height limits established under the airspace protection policies in Section 4.5 are set at the lowest elevation of the combined airspace surfaces at SFO, including Part 77 airport obstruction surfaces, TERPS obstacle clearance surfaces, and one-engine inoperative clearance surfaces. The airspace surfaces are generally lowest immediately off the runway ends in the safety zones. This maximum height restriction effectively limits the maximum density of residential uses and the intensity of nonresidential uses.[7]

The following safety compatibility policies (SP) shall apply to the ALUCP.

SP-1 SAFETY COMPATIBILITY ZONES

Exhibit IV-7 depicts the safety compatibility zones in the vicinity of SFO. Five zones are established, as follows:

- **Zone 1 -- Runway Protection Zone and Object Free Area (RPZ-OFA):** Zone 1 includes the RPZ and the OFA, areas defined according to FAA airport design criteria. [8] The RPZ is a trapezoid-shaped area off each runway end, with the dimensions based on the runway approach visibility minimums and the type of aircraft using the runway. The OFA is a rectangular area centered on each runway within which objects, other than those serving a specific aeronautical purpose, are to be prohibited. Zone 1is an area of relatively high accident risk that FAA encourages airport proprietors to own and keep free of objects, structures, and incompatible uses, including places of assembly (housing, churches, schools, shopping centers, hospitals, and the like), fuel storage, and wildlife attractants.
- **Zone 2 -- Inner Approach/Departure Zone (IADZ):** Zone 2, the IADZ, is designated along the extended centerline of each runway beginning at the outer edge of the RPZ. It is an area of secondary accident risk that tends to be overflown by most aircraft arrivals and departures off each runway end.
- **Zone 3 -- Inner Turning Zone (ITZ):** Zone 3, the ITZ, lies alongside the RPZ and IADZ. It is an area overflown by aircraft making turns at low altitude immediately after takeoff. It tends

[5] California Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook*, October 2011, pp. 3-11 – 3-28, 4-13 – 4-34, and Appendices E and F.

[6] For purposes of this ALUCP, vulnerable populations are those with effective limited mobility, including hospital and nursing home patients and children in schools and day care centers.

[7] The Caltrans *Handbook* measures residential density in dwelling units per acre and nonresidential intensity in people (occupants) per acre. The rationale for the definition of safety zones and policies is discussed in greater detail in **Appendix E** of this ALUCP.

[8] FAA Advisory Circular 150/5300-13, Airport Design, Section 211 and 307.

to be subject to lower accident risk than the IADZ.

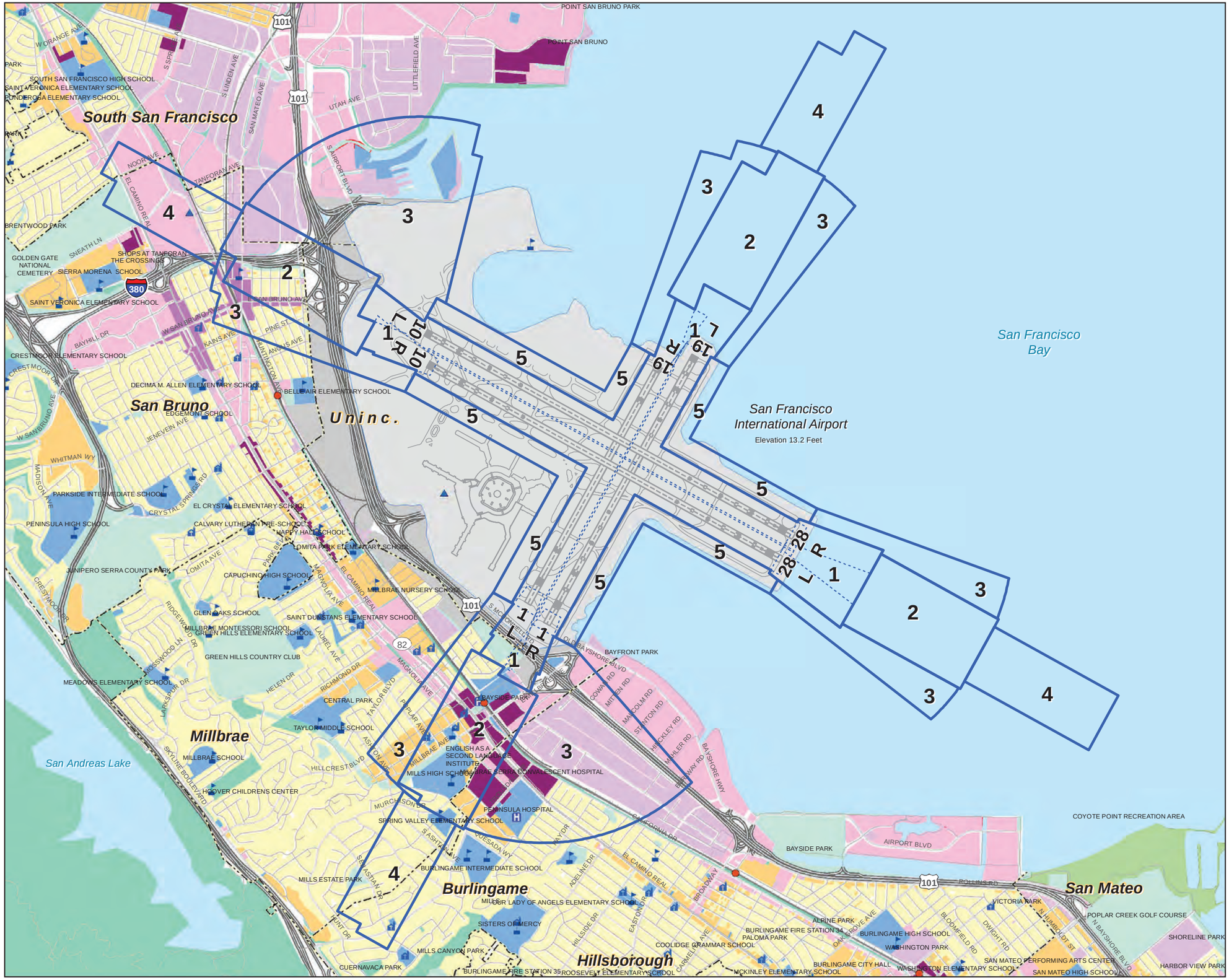
- **Zone 4 -- Outer Approach/Departure Zone (OADZ):** Zone 4, the OADZ, extends along the extended runway centerline immediately beyond the IADZ. It is subject to overflights of aircraft on approach and straight-out departures. At SFO, the OADZ off the west end of Runways 10R-28L and 10L-28R is overflown by a high proportion of departures using Runways 28L and 28R, especially long-haul departures by heavy, wide-body aircraft.
- **Zone 5 – Sideline Zone (SZ):** Zone 5, the SZ, is a rectangular area centered on each runway centerline with a width of 2,000 feet and a length extending 200 feet beyond each runway end. This area is subject to accident risks associated with aircraft losing directional control on takeoff or after landing. At SFO, the SZ is entirely on Airport property.

