TO: JUDY ROSS, ASSISTANT DIRECTOR, MINETA SAN JOSÉ INTERNATIONAL AIRPORT

FROM: LANDRUM & BROWN, INC.

DATE: FEBRUARY 19, 2019

RE: DOWNTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY (PROJECT DADCS)
AIRSPACE SCENARIOS AND AIRCRAFT PERFORMANCE ASSESSMENT

DRAFT WORK PRODUCT

Introduction

In 2007, the Airspace Obstruction Study with the associated composite mapping assessment was conducted for Norman Y. Mineta San José International Airport (SJC or Airport). In this analysis, airspace protection surfaces were evaluated to determine the lowest controlling obstacles that surround the Airport within a 3-mile radius, and to map out a proposed set of maximum allowable heights for development surrounding SJC based on the most restrictive airline one-engine inoperative (OEI) procedure surfaces and Federal Aviation Administration (FAA) "TERPS" surfaces (arrival and departure instrument procedures).

A decade has passed since the previous assessment was conducted, and changes in the Airport operating environment have occurred, including the following:

a. The FAA implemented satellite-based navigation along with existing ground-based navigation. Specifically, the implementation of RNP procedures since 2007 as these are technically the newest satellite-based procedures that have been developed.
b. New aircraft came into San Jose which among them included the Boeing 787-8/9 and Airbus 321-NEO and Airbus has introduced the A350 into worldwide service.
c. This study focused was very specific to SJC, the area south of the airport, the aircraft and markets served
d. The Airport recently completed new obstacle data survey in late 2016.

Table 1 depicts the existing commercial airlines that currently operate at SJC. **Table 2** provides a summary of the existing markets that are currently served from SJC.

The new study, initiated in early 2018, is intended to update and reassess the current airspace protection surfaces for SJC and to identify potential changes to maximum allowable development heights, particularly in Downtown Core of San José and the Diridon Station Area immediately to the west of the Downtown Core. At the conclusion of the study, a newly updated composite airspace protection map for SJC will be developed for use by the City of San José.

Table 1: Existing Passenger Commercial Airlines at SJC

Existing Commercial Airlines	
Aeromexico	Frontier Airlines
Air Canada	Hainan Airlines
Alaska	Hawaiian Airlines
American Airlines	JetBlue
ANA	Lufthansa
British Airways	Southwest
California Pacific	United
Delta	Volaris

Source: www.flysjc.com/airlines

Table 2: Existing Markets Served at SJC

City	Country	City	Country
Albuquerque	United States	London-Heathrow	Europe
Atlanta	United States	Long Beach	United States
Austin	United States	Los Angeles	United States
Baltimore/Washington	United States	Minneapolis-St. Paul	United States
Beijing	China	Morelia	Mexico
Boise	United States	Nashville	United States
Boston	United States	New Orleans (Seasonal)	United States
Burbank	United States	New York-JFK	United States
Cabo San Lucas	United States	Newark (New York Area)	United States
Chicago-Midway	United States	Ontario	United States
Chicago-O'Hare	United States	Orange County	United States
Dallas/Fort Worth	United States	Orlando	United States
Dallas-Love Field	United States	Phoenix	United States
Denver	United States	Portland	United States
Detroit	United States	Raleigh/Durham	United States
El Paso	United States	Reno	United States
Everett (Seattle Area)	United States	Salt Lake City	United States
Guadalajara	Mexico	San Diego	United States
Honolulu	United States (Hawaii)	Seattle	United States
Houston-Hobby	United States	Spokane	United States
Houston-Intercontinental	United States	St. Louis	United States
Kahului (Maui)	United States (Hawaii)	Tokyo-Narita	China
Kona (Hawaii)	United States (Hawaii)	Tucson	United States
Las Vegas	United States	Vancouver	Canada
León	Mexico	Zacatecas	Mexico
Lihue (Kauai)	United States (Hawaii)		

Source: www.flysjc.com/destinations

Below are commonly used acronyms in this memorandum:

- AGL: Above Ground Level (feet).
- CG: Climb Gradient
- FAA: Federal Aviation Administration
- ICAO: International Civil Aviation Organization
- MSL: Mean Sea Level (feet)
- OEI: One-Engine Inoperative
- OCS: Obstacle Clearance Surface
- PAX: Passenger
- Project DADCS: Downtown San José Airspace and Development Capacity Study
- Project Consultants': Landrum & Brown Inc. and Flight Engineering LLC.
- TERPS: United States Terminal Instrument Procedures
- SJC: Norman Y. Mineta San José International Airport

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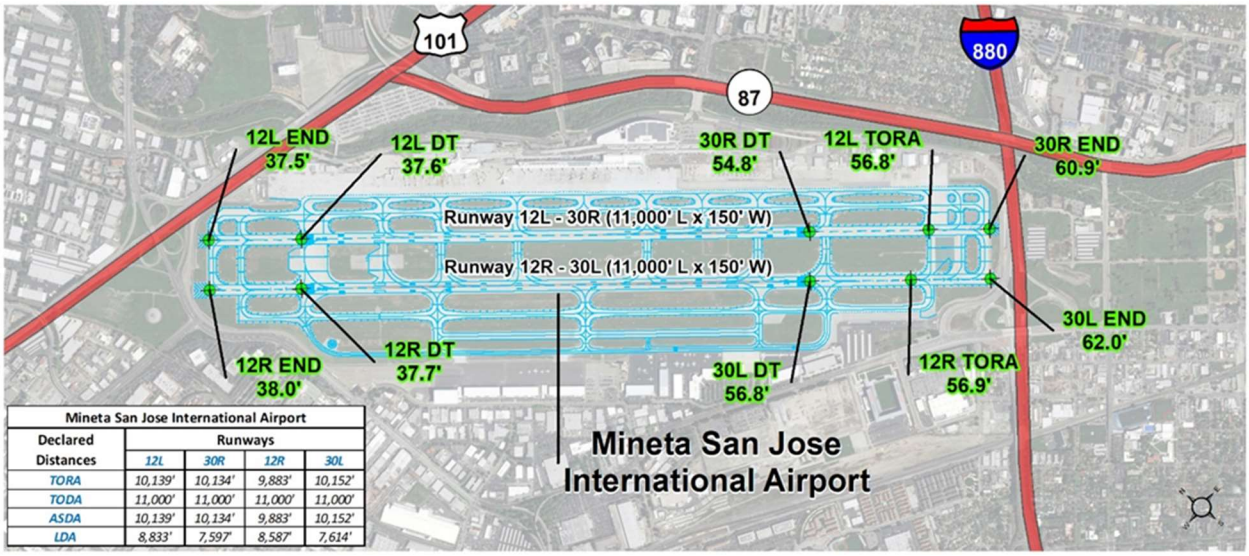
Section 1: Airport and Project Study Area Overview

Section 1A. Airport Layout Overview

Figure 1 depicts the existing airport layout for SJC. The Airport is currently served by two closely-spaced parallel runways. Runways 12L-30R and 12R-30L are both 11,000 feet long and 150 feet wide. Runway 12R-30L is classified as a precision instrument runway (PIR) with CAT I and II instrument landing system capabilities. Runway 12L-30R is classified as a non-precision instrument (NPI) runway and does not accommodate instrument landing system operations. A temporarily closed runway, 11-29, was previously used for general aviation operations on the west side of the Airport but is currently operated as Taxiway W1. A separate independent study is evaluating the permanent disposition of this runway. Current declared distances for the two existing runways is depicted in the inset table on Figure 1. Please note that all elevations are measured in feet (ex. 37.5').

Figure 1: Mineta San José International Airport (SJC) Layout



Source: Landrum & Brown

Section 1B. Project Study Area Overview

Figure 2 depicts the two study areas for Project DADCS, consisting of the Downtown Core and Diridon Station Area. The Downtown Core is located east of Highway 87 and begins approximately 7,200 feet from the approach ends of Runways 30L and 30R and extends to a distance of approximately 13,100 feet from Runways 30L and 30R. The Downtown Core is where high-rise development is most prevalent.

The Diridon Station Area is located west of Highway 87 and begins approximately 5,300 feet from the approach end of Runways 30L and 30R and extends to a distance of approximately 11,200 feet from the runway ends. The Diridon Station Area is currently devoid of high-rise development but is considered to be part of a future expanded downtown given the multiple existing and proposed rail and transit systems serving Diridon Station.

The 2007 Airspace Obstruction Study found that most airlines operating at SJC use OEI procedures that go straight out over the Downtown Core when departing to the south. A few airlines, however, including those with larger aircraft going to more distant destinations, use OEI procedures that curve away from the Downtown Core in order to avoid the existing high-rise buildings and instead overfly the Diridon Station Area where existing development heights are much lower. As described further in

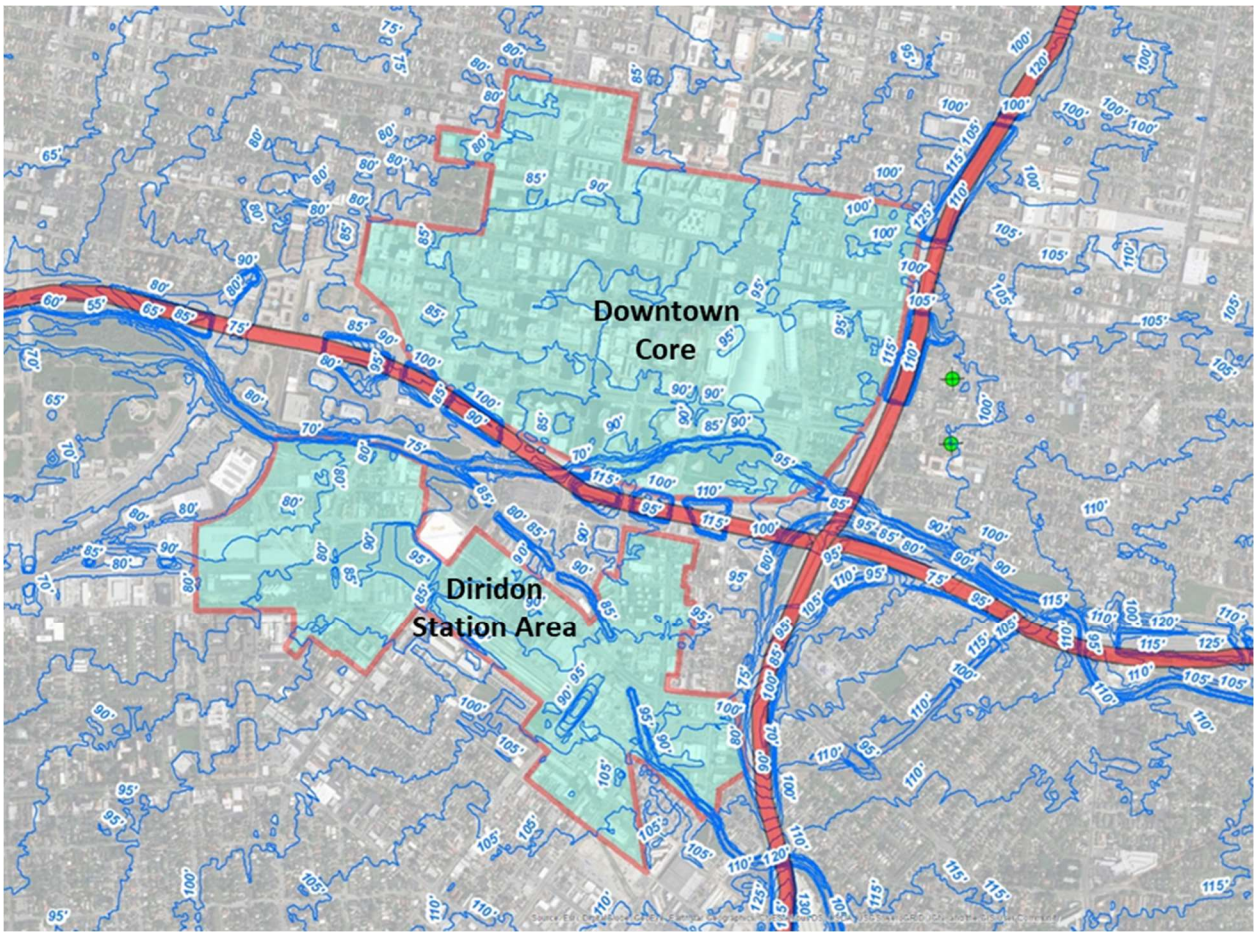
Section 3 of this memorandum, protecting for this westerly curving maneuver by larger/heavier aircraft in an OEI situation results in maximum allowable development heights that are much more restrictive than in the Downtown Core.

Figure 2: Existing Airport Layout and Study Evaluation Area

Source: Landrum & Brown

As depicted in **Figure 3,** ground elevations in the Downtown Core and Diridon Station Area generally range from 80 feet MSL to 105 feet MSL in a northerly to southerly direction. As development heights are typically expressed in AGL, setting a maximum allowable building height for airspace protection purposes at any given location is derived by subtracting the ground MSL elevation from the airspace surface MSL elevation.

Figure 3: Downtown Core and Diridon Station Area Ground Contour Elevations



Source: Graphic prepared by Landrum & Brown. USGS 1/3 arc-second Contour Downloadable Data Collection, 2014; Ground contour data obtained from USGC "The National Map" Staged Products Directory: https://prd-tnm.s3.amazonaws.com/index.html?prefix=StagedProducts/Contours/Shape/

Section 2: Airspace Protection Framework

A Project Steering Committee was formed to guide this process. Steering Committee members represent diverse organizations that have interest in the successful growth of the Airport and the Downtown Core/Diridon Station Area. Participating organizations are listed below:

- The Airport Commission and Downtown Resident
- San José Downtown Association
- Santa Clara Building Trades Council (SCBTC)
- Santa Clara County Residents for Responsible Development
- San Francisco Bay Area Planning and Urban Research Association (SPUR)
- Silicon Valley Leadership Group (SVLG)
- The Silicon Valley Organization (SVO)

Additionally, City staff from the Mayor's office, the Downtown Councilmember's office, the Office of Economic Development and the Department of Planning, Building and Code Enforcement were engaged in the study. The Project Steering Committee provided guidance and direction on the study, and allowed for stakeholders to have an open forum to provide feedback and input. A series of Committee meetings was conducted to present and discuss analytical assumptions, methodology/approach, and findings on the various aspects of this project. In addition to the Project Steering Committee, three broader stakeholder meetings were held, offering stakeholders the ability to ask questions and receive updates as the study progressed. The Project Steering Committee utilized a decision-making framework to evaluate various airspace protection scenarios, aircraft types, and airport destinations.

Section 2A. Potential Scenarios Evaluated

The Project Steering Committee explored a variety of potential airspace protection scenarios. A total of ten scenarios and the existing conditions were proposed:

1. **Existing airspace protection**
    a. Used as the base case and comparison to potentially heights gained in other scenarios
2. **West OEI Corridor with increased surface slopes**
    a. This scenario was removed and replaced with further refinement of the defined development in Scenario 10.
3. **East OEI Corridor with a TERPS only scenario over Diridon Station Area**
    a. Evaluate the feasibility of an East OEI corridor which would essentially be a mirror image of the West OEI Corridor and require long-haul departures to turn left to avoid Downtown Core
    b. Increased development height over Diridon Station Area with the elimination of the existing West OEI Corridor
4. **No OEI protection/TERPS Only**
    a. Removal of existing straight-out and West OEI Corridor surface protection for Runways 12L/12R
    b. TERPS Only scenario would essentially provide increased development heights over Downtown Core and Diridon Station Area
5. **West OEI Corridor surface protection without Straight-out OEI**
    a. Maintain existing West OEI Corridor while removing straight-out OEI protection for Runways 12L/12R
    b. Additional heights gained of Downtown Core while heights over Diridon Station Area would remain the same
6. **West OEI Corridor with greater than 15 degree turn**
    a. Evaluate the feasibility of airlines' ability to make a right turn greater than 15 degrees to avoid Diridon Station Area, allowing additional heights for development
    b. Downtown Core heights would remain the same
7. **Straight-out OEI protection without West OEI Corridor**
    a. Maintain existing straight-out OEI surface protection for Runway 12L/12R departures
    b. West OEI corridor would be removed, allowing for additional development height within Diridon Station Area.
8. **TERPS only with increased TERPS departure climb gradients**
    a. Similar to Scenario 4, with the exception that the current lowest published climb gradient procedures (261 feet/NM and 290 feet/NM) would be eliminated.

b. A 470 foot/NM published TERPS departure climb gradient would be protect for thereby increasing developable heights over the Downtown Core and Diridon Station Area.

9. **No OEI/TERPS Only, increased FAA height limits**
    a. Assumes that the lowest TERPS departure surface climb gradient protection (261 feet/NM and 290 feet/NM) would be eliminated for Runway 12L/12R and non-precision instrument circling approach surface heights would be increased
    b. Assumes no changes to vertically guided precision instrument approach procedures for Runway 30L/30R operations
10. **Modified West OEI Corridor at defined development heights**
    a. Assumes that the surface slope of the West OEI Corridor could be adjusted to allow for additional development heights in Diridon Station Area
    b. Incremental surface slopes adjustments would be conducted to determine the impact on aircraft performance
11. **Extend the approach ends of Runways 12L and/or 12R to the north**
    a. Theoretically solution to extend the arrival end of Runways 12L and/or 12R to the north (across Highway 101) in order to provide a longer runway for departures
    b. TERPS departure airspace surface protection for Runways 12L and/or 12R would shift further away from the Downtown Core and Diridon Station Area thereby resulting in additional development height opportunities

The scenarios were analyzed to determine the overall impacts to aviation operations and the development capacity, including an evaluation of the timing and feasibility of implementation.

Section 2B. Decision Making Criteria

The Project Steering Committee developed a list of decision-making criteria to evaluate the potential feasibility of the various airspace protection scenarios described in Section 2A. An airspace scenario evaluation matrix was created in order to provide a basis of comparison for each of the airspace scenarios above. The evaluation criteria included the following metrics:

- Potential gain in building heights (Downtown Core)
- Potential gain in building heights (Diridon Station Area)
- Potential loss of air service
- Timeframe for action
- Degree of difficulty
- Airlines affected
- Decision making bodies

Table 3 presents the evaluation of the scenarios using a comparative matrix criterion.

Table 3: Project DADCS Airspace Scenario Summary Matrix

DOWNTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY (PROJECT DADCS) AIRSPACE SCENARIO SUMMARY MATRIX								
	Existing conditions AGL building heights	**200'-290' AGL**	**80'-160' AGL**					
Scenario	***Scenario Description***	***Potential gain in building heights (Downtown Core)***	***Potential gain in building heights (Diridon Station Area)***	***Potential loss of air service***	***Timeframe for action***	***Degree of Difficulty***	***Airlines affected***	***Decision making bodies***
#1	Existing airspace protection	-	-	None	N/A	N/A	None	City
#2	West OEI Corridor with increased surface slopes	-	60'-100'	Moderate to Significant	Under a year	Moderate	Alaska, Aero Mexico, Air China, American, British, Hainan, Hawaiian	City
#3	East OEI Corridor with a TERPS only scenario over Diridon Station Area	Reduce 10'-30'	90'-130'	Significant	Under a year	Moderate	Alaska, Aero Mexico, Air China, American, British, Hainan, Hawaiian	City
#4	No OEI/TERPS Only	1'-36'	69'-165'	Significant	Under a year	Moderate	All airlines	City
#5	West OEI Corridor surface protection without Straight-out OEI	10'-30'	-	Moderate	Under a year	Moderate	Air Canada, ANA, Lufthansa, Volaris, FedEx, UPS, Delta, jetBlue, Southwest, United	City
#6	West OEI Corridor with greater than 15 degree turn	-	130' (south only)	Significant	Under a year	Moderate	Alaska, Aero Mexico, Air China, American, British, Hainan, Hawaiian	City
#7	Straight-out OEI protection without West OEI Corridor	-	90'-130'	Significant	Under a year	Moderate	Alaska, Aero Mexico, Air China, American, British, Hainan, Hawaiian	City
#8	TERPS only with increased TERPS departure climb gradients	30'-60'	110'-130'	Significant	One to two years	Moderate to High	General aviation and all airlines	City and FAA
#9	No OEI,TERPS Only with increased FAA height limits	1'-179'	76' - 322'	Severe	One to three years	High	All airlines and other aircraft operators	City and FAA
#10	Modified West OEI Corridor at defined development heights	-	Ranging from 14'-121'	TBD	One to three years	TBD	TBD	Likely City and FAA
#11	Extend the approach ends of Runways 12L and/or 12R to the north	30'-60'	110'-130'	None	Over three years	High	TBD	City, FAA, Caltrans, Santa Clara, resource agencies

Source: Project Steering Committee

Upon review of the various alternative airspace protection scenarios, the Project Steering Committee selected four potential scenarios against existing Scenario 1 (the current protection scenario) for further evaluation. The scenarios selected were the following:

- Scenario 1: Existing airspace protection
- Scenario 4: No OEI protection/TERPS Only
- Scenario 7: Straight-out OEI protection without West OEI Corridor
- Scenario 9: No OEI protection, increased FAA height limits
- Scenario 10: Modified West OEI Corridor at defined development heights

Section 2C. Selected Aircraft for Performance Evaluation

Once an agreement was reached regarding the airspace protection scenarios that were to be evaluated further, a decision on the various aircraft types to be considered as part of an aircraft performance assessment was made. A list of commonly flown aircraft and proposed future aircraft that will likely operate out of SJC is listed below:

Narrow-Body Aircraft

- **Airbus A320-200** - Currently the aircraft with the longest transcontinental flight distance operating at SJC (Boston non-stop) and second most heavily used aircraft for transcontinental operations.
- **Boeing 737-800** - Most heavily used aircraft at SJC for transcontinental operations.

Wide-Body Aircraft

- **Boeing 777-300ER** – A heavily used, long-range aircraft for international routes. When an international route is successful and air carriers want to increase seats, the Boeing 777 is a typical aircraft used. The Boeing 777-200 was previously used at SJC for Tokyo service.
- **Boeing 787-9** - Currently operating at SJC and serving Asia and Europe

Based on the initial aircraft performance evaluation results, additional assessments were conducted for the following aircraft types to provide additional information for decision-making:

Narrow-Body Aircraft

- **Airbus A321 NEO** - Highest seating capacity long-haul narrow-body aircraft. Currently serves New York and Hawaii.

Wide-Body Aircraft

- **Airbus A330-200** - Currently operating at SJC and serving Asia
- **Airbus A350-900** - Likely replacement for the A340 service to Frankfurt and by a potential new entrant carrier.

Section 3: Existing OEI Surface Protection for Runways 12L/12R

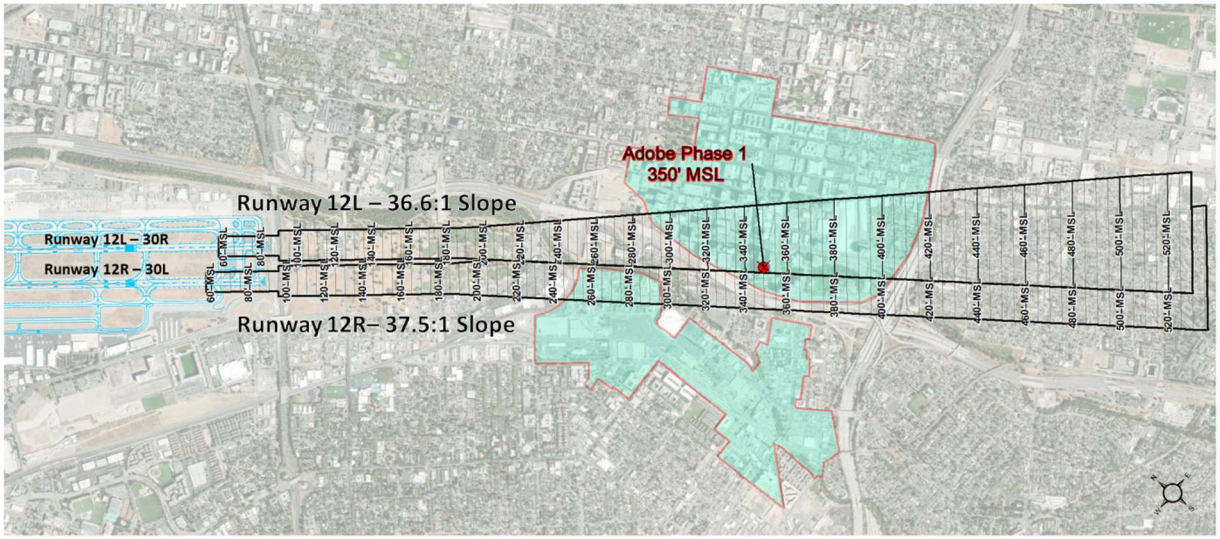
The primary focus of the aircraft performance evaluation was to assess the impacts of increased obstacle heights on OEI departure operations on Runways 12L and 12L at SJC (departures to the southeast over the identified study areas). Scenarios 1, 4, 7 and 10 result in no changes in instrument approach and departure procedures as the TERPS criteria established by the FAA for the safe landing and take-off operations with all engines operating are unchanged. Scenario 9 potentially increases ceiling and visibility minimums for several non-precision approaches but does not eliminate those procedures.

Historical weather analysis indicates that the SJC operates in Southeast Flow approximately 13% annually. In Southeast Flow, aircraft are departing towards the taller buildings in the Downtown Core as well as Diridon Station Area. As previously mentioned, in 2007 the City of San José adopted composite airspace height restriction mapping which included several protected OEI corridors including the ICAO Annex 6, FAA AC120-91 and West OEI Corridors. The FAA has considered protection of OEI procedures to be an economic decision to be made by the airlines, not an FAA safety consideration. It is currently up to local jurisdictions to address the tradeoffs of air service capability versus high-rise development.

Section 3A. Existing Airline OEI Surfaces for Runways 12L/12R

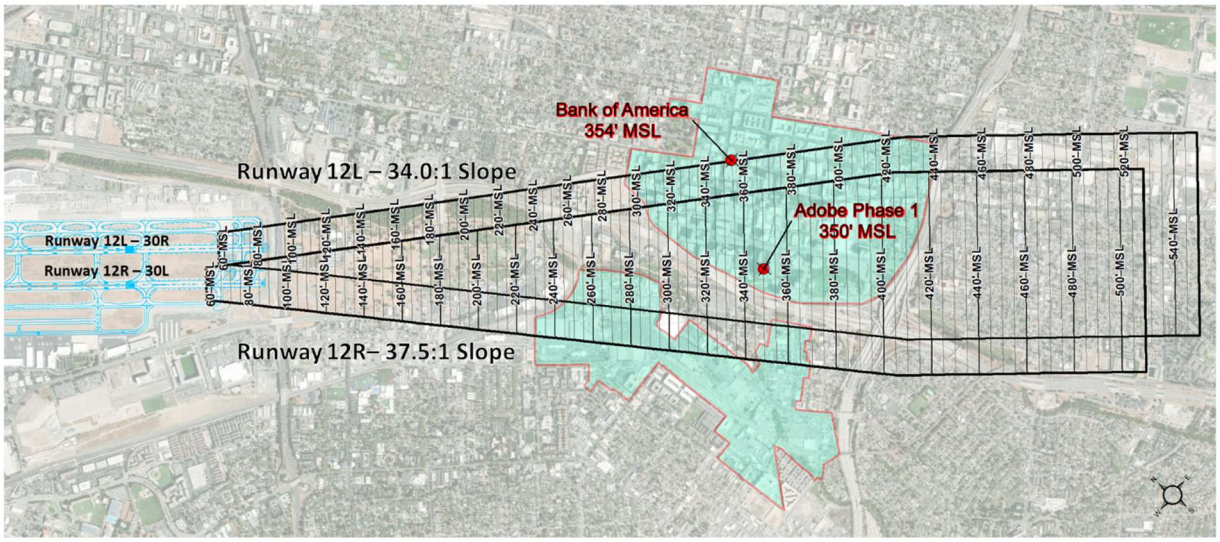
Figure 4, Figure 5 and **Figure 6** depict the existing OEI corridors for Runway 12L/12R departures. The existing "controlling obstacles" which define the slopes of each corridor are also identified. As part of this study, the project consultants evaluated existing OEI surface slopes against updated obstacle survey datasets, specifically the 2016 SJC airspace obstacle survey data, which confirmed that there were no new controlling obstacles that impact existing OEI surface slopes.

Figure 4: Runways 12L/12R FAA AC120-91 OEI Surface Existing Heights



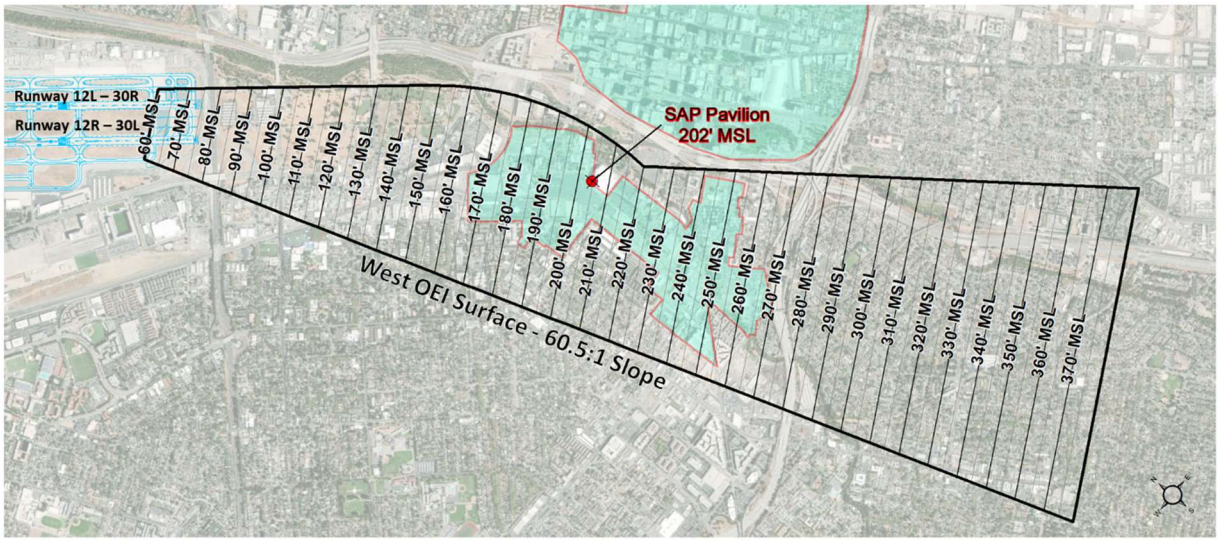
Source: Landrum & Brown

Figure 5: Runways 12L/12R ICAO Annex 6 OEI Surface Existing Heights



Source: Landrum & Brown

Figure 6: Runways 12L/12R West OEI Corridor Existing Heights



Source: Landrum & Brown

Section 3B. Existing Airline OEI Procedures for Runways 12L/12R

Table 4 summarizes the current OEI procedures utilized by Airlines at SJC.

Table 4: Airlines OEI Procedures for Runways 12L/12R

Current Airline	***OEI Procedure (12L & 12R)***
Alaska	West Corridor (AC 120-91 w/course correction)
Aero Mexico	East Corridor for 12L, West Corridor for 12R (ICAO w/ course correction)
Air China	West Corridor (ICAO w/ course correction)
American	West Corridor (AC 120-91 w/course correction)
British Airways	Straight Out (ICAO) and West Corridor (ICAO w/ course correction**)
Hainan	Straight Out for 12L (ICAO), West Corridor for 12R (ICAO w/ course correction)
Hawaiian	West Corridor (AC 120-91 w/course correction)
Air Canada	Straight Out (ICAO)
ANA	Straight Out (ICAO)
Lufthansa	Straight Out (ICAO)
Volaris	Straight Out (ICAO)
Fedex	Straight Out (ICAO)
UPS	Straight Out (ICAO)
Delta	Straight Out (AC 120-91)
JetBlue	Straight Out (AC 120-91)
Southwest	Straight Out (AC 120-91)
United	Straight Out (AC 120-91)
Frontier	TBD

** updated August 2017*
***British Airways utilizes the West Corridor in specific engine-out scenarios.*

Source: City of San José Airport Department and Airlines

Section 4: Airspace Protection Scenarios

As previously mentioned, an assessment of various TERPS and OEI OCS were constructed based upon current procedures at SJC. **Appendix A** contains the aforementioned FAA TERPS airport procedure charts for reference. The following TERPS and OEI surfaces were evaluated and applied to the selected airspace protection scenarios in the study:

TERPS Surfaces:

- Instrument Landing System (ILS) Approach (CAT I & II) – applicable to Runway 12R/30L
- Localizer Only (LOC)
- Localizer Performance with Vertical Guidance (LPV)
- Lateral Navigation (LNAV)
- Lateral Navigation/Vertical Navigation (LNAV-VNAV)
- Required Navigation Performance (RNP 0.11, 0.15, 0.18, 0.30)
- Circling Approaches (CAT A – CAT D)
- Minimum Vectoring Altitude
- Instrument Departure Procedures (200'/NM CG, 261'/NM CG, 290'/NM, 470'/NM CG and 500'/NM CG)

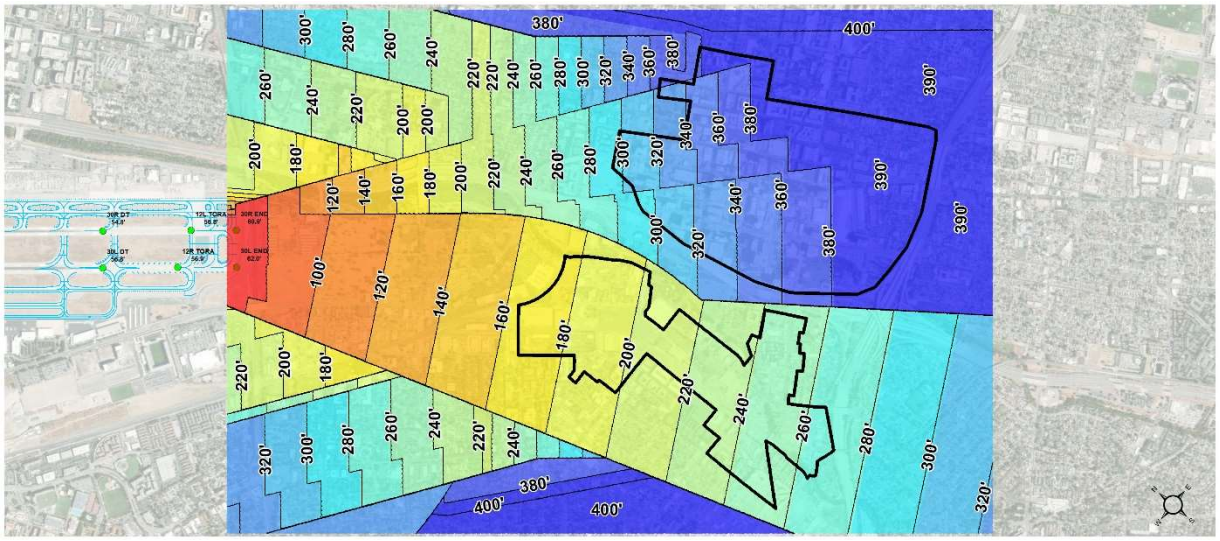
One-Engine Inoperative Surfaces:

- West OEI Corridor
- ICAO Straight-Out Departures
  FAA AC120-91 Straight-Out Departures

Section 4A. Scenario 1 – Existing Airspace Protection

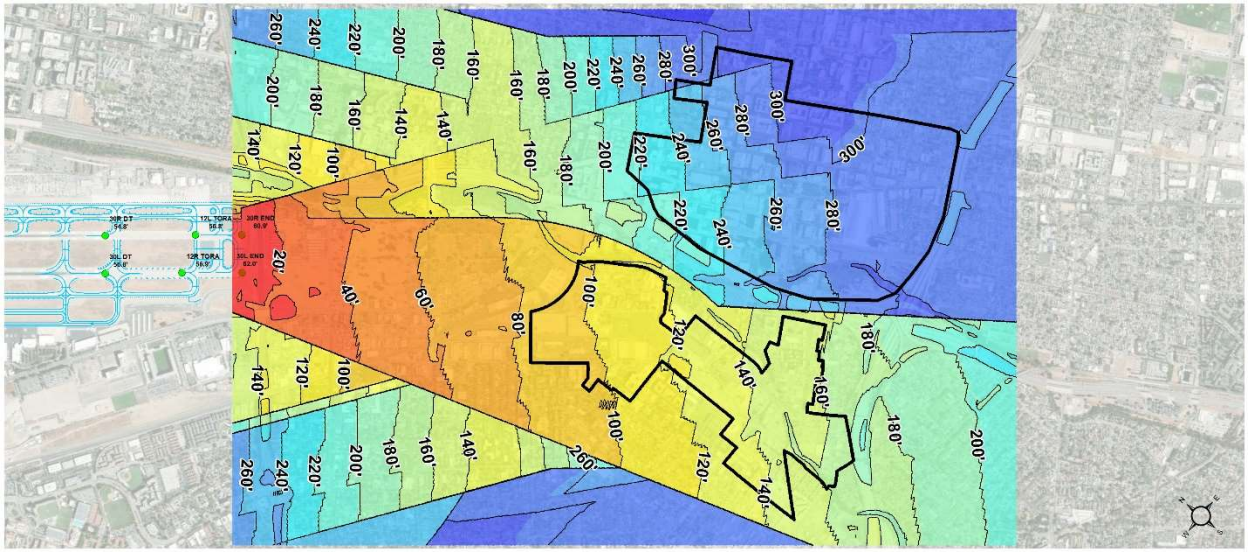
Figure 7 and Figure 8 display the existing airspace OCS protection south of the Airport. OCS protection consists of a combination of TERPS and OEI airspace surfaces. Existing heights within the Downtown Core range from **290 feet MSL – 390 feet MSL** (**202 feet AGL – 310 feet AGL**). Existing heights within the Diridon Station Area range from **164 feet MSL – 270 feet MSL** (**84 feet AGL – 185 feet AGL**).

Figure 7: Scenario 1: Existing Surface Mapping (MSL) Heights



Source: Landrum & Brown

Figure 8: Scenario 1: Existing Surface Mapping (AGL) Heights



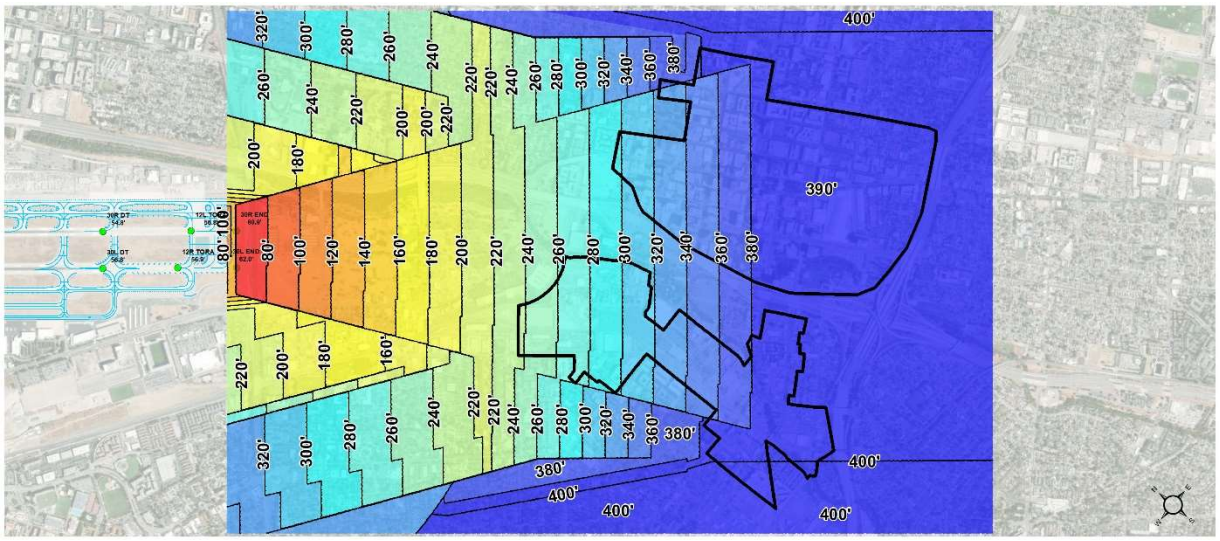
Source: Landrum & Brown

Section 4B. Scenario 4 - No OEI Airspace Protection/TERPS Only

As depicted in **Figure 9 and Figure 10**, the Scenario 4 airspace assumes that the existing OEI OCS protection for Runways 12L/12R departures would be removed and the airspace would consist of TERPS arrivals and departure OCS protection over the Downtown Core and the Diridon Station Area. These identified TERPS OCSs would function as the new OEI OCS surface protection even if the FAA were to increase a TERPS OCS in the future.

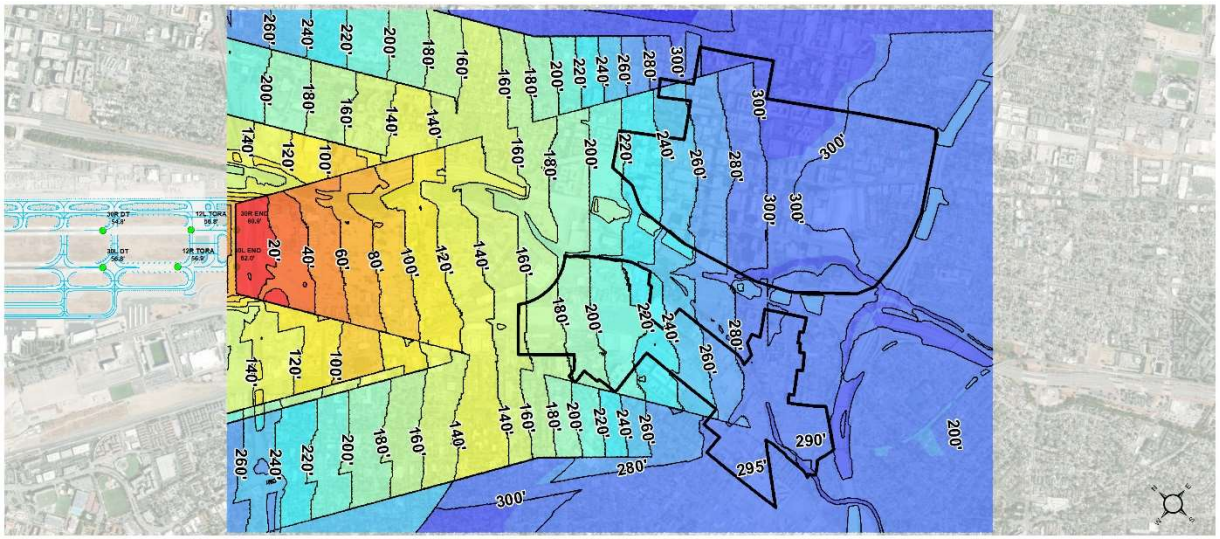
Under Scenario 4, maximum heights within the Downtown Core range from **294 feet MSL – 390 feet MSL** (**212 feet AGL – 315 feet AGL**). Scenario 4 heights within the Diridon Station Area range from **235 feet MSL – 400 feet MSL** (**154 feet AGL – 310 feet AGL**).

Figure 9: Scenario 4: No OEI Protection/TERPS Only Heights (MSL)



Source: Landrum & Brown

Figure 10: Scenario 4: No OEI Protection/TERPS Only Heights (AGL)



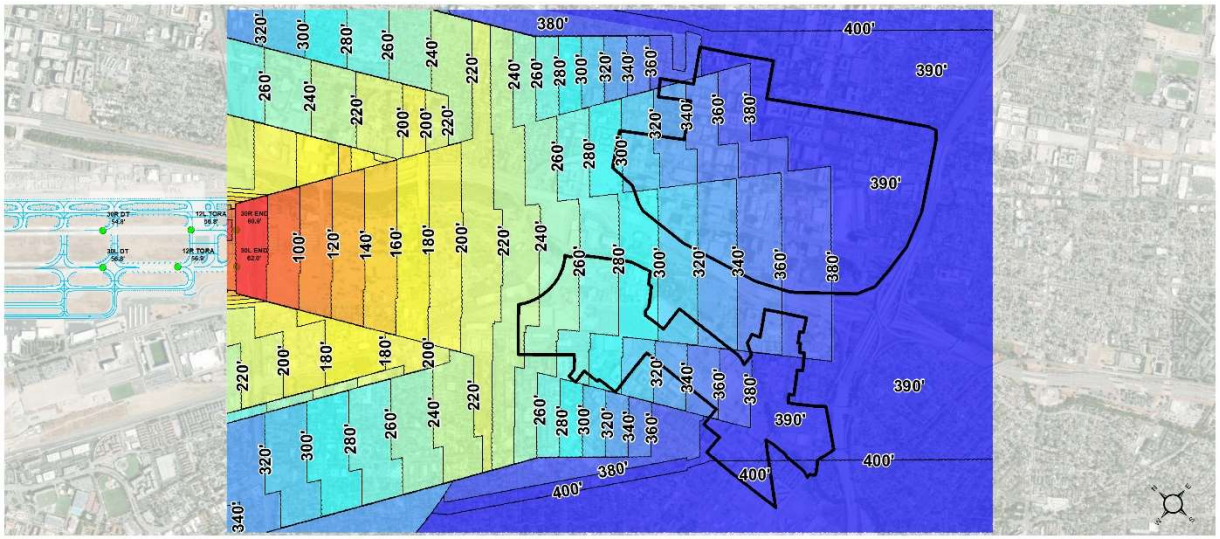
Source: Landrum & Brown

Section 4C. Scenario 7 - Straight-Out OEI Protection without West OEI Corridor

As depicted in **Figure 11 and Figure 12**,the Scenario 7 airspace assumes that the existing straight-out OEI OCS protection for Runways 12L/12R departures would be maintained, while the West OEI Corridor surface which directly impacts Diridon Station Area would be removed.

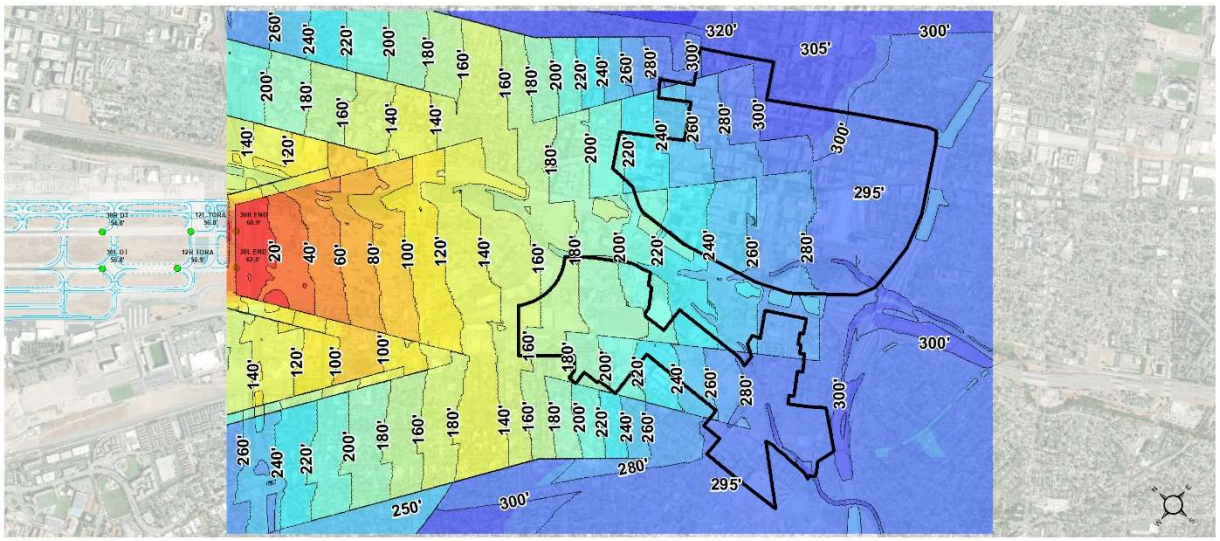
Under Scenario 7, there would be no changes in the existing maximum heights within the Downtown Core, however maximum heights within the Diridon Station Area would increase to **229 feet MSL – 400 feet MSL** (**149 feet AGL – 310 feet AGL**) as the West OEI Corridor is removed and TERPS OCSs would govern over the Diridon Station Area.

Figure 11: Scenario 7: Straight-Out OEI Protection without West OEI Corridor Heights (MSL)



Source: Landrum & Brown

Figure 12: Scenario 7: Straight-Out OEI Protection without West OEI Corridor Heights (AGL)



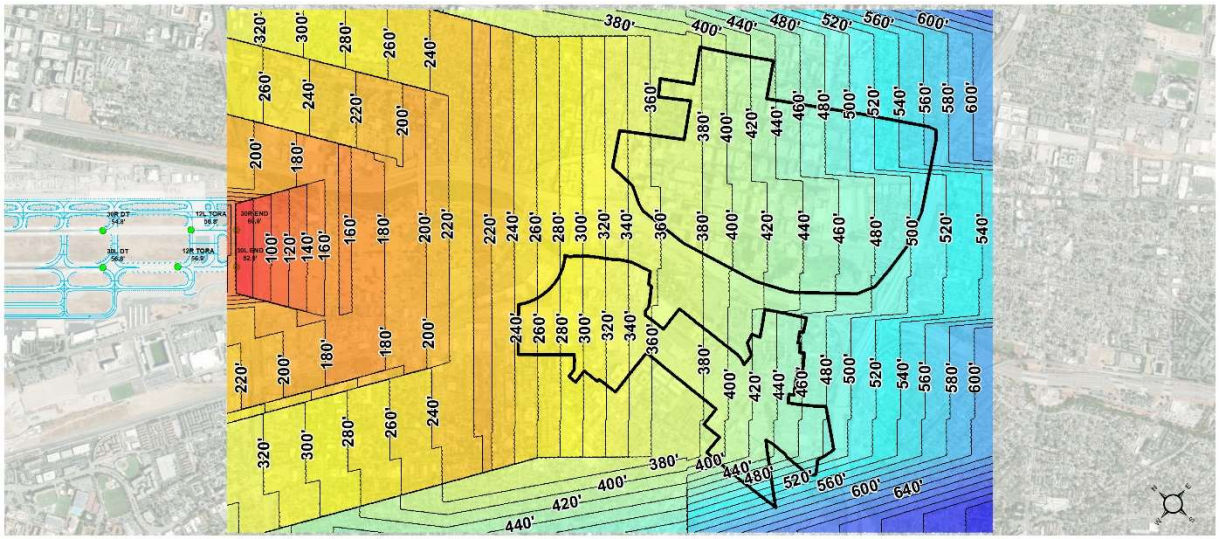
Source: Landrum & Brown

Section 4D. Scenario 9 - No OEI, Increased FAA Height Limits

As depicted in **Figure 13 and Figure 14**, the Scenario 9 airspace assumes that the existing OEI OCS protection for Runways 12L/12R departures would be removed and the airspace would consist of increased TERPS arrivals and departure OCS heights over the Downtown Core and the Diridon Station Area.

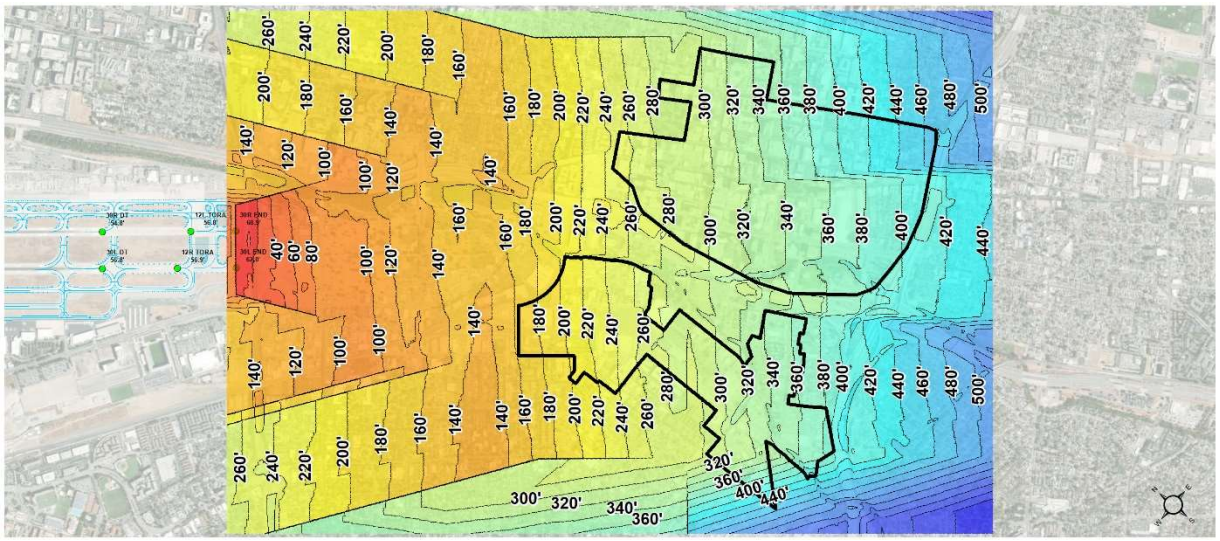
Under Scenario 9, maximum heights within the Downtown Core range from **327 feet MSL – 569 feet MSL** (**245 feet AGL – 469 feet AGL).** Scenario 9 heights within the Diridon Station Area range from **243 feet MSL – 578 feet MSL** (**161 feet AGL – 473 feet AGL**).

Figure 13: Scenario 9: No OEI Protection, Increased FAA Heights (MSL)



Source: Landrum & Brown

Figure 14: Scenario 9: No OEI, Increased FAA Height (AGL)



Source: Landrum & Brown

Section 4E. Scenario 10 – Modified West OEI Corridor at Defined Development Heights

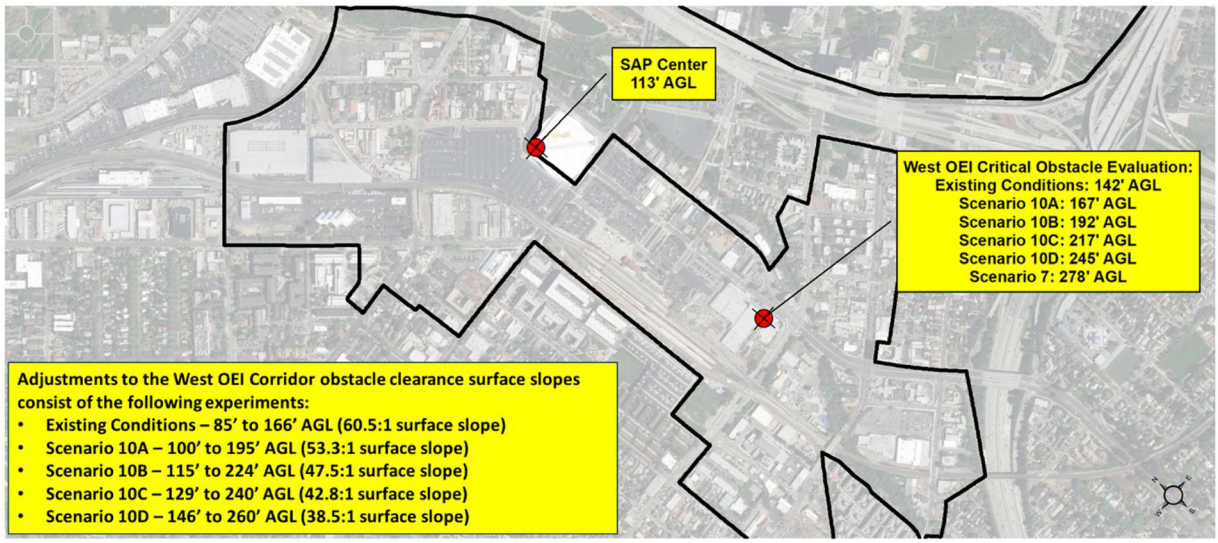
In Scenario 10, the focus was to evaluate the impacts of various increases to the OCS slope of the West OEI Corridor which directly impacts development heights in Diridon Station Area. The existing West OEI Corridor surface is set at a slope of 60.5:1. In the previous airspace study for SJC conducted in 2007, the critical airspace obstacle that was used to define the West OEI Corridor surface slope was the SAP Center, with a maximum height range in Diridon Station Area of 85 feet to 166 feet AGL. For this study a new not-yet constructed critical obstacle was defined in the vicinity where the taller building developments are anticipated.

Four variations of adjustment to the slope of the West OEI Corridor were evaluated in Scenario 10. As depicted in **Figure 15**, Scenarios 10A – 10D were evaluated with critical obstacle heights adjust by 25-foot increments (with the exception of Scenario 10D adjustment of 28 feet).

Adjustments to the West OEI Corridor OCS slopes consist of the following experiments:

- Scenario 10A (53.3:1 surface slope) – 178 feet to 298 feet MSL (100 feet to 195 feet AGL)
- Scenario 10B (47.5:1 surface slope) – 193 feet to 328 feet MSL (115 feet to 224 feet AGL)
- Scenario 10C (42.8:1 surface slope) – 207 feet to 357 feet MSL (129 feet to 240 feet AGL)
- Scenario 10D (38.5:1 surface slope) – 224 feet to 390 feet MSL (146 feet to 260 feet AGL)

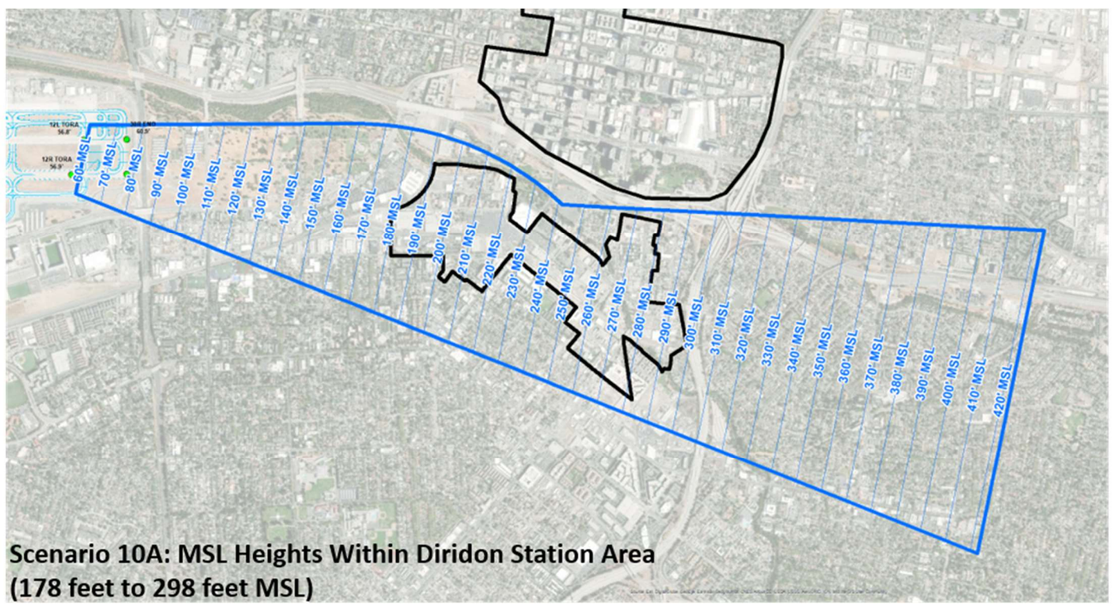
Figure 15: Scenario 10: Modified West OEI Corridor at Defined Development Heights Critical Obstacle

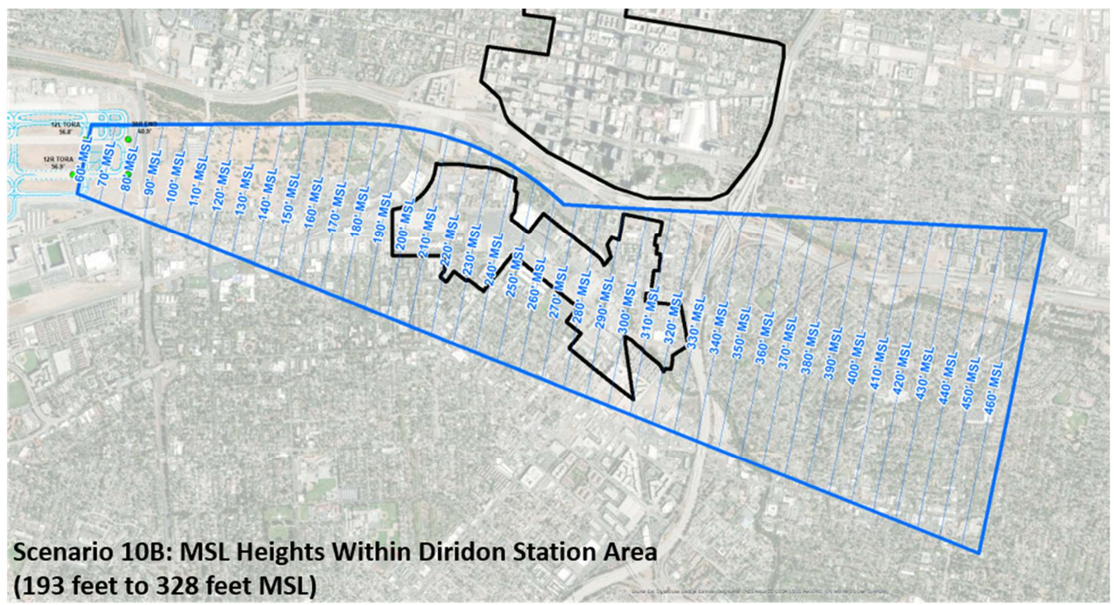


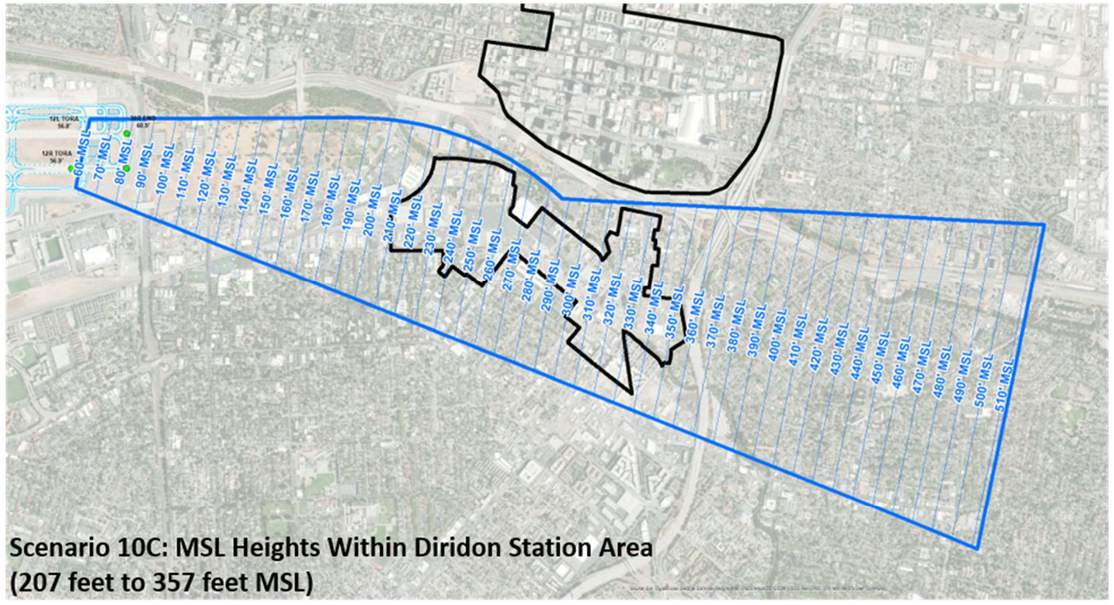
Source: Landrum & Brown

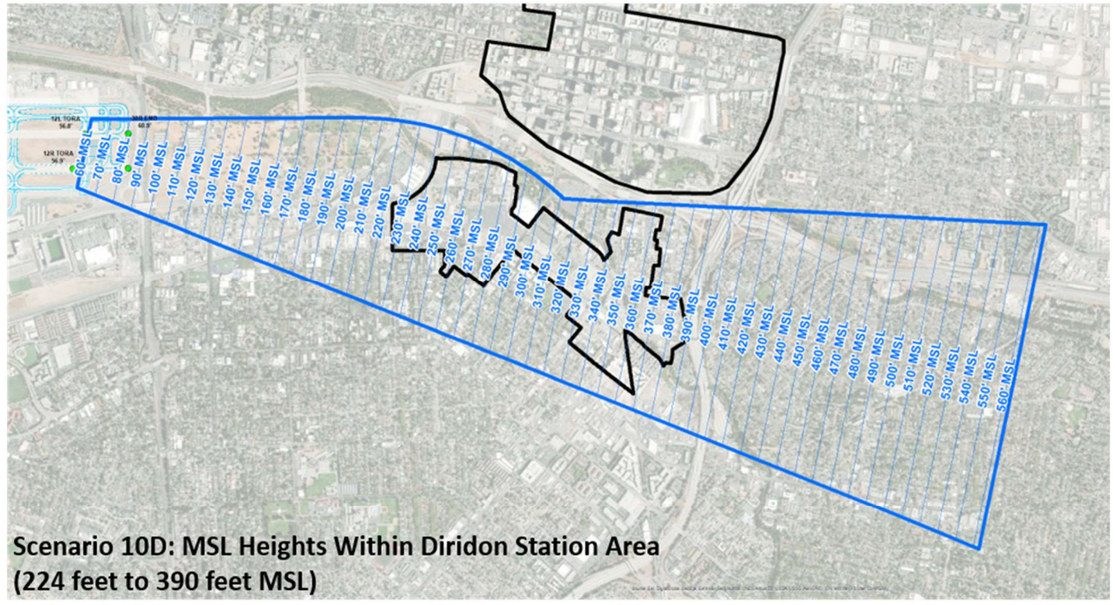
Figure 16 depicts the MSL heights for the four variants of the Scenario 10 West OEI corridor assessment over the Diridon Station Area.

Figure 16: Scenario 10: Modified West OEI Corridor at Defined Development Heights (MSL)









Source: Landrum & Brown

Section 4F. Airspace Scenario Height Differentials

Table 5 provides a general range of additional height gains within the Downtown Core and Diridon Station Area that can be achieved in each of the airspace scenarios when compared to the existing airspace protection (Scenario 1).

It is important to note that in Scenario 7 and 10, the existing airspace protection over the Downtown Core would not change as straight-out OEI protection is maintained in both scenarios.

Table 5: Airspace Protection Scenario Height Differentials as Compared to Scenario 1 (Existing Airspace Protection)

Airspace Protection Scenario Height Differentials		
Airspace Scenarios	**Height Gain Differentials (feet)**	
	Downtown Core	*Diridon Station Area*
Scenario 4 - No OEI Airspace Protection/TERPS Only	5 feet - 35 feet	70 feet - 150 feet
Scenario 7 - Straight-Out OEI Protection without West OEI Corridor	-	70 feet - 150 feet
Scenario 9 - No OEI, Increased FAA height limits	35 feet - 100 feet	80 feet - 220 feet
Scenario 10 - Modified West OEI Corridor at Defined Development Heights		
Scenario 10A	-	15 feet - 25 feet
Scenario 10B	-	30 feet - 55 feet
Scenario 10C	-	45 feet - 85 feet
Scenario 10D	-	65 feet - 115 feet

Source: Landrum & Brown

Section 5: Aircraft Performance City Pair Assessment

Section 5A. Assumptions

Aircraft performance assessments were conducted to evaluate the impacts of proposed obstacles heights under each of the shortlisted airspace scenarios. Suspected aircraft types, city pair combinations and seasonal temperature variations were assessed to identify impacts to aircraft payload (allowable PAX and cargo) and range. Passenger (PAX) and cargo penalties were computed for each scenario. The assumptions used in the aircraft performance assessment are listed below. For the aircraft performance assessment, a 100% load factor was applied to each aircraft to determine the maximum PAX and cargo weight penalties that would be incurred under each airspace protection scenarios/destination combination.

Table 6 summarizes that various aircraft that were evaluated in the aircraft performance assessment.

Table 6: Aircraft Fleet Evaluation

Aircraft	Aircraft Type	Engine	Maximum Takeoff Weight (lbs.)	Seating Capacity
Existing Aircaft Types Serving SJC				
A320-200	Narrow-Body	CFM56-5B4	171,960	150
A321 NEO	Narrow-Body	PW 1000G	206,132	189
B737-800	Narrow-Body	CFM56-7B26	174,200	175
A330-200	Wide-Body	Trent 772	524,700	284
B787-9	Wide-Body	GENX-1B74-7	560,000	290
Potential Aircraft Types Serving SJC				
A350-900	Wide-Body	Trent XWB-84	617,294	325
B777-300ER	Wide-Body	GE90-115BL	775,000	370

Source: Flight Engineering LLC.

An assumed average PAX weight of 228 pounds was used for narrow-body aircraft (domestic and North America) and 248 pounds for wide-body aircraft (international and transoceanic) operations in both the summer and winter aircraft performance analyses.

Table 7 provides a summary of the seasonal temperatures in the aircraft performance assessment that account for the season and reflect the temperatures at the typical time of day these operations occur.

Table 7: Seasonal Temperatures

Aircraft	Temperature (°F)	Notes
Winter		
A320-200, A321 NEO & B737-800	63°F	Early morning and evening departures
A330-200, A350-900, B787-9 & B777-300ER	68°F	Morning and afternoon departures
Summer		
A320-200, A321 NEO & B737-800	81.3°F	Boeing 85% realiablity temperature
A330-200, A350-900, B787-9 & B777-300ER	81.3°F	Boeing 85% realiablity temperature

Source: Landrum & Brown

A weather analysis using historical weather data from 2003 – 2017 was conducted. Additionally, an evaluation of aircraft operations was conducted to identify typical departure patterns based upon the time of day specific flights operate in order to focus the weather assessment around those time periods, specifically during the winter season.

For summer temperatures, the Boeing 85% reliability temperature was used as the basis of the aircraft performance assessment. Boeing publishes reliability temperature charts and these datasets are based upon annual historical weather trends at individual airports. The 85% reliability temperature is typically used by Airlines when conducting aircraft performance evaluations, assessing weight penalty impacts to

aircraft operations, and to ultimately make decisions regarding starting, maintaining or ending service at a particular airport.

Section 5B. Narrow-Body (Domestic/North America) Aircraft Performance

The preliminary Narrow-body aircraft assessment included the A320-200, A321 NEO and B737-800. Two domestic markets were evaluated:

- John F. Kennedy International Airport (JFK)
- Honolulu International Airport (HNL)

JFK and HNL are non-stop destinations which are currently served by airlines at SJC. The A321 NEO was only evaluated to the HNL market as the A320-200 is not currently used to that market and the A321 NEO has entered that market by a current airline.

Table 8 summarizes the results of the aircraft performance assessment for JFK.

- A320-200 operations to JFK result in minor PAX and cargo penalties under Scenarios 4 and 9 in both summer and winter.
- B737-800 operations to JFK results in PAX and minor cargo penalties under Scenario 9 in the summer.

Table 8: JFK PAX & Cargo Penalty Assessment

New York - JFK Winter (63° F)		**A320-200 (150 seats/2,384 lbs. cargo)**		**B737-800 (175 seats/1,604 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	-	**1,067**	-	-
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	-	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	-	-	-
	Opt 10B: 115' - 224' AGL	-	-	-	-
	Opt 10C: 129' - 240' AGL	-	-	-	-
	Opt 10D: 146' - 260' AGL	-	**106**	-	-
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**8**	**2,384**	-	**583**
New York - JFK Summer (81.3° F)		**A320-200 (150 seats/2,384 lbs. cargo)**		**B737-800 (175 seats/1,138 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	**3**	**2,384**	-	-
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	-	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	-	-	-
	Opt 10B: 115' - 224' AGL	-	-	-	-
	Opt 10C: 129' - 240' AGL	-	-	-	-
	Opt 10D: 146' - 260' AGL	-	**1,378**	-	-
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**13**	**2,384**	**3**	**860**

Source: Flight Engineering LLC., & Landrum & Brown

Table 9 summarizes the results of the aircraft performance assessment for HNL for the A321 NEO and B737-800 aircraft.

- A321 NEO operations to HNL result in no PAX penalties under any of the airspace scenarios and minor cargo penalties incurred in Scenarios 4 and 9
- B737-800 operations to HNL results in one PAX penalty in summer with no additional cargo allowed. In the winter, operations to HNL are fuel capacity limited due to increased headwinds resulting in a lower overall seat count (173 PAX) and a three PAX penalty.

Table 9: Hawaii PAX & Cargo Penalty Assessment

Hawaii - HNL Winter (63° F)		A321 NEO (189 seats/18,481 lbs.)		B737-800 (173 seats[1]/No Cargo)	
		PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	-	-	-	-
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	-	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	-	-	-
	Opt 10B: 115' - 224' AGL	-	-	-	-
	Opt 10C: 129' - 240' AGL	-	-	-	-
	Opt 10D: 146' - 260' AGL	-	-	-	-
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	-	**2,537**	**3**	-
Hawaii - HNL Summer (81.3° F)		**A321 NEO (189 seats/21,658 lbs.)**		**B737-800 (175 seats/1,599 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	-	**593**	-	-
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	-	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	-	-	-
	Opt 10B: 115' - 224' AGL	-	-	-	-
	Opt 10C: 129' - 240' AGL	-	-	-	-
	Opt 10D: 146' - 260' AGL	-	-	-	-
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	-	**3,565**	**1**	**1,599**

Source: Flight Engineering LLC., & Landrum & Brown

After the completion of the preliminary aircraft performance assessment, a secondary analysis of various transcontinental destinations was assessed to identify weight and cargo penalty impacts to Anchorage (ANC), Boston (BOS) and Miami (MIA) markets. ANC and MIA are non-stop markets not currently served at SJC, but were evaluated given their distance from SJC in order to more fully understand the impacts of the various airspace scenario heights on aircraft performance.

Two summer weather airspace scenarios were evaluated in this assessment, Scenario 1 (existing airspace protection) and Scenario 4 (No OEI/TERPS Only). The focus of this analysis was to evaluate the impacts of increased heights for straight-out departures over the Downtown Core. For this analysis, the A320-200 and the B737-800 aircraft types were evaluated. **Table 10** provides a summary of the results of this assessment.

- The B737-800 aircraft for all three markets would have minor PAX penalties and no cargo penalties in both Scenarios 1 and 4. The one to three PAX penalties incurred for BOS and MIA result from maximum structural takeoff weight limits and are not related to the proposed airspace scenario obstacle heights or runway lengths at SJC.
- The A320-200 would incur minor PAX penalties to BOS and MIA in Scenario 1 and no PAX penalties to ANC. No additional cargo penalties are incurred when operating to the three markets under both scenarios.
- The A320-200 will incur moderate PAX penalties to BOS and MIA in Scenario 4 and no PAX penalties to ANC. No additional cargo penalties are incurred when operating to the three markets under both scenarios.

Table 10: ANC, BOS and MIA PAX & Cargo Penalty Assessment

Anchorage - ANC Summer (81.3° F)		A320 (150 seats/1,379 lbs. cargo)		B737-800 (175 seats/7,100 lbs. cargo)	
		PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	-	-	-	-
Boston - BOS Summer (81.3° F)		**A320 (150 seats/0 lbs. cargo)**		**B737-800 (175 seats/0 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	7	-	1	-
Scenario 4	TERPS Only	23		1	-
Miami - MIA Summer (81.3° F)		**A320 (150 seats/0 lbs. cargo)**		**B737-800 (175 seats/0 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	1	-	3	-
Scenario 4	TERPS Only	17		3	-

Source: Flight Engineering LLC., & Landrum & Brown

Section 5C. Wide-Body (International) Aircraft Performance

A wide-body aircraft assessment was performed for the typical aircraft from SJC to various transoceanic destinations. A preliminary aircraft performance assessment was conducted using the B787-9 and B777-300ER aircraft to two destinations, Beijing International Airport (PEK) and Frankfurt International Airport (FRA).

A secondary wide-body aircraft performance evaluation assessment was conducted for additional transoceanic destinations that are currently not served from SJC. The intent of the assessment was to evaluate the operational limitations of each of the aircraft to these long-haul transoceanic destinations to better understand if non-stop air service from SJC would be achievable. The following destinations

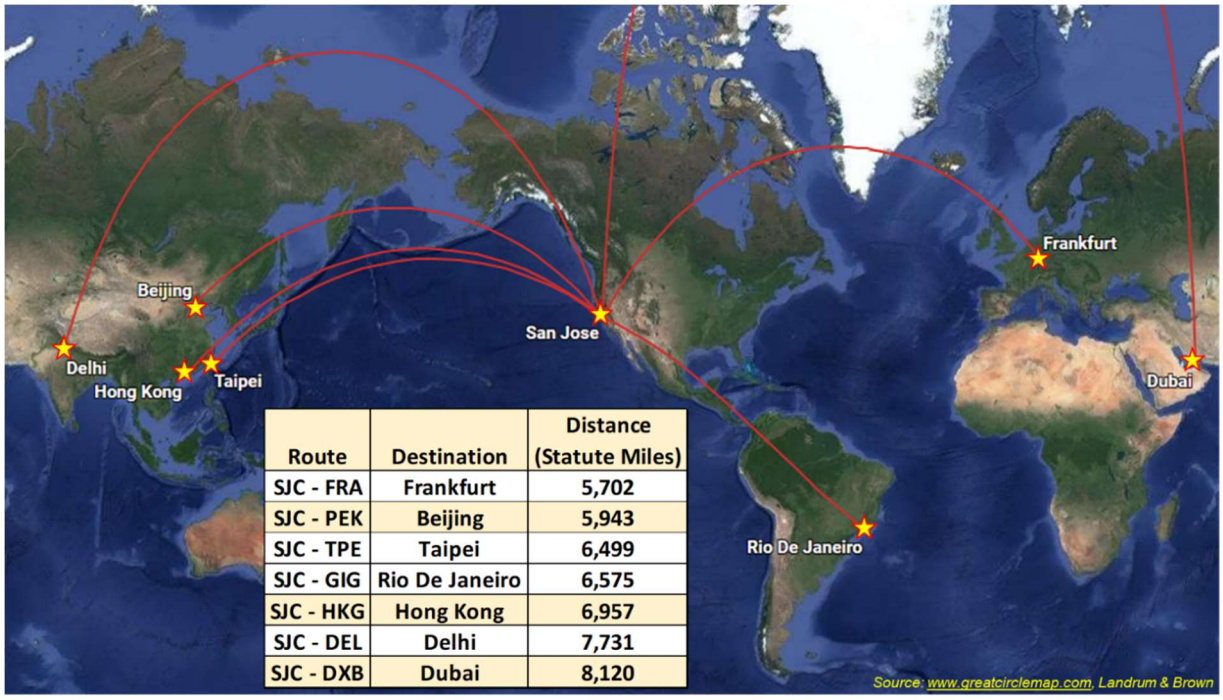
were evaluated to identify the weight and cargo penalties associated with both Scenarios 1 and 4 airspace protection:

- Rio de Janeiro (GIG)
- Taipei (TPE)
- Hong Kong (HKG)
- Delhi (DEL)
- Dubai (DXB)

As part of the secondary wide-body performance assessment, two additional wide-body aircraft types (A330-200 and A350-900) were evaluated along with the B787-9 and B777-300ER. The A330-200 recently operated service from SJC to China. The A350-900 is a new aircraft that could possibly enter service at SJC in the future.

Figure 17 depicts the great circle distances from SJC to the previously mentioned transoceanic destinatoins.

Figure 17: Great Circle Map of International Destinations



Route	Destination	Distance (Statute Miles)
SJC - FRA	Frankfurt	5,702
SJC - PEK	Beijing	5,943
SJC - TPE	Taipei	6,499
SJC - GIG	Rio De Janeiro	6,575
SJC - HKG	Hong Kong	6,957
SJC - DEL	Delhi	7,731
SJC - DXB	Dubai	8,120

Source: Greatcirclemap.com and Landrum & Brown

Table 11 summarizes the wide-body aircraft performance assessment for PEK for the B787-9 and B777-300ER aircraft:

- B787-9 operation to Asia results in significant PAX and cargo penalties under Scenarios 4, 7, 9 and 10D in both summer and winter.
- B787-9 operation to Asia results in moderate PAX and significant cargo penalties under Scenario 10C in both summer and winter.
- No airlines at SJC currently operate the B777-300ER. However, it is anticipated that this aircraft will operate out of SJC in the future as airlines operating successful international routes from SJC

may opt to increase passenger volumes thereby moving to larger wide-body aircraft such as the B777-300ER.

- B777-300ER incurs no PAX penalties under any scenarios, however cargo penalties are incurred in all scenarios except Scenario 1 with Scenarios 4, 7 and 10D being most significant.

Table 11: Beijing PAX & Cargo Penalty Assessment

Beijing - PEK Winter (68° F)		B787-9 (290 seats/10,853 lbs. cargo)		B777-300ER (370 seats/56,089 lbs. cargo)	
		PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	**51**	**10,853**	-	**19,278**
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	**25**	**10,853**	-	**11,801**
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	**4,534**	-	**5,479**
	Opt 10B: 115' - 224' AGL	-	**9,408**	-	**6,673**
	Opt 10C: 129' - 240' AGL	**13**	**10,853**	-	**10,537**
	Opt 10D: 146' - 260' AGL	**34**	**10,853**	-	**16,929**
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**93**	**10,853**	-	**26,672**

Beijing - PEK Summer (81.3° F)		B787-9 (290 seats/9,542 lbs. cargo)		B777-300ER (370 seats/55,588 lbs. cargo)	
		PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	**56**	**9,542**	-	**20,597**
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	**30**	**9,542**	-	**13,268**
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	**3,933**	-	**5,293**
	Opt 10B: 115' - 224' AGL	-	**8,725**	-	**10,223**
	Opt 10C: 129' - 240' AGL	**15**	**9,542**	-	**11,020**
	Opt 10D: 146' - 260' AGL	**36**	**9,542**	-	**17,545**
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**95**	**9,542**	-	**28,076**

Source: Flight Engineering LLC., & Landrum & Brown

Table 12 summarizes the wide-body aircraft performance assessment to FRA for the B787-9 and B777-300ER aircraft:

- B787-9 operation to Europe results in significant PAX and cargo penalties under Scenario 9 and significant cargo penalties under Scenarios 4, 7, 9, 10C and 10D.
- B777-300ER incurs no PAX penalties under any scenarios, however cargo penalties are incurred in Scenarios 4, 9 and 10D with Scenario 9 being most significant.

Table 12: Frankfurt PAX & Cargo Penalty Assessment

Frankfurt - FRA Winter (68° F)		B787-9 (290 seats/26,198 lbs. cargo)		B777-300ER (370 seats/62,240 lbs. cargo)	
		PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	-	**21,580**	-	**4,400**
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	**15,338**	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	**10,000**	-	-
	Opt 10A: 100' - 195' AGL	-	-	-	-
	Opt 10B: 115' - 224' AGL	-	**9,349**	-	-
	Opt 10C: 129' - 240' AGL	-	**14,096**	-	-
	Opt 10D: 146' - 260' AGL	-	**19,282**	-	**2,027**
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**29**	**26,198**	-	**11,735**
Frankfurt - FRA Summer (81.3° F)		**B787-9 (290 seats/23,514 lbs. cargo)**		**B777-300ER (370 seats/62,240 lbs. cargo)**	
		PAX Penalty	**Cargo Penalty (lbs.)**	**PAX Penalty**	**Cargo Penalty (lbs.)**
Scenario 1	Existing airspace protection	-	-	-	-
Scenario 4	TERPS Only	**2**	**22,911**	-	**7,811**
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	-	**16,407**	-	-
Scenario 10	Existing Conditions: 85' - 166' AGL	-	-	-	-
	Opt 10A: 100' - 195' AGL	-	**4,217**	-	-
	Opt 10B: 115' - 224' AGL	-	**9,353**	-	-
	Opt 10C: 129' - 240' AGL	-	**14,270**	-	-
	Opt 10D: 146' - 260' AGL	-	**19,612**	-	**3,876**
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**41**	**23,514**	-	**15,397**

Source: Flight Engineering LLC., & Landrum & Brown

Table 13 summarizes the results of the secondary wide-body aircraft performance assessment for the previously mentioned transoceanic destination. As mentioned, the A330-200, A350-900, B777-300ER and B787-9 aircraft were evaluated to each destination:

- A330-200, A350-900 and B777-300ER operations to GIG, TPE and HKG would incur minor PAX penalties in all scenarios. Utilizing the existing West OEI Corridor would not result in any additional cargo penalties, however, when utilizing existing straight-out OEI or Scenario 4 straight-out, additional cargo penalties ranging from minor to significant will be incurred.
- B787-9 would incur significant PAX penalties under existing straight-out and Scenario 4 straight-out scenario heights for GIG, TPE, HKG, DEL and DXB operations.
- Given the extended distance from SJC to DEL and DXB, it is unlikely that non-stop service to these destinations would be achievable operating the B787-9 aircraft. No additional cargo would be allowed to any of the destinations when operating the B787-9 aircraft.

Table 13: Potential International Market PAX & Cargo Penalty Assessment

Rio de Janeiro - GIG Summer (81.3° F)	A330-200 (284 seats/39,344 lbs. cargo)		A350-900 (325 seats/37,963 lbs. cargo)		B777-300ER (370 seats/48,211 lbs. cargo)		B787-9 (290 seats/7,144 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
West OEI Corridor	-	-	-	-	-	-	-	-
TERPS Only	-	20,072	-	23,528	-	18,975	60	7,144
	A330-200 (284 seats/21,199 lbs. cargo)		A350-900 (325 seats/16,520 lbs. cargo)		B777-300ER (370 seats/32,012 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Existing Straight Out OEI	-	-	-	-	-	-	51	-
TERPS Only	-	1,927	-	2,085	-	2,776	60	-
Taipei - TPE Summer (81.3° F)	A330-200 (284 seats/28,577 lbs. cargo)		A350-900 (325 seats/27,582 lbs. cargo)		B777-300ER (370 seats/35,569 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
West OEI Corridor	-	-	-	-	-	-	12	-
TERPS Only	-	1,976	-	23,195	-	18,742	96	-
	A330-200 (284 seats/10,635 lbs. cargo)		A350-900 (325 seats/6,439 lbs. cargo)		B777-300ER (370 seats/19,465 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Existing Straight Out OEI	-	-	-	-	-	-	89	-
TERPS Only	-	1,976	-	2,052	-	2,638	96	-
Hong Kong - HKG Summer (81.3° F)	A330-200 (284 seats/18,283 lbs. cargo)		A350-900 (325 seats/17,182 lbs. cargo)		B777-300ER (370 seats/20,785 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
West OEI Corridor	-	-	-	-	-	-	51	-
TERPS Only	5	18,283	23	17,182	-	17,980	134	-
	A330-200 (284 seats/743 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/5,348 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Existing Straight Out OEI	-	-	15	-	-	-	128	-
TERPS Only	5	743	23	-	-	2,543	134	-
Delhi - DEL Summer (81.3° F)	A330-200 (284 seats/5,014 lbs. cargo)		A350-900 (325 seats/3,132 lbs. cargo)		B777-300ER (370 seats/106 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
West OEI Corridor	-	-	-	-	-	-	103	-
TERPS Only	55	5,014	77	3,132	72	106	184	-
	A330-200 (284 seats/0 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/0 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Existing Straight Out OEI	48	-	69	-	62	-	178	-
TERPS Only	55	-	77	-	72	-	184	-
Dubai - DXB Summer (81.3° F)	A330-200 (284 seats/3,537 lbs. cargo)		A350-900 (325 seats/2,688 lbs. cargo)		B777-300ER (370 seats/1,828 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
West OEI Corridor	-	-	-	-	-	-	107	-
TERPS Only	65	3,537	79	2,688	72	1,828	191	-
	A330-200 (284 seats/0 lbs. cargo)		A350-900 (325 seats/0 lbs. cargo)		B777-300ER (370 seats/0 lbs. cargo)		B787-9 (290 seats/0 lbs. cargo)	
	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)	PAX Penalty	Cargo Penalty (lbs.)
Existing Straight Out OEI	57	-	71	-	62	-	184	-
TERPS Only	65	-	79	-	72	-	191	-

Source: Flight Engineering LLC., & Landrum & Brown

Section 6: Airline Aircraft Performance Assessment

Participation from the Airlines currently operating at SJC was an integral part of the aircraft performance assessment exercises conducted for this study. Project consultants and Airport staff educated and informed the airlines as to (1) the nature of the project, (2) the various airspace protection scenarios being considered and (3) to provide critical obstacle datasets for the airlines performance engineering departments to evaluate the potential PAX and cargo weight penalties on their respective aircraft fleets.

A conference call was arranged by the Project Consultant and the Airlines at SJC to provide them with an overview of the project and to formally request their assistance with conducting an aircraft performance assessment for the various airspace scenarios. At the conclusion of the conference call, the Project Consultant send the Airlines a detailed email with a data package containing information about each airspace scenario and critical obstacles. Airlines were requested to evaluate their existing and potential aircraft fleets and markets served from SJC as part of against each of the scenario obstacles. **Appendix B** contains a copy of the email sent to each airline, as well as the dataset provided.

Results of the airlines' aircraft performance assessment were used to double-check the project consultants' analysis of weight penalty impacts for each airspace protection scenario, and to support an informed decision by the City staff regarding future airspace protection. **Table 14** lists the airlines that participated in aircraft performance assessment for this study. 13 of 19 airlines responded to the project consultant's request to evaluate their aircraft fleets performance against each of the scenario obstacles. Air China provided results of their aircraft performance assessment of the various airspace protection scenarios prior to its decision to discontinue operations at SJC.

Table 14: SJC Airline Aircraft Performance Assessment Participants

Responded	No Response
Aeromexico	Air Canada/Jazz
Air China	California Pacific
Alaska	Frontier
American	JetBlue
ANA	Lufthansa
British Air	UPS
Delta	
FedEx	
Hainan Airways	
Hawaiian	
Southwest	
United	
Volaris	

An agreement was made with each airline that participated in the aircraft performance assessment to ensure that the results of their individual aircraft performance assessment would be confidential in nature and proprietary due to the competitive nature of the industry. To maintain confidentiality, all transmittals and aircraft performance assessment results were sent directly to the project consultants. Exact PAX and cargo penalty results calculated by each airline will not be reported publicly. However, a general summary of the results from each participating airline is provided below:

ANA

- Evaluated B787-8 (max 169 PAX configuration)
- No PAX penalty impacts in Scenarios 1, 4, 7 and 10, however cargo impact.
- Scenario 9 results in significant PAX penalties in Summer temperatures (92º F), including additional cargo penalties
- ANA will not their assessment of the B787-9 aircraft by the end of February

Hainan Airways

- For B787-8/9, Scenario 4 obstacles results in significant reduction in cargo and PAX (50+ PAX for B787-9) due to loss of the West Corridor

British Airways

- Scenarios 4 and 7 have no impact at all to current Runway 12L operations but both would result in PAX and cargo penalty impacts to 12R
- Scenario 9 results in greatest impact when operating on Runways 12L/12R
- Scenario 10 has no impact on Runway 12L when departing straight-out which would have a PAX and cargo penalties similar to Scenario 1
- Scenario 10 has a PAX and cargo penalty impacts for Runway 12R when using the West OEI Corridor compared with Scenario 1

Alaska, American, Aeromexico, Delta, and Southwest, Volaris

- No penalties for operations below 92º F

United

- Minor PAX and cargo penalties in Scenario 4 for B737-800; moderate PAX and cargo penalties in Scenario 9 for B737-800
- Significant PAX and cargo penalties for B737-900ER operation in Scenarios 1, 4, 7 and 9.

Hawaiian (Aircraft - A321 NEO)

- HNL, OGG, or KOA has no passenger penalties, some cargo penalties
- LIH has minimal passenger penalties and some cargo penalties

Federal Express

- Cargo penalties in most scenarios; however, the aircraft will run out of space before it reaches the maximum weight limit

Section 7: Steering Committee Airspace Protection Recommendation

A new composite airspace protection map has been created which defines the proposed heights within a 3-mile radius from each runway end at SJC for the Scenario 4 airspace. As part of the proposed Scenario 4 airspace protection, the City of San Jose will work to develop a construction crane operation policy to aid in minimizing the impacts of erected construction cranes on aircraft operations at SJC.

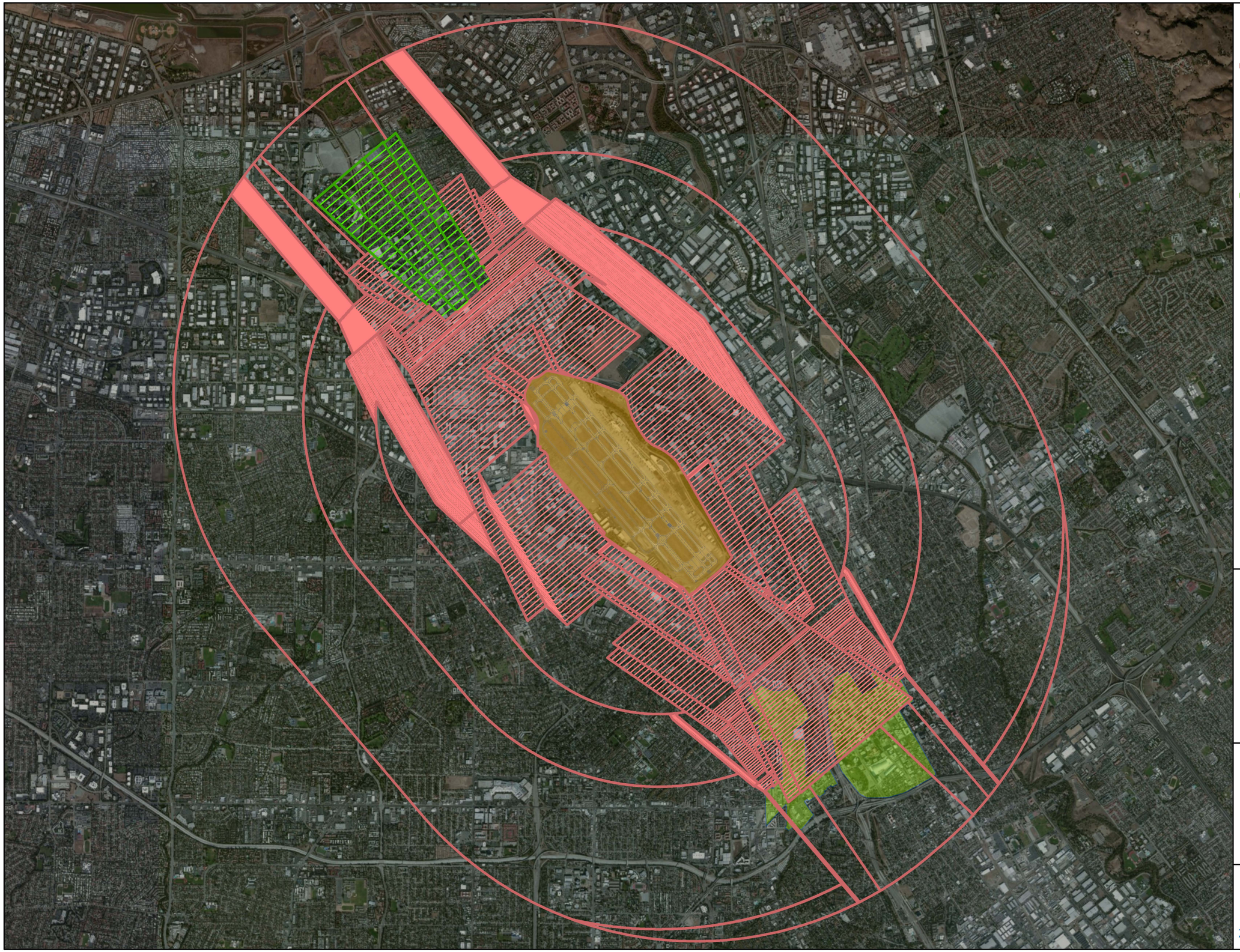
Section 7A. Proposed Scenario 4 Composite Airspace Protection Surfaces

The Scenario 4 composite airspace protection includes the lowest controlling TERPS OCS surfaces within a 3-mile radius of each runway end at SJC. For the Downtown Core and Diridon Station Area, all OEI surface protection as depicted in **Figure 4, Figure 5, and Figure 6** would no longer be protected by the City, and the new Scenario 4 airspace surface would be used to set the maximum allowable building heights in the Downtown Core and Diridon Station Area, thereby becoming the new OEI protection heights.

If the FAA were to change the heights of a TERPS surface in the future, the City would continue to use Scenario 4 to avoid the potential for any further impact on airline OEI performance. The FAA may institute new or modified approach and departure procedures that could lower the TERPS surfaces below those indicated in Scenario 4 (as was the case for some procedures implemented since the 2007 analysis). Therefore, the lower of the Scenario 4 surfaces or an FAA Obstruction Evaluation determination would dictate the height of a proposed structure.

It should be noted that the federal requirement under FAR Part 77 for FAA review of proposed structures which would exceed an airspace surface defined under the regulation is unaffected by any change in City policy on maximum building heights. Further, existing City policy requiring development applicants, if applicable, to obtain "determinations of no hazard" from the FAA, and to comply with any conditions set forth by the FAA in such determinations, will continue. The FAA retains discretion to determine whether any proposed structure elevation would constitute a hazard to aviation. The City can only presume that the FAA would allow a structure to be as tall as indicated under Scenario 4.

Exhibit 1 depicts the 3-mile airspace protection surface coverage for Scenario 4. OEI protection for Runway 30L/30R departures is maintained in this scenario. OEI impacts for northbound departures were not evaluated as part of this study and any impacts to airline operations as it pertains to PAX and/or cargo penalties is unknown. For Runways 30L/30R, straight-out OEI corridor protection is maintained in the Scenario 4 composite airspace. **Exhibit 2** depicts the Scenario 4 composite airspace height limits over the Downtown Core and Diridon Station Area.



LEGEND

- Lowest TERPS obstacle clearance surface (OCS), edge or intersection
- 230' — Lowest TERPS OCS elevation contour (feet NAVD88)
- Lowest One-Engine Inoperative (OEI) (Runways 30L/30R) obstacle clearance surface (OCS), edge or intersection
- 230' — Lowest OEI (Runways 30L/30R) OCS elevation contour (feet NAVD88)
- Downtown Core & Diridon Station Study Areas

DRAFT WORK PRODUCT
February 13, 2019

NORTH ARROW

N
W E
S

0 2,000 4,000 8,000
Feet

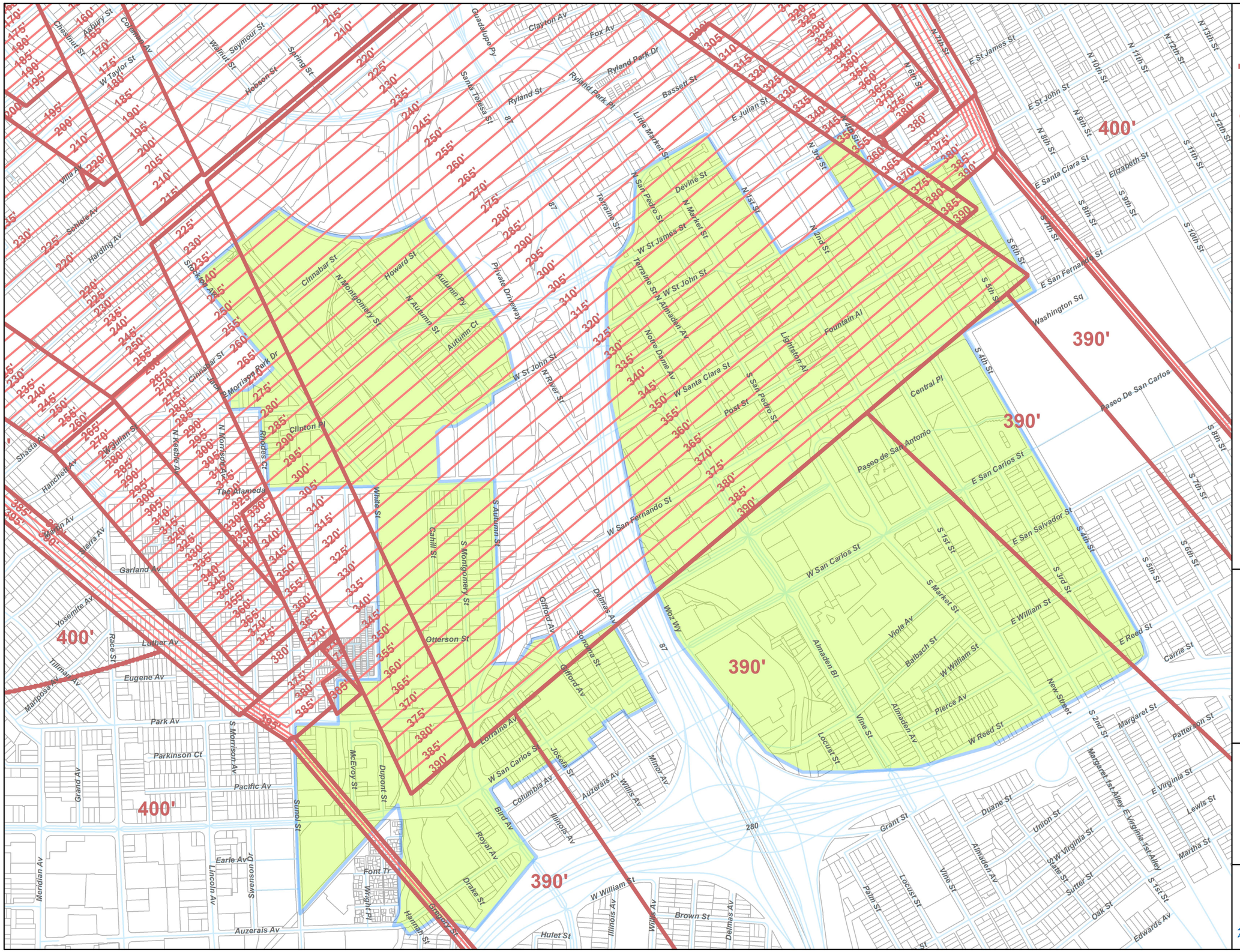
COMPOSITE AIRSPACE PROTECTION SURFACES

SAN JOSE INTERNATIONAL AIRPORT

February 13, 2019

L&B
Aviation Planning at the Leading Edge

Exhibit:
1



LEGEND

Lowest TERPS obstacle clearance surface (OCS), edge or intersection

230' Lowest TERPS OCS elevation contour (feet NAVD88)

DRAFT WORK PRODUCT
February 13, 2019

NORTH ARROW

N
W E
S

0 800 1,600 Feet

COMPOSITE AIRSPACE PROTECTION SURFACES

SAN JOSE INTERNATIONAL AIRPORT

February 13, 2019

L&B Aviation Planning at the Leading Edge

Exhibit: 2

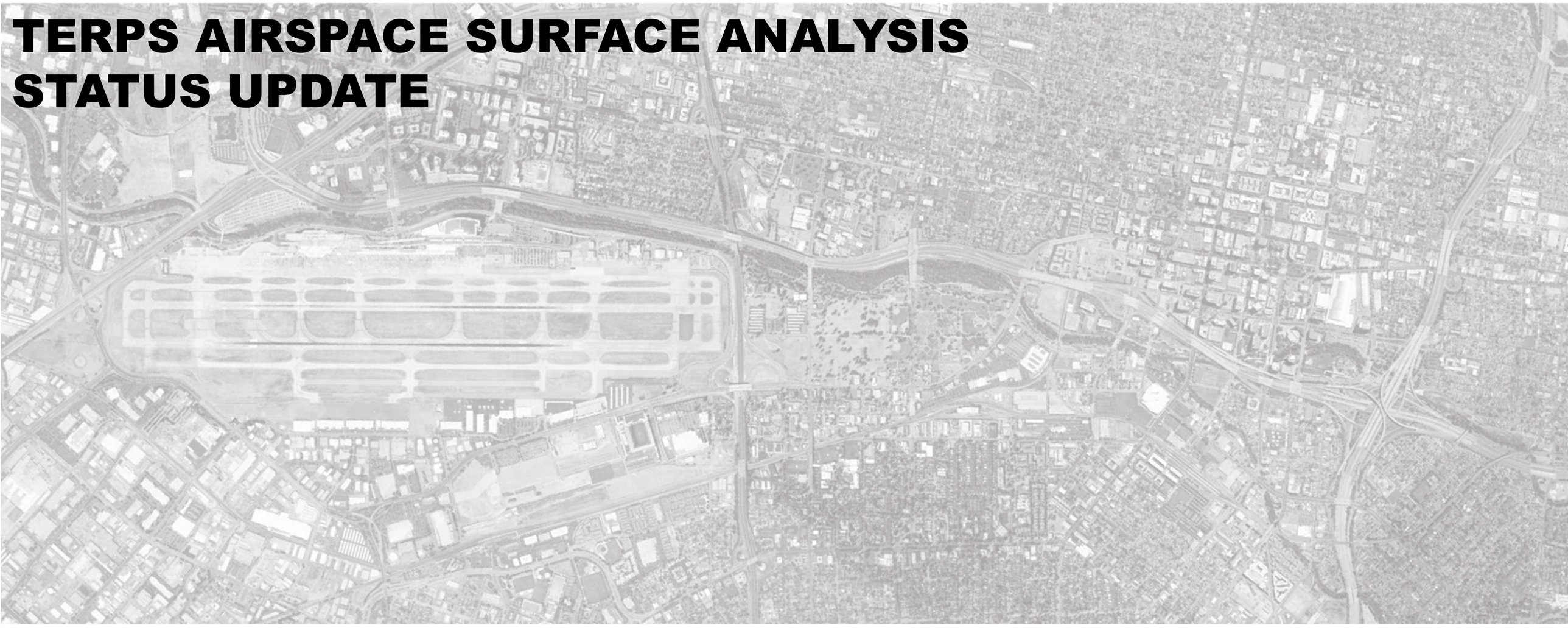
Appendix A: TERPS Surface Assessment

Appendix A contains exhibits depicting the various TERPS airspace protection surfaces described in **Section 4** of this memorandum. The TERPS surface assessment was completed on April 18, 2018.

Additionally, the FAA instrument procedure charts which were used a reference during the creation of the TERPS OCS evaluated in this study are included. The publishing cycle date for these procedures was "**SW-2, 01 FEB 2018 to 01 MAR 2018**".

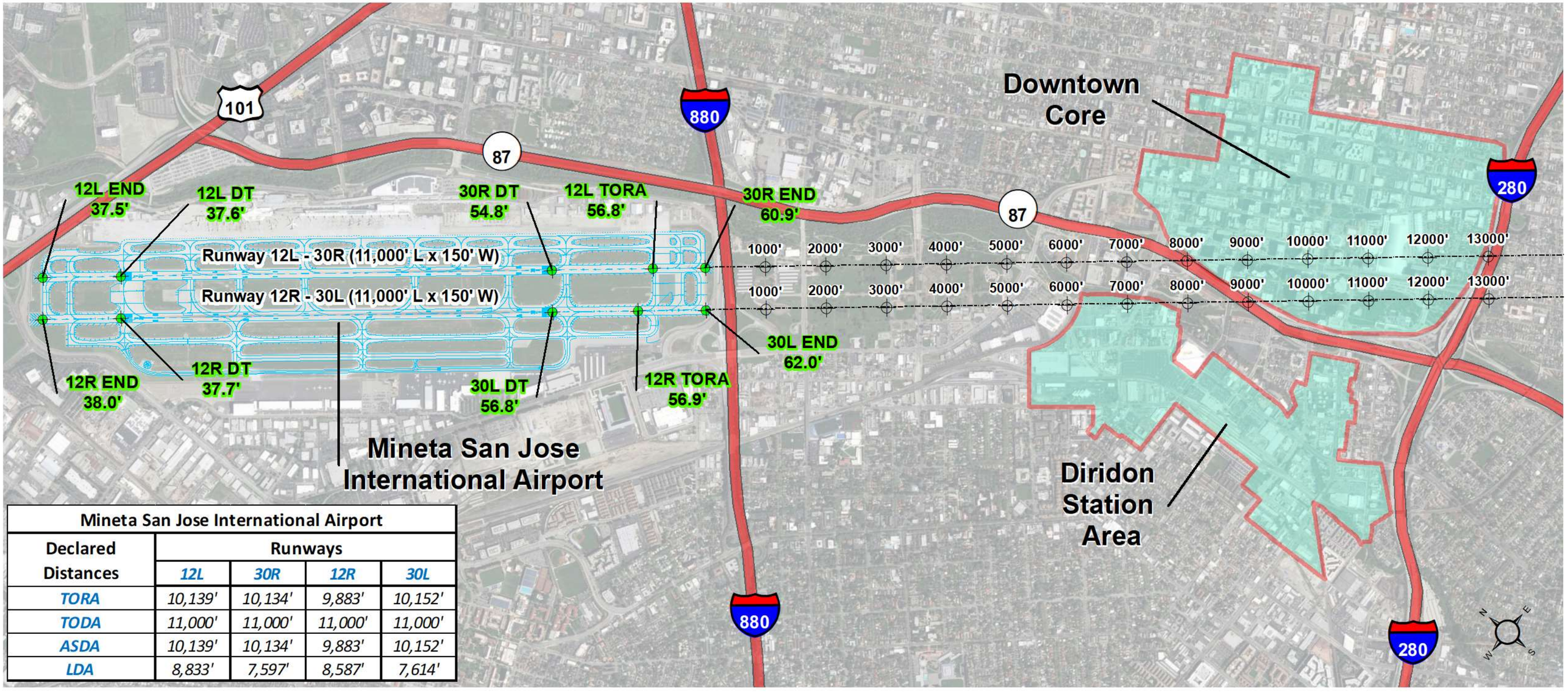
DOWNTOWN SAN JOSÉ AIRSPACE
& DEVELOPMENT CAPACITY STUDY (PROJECT CAKE)

TERPS AIRSPACE SURFACE ANALYSIS STATUS UPDATE



April 18, 2018

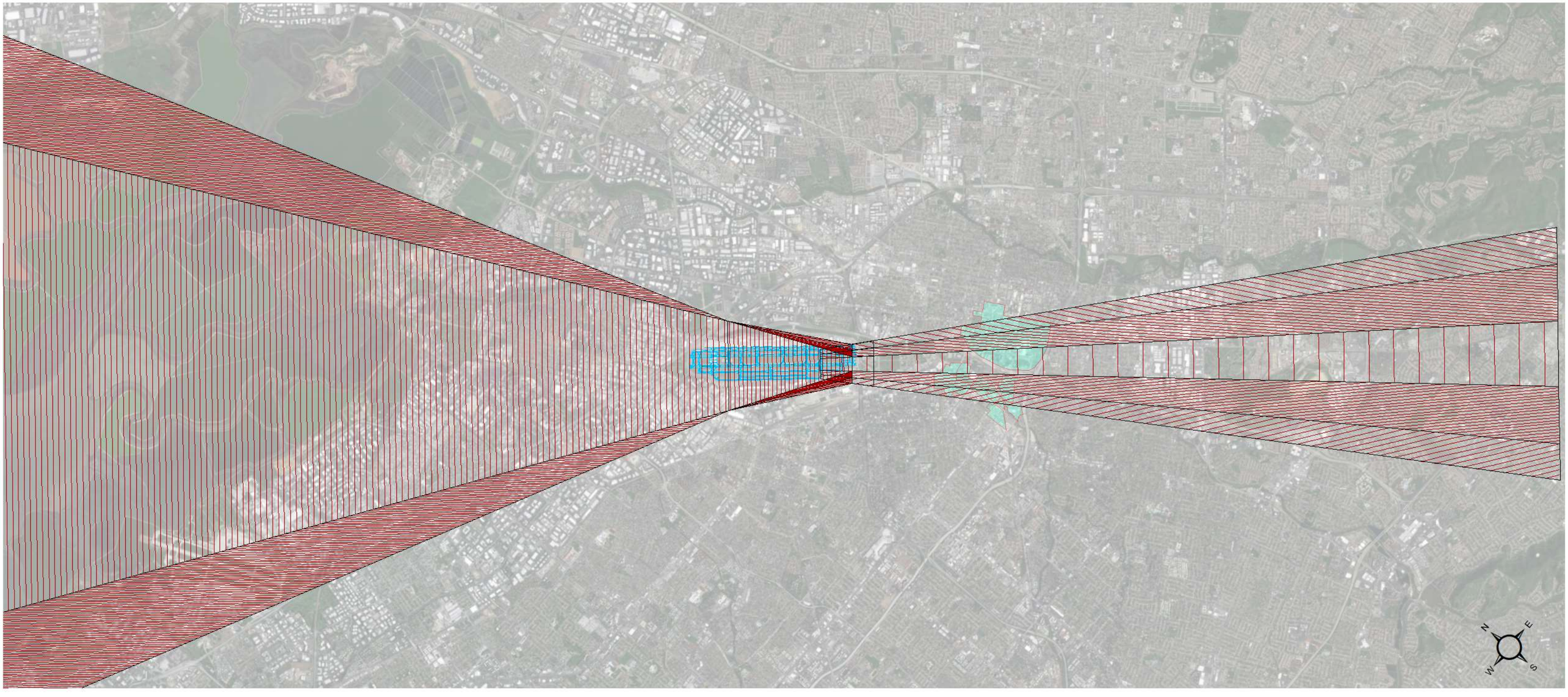
EXISTING AIRPORT LAYOUT & STUDY EVALUTION AREA



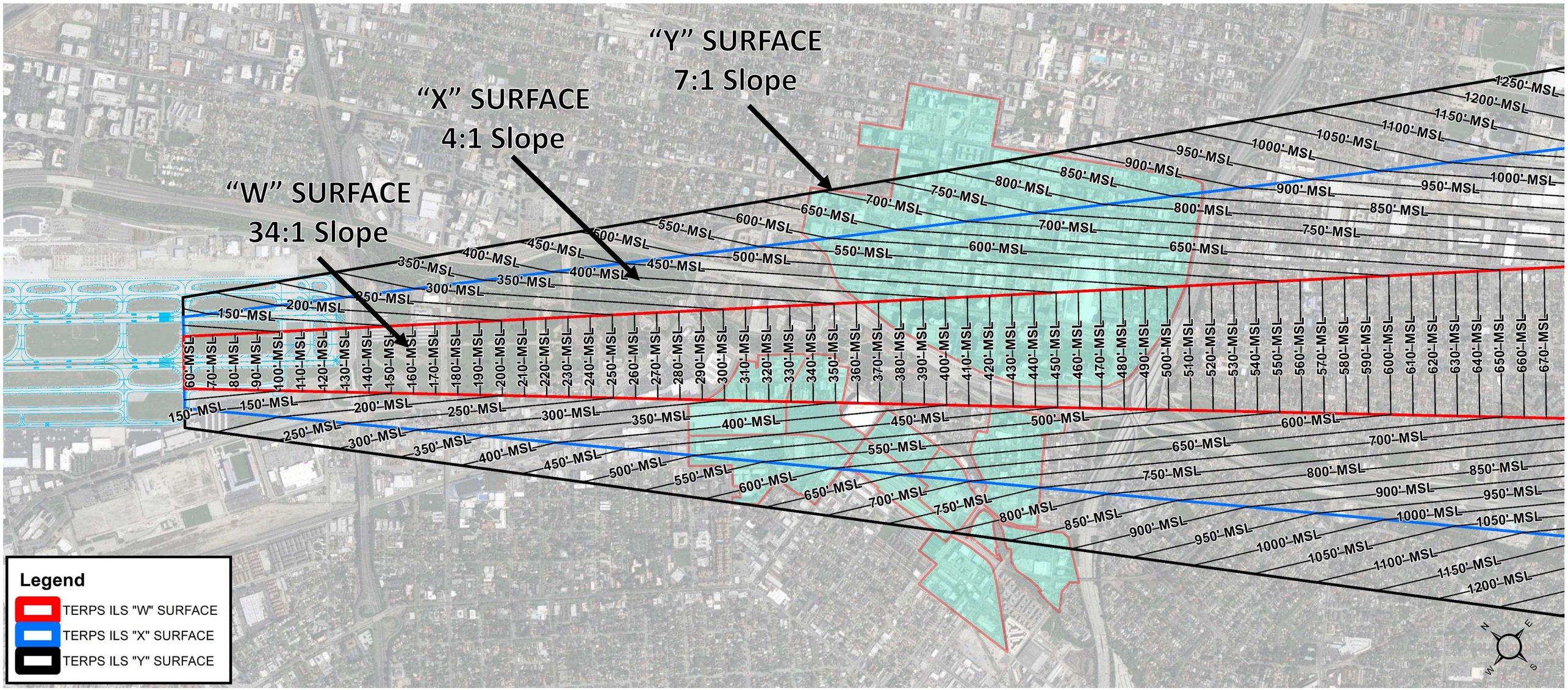
Mineta San Jose International Airport				
Declared Distances	Runways			
	12L	*30R*	*12R*	*30L*
TORA	*10,139'*	*10,134'*	*9,883'*	*10,152'*
TODA	*11,000'*	*11,000'*	*11,000'*	*11,000'*
ASDA	*10,139'*	*10,134'*	*9,883'*	*10,152'*
LDA	*8,833'*	*7,597'*	*8,587'*	*7,614'*