Exhibit IV-8 presents a close-up view of the safety zones off the west end of Runways 10L-28R and 10R-28L. The RPZs have the following dimensions: 500-foot inner width, 1,010-foot outer width, and 1,700-foot length.

Zone 2 (the IADZ) off each runway extends 4,300 feet beyond the RPZ, with the lateral boundaries extending 750 feet on either side of the extended runway centerline. Zone 4, (the OADZ) extends 4,000 feet beyond Zone 2, with the lateral boundaries extending 500 feet either side of the extended runway centerline.

Zone 3, (the ITZ) extends 6,000 feet from the inner edge of the RPZ on both sides of Zone 2. On the north side, the shape of Zone 3 is designed to capture the area overflown by departures turning right on standard instrument departure routes.[9] The eastern boundary follows a radial 75 degrees northeast of the extended runway centerline.

[9] Three published instrument departures at SFO require aircraft using Runways 28L and 28R to turn right immediately after takeoff – the Quiet Two, the Rebas, and the Shoreline One departures. http://www.airnav.com/airport/KSFO, accessed February 20, 2012.



LEGEND

Safety Compatibility Zones

- 1 - Runway Protection Zone-Object Free Area
- 2 - Inner Approach/Departure Zone
- 3 - Inner Turning Zone
- 4 - Outer Approach/Departure Zone
- 5 - Sideline Zonee

Internal boundaries of ALP-defined areas

Airport Property

BART Station

CALTRAIN Station

School

Place of Worship

Hospital

Municipal Boundary

Railroad

Freeway

Road

Planned Land Use Per General Plans:

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space
- Planned use not mapped

Sources:

Safety Compatibility Zones:
- Jacobs Consultancy Team, 2009; Ricondo & Associates, Inc., 2011

County Base Maps:
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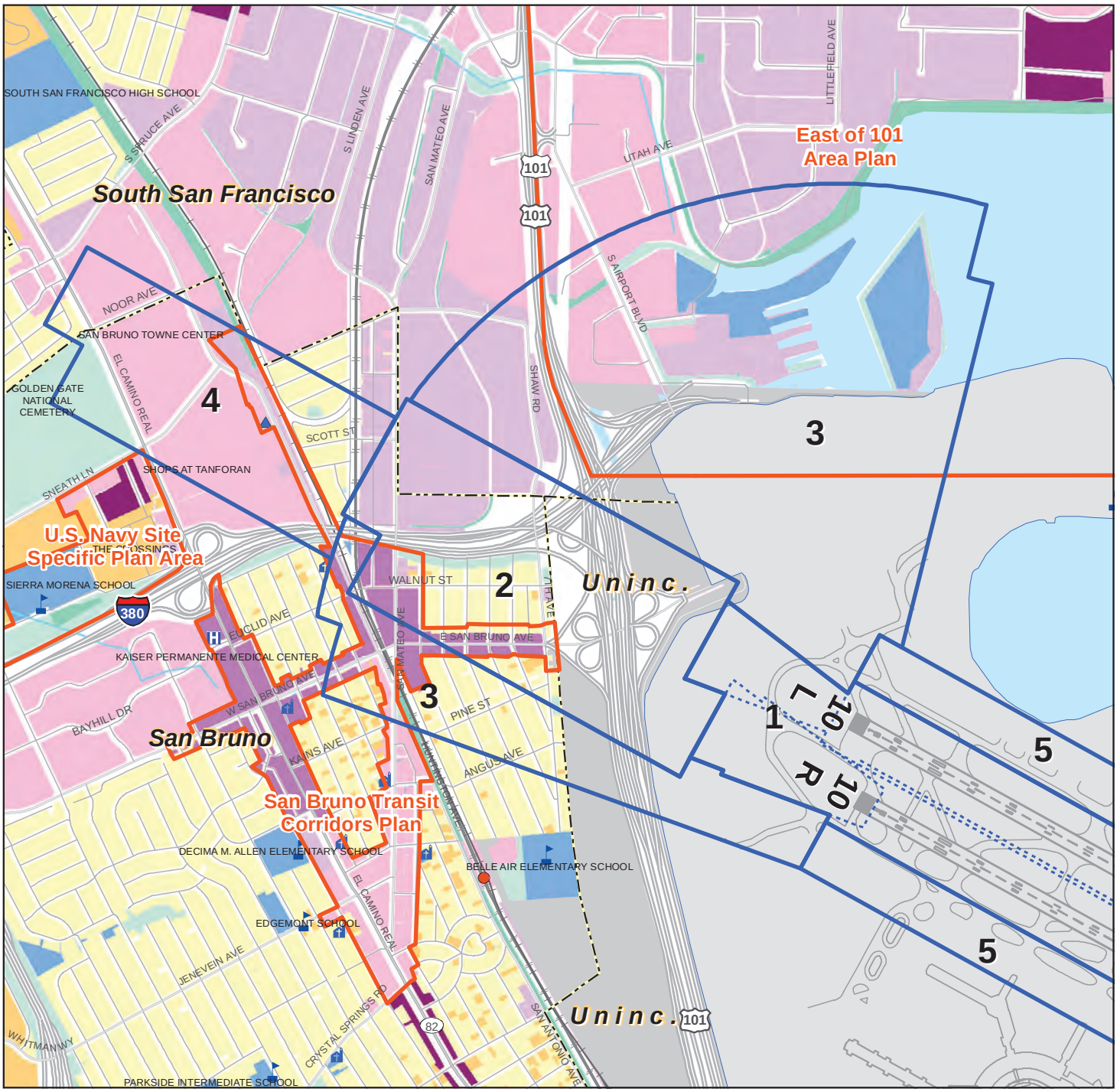
NORTH

0 0.125 0.25 0.5 Miles

Exhibit IV-7
SAFETY COMPATIBILITY ZONES
Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG
City/County Association of Governments
of San Mateo County, California



LEGEND

Safety Compatibility Zones

- 1 - Runway Protection Zone-Object Free Area
- 2 - Inner Approach/Departure Zone
- 3 - Inner Turning Zone
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- 5 - Sideline Zones
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- Specific Plan Area
- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Major Road
- Road

Planned Land Use Per General Plans

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

NORTH

0 0.125 0.25 0.5 Miles

Sources:

Local Plans:
- San Bruno General Plan, December 2008
- South San Francisco General Plan, 1998

Exhibit IV-8

SAFETY COMPATIBILITY ZONES IN THE CITIES OF SOUTH SAN FRANCISCO AND SAN BRUNO

Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California

Exhibit IV-9 depicts the safety zones off the south end of Runways 1L-19R and 1R-19L. In Zone 1, the RPZs have a 500-foot inner width, 1,010-foot outer width and 1,700-foot length. Zone 2 (the IADZ) extends 4,300 feet from the outer edge of the RPZ and is 1,500 feet wide, centered on the extended runway centerline. Zone 3 (the ITZ) extends 6,000 feet from the inner edge of each RPZ. On the east side, Zone 3 is fanned 70 degrees east of the extended runway centerline. This reflects the left departure turns made by nearly all aircraft taking off on Runways 19L and 19R and 19R.[10] Zone 4, the OADZ, extends 4,000 feet beyond the end of Zone 2.

SP-2 SAFETY COMPATIBILITY LAND USE CRITERIA

The land use compatibility criteria for safety are established in **Table IV-2**. The safety compatibility criteria are generally based on the guidelines provided in the *California Airport Land Use Planning Handbook*, although modifications have been made in recognition of the intense level of existing development in the airport vicinity. See Appendix E for a discussion of the factors that were considered in establishing the safety compatibility policies.

The criteria include two categories – uses that are incompatible and uses that should be avoided in the respective zones.

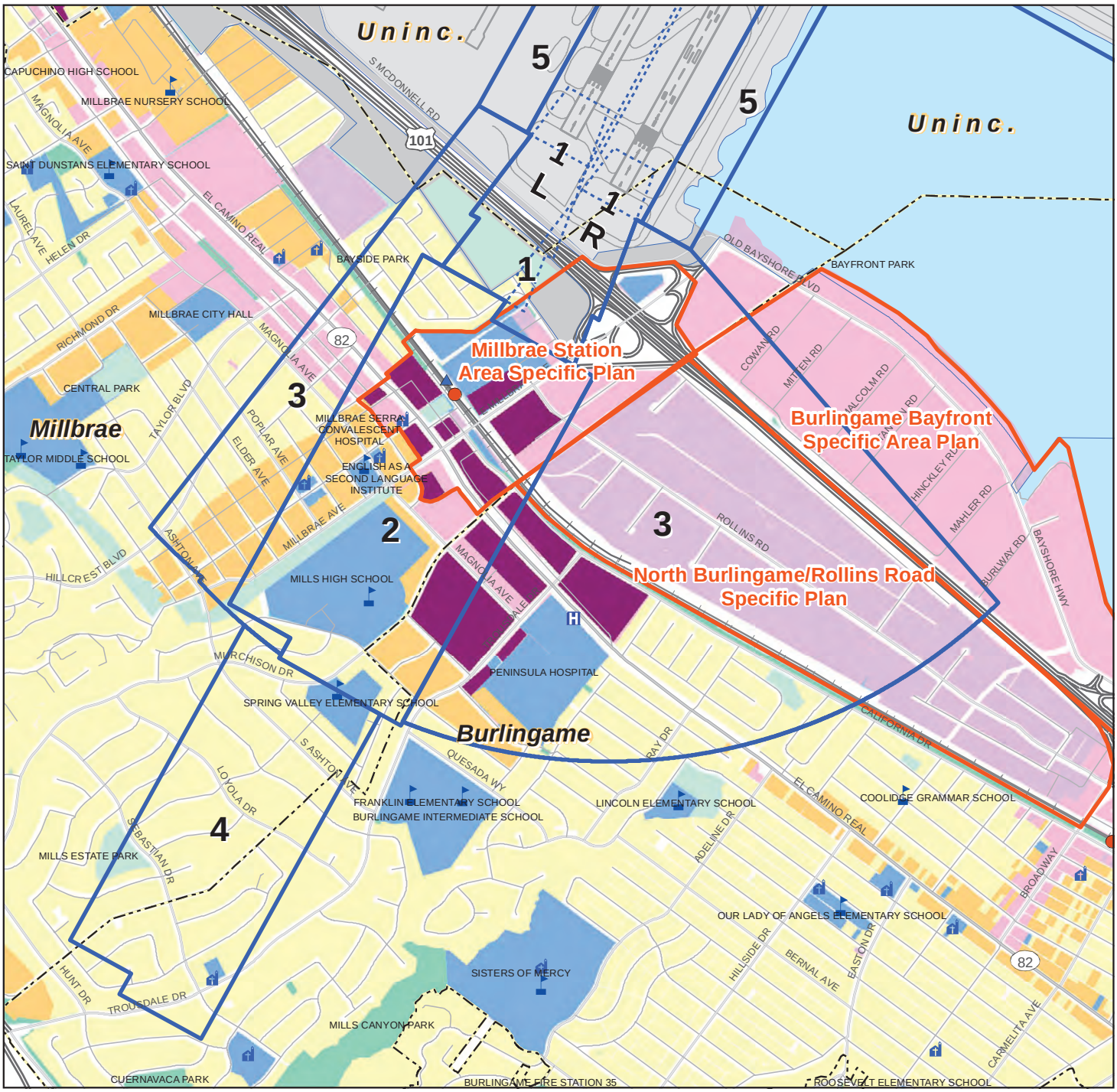
- Incompatible Uses – uses that are incompatible within the safety zone.
- Uses to be Avoided – uses that should not be allowed in the safety zone unless no feasible alternative is available, as determined by the land use agency with permitting authority. Where these uses are allowed, habitable structures shall be provided with at least 50 percent more exits than required by applicable codes. If the 50 percent calculation results in a fraction, the fractional number shall be rounded up to the next whole number.