ILS SURFACES

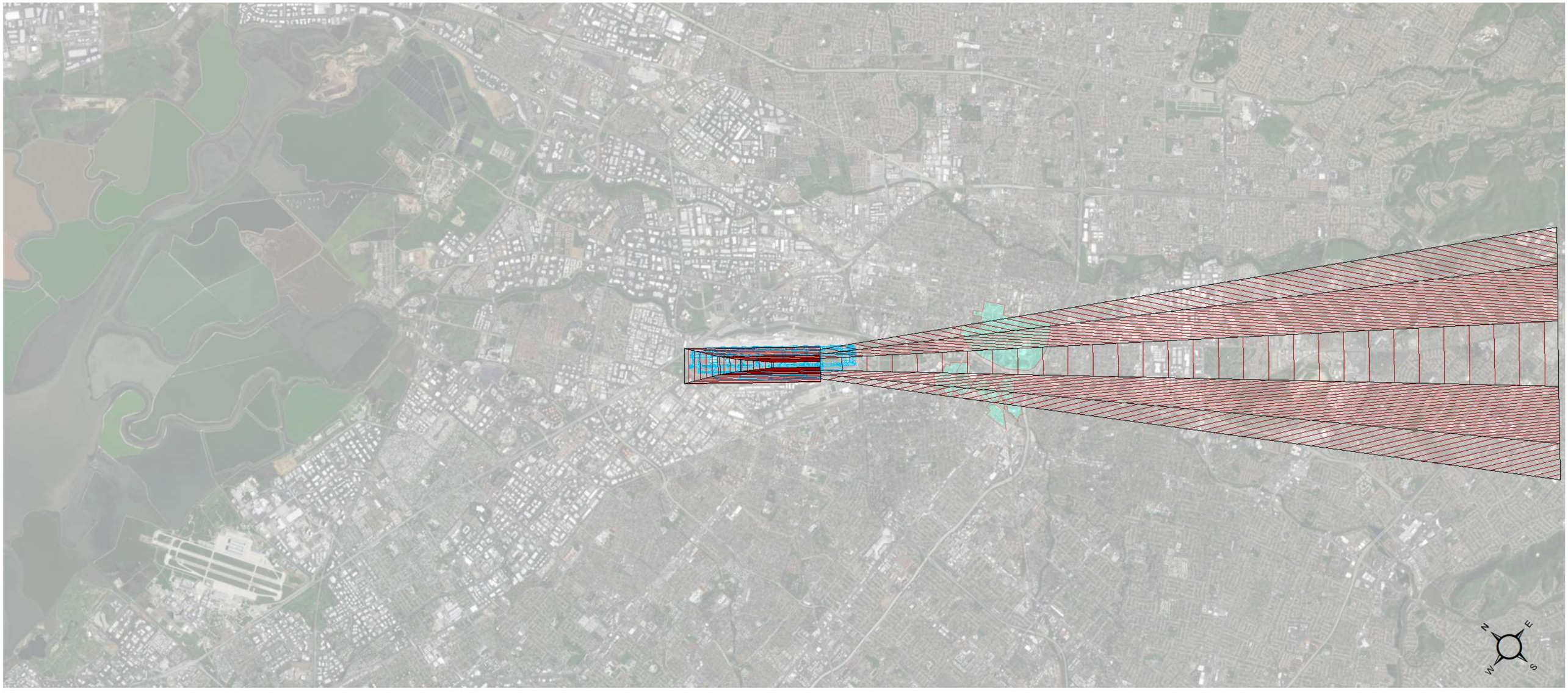
RUNWAY 30L CAT I ILS (STANDARD) SURFACE



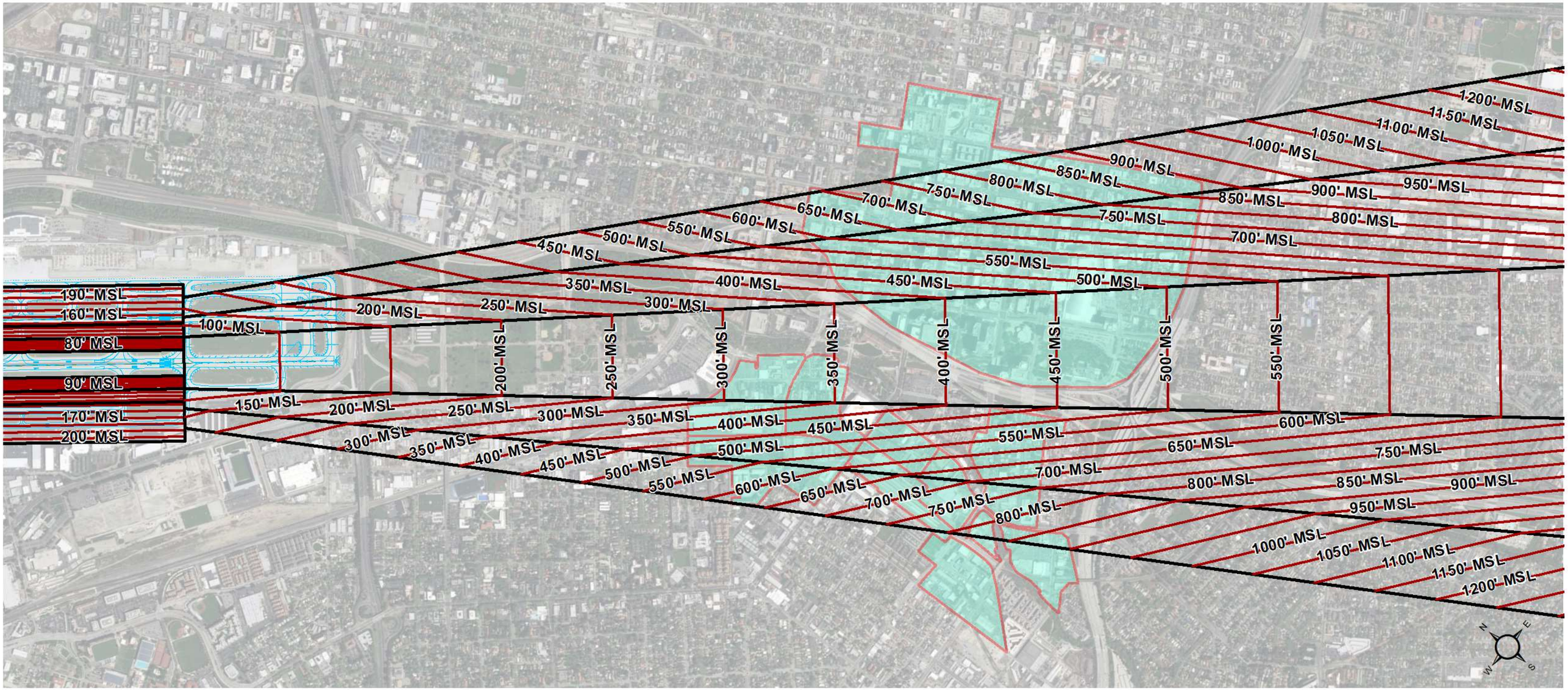
TERPS ILS CAT I/II – FINAL SEGMENT – RUNWAY 30L



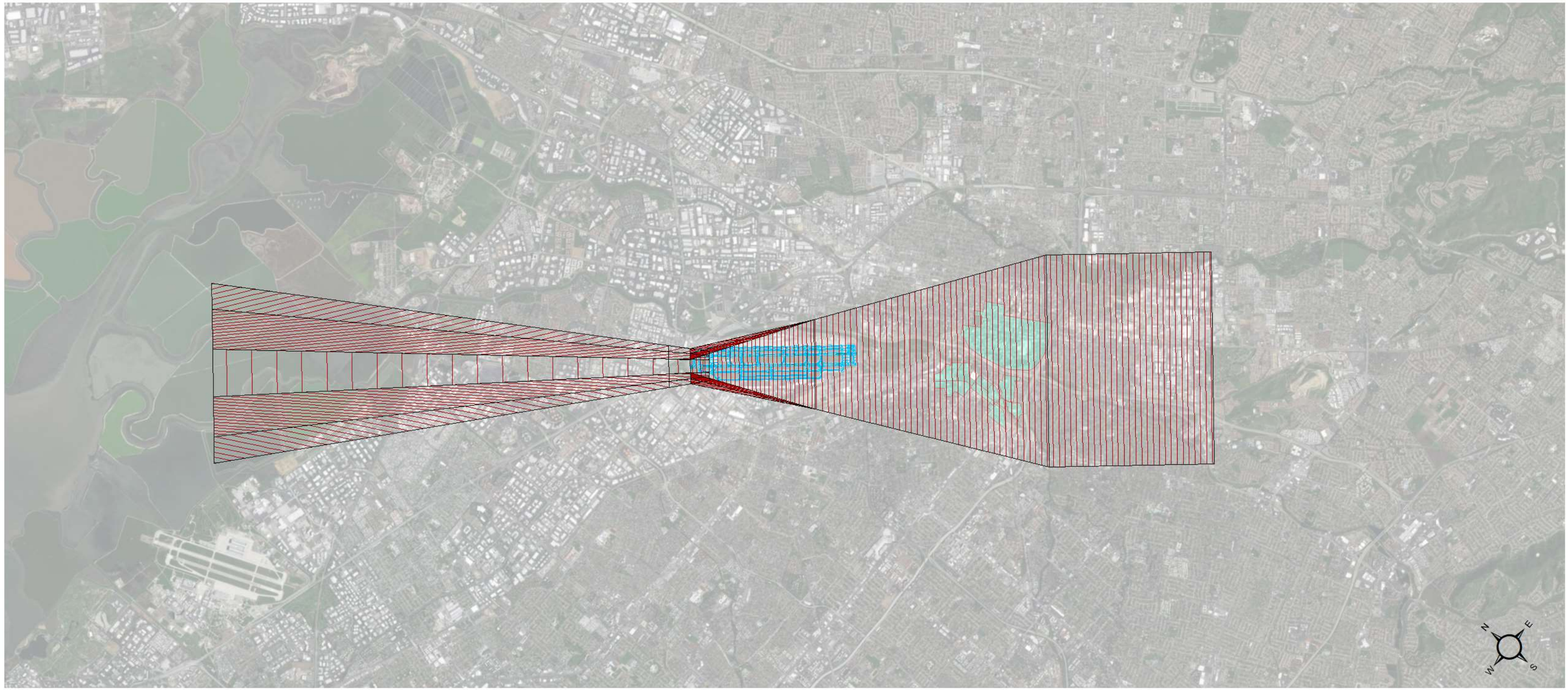
RUNWAY 30L CAT II ILS (SPECIAL AUTHORIZATION) SURFACE



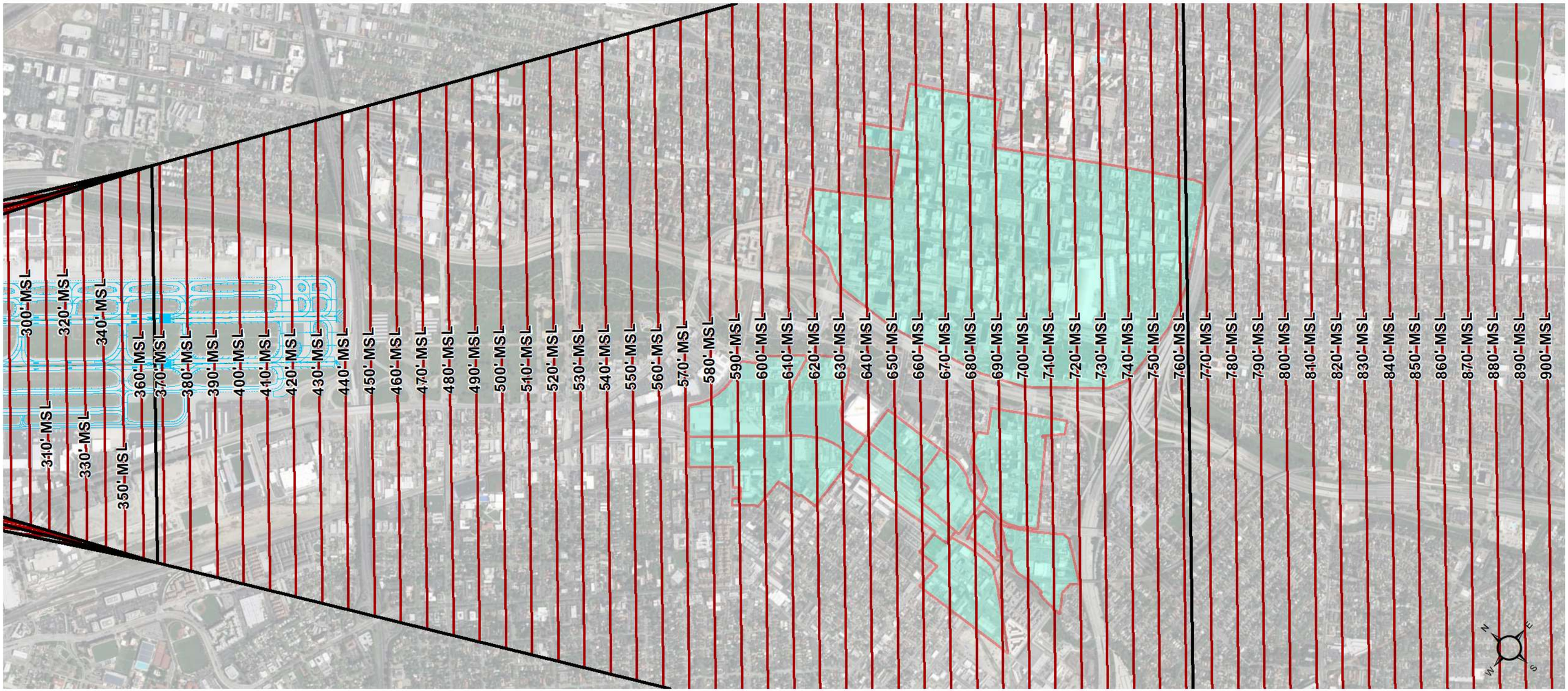
RUNWAY 30L CAT II ILS (SPECIAL AUTHORIZATION) SURFACE – FINAL APPROACH



RUNWAY 12R CAT I ILS (STANDARD) SURFACE

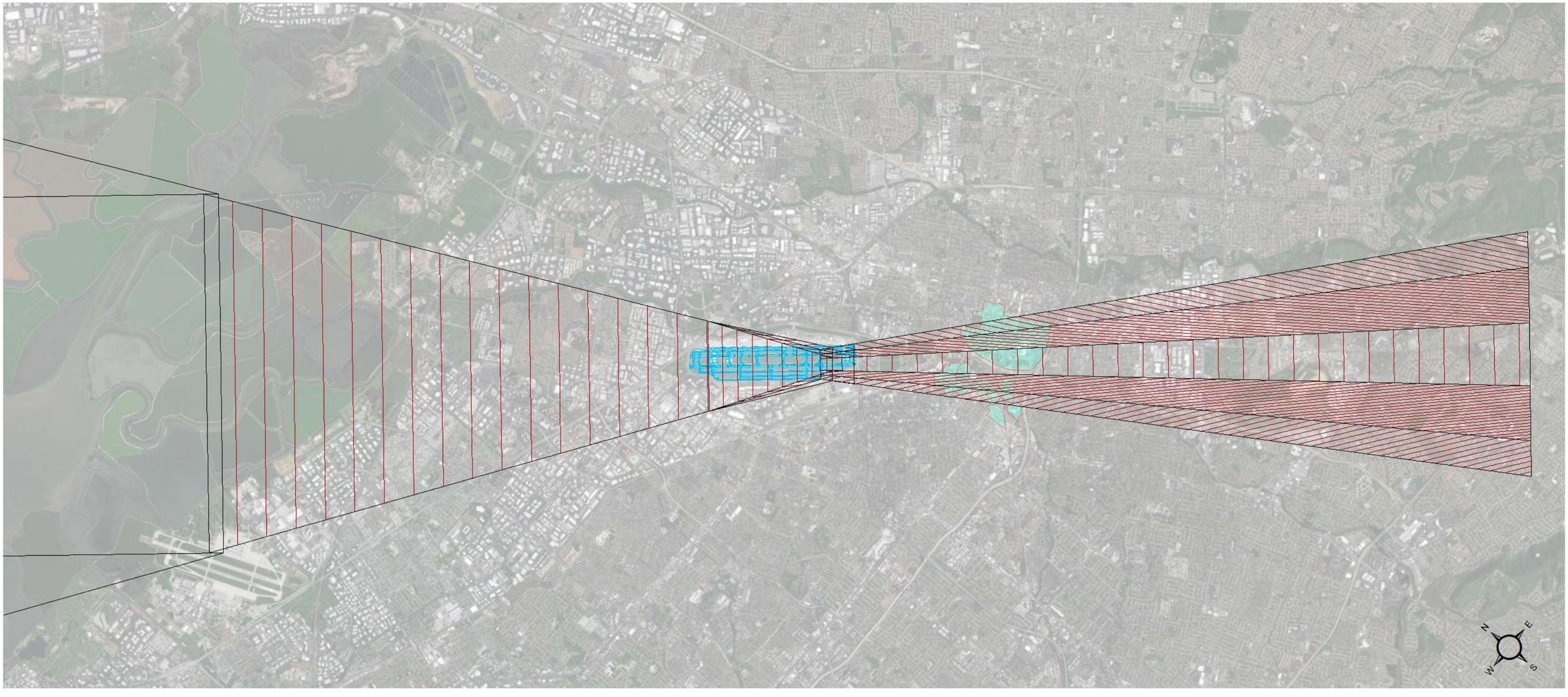


RUNWAY 12R CAT I ILS (STANDARD) SURFACE – MISSED APPROACH

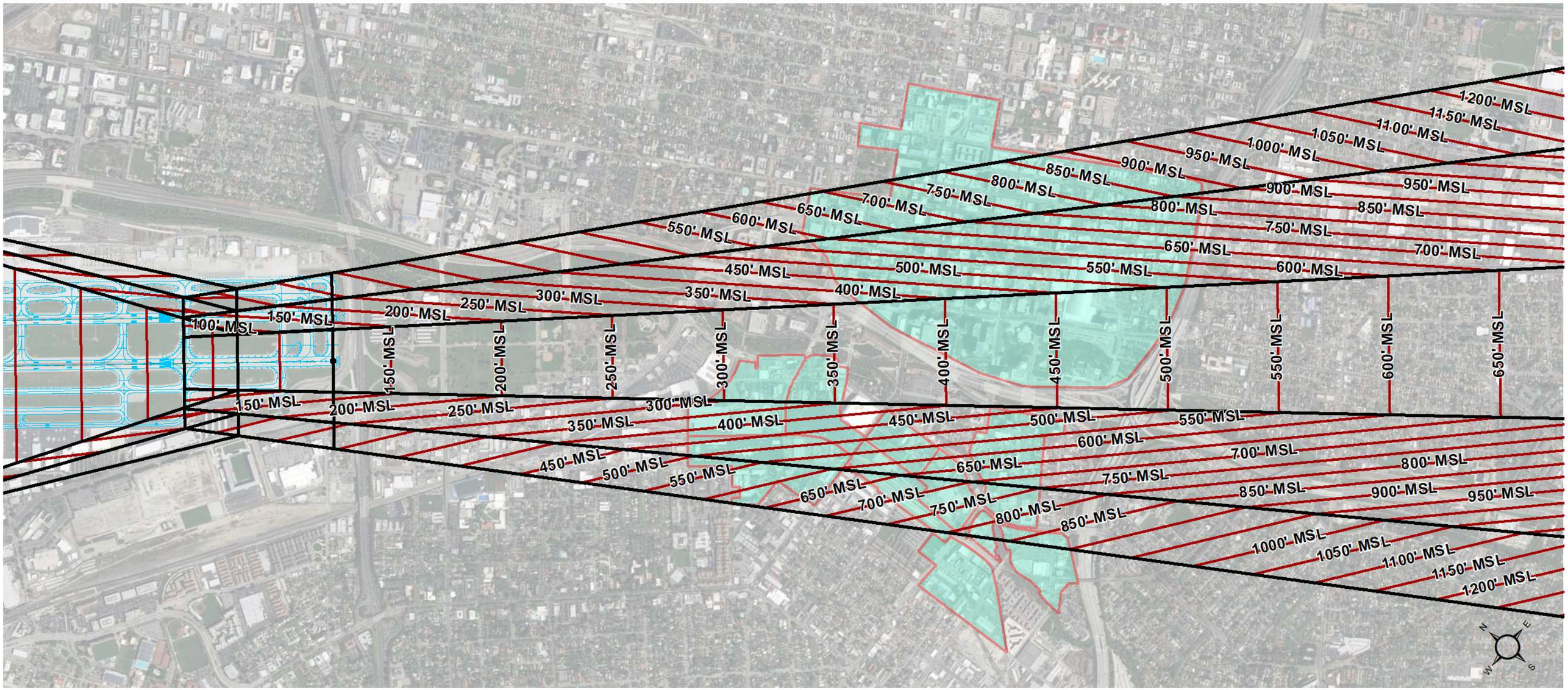


LPV SURFACES

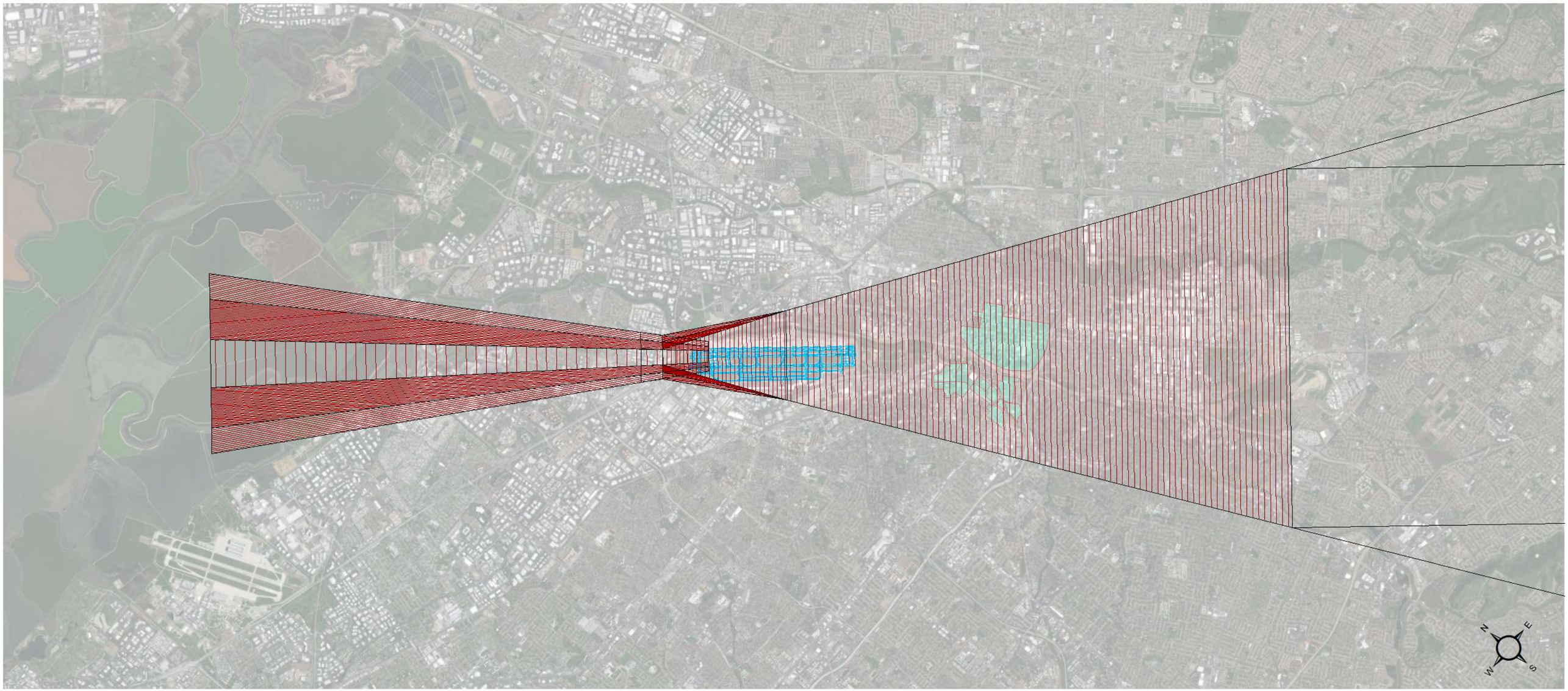
RUNWAY 30L LPV SURFACE



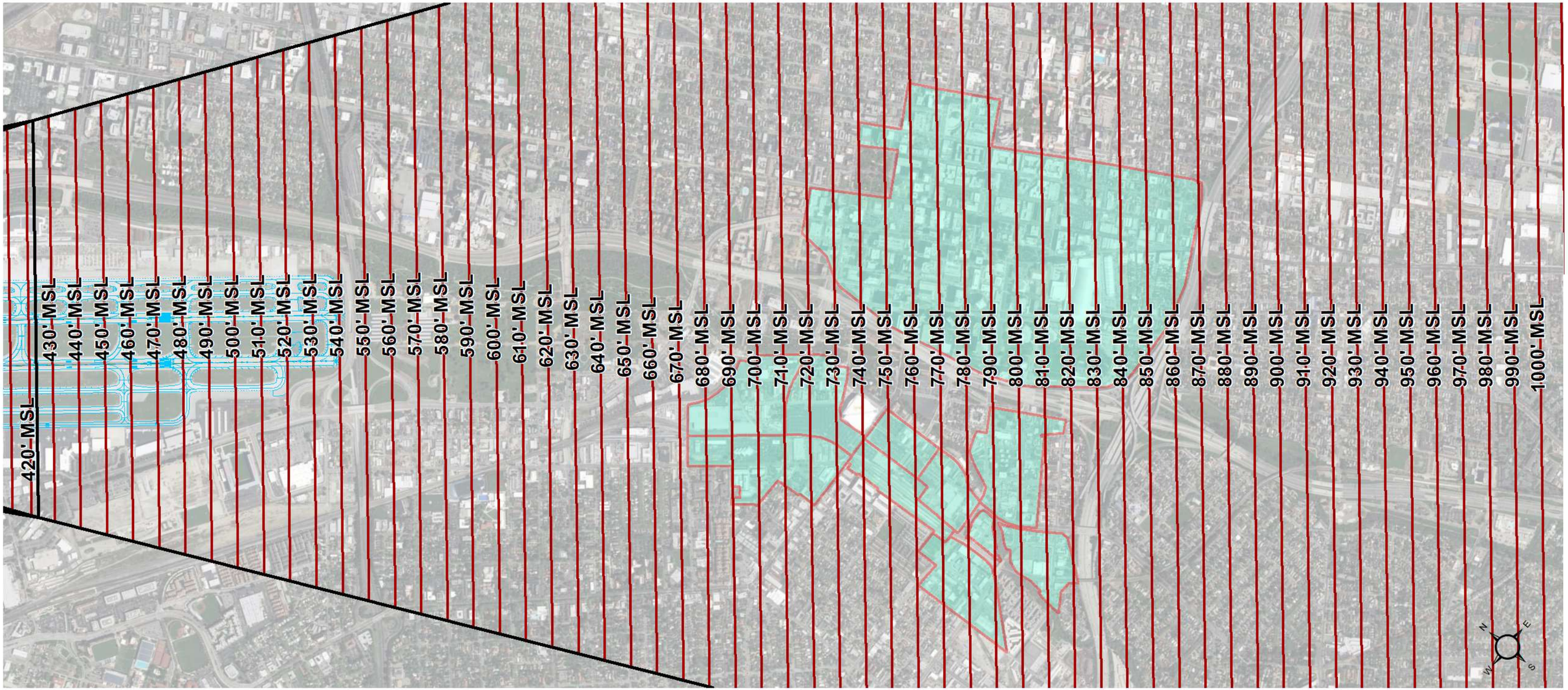
RUNWAY 30L LPV SURFACE – FINAL APPROACH



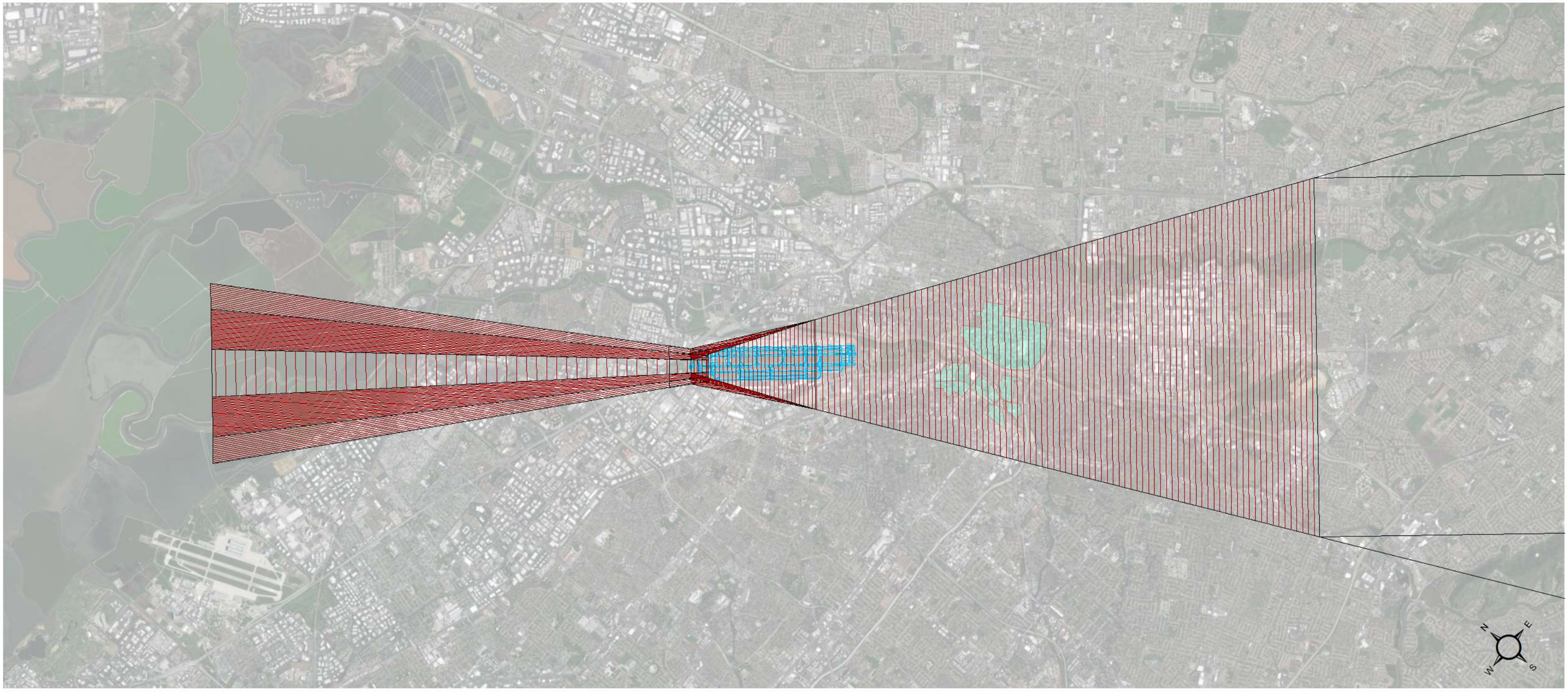
RUNWAY 12L LPV SURFACE



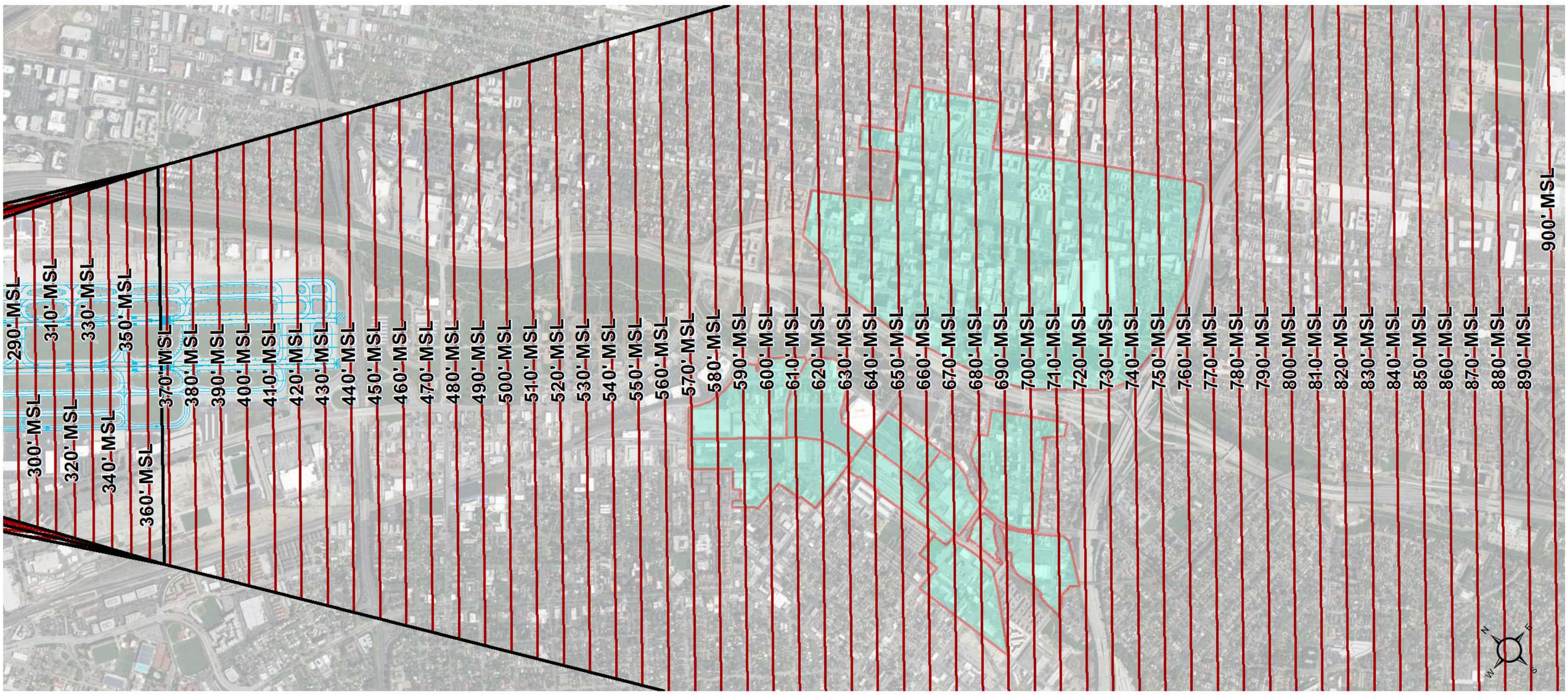
RUNWAY 12L LPV SURFACE – MISSED APPROACH



RUNWAY 12R LPV SURFACE

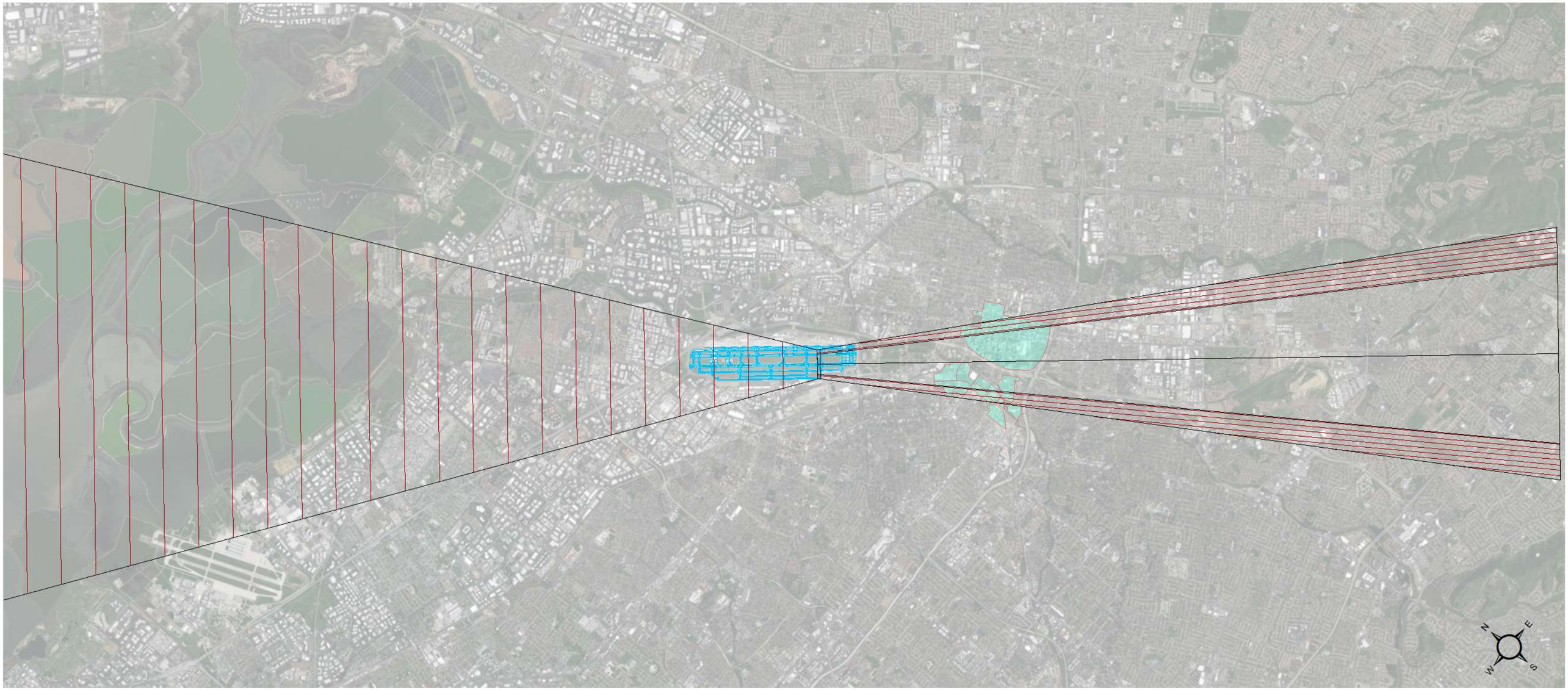


RUNWAY 12R LPV SURFACE – MISSED APPROACH

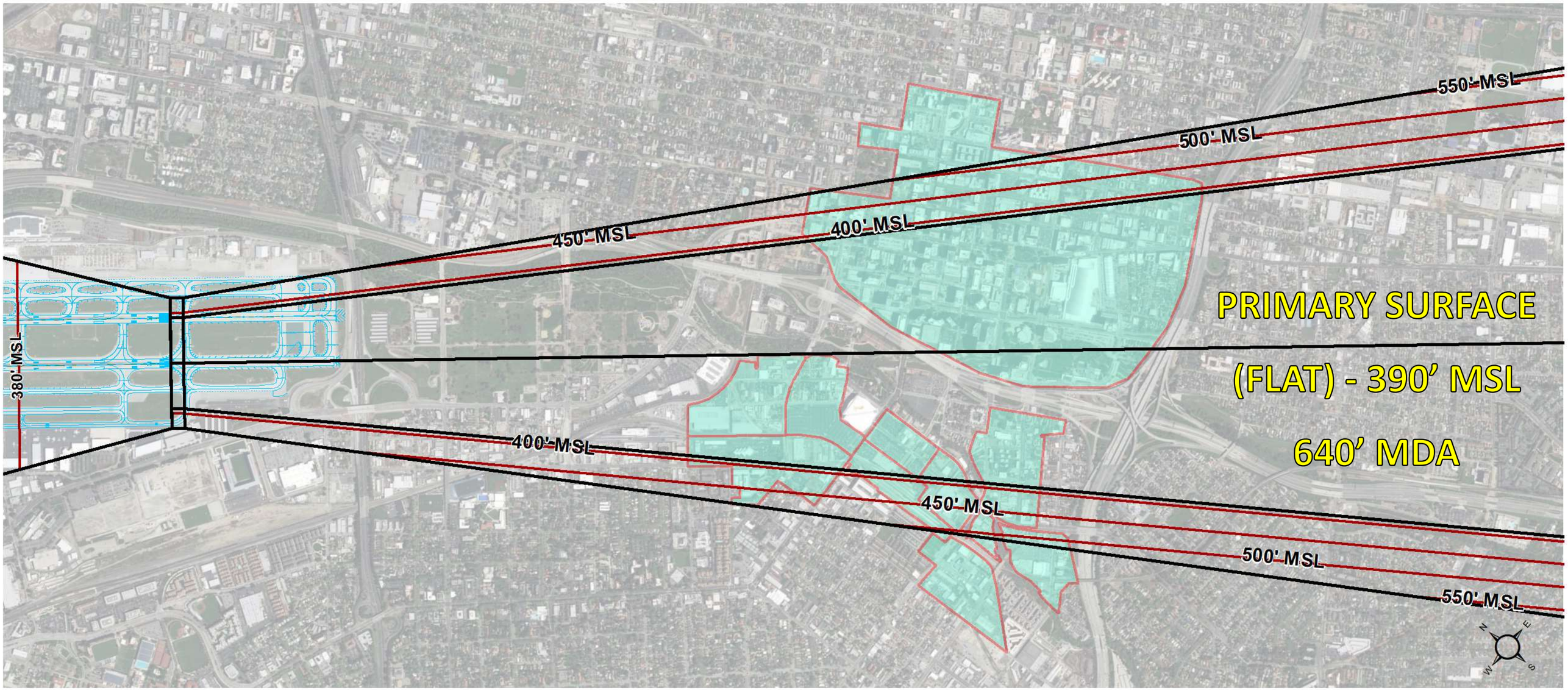


LOCALIZER PRECISION (LP) SURFACES

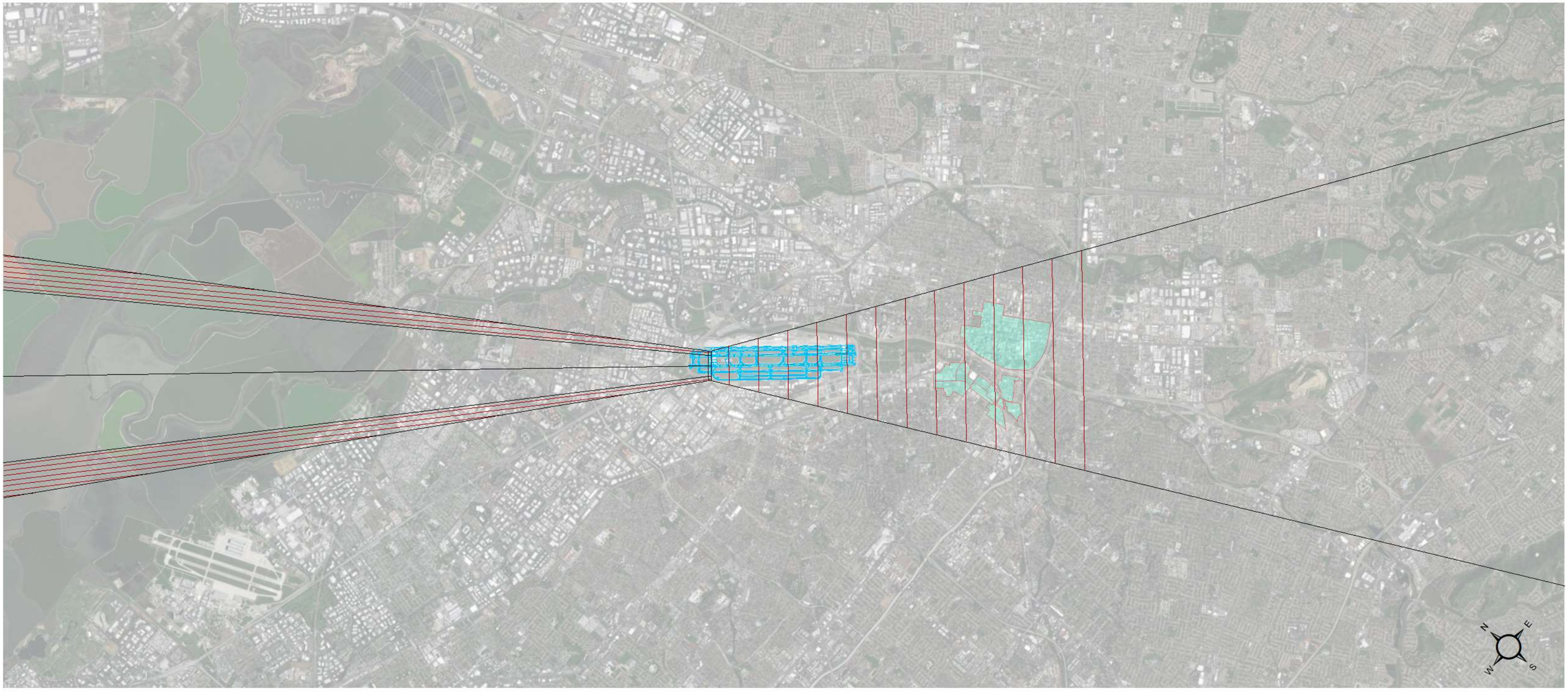
RUNWAY 30L LP SURFACE



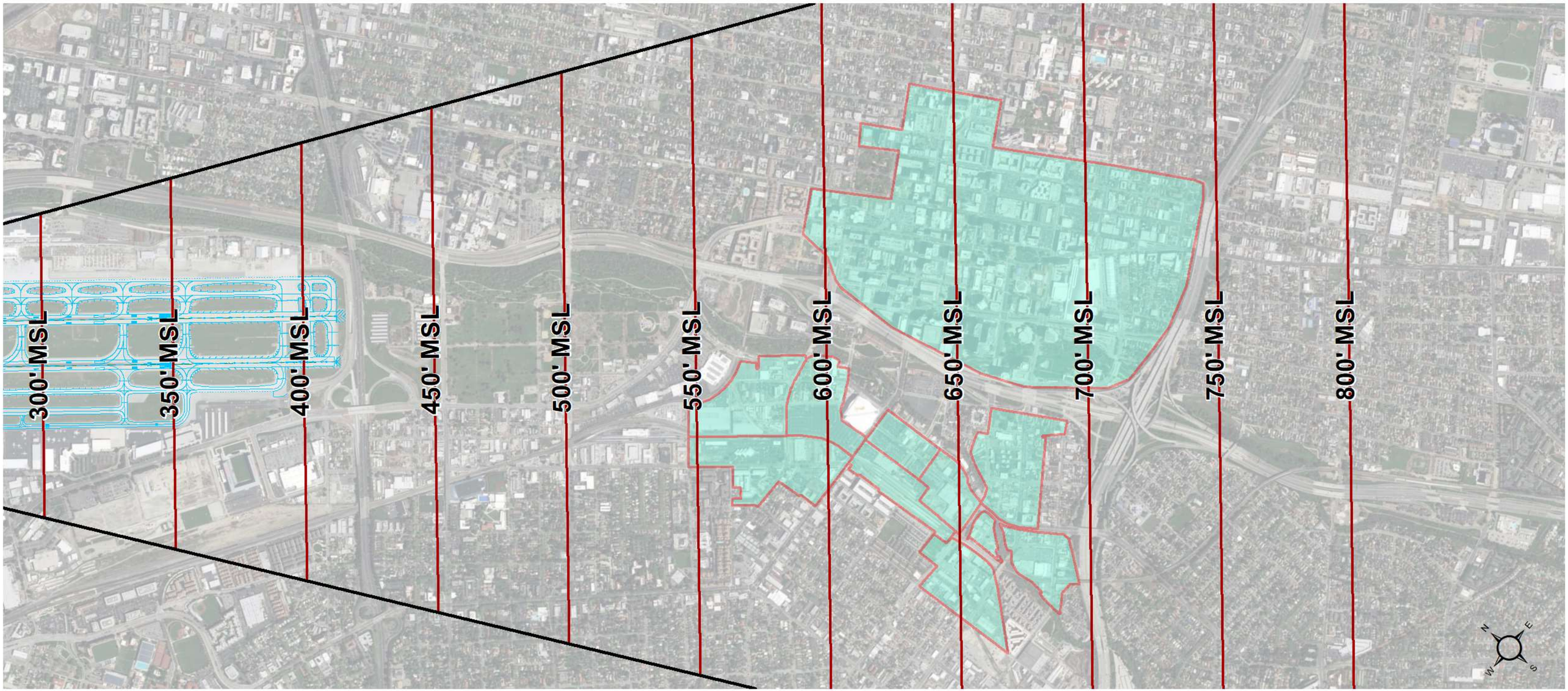
RUNWAY 30L LP SURFACE – FINAL APPROACH



RUNWAY 12R LP SURFACE

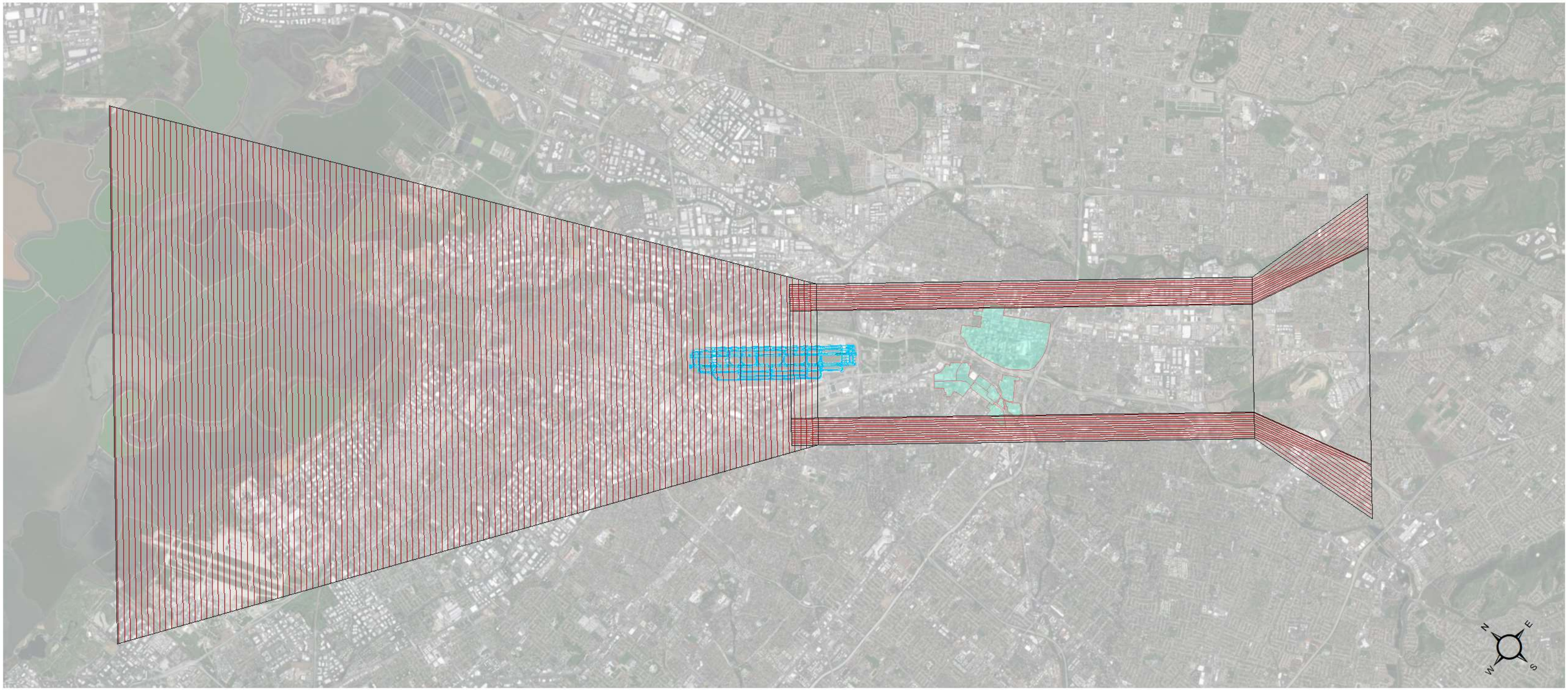


RUNWAY 12R LP SURFACE – MISSED APPROACH



LNAV SURFACES

RUNWAY 30L LNAV SURFACE



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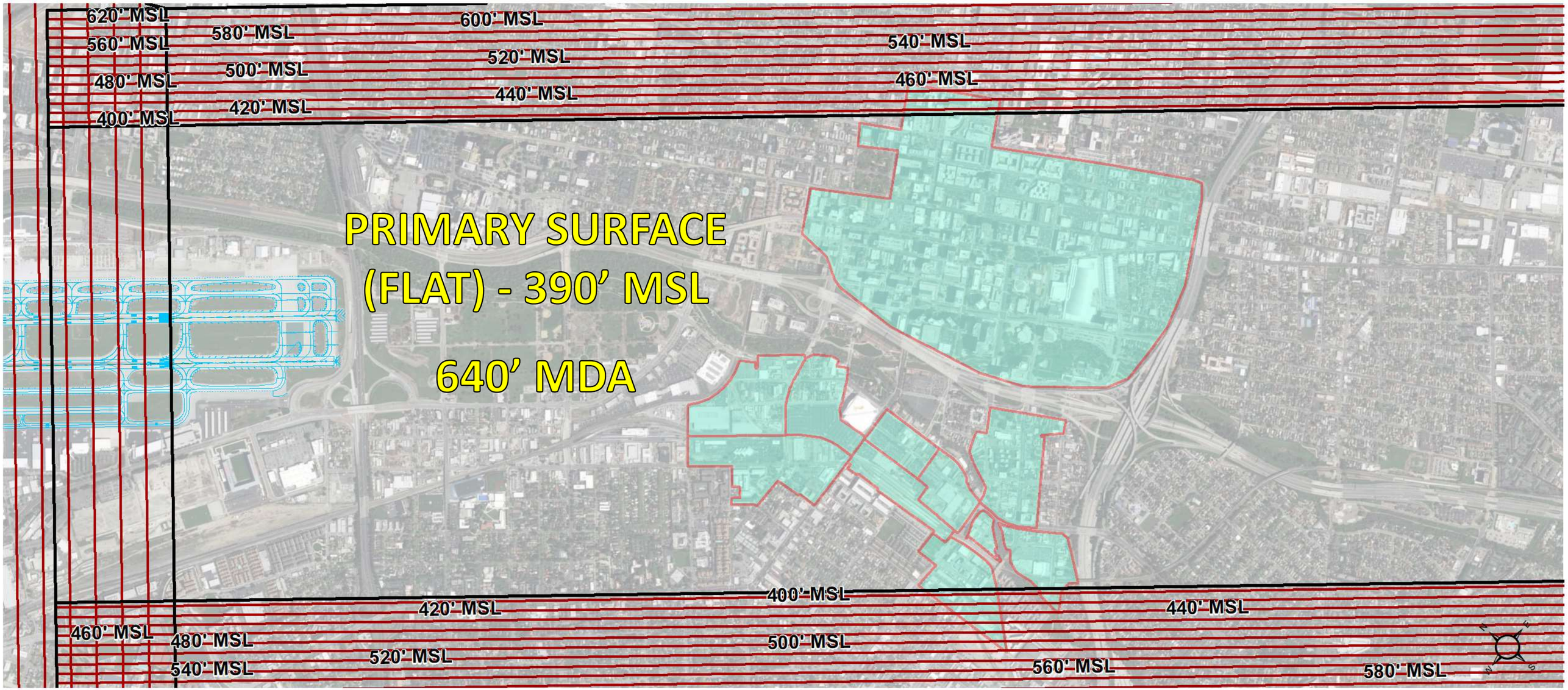
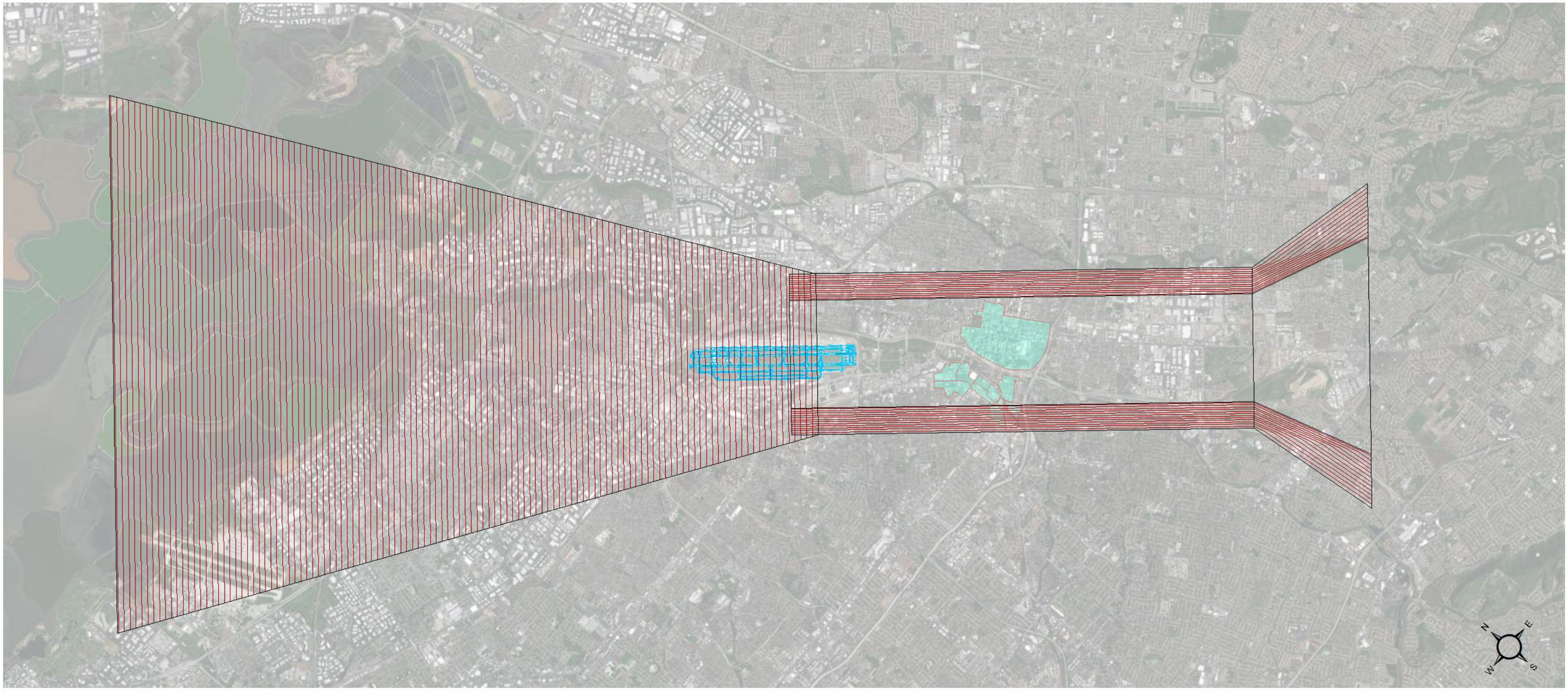
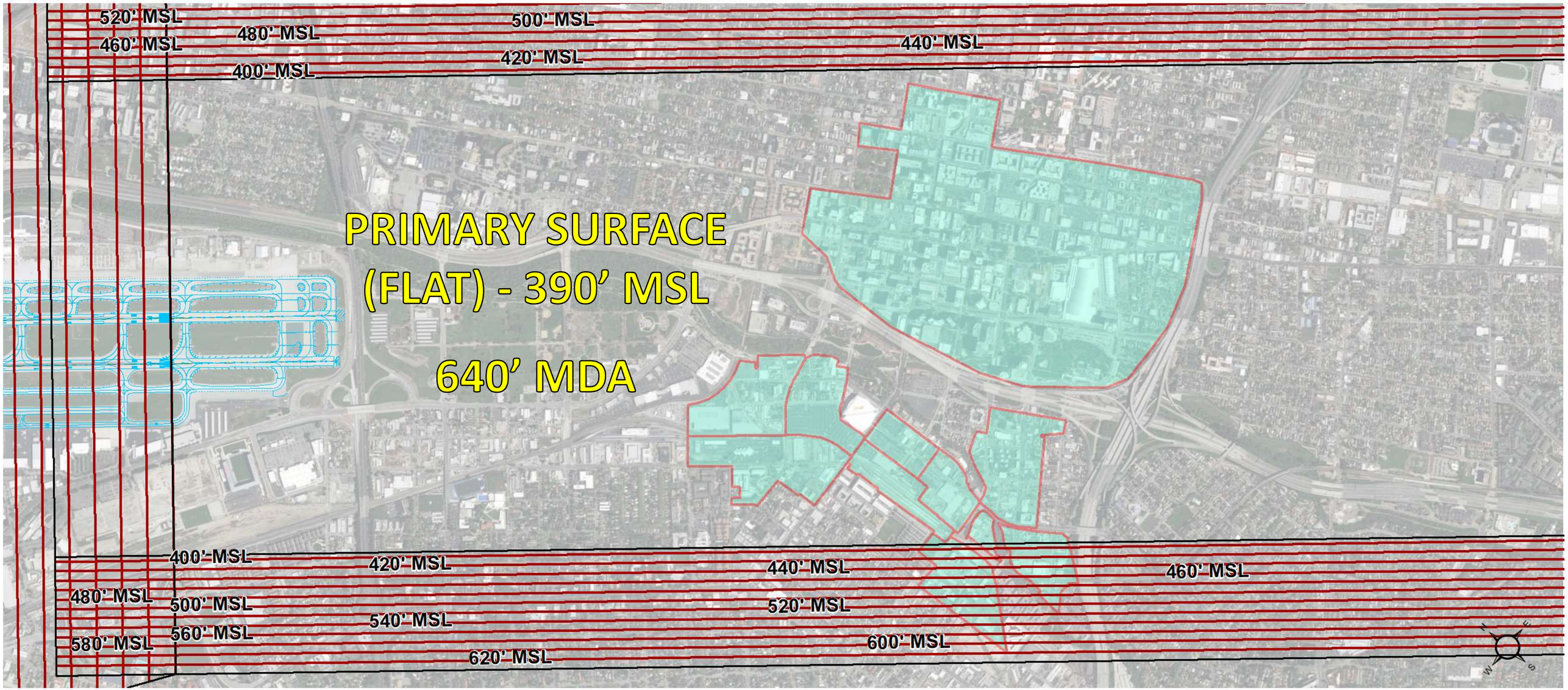


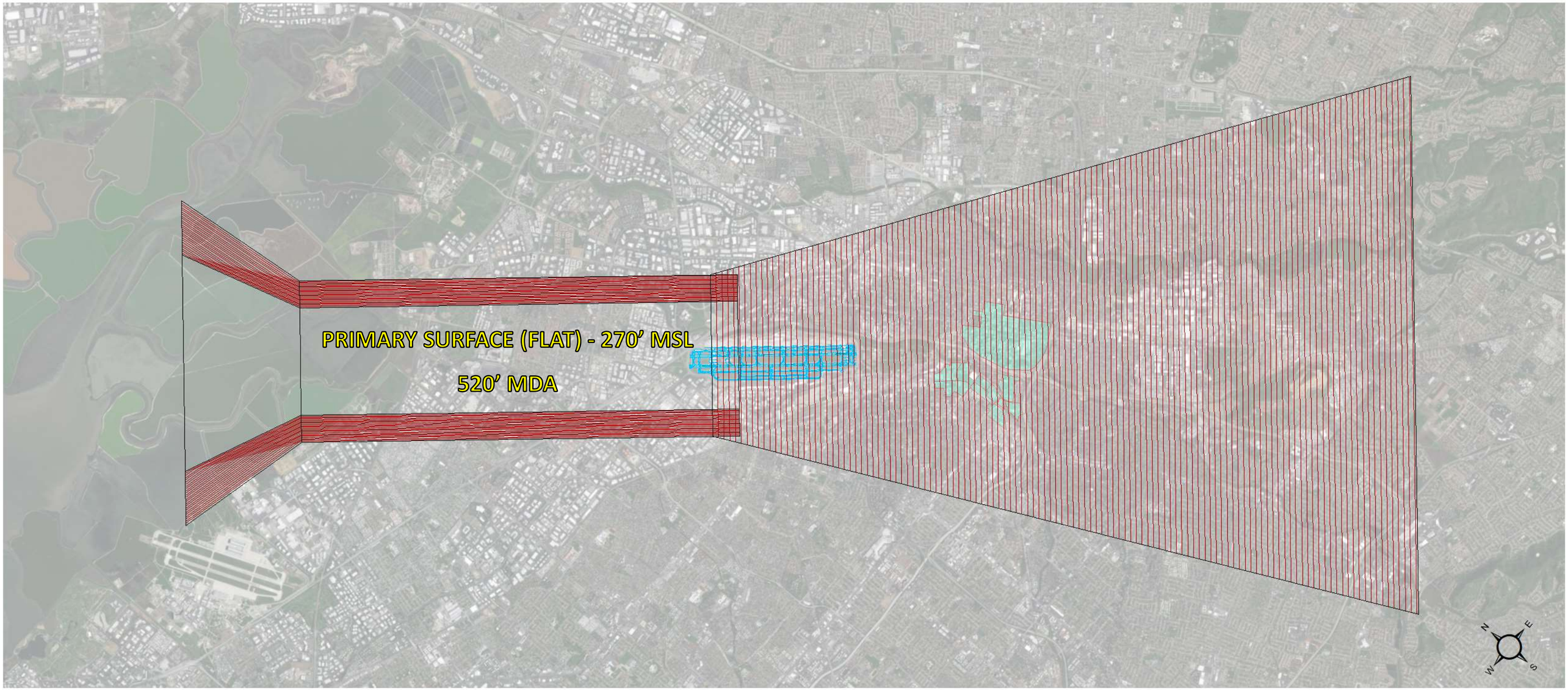
RUNWAY 30R LNAV SURFACE



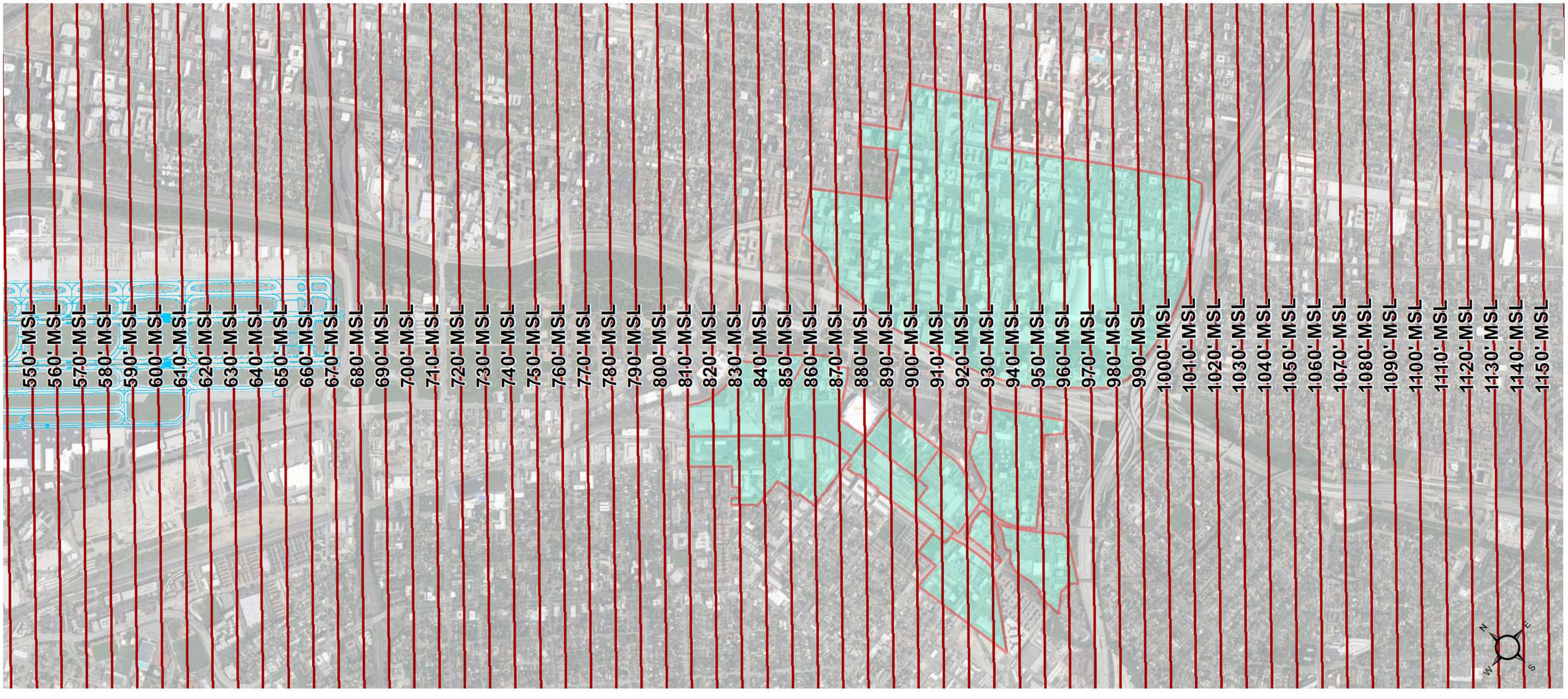
RUNWAY 30R LNAV SURFACE – FINAL APPROACH



RUNWAY 12L LNAV SURFACE



RUNWAY 12L LNAV SURFACE – MISSED APPROACH



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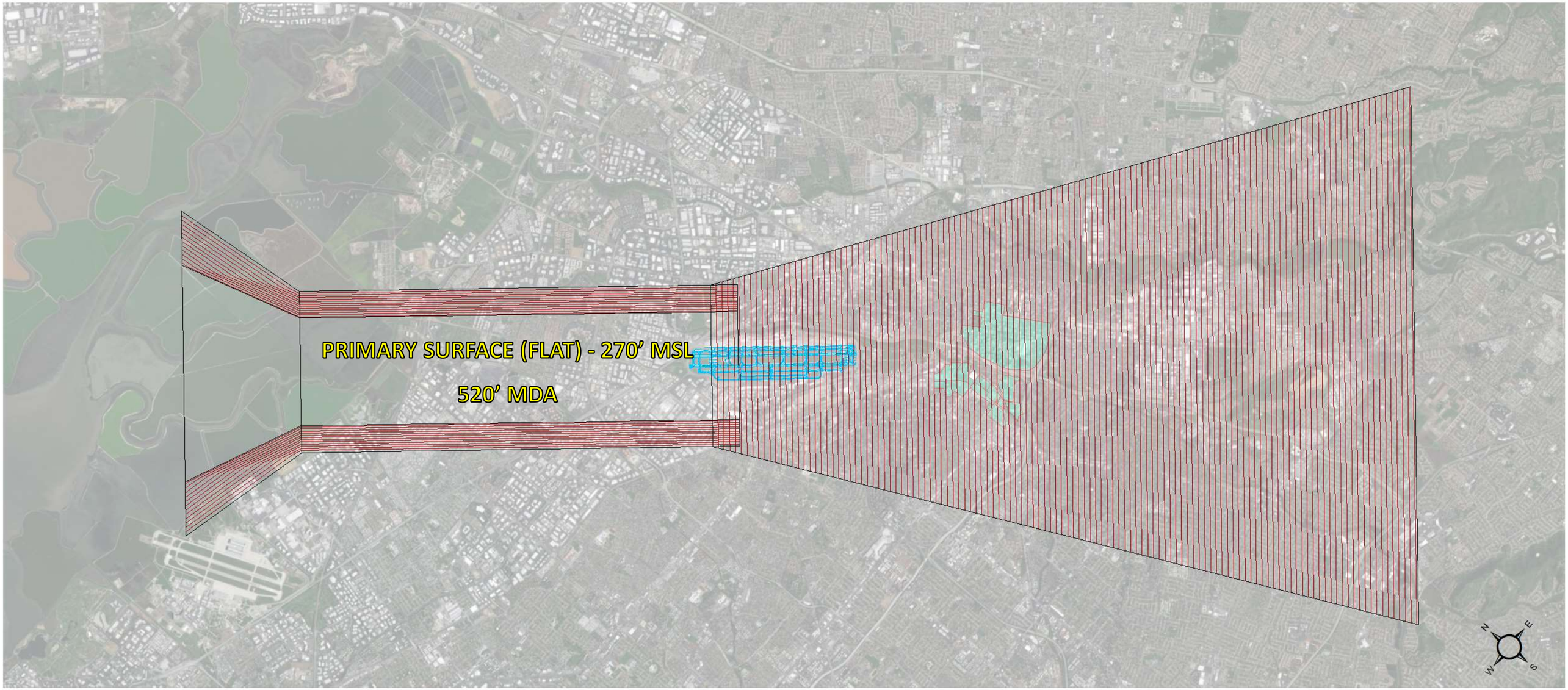
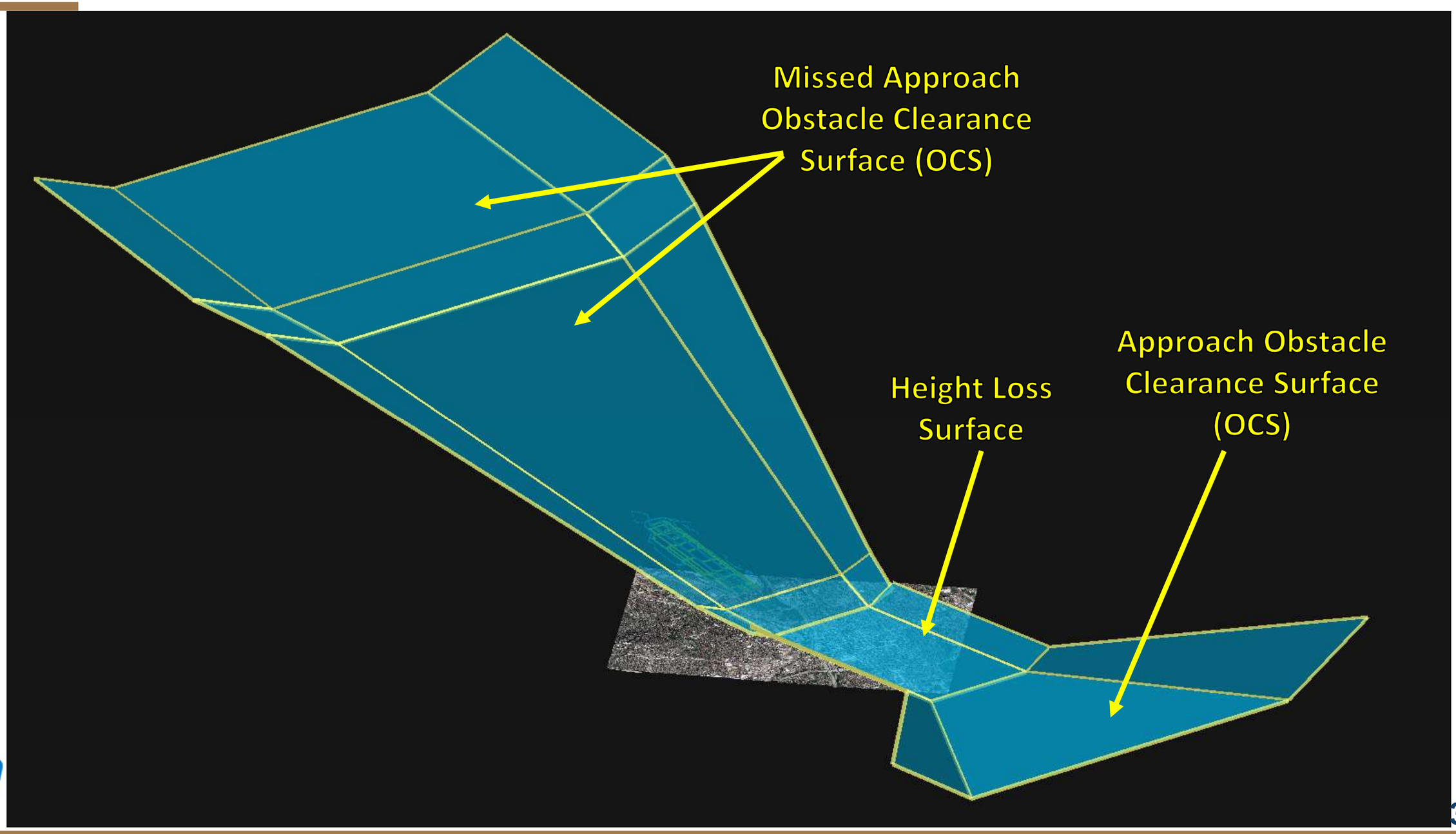