ZONE 1 – RUNWAY PROTECTION ZONE AND OBJECT FREE AREA (RPZ-OFA)

Zone 1 is the zone where the accident risk is highest. At SFO, the RPZs for Runways 10R and 10L are on Airport property or on public highway right-of-way. Most of the RPZs for Runways 1L and 1R are on Airport property or public right-of-way. Part of the RPZs lie in Bayside Park and small areas extend onto private property. All of the OFAs (Object Free Areas) are on Airport property.

The compatibility criteria presented in Table IV-2 declare that all new structures in Zone 1 are incompatible. All but very low intensity nonresidential uses, at the outer edges of the RPZs, are to be avoided. Examples of potentially acceptable nonresidential uses include parking lots and outdoor equipment storage.

[10] All published instrument departure procedures for Runways 19L and 19R require aircraft to turn left immediately after takeoff. http://www.airnav.com/airport/KSFO, accessed February 20, 2012.



LEGEND

Safety Compatibility Zones

- 1 - Runway Protection Zone-Object Free Area
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- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Major Road
- Road

Planned Land Use Per General Plans

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

NORTH

0 0.125 0.25 0.5 Miles

Sources:

Local Plans:
- San Bruno General Plan, December 2008
- South San Francisco General Plan, 1998

ExhibitIV-9

SAFETY COMPATIBILITY ZONES
IN THE CITIES OF BURLINGAME AND MILLBRAE

Comprehensive Airport Land Use Plan
for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments
of San Mateo County, California

Table IV-2 (1 of 2) Safety Compatibility Criteria

	LAND USE CRITERIA	
ZONE	**INCOMPATIBLE**[1/]	**AVOID**[1/]
Zone 1: Runway Protection Zone and Object Free Area (RPZ-OFA)		
	All new structures[3/] Places of assembly not in structures Hazardous uses[2/] Critical public utilities[2/]	Nonresidential uses except very low intensity uses[4/] in the "controlled activity area." [2/]
Zone 2: Inner Approach/Departure Zone (IADZ)		
	Children's schools[2/] Large child day care centers and noncommercial employer-sponsored centers ancillary to a place of business[2/] Hospitals, nursing homes Hazardous uses[2/] Critical public utilities[2/] Theaters, meeting halls, places of assembly seating more than 300 people Stadiums, arenas	---
Zone 3: Inner Turning Zone (ITZ)		
	Biosafety Level 3 and 4 facilities [2/] Children's schools [2/] Large child day care centers [2/] Hospitals, nursing homes Stadiums, arenas	Hazardous uses other than Biosafety Level 3 and 4 facilities[2/] Critical public utilities[2/]
Zone 4: Outer Approach/Departure Zone (OADZ)		
	Biosafety Level 3 and 4 facilities[2/] Children's schools [2/] Large child day care centers [2/] Hospitals, nursing homes Stadiums, arenas	Hazardous uses other than Biosafety Level 3 and 4 facilities [2/] Critical public utilities[2/]
Zone 5: Sideline Zone (SZ)		
	Children's schools[2/] Large child day care facilities and noncommercial employer-sponsored centers ancillary to a place of business Hospitals, nursing homes Hazardous uses[2/] Critical public utilities[2/] Stadiums, arenas	---

Table IV-2 (2 of 2) Safety Compatibility Criteria

Notes:

1/ *Avoid:* Use is not fully compatible and should not be permitted unless no feasible alternative is available. Where use is allowed, habitable structures shall be provided with at least 50 percent more exits than required by applicable codes. Where the 50-percent factor results in a fraction, the number of additional exits shall be rounded to the next highest whole number.

Incompatible Use is not compatible in the indicated zones and cannot be permitted.