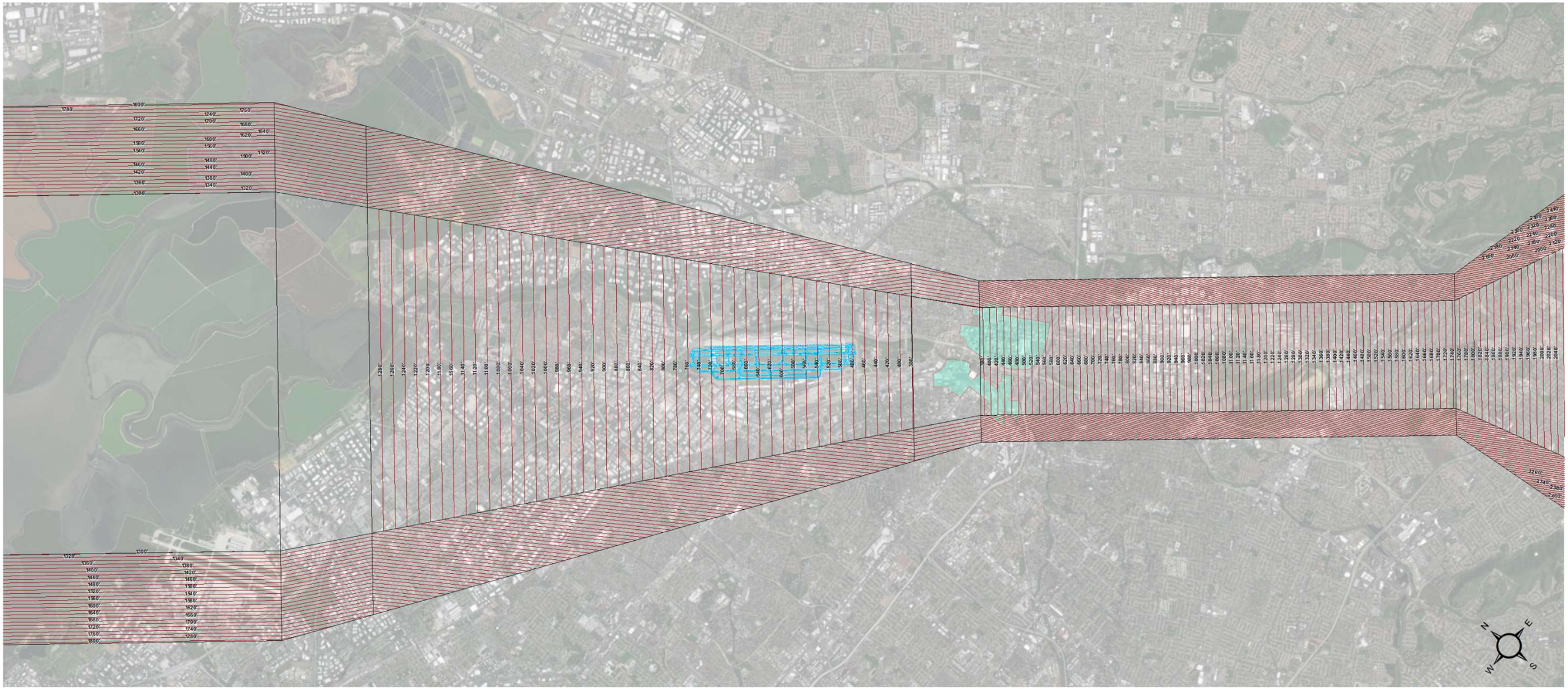
RUNWAY 12R LNAV SURFACE – MISSED APPROACH

LNAV-VNAV SURFACES

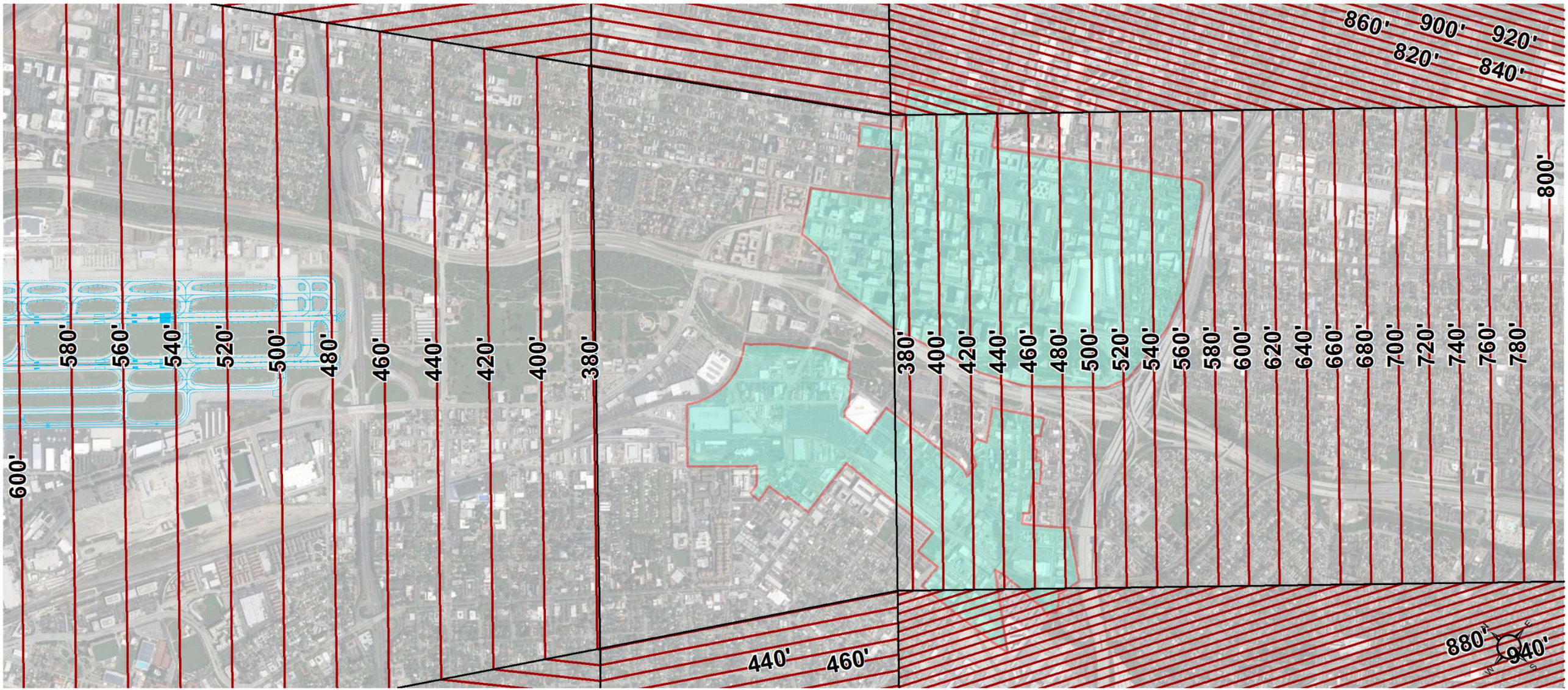
RUNWAY 30R LNAV-VNAV 3D RENDERING EXAMPLE



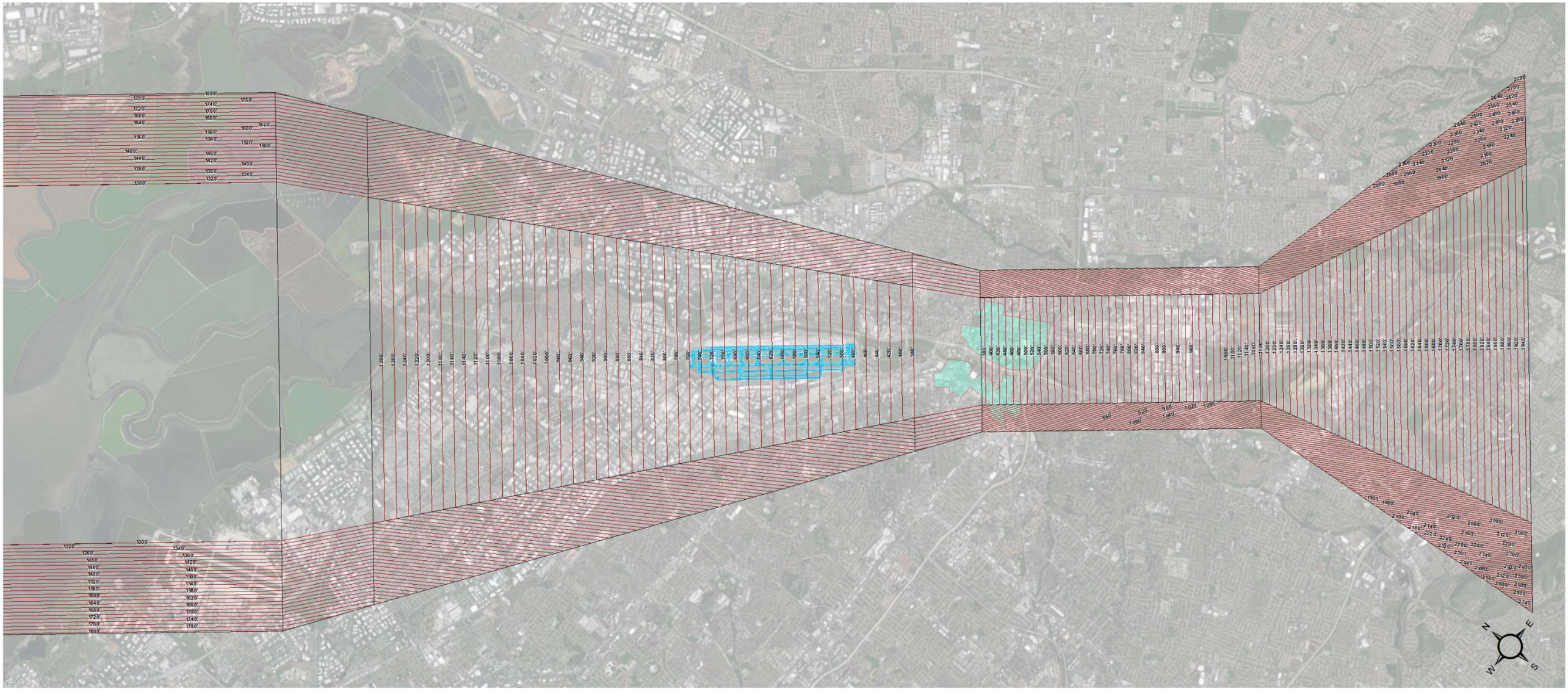
RUNWAY 30L LNAV-VNAV – OVERVIEW



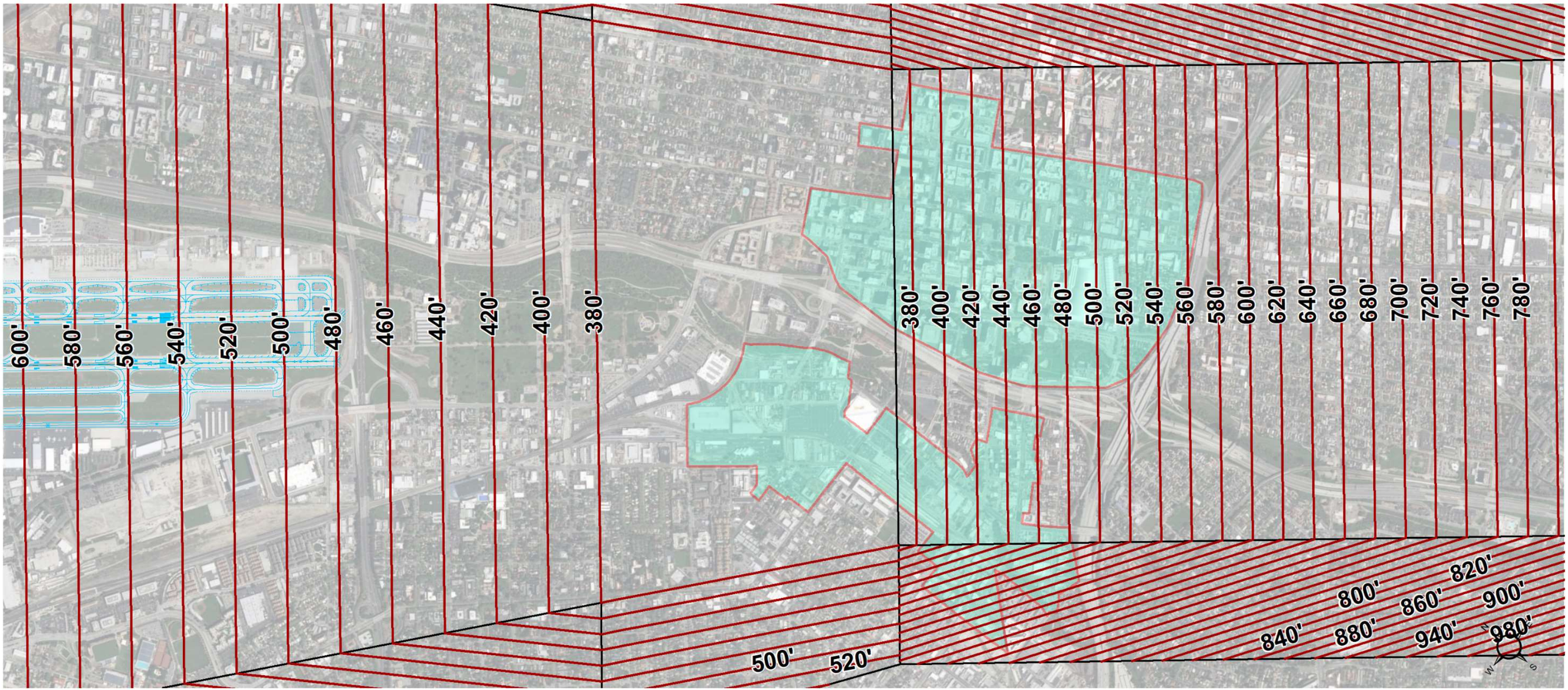
RUNWAY 30L LNAV-VNAV – FINAL APPROACH



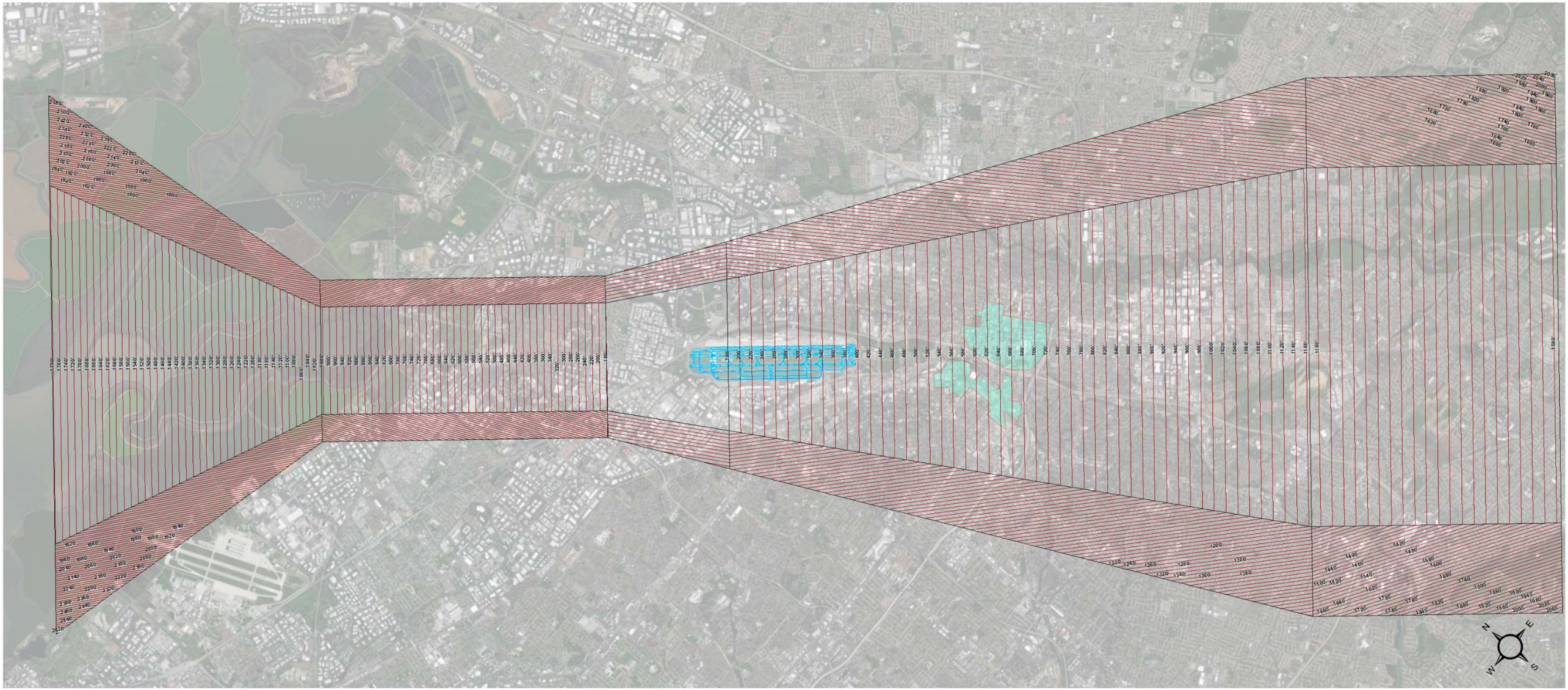
RUNWAY 30R LNAV-VNAV – OVERVIEW



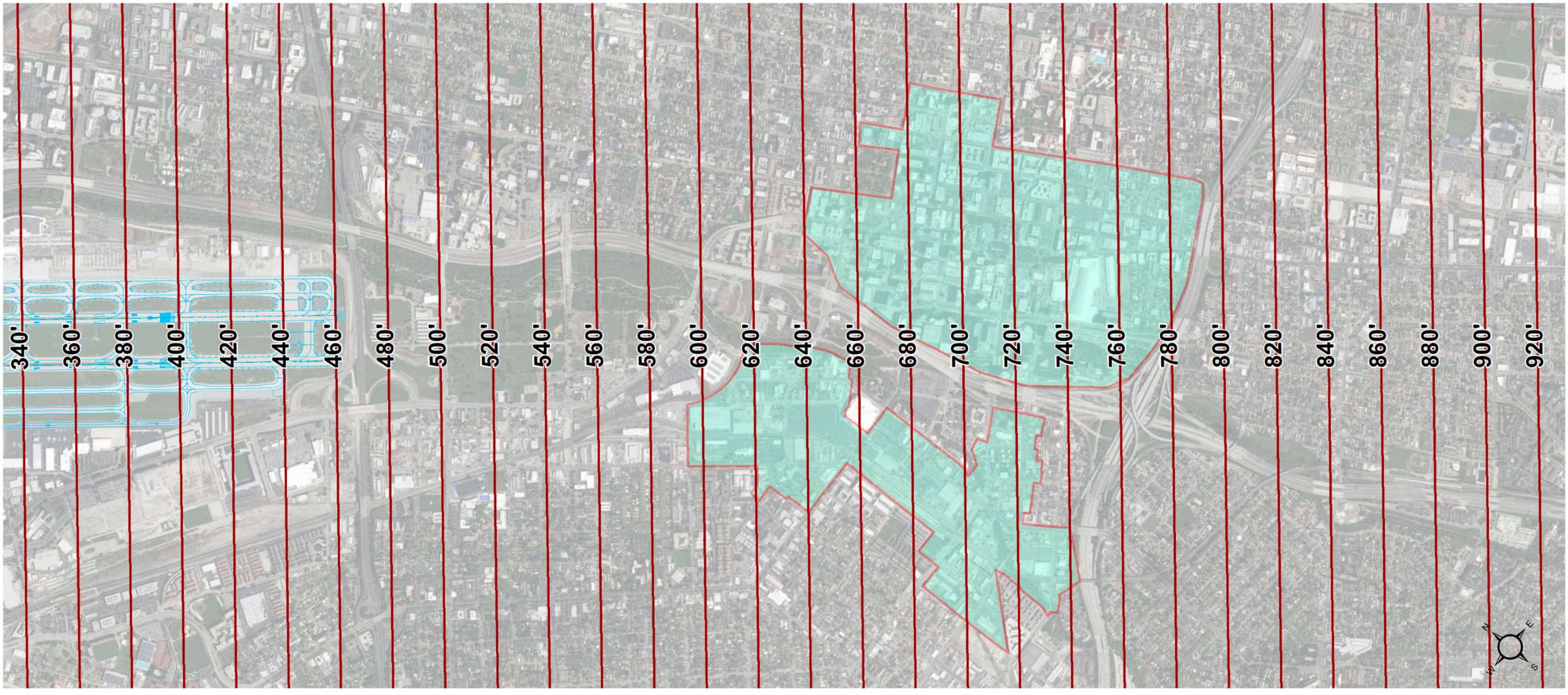
RUNWAY 30R LNAV-VNAV – FINAL APPROACH



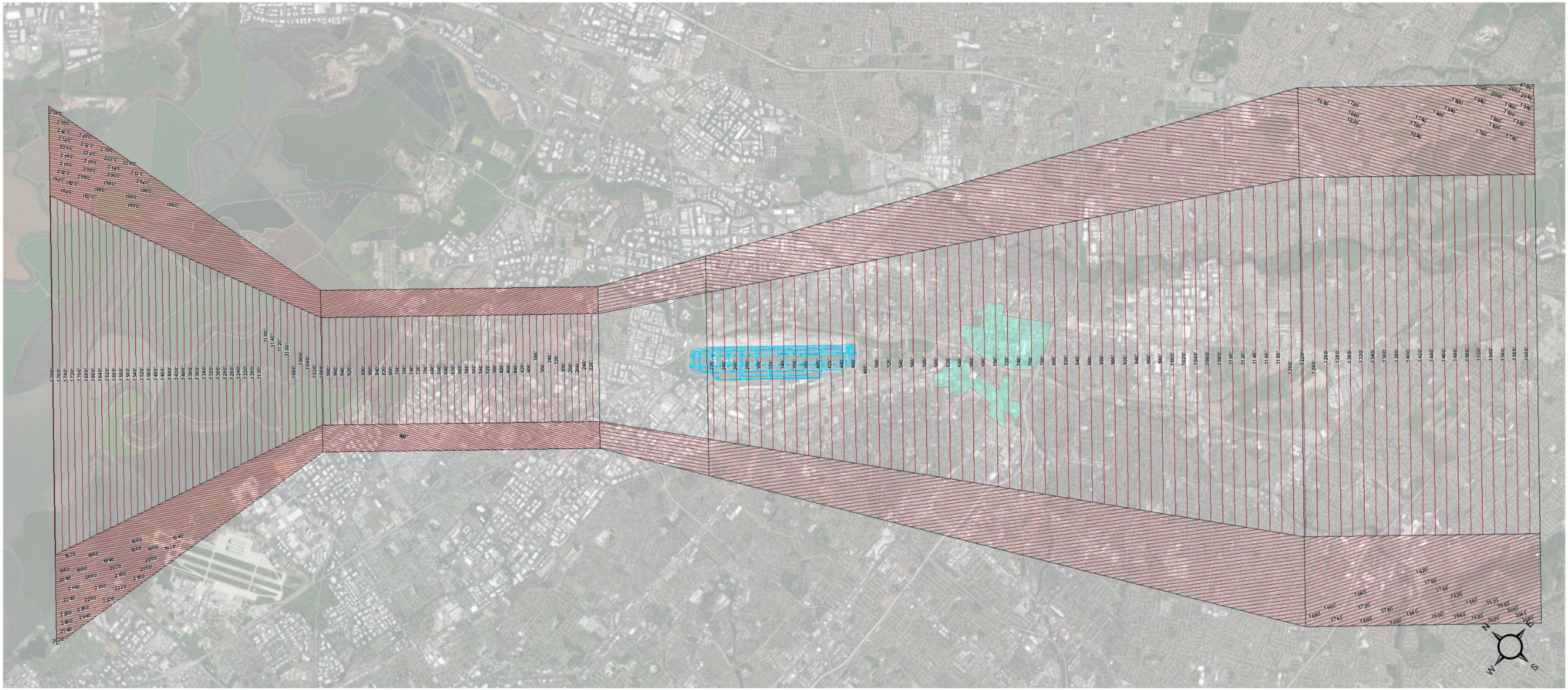
RUNWAY 12L LNAV-VNAV – OVERVIEW



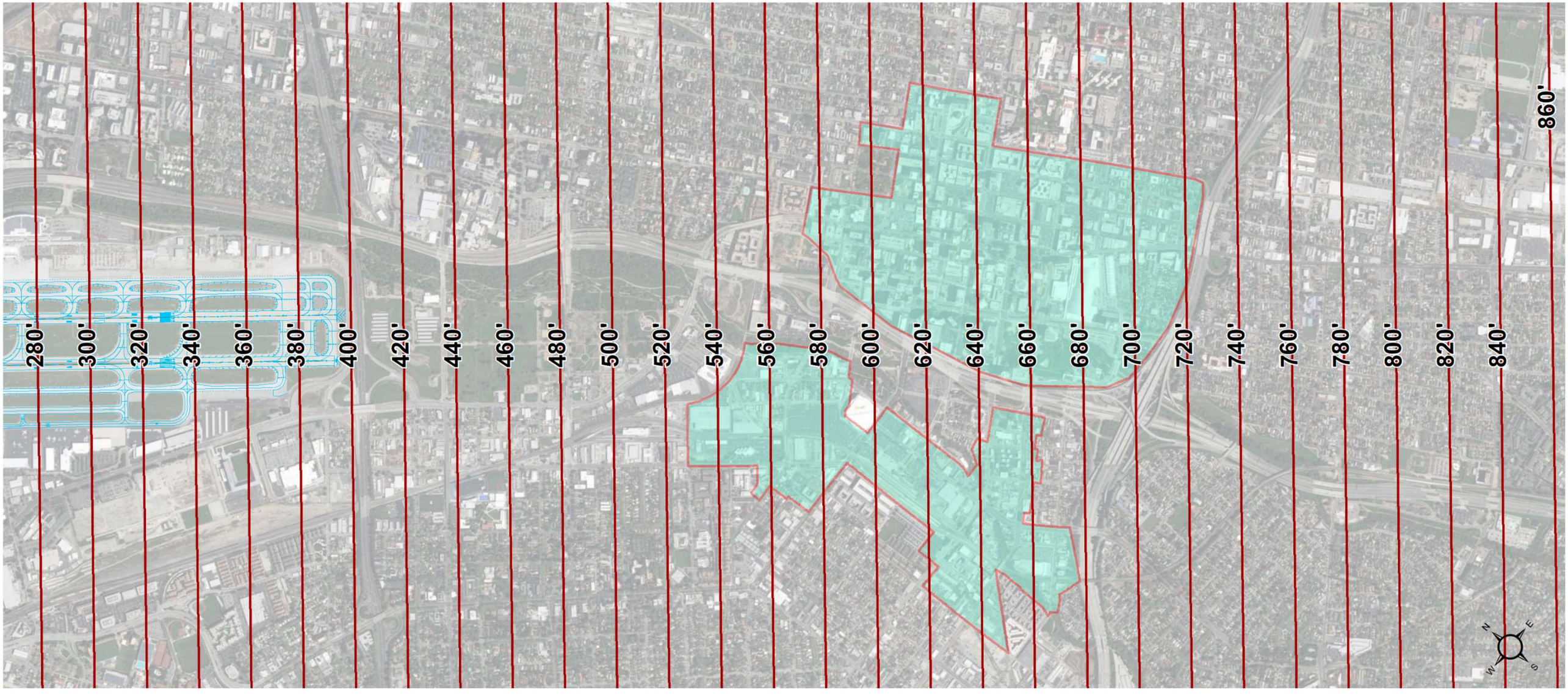
RUNWAY 12L LNAV-VNAV – MISSED APPROACH



RUNWAY 12R LNAV-VNAV – OVERVIEW



RUNWAY 12R LNAV-VNAV – MISSED APPROACH

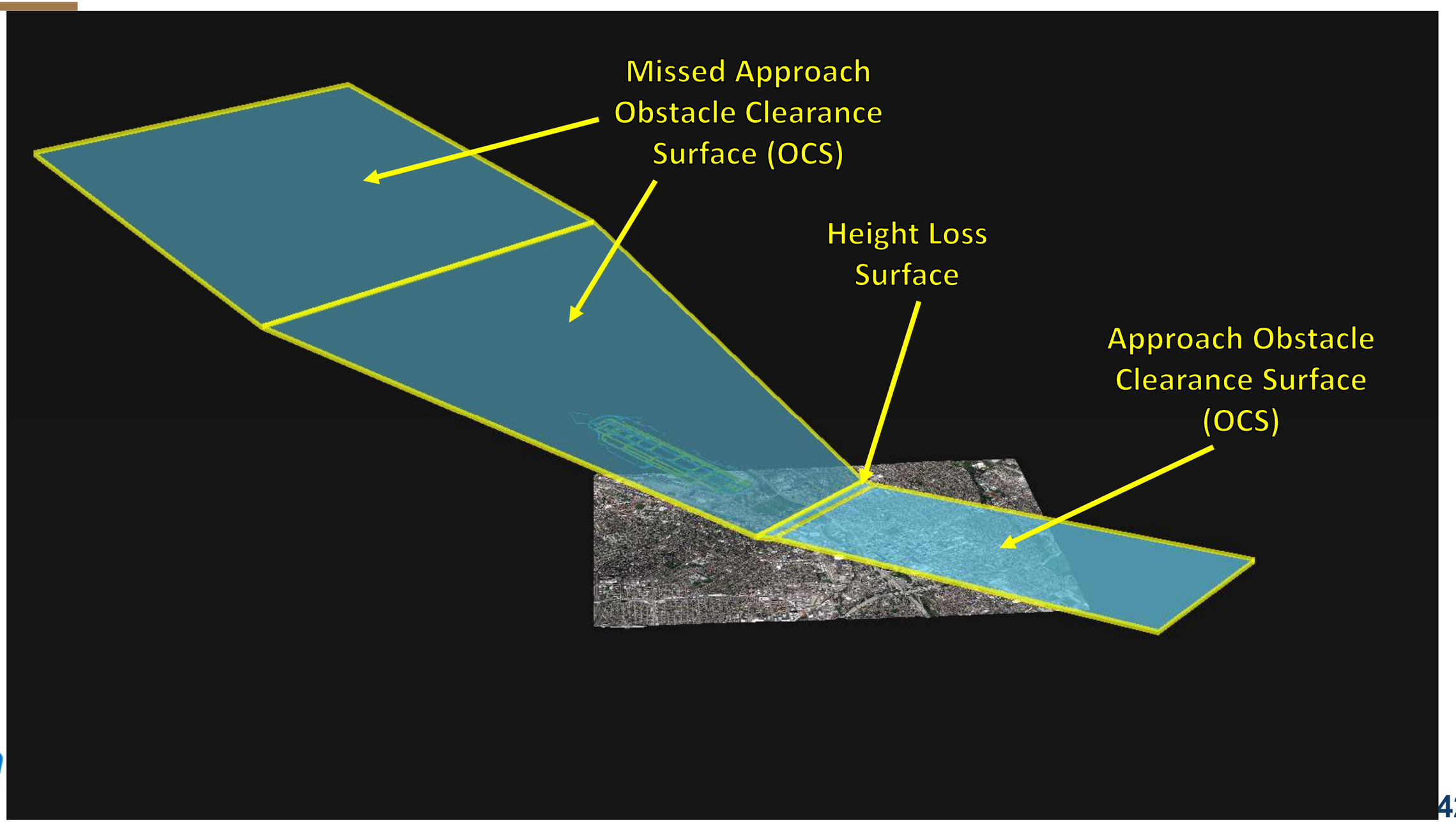


RNP SURFACES

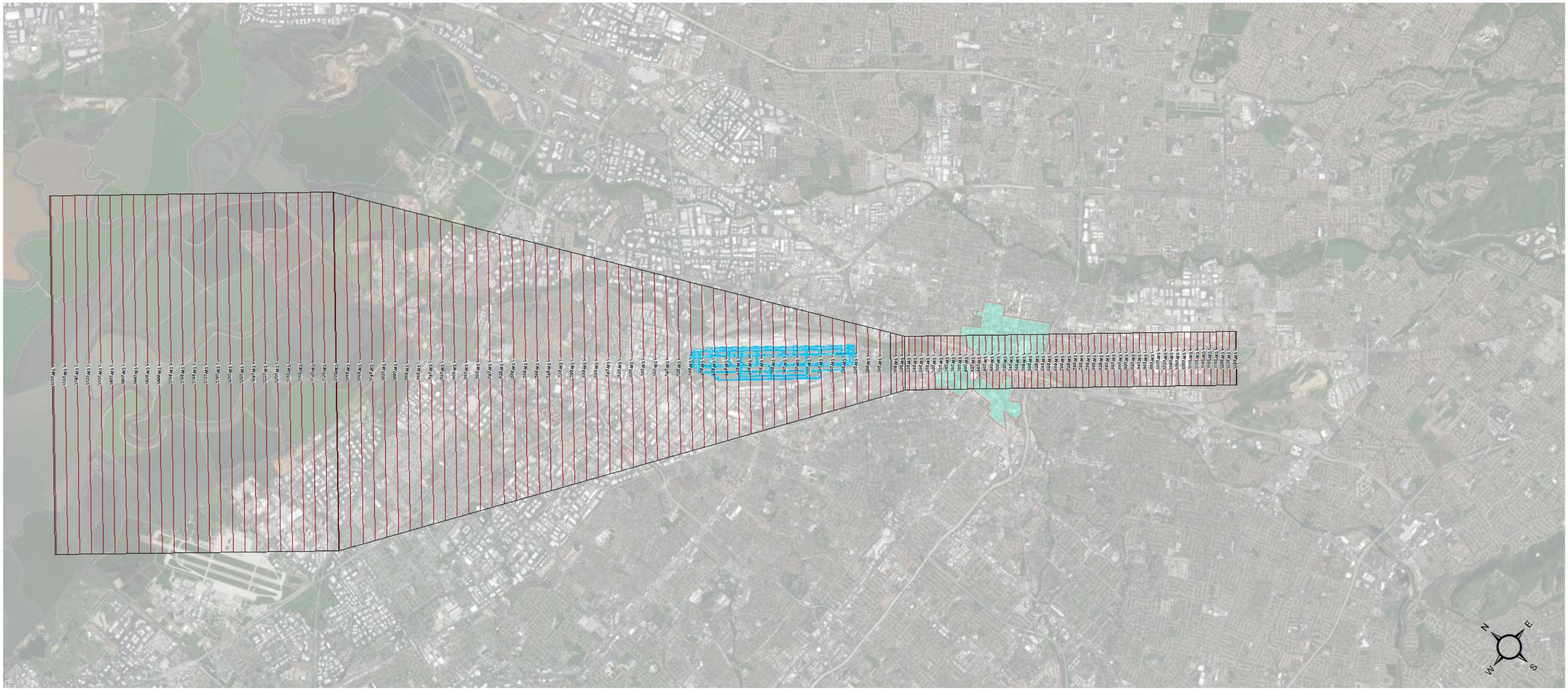
RNP SURFACE STATUS UPDATE

- QA/QC OF RNP SURFACE IS COMPLETE
- COMPLETED RNP SURFACES
  - RUNWAY 30L RNP 0.15 and 0.30)
  - RUNWAY 30R (0.11 DA, 0.20 DA and 0.30 DA)
  - RUNWAY 12L (0.18 DA and 0.30 DA)
  - RUNWAY 12R (0.15 DA and 0.30 DA)

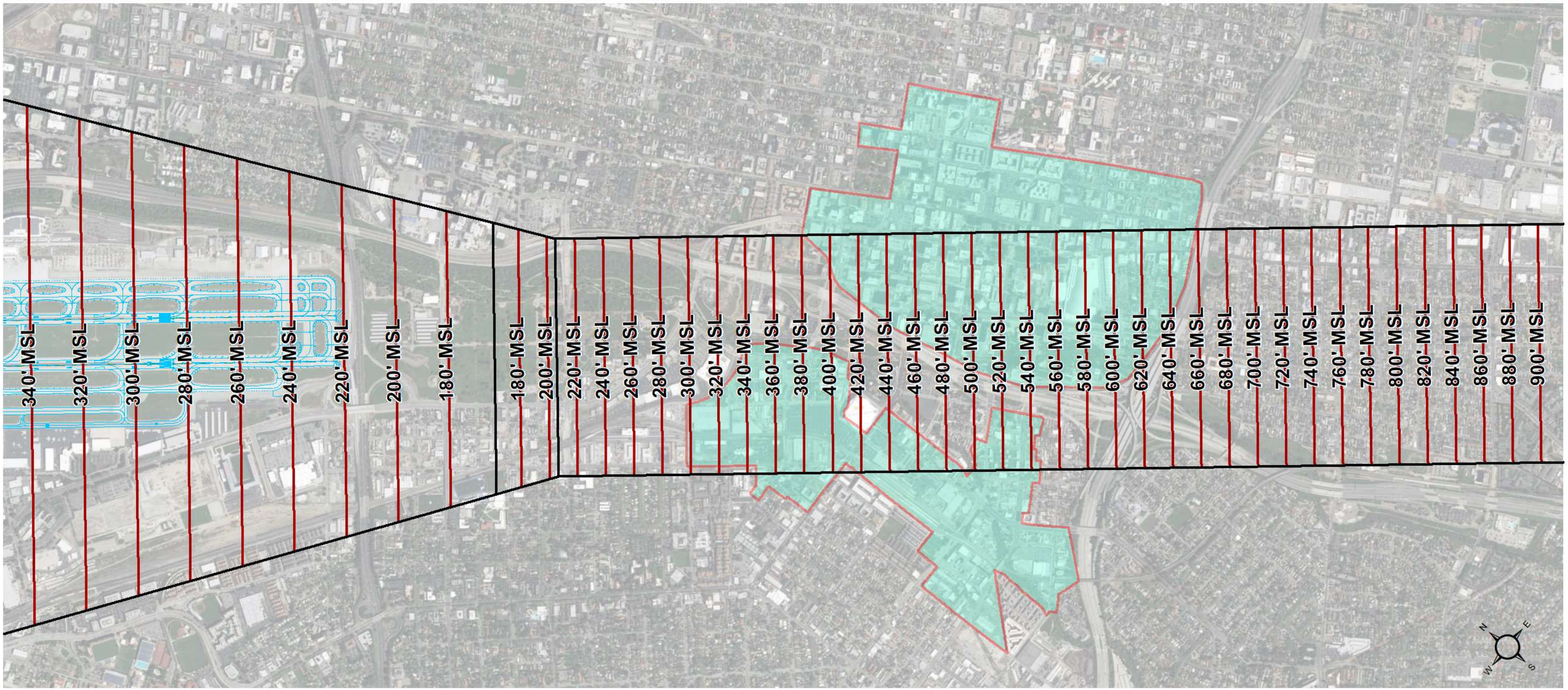
RUNWAY 30R RNP 0.3 3D RENDERING EXAMPLE



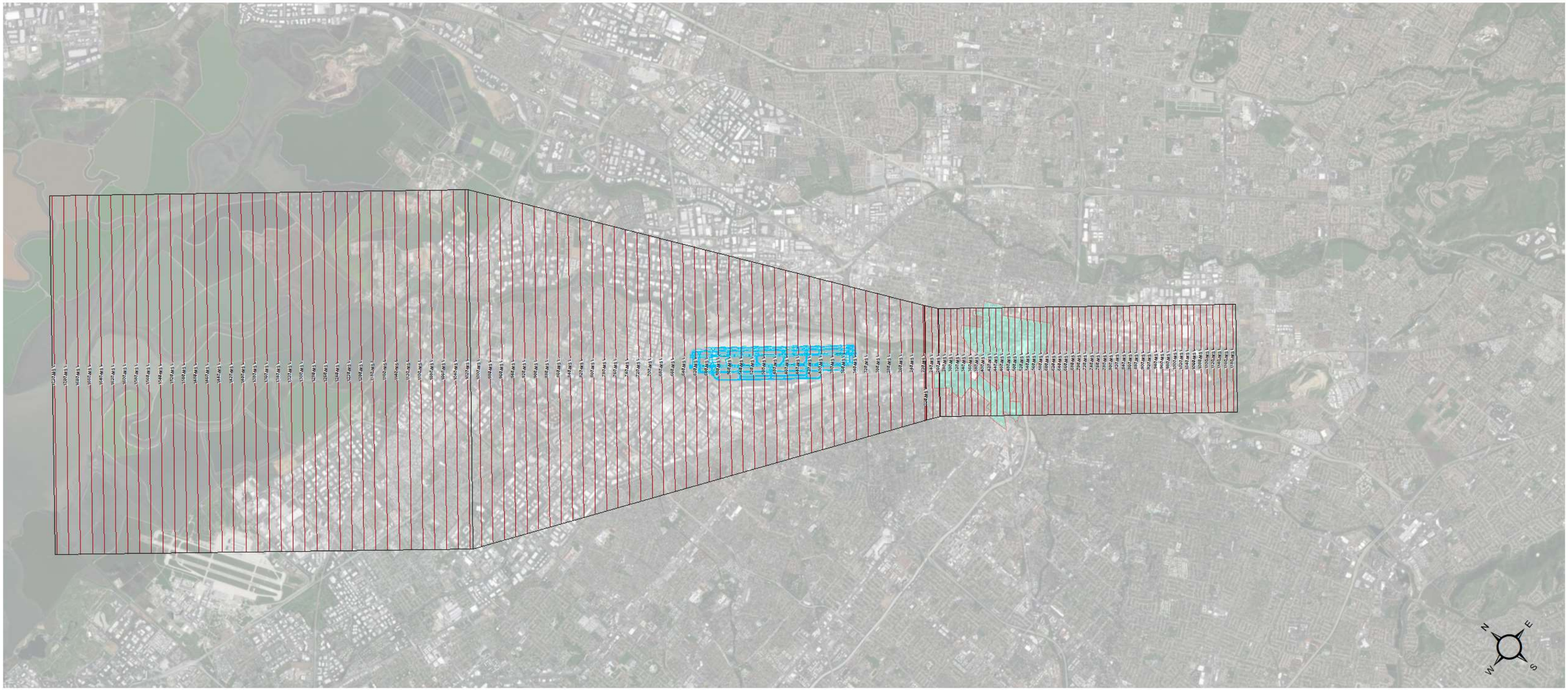
RUNWAY 30L RNP 0.15 SURFACE



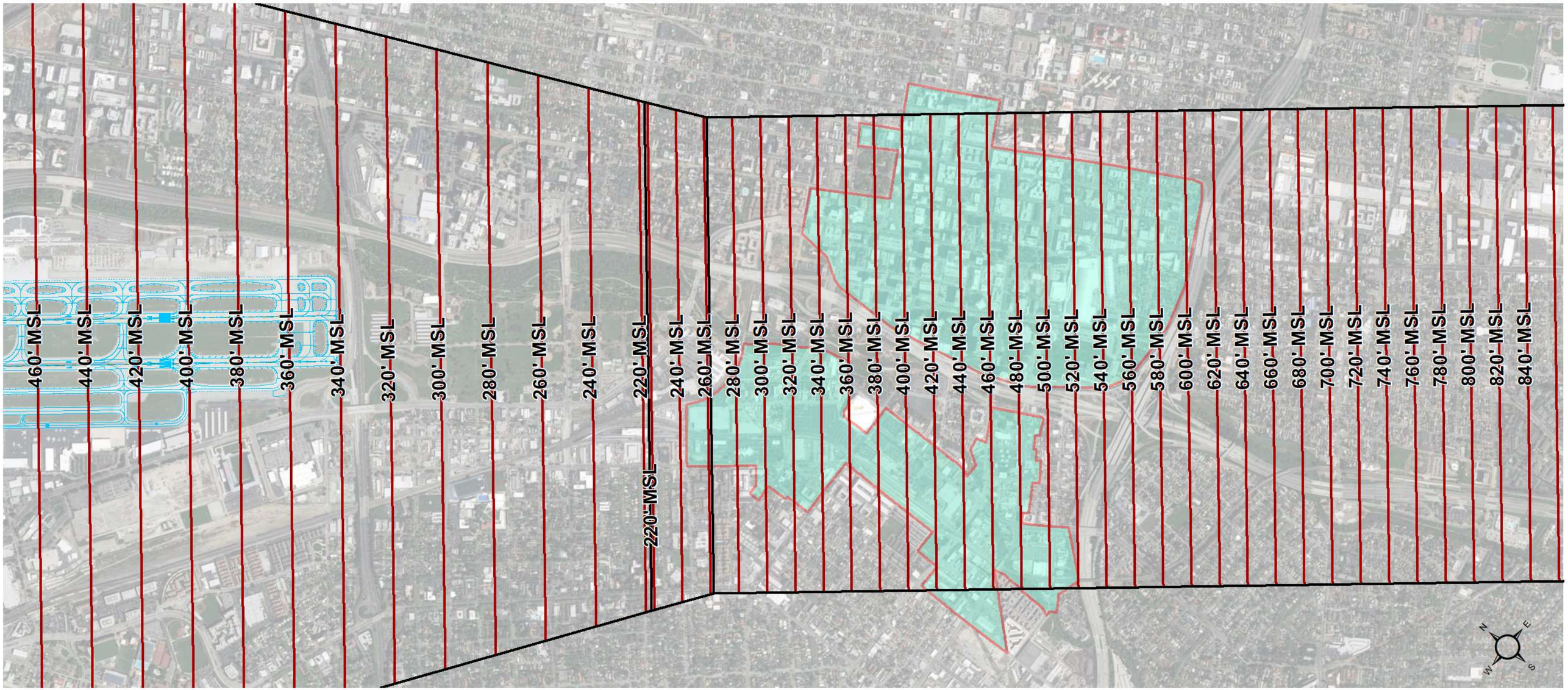
RUNWAY 30L RNP 0.15 SURFACE – FINAL APPROACH



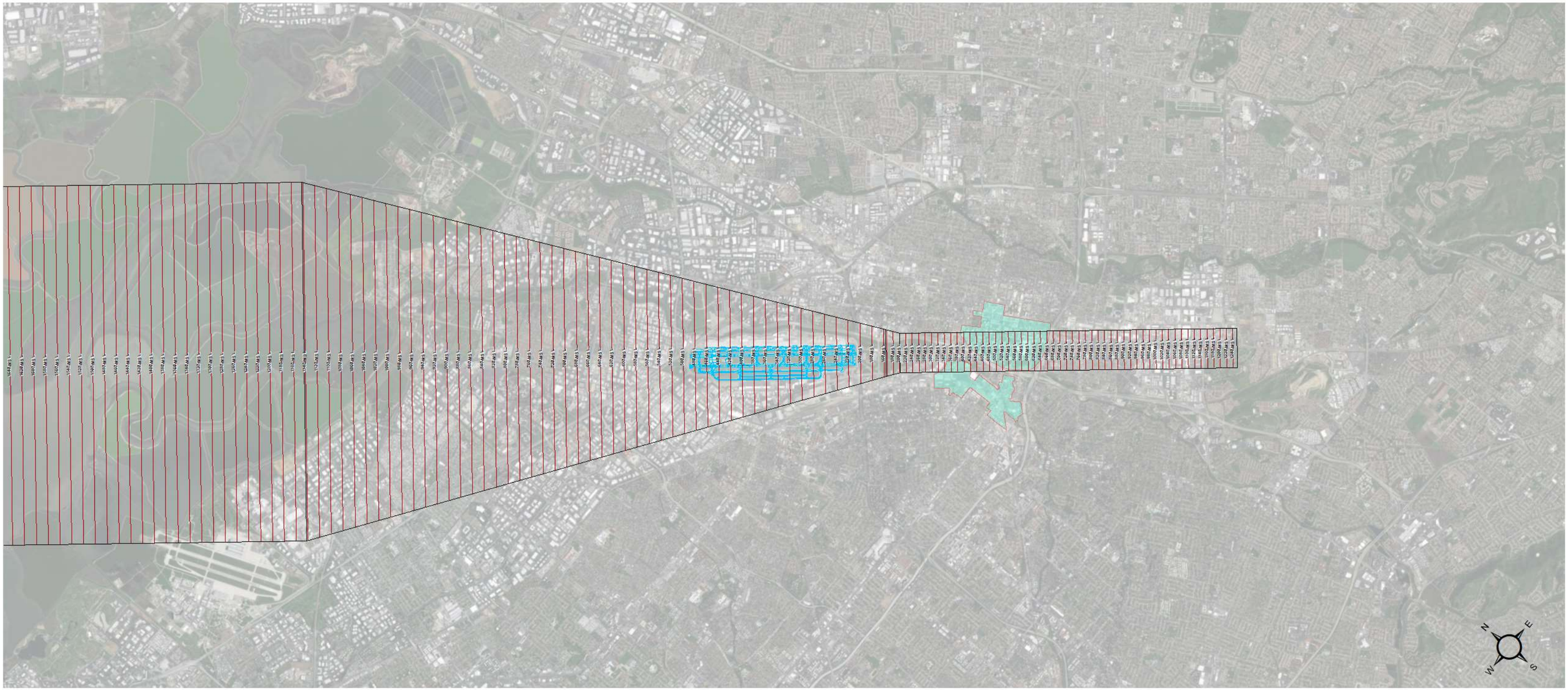
RUNWAY 30L RNP 0.3 SURFACE



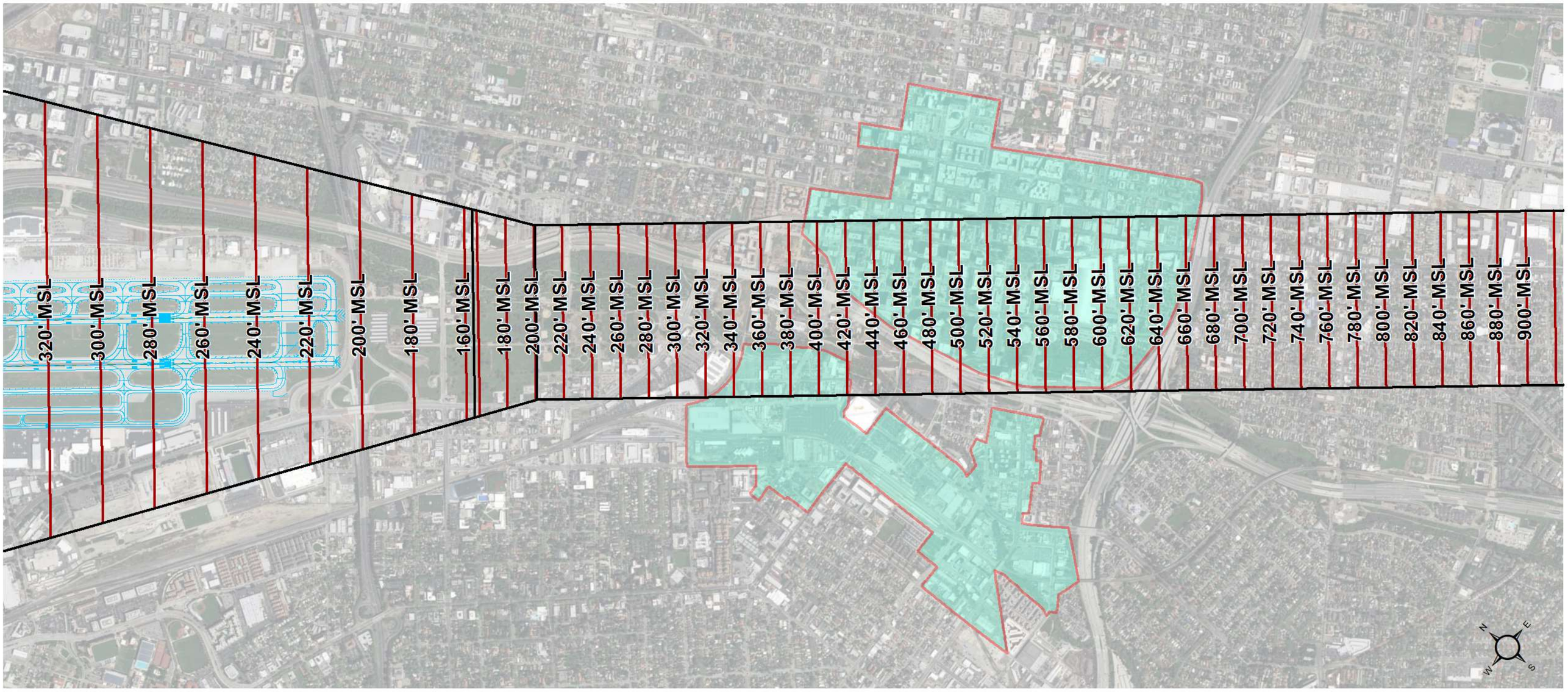
RUNWAY 30L RNP 0.3 SURFACE – FINAL APPROACH



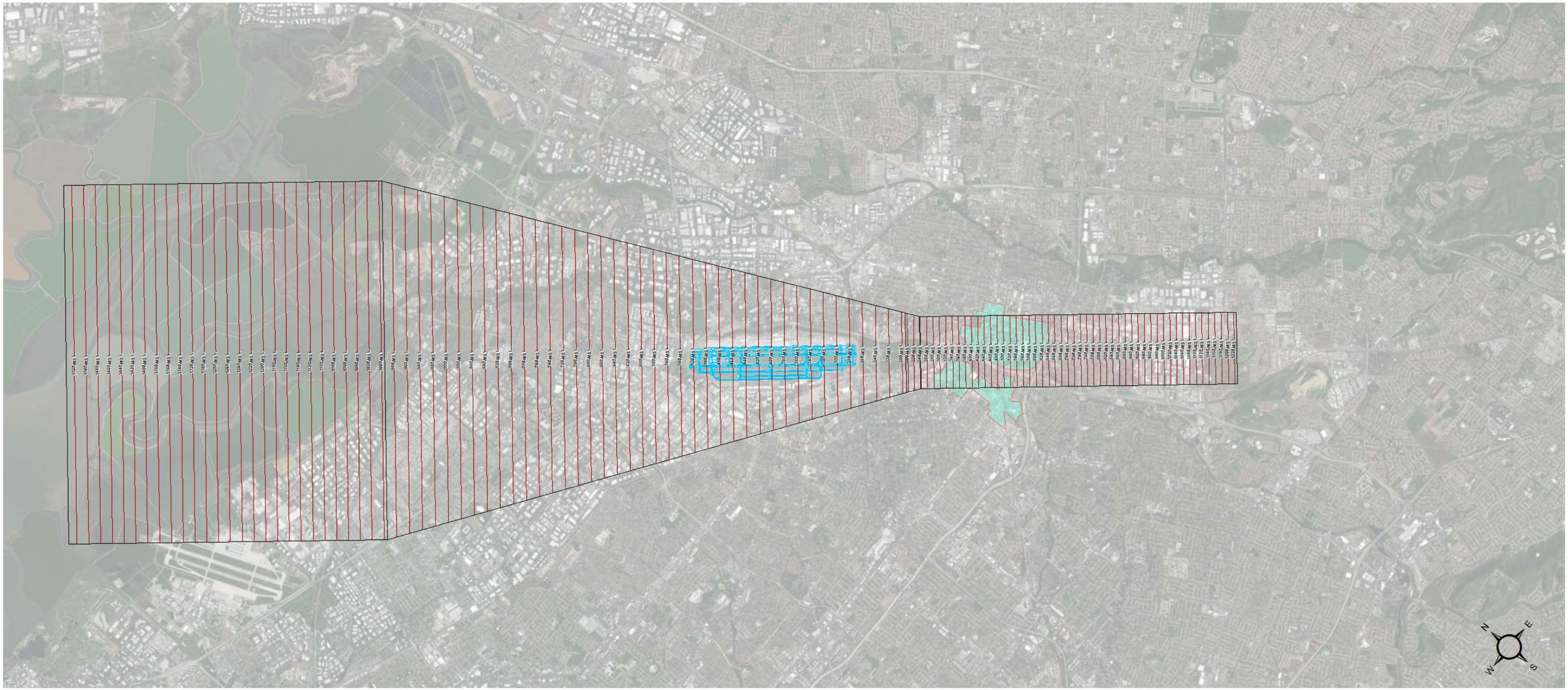
RUNWAY 30R RNP 0.11 SURFACE



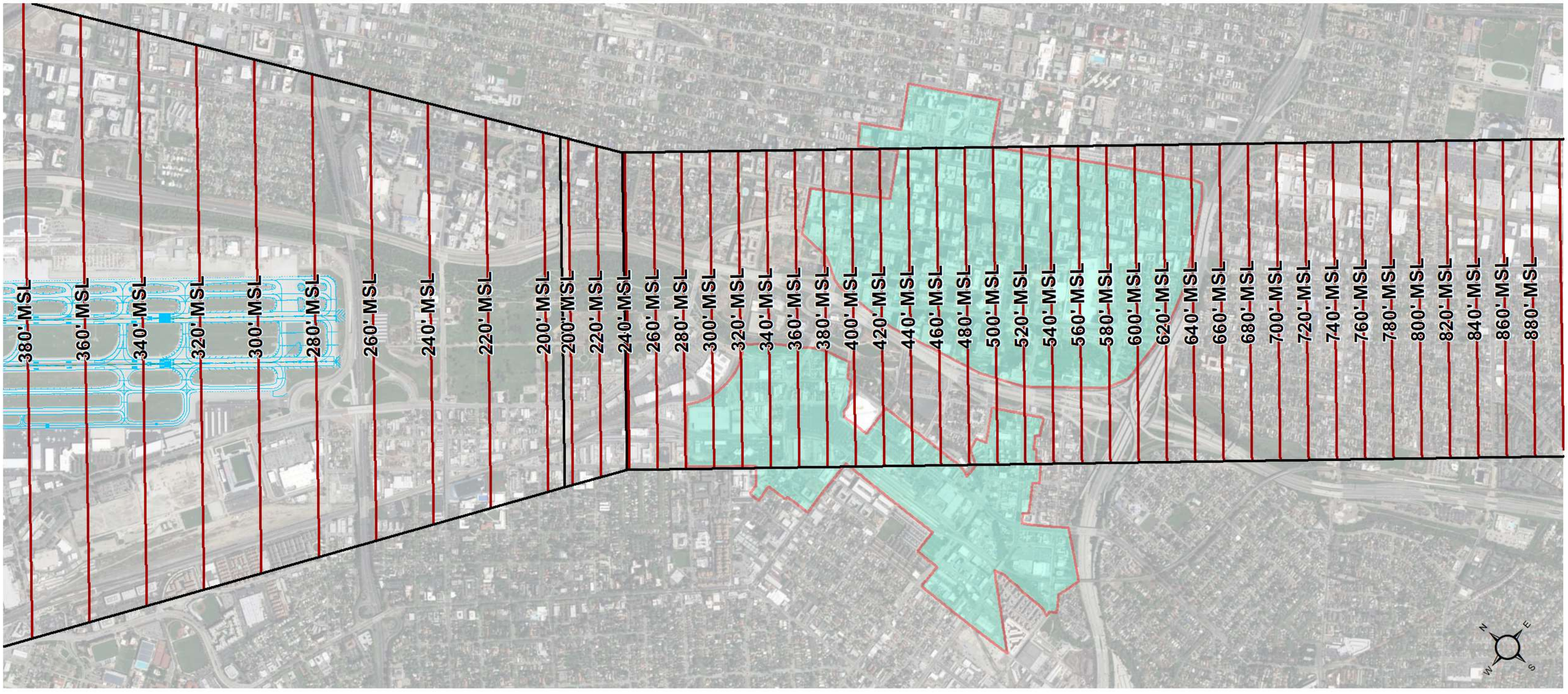
RUNWAY 30R RNP 0.11 SURFACE – FINAL APPROACH



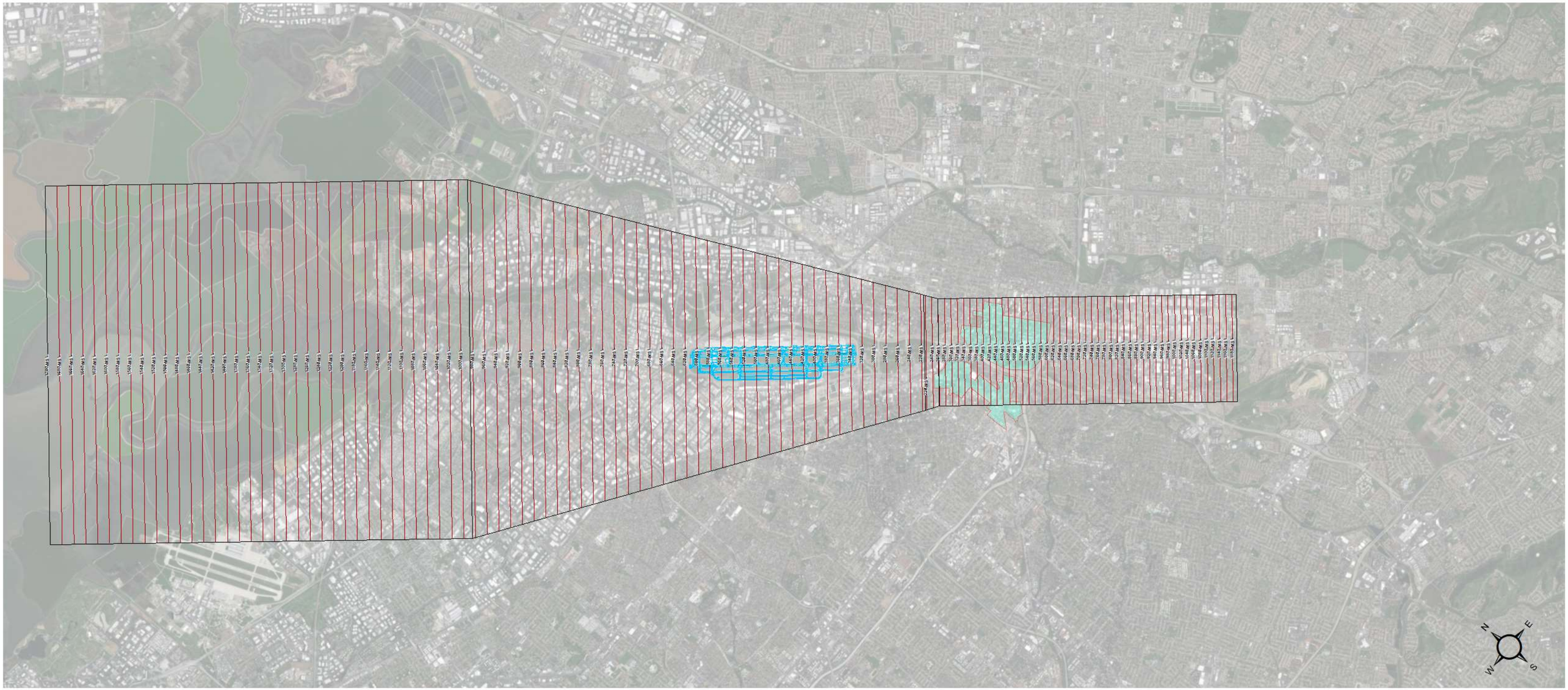
RUNWAY 30R RNP 0.2 SURFACE



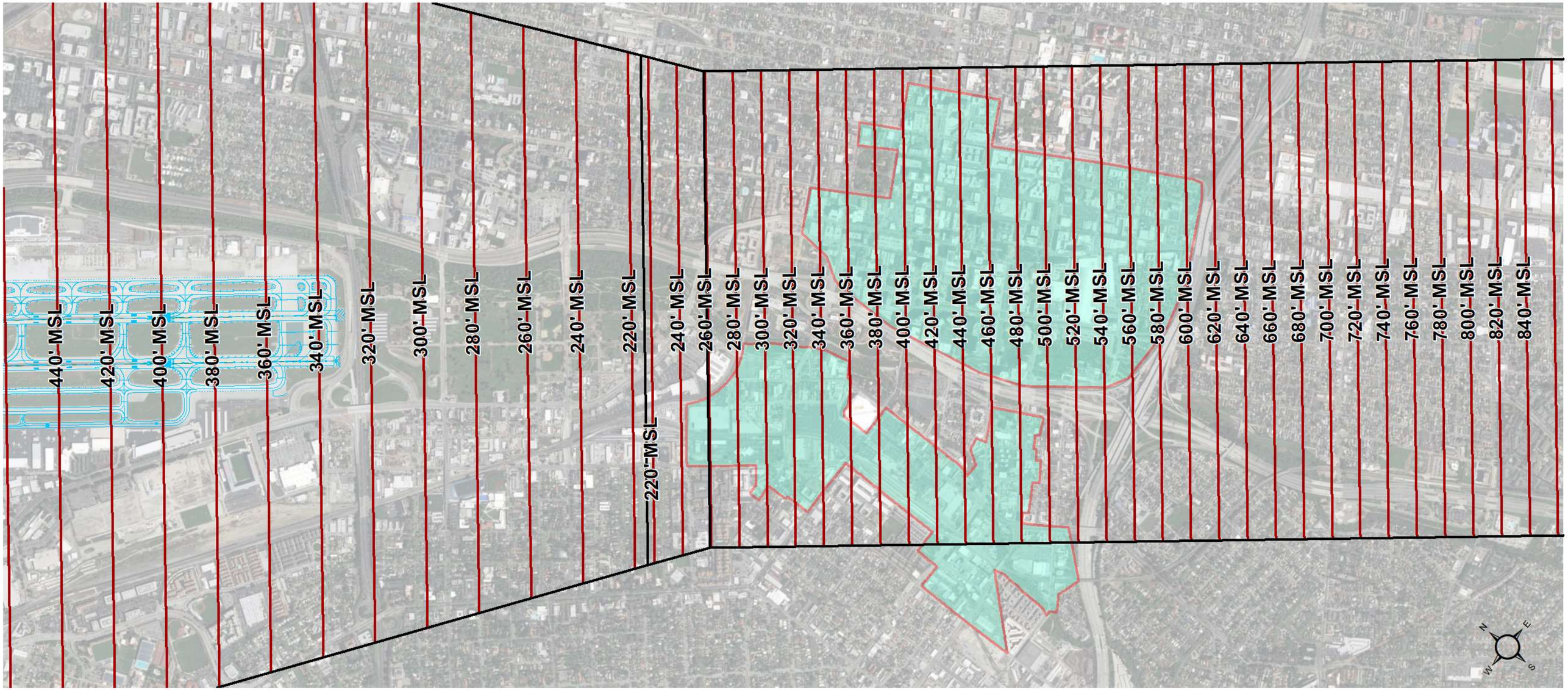
RUNWAY 30R RNP 0.2 SURFACE – FINAL APPROACH



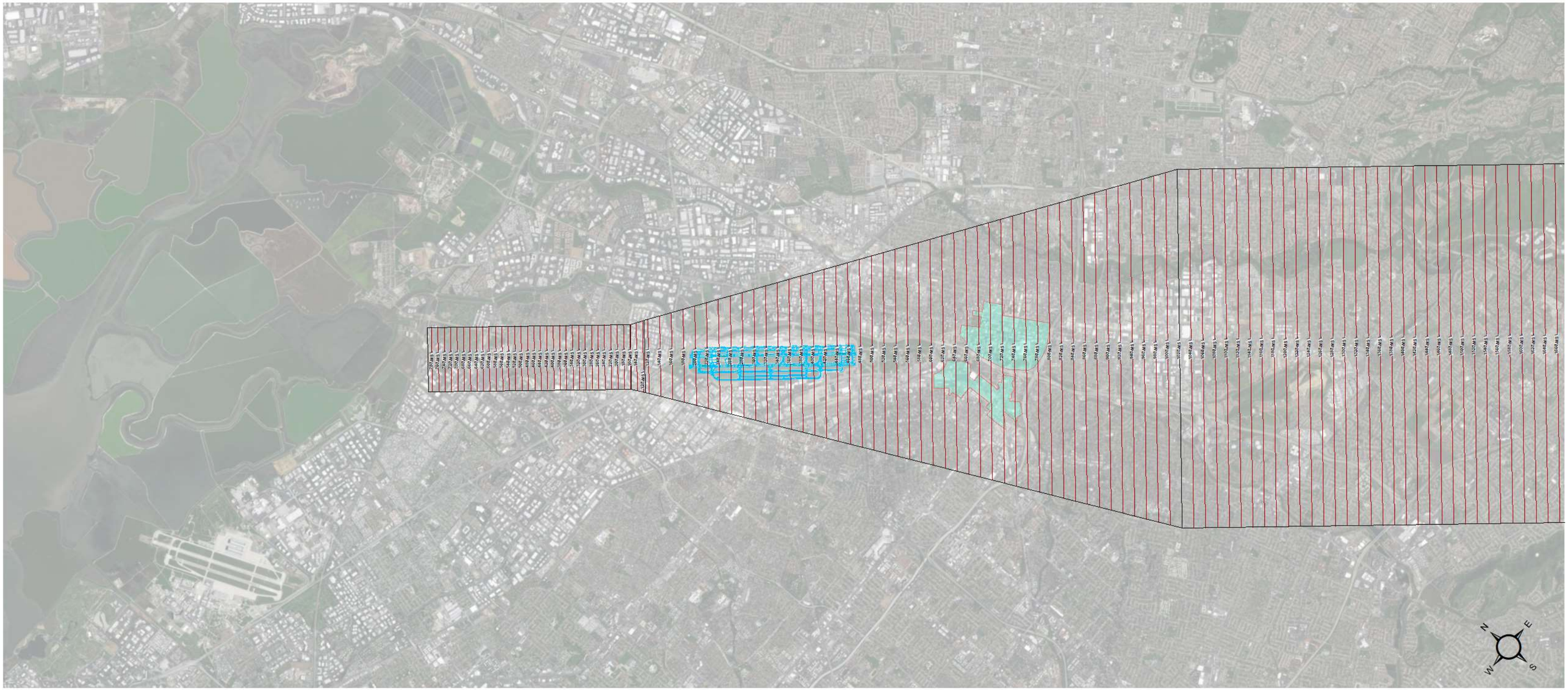
RUNWAY 30R RNP 0.3 SURFACE



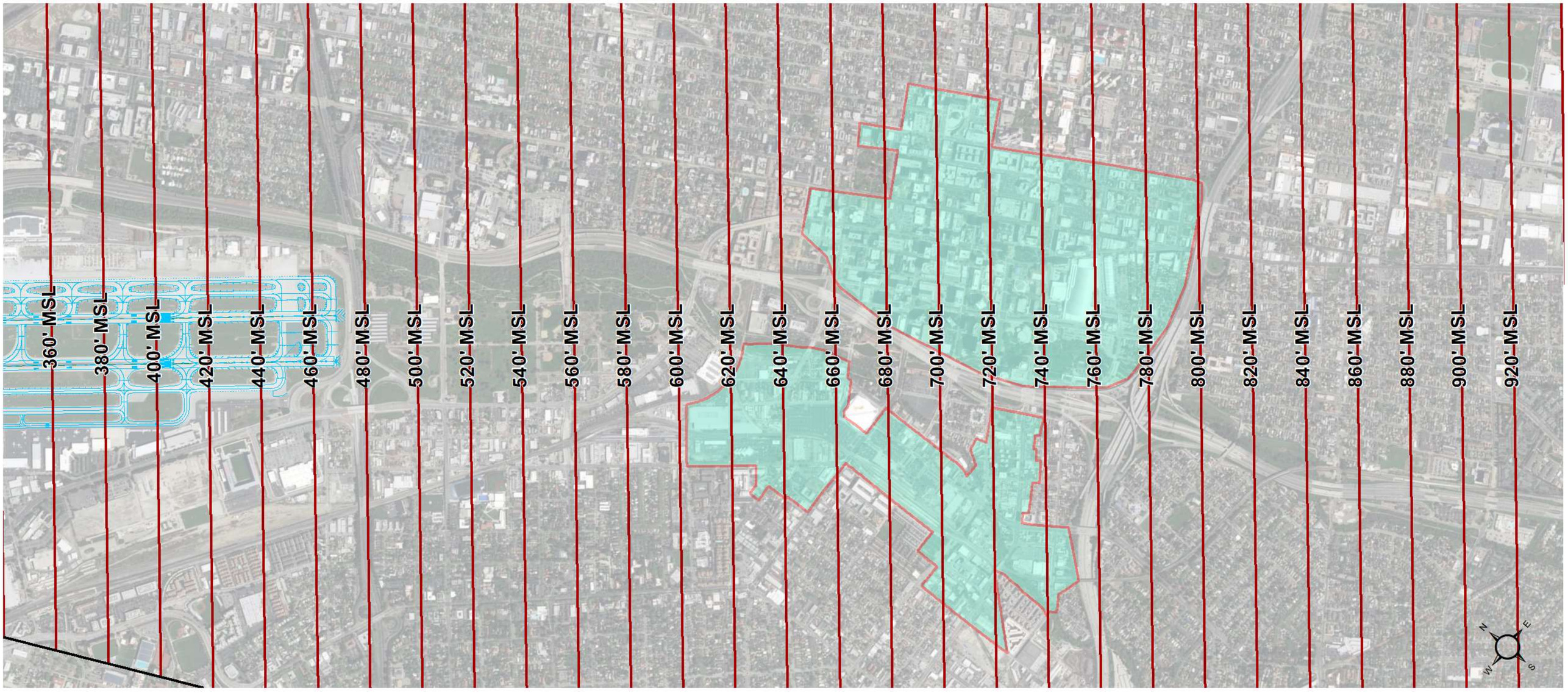
RUNWAY 30R RNP 0.3 SURFACE – FINAL APPROACH



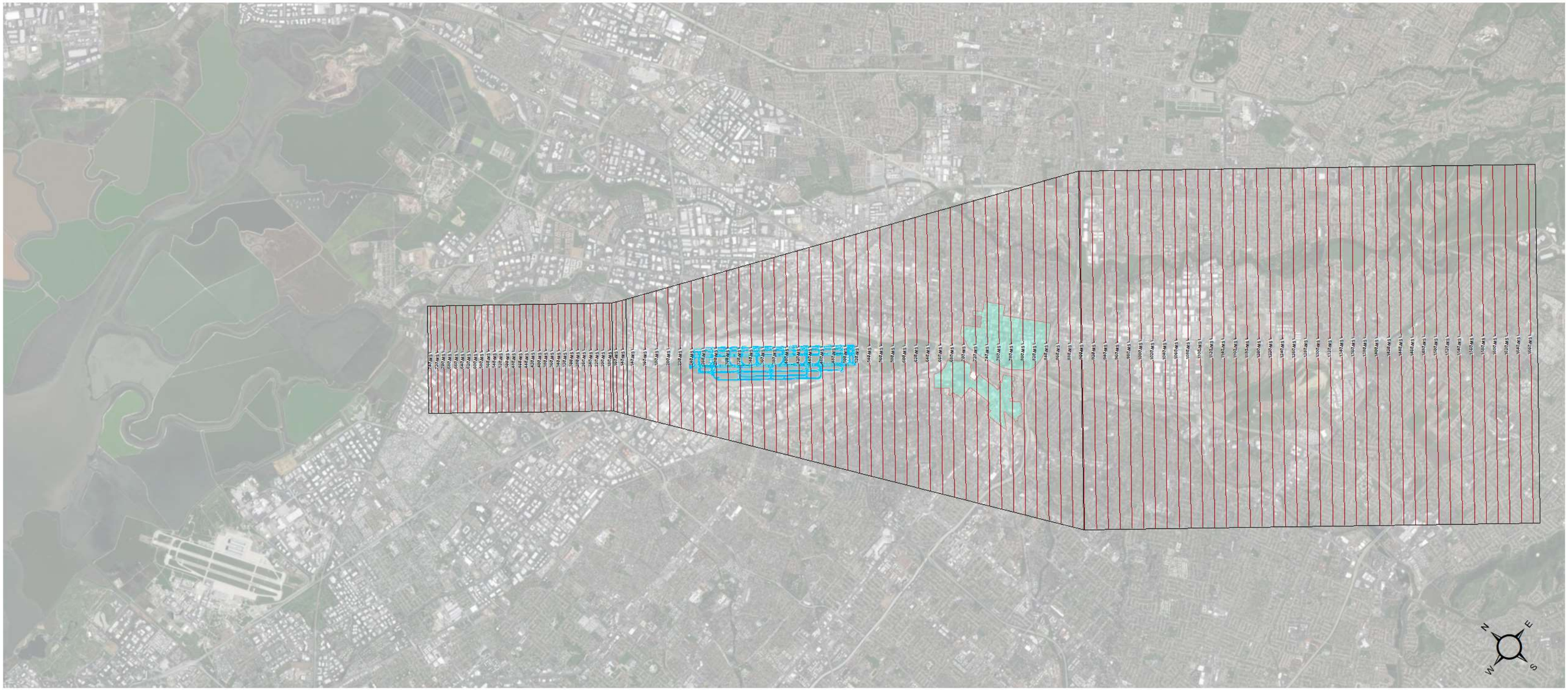
RUNWAY 12L RNP 0.18 SURFACE



RUNWAY 12L RNP 0.18 SURFACE – MISSED APPROACH

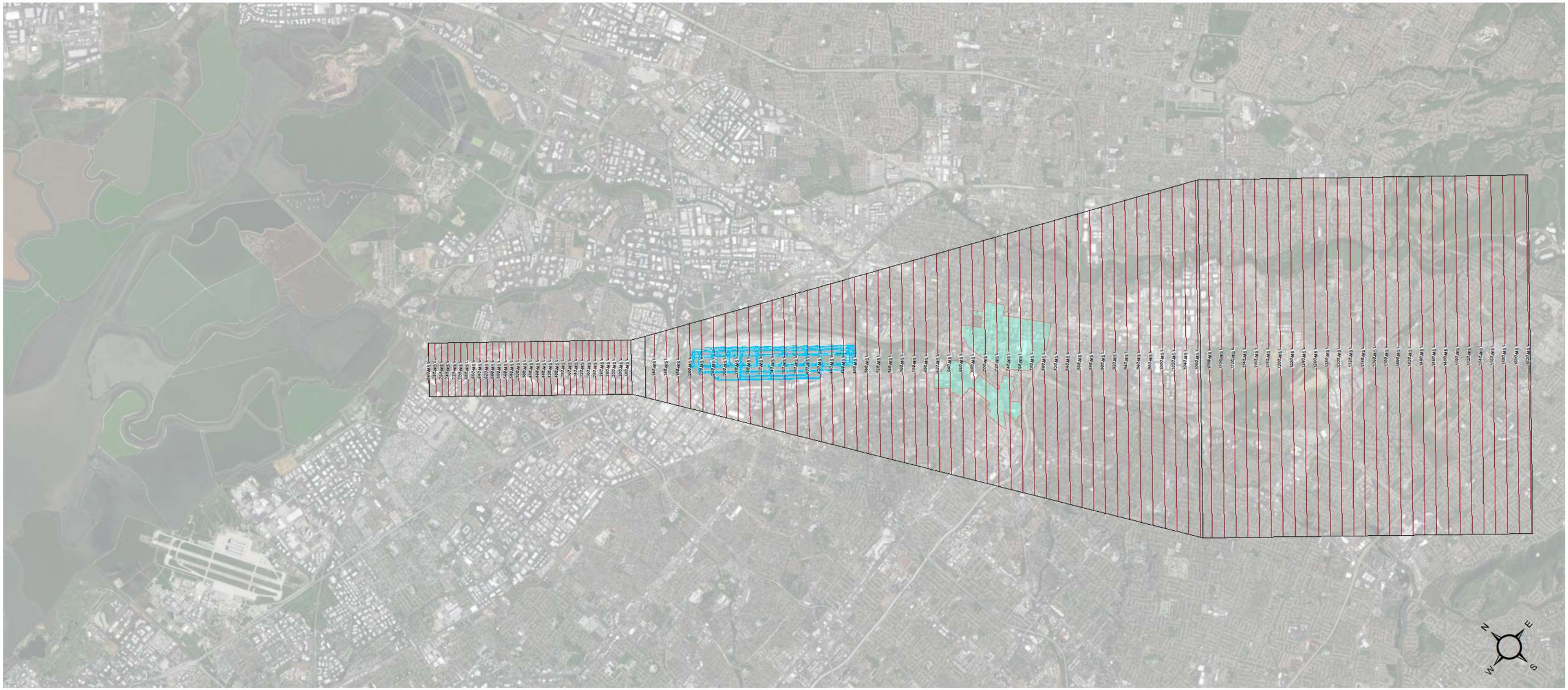


RUNWAY 12L RNP 0.3 SURFACE

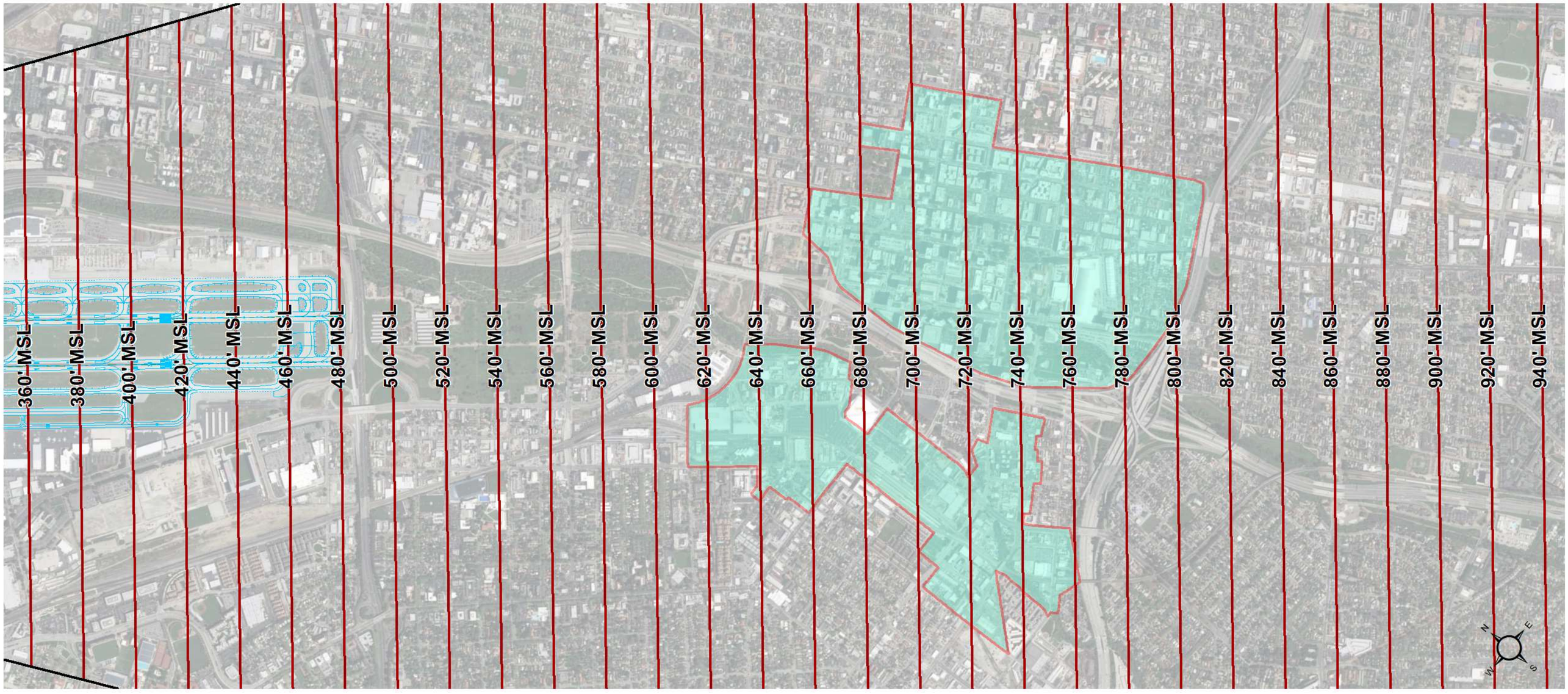


RUNWAY 12L RNP 0.3 SURFACE – MISSED APPROACH

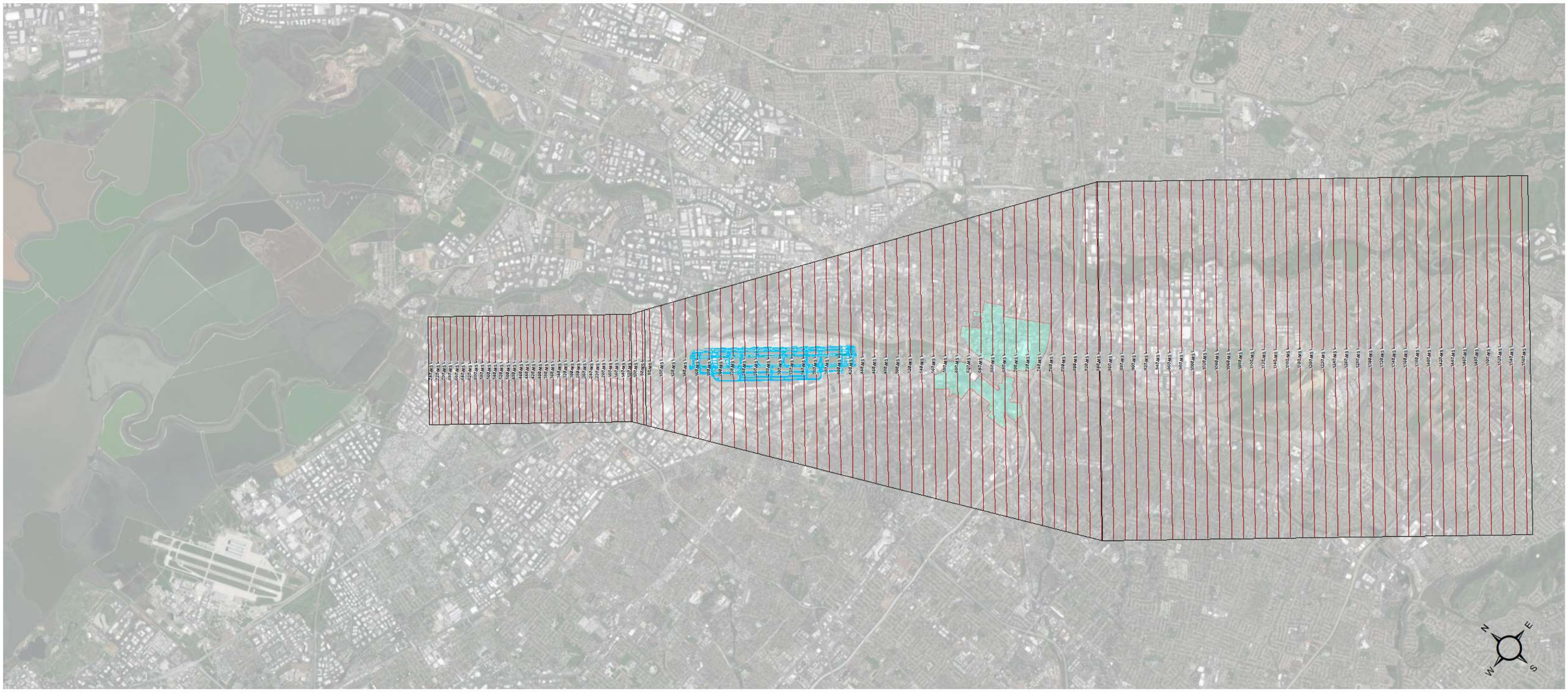
RUNWAY 12R RNP 0.15 SURFACE



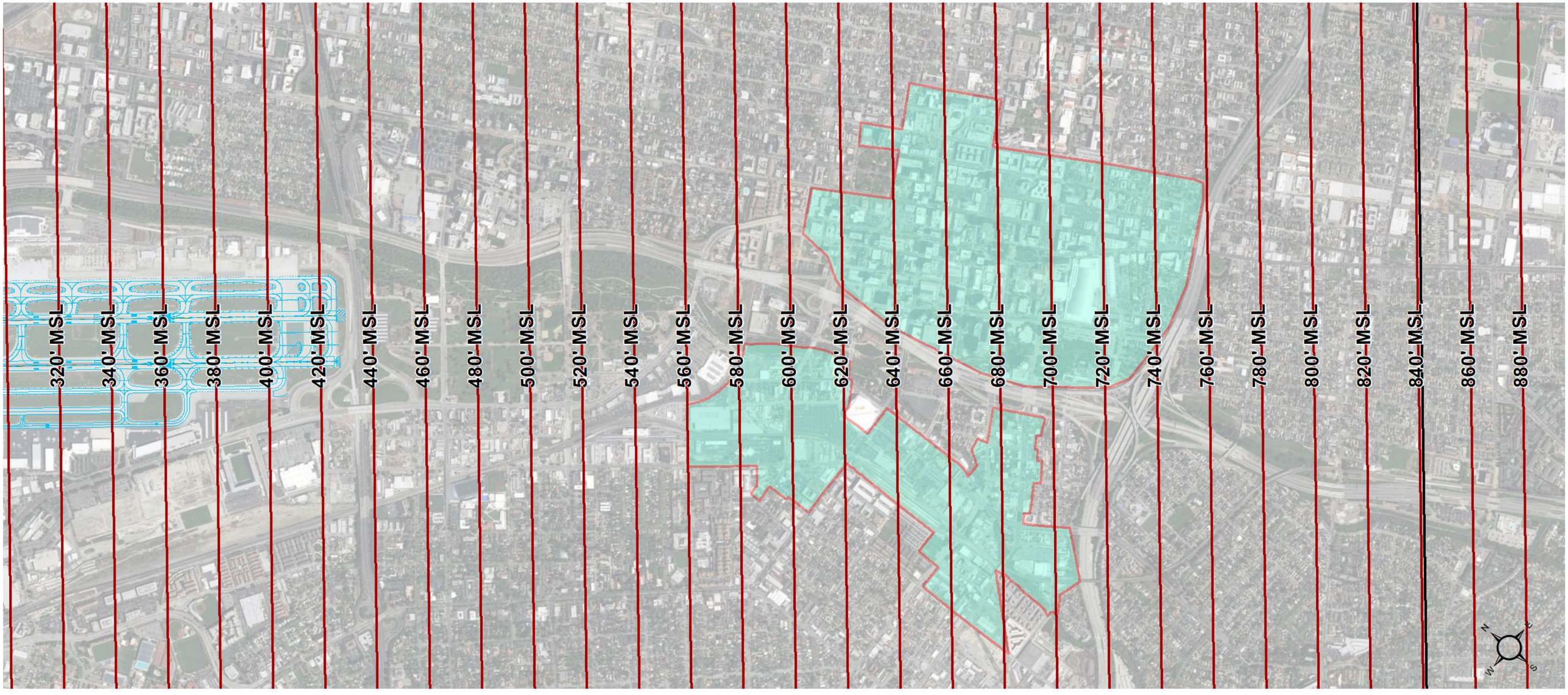
RUNWAY 12R RNP 0.15 SURFACE – MISSED APPROACH



RUNWAY 12R RNP 0.3 SURFACE



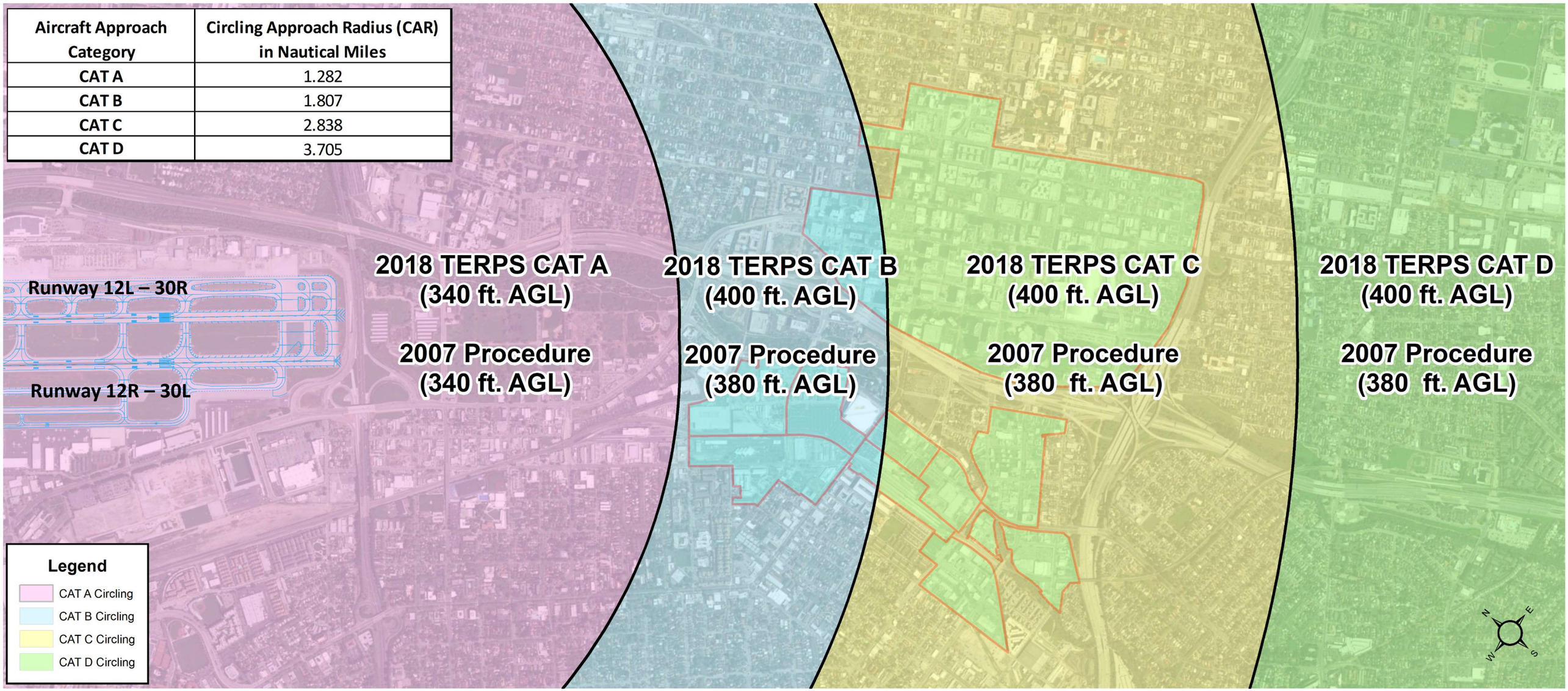
RUNWAY 12R RNP 0.3 SURFACE – MISSED APPROACH



CIRCLING APPROACH

TERPS NON-PRECISION APPROACH CIRCLING MINIMUMS

Aircraft Approach Category	Circling Approach Radius (CAR) in Nautical Miles
CAT A	1.282
CAT B	1.807
CAT C	2.838
CAT D	3.705



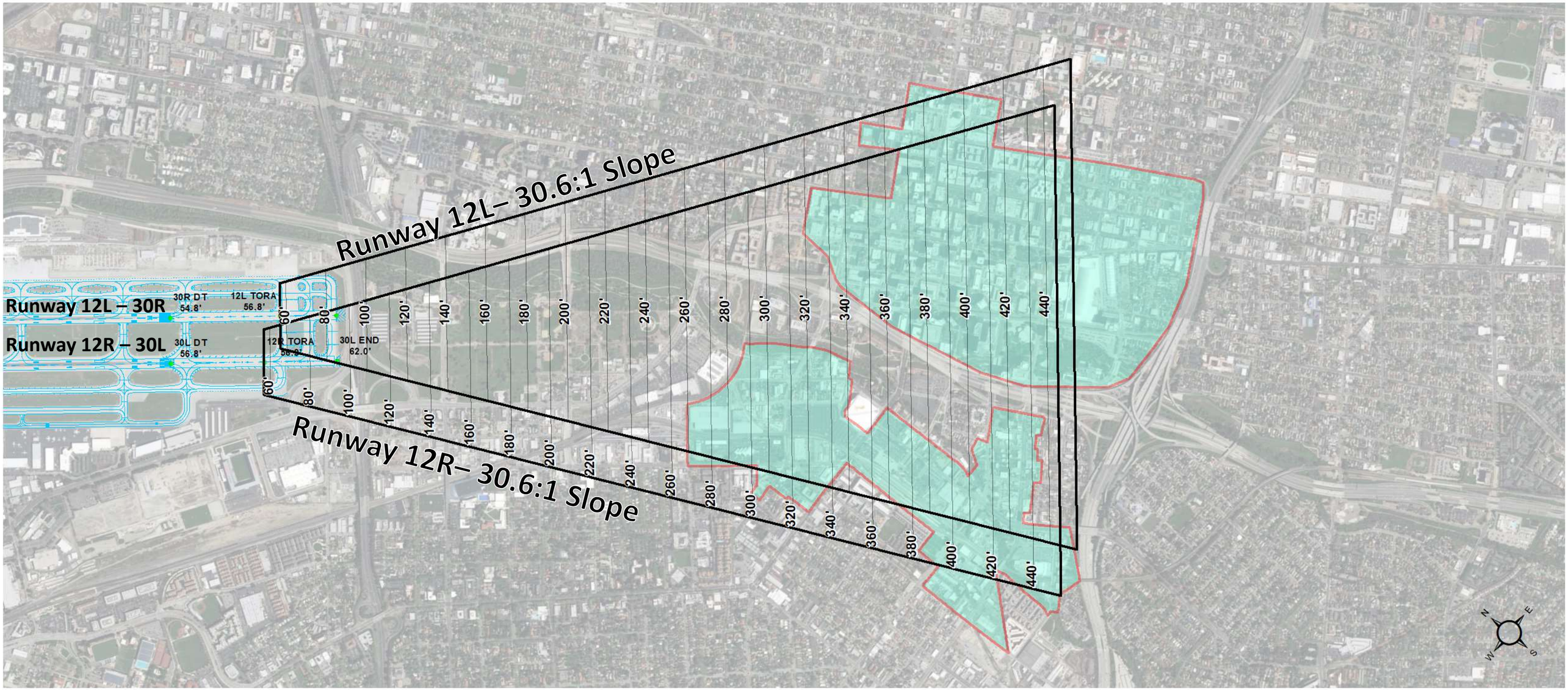
The 2018 CAT B, C and D circling minimums have increased 20 feet as compared to the 2007 circling minimums.

DEPARTURE SURFACE CLIMB GRADIENT ANALYSIS

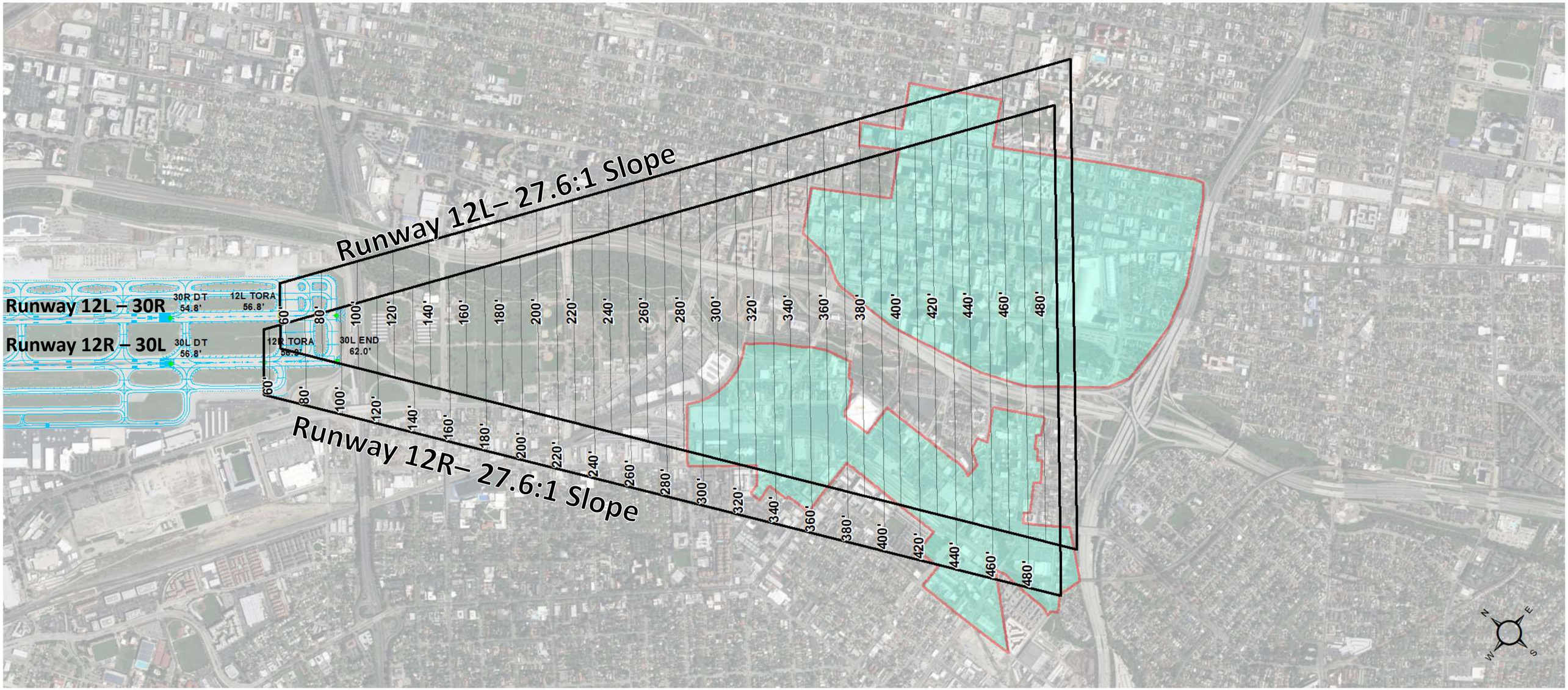
TERPS DEPARTURE SURFACE STATUS UPDATE

- REVIEW OF DEPARTURE SURFACE CLIMB GRADIENTS OVER DOWNTOWN CORE AND DIRIDON STATION
  - OBSTACLE DEPARTURE PROCEDURE (ODP) – 261’ FT./NM
  - SUNOL NINE DEPARTURE (RNAV) – 290 FT./NM CG TO 4,000 FT.
  - BMRNG FOUR DEPARTURE (RNAV) – 470 FT./NM CG TO 5,600 FT.
  - TECKY THREE DEPARTURE (RNAV) – 500 FT./NM CG TO 570 FT.
  - ALMDN FOUR DEPARTURE (RNAV) – 500 FT./NM CG TO 2,500 FT

TERPS DEPARTURE SURFACE – RUNWAY 12L/12R – 261 FT./NM CG

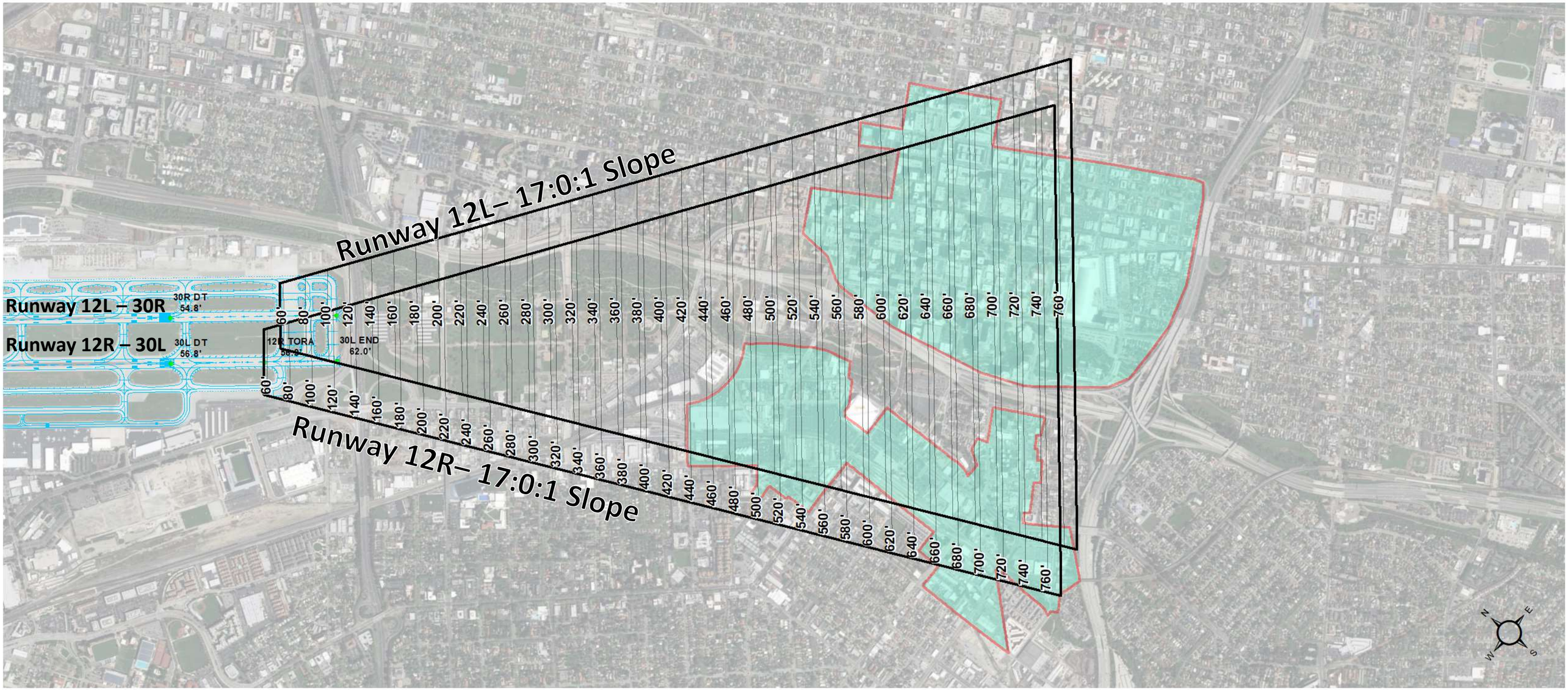


TERPS DEPARTURE SURFACE – RUNWAY 12L/12R – 290 FT./NM CG

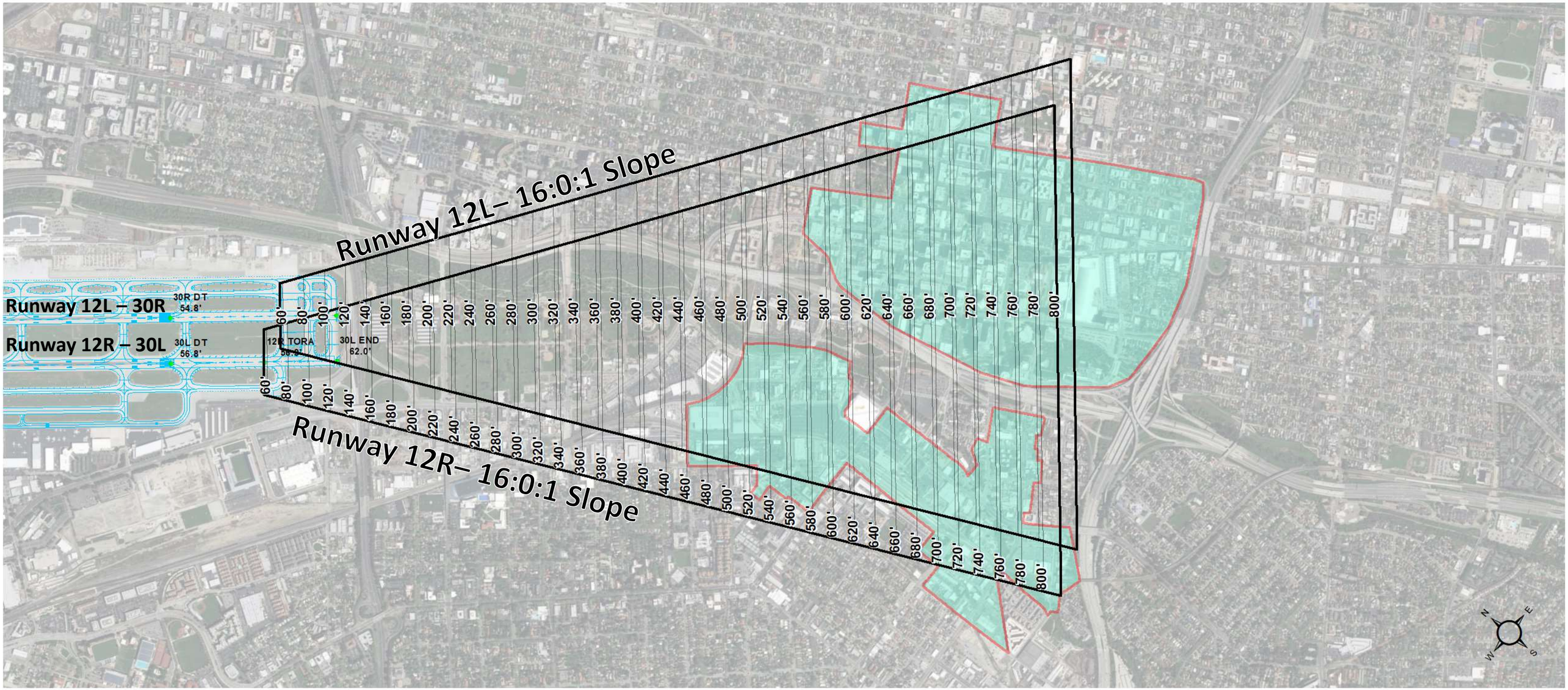


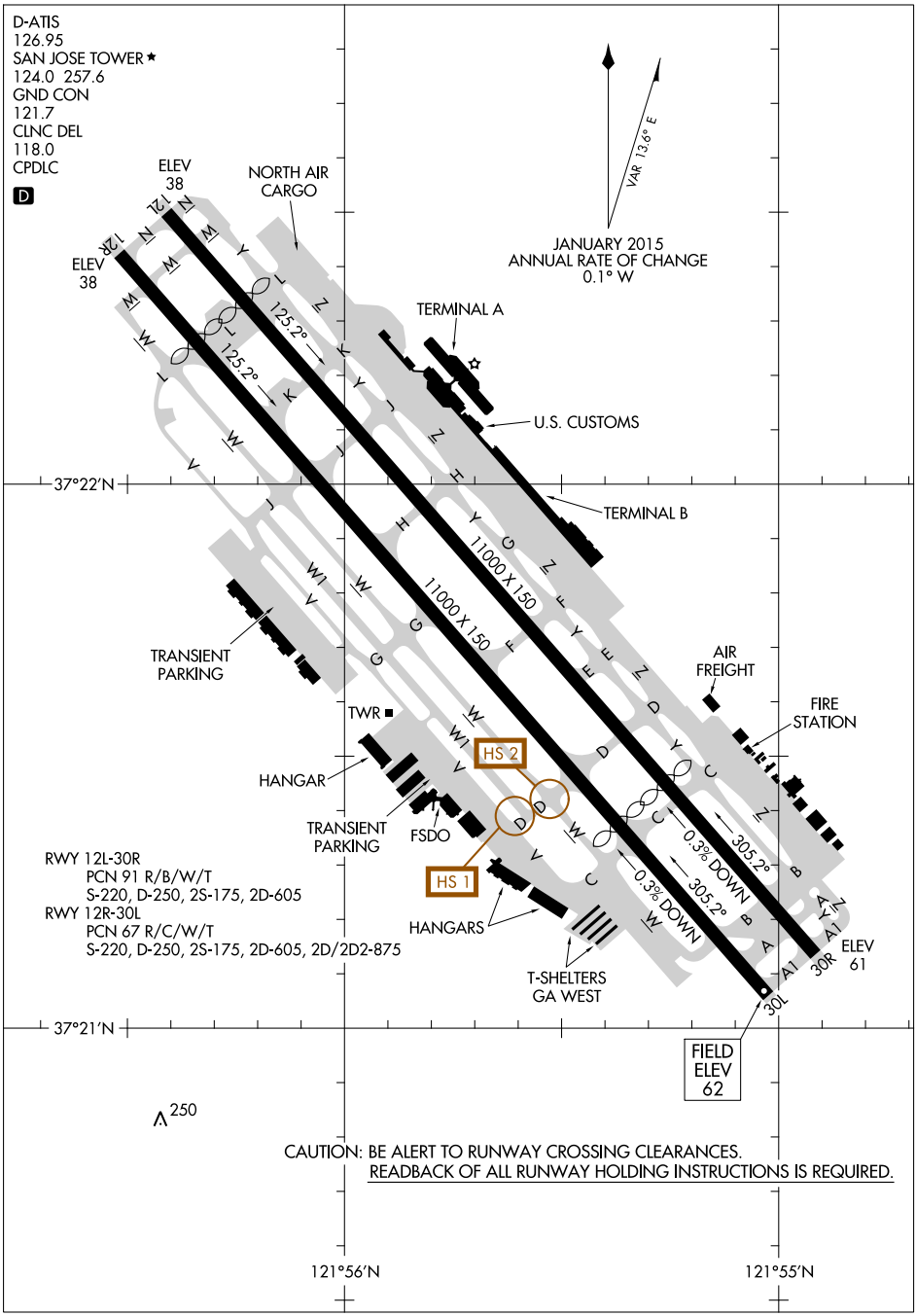
NOTE: SUNOL NINE DEPARTURE LIMITED TO PROP AIRCRAFT ONLY

TERPS DEPARTURE SURFACE – RUNWAY 12L/12R – 470 FT./NM CG



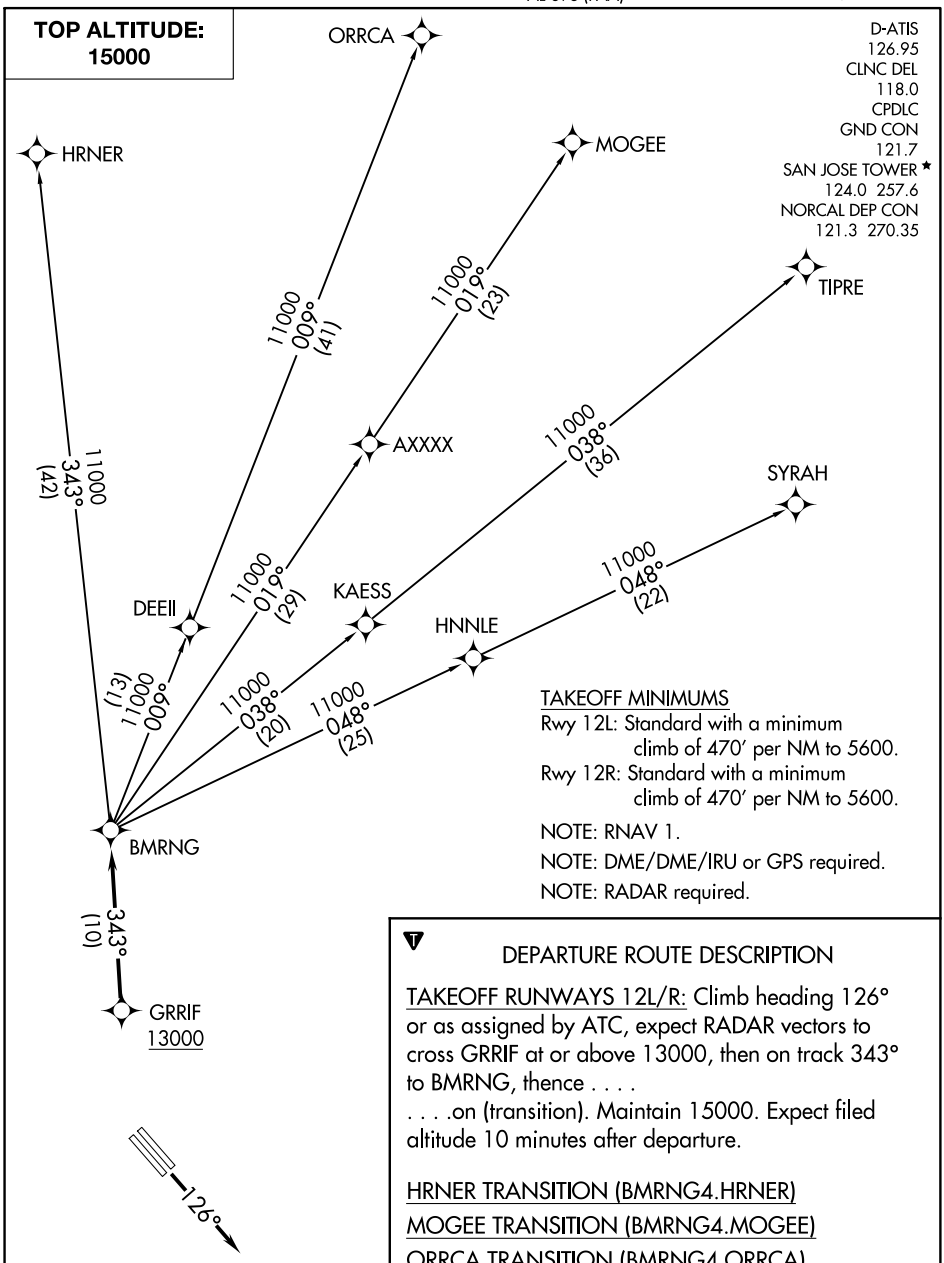
TERPS DEPARTURE SURFACE – RUNWAY 12L/12R – 500 FT./NM CG





SW-2, 01 FEB 2018 to 01 MAR 2018

BMRNG FOUR DEPARTURE (RNAV)



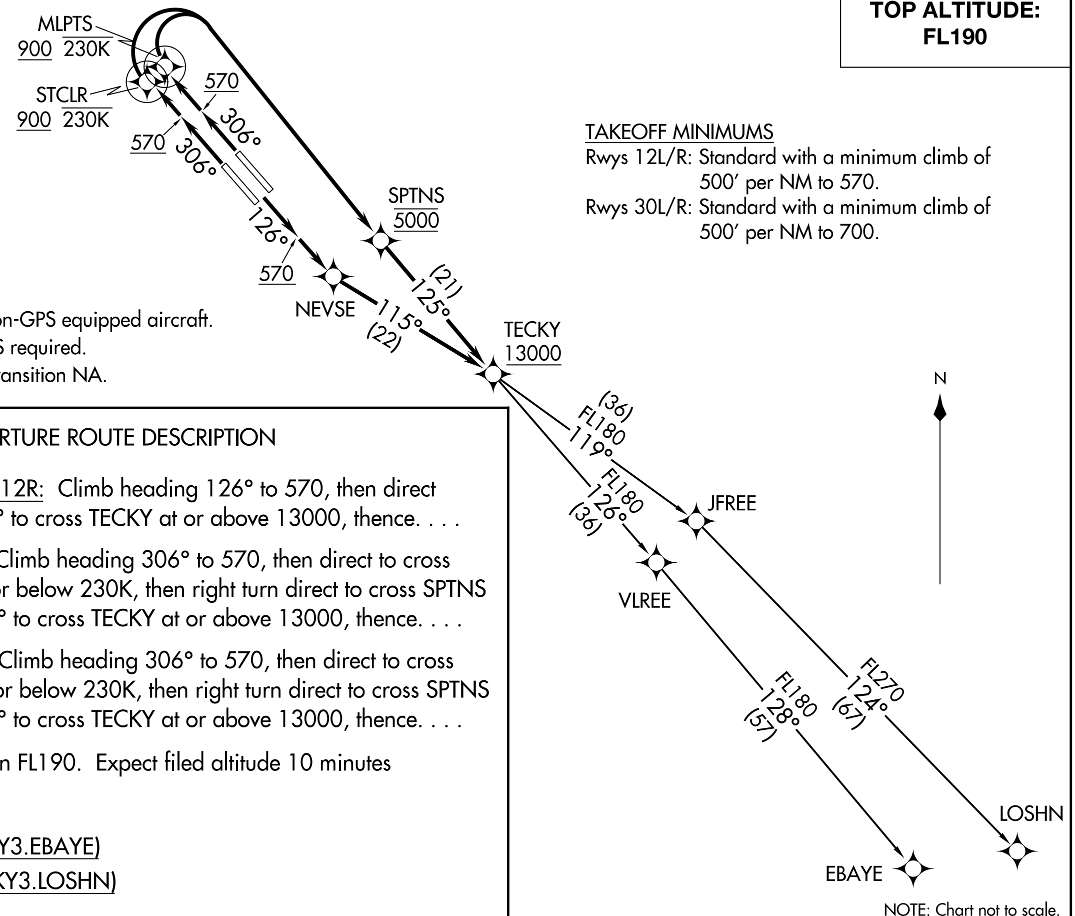
SW-2, 01 FEB 2018 to 01 MAR 2018

TECKY THREE DEPARTURE (RNAV)
(TECKY3.TECKY) 21JUL16

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

D-ATIS
126.95
CLNC DEL
118.0
CPDLC
GND CON
121.7
SAN JOSE TOWER ★
124.0 257.6
NORCAL DEP CON
121.3 270.35

TOP ALTITUDE: FL190



TAKEOFF MINIMUMS
Rwys 12L/R: Standard with a minimum climb of 500′ per NM to 570.
Rwys 30L/R: Standard with a minimum climb of 500′ per NM to 700.

NOTE: RNAV 1
NOTE: RADAR required for non-GPS equipped aircraft.
NOTE: DME/DME/IRU or GPS required.
NOTE: Rwys 12L/R: LOSHN transition NA.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L, 12R: Climb heading 126° to 570, then direct NEVSE, then on track 115° to cross TECKY at or above 13000, thence. . . .

TAKEOFF RUNWAY 30L: Climb heading 306° to 570, then direct to cross STCLR at or above 900 at or below 230K, then right turn direct to cross SPTNS at 5000, then on track 125° to cross TECKY at or above 13000, thence. . . .

TAKEOFF RUNWAY 30R: Climb heading 306° to 570, then direct to cross MLPTS at or above 900 at or below 230K, then right turn direct to cross SPTNS at 5000, then on track 125° to cross TECKY at or above 13000, thence. . . .

. . . .on (transition), maintain FL190. Expect filed altitude 10 minutes after departure.

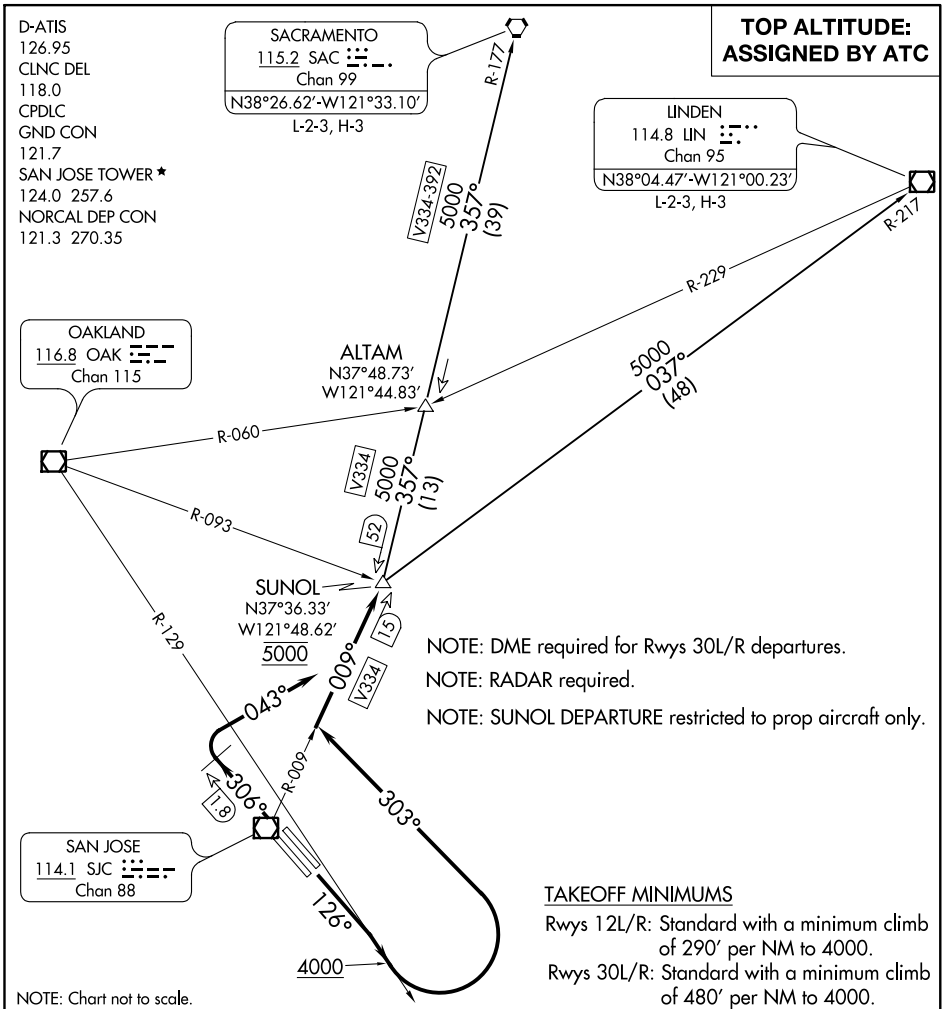
EBAYE TRANSITION (TECKY3.EBAYE)
LOSHN TRANSITION (TECKY3.LOSHN)

NOTE: Chart not to scale.

TECKY THREE DEPARTURE (RNAV)
(TECKY3.TECKY) 17341

AL-693 (FAA)

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L/R: Climb heading 126° to intercept and proceed on OAK R-129 to 4000, then turn left heading 303° for RADAR vectors to intercept and proceed on SJC R-009 to SUNOL. . . .

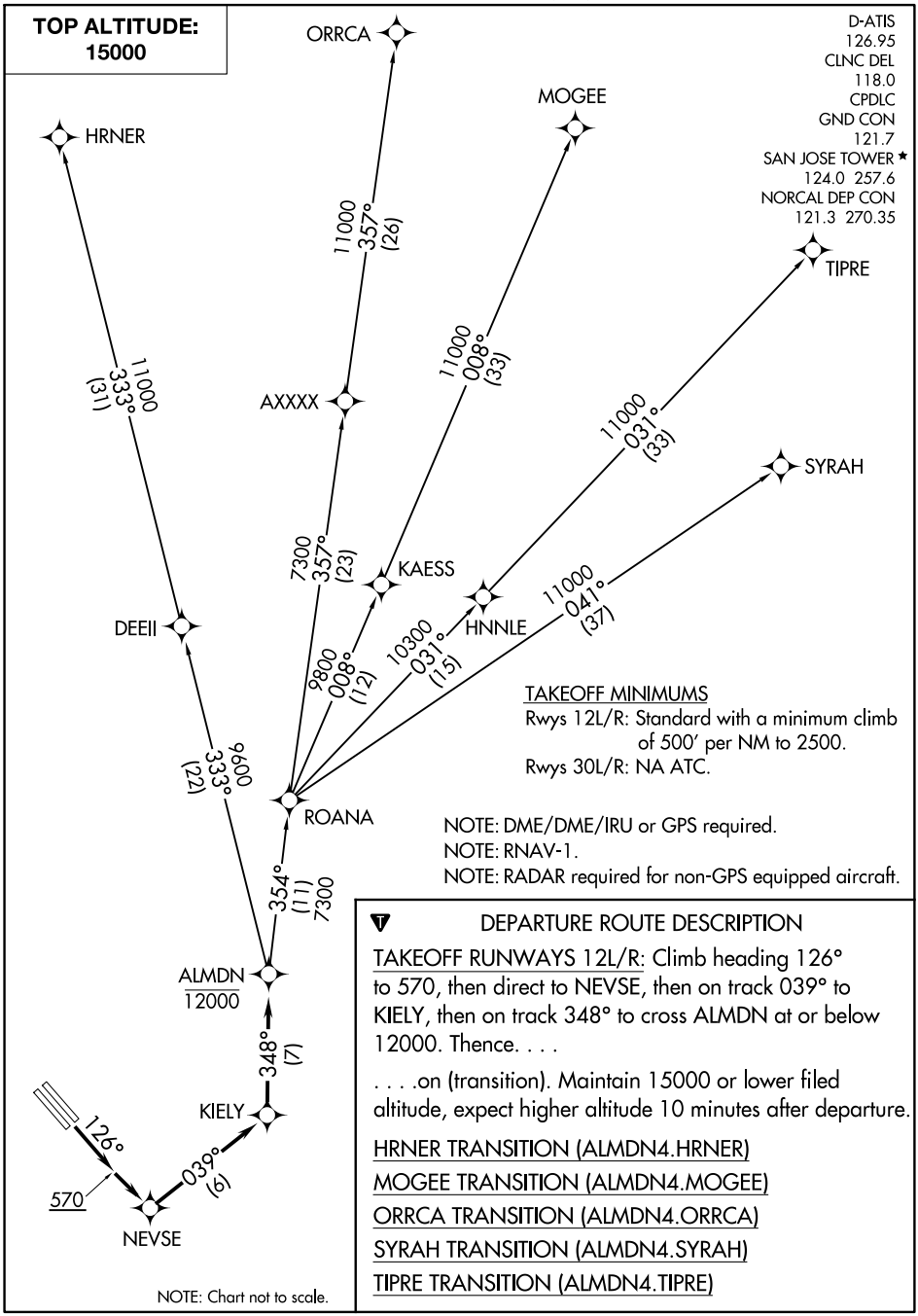
TAKEOFF RUNWAYS 30L/R: Climb heading 306°. At SJC 1.8 DME northwest of SJC VOR/DME, turn right heading 043° to intercept and proceed on SJC R-009 to SUNOL . . . .

. . . .cross SUNOL at 5000, then on (transition) or (assigned route).

LINDEN TRANSITION (SUNOL9.LIN): From over SUNOL INT on LIN R-217 to LIN VOR/DME.

SACRAMENTO TRANSITION (SUNOL9.SAC): From over SUNOL INT on SAC R-177 to SAC VORTAC.

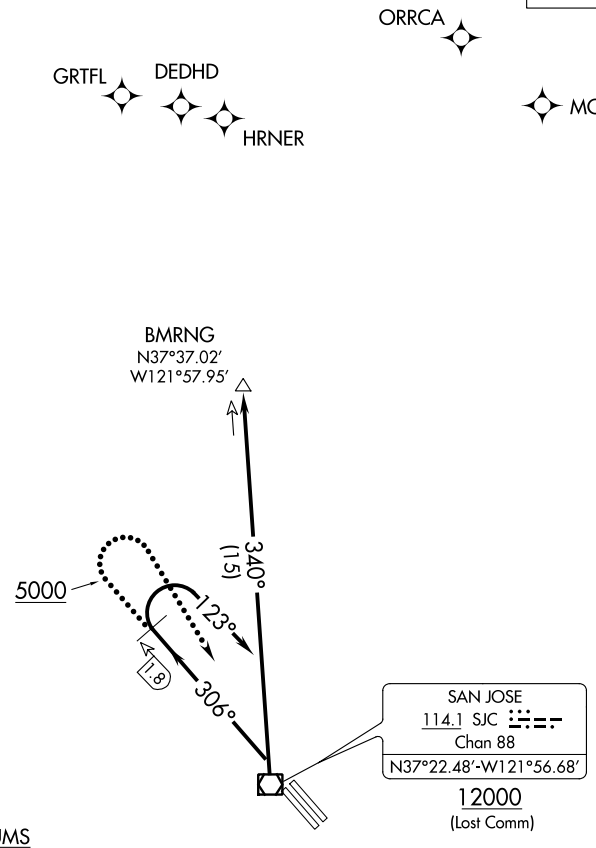
SW-2, 01 FEB 2018 to 01 MAR 2018



SW-2, 01 FEB 2018 to 01 MAR 2018

D-ATIS
126.95
CLNC DEL
118.0
CPDLC
GND CON
121.7
SAN JOSE TOWER ★
124.0 257.6
NORCAL DEP CON
121.3 270.35

TOP ALTITUDE: 5000



TAKEOFF MINIMUMS
Rwys 12L/R: NA-ATC.
Rwys 30L/R: Standard with a minimum climb of 470′ per NM to 5000.

NOTE: RADAR and DME required.

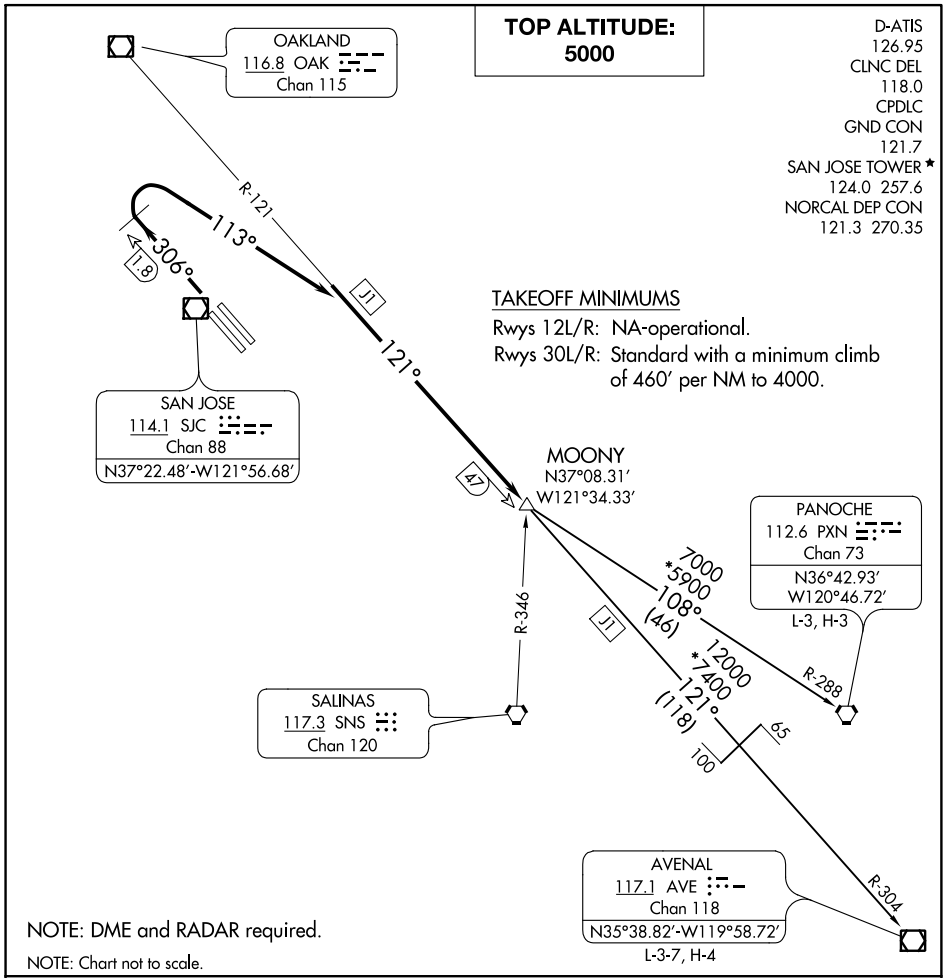
NOTE: Chart not to scale.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 30L/R: Climb heading 306°, at SJC VOR/DME 1.8 DME northwest turn right heading 123°. Expect vectors to SJC VOR/DME, then via SJC R-340 to BMRNG INT. Maintain 5000. Expect filed altitude 10 minutes after departure.

LOST COMMUNICATIONS
RUNWAYS 30L/R: If not in contact with departure control after reaching 5000′ turn right direct SJC VOR/DME thence via SJC VOR/DME R-340 to BMRNG INT, thence via assigned route. Cross SJC VOR/DME at or above 12000, then climb to filed altitude.

SW-2, 01 FEB 2018 to 01 MAR 2018



SW-2, 01 FEB 2018 to 01 MAR 2018

SW-2, 01 FEB 2018 to 01 MAR 2018

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 12L/R: NA.

TAKEOFF RUNWAYS 30L/R: Climb heading 306° to SJC 1.8 DME NW of SJC VOR/DME, then turn right heading 113° to intercept and proceed on OAK R-121 to MOONY INT, thence. . . .

. . . .on (transition) or (assigned route). Maintain 5000, expect clearance to filed altitude ten minutes after departure.

AVENAL TRANSITION (SJC2.AVE): From over MOONY INT on OAK R-121 and AVE R-304 to AVE VOR/DME.

PANOCHE TRANSITION (SJC2.PXN): From over MOONY INT on PXN R-288 to PXN VORTAC.

RNAV (GPS) Y RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

WAAS	APP CRS		12R	12L
CH 90106	126°	Rwy Idg	8587	8833
W12A		TDZE	46	44
		Apt Elev	62	62

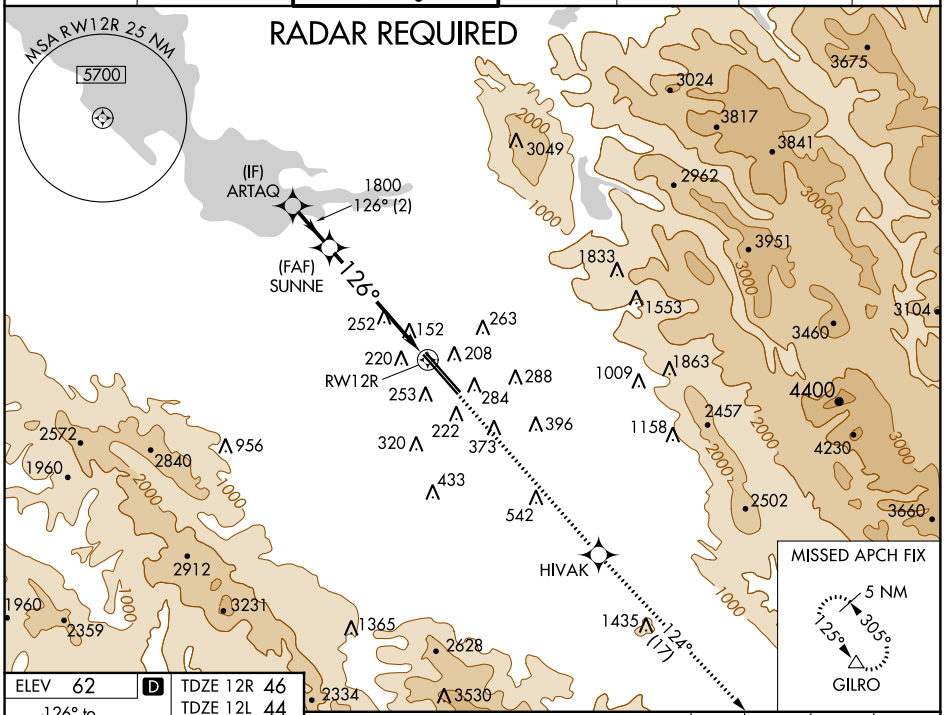
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. For inoperative MALSR, increase LNAV/VNAV all Cats visibility to 1 mile and LNAV Cats C/D visibility to 1⅜ mile.

MALSR Rwy 12R

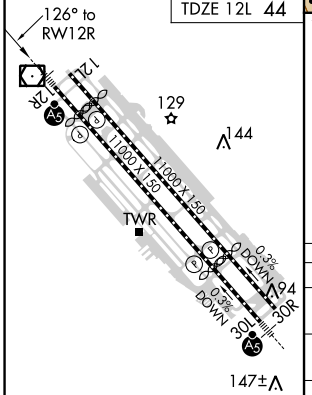
MISSED APPROACH: Climb to 4600 direct HIVAK and on track 124° to GILRO and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95

RADAR REQUIRED

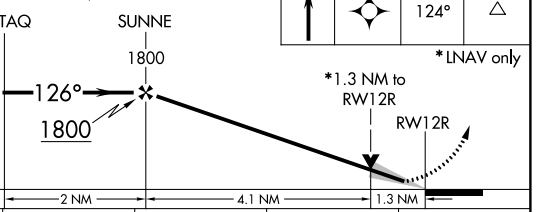


ELEV 62 D	TDZE 12R 46
	TDZE 12L 44



REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 75).



CATEGORY	A	B	C	D
LPV DA	246-½ 200 (200-½)			
LNAV/VNAV DA	371-⅝ 325 (400-⅝)	371-1 325 (400-1)		
LNAV MDA	520-½ 474 (500-½)		520-1 474 (500-1)	
SIDESTEP 12L	520-1 476 (500-1)		520-1½ 476 (500-1½)	520-2 476 (500-2)

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018

ILS or LOC RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

LOC/DME I-SLV	APP CRS		12R	12L
110.9	126°	Rwy Idg	8587	8833
Chan 46		TDZE	46	44
		Apt Elev	62	62

T A — DME required.
For inoperative MALSR, increase S-LOC 12R Cat C/D visibility to 1 mile.

MALSR Rwy 12R (A5)

MISSED APPROACH: Climb to 500 then climb to 4000 on SJC VOR/DME R-121 to GILRO/SJC 26.7 DME and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95

RADAR REQUIRED

MSA SJC 25 NM 5600

WOODSIDE 113.9 OSI Chan 86

(IF) ARTAQ INT I-SLV 9

SUNNE INT I-SLV 7

JUJGE I-SLV 3

SAN JOSE 114.1 SJC Chan 88

LOCALIZER 110.9 I-SLV Chan 46

MISSED APCH FIX GILRO SJC 26.7

117.3 SNS Chan 120

ELEV 62 D — TDZE 12R 46 — TDZE 12L 44

126° 5.4 NM from FAF

VGSI and ILS glidepath not coincident
(VGSI Angle 3.00/TCH 75).

GS 3.00°
TCH 58

*LOC only

CATEGORY	A	B	C	D
S-ILS 12R	251-½ 205 (200-½)			
S-LOC 12R	420-½ 374 (400-½)		420-⅝ 374 (400-⅝)	
SIDESTEP RWY 12L	600-1 556 (600-1)		600-1½ 556 (600-1½)	600-2 556 (600-2)

REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018

APP CRS	Rwy Idg	7614
306°	TDZE	57
	Apt Elev	62

RNAV (RNP) Z RWY 30L

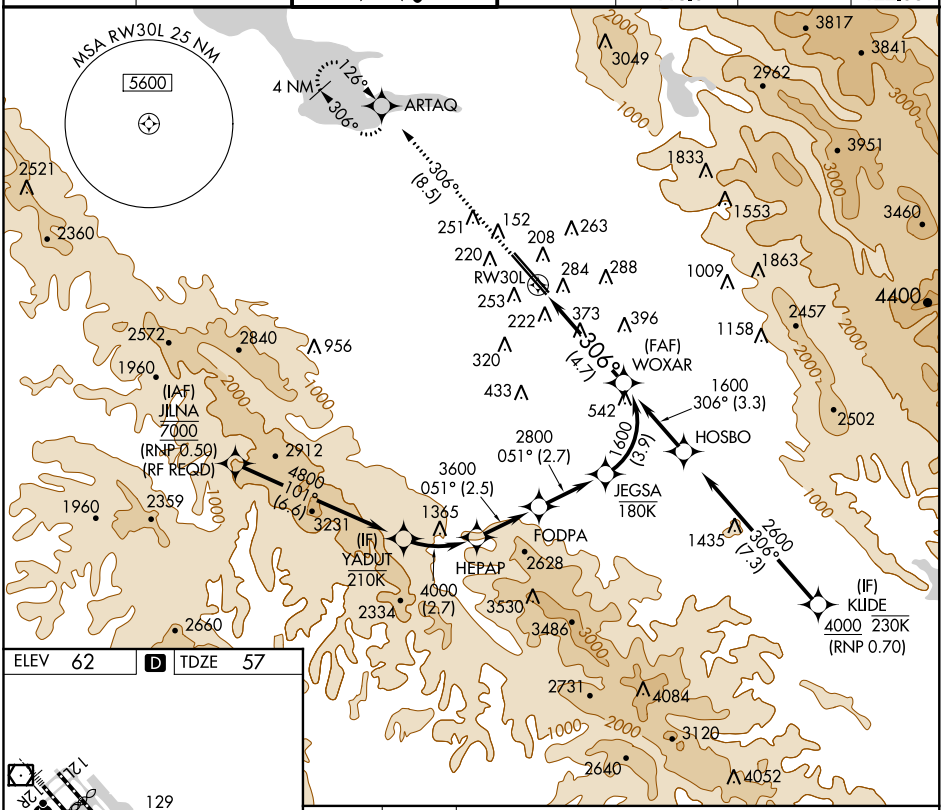
NORMAN Y MINETA SAN JOSE INTL (SJC)

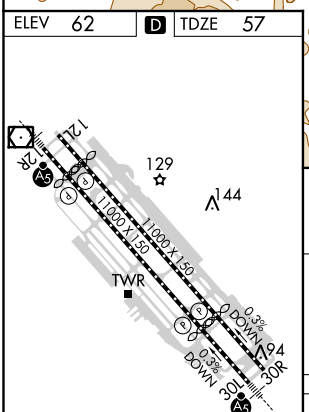
For uncompensated Baro-VNAV systems, procedure NA below -1°C (31°F) or above 54°C (130°F). GPS required. For inoperative MALSR, increase RNP 0.15 all Cats visibility to RVR 6000 and increase RNP 0.30 all Cats visibility to 1⅝ mile.

MALSR

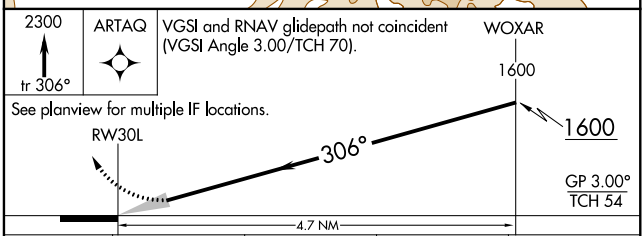
MISSED APPROACH: Climb to 2300 on track 306° to ARTAQ and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95





REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L



CATEGORY	A	B	C	D
RNP 0.15 DA	421/40 364 (400-¾)			
RNP 0.30 DA	544/60 487 (500-1¼)			

AUTHORIZATION REQUIRED

SW-2, 01 FEB 2018 to 01 MAR 2018

APP CRS	Rwy Idg	8833
126°	TDZE	44
	Apt Elev	62

RNAV (RNP) Z RWY 12L

NORMAN Y MINETA SAN JOSE INTL (SJC)

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MISSED APPROACH: Climb to 4600 on track 126° to COKOR and on track 124° to GILRO and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95

RADAR REQUIRED

MSA RW12L 25 NM 5700

(IAF) ARTAQ 1800 123° (2)

(IF) OMSEE 1100 126° (2.2)

(FAF) HINIR (3.2) 126°

(IAF) WADVA 4500 (RF REQD)

(IF) RERAE 1800 061° (5.4)

NIBUY 210K

1100 (2.5) 251°

1800 (4.5)

3500 074° (4)

ZORSA 210K

3000 306° (3.1)

(IF) HITIR 4000 (RF REQD)

RW12L

126° (7.1)

COKOR

124° (19.2)

1435

MISSED APCH FIX 5 NM 125° 305° GILRO

ELEV 62 D TDZE 44

126° to RW12L

TWR

11000 X 150

0.3% DOWN

GP 3.00° TCH 57

HINIR 1100

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 70).

4600 tr 126° COKOR tr 124° GILRO

1100 126° RW12L

See planview for multiple IF locations.

3.2 NM

CATEGORY	A	B	C	D
RNP 0.18 DA	385-1⅛ 341 (400-1⅛)			
RNP 0.30 DA	451-1⅜ 407 (400-1⅜)			

AUTHORIZATION REQUIRED

REIL Rwy 12L

HIRL Rwys 12L-30R and 12R-30L L

SW-2, 01 FEB 2018 to 01 MAR 2018

APP CRS	Rwy Idg	8587
126°	TDZE	46
	Apt Elev	62

RNAV (RNP) Z RWY 12R

NORMAN Y MINETA SAN JOSE INTL (SJC)

For uncompensated Baro-VNAV systems, procedure NA below 0°C (32°F) or above 54°C (130°F). GPS required.