2/ Definitions

- *Biosafety Level 3 and 4 facilities:* Medical and biological research facilities involving the storage and processing of extremely toxic or infectious agents. See Policy SP-3 for additional detail.
- *Children's schools:* Public and private schools serving preschool through grade 12, excluding commercial services.
- *Controlled Activity Area: The lateral edges of the RPZ, outside the Runway Safety Area (RSA) and the extension of the RSA, which extends to the outer edge of the RPZ. See FAA Advisory Circular 150/5300-13, Airport Design, Section 212a.(1)(b).*
- *Critical public utilities:* Facilities that, if disabled by an aircraft accident, could lead to public safety or health emergencies. They include the following: electrical power generation plants, electrical substations, wastewater treatment plants, and public water treatment facilities.
- *Hazardous uses:* Uses involving the manufacture, storage, or processing of flammable, explosive ,or toxic materials that would substantially aggravate the consequences of an aircraft accident. See Policy SP-3 for additional detail.
- *Large child day care centers:* Commercial facilities defined in accordance with Health and Safety Code, Section 1596.70, et seq., and licensed to serve 15 or more children. Family day care homes and noncommercial employer-sponsored facilities ancillary to place of business are allowed.

3/ Structures serving specific aeronautical functions are allowed, in compliance with applicable FAA design standards.

4/ Examples include parking lots and outdoor equipment storage.

SOURCE: Ricondo & Associates, Inc., June 2012.
PREPARED BY: Ricondo & Associates, Inc., June 2012.

ZONE 2 -- INNER APPROACH/DEPARTURE ZONE (IADZ)

In Zone 2, the IADZ, a variety of uses that involve hazardous materials, critical public utilities, theaters, meeting halls, places of assembly seating more than 300 people, stadiums, arenas, and those accommodating potentially vulnerable populations – such as children's schools, child day care facilities, hospitals, and nursing homes – are incompatible.

ZONE 3 -- INNER TURNING ZONE (ITZ)

The compatibility criteria in Zone 3, the ITZ, are somewhat less restrictive than in Zone 2. This is because the area is subject to less accident risk by virtue of the lower density of overflights in this area. In Zone 3, stadiums, arenas, and uses accommodating potentially vulnerable populations are incompatible. Hazardous uses and critical public utilities are not incompatible in Zone 3, but are classified as uses to be avoided. This means that they should not be permitted unless no feasible alternative is available.

ZONE 4 - OUTER APPROACH/DEPARTURE ZONE (OADZ)

The compatibility criteria in Zone 4,the OADZ, are the same as in Zone 3.

ZONE 5 – SIDELINE ZONE (SZ)

The compatibility criteria in Zone 5 are the same as those in Zone 2.

SP-3 HAZARDOUS USES

Hazardous uses, facilities involving the manufacture, processing, or storage of hazardous materials, can pose serious risks to the public in case of aircraft accidents. Hazardous materials of particular concern in this ALUCP, and which are covered by the safety compatibility criteria in Table IV-2, are the following:

A. **Aboveground fuel storage** — This includes storage tanks with capacities greater than 10,000 gallons of any substance containing at least 5 percent petroleum.[11] Project sponsors must provide evidence of compliance with all applicable regulations prior to the issuance of development permits.

B. **Facilities where toxic substances are manufactured, processed or stored** — Proposed land use projects involving the manufacture or storage of toxic substances may be allowed if the amounts of the substances do not exceed the threshold planning quantities for hazardous and extremely hazardous substances specified by the EPA.[12]

C. **Explosives and fireworks manufacturing and storage** — Proposed land use projects involving the manufacture or storage of explosive materials may be allowed in safety zones only in compliance with the applicable regulations of the California Division of Occupational Safety and Health (Section 5252, Table EX-1). Project sponsors must provide evidence of compliance with applicable state regulations prior to the issuance of any development permits.[13]

D. **Medical and biological research facilities handling highly toxic or infectious agents** — These facilities are classified by "Biosafety Levels."[14] Biosafety Level 1 does not involve hazardous materials and is not subject to the restrictions on hazardous uses in Table IV-2. Definitions of the other three biosafety levels are quoted from *Biosafety in Microbiological and Biomedical Laboratories*, below.[15]

    a. Biosafety Level 2 practices, equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, and other laboratories in which work is done with the broad spectrum of indigenous moderate-risk agents that are present in the community

[11] State of California, California Health and Safety Code, Section 25270 (*Aboveground Petroleum Storage Act*).

[12] Title 40 Code of Federal Regulations Part 355, Subpart D, Appendices A & B.

[13] California Code of Regulations, Title 8, Subchapter 7 *General Industry Safety Orders*, Group 18 *Explosives and Pyrotechnics*, Article 114 *Storage of Explosives*.

[14] *Biosafety in Microbiological and Biomedical Laboratories*, 5th Edition, 2009, published by the U.S. Department of Health and Human Services in concert with the Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health, or any successor publication.

[15] *Biosafety in Microbiological and Biomedical Laboratories*, 5th Edition, 2009, published by the U.S. Department of Health and Human Services in concert with the Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health, pp. 25-26.

and associated with human disease of varying severity.

b. Biosafety Level 3 practices, safety equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with indigenous or exotic agents with a potential for respiratory transmission, and which may cause serious and potentially lethal infection.

c. Biosafety Level 4 practices, safety equipment, and facility design and construction are applicable for work with dangerous and exotic agents that pose a high individual risk of life-threatening disease, which may be transmitted via the aerosol route and for which there is no available vaccine or therapy.

4.5 Airspace Protection

The compatibility of proposed land uses with respect to airspace protection shall be evaluated in accordance with the policies set forth in this section. These policies are established with a twofold purpose:

1. To protect the public health, safety, and welfare by minimizing the public's exposure to potential safety hazards that could be created through the construction of tall structures.

2. To protect the public interest in providing for the orderly development of SFO by ensuring that new development in the Airport environs avoids compromising the airspace in the Airport vicinity. This avoids the degradation in the safety, utility, efficiency, and air service capability of the Airport that could be caused by the attendant need to raise visibility minimums, increase minimum rates of climb, or cancel, restrict, or redesign flight procedures.