MALSR

MISSED APPROACH: Climb to 4600 on track 126° to HOSBO and on track 124° to GILRO and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95

RADAR REQUIRED

MSA RW12R 25 NM 5700

(IAF) WADVA 4500 (RF REQD)

(IF) RERAE

PUAKO 210K

(IAF) ARTAQ

(IF) SUNNE

(FAF) FOXAG

ZORSA 210K

(IF) HITIR 4000 (RF REQD)

RW12R

HOSBO

MISSED APCH FIX 5 NM 305° 125° GILRO

ELEV 62 D TDZ 46

126° to RW12R

TWR

REIL Rwy 12L

HIRL Rwys 12L-30R and 12R-30L L

FOXAG

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 75).

4600 tr 126° | HOSBO | tr 124° | GILRO

1100

126°

RW12R

GP 3.00° TCH 58

See planview for multiple IF locations.

3.2 NM

CATEGORY	A	B	C	D
RNP 0.15 DA	380-⅝ 334 (400-⅝)			
RNP 0.30 DA	486-1 440 (500-1)			

AUTHORIZATION REQUIRED

SW-2, 01 FEB 2018 to 01 MAR 2018

SW-2, 01 FEB 2018 to 01 MAR 2018

ILS RWY 30L (SA CAT I & II)

NORMAN Y MINETA SAN JOSE INTL (SJC)

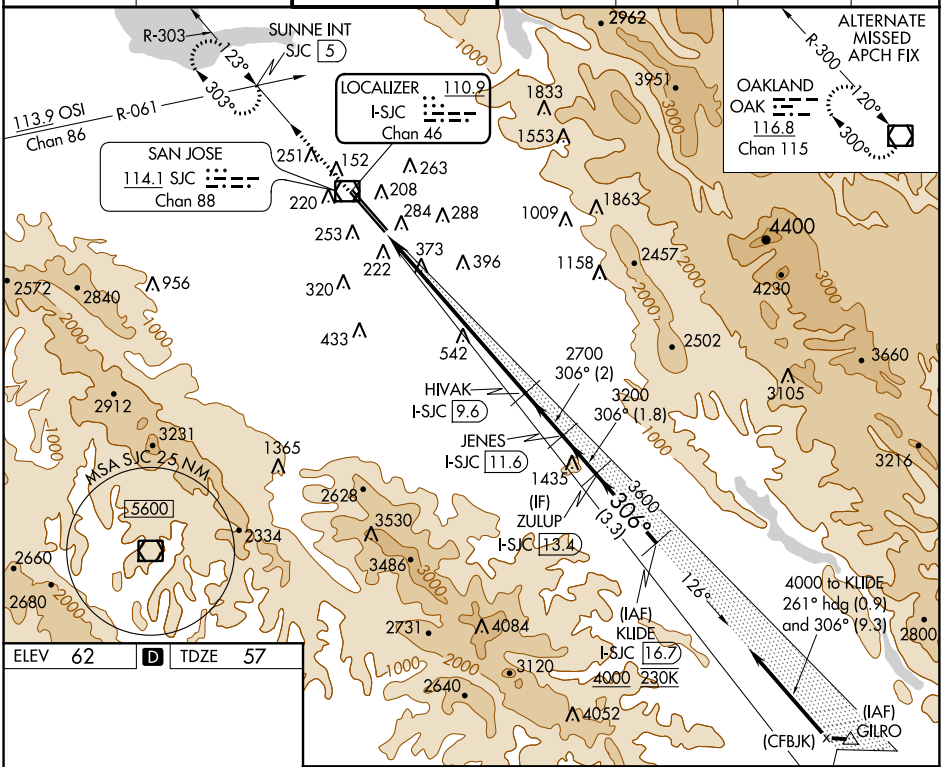
LOC/DME I-SJC	APP CRS	Rwy Idg 7614
110.9	306°	TDZE 57
Chan 46		Apt Elev 62

T DME required. SA CAT I: Requires specific OPSPEC, MSPEC, or LOA approval and use of HUD to DH. SA CAT II: Reduced lighting: requires specific OPSPEC, MSPEC, or LOA approval and use of Autoland or HUD to touchdown.
A SA CAT I /II: NA when tower closed.

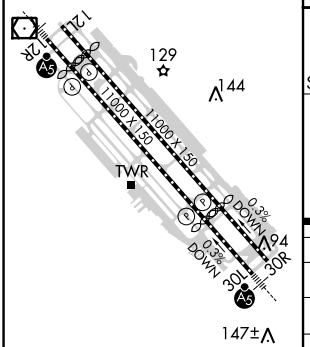
MALSR (A5)

MISSED APPROACH: Climb to 1900 on SJC VOR/DME R-303 to SUNNE INT/SJC 5 DME and hold.

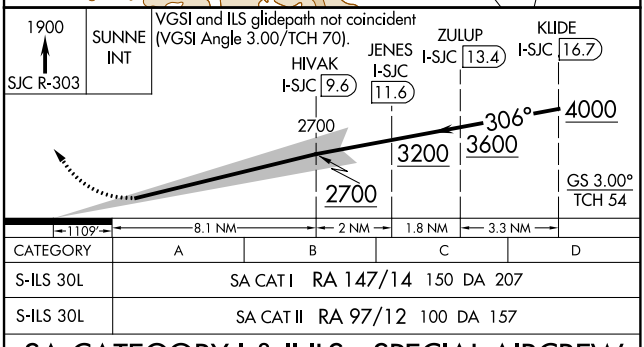
D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 57



REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L



CATEGORY	A	B	C	D
S-ILS 30L	SA CAT I RA 147/14 150 DA 207			
S-ILS 30L	SA CAT II RA 97/12 100 DA 157			

SA CATEGORY I & II ILS - SPECIAL AIRCREW AND AIRCRAFT CERTIFICATION REQUIRED

SW-2, 01 FEB 2018 to 01 MAR 2018

APP CRS	Rwy Idg	7597
306°	TDZE	55
	Apt Elev	62

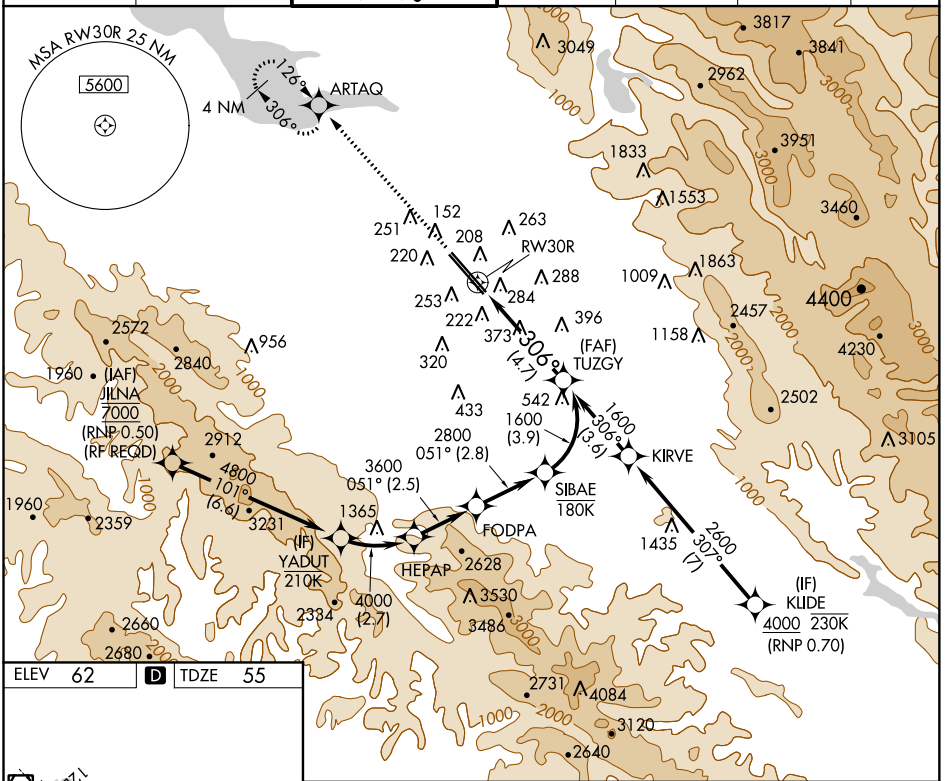
RNAV (RNP) Z RWY 30R

NORMAN Y MINETA SAN JOSE INTL (SJC)

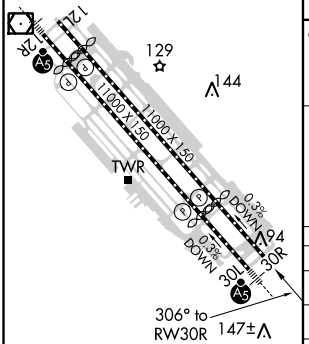
For uncompensated Baro-VNAV systems, procedure NA below -1°C (31°F) or above 54°C (130°F). GPS required.

MISSED APPROACH: Climb to 600 then climb to 2300 direct ARTAQ and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 55

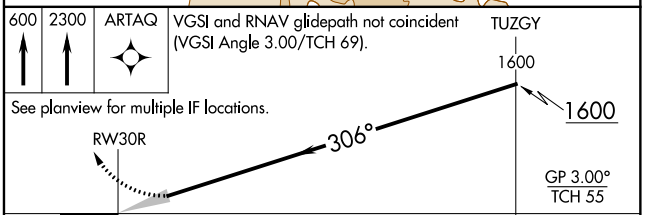


REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L

600	2300	ARTAQ

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 69).

See planview for multiple IF locations.



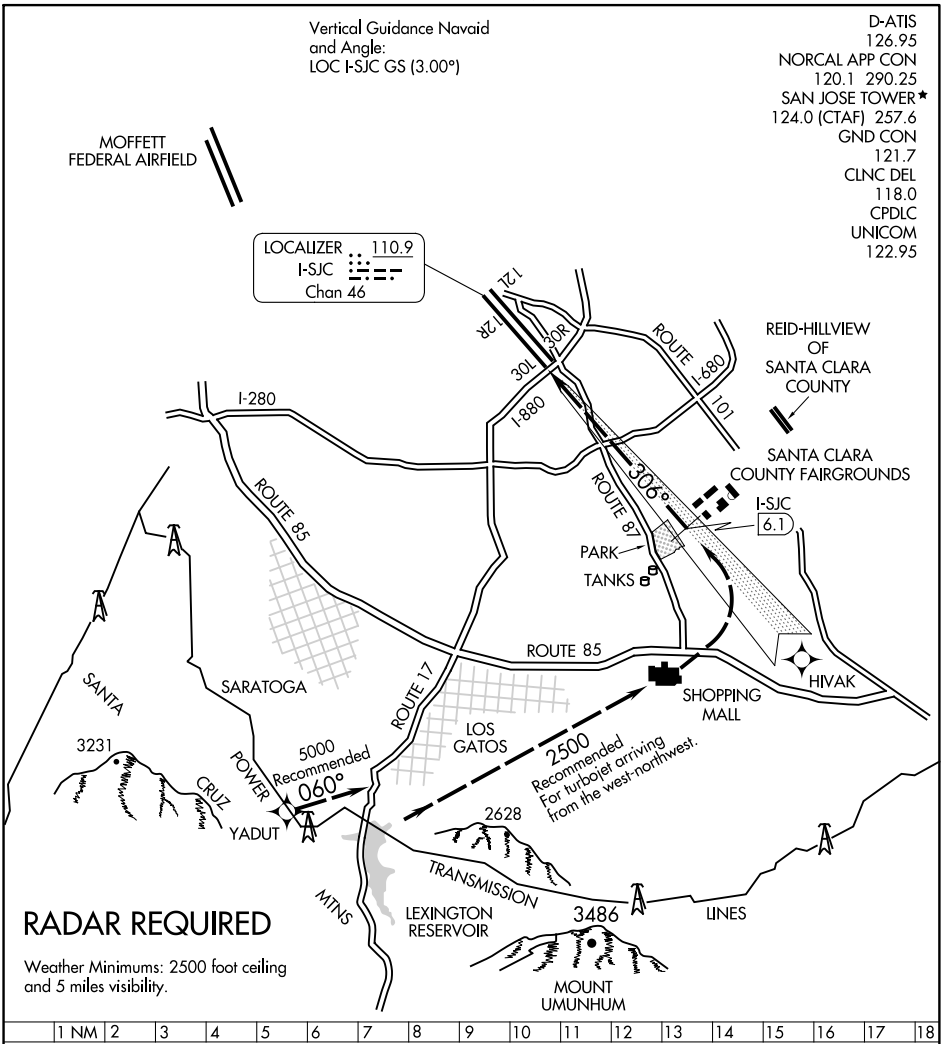
CATEGORY	A	B	C	D
RNP 0.11 DA		404-1⅛	349 (400-1⅛)	
RNP 0.20 DA		475-1⅜	420 (500-1⅜)	
RNP 0.30 DA		541-1⅝	486 (500-1⅝)	

AUTHORIZATION REQUIRED

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018

FAIRGROUNDS VISUAL RWYS 30L/R

SAN JOSE, CALIFORNIA



SW-2, 01 FEB 2018 to 01 MAR 2018

SW-2, 01 FEB 2018 to 01 MAR 2018

FAIRGROUNDS VISUAL APPROACH RUNWAYS 30L/R

When cleared for Fairgrounds Visual Approach, aircraft should turn final no closer than I-SJC 6.1 DME for noise abatement.

NOTE: Closely spaced parallel visual approaches may be in progress to Runways 30L/R. In the event of a go-around on Runway 30L, proceed straight-ahead heading 300°, or on Runway 30R, turn right heading 120°, climb and maintain 4000, or as directed by ATC.

ILS or LOC RWY 30L

NORMAN Y MINETA SAN JOSE INTL (SJC)

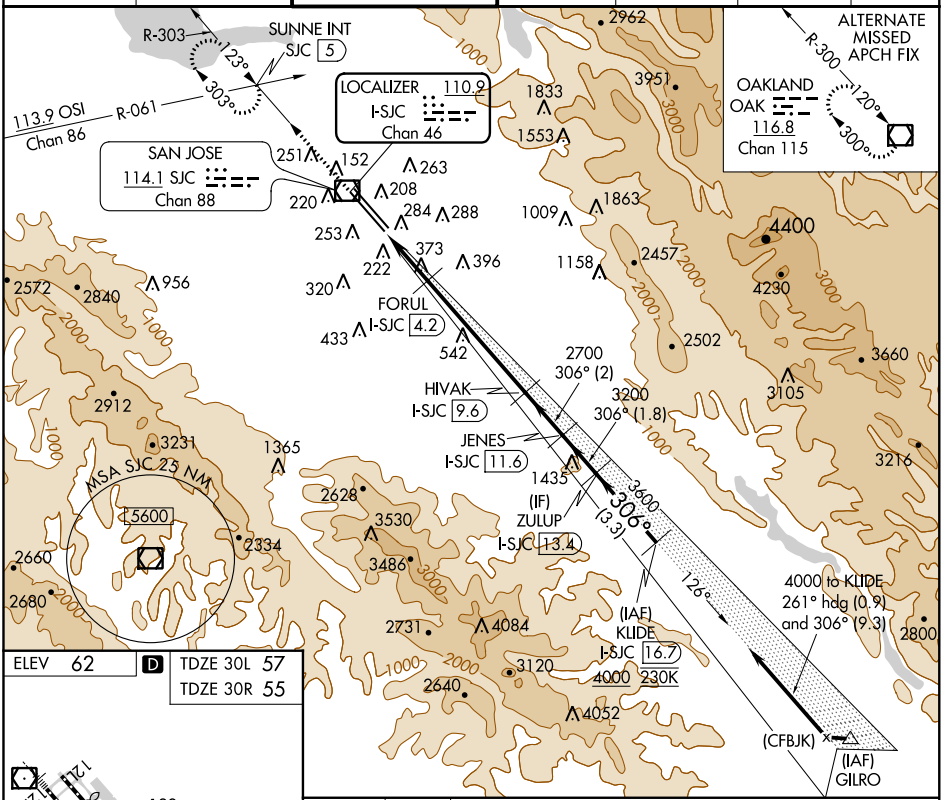
LOC/DME I-SJC	APP CRS		30L	30R
110.9	306°	Rwy Idg	7614	7597
Chan 46		TDZE	57	55
		Apt Elev	62	62

DME required.
RVR 1800 authorized with use of FD or AP or HUD to DA.

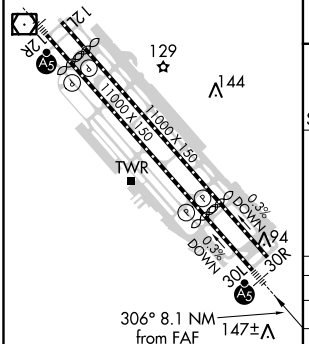
MALSR Rwy 30L

MISSED APPROACH: Climb to 1900 on SJC VOR/DME R-303 to SUNNE INT/SJC 5 DME and hold.

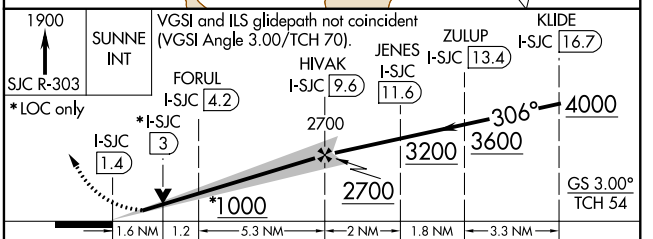
D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 30L 57
		TDZE 30R 55



REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L



CATEGORY	A	B	C	D
S-ILS 30L #	257/24 200 (200-½)			
S-LOC 30L	640/24 583 (600-½)		640-1¼ 583 (600-1¼)	
SIDESTEP 30R	640-1 585 (600-1)		640-1½ 585 (600-1½)	640-2 585 (600-2)

SW-2, 01 FEB 2018 to 01 MAR 2018

WAAS CH 72901 W30B	APP CRS 306°	Rwy Idg 7597 TDZE 55 Apt Elev 62

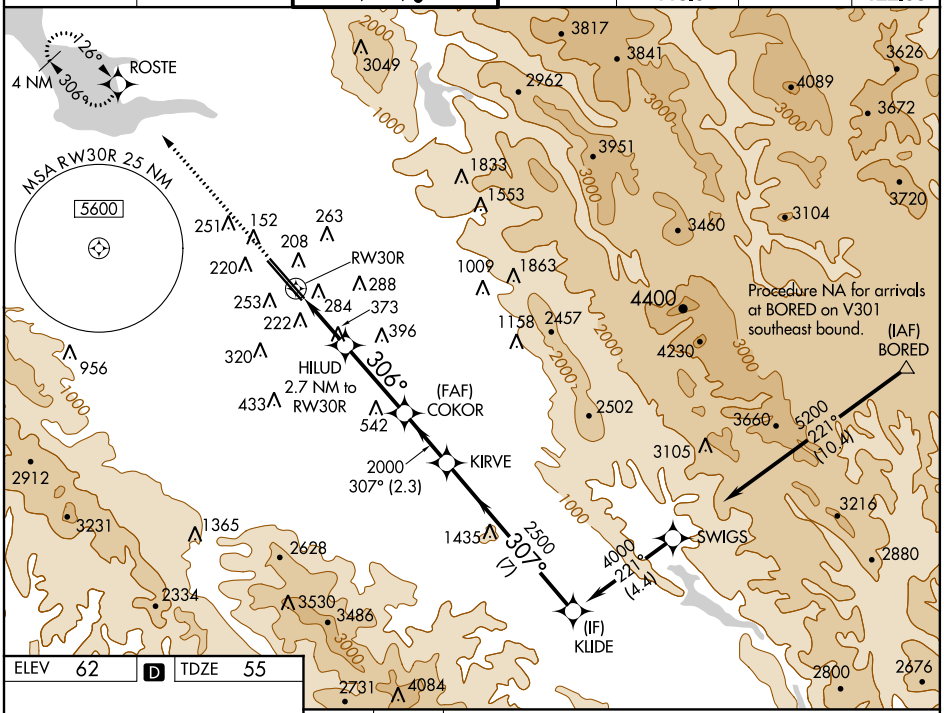
RNAV (GPS) Y RWY 30R

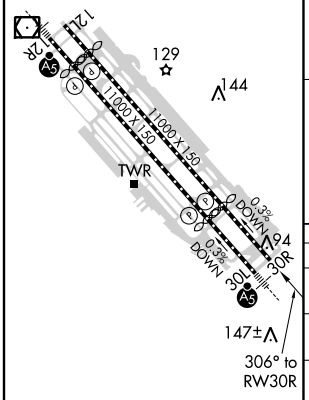
NORMAN Y MINETA SAN JOSE INTL (SJC)

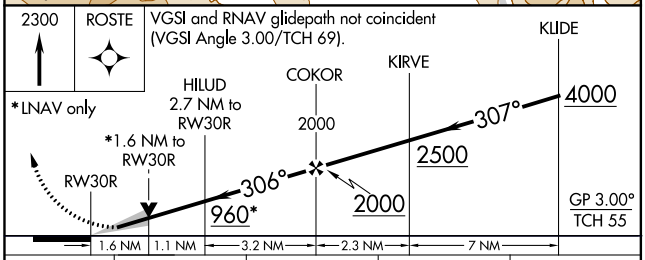
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). DME/DME RNP-0.3 NA.

MISSED APPROACH: Climb to 2300 direct ROSTE and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95







CATEGORY	A	B	C	D
LPV DA	255-¾ 200 (200-¾)			
LNAV/VNAV DA	541-1⅝ 486 (500-1⅝)			
LNAV MDA	640-1 585 (600-1)		640-1¾ 585 (600-1¾)	
C CIRCLING	640-1 578 (600-1)	700-1 638 (700-1)	700-1¾ 638 (700-1¾)	700-2 638 (700-2)

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RNAV (GPS) Y RWY 30L

NORMAN Y MINETA SAN JOSE INTL (SJC)

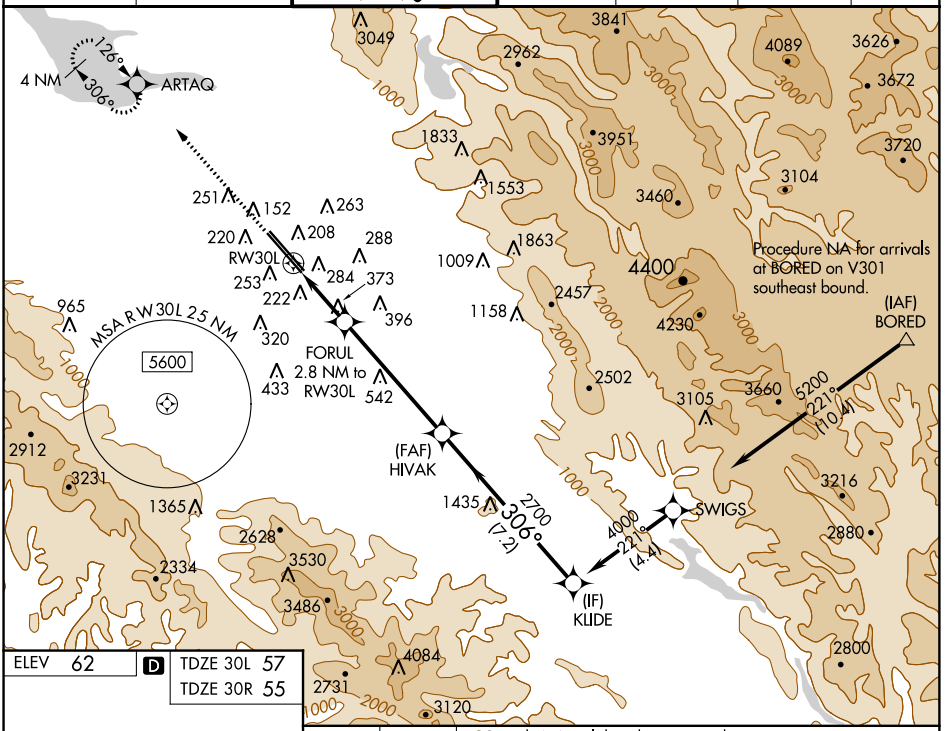
WAAS CH 97306 W30A	APP CRS 306°		30L	30R
		Rwy Idg	7614	7597
		TDZE	57	55
		Apt Elev	62	62

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F).
DME/DME RNP-0.3 NA.
RVR 1800 authorized with use of FD or AP or HUD to DA.

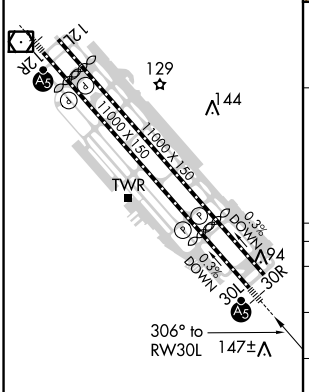
MALSR Rwy 30L

MISSED APPROACH: Climb to 2300 direct ARTAQ and hold.

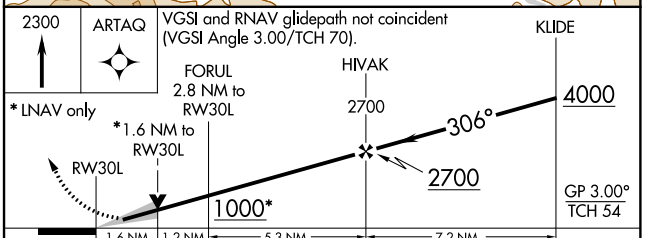
D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 30L 57
		TDZE 30R 55



REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L



CATEGORY	A	B	C	D
LPV DA #	257/24 200 (200-½)			
LNAV/VNAV DA	540/60 483 (500-1¼)			
LNAV MDA	640/24 583 (600-½)		640-1¼ 583 (600-1¼)	
SIDESTEP 30R	640-1 585 (600-1)			

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018

WAAS	APP CRS	Rwy Idg	8833
CH 69501	126°	TDZE	44
W12B		Apt Elev	62

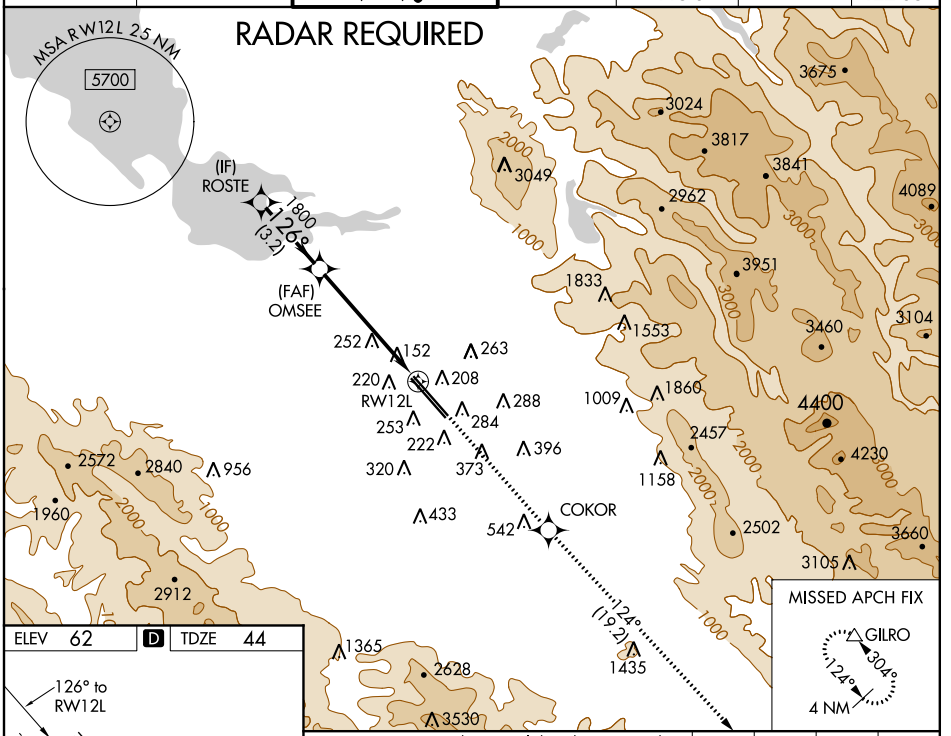
RNAV (GPS) Y RWY 12L

NORMAN Y MINETA SAN JOSE INTL (SJC)

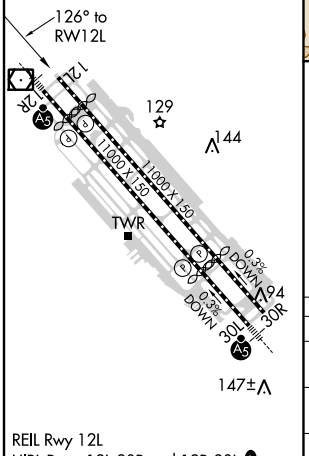
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). DME/DME RNP- 0.3 NA.

MISSED APPROACH: Climb to 4600 direct COKOR and on track 124° to GILRO and hold.

D-ATIS	NORCAL APP CON	SAN JOSE TOWER ★	GND CON	CLNC DEL	CPDLC	UNICOM
126.95	120.1 290.25	124.0 (CTAF) L 257.6	121.7	118.0		122.95



ELEV 62	D	TDZE 44

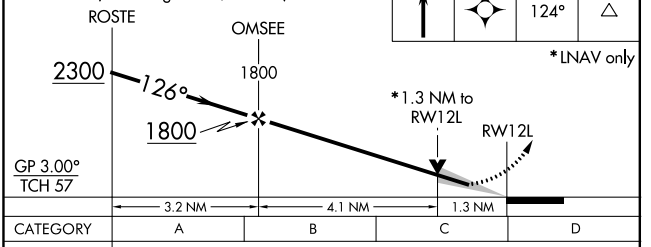


REIL Rwy 12L
HIRL Rwys 12L-30R and 12R-30L L

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 70).

4600	COKOR	tr 124°	GILRO

*LNAV only



CATEGORY	A	B	C	D
LPV DA	294-¾ 250 (300-¾)			
LNAV/VNAV DA	341-1 297 (300-1)			
LNAV MDA	520-1 476 (500-1)		520-1⅜ 476 (500-1⅜)	

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018

IFR TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

Civil Airports and Selected Military Airports

ALL USERS: Airports that have Departure Procedures (DPs) designed specifically to assist pilots in avoiding obstacles during the climb to the minimum enroute altitude, and/or airports that have civil IFR takeoff minimums other than standard, are listed below. Takeoff Minimums and Departure Procedures apply to all runways unless otherwise specified. An entry may also be listed that contains only Takeoff Obstacle Notes. Altitudes, unless otherwise indicated, are minimum altitudes in MSL.

DPs specifically designed for obstacle avoidance are referred to as Obstacle Departure Procedures (ODPs) and are textually described below, or published separately as a graphic procedure. If the ODP is published as a graphic procedure, its name will be listed below, and it can be found in either this volume (civil), or the applicable military volume, as appropriate. Users will recognize graphic obstacle DPs by the term "(OBSTACLE)" included in the procedure title; e.g., TETON TWO (OBSTACLE). If not specifically assigned an ODP, SID, or radar vector as part of an IFR clearance, an ODP may be required to be flown for obstacle clearance, even though not specifically stated in the IFR clearance. When doing so in this manner, ATC should be informed when the ODP being used contains a specified route to be flown, restrictions before turning, and/or altitude restrictions.

Some ODPs, which are established solely for obstacle avoidance, require a climb in visual conditions to cross the airport, a fix, or a NAVAID in a specified direction, at or above a specified altitude. These procedures are called Visual Climb Over Airport (VCOA). To ensure safe and efficient operations, the pilot must verbally request approval from ATC to fly the VCOA when requesting their IFR clearance.

At some locations where an ODP has been established, a diverse vector area (DVA) may be created to allow radar vectors to be used in lieu of an ODP. DVA information will state that headings will be as assigned by ATC and climb gradients, when applicable, will be published immediately following the specified departure procedure.

Graphic DPs designed by ATC to standardize traffic flows, ensure aircraft separation and enhance capacity are referred to as "Standard Instrument Departures (SIDs)". SIDs also provide obstacle clearance and are published under the appropriate airport section. ATC clearance must be received prior to flying a SID.

CIVIL USERS NOTE: Title 14 Code of Federal Regulations Part 91 prescribes standard takeoff rules and establishes takeoff minimums for certain operators as follows: (1) For aircraft, other than helicopters, having two engines or less – one statute mile visibility. (2) For aircraft having more than two engines – one-half statute mile visibility. (3) For helicopters – one-half statute mile visibility. These standard minima apply in the absence of any different minima listed below.

MILITARY USERS NOTE: Civil (nonstandard) takeoff minima are published below. For military takeoff minima, refer to appropriate service directives.

01 FEB 2018 to 01 MAR 2018

NAME	TAKEOFF MINIMUMS
ALTURAS, CA	
ALTURAS MUNI (AAT)	
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES	
AMDT 2 08101 (FAA)	
DEPARTURE PROCEDURE: Use BACHS DEPARTURE.	
AMEDEE AAF (KAHC),	
HERLONG, CA	
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES	
AMDT 1, 09239	
Rwy 8, 26: 4000-3 for climb in visual conditions.	
Rwy 8, 26: Cross Amedee AAF at or above 7900 before proceeding on course.	

SAN JOSE, CA

NORMAN Y MINETA SAN JOSE INTL (SJC)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

AMDT 6C 16203 (FAA)

TAKEOFF MINIMUMS: **Rwy12 L/R,** 400-2½ or std. w/min. climb of 261' per NM to 500.

DEPARTURE PROCEDURE: **Rwy 12L/R,** climbing right turn to 2000 on Heading 318° and on OAK R-135 to OAK VOR/DME before proceeding on course. **Rwy 30L/R,** climb via heading 315° to 2000, then via OAK R-132 to OAK VOR/DME before proceeding on course.

TAKEOFF OBSTACLE NOTES: **Rwy 12L,** fence 156' from DER, 57' left of centerline, 14' AGL/73' MSL. Ol on blast fence, 156' from DER, 57' left of centerline, 73' MSL. Pole 191' from DER, 81' left of centerline, 34' AGL/93' MSL. Trees beginning 286' from DER, 161' right of centerline, up to 107' MSL. T-L twr, pole beginning 466' from DER, 228' left of centerline, up to 46' AGL/105' MSL. Tree 1281' from DER, 529' left of centerline, 117' MSL. T-L twr 1731' from DER, 729' left of centerline, 86' AGL/156' MSL. Tree 1799' from DER, 273' left of centerline, 144' MSL. Tree 1887' from DER, 68' right of centerline, 124' MSL. T-L twr 3047' from DER, 543' left of centerline, 73' AGL/147' MSL. Building 1.2 NM from DER, 630' left of centerline, 170' AGL/250' MSL. Building 1.3 NM from DER, 1051' left of centerline, 265' MSL. Building 1.3 NM from DER, 445' left of centerline, 217' AGL/301' MSL. Building 1.3 NM from DER, 51' left of centerline, 228' AGL/309' MSL. Buildings beginning 1.3 NM from DER, 81' left of centerline, up to 312' MSL. Building 1.5 NM from DER, 975' left of centerline, 262' AGL/351' MSL. Building 1.5 NM from DER, 1591' left of centerline, 268' AGL/358' MSL. Buildings beginning 1.5 NM from DER, 82' left of centerline, up to 365' MSL. Buildings beginning 1.6 NM from DER, 280' right of centerline, up to 346' MSL. Buildings beginning 1.6 NM from DER, 350' right of centerline, up to 260' AGL/350' MSL. Building 1.6 NM from DER, 1977' left of centerline, 286' AGL/368' MSL. Buildings beginning 1.6 NM from DER, 640' left of centerline, up to 274' AGL/370' MSL. Building 1.9 NM from DER, 313' right of centerline, 284' AGL/373' MSL. Building 1.9 NM from DER, 282' right of centerline, 281' AGL/372' MSL. **Rwy 12R,** ol on loc 10' from DER, on centerline, 68' MSL. Ol on blast fence 45' from DER, 115' right of centerline, 75' MSL. Fence 45' from DER, 115' right of centerline, 14' AGL/75' MSL. Tree 269' from DER, 149' right of centerline, 100' MSL. Trees, beginning 285' from DER, 193' left of centerline, up to 107' MSL. Rd 338' from DER, 2' right of centerline, 82' MSL. Tree, pole beginning 519 ' from DER, 279' right of centerline, up to 122' MSL. Trees beginning 1798' from DER, 631' left of centerline, up to 144' MSL. Poles beginning 1948' from DER, 688' right of centerline, up to 59' AGL/128 ' MSL. Tree 2604' from DER, 551' right of centerline, 133' MSL. T-L twr 3046' from DER, 1243' left of centerline, 73' AGL/147' MSL. Tree 3079' from DER, 873' right of centerline, 142' MSL. Building 1.3 NM from DER, 1145' left of centerline, 217' AGL/301' MSL. Building 1.3 NM from DER, 751' left of centerline, 228' AGL/309' MSL. Buildings beginning 1.3 NM from DER, 781' left of centerline, up to 312' MSL. Building 1.5 NM from DER, 1676' left of centerline, 262' AGL/351' MSL. Building 1.5 NM from DER, 2291' left of centerline, 268' AGL/358' MSL. Buildings beginning 1.5 NM from DER, 134' left of centerline, up to 365' MSL. Building 1.6 NM from DER, 2678' left of centerline, 286' AGL/368' MSL. Buildings beginning 1.6 NM from DER, 1340' left of centerline, up to 274' AGL/370' MSL. Building 1.6 NM from DER, 345' right of centerline, 320' MSL. Building 1.9 NM from DER, 386' left of centerline, 284' AGL/373' MSL. Building 1.9 NM from DER, 417' left of centerline, 281' AGL/372' MSL.

SAN JOSE, CA (CON'T)

NORMAN Y MINETA SAN JOSE INTL (SJC) (CON'T)

Rwy 30L, poles beginning 166' from DER, 494' left of centerline, up to 69' MSL. NAVAID 174' from DER, on centerline, 7' AGL/44' MSL. Fence 184' from DER, 369' right of centerline, 15' AGL/51' MSL. Tree 308' from DER, 424' left of centerline, 71' MSL. Tree, pole beginning 473' from DER, 118' right of centerline, up to 72' MSL. Poles beginning 711' from DER, 544' right of centerline, up to 75' MSL. NAVAID 782' from DER, 350' left of centerline, 47' AGL/83' MSL. Pole 1227' from DER, 607' left of centerline, 48' AGL/86' MSL. Pole 1315' from DER, 548' right of centerline, 49' AGL/80' MSL. Pole 1329' from DER, 743' left of centerline, 57' AGL/94' MSL. Tree 1852' from DER, 179' right of centerline, 85' MSL. Tree 2561' from DER, 738' right of centerline, 108' MSL. Trmsn twr, t-l twr, beginning 2616' from DER, 1130' left of centerline, up to 120' MSL. Pole 2806' from DER, 1215' left of centerline, 135' MSL. Pole 2897' from DER, 614' left of centerline, 113' MSL. Pole, t-l twr, beginning 4145' from DER, 1329' left of centerline, up to 152' MSL. **Rwy 30R**, pole 100' from DER, 449' right of centerline, 40' AGL/75' MSL. Fence 138' from DER 243' right of centerline, 13' AGL/47' MSL. Fence 184' from DER, 329' left of centerline, 15' AGL/51' MSL. Tree 411' from DER, 37' left of centerline, 70' MSL. Tree 473' from DER, 319' left of centerline, 72' MSL. Pole 526' from DER, 580' left of centerline, 26' AGL/61' MSL. Pole 657' from DER, 369' right of centerline, 53' AGL/84' MSL. Vehicle on rd beginning 688' from DER, on centerline, up to 68' MSL. Poles beginning 711' from DER, 57' left of centerline, up to 25' AGL/75' MSL. Pole 961' from DER, 133' right of centerline, 56' AGL/88' MSL. Pole 1315' from DER, 150' left of centerline, 49' AGL/80' MSL. Tree 1852' from DER, 519' left of centerline, 85' MSL. Tree 2561' from DER, 39' right of centerline, 108' MSL. Building 3424' from DER, 146' right of centerline, 96' AGL/124' MSL.

DIVERSE VECTOR AREA (RADAR VECTORS)

AMDT 1 16203(FAA)

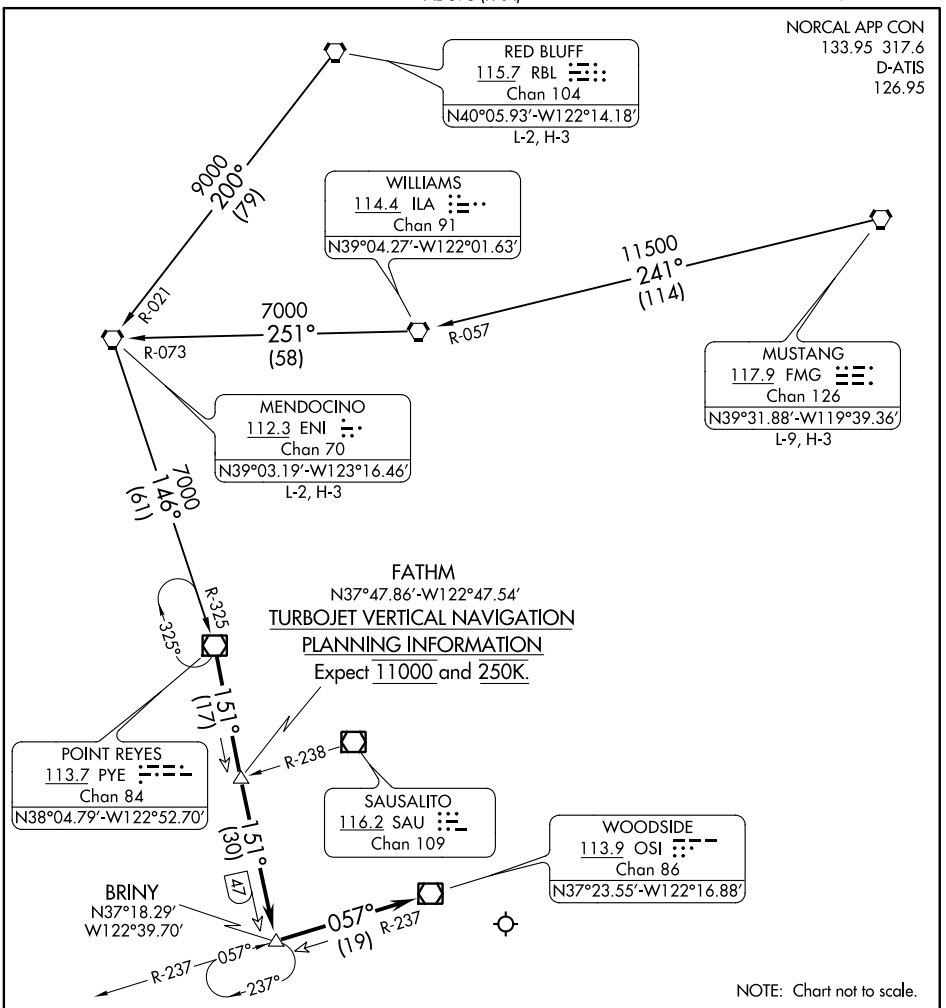
Rwy 12L/12R, heading as assigned by ATC; requires minimum climb of 470' per NM to 5600. **Rwys 30L/30R,** heading as assigned by ATC; requires minimum climb of 490' per NM to 5600 and do not exceed 210 KTS until established on assigned heading.

REID-HILLVIEW OF SANTA CLARA COUNTY (RHV)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

TAKEOFF MINIMUMS: **Rwys 13L, 13R,** NA - environmental.

DEPARTURE PROCEDURE: Use DECOT DEPARTURE.



ARRIVAL ROUTE DESCRIPTION

MENDOCINO TRANSITION (ENI.BRINY2): From over ENI VORTAC via ENI R-146 and PYE R-325 to PYE VOR/DME. Thence . . . .

MUSTANG TRANSITION (FMG.BRINY2): From over FMG VORTAC via FMG R-241 to ILA VORTAC then via ILA R-251 to ENI VORTAC, then via ENI R-146 to PYE VOR/DME. Thence . . . .

RED BLUFF TRANSITION (RBL.BRINY2): From over RBL VORTAC via RBL R-200 and ENI R-146 to PYE VOR/DME. Thence . . . .

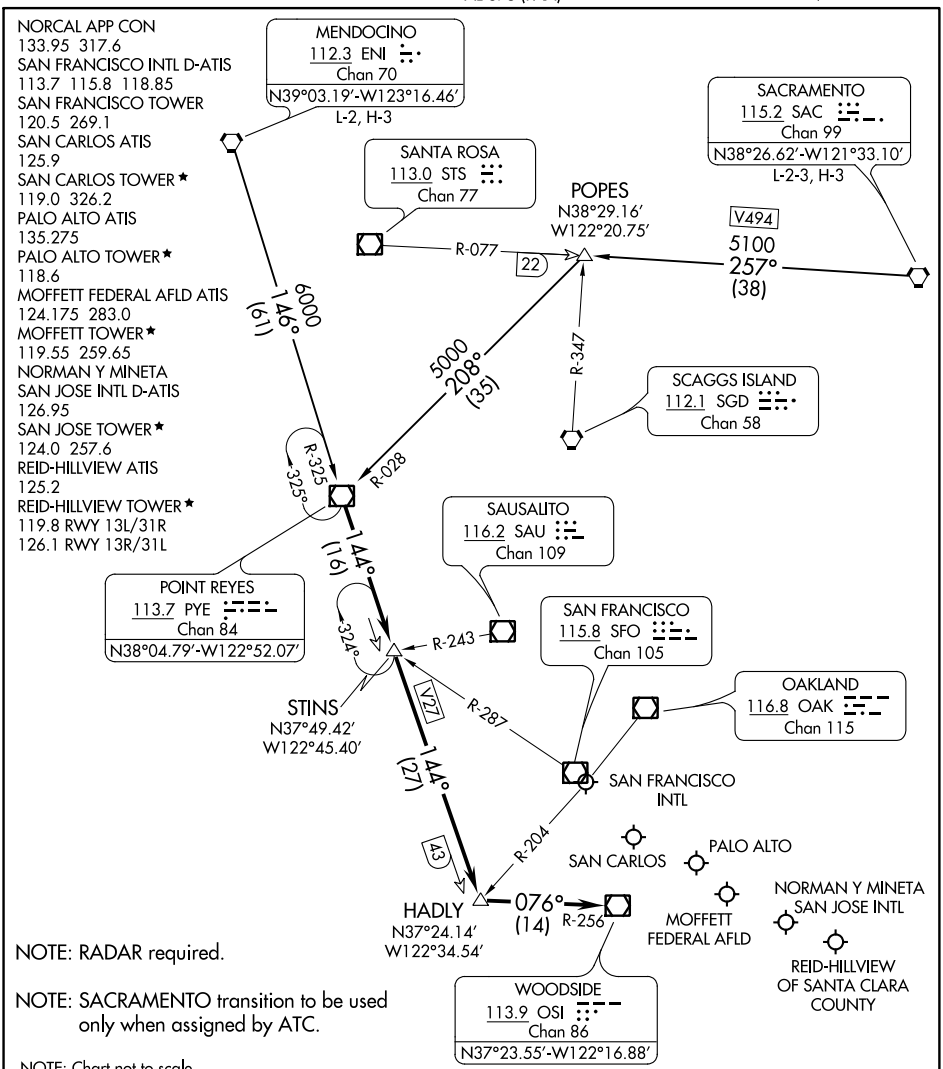
. . . . From over PYE VOR/DME via PYE R-151 to BRINY INT/DME, then via OSI R-237 to OSI VOR/DME. Expect RADAR vectors to Rwy 12R final approach course.

SW-2, 01 FEB 2018 to 01 MAR 2018

POINT REYES THREE ARRIVAL

AL-375 (FAA)

SAN FRANCISCO, CALIFORNIA



NOTE: RADAR required.

NOTE: SACRAMENTO transition to be used only when assigned by ATC.

NOTE: Chart not to scale.

ARRIVAL ROUTE DESCRIPTION

MENDOCINO TRANSITION (ENI.PYE3): From over ENI VORTAC on ENI R-146 and PYE R-325 to PYE VOR/DME. Thence. . . .

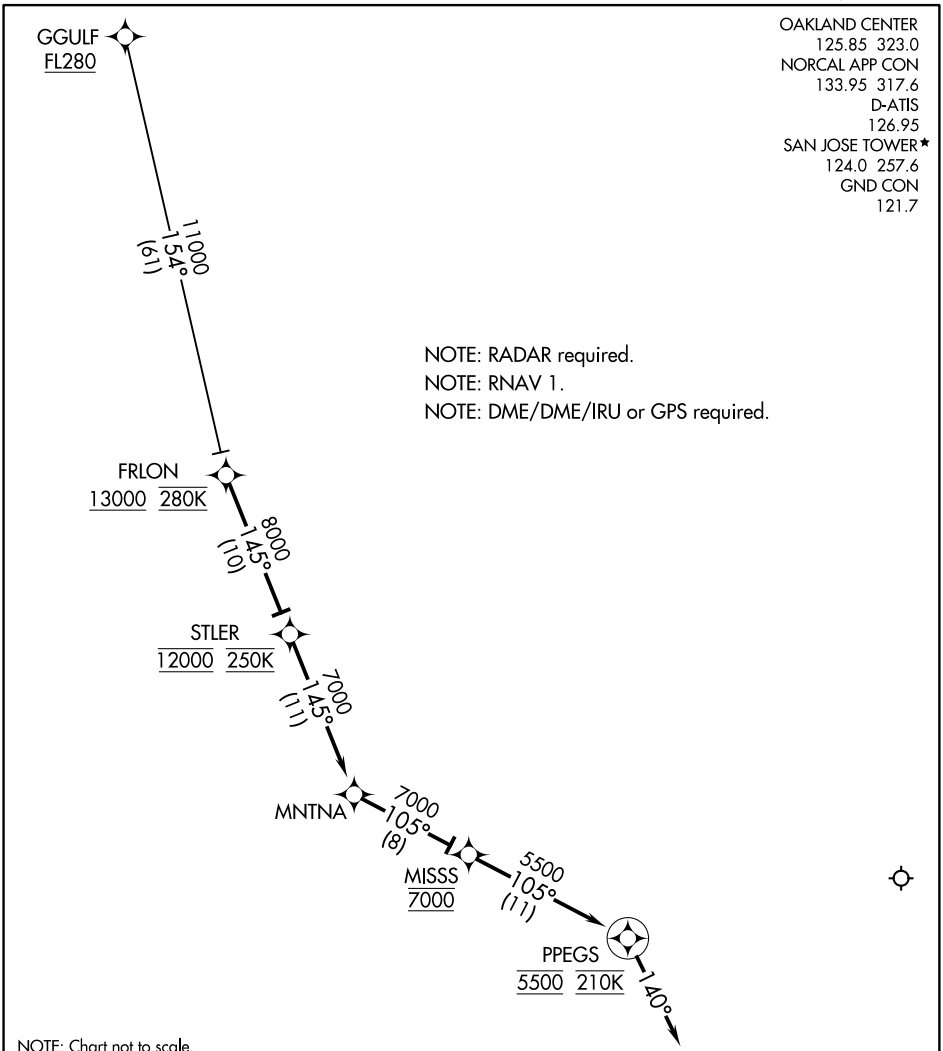
SACRAMENTO TRANSITION (SAC.PYE3): From over SAC VORTAC on SAC R-257 and PYE R-028 to PYE VOR/DME. Thence. . . .

. . . .From over PYE VOR/DME on PYE R-144 to HADLY, then on OSI R-256 to OSI VOR/DME. Expect RADAR vectors to final approach course.

POINT REYES THREE ARRIVAL

SAN FRANCISCO, CALIFORNIA

SW-2, 01 FEB 2018 to 01 MAR 2018



SW-2, 01 FEB 2018 to 01 MAR 2018

ARRIVAL ROUTE DESCRIPTION

GGULF TRANSITION (GGULF.FRLON2)

From FRLON on track 145° to cross STLER at 12000 and at 250K, then on track 145° to MNTNA, then on track 105° to cross MISSS at 7000, then on track 105° to cross PPEGS at 5500 and at 210K, then on track 140°. Expect RADAR vectors to final approach course.

RAZRR FOUR ARRIVAL (RNAV) Arrival Routes

(STUBL.RAZRR4) 21JUL16

NORMAN Y MINETA SAN JOSE INTL (SJC)

SAN JOSE, CALIFORNIA

(STUBL.RAZRR4) 17173

RAZRR FOUR ARRIVAL (RNAV) Arrival Routes

NORMAN Y MINETA SAN JOSE INTL (SJC)

SAN JOSE, CALIFORNIA

AL-693 (FAA)

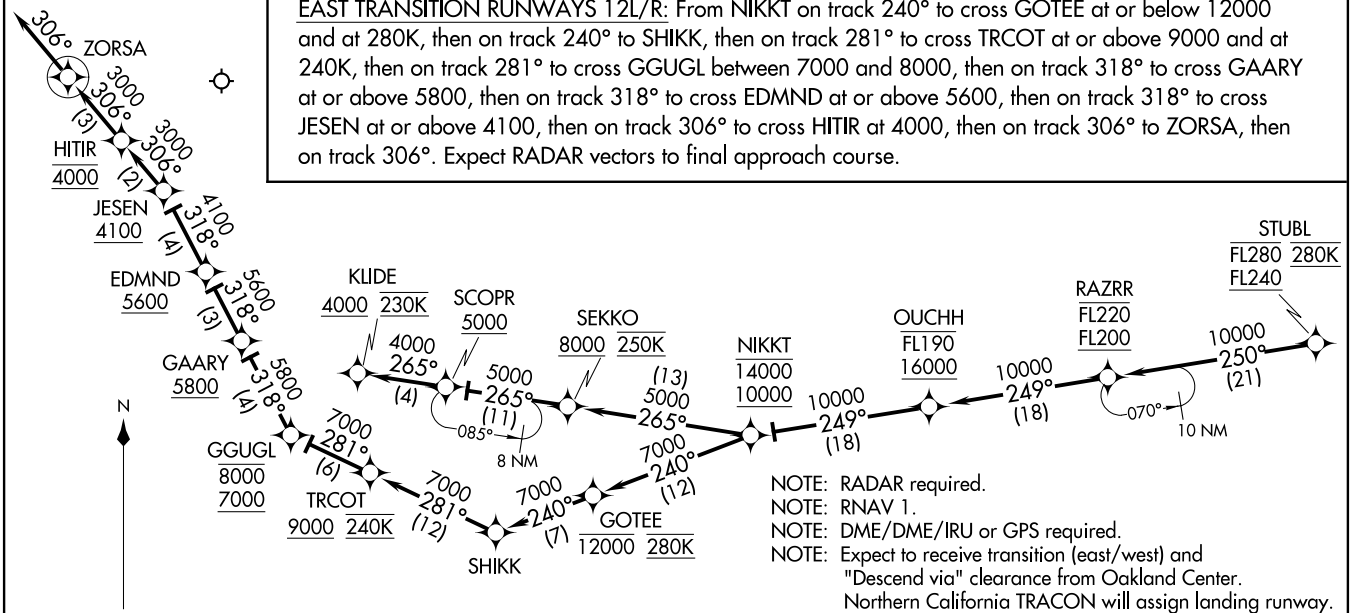
OAKLAND CENTER
121.25 327.0
NORCAL APP CON
126.475 317.775
D-ATIS
126.95
SAN JOSE TOWER★
124.0 257.6
GND CON
121.7

ARRIVAL ROUTE DESCRIPTION

From STUBL on track 250° to cross RAZRR between FL200 and FL220, then on track 249° to cross OUCHH between 16000 and FL190, then on track 249° to cross NIKKT between 10000 and 14000.

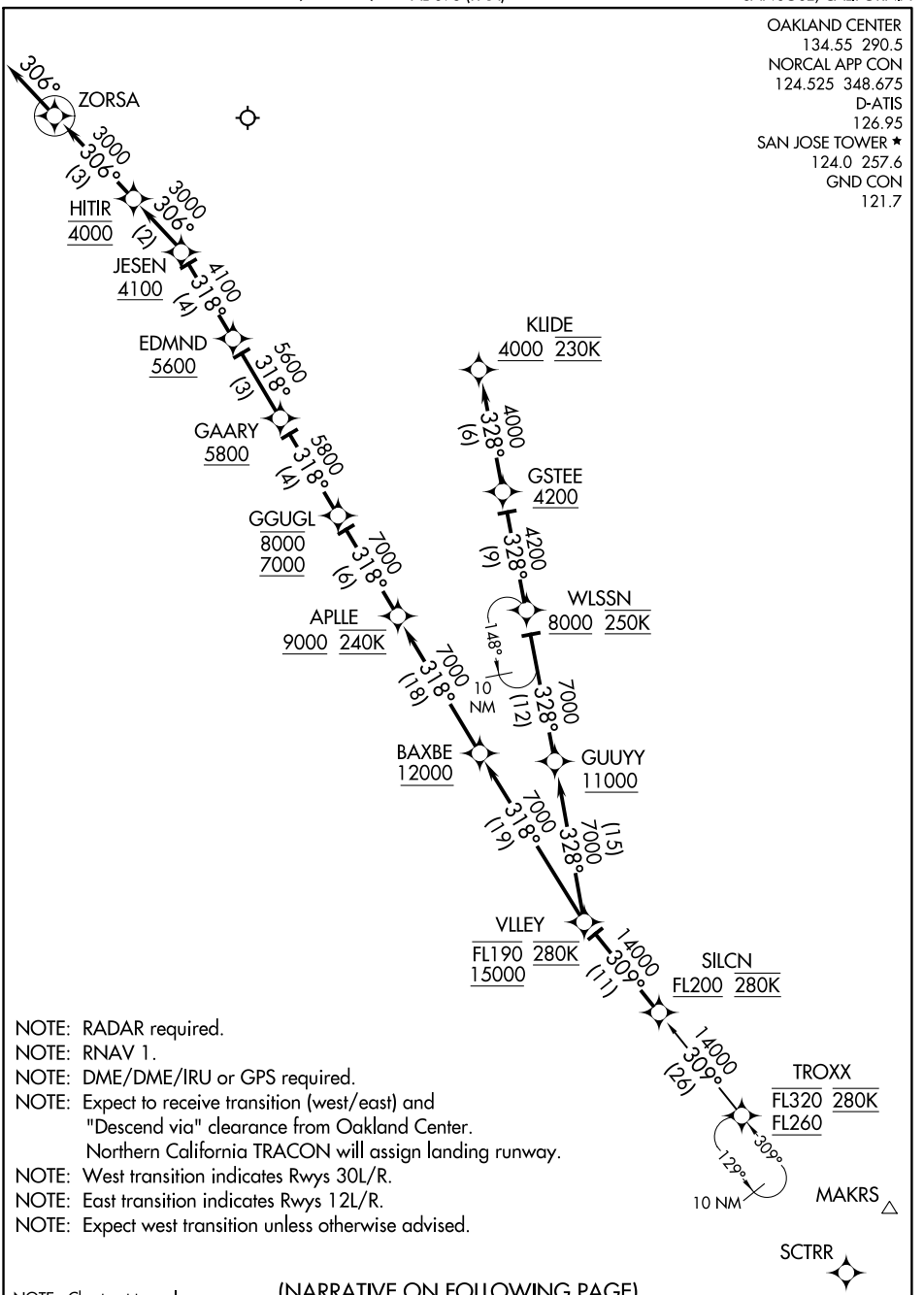
WEST TRANSITION RUNWAYS 30L/R: From NIKKT on track 265° to cross SEKKO at or above 8000 and at 250K, then on track 265° to cross SCOPR at or above 5000, then on track 265° to cross KLIDE at or above 4000 and at 230K. Expect assigned instrument approach procedure.

EAST TRANSITION RUNWAYS 12L/R: From NIKKT on track 240° to cross GOTEE at or below 12000 and at 280K, then on track 240° to SHIKK, then on track 281° to cross TRCOT at or above 9000 and at 240K, then on track 281° to cross GGUGL between 7000 and 8000, then on track 318° to cross GAARY at or above 5800, then on track 318° to cross EDMND at or above 5600, then on track 318° to cross JESEN at or above 4100, then on track 306° to cross HITIR at 4000, then on track 306° to ZORSA, then on track 306°. Expect RADAR vectors to final approach course.



NOTE: Chart not to scale.

NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect to receive transition (east/west) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwys 30L/R.
NOTE: East transition indicates Rwys 12L/R.
NOTE: Expect west transition unless otherwise advised.



NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect to receive transition (west/east) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwys 30L/R.
NOTE: East transition indicates Rwys 12L/R.
NOTE: Expect west transition unless otherwise advised.

NOTE: Chart not to scale.

(NARRATIVE ON FOLLOWING PAGE)

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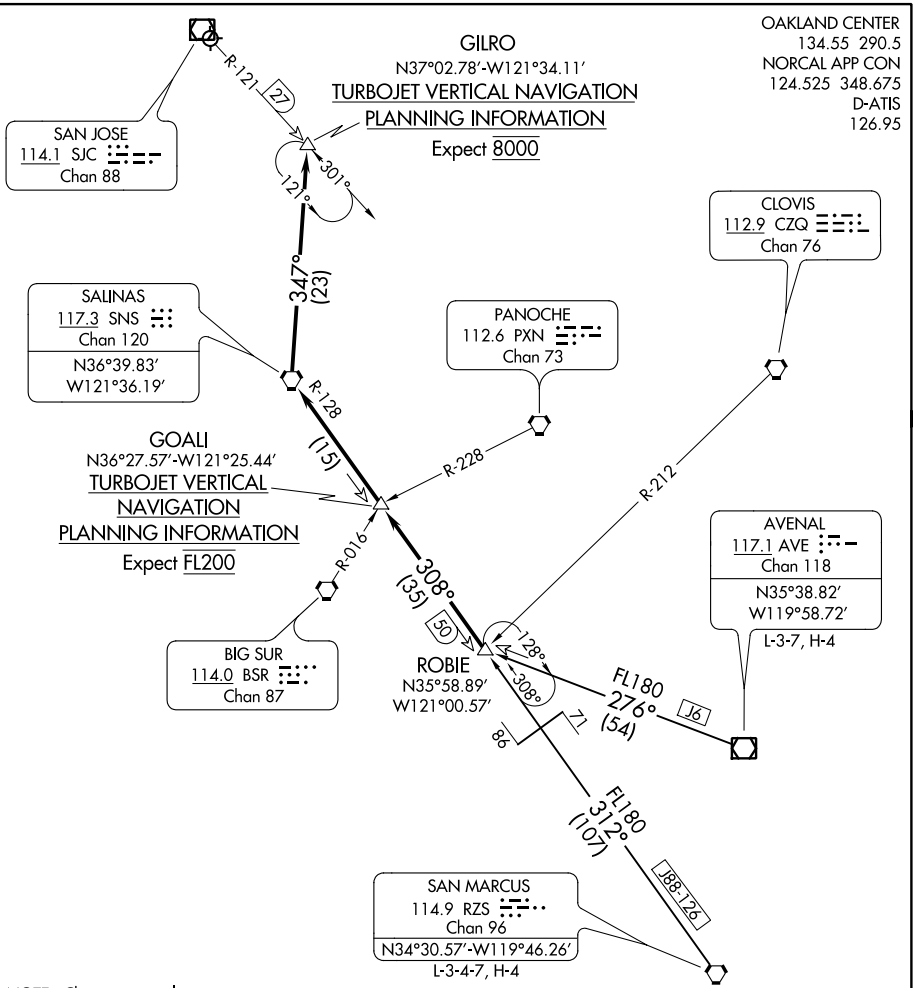
SW-2, 01 FEB 2018 to 01 MAR 2018



NOTE: Chart not to scale.

ARRIVAL ROUTE DESCRIPTION

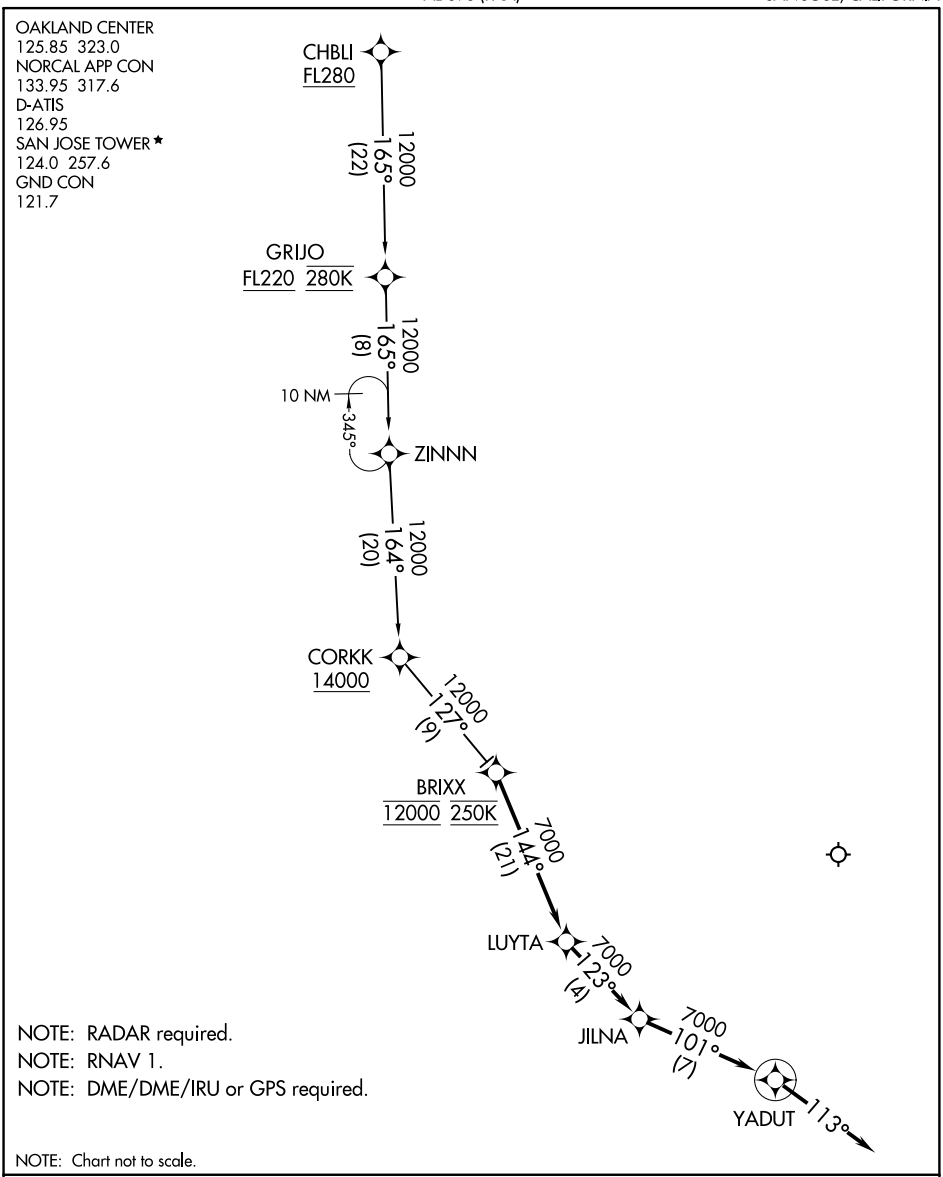
AVENAL TRANSITION (AVE.ROBIE4): From over AVE VOR/DME on AVE R-276 to ROBIE INT. Thence . . . .

SAN MARCUS TRANSITION (RZS.ROBIE4): From over RZS VORTAC on RZS R-312 and SNS R-128 to ROBIE INT. Thence . . . .

. . . . From over ROBIE INT via SNS R-128 to SNS VORTAC. Then via SNS R-347 to GILRO INT/DME fix. Expect the ILS RWY 30L approach.

FOR RUNWAY 12 OPERATIONS: Expect routing via SNS direct SJC VOR/DME and RADAR vectors to final approach course.

SW-2, 01 FEB 2018 to 01 MAR 2018
SW-2, 01 FEB 2018 to 01 MAR 2018



SW-2, 01 FEB 2018 to 01 MAR 2018

ARRIVAL ROUTE DESCRIPTION

CHBLI TRANSITION (CHBLI.BRIXX2)

From BRIXX on track 144° to LUYTA, then on track 123° to JILNA, then on track 101° to YADUT, then on track 113°. Expect RADAR vectors to final approach course.