4.5.1 FEDERAL REGULATIONS REGARDING TALL STRUCTURES

14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use and Preservation of the Navigable Airspace*, governs the FAA's review of proposed construction exceeding certain height limits, defines airspace obstruction criteria, and provides for FAA aeronautical studies of proposed construction. **Appendix F** describes the FAA airspace review process and the extent of FAA authority related to airspace protection.

4.5.2 PART 77, SUBPART B, NOTIFICATION PROCESS

Federal regulations require any person proposing to build a new structure or alter an existing structure with a height that would exceed the elevations described in CFR Part 77, Subpart B, Section 77.9, to prepare an FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, and submit the notice to the FAA. The regulations apply to buildings and other structures or portions of structures, such as mechanical equipment, flag poles, and other projections that may exceed the aforementioned elevations.

Attachment D

SFO ALUCP Airspace Protection Policies

and associated with human disease of varying severity.

b. Biosafety Level 3 practices, safety equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with indigenous or exotic agents with a potential for respiratory transmission, and which may cause serious and potentially lethal infection.

c. Biosafety Level 4 practices, safety equipment, and facility design and construction are applicable for work with dangerous and exotic agents that pose a high individual risk of life-threatening disease, which may be transmitted via the aerosol route and for which there is no available vaccine or therapy.

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4.5.2 PART 77, SUBPART B, NOTIFICATION PROCESS

Federal regulations require any person proposing to build a new structure or alter an existing structure with a height that would exceed the elevations described in CFR Part 77, Subpart B, Section 77.9, to prepare an FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, and submit the notice to the FAA. The regulations apply to buildings and other structures or portions of structures, such as mechanical equipment, flag poles, and other projections that may exceed the aforementioned elevations.

Exhibit IV-10 depicts the approximate elevations at which the 14 CFR Part 77 notification requirements would be triggered; see **Exhibit IV-11** for a close-up view of the northern half and **Exhibit IV-12** for a close-up view of the southern half of the area. These exhibits are provided for informational purposes only. Official determinations of the areas and elevations within which the federal notification requirements apply are subject to the authority of the FAA. The FAA is empowered to require the filing of notices for proposed construction based on considerations other than height. For example, in some areas of complex airspace and high air traffic volumes, the FAA may be concerned about the potential for new construction of any height to interfere with electronic navigation aids. In these areas, the FAA will want to review all proposed construction projects.

The FAA has developed an on-line tool for project sponsors to use in determining whether they are required to file a Notice of Proposed Construction or Alteration. Sponsors of proposed projects are urged to refer to this website to determine whether they are required to file Form 7460-1 with the FAA:

https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm

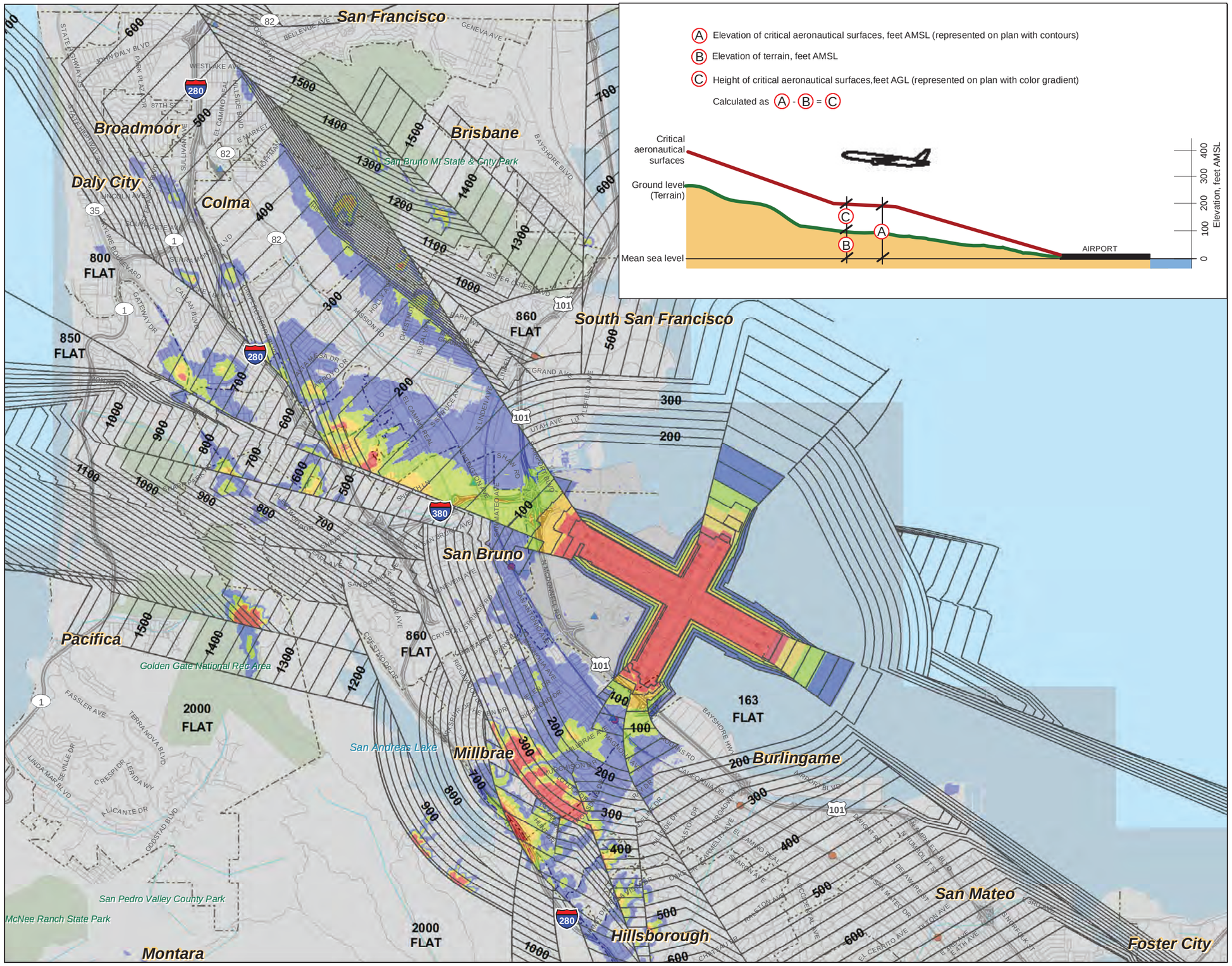
4.5.3 AIRSPACE MAPPING

Part 77, Subpart C, establishes obstruction standards for the airspace around airports including approach zones, conical zones, transitional zones, and horizontal zones known as "imaginary surfaces." **Exhibit IV-13** depicts the Part 77 Civil Airport Imaginary Surfaces at SFO. The imaginary surfaces rise from the primary surface, which is at ground level immediately around the runways. The surfaces rise gradually along the approach slopes associated with each runway end and somewhat more steeply off the sides of the runways. The FAA considers any objects penetrating these surfaces, whether buildings, trees or vehicles travelling on roads and railroads, as obstructions to air navigation. Obstructions may occur without compromising safe air navigation, but they must be marked, lighted, and noted on aeronautical publications to ensure that pilots can see and avoid them.

Close-up views of the north and south sides of the Part 77 surfaces are provided in **Exhibit IV-14** and **Exhibit IV-15**, respectively. Additionally, **Exhibit IV-16** provides an illustration of the outer approach and transitional surfaces located on the southeast side of the Part 77 surfaces.

Together with its tenant airlines, SFO has undertaken a mapping effort to illustrate the critical aeronautical surfaces that protect the airspace required for multiple types of flight procedures such as those typically factored into FAA aeronautical studies, as shown on **Exhibit IV-17** and **Exhibit IV-18**. These aeronautical surfaces include those established in accordance with FAA Order 8260.3B, *U.S. Standard for Terminal Instrument Procedures (TERPS)*, and a surface representing the airspace required for One-Engine Inoperative (OEI) departures from Runway 28L (to the west through the San Bruno Gap).[16] The exhibits depict the lowest elevations from the combination of the OEI procedure surface and all TERPS surfaces. The surfaces are defined with Required Obstacle Clearance (ROC) criteria to ensure safe separation of aircraft using the procedures from the underlying obstacles. Any proposed structures penetrating these surfaces are likely to receive Determinations of Hazard (DOH) from the FAA through the 7460-1 aeronautical study process. These surfaces indicate the maximum height at which structures can be considered compatible with Airport operations.

[16] See Appendix F, Section F.3.2 for a discussion of one-engine inoperative procedures.



LEGEND

A — 100 — Elevation of critical aeronautical surfaces, feet Above Mean Sea Level (AMSL), North American Vertical Datum of 1988 (NAVD88)

C **Height of Critical Aeronautical Surfaces, Feet Above Ground Level (AGL)**

- 35 and lower
- 35- 65
- 65 - 100
- 100 - 150
- 150 and more
- Airport Property
- BART Station
- CALTRAIN Station
- Regional Park or Recreation Area
- Municipal Boundary
- Railroad
- Freeway
- Road

Notes:

1. This map is intended for informational and conceptual planning purposes, generally representing the aeronautical surfaces considered most critical by San Francisco International Airport (SFO) and its constituent airlines. It does not represent actual survey data, nor should it be used as the sole source of information regarding compatibility with airspace clearance requirements in the development of data for an FAA Form 7460-1, Notice of Proposed Construction or Alteration. SFO does not certify its accuracy, information, or title to the properties contained in this plan. SFO does make any warrants of any kind, express or implied, in fact or by law, with respect to boundaries, easements, restrictions, claims, overlaps, or other encumbrances affecting such properties.

2. This map does not replace the FAA's obstruction evaluation / airport airspace analysis (OE/AAA) review process. Proposing construction at elevations and heights that are lower than the critical aeronautical surfaces shown on this map, (a) does not relieve the construction sponsor of the obligation to file an FAA Form 7460-1, and (b) does not ensure that the proposal will be acceptable to the FAA, SFO, air carriers, or other agencies or stakeholders. SFO, San Mateo County, and local authorities having jurisdiction reserve the right to re-assess, review, and seek modifications to projects that may be consistent with this critical aeronautical surfaces map but that through the FAA OE/AAA process are found to have unexpected impacts to the safety or efficiency of operations at SFO.

Sources: San Francisco International Airport, Jacobs Consultancy, and Planning Technology Inc., 2009

NORTH

0 0.25 0.5 1 Miles

Exhibit IV-17

CRITICAL AERONAUTICAL SURFACES -- NORTHWEST SIDE

Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport

C/CAG

City/County Association of Governments of San Mateo County, California

Exhibit IV-19, which is provided for information purposes only, depicts a profile view of the lowest critical airspace surfaces along the extended centerline of Runway 10L-28R – the TERPS Obstacle Departure Procedure (ODP) surface, representing standard all-engines departures, and the approximate OEI surface developed by SFO through independent study in consultation with the airlines serving SFO. The exhibit also shows the terrain elevation beneath the airspace surfaces and various aircraft approach and departure profiles, based on varying operating assumptions. The exhibit illustrates a fundamental principle related to the design of airspace protection surfaces. The surfaces are always designed below the actual aircraft flight profile which they are designed to protect, thus providing a margin of safety. Note that the ODP climb profile is above the ODP airspace surface, and the OEI climb profile is above the OEI airspace surface.

4.5.4 AIRSPACE PROTECTION POLICIES

The following airspace protection policies (AP) shall apply to the ALUCP.