AL-693 (FAA)

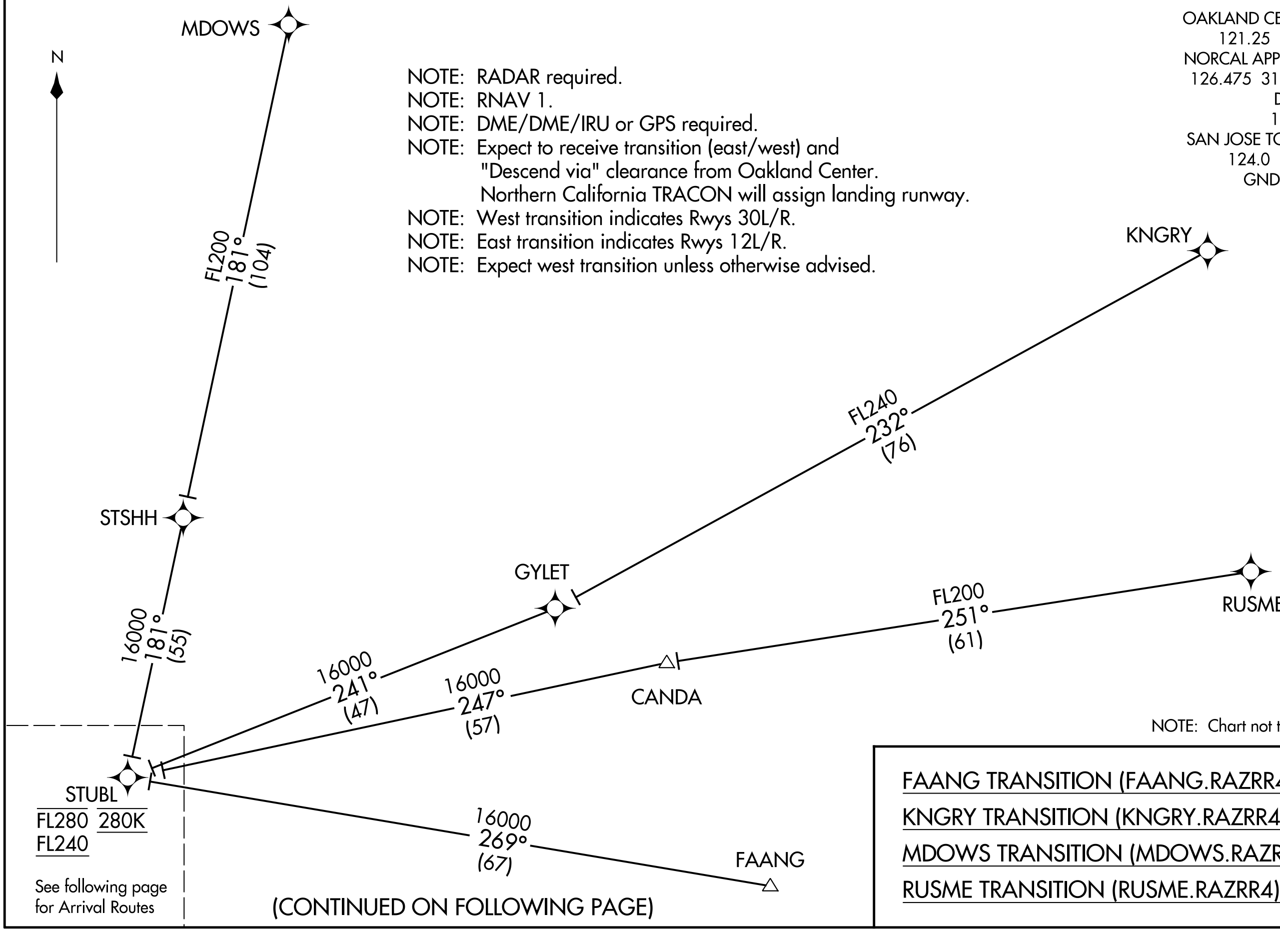
RAZRR FOUR ARRIVAL (RNAV) Transition Routes
(STUBL.RAZRR4) 21JUL16

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

RAZRR FOUR ARRIVAL (RNAV) Transition Routes
(STUBL.RAZRR4) 17173
NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

OAKLAND CENTER
121.25 327.0
NORCAL APP CON
126.475 317.775
D-ATIS
126.95
SAN JOSE TOWER★
124.0 257.6
GND CON
121.7

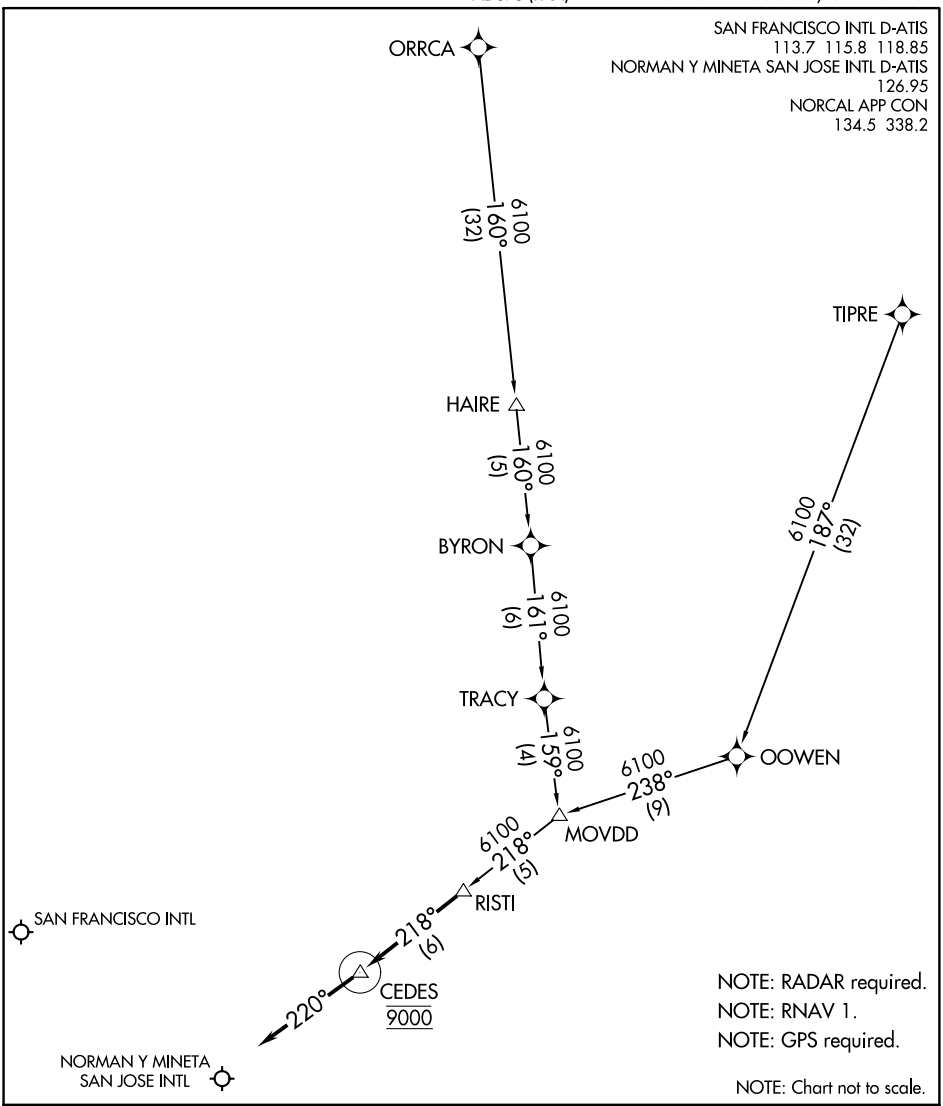
NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Expect to receive transition (east/west) and "Descend via" clearance from Oakland Center. Northern California TRACON will assign landing runway.
NOTE: West transition indicates Rwys 30L/R.
NOTE: East transition indicates Rwys 12L/R.
NOTE: Expect west transition unless otherwise advised.



NOTE: Chart not to scale.

(CONTINUED ON FOLLOWING PAGE)

FAANG TRANSITION (FAANG.RAZRR4)
KNGRY TRANSITION (KNGRY.RAZRR4)
MDOWS TRANSITION (MDOWS.RAZRR4)
RUSME TRANSITION (RUSME.RAZRR4)



SW-2, 01 FEB 2018 to 01 MAR 2018

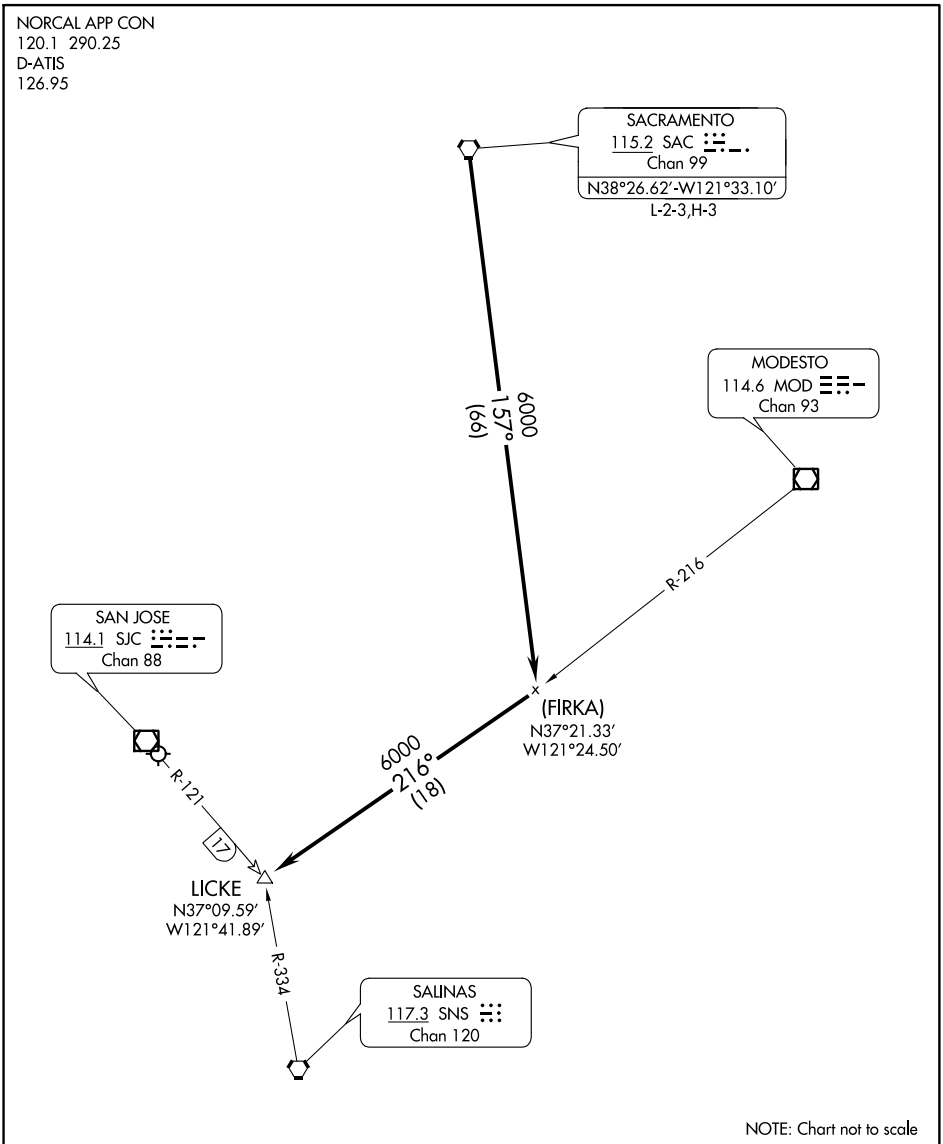
SW-2, 01 FEB 2018 to 01 MAR 2018

ARRIVAL ROUTE DESCRIPTION

ORRCA TRANSITION (ORRCA.RISTI1)

TIPRE TRANSITION (TIPRE.RISTI1)

LANDING KSFO/KSJC: From RISTI on track 218° to cross CEDES at 9000, then on heading 220° or as assigned by ATC. Expect RADAR vectors to final approach course.



ARRIVAL ROUTE DESCRIPTION

From over SAC VORTAC via SAC R-157 to intercept and proceed via MOD R-216 to LICKE INT. Then via RADAR vector to Norman Y Mineta San Jose Intl.

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SW-2, 01 FEB 2018 to 01 MAR 2018

ARRIVAL ROUTE DESCRIPTION

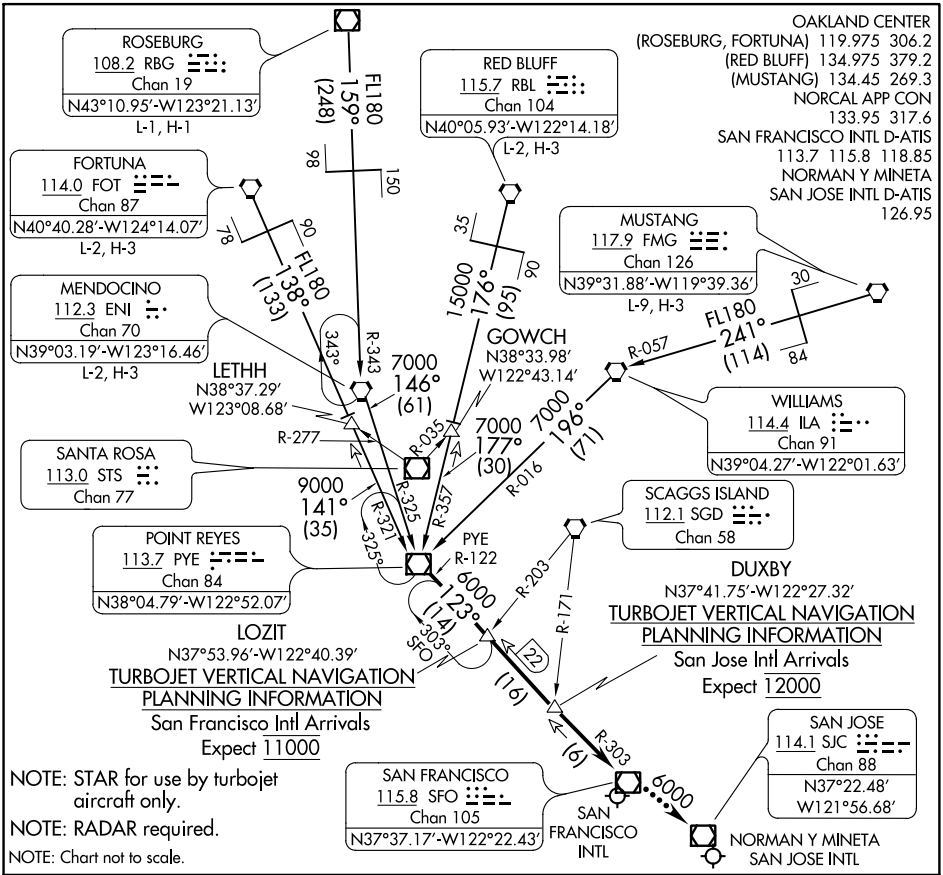
TROXX TRANSITION (TROXX.SILCN4)

From SILCN on track 309° to cross VLLEY between 15000 and FL190 and at 280K.

WEST TRANSITION RUNWAYS 30L/R: From VLLEY on track 328° to cross GUUYY at or above 11000, then on track 328° to cross WLSSN at or above 8000 and at 250K, then on track 328° to cross GSTEE at or above 4200, then on track 328° to cross KLIDE at or above 4000 and at 230K. Expect assigned instrument approach procedure.

EAST TRANSITION RUNWAYS 12L/R: From VLLEY on track 318° to cross BAXBE at or above 12000, then on track 318° to cross APLLE at or above 9000 and at 240K, then on track 318° to cross GGUGL between 7000 and 8000, then on track 318° to cross GAARY at or above 5800, then on track 318° to cross EDMND at or above 5600, then on track 318° to cross JESEN at or above 4100, then on track 306° to cross HITIR at 4000, then on track 306° to ZORSA, then on track 306°. Expect RADAR vectors to final approach course.

SW-2, 01 FEB 2018 to 01 MAR 2018



SW-2, 01 FEB 2018 to 01 MAR 2018

SW-2, 01 FEB 2018 to 01 MAR 2018

ARRIVAL ROUTE DESCRIPTION

FORTUNA TRANSITION (FOT.GOLDN7): From over FOT VORTAC on FOT R-138 to LETHH INT, then on PYE R-321 to PYE VOR/DME. Thence. . . .

MENDOCINO TRANSITION (ENI.GOLDN7): From over ENI VORTAC on ENI R-146 and PYE R-325 to PYE VOR/DME. Thence. . . .

MUSTANG TRANSITION (FMG.GOLDN7): From over FMG VORTAC on FMG R-241 and ILA R-057 to ILA VORTAC, then via ILA R-196 and PYE R-016 to PYE VOR/DME. Thence. . . .

RED BLUFF TRANSITION (RBL.GOLDN7): From over RBL VORTAC on RBL R-176 to GOWCH INT, then on PYE R-357 to PYE VOR/DME. Thence. . . .

ROSEBURG TRANSITION (RBG.GOLDN7): From over RBG VOR/DME on RBG R-159 and ENI R-343 to ENI VORTAC, then on ENI R-146 and PYE R-325 to PYE VOR/DME. Thence. . . .

. . . .From over PYE VOR/DME via SFO R-303 to SFO VOR/DME. Expect RADAR vectors to final approach course.

LOST COMMUNICATIONS: San Jose Intl: After SFO VOR/DME proceed direct SJC VOR/DME.

EL NIDO FIVE ARRIVAL (HYP.HYP5)

06SEP01

17173

NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

AL-693 (FAA)

NORCAL APP CON
126.475 317.775
D-ATIS
126.95

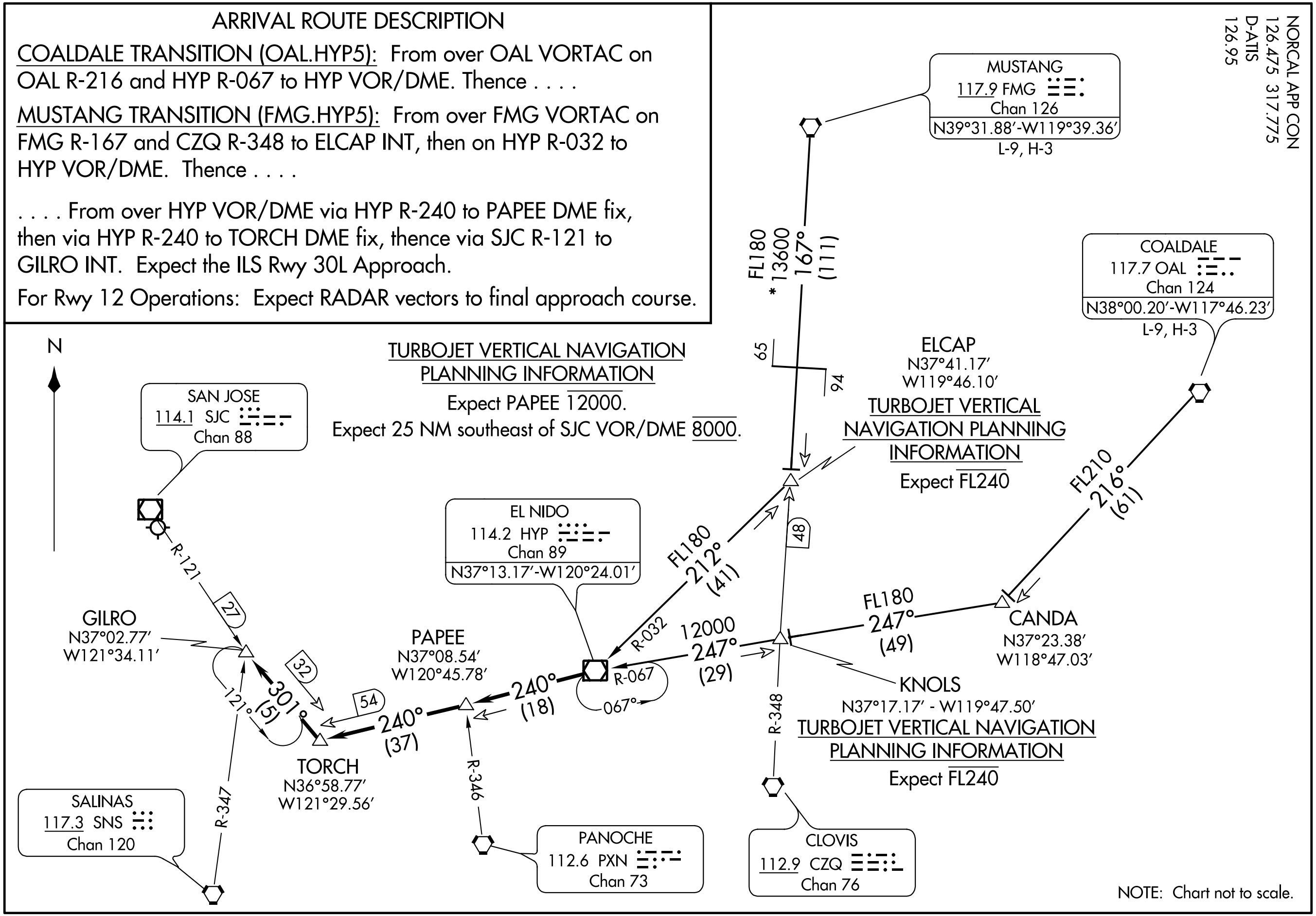
ARRIVAL ROUTE DESCRIPTION

COALDALE TRANSITION (OAL.HYP5): From over OAL VORTAC on OAL R-216 and HYP R-067 to HYP VOR/DME. Thence . . . .

MUSTANG TRANSITION (FMG.HYP5): From over FMG VORTAC on FMG R-167 and CZQ R-348 to ELCAP INT, then on HYP R-032 to HYP VOR/DME. Thence . . . .

. . . . From over HYP VOR/DME via HYP R-240 to PAPEE DME fix, then via HYP R-240 to TORCH DME fix, thence via SJC R-121 to GILRO INT. Expect the ILS Rwy 30L Approach.

For Rwy 12 Operations: Expect RADAR vectors to final approach course.



EL NIDO FIVE ARRIVAL (HYP.HYP5)
NORMAN Y MINETA SAN JOSE INTL (SJC)
SAN JOSE, CALIFORNIA

Appendix B: Airline Aircraft Performance Assessment Dataset

As previously mentioned in **Section 6**, a conference call with the airlines was facilitated by Landrum & Brown to provide them with an introduction to the Project DADCS study and to educate them about the proposed airspace protection scenarios that were being considered. At the conclusion of the conference call a summary email along with a comprehensive dataset attachment was provided to the participating carriers for use in their individual aircraft performance assessments.

James Terry

Hello All,

Thank you for participating in the conference call this afternoon pertaining to the Project CAKE Airline Aircraft Performance Assessment at Mineta San José International Airport. And thank you in advance for your assistance in performing the requested aircraft performance /obstacle evaluation assessment to assist us in furthering progress on this project.

Attached to this email are the following documents that should be used for the requested aircraft performance assessment:

1. **2018-10-04 SJC_CAKE - Airline Aircraft Performance Assessment.pdf** (Presentation that was presented on the conference call this afternoon. Please refer to this document for reference purposes.)
2. **SJC Project CAKE Critical Obstacles for Aircraft Performance – 20180904.xls** (Spreadsheet contained obstacle data for the five airspace scenarios that we are requesting your assistance with evaluating.)
3. **SJC Project CAKE Aircraft Performance Assessment Results Template – 20180904.xls** (Spreadsheet and requested format for the results of the airline aircraft performance assessment to be populated.)

For your reference, the obstacle spreadsheet contains data for the following scenarios:

Scenario 1: Existing airspace (OEI and TERPS)
Scenario 4: No OEI protection (TERPS Only)
Scenario 7: Straight-Out OEI protection (no West OEI Corridor)
Scenario 9: No OEI Protection (TERPS Only) with increased FAA procedure minimum heights
Scenario 10: Straight-Out OEI with West OEI Corridor alternatives

Please note that all heights listed in the obstacle data spreadsheet are in feet mean sea level (MSL).

We are requesting that the obstacle evaluation be completed and returned to us no later than October 25, 2018 which is approximately three weeks from today. This will allow us time to compile and process the results of your assessment in preparation for meetings in early November 2018.

If requested, the airline performance assessment results can be generalized and not depicted on a specific airline basis. If requested, teleconferences with individual carriers can be arranged if additional clarification or coordination is required.

Newly Published SJC Obstacle Data:

We wanted to make sure that carriers at SJC were aware that the newly published airport obstacle dataset for SJC is available from the FAA. **I have attached the new SJC UDDF obstacle file to this email (2018_SJC_VGA_6371.SPC.txt**). Please note that we encourage air carriers participating in this assessment to supplement the previously described obstacle data for each airspace scenario that we are providing you with and incorporate this new obstacle data into your assessment. If any existing man-made or vegetative (trees) obstacles from the UDDF file are identified in your aircraft performance assessment as being more critical in nature, please feel free to report this information back to us and we will forward it to the City of San Jose Planning staff. However for vegetative (tree) obstacles, please note that these obstacles can reasonably be mitigated so for aircraft performance assessment purposes please **identify**, but **do not include** these as critical obstacles as this may skew the results of your assessment for each of the individual airspace protection scenarios that we are requesting you to evaluate. Our primary focus is on the impacts of man-made obstacles.

Thank you again for your assistance as your feedback and the results of your aircraft performance assessment will be very helpful in our ongoing study. Please feel free to contact me directly with any questions that may arise during your evaluation. If I have not included key staff member within your company on this email, please forward the information to them and I will add them to my contact list for future correspondence.

Thank you!

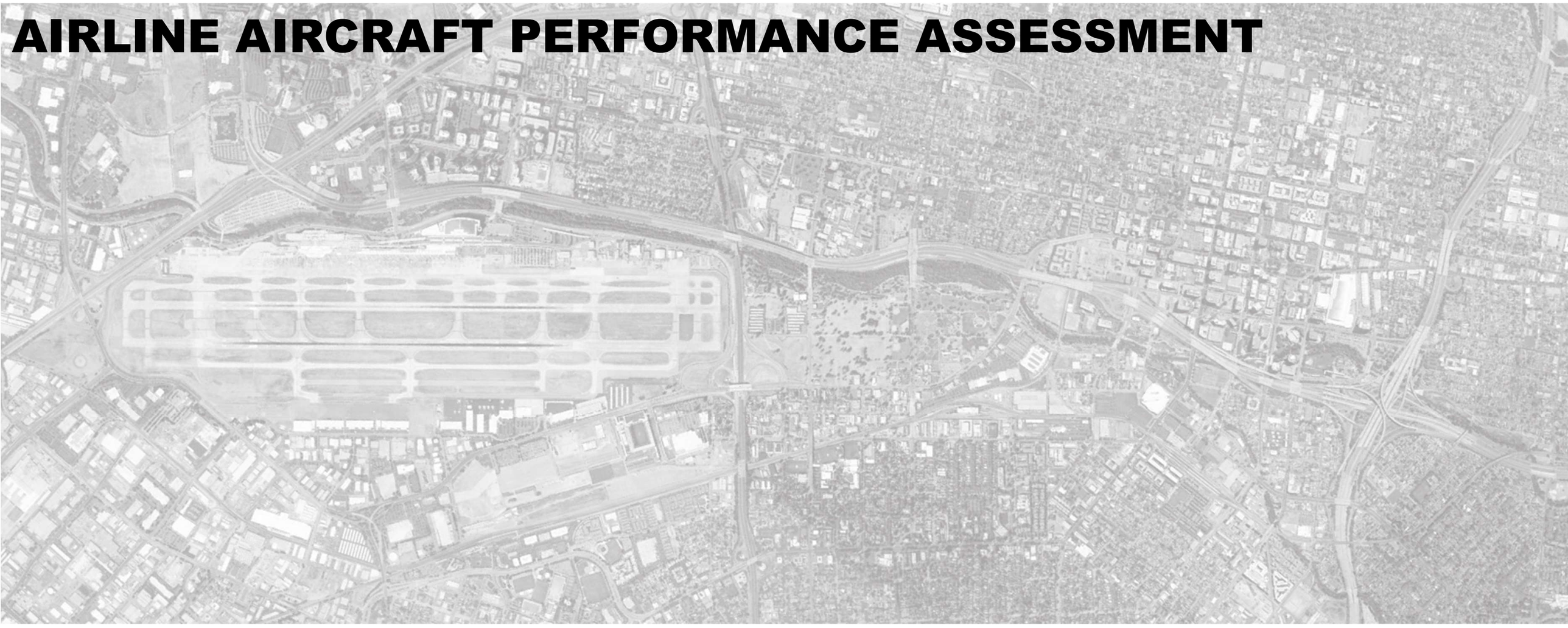
James Terry
Managing Consultant

Landrum & Brown
Global Aviation Planning & Development

landrum-brown.com

DOWNTOWN SAN JOSÉ AIRSPACE
& DEVELOPMENT CAPACITY STUDY (PROJECT CAKE)

AIRLINE AIRCRAFT PERFORMANCE ASSESSMENT



October 4, 2018

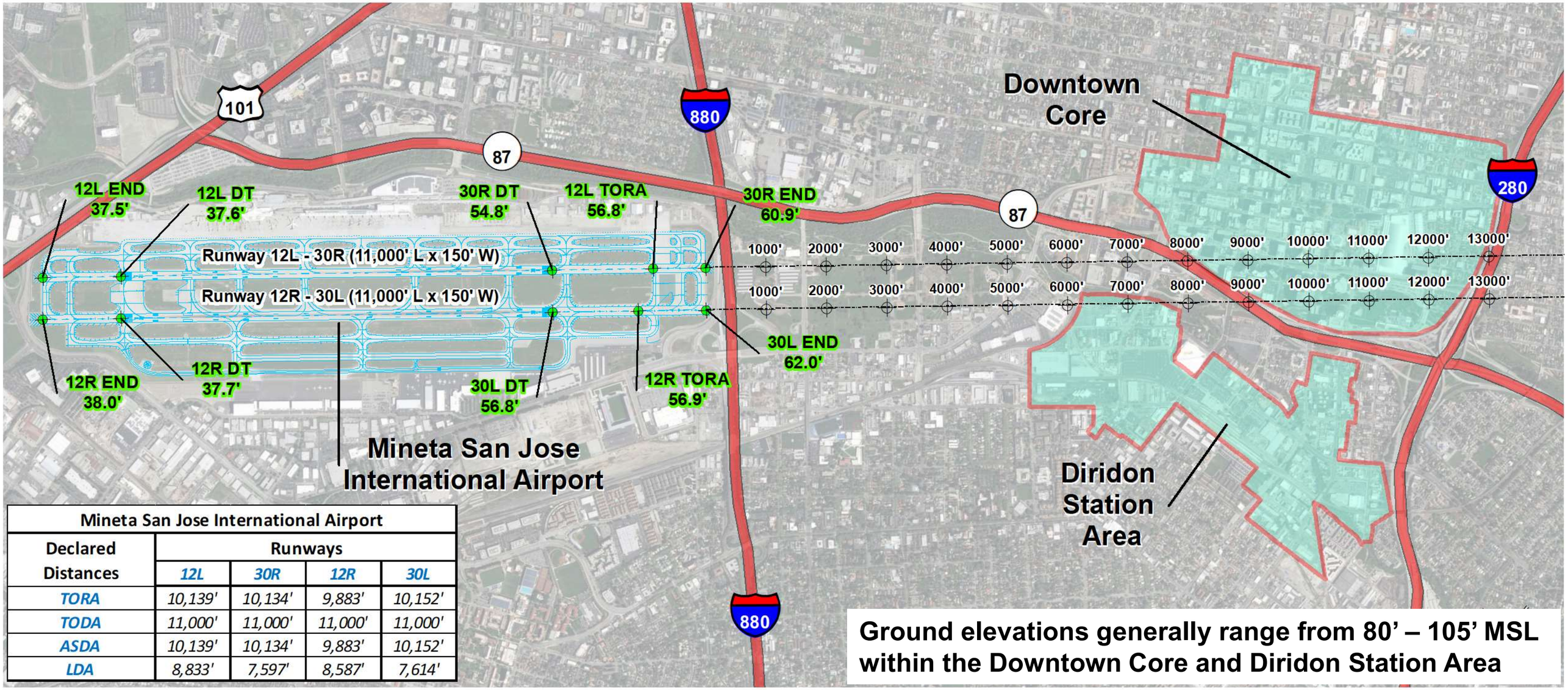
AGENDA

- Introduction
- Project Study Area
- Airspace Protection Scenarios

INTRODUCTION

- A previous TERPS and OEI assessment was conducted in 2008 and the establishment of airspace protection mapping was adopted as a city policy to limit the impact of tall structures on aviation activities at SJC
- The Downtown San José Airspace & Development Capacity Study (referred to as Project CAKE) revisits TERPS and OEI airspace protection
- Evaluation of various airspace protection scenarios to identify potential impacts to aviation activities as a result of potential future development in the Downtown Core and Diridon Station Areas
- Primarily impacts departure operations in a Southeast Flow runway configuration (Runway 12L/12R) which occurs approximately 13% annually; predominately in the winter but sometimes in the summer

PROJECT CAKE STUDY AREA



Mineta San Jose International Airport				
Declared Distances	Runways			
	12L	*30R*	*12R*	*30L*
TORA	*10,139'*	*10,134'*	*9,883'*	*10,152'*
TODA	*11,000'*	*11,000'*	*11,000'*	*11,000'*
ASDA	*10,139'*	*10,134'*	*9,883'*	*10,152'*
LDA	*8,833'*	*7,597'*	*8,587'*	*7,614'*

Ground elevations generally range from 80’ – 105’ MSL within the Downtown Core and Diridon Station Area

Graphic Source: Landrum & Brown
Aerial Image Source: Bing

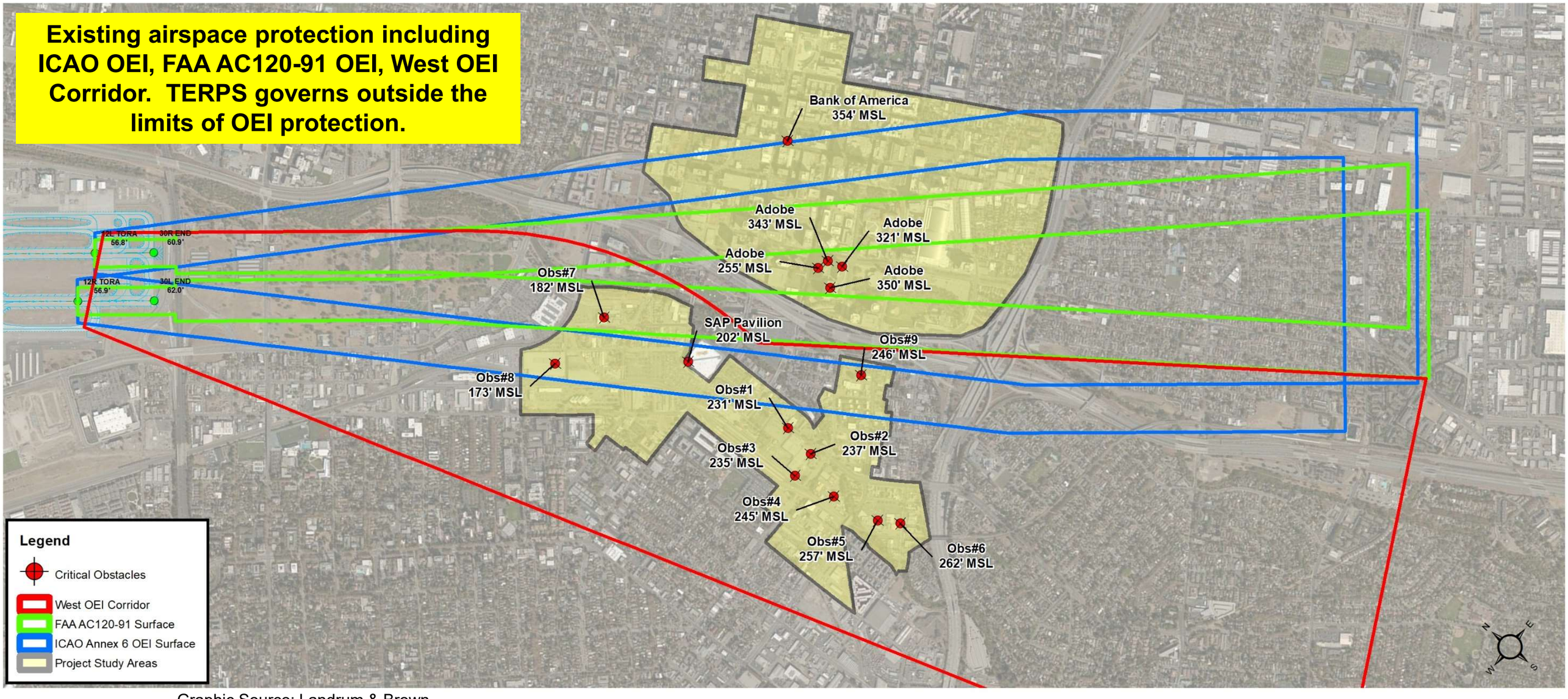
AIRSPACE PROTECTION SCENARIOS

- Five Airspace Scenarios
  - **Scenario 1**: Existing
  - **Scenario 4**: No OEI (#1)
  - **Scenario 7:** Straight-out OEI (#2)
  - **Scenario 9**: No OEI, increased FAA height limits (#4)
  - **Scenario 10**: Straight-out OEI with West OEI Corridor alternatives (#3)
    - Baseline
    - Scenario 10A (#3D)
    - Scenario 10B (#3C)
    - Scenario 10C (#3B)
    - Scenario 10D (#3A)

Note: (#) denotes the order/prioritization of the airspace scenarios that are being requested for performance evaluation by the participating Airlines. Ranked in order from highest to lowest priority.

SCENARIO 1 – EXISTING

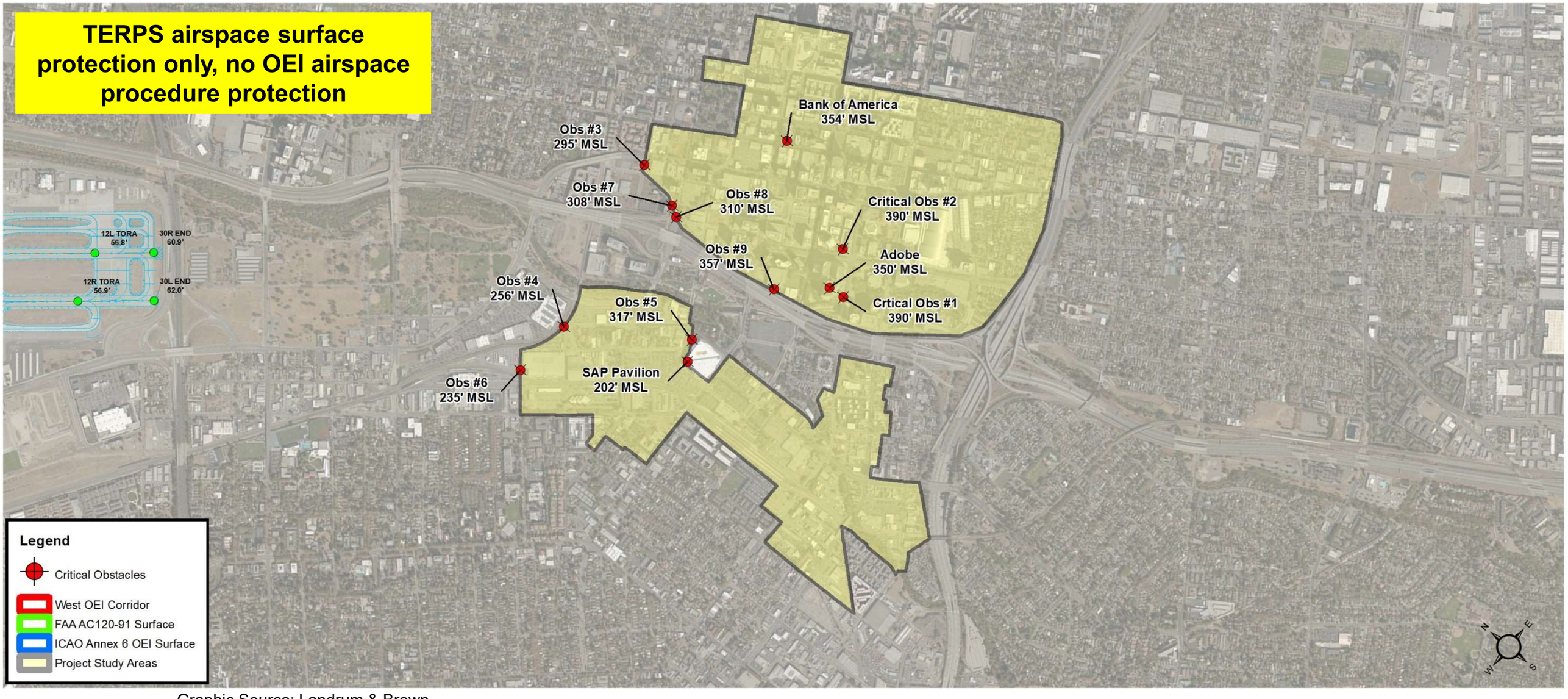
Existing airspace protection including ICAO OEI, FAA AC120-91 OEI, West OEI Corridor. TERPS governs outside the limits of OEI protection.



Graphic Source: Landrum & Brown

SCENARIO 4 – NO OEI

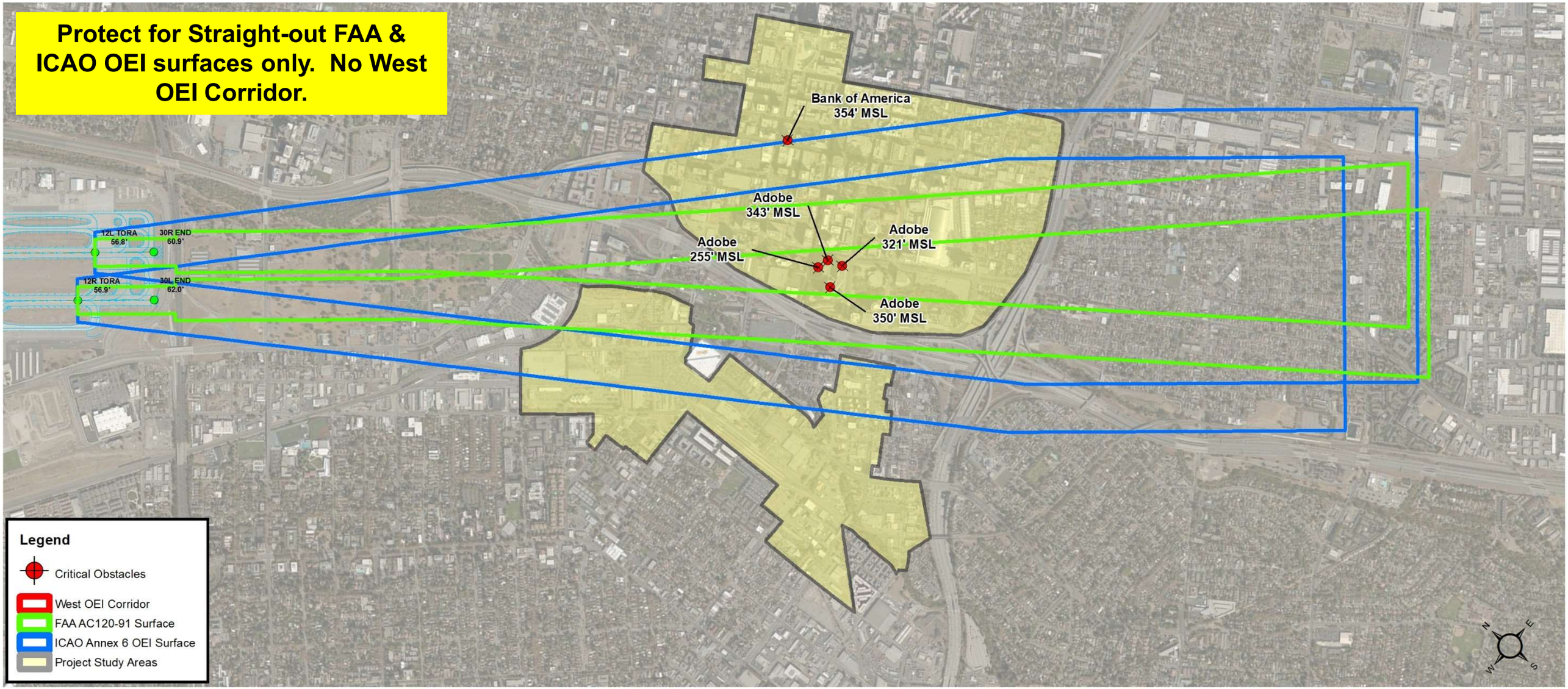
TERPS airspace surface protection only, no OEI airspace procedure protection



Graphic Source: Landrum & Brown

SCENARIO 7 – STRAIGHT-OUT OEI

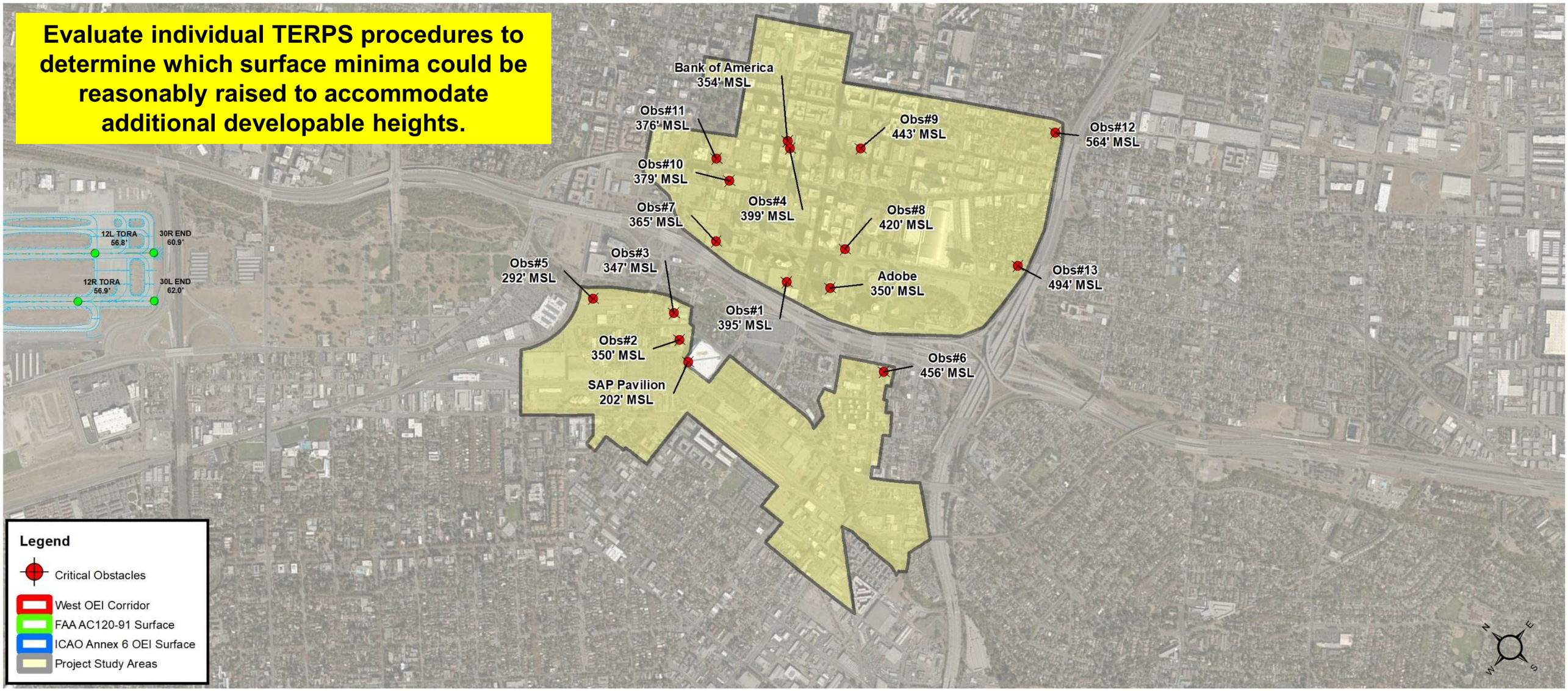
Protect for Straight-out FAA & ICAO OEI surfaces only. No West OEI Corridor.



Graphic Source: Landrum & Brown

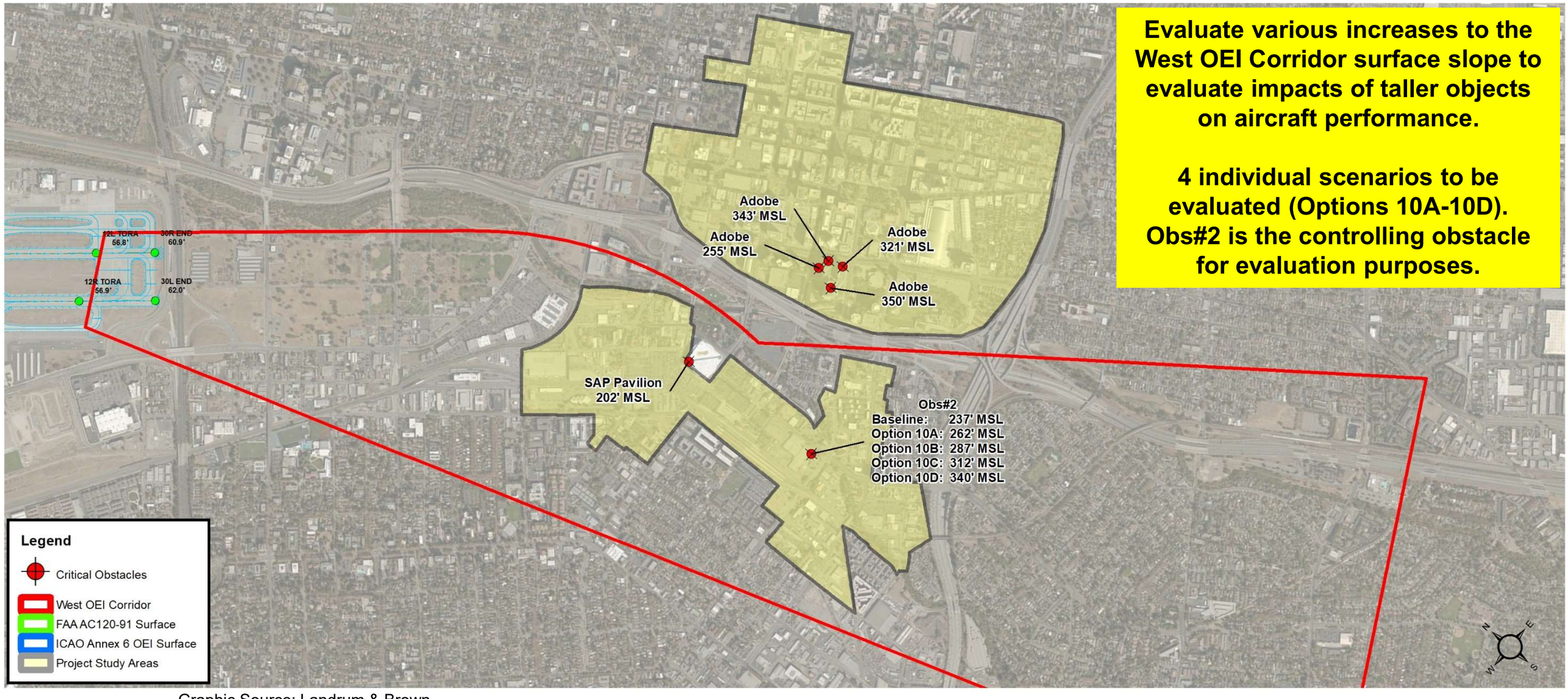
SCENARIO 9 – NO OEI, INCREASED FAA HEIGHT LIMITS

Evaluate individual TERPS procedures to determine which surface minima could be reasonably raised to accommodate additional developable heights.



Graphic Source: Landrum & Brown

SCENARIO 10 – STRAIGHT-OUT OEI WITH WEST OEI CORRIDOR ALTERNATIVES



Evaluate various increases to the West OEI Corridor surface slope to evaluate impacts of taller objects on aircraft performance.

4 individual scenarios to be evaluated (Options 10A-10D). Obs#2 is the controlling obstacle for evaluation purposes.

Graphic Source: Landrum & Brown

SAMPLE OBSTACLE EVALUATION DATA FORMAT

FID	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
0	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R	9883	136L	9883
1	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
2	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9708	425L	9707
3	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
4	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057
5	231	Obs#1	6154315.299	1945101.864	37° 19' 42.313" N	121° 54' 3.765" W	2608R	9251	1905R	9252
6	237	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9585	2286R	9586
7	235	Obs#3	6153842.571	1944574.473	37° 19' 37.029" N	121° 54' 9.520" W	3309R	9348	2607R	9348
8	245	Obs#4	6153978.184	1943940.881	37° 19' 30.786" N	121° 54' 7.723" W	3616R	9918	2913R	9919
9	257	Obs#5	6154125.763	1943225.245	37° 19' 23.733" N	121° 54' 5.764" W	3967R	10559	3264R	10560
10	262	Obs#6	6154302.893	1942944.989	37° 19' 20.988" N	121° 54' 3.519" W	4013R	10888	3310R	10889
11	182	Obs#7	6153818.205	1948196.92	37° 20' 12.838" N	121° 54' 10.494" W	984R	6570	282R	6570
12	173	Obs#8	6152844.322	1948312.317	37° 20' 13.834" N	121° 54' 22.573" W	1651R	5852	950R	5852
13	246	Obs#9	6155589.233	1944779.287	37° 19' 39.313" N	121° 53' 47.934" W	1845R	10322	1142R	10322

Note: Please note that the distance “out” is measured from the physical end of the runway pavement for Runway 12L/12R. The “over” distance is measured from left or right of the extended runway centerline for Runway 12L/12R.

REQUESTED AIRCRAFT PERFORMANCE RESULTS FORMAT

Destination (ex. JFK) Temperature (ex 83° F)		AIRCRAFT TYPE (ex. B737-800) SEAT CAPACITY (ex. 150 seats) CARGO CAPACITY (ex. 2,000 lbs.)					
		PAX Penalty	PAX Penalty (lbs.)	Cargo Penalty (lbs.)	Weight Penalty Total (lbs.)	PAX Penalty Cost Per Flight	Cargo Penalty Cost Per Flight
Scenario 1	Existing airspace protection	**4**	**912**	**500**	**1,412**	**$**	**$**
Scenario 4	TERPS Only	**20**	**4,560**	**1,200**	**5,760**	**$**	**$**
Scenario 7	Straight-Out ICAO OEI surface protection without West OEI Corridor	**12**	**2,736**	**600**	**3,336**	**$**	**$**
Scenario 10	Existing Conditions: 85' - 166' AGL	**6**	**1,368**		**1,368**	**$**	**$**
	Opt 10A: 100' - 195' AGL	**6**	**1,368**		**1,368**	**$**	**$**
	Opt 10B: 115' - 224' AGL	**6**	**1,368**		**1,368**	**$**	**$**
	Opt 10C: 129' - 240' AGL	**8**	**1,824**		**1,824**	**$**	**$**
	Opt 10D: 146' - 260' AGL	**14**	**3,192**		**3,192**	**$**	**$**
Scenario 9	TERPS only with increased TERPS departure climb gradients and approach procedure minima	**29**	**6,612**		**6,612**	**$**	**$**

REQUESTED AIRCRAFT PERFORMANCE ASSESSMENT

- Airlines will be provided with obstacle data for each aircraft scenario
- Airlines to performance aircraft performance assessment for:
  1. Existing aircraft and markets served to/from SJC
  2. Future aircraft fleet and markets to potentially be served to/from SJC (within the next 10 years)
  3. If possible, assess summer and winter temperatures
  4. Provide passenger and cargo weight penalties for each aircraft and destination under each airspace scenario
  5. Monetize the PAX and cargo weight penalties to better understanding the economic impacts incurred by Airline operators
- Results of the aircraft performance assessment are requested no later than **October 25, 2018**

REQUESTED AIRCRAFT PERFORMANCE ASSESSMENT

- If requested, the airline performance assessment results can be generalized and not depicted on a specific airline basis
- If requested, teleconferences with individual carriers can be arranged if additional clarification or coordination is required

CONTACT INFORMATION

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  - 510-220-6612 or jterry@landrum-brown.com
- Tom Cornell, Principal, Landrum & Brown
  - 415-307-2202 and tcornell@landrum-brown.com
- Matthew Kazmierczak, Manager of Strategy and Policy, Mineta San José International Airport
  - 408-392-3640 and MKazmierczak@sjc.org

THANK YOU

FID	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R	9883	136L	9883
2	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
3	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9708	425L	9707
4	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
5	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057
6	231	Obs#1	6154315.299	1945101.864	37° 19' 42.313" N	121° 54' 3.765" W	2608R	9251	1905R	9252
7	237	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9585	2286R	9586
8	235	Obs#3	6153842.571	1944574.473	37° 19' 37.029" N	121° 54' 9.520" W	3309R	9348	2607R	9348
9	245	Obs#4	6153978.184	1943940.881	37° 19' 30.786" N	121° 54' 7.723" W	3616R	9918	2913R	9919
10	257	Obs#5	6154125.763	1943225.245	37° 19' 23.733" N	121° 54' 5.764" W	3967R	10559	3264R	10560
11	262	Obs#6	6154302.893	1942944.989	37° 19' 20.988" N	121° 54' 3.519" W	4013R	10888	3310R	10889
12	182	Obs#7	6153818.205	1948196.92	37° 20' 12.838" N	121° 54' 10.494" W	984R	6570	282R	6570
13	173	Obs#8	6152844.322	1948312.317	37° 20' 13.834" N	121° 54' 22.573" W	1651R	5852	950R	5852
14	246	Obs#9	6155589.233	1944779.287	37° 19' 39.313" N	121° 53' 47.934" W	1845R	10322	1142R	10322
15	354	Bank of America	6157520.336	1947801.754	37° 20' 9.478" N	121° 53' 24.583" W	1583L	9267	2285L	9267

Scenario 1 Critical Obstacles

FID	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	390	Crtical Obs #1	6156303.83	1945702.897	37° 19' 48.549" N	121° 53' 39.258" W	703R	10080	0R	10080
2	390	Critical Obs #2	6156839.597	1946157.498	37° 19' 53.122" N	121° 53' 32.709" W	0R	10080	703L	10080
3	354	Bank of America	6157520.336	1947801.754	37° 20' 9.478" N	121° 53' 24.583" W	1583L	9267	2285L	9267
4	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R	9883	136L	9883
5	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
6	295	Obs #3	6155908.654	1949175.325	37° 20' 22.820" N	121° 53' 44.792" W	1243L	7177	1945L	7177
7	256	Obs #4	6153344.702	1948557.966	37° 20' 16.337" N	121° 54' 16.423" W	1111R	5989	409R	5989
8	317	Obs #5	6154402.503	1947003.05	37° 20' 1.122" N	121° 54' 3.038" W	1311R	7858	609R	7859
9	235	Obs #6	6152449.053	1948631.045	37° 20' 16.927" N	121° 54' 27.526" W	1746R	5353	1045R	5353
10	308	Obs #7	6155717.274	1948477.779	37° 20' 15.896" N	121° 53' 47.032" W	646L	7585	1348L	7585
11	310	Obs #8	6155627.052	1948325.585	37° 20' 14.378" N	121° 53' 48.121" W	479L	7643	1181L	7642
12	357	Obs #9	6155744.129	1946550.229	37° 19' 56.843" N	121° 53' 46.344" W	581R	9072	121L	9072

Scenario 4 Critical Obstacles

FID	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	354	Bank of America	6157520.336	1947801.754	37° 20' 9.478" N	121° 53' 24.583" W	1583L	9267	2285L	9267
2	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R	9883	136L	9883
3	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9708	425L	9707
4	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
5	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 7 Critical Obstacles

FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	420	Obs#8	6156853.137	1946141.547	37° 19' 52.966" N	121° 53' 32.538" W	0R	10101	703L	10101
2	354	Bank of America	6157520.336	1947801.754	37° 20' 9.478" N	121° 53' 24.583" W	1583L	9267	2285L	9267
3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R	9883	136L	9883
4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
5	376	Obs#11	6156658.984	1948430.101	37° 20' 15.563" N	121° 53' 35.364" W	1333L	8231	2035L	8230
6	365	Obs#7	6155728.724	1947659.49	37° 20' 7.807" N	121° 53' 46.739" W	125L	8216	827L	8216
7	395	Obs#1	6155939.407	1946486.899	37° 19' 56.246" N	121° 53' 43.914" W	473R	9247	229L	9247
8	379	Obs#10	6156531.822	1948075.624	37° 20' 12.040" N	121° 53' 36.873" W	1007L	8419	1709L	8418
9	443	Obs#9	6158128.428	1946913.684	37° 20' 0.787" N	121° 53' 16.891" W	1472L	10338	2175L	10337
10	564	Obs#12	6160135.441	1944883.194	37° 19' 41.007" N	121° 52' 51.672" W	1688L	13185	2391L	13184
11	399	Obs#4	6157463.99	1947705.53	37° 20' 8.518" N	121° 53' 25.263" W	1478L	9304	2180L	9304
12	292	Obs#5	6153930.962	1948501.026	37° 20' 15.861" N	121° 54' 9.154" W	701R	6411	1L	6411
13	347	Obs#3	6154532.304	1947459.136	37° 20' 5.650" N	121° 54' 1.515" W	917R	7595	215R	7595
14	350	Obs#2	6154282.06	1947143.026	37° 20' 2.488" N	121° 54' 4.555" W	1312R	7674	610R	7674
15	494	Obs#13	6158289.838	1944047.141	37° 19' 32.472" N	121° 53' 14.367" W	260R	12628	443L	12628
16	456	Obs#6	6155844.832	1944557.835	37° 19' 37.161" N	121° 53' 44.729" W	1794R	10656	1091R	10656

Scenario 9 Critical Obstacles

Baseline Obstacle Data

FID	Shape *	FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	Point	15	237	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9586	2286R	9586
2	Point	3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R567R	9883	136L	9883
3	Point	4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
4	Point	1000	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9797	425L	9707
5	Point	1001	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
6	Point	1004	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 10A Obstacle Data

FID	Shape *	FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	Point	15	262	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9586	2286R	9586
2	Point	3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R567R	9883	136L	9883
3	Point	4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
4	Point	1000	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9797	425L	9707
5	Point	1001	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
6	Point	1004	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 10B Obstacle Data

FID	Shape *	FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	Point	15	287	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9586	2286R	9586
2	Point	3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R567R	9883	136L	9883
3	Point	4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
4	Point	1000	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9797	425L	9707
5	Point	1001	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
6	Point	1004	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 10C Obstacle Data

FID	Shape *	FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	Point	15	312	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9586	2286R	9586
2	Point	3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R567R	9883	136L	9883
3	Point	4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
4	Point	1000	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9797	425L	9707
5	Point	1001	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
6	Point	1004	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 10D Obstacle Data

FID	Shape *	FID_	Elv_MSL	Name	Easting	Northing	Lat	Long	Over12L	Out12L	Over12R	Out12R
1	Point	15	340	Obs#2	6154240.507	1944600.667	37° 19' 37.347" N	121° 54' 4.598" W	2989R	9586	2286R	9586
2	Point	3	350	Adobe	6156279.846	1945941.228	37° 19' 50.902" N	121° 53' 39.599" W	567R567R	9883	136L	9883
3	Point	4	202	SAP Pavilion	6154115.628	1946839.133	37° 19' 59.459" N	121° 54' 6.559" W	1636R	7798	933R	7798
4	Point	1000	255	Adobe	6156386.62	1946261.926	37° 19' 54.088" N	121° 53' 38.336" W	278R	9797	425L	9707
5	Point	1001	343	Adobe	6156559.009	1946221.246	37° 19' 53.711" N	121° 53' 36.194" W	173R	9850	530L	9850
6	Point	1004	321	Adobe	6156628.35	1946008.93	37° 19' 51.622" N	121° 53' 35.297" W	257R	10057	445L	10057

Scenario 10 Critical Obstacles

Note: Please note that in Scenario 10, the critical obstacle for evaluation is named "Obs#2".
This obtacle has five heights that we are requesting you to evaluate in your obstacle performance assessment:
Baseline: 237' MSL
Option 10A: 262' MSL
Option 10B: 287' MSL
Option 10C: 312' MSL
Option 10D: 340' MSL