AP-1 COMPLIANCE WITH 14 CFR PART 77, SUBPART B, NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

AP-1.1 Local Government Responsibility to Notify Project Sponsors

Local governments should notify sponsors of proposed projects at the earliest opportunity to file Form 7460-1, *Notice of Proposed Construction or Alteration*, with the FAA for any proposed project that would exceed the FAA notification heights, as shown approximately on Exhibit IV-10. Under Federal law, it is the responsibility of the project sponsor to comply with all notification and other requirements described in 14 CFR Part 77. This requirement applies independent of this ALUCP.

AP-1.2 FAA Aeronautical Study Findings Required Before Processing Development Application

The sponsor of a proposed project that would exceed the FAA notification heights, as shown approximately on Exhibit IV-10, shall present to the local government permitting agency with his or her application for a development permit, a copy of the findings of the FAA's aeronautical study, or evidence demonstrating that he or she is exempt from having to file an FAA Form 7460-1. It is the responsibility of the local agency to consider the FAA determination study findings as part of its review and decision on the proposed project.

AP-2 COMPLIANCE WITH FINDINGS OF FAA AERONAUTICAL STUDIES

Project sponsors shall be required to comply with the findings of FAA aeronautical studies with respect to any recommended alterations in the building design and height and any recommended marking and lighting of their structures for their proposed projects to be deemed consistent with this ALUCP.

AP-3 MAXIMUM COMPATIBLE BUILDING HEIGHT

In order to be deemed consistent with the ALUCP, the maximum height of a new building must be the lower of (1) the height shown on the SFO critical aeronautical surfaces map (Exhibits IV-17 and IV-18), or (2) the maximum height determined not to be a "hazard to air navigation" by the FAA in an aeronautical study prepared pursuant to the filing of Form 7460-1.

For the vast majority of parcels, the height limits established in local zoning ordinances are lower than the critical airspace surfaces. In those cases, the zoning district height regulations will control. Compliance with the zoning district height and the SFO critical aeronautical surfaces map, however, does not relieve the construction sponsor of the obligation to file a FAA Form 7460-1 *Notice of Proposed Construction or Alteration*, if required, and to comply with the determinations resulting from the FAA's aeronautical study.

For a project to be consistent with this ALUCP, no local agency development permits shall be issued for any proposed structure that would penetrate the aeronautical surfaces shown on Exhibits IV-17 and IV-18 or the construction of which **has not** received a Determination of No Hazard from the FAA, or which would cause the FAA to increase the minimum visibility requirements for any instrument approach or departure procedure at the Airport.

AP-4 OTHER FLIGHT HAZARDS ARE INCOMPATIBLE

Proposed land uses with characteristics that may cause visual, electronic, or wildlife hazards, particularly bird strike hazards, to aircraft taking off or landing at the Airport or in flight are incompatible in Area B of the Airport Influence Area. They may be permitted only if the uses are consistent with FAA rules and regulations. Proof of consistency with FAA rules and regulations and with any performance standards cited below must be provided to the Airport Land Use Commission (C/CAG Board) by the sponsor of the proposed land use action.

Specific characteristics that may create hazards to aircraft in flight and which are incompatible include:

(a) Sources of glare, such as highly reflective buildings or building features, or bright lights, including search lights or laser displays, which would interfere with the vision of pilots making approaches to the Airport.

(b) Distracting lights that that could be mistaken by pilots on approach to the Airport for airport identification lighting, runway edge lighting, runway end identification lighting, or runway approach lighting.

(c) Sources of dust, smoke, or water vapor that may impair the vision of pilots making approaches to the Airport.

(d) Sources of electrical interference with aircraft or air traffic control communications or navigation equipment, including radar.

(e) Land uses that, as a regular byproduct of their operations, produce thermal plumes with the potential to rise high enough and at sufficient velocities to interfere with the control of aircraft in

flight. Upward velocities of 4.3 meters (14.1 feet) per second at altitudes above 200 feet above the ground shall be considered as potentially interfering with the control of aircraft in flight.[17]

(f) Any use that creates an increased attraction for wildlife, particularly large flocks of birds, that is inconsistent with FAA rules and regulations, including, but not limited to, FAA Order 5200.5A, *Waste Disposal Sites On or Near Airports*, FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, and any successor or replacement orders or advisory circulars. Exceptions to this policy are acceptable for wetlands or other environmental mitigation projects required by ordinance, statute, court order, or Record of Decision issued by a federal agency under the National Environmental Policy Act.

4.5.5 iALP AIRSPACE TOOL

In consultation with C/CAG, SFO developed the iALP Airspace Tool, a web-based, interactive tool to evaluate the relationship of proposed buildings with the Airport's critical airspace surfaces. The iALP Airspace Tool is designed to assist planners, developers, and other interested persons with the implementation of the airspace protection policies of the SFO ALUCP. The tool helps users determine: (1) the maximum allowable building height at a given site, and/or (2) whether a building penetrates a critical airspace surface, and by how much, given the proposed building height.

A more detailed description of the iALP Airspace Tool and a tutorial explaining how to use it is presented in **Appendix J**. Use of this tool, however, does not relieve a project sponsor of the duty to comply with all federal regulations, including the obligation to file Form 7460-1, Notice of Proposed Construction or Alteration, with the FAA.

[17] This is a threshold established by the California Energy Commission in its review of power plant licensing applications. See *Blythe Solar Power Project: Supplemental Staff Assessment, Part 2*,. CEC-700-2010-004-REV1-SUP-PT2, July 2010. California Energy Commission. Docket Number 09-AFC-6, p. 25. This criterion is based on guidance established by the Australian Government Civil Aviation Authority (Advisory Circular AC 139-05(0), June 2004). The FAA's Airport Obstructions Standards Committee (AOSC) is studying this matter but has not yet issued specific guidance.