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|SJC   |02204.A   |AWP |1.07|
|NORMAN Y MINETA SAN JOSE INTL                                          |3572016|
|SAN JOSE                                |CALIFORNIA                    |
|NAD83     |5 CM      |15 CM     |NAVD88    |25 CM          |
|-13.4|3572016|
|   62.2|  -45.0|30L+10  |3572016|
|       |       |       |
| 372145.6|-1215544.8|
@
|11   |P|3572016|
| |       |
| 372157.4164|-1215611.9716|1384847| 4626|100|3572016|
|   48.9|  -58.3|3572016|
|            |             |       |       |
|    0|   41.9|  -65.3|3572016|
| 2313|   47.2|  -60.0|3572016|
| 4626|   51.7|  -55.5|3572016|
#
|29   |P|3572016|
| |       |
| 372122.9983|-1215534.2452|3184910| 4626|100|3572016|
|   51.8|  -55.3|3572016|
|            |             |       |       |
|    0|   51.7|  -55.5|3572016|
| 2313|   47.2|  -60.0|3572016|
| 4626|   41.9|  -65.3|3572016|
#
|12L  |P|3572016|
| |       |
| 372229.9801|-1215624.6377|1384833|11000|150|3572016|
|   43.8|  -63.3|3572016|
| 372220.2525|-1215613.9699|   1308|3572016|
|    0|   37.7|  -69.5|3572016|
| 1308|   37.8|  -69.4|3572016|
| 2920|   38.5|  -68.7|3572016|
| 4250|   43.8|  -63.4|3572016|
| 5500|   47.0|  -60.1|3572016|
| 8463|   55.2|  -51.9|3572016|
|10060|   56.7|  -50.4|3572016|
|11000|   61.1|  -46.0|3572016|
#
|30R  |P|3572016|
| |       |
| 372108.1324|-1215454.9212|3184927|11000|150|3572016|
|   55.2|  -51.9|3572016|
| 372127.0149|-1215515.6102|   2537|3572016|
|    0|   61.1|  -46.0|3572016|
|  940|   56.7|  -50.4|3572016|
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| 2537|   55.2|  -51.9|3572016|
| 5500|   47.0|  -60.1|3572016|
| 6750|   43.8|  -63.4|3572016|
| 8080|   38.5|  -68.7|3572016|
| 9692|   37.8|  -69.4|3572016|
|11000|   37.7|  -69.5|3572016|
#
|12R  |P|3572016|
| |       |
| 372225.4266|-1215631.1597|1384834|11000|150|3572016|
|   45.6|  -61.6|3572016|
| 372215.7747|-1215620.5816|   1297|3572016|
|    0|   38.2|  -69.0|3572016|
| 1297|   37.9|  -69.3|3572016|
| 5500|   48.9|  -58.3|3572016|
| 8463|   57.0|  -50.2|3572016|
|10070|   57.7|  -49.4|3572016|
|10990|   62.2|  -45.0|3572016|
|11000|   62.1|  -45.0|3572016|
#
|30L  |P|3572016|
| |       |
| 372103.5766|-1215501.4432|3184928|11000|150|3572016|
|   57.0|  -50.2|3572016|
| 372122.4564|-1215522.1304|   2537|3572016|
|    0|   62.1|  -45.0|3572016|
|   10|   62.2|  -45.0|3572016|
|  930|   57.7|  -49.4|3572016|
| 2537|   57.0|  -50.2|3572016|
| 5500|   48.9|  -58.3|3572016|
| 9703|   37.9|  -69.3|3572016|
|11000|   38.2|  -69.0|3572016|
@
|DME    (12R_SLV)                | 372227.5750|-1215632.6145|   56.0|  -51.2|
|      |3572016|
|DME    (30L_SJC)                | 372102.6639|-1215501.3459|   81.4|  -25.8|
|      |3572016|
|GS CE  (30L_SJC)                | 372133.0094|-1215527.8798|   48.6|  -58.6|
|      |3572016|
|GS CE  (30L_SJC)          PP    | 372130.7086|-1215531.1746|   54.0|       |
353R|  1109|3572016|
|GS SB  (12R_SLV)                | 372206.0334|-1215614.5901|   36.8|  -70.4|
|      |3572016|
|GS SB  (12R_SLV)          PP    | 372207.8901|-1215611.9316|   40.3|       |
285R|  1060|3572016|
|LOC    (12R_SLV)                | 372103.0434|-1215500.8585|   75.1|  -32.1|
|    72|3572016|
|LOC    (30L_SJC)                | 372227.1917|-1215633.1047|   49.6|  -57.5|
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|   238|3572016|
|VOR/DME(SJC)                    | 372228.9638|-1215640.8069|   34.5|  -72.7|
|      |3572016|
#
|ALS/MALSR      (12R)            | 372234.9685|-1215641.6333|   33.1|  -74.1|
|      |3572016|
|ALS/MALSR      (12R)            | 372215.7705|-1215620.5718|   38.0|  -69.1|
|      |3572016|
|ALS/MALSR      (30L)            | 372122.3916|-1215522.0599|   57.1|  -50.1|
|      |3572016|
|ALS/MALSR      (30L)            | 372104.5999|-1215502.5648|   61.6|  -45.5|
|      |3572016|
|APBN                            | 372210.4564|-1215542.4811|   36.1|  -71.0|
|      |3572016|
|PAPI/PAPI4     (12L)            | 372209.2023|-1215604.6523|   35.7|  -71.4|
|      |3572016|
|PAPI/PAPI4     (12L)          PP| 372210.3086|-1215603.0682|   38.3|       |
170R|  1336|3572016|
|PAPI/PAPI4     (12R)            | 372204.4841|-1215611.1667|   37.7|  -69.5|
|      |3572016|
|PAPI/PAPI4     (12R)          PP| 372205.6586|-1215609.4850|   41.1|       |
180R|  1360|3572016|
|PAPI/PAPI4     (29) [INACTIVE]  | 372128.2145|-1215541.7774|   48.7|  -58.5|
|      |3572016|
|PAPI/PAPI4     (29) [INACTIVE] PP| 372128.9327|-1215540.7490|   50.7|       |
110L|   798|3572016|
|PAPI/PAPI4     (30L)            | 372131.7671|-1215535.2961|   49.7|  -57.5|
|      |3572016|
|PAPI/PAPI4     (30L)          PP| 372132.9386|-1215533.6186|   53.1|       |
180L|  1409|3572016|
|PAPI/PAPI4     (30R)            | 372136.4130|-1215528.7064|   48.6|  -58.5|
|      |3572016|
|PAPI/PAPI4     (30R)          PP| 372137.5183|-1215527.1237|   51.3|       |
170L|  1412|3572016|
|REIL           (12L)            | 372219.7285|-1215615.2858|   36.4|  -70.8|
|      |3572016|
|REIL           (12L)            | 372221.2225|-1215613.1454|   36.2|  -71.0|
|      |3572016|
|REIL           (29) [INACTIVE]  | 372123.3000|-1215533.0865|   51.0|  -56.1|
|      |3572016|
|REIL           (29) [INACTIVE]  | 372122.1215|-1215534.7570|   52.0|  -55.2|
|      |3572016|
#
|AWOS                            | 372133.8610|-1215527.9346|   49.1|  -58.0|
|      |3572016|
|WIND CONE                       | 372145.5676|-1215541.7151|   42.1|  -65.1|
|      |3572016|
|WIND CONE                       | 372114.5051|-1215506.3449|   52.4|  -54.8|
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|      |3572016|
|WIND CONE                    | 372132.1672|-1215536.8878|   47.9|  -59.2|
|      |3572016|
|WIND CONE                    | 372206.9395|-1215606.7842|   37.2|  -70.0|
|      |3572016|
|WIND CONE                    | 372221.6723|-1215619.6997|   36.6|  -70.5|
|      |3572016|
@
|11  |VGA    |
#
|29  |VGA    |
#
|12L |VGA    |
#
|30R |VGA    |
#
|12R |VGA    |
#
|30L |VGA    |
#
|ARP |HCT    |
|SIGN                         | 372143.50|-1215549.37|1A|   50|     |    5|  -12|
  |     |     |3572016|
|SIGN                         | 372139.80|-1215543.62|1A|   52|     |    5|  -10|
  |     |     |3572016|
|GRD                          | 372138.55|-1215541.06|1A|   50|     |     |  -12|
  |     |     |3572016|
|GRD                          | 372151.04|-1215552.15|1A|   45|     |     |  -17|
  |     |     |3572016|
|GRD                          | 372136.45|-1215544.05|1A|   48|     |     |  -14|
  |     |     |3572016|
|GRD                          | 372147.92|-1215556.63|1A|   45|     |     |  -17|
  |     |     |3572016|
|RWY LT                       | 372146.72|-1215559.34|1A|   46|     |    2|  -16|
  |     |     |3572016|
|FENCE                        | 372139.20|-1215557.99|1A|   57|     |   10|   -5|
  |     |     |3572016|
|ANT                          | 372137.83|-1215532.37|1A|   81|     |   34|   19|
  |     |     |3572016|
|GRD                          | 372141.93|-1215600.01|1A|   47|     |     |  -15|
  |     |     |3572016|
|NAVAID                       | 372136.19|-1215555.47|1A|  137|     |   90|   75|
  |     |     |3572016|
|CONTROL TWR                  | 372134.96|-1215553.83|1A|  156|     |  108|   94|
  |     |     |3572016|
|TREE                         | 372135.06|-1215554.24|1A|   74|     |     |   12|
  |     |     |3572016|
|POLE                         | 372137.38|-1215557.75|1A|   73|     |   26|   11|
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		3572016							
NAVAID			372144.67	-1215602.32	1A	46		2	-16
		3572016							
GRD			372142.15	-1215602.07	1A	47			-15
		3572016							
WALL			372133.47	-1215554.40	1A	66		18	4
		3572016							
FENCE			372137.85	-1215559.93	1A	57		10	-5
		3572016							
POLE			372135.45	-1215557.64	1A	74		25	12
		3572016							
GRD			372139.64	-1215601.80	1A	47			-15
		3572016							
WSK			372132.17	-1215536.89	1A	59		11	-3
		3572016							
SIGN			372154.65	-1215559.97	1A	47		5	-15
		3572016							
BLDG			372131.00	-1215549.76	1A	74		24	12
		3572016							
GRD			372131.72	-1215552.46	1A	49			-13
		3572016							
POLE			372135.79	-1215600.02	1A	74		25	12
		3572016							
GRD			372141.33	-1215603.62	1A	47			-15
		3572016							
GRD			372142.76	-1215604.06	1A	47			-15
		3572016							
GRD			372144.19	-1215604.41	1A	46			-16
		3572016							
BLDG			372137.11	-1215601.77	1A	98		50	36
		3572016							
BLDG			372132.62	-1215556.59	1A	91		25	29
		3572016							
GRD			372129.45	-1215545.37	1A	50			-12
		3572016							
ANT			372134.16	-1215559.55	1A	132		82	70
		3572016							
BLDG			372140.29	-1215605.22	1A	98		51	36
		3572016							
HGR			372129.69	-1215553.37	1A	91		39	29
		3572016							
GRD			372144.91	-1215606.58	1A	46			-16
		3572016							
BLDG			372128.40	-1215549.55	1A	90		39	28
		3572016							
GRD			372146.70	-1215606.85	1A	46			-16
		3572016							
GRD			372127.95	-1215543.95	1A	51			-11

		3572016							
ANT			372132.48	-1215559.69	1A	132		82	70
		3572016							
VERTICAL POINT			372127.89	-1215542.32	1A	54		4	-8
		3572016							
POLE			372134.39	-1215602.17	1A	74		25	12
		3572016							
POLE			372136.17	-1215603.99	1A	78		30	16
		3572016							
TREE			372141.27	-1215606.77	1A	71			9
		3572016							
GRD			372131.42	-1215530.64	1A	53			-9
		3572016							
GRD			372158.69	-1215600.55	1A	43			-19
		3572016							
BLDG			372142.02	-1215607.10	1A	97		49	35
		3572016							
GRD			372130.40	-1215532.19	1A	53			-9
		3572016							
GRD			372157.72	-1215602.07	1A	43			-19
		3572016							
TWR			372133.02	-1215527.88	1A	98		50	36
		3572016							
GRD			372134.94	-1215525.64	1A	51			-11
		3572016							
POLE			372130.75	-1215559.05	1A	99		48	37
		3572016							
GRD			372202.25	-1215555.54	1A	41			-21
		3572016							
SIGN			372137.74	-1215523.21	1A	54		4	-8
		3572016							
SIGN			372139.72	-1215522.09	1A	54		3	-8
		3572016							
GRD			372135.99	-1215524.15	1A	51			-11
		3572016							
POLE			372138.52	-1215607.03	1A	79		32	17
		3572016							
BLDG			372127.80	-1215553.50	1A	82		31	20
		3572016							
GRD			372203.26	-1215554.05	1A	41			-21
		3572016							
GRD			372126.59	-1215541.83	1A	52			-10
		3572016							
GRD			372146.44	-1215609.05	1A	45			-17
		3572016							
BLDG			372126.80	-1215551.15	1A	90		39	28
		3572016							
TREE			372128.51	-1215556.63	1A	96			34

		3572016								
BLDG			372126.00	-1215545.72	1A	92		39	30	
		3572016								
GRD			372148.80	-1215609.16	1A	44			-18	
		3572016								
GRD			372125.85	-1215543.62	1A	51			-11	
		3572016								
SIGN			372128.83	-1215531.35	1A	55		4	-7	
		3572016								
TRMSN TWR			372202.49	-1215531.55	1A	149		103	87	
		3572016								
POLE			372140.23	-1215608.90	1A	78		32	16	
		3572016								
BLDG			372125.54	-1215548.07	1A	100		48	38	
		3572016								
BLDG			372145.18	-1215610.56	1A	97		51	35	
		3572016								
SIGN			372205.23	-1215553.29	1A	42		4	-20	
		3572016								
POLE			372142.03	-1215610.48	1A	76		30	14	
		3572016								
GRD			372125.02	-1215540.08	1A	52			-10	
		3572016								
GRD			372139.14	-1215519.61	1A	52			-10	
		3572016								
WALL			372125.05	-1215551.04	1A	71		19	9	
		3572016								
BLDG			372124.07	-1215542.65	1A	94		42	32	
		3572016								
TREE			372124.95	-1215552.83	1A	109			47	
		3572016								
GRD			372149.12	-1215611.75	1A	44			-18	
		3572016								
TREE			372123.85	-1215547.22	1A	125			63	
		3572016								
POLE			372143.63	-1215612.22	1A	76		31	14	
		3572016								
BLDG			372147.00	-1215612.52	1A	96		50	34	
		3572016								
GRD			372126.51	-1215529.96	1A	53			-9	
		3572016								
GRD			372152.75	-1215611.58	1A	43			-19	
		3572016								
GRD			372127.10	-1215528.55	1A	54			-8	
		3572016								
TREE			372122.83	-1215545.06	1A	102			40	
		3572016								
GRD			372150.80	-1215612.60	1A	45			-17	

		3572016							
TREE			372122.91	-1215549.42	1A	102			40
		3572016							
NAVAID			372123.33	-1215537.45	1A	55		2	-7
		3572016							
POLE			372145.28	-1215613.98	1A	75		30	13
		3572016							
NAVAID			372125.58	-1215529.75	1A	55		3	-7
		3572016							
GRD			372122.61	-1215539.61	1A	53			-9
		3572016							
TREE			372134.07	-1215610.47	1A	150			88
		3572016							
POLE			372141.90	-1215515.68	1A	136		84	74
		3572016							
GRD			372152.12	-1215613.85	1A	44			-18
		3572016							
SIGN			372200.78	-1215608.26	1A	42		4	-20
		3572016							
GRD			372122.59	-1215535.56	1A	53			-9
		3572016							
BLDG			372121.53	-1215541.66	1A	101		47	39
		3572016							
SIGN			372123.35	-1215532.73	1A	53		3	-9
		3572016							
SIGN			372127.14	-1215525.02	1A	57		4	-5
		3572016							
BLDG			372149.24	-1215614.96	1A	96		51	34
		3572016							
GRD			372121.96	-1215536.72	1A	54			-8
		3572016							
GRD			372122.10	-1215534.75	1A	52			-10
		3572016							
TREE			372120.87	-1215547.57	1A	116			54
		3572016							
SIGN			372202.12	-1215608.11	1A	44		5	-18
		3572016							
SIGN			372121.84	-1215535.11	1A	56		3	-6
		3572016							
TREE			372120.52	-1215544.38	1A	113			51
		3572016							
SIGN			372121.71	-1215535.01	1A	56		3	-6
		3572016							
POLE			372147.42	-1215616.32	1A	75		31	13
		3572016							
GRD			372121.53	-1215535.21	1A	53			-9
		3572016							
GRD			372120.78	-1215538.46	1A	54			-8

		3572016							
SIGN			372156.94	-1215613.52	1A	43		3	-19
		3572016							
BLDG			372150.10	-1215616.40	1A	134		90	72
		3572016							
TREE			372120.07	-1215541.08	1A	134			72
		3572016							
TREE			372120.06	-1215541.22	1A	138			76
		3572016							
GRD			372153.54	-1215615.48	1A	44			-18
		3572016							
SIGN			372157.16	-1215613.78	1A	43		3	-19
		3572016							
SIGN			372121.40	-1215532.41	1A	67		16	5
		3572016							
TREE			372119.17	-1215544.62	1A	117			55
		3572016							
SIGN			372158.96	-1215613.57	1A	55		16	-7
		3572016							
POLE			372206.77	-1215605.26	1A	58		23	-4
		3572016							
POLE			372154.71	-1215616.75	1A	66		25	4
		3572016							
VERTICAL POINT			372120.49	-1215531.98	1A	57		4	-5
		3572016							
TREE			372118.44	-1215541.77	1A	100			38
		3572016							
BLDG			372151.89	-1215618.35	1A	134		89	72
		3572016							
POLE			372153.91	-1215617.88	1A	68		25	6
		3572016							
TREE			372137.76	-1215618.69	1A	155			93
		3572016							
RD (N)			372117.38	-1215543.67	1A	69			7
		3572016							
TREE			372116.80	-1215541.09	1A	106			44
		3572016							
TREE			372122.00	-1215608.25	1A	172			110
		3572016							
TREE			372206.94	-1215517.66	1A	154			92
		3572016							
TREE			372151.65	-1215622.28	1A	98			36
		3572016							
TWR			372206.03	-1215614.61	1A	62		26	0
		3572016							
ANT			372154.90	-1215624.09	1A	106		64	44
		3572016							
TREE			372156.51	-1215623.50	1A	116			54

		3572016							
TREE			372157.01	-1215623.92	1A	104			42
		3572016							
TRMSN TWR			372218.71	-1215540.39	1A	168		127	106
		3572016							
TREE			372157.95	-1215625.97	1A	109			47
		3572016							
BLDG			372109.96	-1215538.26	1A	161		103	99
		3572016							
BLDG			372110.06	-1215533.85	1A	147		88	85
		3572016							
POLE			372222.25	-1215600.91	1A	122		87	60
		3572016							
TREE			372109.75	-1215522.81	1A	80			18
		3572016							
TREE			372109.60	-1215522.60	1A	84			22
		3572016							
TREE			372109.47	-1215522.91	1A	97			35
		3572016							
POLE			372110.26	-1215520.36	1A	90		35	28
		3572016							
POLE			372107.02	-1215528.14	1A	142		81	80
		3572016							
TREE			372109.04	-1215521.43	1A	84			22
		3572016							
STADIUM			372106.34	-1215528.95	1A	137		79	75
		3572016							
TREE			372108.25	-1215522.27	1A	105			43
		3572016							
POLE			372208.16	-1215628.67	1A	78		40	16
		3572016							
TREE			372107.99	-1215521.85	1A	109			47
		3572016							
POLE			372109.12	-1215519.12	1A	88		33	26
		3572016							
POLE			372107.32	-1215522.28	1A	92		35	30
		3572016							
BLDG			372217.21	-1215509.16	1A	215		175	153
		3572016							
POLE			372210.53	-1215628.65	1A	83		44	21
		3572016							
POLE			372106.82	-1215521.07	1A	105		48	43
		3572016							
POLE			372108.11	-1215518.00	1A	91		36	29
		3572016							
TREE			372209.21	-1215630.13	1A	86			24
		3572016							
TREE			372209.41	-1215630.50	1A	87			25

		3572016							
TREE			372210.05	-1215630.23	1A	88			26
		3572016							
POLE			372106.20	-1215520.03	1A	89		32	27
		3572016							
TREE			372211.08	-1215630.04	1A	80			18
		3572016							
TREE			372211.49	-1215630.05	1A	78			16
		3572016							
POLE			372107.09	-1215516.89	1A	89		32	27
		3572016							
TREE			372211.98	-1215630.19	1A	82			20
		3572016							
POLE			372105.68	-1215518.98	1A	88		32	26
		3572016							
TREE			372212.34	-1215630.26	1A	84			22
		3572016							
TREE			372105.58	-1215518.16	1A	99			37
		3572016							
TREE			372106.11	-1215516.74	1A	100			38
		3572016							
POLE			372104.65	-1215519.79	1A	89		32	27
		3572016							
POLE			372105.14	-1215517.93	1A	89		32	27
		3572016							
POLE			372106.09	-1215515.78	1A	91		34	29
		3572016							
TREE			372211.54	-1215632.16	1A	99			37
		3572016							
BLDG			372203.93	-1215452.05	1A	195		151	133
		3572016							
TREE			372105.58	-1215516.11	1A	94			32
		3572016							
TREE			372212.12	-1215632.27	1A	78			16
		3572016							
POLE			372103.95	-1215518.87	1A	89		32	27
		3572016							
TREE			372212.68	-1215632.20	1A	79			17
		3572016							
POLE			372104.59	-1215516.90	1A	89		31	27
		3572016							
TREE			372212.70	-1215632.54	1A	86			24
		3572016							
TREE			372105.21	-1215515.10	1A	102			40
		3572016							
TREE			372212.69	-1215632.78	1A	89			27
		3572016							
POLE			372105.13	-1215514.61	1A	91		34	29

		3572016								
TREE			372214.03	-1215631.89	1A	81			19	
		3572016								
TREE			372104.89	-1215514.87	1A	93			31	
		3572016								
TREE			372213.47	-1215632.80	1A	85			23	
		3572016								
TREE			372212.68	-1215633.52	1A	85			23	
		3572016								
TREE			372212.69	-1215633.70	1A	87			25	
		3572016								
TREE			372104.58	-1215514.54	1A	95			33	
		3572016								
TREE			372212.61	-1215633.92	1A	90			28	
		3572016								
TREE			372214.48	-1215632.39	1A	88			26	
		3572016								
TREE			372213.59	-1215633.33	1A	89			27	
		3572016								
TREE			372213.94	-1215633.09	1A	89			27	
		3572016								
TREE			372212.60	-1215634.47	1A	81			19	
		3572016								
TREE			372214.81	-1215632.96	1A	97			35	
		3572016								
TREE			372213.70	-1215634.03	1A	94			32	
		3572016								
POLE			372103.62	-1215514.77	1A	95		36	33	
		3572016								
POLE			372103.74	-1215514.28	1A	95		35	33	
		3572016								
TREE			372213.71	-1215634.32	1A	91			29	
		3572016								
TREE			372215.04	-1215633.09	1A	96			34	
		3572016								
TREE			372102.29	-1215517.28	1A	92			30	
		3572016								
TREE			372215.66	-1215632.68	1A	86			24	
		3572016								
POLE			372120.27	-1215452.77	1A	145		86	83	
		3572016								
POLE			372102.66	-1215515.55	1A	94		35	32	
		3572016								
TREE			372215.16	-1215633.73	1A	116			54	
		3572016								
POLE			372103.23	-1215513.80	1A	94		35	32	
		3572016								
TREE			372215.25	-1215634.08	1A	112			50	

		3572016							
POLE			372102.44	-1215515.00	1A	94		35	32
		3572016							
POLE			372102.93	-1215513.72	1A	95		35	33
		3572016							
TREE			372215.54	-1215634.28	1A	87			25
		3572016							
TREE			372101.60	-1215515.99	1A	94			32
		3572016							
TREE			372215.22	-1215634.72	1A	87			25
		3572016							
POLE			372102.10	-1215514.39	1A	94		35	32
		3572016							
BLDG			372215.13	-1215637.64	1A	101		61	39
		3572016							
SIGN			372109.25	-1215458.44	1A	62		4	0
		3572016							
GRD			372102.38	-1215508.25	1A	65			3
		3572016							
TREE			372059.53	-1215512.78	1A	106			44
		3572016							
SIGN			372110.60	-1215455.33	1A	62		3	0
		3572016							
RD SIGN			372101.84	-1215507.62	1A	84			22
		3572016							
POLE			372100.38	-1215510.31	1A	100		35	38
		3572016							
TREE			372059.08	-1215513.11	1A	103			41
		3572016							
POLE			372100.29	-1215509.82	1A	100		35	38
		3572016							
POLE			372059.66	-1215510.77	1A	100		35	38
		3572016							
POLE			372059.84	-1215509.46	1A	103		36	41
		3572016							
TREE			372216.77	-1215639.72	1A	108			46
		3572016							
GRD			372109.33	-1215454.86	1A	60			-2
		3572016							
POLE			372058.14	-1215512.77	1A	105		42	43
		3572016							
POLE			372102.26	-1215504.48	1A	79		18	17
		3572016							
POLE			372221.16	-1215635.78	1A	61		24	-1
		3572016							
WALL			372232.28	-1215619.20	1A	47		13	-15
		3572016							
POLE			372059.09	-1215510.01	1A	103		35	41

		3572016							
GRD			372104.21	-1215500.76	1A	61			-1
		3572016							
GRD			372104.91	-1215459.56	1A	61			-1
		3572016							
GRD			372107.62	-1215455.69	1A	61			-1
		3572016							
WALL			372102.52	-1215502.72	1A	73		14	11
		3572016							
TREE			372115.70	-1215447.04	1A	96			34
		3572016							
TREE			372221.03	-1215637.46	1A	90			28
		3572016							
WALL			372103.18	-1215500.97	1A	75		14	13
		3572016							
WALL			372102.53	-1215501.90	1A	76		15	14
		3572016							
LOC			372103.41	-1215500.45	1A	82		22	20
		3572016							
RD (N)			372101.84	-1215502.85	1A	77			15
		3572016							
WALL			372103.72	-1215459.87	1A	76		15	14
		3572016							
LOC			372102.67	-1215501.34	1A	85		25	23
		3572016							
ELEC BOX			372102.62	-1215501.19	1A	64		3	2
		3572016							
WALL			372102.01	-1215502.09	1A	72		12	10
		3572016							
TREE			372219.95	-1215639.16	1A	84			22
		3572016							
TREE			372221.46	-1215637.67	1A	94			32
		3572016							
TREE			372235.73	-1215614.51	1A	70			8
		3572016							
WALL			372104.10	-1215458.70	1A	75		15	13
		3572016							
TREE			372221.73	-1215637.60	1A	96			34
		3572016							
POLE			372101.97	-1215501.75	1A	77		15	15
		3572016							
POLE			372101.45	-1215502.40	1A	80		17	18
		3572016							
WALL			372102.20	-1215500.83	1A	72		12	10
		3572016							
RD (N)			372101.91	-1215501.21	1A	76			14
		3572016							
FENCE			372224.57	-1215634.96	1A	49		15	-13

		3572016								
WALL			372101.34	-1215501.87	1A	65		3	3	
		3572016								
WALL			372105.68	-1215455.61	1A	74		15	12	
		3572016								
POLE			372102.21	-1215500.37	1A	77		16	15	
		3572016								
WALL			372106.35	-1215454.65	1A	74		15	12	
		3572016								
WALL			372102.60	-1215459.65	1A	72		12	10	
		3572016								
WALL			372107.02	-1215453.69	1A	74		15	12	
		3572016								
RD (N)			372101.00	-1215502.04	1A	73			11	
		3572016								
POLE			372233.66	-1215621.27	1A	74		40	12	
		3572016								
WALL			372103.20	-1215458.60	1A	72		12	10	
		3572016								
FENCE			372229.55	-1215628.71	1A	50		15	-12	
		3572016								
RD (N)			372102.23	-1215459.96	1A	76			14	
		3572016								
WALL			372232.69	-1215623.34	1A	49		15	-13	
		3572016								
POLE			372101.59	-1215500.92	1A	79		17	17	
		3572016								
POLE			372223.36	-1215637.05	1A	70		32	8	
		3572016								
WALL			372107.69	-1215452.72	1A	73		16	11	
		3572016								
RD SIGN			372057.53	-1215508.18	1A	106			44	
		3572016								
FENCE			372225.44	-1215634.59	1A	49		14	-13	
		3572016								
WALL			372230.14	-1215627.88	1A	49		14	-13	
		3572016								
POLE			372102.71	-1215459.15	1A	77		17	15	
		3572016								
POLE			372103.41	-1215458.10	1A	77		17	15	
		3572016								
WALL			372105.42	-1215455.37	1A	72		12	10	
		3572016								
WALL			372230.68	-1215627.11	1A	49		14	-13	
		3572016								
POLE			372104.16	-1215457.02	1A	77		17	15	
		3572016								
WALL			372108.38	-1215451.79	1A	73		15	11	

		3572016							
FENCE			372232.35	-1215624.28	1A	48		15	-14
		3572016							
WALL			372106.10	-1215454.40	1A	72		12	10
		3572016							
WALL			372231.36	-1215626.13	1A	49		16	-13
		3572016							
RD (N)			372102.89	-1215458.62	1A	76			14
		3572016							
RD (N)			372103.44	-1215457.80	1A	75			13
		3572016							
POLE			372234.85	-1215619.33	1A	79		45	17
		3572016							
WALL			372106.78	-1215453.44	1A	72		12	10
		3572016							
WALL			372101.50	-1215500.62	1A	66		3	4
		3572016							
RD SIGN			372106.13	-1215454.19	1A	70			8
		3572016							
WALL			372232.00	-1215625.22	1A	49		16	-13
		3572016							
RD (N)			372105.23	-1215455.23	1A	76			14
		3572016							
WALL			372107.46	-1215452.49	1A	71		12	9
		3572016							
RD (N)			372105.88	-1215454.30	1A	75			13
		3572016							
WALL			372228.11	-1215631.63	1A	49		15	-13
		3572016							
RD (N)			372103.23	-1215457.78	1A	76			14
		3572016							
WALL			372227.13	-1215633.02	1A	51		14	-11
		3572016							
WALL			372108.16	-1215451.54	1A	71		12	9
		3572016							
POLE			372105.40	-1215454.78	1A	81		20	19
		3572016							
WALL			372226.28	-1215634.23	1A	50		14	-12
		3572016							
POLE			372101.99	-1215459.46	1A	79		17	17
		3572016							
RD SIGN			372100.88	-1215501.19	1A	71			9
		3572016							
RD (N)			372106.60	-1215453.27	1A	75			13
		3572016							
WALL			372101.00	-1215500.87	1A	67		6	5
		3572016							
POLE			372106.12	-1215453.75	1A	81		21	19

		3572016							
WALL			372101.90	-1215459.42	1A	66		5	4
		3572016							
RD (N)			372107.23	-1215452.37	1A	75			13
		3572016							
POLE			372108.28	-1215451.19	1A	76		17	14
		3572016							
RD (N)			372101.19	-1215500.46	1A	76			14
		3572016							
POLE			372106.83	-1215452.74	1A	80		21	18
		3572016							
POLE			372102.56	-1215458.30	1A	79		17	17
		3572016							
FENCE			372225.86	-1215635.09	1A	47		10	-15
		3572016							
WALL			372102.44	-1215458.39	1A	66		5	4
		3572016							
RD (N)			372108.01	-1215451.32	1A	74			12
		3572016							
RD (N)			372105.73	-1215453.91	1A	65			3
		3572016							
POLE			372107.56	-1215451.75	1A	80		20	18
		3572016							
POLE			372109.38	-1215449.77	1A	76		17	14
		3572016							
WALL			372232.98	-1215624.41	1A	44		9	-18
		3572016							
RD SIGN			372107.71	-1215451.51	1A	67			5
		3572016							
RD SIGN			372107.91	-1215451.26	1A	67			5
		3572016							
WALL			372103.00	-1215457.37	1A	67		5	5
		3572016							
RD (N)			372106.35	-1215453.00	1A	70			8
		3572016							
WALL			372104.86	-1215454.83	1A	66		4	4
		3572016							
WALL			372232.45	-1215625.58	1A	45		10	-17
		3572016							
WALL			372231.84	-1215626.69	1A	44		9	-18
		3572016							
POLE			372105.36	-1215454.10	1A	83		21	21
		3572016							
RD SIGN			372101.16	-1215459.92	1A	72			10
		3572016							
WALL			372105.51	-1215453.89	1A	65		4	3
		3572016							
WALL			372231.26	-1215627.73	1A	44		9	-18

		3572016							
WALL			372100.83	-1215500.43	1A	67		5	5
		3572016							
RD (N)			372101.59	-1215459.24	1A	77			15
		3572016							
RD (N)			372107.06	-1215452.01	1A	73			11
		3572016							
RD SIGN			372105.71	-1215453.60	1A	73			11
		3572016							
WALL			372230.71	-1215628.72	1A	45		9	-17
		3572016							
RD (N)			372104.73	-1215454.78	1A	77			15
		3572016							
FENCE			372226.33	-1215635.02	1A	47		10	-15
		3572016							
RD (N)			372102.93	-1215457.16	1A	77			15
		3572016							
POLE			372106.08	-1215453.07	1A	82		21	20
		3572016							
FENCE			372226.76	-1215634.51	1A	47		10	-15
		3572016							
RD (N)			372107.77	-1215451.06	1A	75			13
		3572016							
RD (N)			372102.19	-1215458.13	1A	78			16
		3572016							
RD (N)			372105.45	-1215453.72	1A	77			15
		3572016							
RD SIGN			372101.43	-1215459.13	1A	72			10
		3572016							
POLE			372106.78	-1215452.05	1A	82		18	20
		3572016							
WALL			372104.64	-1215454.64	1A	69		6	7
		3572016							
RD (N)			372226.14	-1215635.50	1A	53			-9
		3572016							
RD (N)			372106.14	-1215452.74	1A	77			15
		3572016							
RD SIGN			372107.42	-1215451.19	1A	67			5
		3572016							
FENCE			372229.02	-1215631.77	1A	46		10	-16
		3572016							
FENCE			372227.57	-1215633.80	1A	47		10	-15
		3572016							
POLE			372107.52	-1215451.05	1A	80		17	18
		3572016							
RD SIGN			372107.62	-1215450.93	1A	70			8
		3572016							
RD SIGN			372105.31	-1215453.61	1A	78			16

		3572016							
TREE			372114.03	-1215444.76	1A	128			66
		3572016							
RD (N)			372106.87	-1215451.72	1A	76			14
		3572016							
WALL			372105.25	-1215453.64	1A	69		5	7
		3572016							
RD (N)			372104.52	-1215454.53	1A	79			17
		3572016							
FENCE			372228.34	-1215632.86	1A	46		9	-16
		3572016							
RD SIGN			372101.23	-1215459.10	1A	72			10
		3572016							
RD SIGN			372232.86	-1215625.78	1A	45			-17
		3572016							
POLE			372104.75	-1215454.14	1A	85		21	23
		3572016							
RD (N)			372232.16	-1215627.05	1A	50			-12
		3572016							
RD (N)			372107.56	-1215450.79	1A	75			13
		3572016							
FENCE			372227.31	-1215634.40	1A	43		7	-19
		3572016							
RD SIGN			372106.97	-1215451.44	1A	83			21
		3572016							
RD (N)			372231.68	-1215627.93	1A	51			-11
		3572016							
RD (N)			372232.57	-1215626.41	1A	49			-13
		3572016							
WALL			372105.86	-1215452.64	1A	70		6	8
		3572016							
RD (N)			372226.95	-1215635.04	1A	53			-9
		3572016							
RD (N)			372105.32	-1215453.23	1A	80			18
		3572016							
RD (N)			372231.34	-1215628.74	1A	50			-12
		3572016							
WALL			372106.57	-1215451.66	1A	70		6	8
		3572016							
RD (N)			372102.55	-1215456.69	1A	79			17
		3572016							
RD (N)			372101.87	-1215457.65	1A	78			16
		3572016							
POLE			372105.87	-1215452.34	1A	86		21	24
		3572016							
RD (N)			372101.10	-1215458.71	1A	78			16
		3572016							
WALL			372107.35	-1215450.60	1A	71		6	9

		3572016							
RD (N)			372106.29	-1215451.74	1A	81			19
		3572016							
RD (N)			372100.36	-1215459.75	1A	77			15
		3572016							
RD (N)			372231.08	-1215629.50	1A	50			-12
		3572016							
RD (N)			372233.30	-1215625.85	1A	49			-13
		3572016							
RD (N)			372059.64	-1215500.75	1A	76			14
		3572016							
RD SIGN			372228.26	-1215633.83	1A	45			-17
		3572016							
RD (N)			372227.70	-1215634.63	1A	53			-9
		3572016							
RD (N)			372107.27	-1215450.42	1A	81			19
		3572016							
RD (N)			372233.75	-1215625.17	1A	48			-14
		3572016							
RD SIGN			372228.52	-1215633.72	1A	45			-17
		3572016							
TREE			372219.82	-1215643.62	1A	110			48
		3572016							
WALL			372104.26	-1215453.64	1A	68		2	6
		3572016							
RD (N)			372232.61	-1215627.66	1A	48			-14
		3572016							
WALL			372104.80	-1215452.90	1A	68		2	6
		3572016							
TREE			372113.19	-1215444.32	1A	120			58
		3572016							
RD (N)			372228.31	-1215634.26	1A	52			-10
		3572016							
WALL			372105.16	-1215452.39	1A	69		3	7
		3572016							
RD SIGN			372229.05	-1215633.31	1A	48			-14
		3572016							
RD (N)			372102.19	-1215456.24	1A	79			17
		3572016							
RD (N)			372101.50	-1215457.20	1A	79			17
		3572016							
TREE			372219.97	-1215643.67	1A	112			50
		3572016							
RD (N)			372232.01	-1215628.83	1A	50			-12
		3572016							
RD (N)			372103.87	-1215453.94	1A	80			18
		3572016							
WALL			372105.56	-1215451.83	1A	69		3	7

		3572016							
RD (N)			372100.73	-1215458.28	1A	78			16
		3572016							
RD (N)			372104.34	-1215453.29	1A	80			18
		3572016							
RD (N)			372104.90	-1215452.50	1A	81			19
		3572016							
WALL			372106.15	-1215451.02	1A	69		3	7
		3572016							
RD (N)			372059.99	-1215459.29	1A	77			15
		3572016							
TREE			372112.50	-1215444.66	1A	131			69
		3572016							
RD SIGN			372227.34	-1215635.86	1A	49			-13
		3572016							
RD (N)			372105.36	-1215451.87	1A	81			19
		3572016							
WALL			372106.70	-1215450.27	1A	70		3	8
		3572016							
RD (N)			372059.23	-1215500.35	1A	77			15
		3572016							
RD (N)			372105.81	-1215451.24	1A	81			19
		3572016							
POLE			372229.40	-1215633.24	1A	60		26	-2
		3572016							
RD (N)			372229.02	-1215633.85	1A	52			-10
		3572016							
RD (N)			372106.35	-1215450.49	1A	82			20
		3572016							
TREE			372221.33	-1215642.82	1A	87			25
		3572016							
RD (N)			372106.83	-1215449.83	1A	82			20
		3572016							
RD (N)			372233.38	-1215627.26	1A	48			-14
		3572016							
BUSH			372233.06	-1215627.92	1A	45			-17
		3572016							
TREE			372113.07	-1215443.70	1A	145			83
		3572016							
BUSH			372232.78	-1215628.52	1A	47			-15
		3572016							
RD (N)			372230.18	-1215632.67	1A	49			-13
		3572016							
RD SIGN			372100.88	-1215457.10	1A	75			13
		3572016							
TREE			372232.57	-1215629.11	1A	59			-3
		3572016							
RD (N)			372101.57	-1215455.84	1A	75			13

		3572016							
POLE			372106.48	-1215449.65	1A	95		29	33
		3572016							
POLE			372105.20	-1215451.12	1A	90		24	28
		3572016							
RD SIGN			372104.16	-1215452.35	1A	80			18
		3572016							
RD (N)			372229.99	-1215633.46	1A	52			-10
		3572016							
RD (N)			372232.22	-1215630.07	1A	53			-9
		3572016							
POLE			372228.94	-1215635.03	1A	47		13	-15
		3572016							
RD (N)			372230.52	-1215632.97	1A	52			-10
		3572016							
FENCE			372103.35	-1215452.98	1A	69		6	7
		3572016							
BUSH			372232.70	-1215629.71	1A	47			-15
		3572016							
RD (N)			372100.67	-1215456.42	1A	74			12
		3572016							
POLE			372234.22	-1215627.41	1A	65		33	3
		3572016							
POLE			372230.05	-1215634.11	1A	61		25	-1
		3572016							
TREE			372106.02	-1215448.93	1A	95			33
		3572016							
TREE			372230.24	-1215634.37	1A	70			8
		3572016							
RD (N)			372234.57	-1215627.50	1A	48			-14
		3572016							
TREE			372111.01	-1215443.88	1A	124			62
		3572016							
RD (N)			372230.71	-1215633.78	1A	51			-11
		3572016							
BLDG			372102.69	-1215452.74	1A	76		14	14
		3572016							
POLE			372107.08	-1215447.58	1A	101		42	39
		3572016							
TREE			372233.01	-1215630.44	1A	56			-6
		3572016							
TREE			372111.73	-1215442.95	1A	125			63
		3572016							
RD (N)			372059.70	-1215456.64	1A	72			10
		3572016							
RD (I)			372235.15	-1215626.96	1A	51			-11
		3572016							
BLDG			372103.33	-1215451.65	1A	72		11	10

		3572016							
TREE			372232.63	-1215631.43	1A	66			4
		3572016							
TREE			372112.38	-1215442.23	1A	91			29
		3572016							
BLDG			372102.81	-1215452.01	1A	72		11	10
		3572016							
RD (N)			372233.12	-1215630.84	1A	59			-3
		3572016							
BLDG			372104.00	-1215450.50	1A	71		12	9
		3572016							
ELEC TRANSMISSION LINE			372108.88	-1215445.21	1A	90		26	28
		3572016							
BUSH			372233.58	-1215630.15	1A	53			-9
		3572016							
SIGN			372235.03	-1215627.75	1A	46		12	-16
		3572016							
BLDG			372103.52	-1215450.93	1A	72		13	10
		3572016							
TREE			372100.38	-1215455.06	1A	86			24
		3572016							
TREE			372233.45	-1215630.53	1A	63			1
		3572016							
RD (N)			372231.36	-1215633.78	1A	50			-12
		3572016							
RD (N)			372232.80	-1215631.62	1A	58			-4
		3572016							
POLE			372234.96	-1215628.18	1A	72		40	10
		3572016							
TREE			372104.17	-1215449.72	1A	124			62
		3572016							
TREE			372052.89	-1215507.60	1A	123			61
		3572016							
RD (N)			372233.44	-1215631.24	1A	62			0
		3572016							
RD (I)			372235.36	-1215628.09	1A	51			-11
		3572016							
TREE			372107.77	-1215445.52	1A	118			56
		3572016							
TREE			372100.45	-1215454.14	1A	83			21
		3572016							
RD (N)			372058.65	-1215456.73	1A	73			11
		3572016							
TREE			372105.21	-1215447.96	1A	84			22
		3572016							
RD (N)			372234.08	-1215630.72	1A	65			3
		3572016							
GUARDRAIL			372234.24	-1215630.51	1A	54		3	-8

		3572016							
TREE			372109.82	-1215443.17	1A	129			67
		3572016							
RD (I)			372235.98	-1215627.60	1A	51			-11
		3572016							
RD SIGN			372233.41	-1215632.19	1A	54			-8
		3572016							
POLE			372234.52	-1215630.42	1A	73		21	11
		3572016							
TREE			372100.15	-1215453.75	1A	87			25
		3572016							
TREE			372059.78	-1215454.18	1A	110			48
		3572016							
RD (N)			372104.99	-1215447.54	1A	75			13
		3572016							
RD SIGN			372234.90	-1215630.15	1A	64			2
		3572016							
POLE			372058.15	-1215456.45	1A	95		38	33
		3572016							
POLE			372235.39	-1215629.38	1A	64		31	2
		3572016							
TREE			372104.69	-1215447.72	1A	89			27
		3572016							
TREE			372059.91	-1215453.58	1A	108			46
		3572016							
BRDG			372235.12	-1215630.11	1A	58		11	-4
		3572016							
POLE			372234.19	-1215631.80	1A	74		26	12
		3572016							
RD (I)			372235.55	-1215629.73	1A	51			-11
		3572016							
RD (N)			372057.62	-1215456.53	1A	75			13
		3572016							
TREE			372111.80	-1215440.38	1A	78			16
		3572016							
TREE			372104.58	-1215447.32	1A	86			24
		3572016							
TREE			372059.61	-1215453.50	1A	82			20
		3572016							
RD (N)			372235.49	-1215630.03	1A	70			8
		3572016							
RD (I)			372236.21	-1215628.78	1A	51			-11
		3572016							
TREE			372059.74	-1215453.24	1A	90			28
		3572016							
RD SIGN			372057.28	-1215456.83	1A	77			15
		3572016							
POLE			372236.67	-1215628.08	1A	67		34	5

		3572016							
POLE			372235.10	-1215631.01	1A	87		34	25
		3572016							
TREE			372103.18	-1215448.57	1A	99			37
		3572016							
RD SIGN			372235.09	-1215631.14	1A	63			1
		3572016							
TREE			372104.91	-1215446.53	1A	121			59
		3572016							
POLE			372235.07	-1215631.21	1A	80		27	18
		3572016							
TREE			372107.70	-1215443.59	1A	133			71
		3572016							
TREE			372110.45	-1215441.07	1A	83			21
		3572016							
RD SIGN			372236.10	-1215629.51	1A	67			5
		3572016							
TREE			372104.37	-1215447.03	1A	83			21
		3572016							
BRDG			372235.41	-1215630.85	1A	58		23	-4
		3572016							
RD SIGN			372057.36	-1215456.18	1A	75			13
		3572016							
RD SIGN			372236.30	-1215629.39	1A	61			-1
		3572016							
WALL			372059.25	-1215453.19	1A	66		3	4
		3572016							
TREE			372102.95	-1215448.33	1A	96			34
		3572016							
TREE			372108.60	-1215442.30	1A	101			39
		3572016							
TREE			372102.79	-1215448.41	1A	95			33
		3572016							
TREE			372106.15	-1215444.63	1A	118			56
		3572016							
TREE			372104.11	-1215446.72	1A	86			24
		3572016							
RD (N)			372236.72	-1215629.30	1A	70			8
		3572016							
RD (I)			372235.90	-1215630.90	1A	51			-11
		3572016							
RD (N)			372059.02	-1215452.92	1A	78			16
		3572016							
BRDG			372237.08	-1215628.94	1A	58		17	-4
		3572016							
RD SIGN			372236.40	-1215630.27	1A	65			3
		3572016							
RD (N)			372056.62	-1215456.26	1A	78			16

		3572016							
TREE			372102.56	-1215448.09	1A	92			30
		3572016							
POLE			372059.15	-1215452.40	1A	77		13	15
		3572016							
POLE			372059.00	-1215452.54	1A	95		32	33
		3572016							
TREE			372103.86	-1215446.44	1A	77			15
		3572016							
TREE			372051.18	-1215506.06	1A	114			52
		3572016							
TREE			372100.53	-1215450.34	1A	77			15
		3572016							
TREE			372102.61	-1215447.74	1A	93			31
		3572016							
TREE			372100.76	-1215450.01	1A	76			14
		3572016							
RD (I)			372236.53	-1215630.50	1A	51			-11
		3572016							
POLE			372235.69	-1215631.96	1A	72		39	10
		3572016							
BLDG			372153.63	-1215426.84	1B	183		135	121
		3572016							
DEBRIS/RUINS			372059.42	-1215451.57	1A	68		2	6
		3572016							
DEBRIS/RUINS			372059.88	-1215450.87	1A	69		4	7
		3572016							
DEBRIS/RUINS			372059.20	-1215451.78	1A	68		2	6
		3572016							
TREE			372103.63	-1215446.18	1A	84			22
		3572016							
DEBRIS/RUINS			372059.42	-1215451.29	1A	69		3	7
		3572016							
BRDG			372237.33	-1215629.71	1A	58		11	-4
		3572016							
GRD			372058.80	-1215452.03	1A	69		2	7
		3572016							
POLE			372237.08	-1215630.30	1A	65		32	3
		3572016							
GRD			372058.99	-1215451.68	1A	69		3	7
		3572016							
RD (I)			372236.11	-1215632.03	1A	51			-11
		3572016							
SIGN			372055.68	-1215456.53	1A	76		11	14
		3572016							
TREE			372105.79	-1215443.50	1A	105			43
		3572016							
TREE			372108.63	-1215440.64	1A	108			46

		3572016							
POLE			372237.94	-1215629.36	1A	88		34	26
		3572016							
RD (N)			372055.63	-1215456.09	1A	81			19
		3572016							
TREE			372109.67	-1215439.43	1A	105			43
		3572016							
GRD			372058.96	-1215451.00	1A	71		5	9
		3572016							
RD SIGN			372238.08	-1215629.43	1A	62			0
		3572016							
TREE			372240.65	-1215624.48	1A	123			61
		3572016							
GRD			372058.81	-1215451.02	1A	70		4	8
		3572016							
TREE			372058.23	-1215451.65	1A	97			35
		3572016							
TREE			372106.72	-1215441.72	1A	116			54
		3572016							
TREE			372103.75	-1215444.68	1A	111			49
		3572016							
TREE			372240.78	-1215624.68	1A	115			53
		3572016							
TREE			372104.38	-1215443.63	1A	119			57
		3572016							
RD (N)			372102.93	-1215445.09	1A	76			14
		3572016							
POLE			372238.00	-1215631.29	1A	87		56	25
		3572016							
TREE			372055.59	-1215454.26	1A	91			29
		3572016							
RD (N)			372054.57	-1215455.84	1A	84			22
		3572016							
TREE			372243.47	-1215619.87	1A	101			39
		3572016							
RD (N)			372057.47	-1215451.31	1A	79			17
		3572016							
TREE			372242.81	-1215621.83	1A	103			41
		3572016							
TREE			372057.61	-1215450.98	1A	90			28
		3572016							
TREE			372059.01	-1215448.68	1A	80			18
		3572016							
TREE			372104.57	-1215442.16	1A	122			60
		3572016							
TREE			372102.10	-1215444.80	1A	81			19
		3572016							
TREE			372105.01	-1215441.61	1A	117			55

		3572016							
TREE			372242.87	-1215622.65	1A	105			43
		3572016							
POLE			372102.38	-1215444.35	1A	93		33	31
		3572016							
TREE			372106.99	-1215439.54	1A	97			35
		3572016							
TREE			372055.27	-1215453.56	1A	104			42
		3572016							
RD SIGN			372109.23	-1215437.44	1A	126			64
		3572016							
TREE			372058.79	-1215448.42	1A	80			18
		3572016							
TREE			372108.03	-1215438.42	1A	118			56
		3572016							
TREE			372058.36	-1215448.62	1A	79			17
		3572016							
TREE			372058.30	-1215448.54	1A	81			19
		3572016							
TREE			372059.30	-1215447.13	1A	105			43
		3572016							
TREE			372101.99	-1215443.75	1A	91			29
		3572016							
TREE			372102.36	-1215443.15	1A	91			29
		3572016							
TREE			372059.17	-1215446.75	1A	91			29
		3572016							
TREE			372058.50	-1215447.60	1A	125			63
		3572016							
TREE			372105.30	-1215439.90	1A	93			31
		3572016							
TREE			372101.58	-1215443.78	1A	92			30
		3572016							
ELEC TRANSMISSION LINE			372238.31	-1215633.86	1A	67		33	5
		3572016							
TREE			372103.05	-1215442.14	1A	97			35
		3572016							
POLE			372056.60	-1215449.96	1A	90		27	28
		3572016							
TREE			372057.96	-1215447.99	1A	99			37
		3572016							
POLE			372237.88	-1215634.84	1A	73		39	11
		3572016							
TREE			372056.76	-1215449.56	1A	92			30
		3572016							
TREE			372105.86	-1215439.10	1A	110			48
		3572016							
TREE			372058.25	-1215447.50	1A	124			62

		3572016								
TREE			372100.90	-1215444.24	1A	99				37
		3572016								
TREE			372059.37	-1215446.06	1A	83				21
		3572016								
TREE			372059.04	-1215446.40	1A	90				28
		3572016								
TREE			372050.27	-1215459.93	1A	131				69
		3572016								
TREE			372059.77	-1215445.35	1A	101				39
		3572016								
TREE			372058.35	-1215447.11	1A	82				20
		3572016								
POLE			372057.99	-1215447.58	1A	93			32	31
		3572016								
TREE			372050.04	-1215500.03	1A	136				74
		3572016								
TREE			372106.96	-1215437.68	1A	113				51
		3572016								
TREE			372059.33	-1215445.70	1A	82				20
		3572016								
TREE			372049.97	-1215459.80	1A	139				77
		3572016								
POLE			372100.02	-1215444.60	1A	92			32	30
		3572016								
TREE			372101.41	-1215442.98	1A	120				58
		3572016								
TREE			372101.22	-1215443.18	1A	116				54
		3572016								
POLE			372100.77	-1215443.66	1A	92			32	30
		3572016								
TREE			372103.91	-1215440.22	1A	118				56
		3572016								
POLE			372058.75	-1215445.91	1A	92			32	30
		3572016								
TREE			372101.87	-1215442.15	1A	100				38
		3572016								
TREE			372058.35	-1215446.25	1A	84				22
		3572016								
TREE			372058.59	-1215445.91	1A	95				33
		3572016								
TREE			372055.95	-1215449.29	1A	98				36
		3572016								
TREE			372100.47	-1215443.33	1A	110				48
		3572016								
TREE			372056.05	-1215448.93	1A	102				40
		3572016								
POLE			372238.72	-1215635.37	1A	73			42	11

		3572016							
FLGPL			372059.81	-1215443.98	1A	92		31	30
		3572016							
TREE			372102.45	-1215440.81	1A	125			63
		3572016							
POLE			372230.65	-1215646.80	1A	83		46	21
		3572016							
TREE			372055.80	-1215448.77	1A	98			36
		3572016							
TREE			372104.85	-1215438.12	1A	94			32
		3572016							
POLE			372058.29	-1215445.07	1A	82		22	20
		3572016							
TREE			372059.84	-1215443.12	1A	88			26
		3572016							
POLE			372230.64	-1215647.52	1A	84		48	22
		3572016							
POLE			372238.78	-1215636.64	1A	80		50	18
		3572016							
TREE			372059.37	-1215443.38	1A	101			39
		3572016							
POLE			372100.13	-1215442.24	1A	94		34	32
		3572016							
TREE			372103.65	-1215438.28	1A	100			38
		3572016							
TREE			372059.33	-1215442.72	1A	104			42
		3572016							
POLE			372059.00	-1215443.08	1A	92		32	30
		3572016							
POLE			372237.31	-1215639.79	1A	76		40	14
		3572016							
TREE			372104.98	-1215436.70	1A	105			43
		3572016							
TREE			372237.06	-1215640.44	1A	69			7
		3572016							
TREE			372058.74	-1215443.06	1A	98			36
		3572016							
ELEC	TRANSMISSION LINE		372238.92	-1215637.85	1A	74		40	12
		3572016							
TREE			372237.16	-1215640.60	1A	67			5
		3572016							
TREE			372102.47	-1215438.44	1A	95			33
		3572016							
BLDG			372059.62	-1215441.35	1A	98		37	36
		3572016							
TREE			372053.69	-1215448.77	1A	101			39
		3572016							
TREE			372100.87	-1215439.51	1A	120			58

		3572016							
TREE			372058.16	-1215442.51	1A	95			33
		3572016							
TREE			372103.54	-1215436.66	1A	124			62
		3572016							
POLE			372239.14	-1215639.12	1A	78		47	16
		3572016							
TREE			372237.58	-1215641.73	1A	67			5
		3572016							
TREE			372047.99	-1215457.10	1A	140			78
		3572016							
POLE			372058.13	-1215441.89	1A	92		32	30
		3572016							
TREE			372237.61	-1215642.03	1A	72			10
		3572016							
TREE			372058.23	-1215441.48	1A	106			44
		3572016							
TREE			372051.04	-1215451.22	1A	107			45
		3572016							
POLE			372237.84	-1215641.91	1A	77		41	15
		3572016							
TREE			372057.69	-1215441.99	1A	101			39
		3572016							
TREE			372237.82	-1215642.25	1A	64			2
		3572016							
TREE			372237.68	-1215642.65	1A	65			3
		3572016							
TREE			372058.84	-1215440.17	1A	96			34
		3572016							
TREE			372059.32	-1215439.50	1A	131			69
		3572016							
TREE			372050.69	-1215450.86	1A	105			43
		3572016							
BLDG			372239.66	-1215640.24	1A	67		36	5
		3572016							
TREE			372237.81	-1215643.08	1A	72			10
		3572016							
TREE			372057.68	-1215440.94	1A	101			39
		3572016							
COMMUNICATION TWR			372201.25	-1215710.39	1A	171		125	109
		3572016							
TREE			372242.82	-1215635.55	1A	63			1
		3572016							
TREE			372057.48	-1215440.86	1A	107			45
		3572016							
TREE			372058.56	-1215439.57	1A	94			32
		3572016							
TREE			372102.35	-1215435.54	1A	113			51

		3572016							
TREE			372057.33	-1215440.87	1A	87			25
		3572016							
TREE			372054.34	-1215444.62	1A	95			33
		3572016							
TREE			372054.62	-1215444.21	1A	92			30
		3572016							
TREE			372238.08	-1215643.51	1A	66			4
		3572016							
TREE			372057.42	-1215440.56	1A	95			33
		3572016							
POLE			372242.65	-1215636.40	1A	72		43	10
		3572016							
TREE			372058.34	-1215439.38	1A	97			35
		3572016							
POLE			372052.58	-1215446.70	1A	95		32	33
		3572016							
FLGPL			372057.34	-1215440.48	1A	103		41	41
		3572016							
TREE			372057.57	-1215440.20	1A	88			26
		3572016							
POLE			372055.74	-1215442.40	1A	89		27	27
		3572016							
POLE			372054.39	-1215444.06	1A	94		32	32
		3572016							
POLE			372049.57	-1215451.10	1A	97		32	35
		3572016							
TREE			372242.29	-1215637.47	1A	72			10
		3572016							
TREE			372238.09	-1215643.92	1A	70			8
		3572016							
POLE			372055.45	-1215442.51	1A	94		32	32
		3572016							
POLE			372056.51	-1215440.98	1A	95		34	33
		3572016							
POLE			372239.65	-1215642.02	1A	80		48	18
		3572016							
TREE			372241.97	-1215638.47	1A	71			9
		3572016							
POLE			372057.21	-1215440.05	1A	94		32	32
		3572016							
SIGN			372239.82	-1215641.92	1A	67		36	5
		3572016							
POLE			372044.49	-1215459.77	1A	128		58	66
		3572016							
POLE			372057.93	-1215438.98	1A	97		32	35
		3572016							
POLE			372052.77	-1215445.38	1A	95		32	33

		3572016							
POLE			372243.29	-1215636.68	1A	74		44	12
		3572016							
POLE			372049.72	-1215449.79	1A	97		33	35
		3572016							
TREE			372101.40	-1215435.07	1A	114			52
		3572016							
TREE			372049.79	-1215449.47	1A	89			27
		3572016							
TREE			372051.06	-1215447.45	1A	103			41
		3572016							
TREE			372050.91	-1215447.68	1A	105			43
		3572016							
POLE			372056.63	-1215439.97	1A	96		35	34
		3572016							
POLE			372057.52	-1215438.61	1A	97		33	35
		3572016							
TREE			372054.61	-1215441.93	1A	107			45
		3572016							
POLE			372241.18	-1215641.31	1A	68		38	6
		3572016							
POLE			372051.95	-1215445.41	1A	95		32	33
		3572016							
TREE			372238.38	-1215645.52	1A	73			11
		3572016							
TREE			372052.14	-1215444.97	1A	120			58
		3572016							
TREE			372056.31	-1215439.43	1A	90			28
		3572016							
TREE			372057.28	-1215438.26	1A	89			27
		3572016							
ELEC	TRANSMISSION LINE		372239.99	-1215643.58	1A	74		41	12
		3572016							
TREE			372056.17	-1215439.43	1A	104			42
		3572016							
POLE			372244.24	-1215637.05	1A	73		43	11
		3572016							
TREE			372050.57	-1215446.70	1A	111			49
		3572016							
TREE			372238.41	-1215646.15	1A	68			6
		3572016							
POLE			372239.74	-1215644.49	1A	73		41	11
		3572016							
TREE			372056.04	-1215439.14	1A	102			40
		3572016							
POLE			372241.70	-1215641.62	1A	68		38	6
		3572016							
TREE			372051.71	-1215444.64	1A	104			42

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POLE			372244.54	-1215637.17	1A	73		45	11
		3572016							
TREE			372240.01	-1215644.55	1A	72			10
		3572016							
POLE			372244.65	-1215637.21	1A	75		45	13
		3572016							
TREE			372238.60	-1215646.58	1A	68			6
		3572016							
TREE			372051.47	-1215444.39	1A	116			54
		3572016							
TREE			372049.96	-1215446.48	1A	114			52
		3572016							
TREE			372050.97	-1215444.97	1A	105			43
		3572016							
TREE			372050.78	-1215445.26	1A	106			44
		3572016							
TREE			372048.56	-1215448.37	1A	114			52
		3572016							
TREE			372240.44	-1215644.62	1A	94			32
		3572016							
TREE			372052.32	-1215442.53	1A	103			41
		3572016							
POLE			372240.31	-1215645.15	1A	79		48	17
		3572016							
TREE			372050.48	-1215445.06	1A	105			43
		3572016							
TREE			372240.41	-1215645.05	1A	70			8
		3572016							
TREE			372049.17	-1215446.95	1A	108			46
		3572016							
TREE			372056.35	-1215437.39	1A	128			66
		3572016							
TREE			372048.15	-1215448.36	1A	94			32
		3572016							
TREE			372050.20	-1215445.00	1A	100			38
		3572016							
TREE			372240.50	-1215645.38	1A	78			16
		3572016							
TREE			372052.43	-1215441.85	1A	98			36
		3572016							
TREE			372053.62	-1215440.14	1A	131			69
		3572016							
TREE			372240.57	-1215645.55	1A	75			13
		3572016							
TREE			372240.57	-1215645.71	1A	81			19
		3572016							
TREE			372051.80	-1215442.27	1A	109			47

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TREE			372056.21	-1215436.78	1A	112			50
		3572016							
TREE			372055.67	-1215437.30	1A	122			60
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TREE			372055.25	-1215437.63	1A	100			38
		3572016							
TREE			372050.64	-1215443.49	1A	97			35
		3572016							
TREE			372048.42	-1215446.74	1A	101			39
		3572016							
TREE			372055.08	-1215437.70	1A	96			34
		3572016							
TREE			372240.74	-1215646.15	1A	92			30
		3572016							
TREE			372055.48	-1215436.45	1A	107			45
		3572016							
TREE			372240.82	-1215646.74	1A	93			31
		3572016							
TREE			372048.06	-1215446.13	1A	105			43
		3572016							
POLE			372246.53	-1215637.95	1A	73		44	11
		3572016							
TREE			372053.90	-1215438.01	1A	98			36
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TREE			372054.40	-1215437.29	1A	97			35
		3572016							
POLE			372243.79	-1215642.90	1A	70		39	8
		3572016							
TREE			372240.90	-1215647.22	1A	74			12
		3572016							
TREE			372048.40	-1215445.14	1A	97			35
		3572016							
TREE			372055.08	-1215436.17	1A	117			55
		3572016							
TREE			372051.12	-1215441.02	1A	99			37
		3572016							
CHIMNEY/SMOKESTACK			372223.94	-1215704.99	1A	168		130	106
		3572016							
TREE			372049.88	-1215442.57	1A	108			46
		3572016							
TREE			372055.27	-1215435.70	1A	112			50
		3572016							
TREE			372053.80	-1215437.42	1A	100			38
		3572016							
TREE			372055.40	-1215435.53	1A	106			44
		3572016							
TREE			372240.98	-1215647.61	1A	99			37

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TREE			372046.59	-1215447.39	1A	105			43
		3572016							
TREE			372049.81	-1215442.48	1A	105			43
		3572016							
SIGN			372238.67	-1215650.83	1A	83		44	21
		3572016							
TREE			372054.55	-1215435.99	1A	109			47
		3572016							
TREE			372055.09	-1215435.35	1A	100			38
		3572016							
TREE			372241.08	-1215648.04	1A	76			14
		3572016							
TREE			372052.08	-1215438.68	1A	107			45
		3572016							
TREE			372049.86	-1215441.47	1A	112			50
		3572016							
TREE			372054.71	-1215435.34	1A	101			39
		3572016							
TREE			372054.87	-1215435.09	1A	105			43
		3572016							
POLE			372241.09	-1215648.66	1A	75		44	13
		3572016							
POLE			372247.66	-1215638.43	1A	74		45	12
		3572016							
TREE			372054.11	-1215435.76	1A	101			39
		3572016							
TREE			372054.48	-1215435.23	1A	108			46
		3572016							
TREE			372053.32	-1215436.55	1A	113			51
		3572016							
TREE			372054.64	-1215434.88	1A	114			52
		3572016							
TREE			372241.21	-1215648.98	1A	88			26
		3572016							
TREE			372239.53	-1215651.41	1A	80			18
		3572016							
TREE			372239.24	-1215651.84	1A	88			26
		3572016							
TREE			372054.17	-1215435.07	1A	111			49
		3572016							
TREE			372054.36	-1215434.82	1A	111			49
		3572016							
TREE			372048.19	-1215442.75	1A	105			43
		3572016							
TREE			372241.27	-1215649.40	1A	81			19
		3572016							
TREE			372239.58	-1215651.63	1A	74			12

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TREE			372239.25	-1215652.22	1A	100				38	
		3572016									
TREE			372049.01	-1215441.24	1A	113				51	
		3572016									
TREE			372239.63	-1215651.86	1A	73				11	
		3572016									
TREE			372054.04	-1215434.69	1A	115				53	
		3572016									
TREE			372053.47	-1215435.30	1A	118				56	
		3572016									
TREE			372048.43	-1215441.71	1A	106				44	
		3572016									
TREE			372241.40	-1215649.81	1A	78				16	
		3572016									
TREE			372241.28	-1215650.13	1A	79				17	
		3572016									
TREE			372053.79	-1215434.63	1A	117				55	
		3572016									
TREE			372053.10	-1215435.31	1A	112				50	
		3572016									
TREE			372048.21	-1215441.45	1A	106				44	
		3572016									
TREE			372046.62	-1215443.76	1A	122				60	
		3572016									
TREE			372053.52	-1215434.52	1A	122				60	
		3572016									
TREE			372053.69	-1215434.07	1A	113				51	
		3572016									
TREE			372241.58	-1215650.57	1A	83				21	
		3572016									
TREE			372052.85	-1215434.95	1A	120				58	
		3572016									
TREE			372048.00	-1215441.19	1A	106				44	
		3572016									
TREE			372047.14	-1215442.35	1A	106				44	
		3572016									
TREE			372053.22	-1215434.34	1A	117				55	
		3572016									
TREE			372046.18	-1215443.58	1A	128				66	
		3572016									
TREE			372052.70	-1215434.64	1A	117				55	
		3572016									
TREE			372047.74	-1215441.06	1A	105				43	
		3572016									
TREE			372051.36	-1215436.23	1A	99				37	
		3572016									
TRMSN TWR			372039.49	-1215455.19	1A	138			67	76	

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TREE			372241.42	-1215651.41	1A	77			15	
		3572016								
TREE			372241.54	-1215651.27	1A	77			15	
		3572016								
TREE			372048.06	-1215440.53	1A	124			62	
		3572016								
TREE			372241.35	-1215651.59	1A	79			17	
		3572016								
TREE			372241.46	-1215651.69	1A	78			16	
		3572016								
TREE			372052.80	-1215434.13	1A	117			55	
		3572016								
TRMSN TWR			372037.35	-1215459.42	1A	177		102	115	
		3572016								
TREE			372050.65	-1215436.65	1A	113			51	
		3572016								
TREE			372047.80	-1215440.42	1A	123			61	
		3572016								
TREE			372047.50	-1215440.75	1A	110			48	
		3572016								
BLDG			372105.09	-1215422.10	1A	235		171	173	
		3572016								
TREE			372053.20	-1215433.11	1A	106			44	
		3572016								
TREE			372052.45	-1215433.87	1A	114			52	
		3572016								
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|TREE                          | 372251.64|-1215643.93|1A|  107|     |     |   45|
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|TREE                          | 372245.87|-1215652.94|1A|   89|     |     |   27|
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|TREE                          | 372044.94|-1215436.77|1A|  116|     |     |   54|
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|TREE                          | 372251.92|-1215644.00|1A|  118|     |     |   56|
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|TREE                          | 372251.78|-1215644.25|1A|  114|     |     |   52|
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|TREE                          | 372248.28|-1215650.57|1A|   93|     |     |   31|
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|TREE                          | 372044.56|-1215436.61|1A|  107|     |     |   45|
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|TREE                          | 372045.75|-1215434.72|1A|  119|     |     |   57|
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|TREE                          | 372049.81|-1215429.47|1A|  109|     |     |   47|
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|TREE                          | 372049.56|-1215429.68|1A|  115|     |     |   53|
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TWR			372028.95	-1215404.59	1A	166		92	104
		3572016							
TRMSN TWR			372026.53	-1215407.29	1A	161		86	99
		3572016							
TRMSN TWR			372029.06	-1215404.02	1A	153		81	91
		3572016							
TRMSN TWR			372017.32	-1215420.40	1A	147		68	85
		3572016							
TREE			371954.34	-1215542.34	1B	234			172
		3572016							
TRMSN TWR			372029.44	-1215403.14	1A	163		90	101
		3572016							
TREE			372334.32	-1215614.65	1B	116			54
		3572016							
TRMSN TWR			372022.08	-1215410.87	1A	168		90	106
		3572016							
TREE			371952.99	-1215540.57	1B	235			173
		3572016							
TREE			372305.88	-1215724.57	1A	113			51
		3572016							
TRMSN TWR			372027.07	-1215402.74	1A	157		83	95
		3572016							
TRMSN TWR			372016.75	-1215416.38	1A	147		69	85
		3572016							
POLE			372032.35	-1215355.69	1A	177		82	115
		3572016							
BLDG			372306.74	-1215727.43	1A	164		137	102
		3572016							
TREE			371950.61	-1215615.21	1B	220			158
		3572016							
TREE			371957.80	-1215433.81	1A	186			124
		3572016							
TREE			372159.18	-1215816.93	1B	165			103
		3572016							
TREE			371944.95	-1215617.94	1B	236			174
		3572016							
BLDG			372348.30	-1215604.74	1B	144		122	82
		3572016							
TREE			372331.18	-1215715.04	1A	122			60

		3572016							
BLDG			372017.70	-1215344.65	1A	253		173	191
		3572016							
CRANE			372015.25	-1215344.10	1A	366		306	304
		3572016							
BLDG			372020.15	-1215336.73	1A	239		157	177
		3572016							
TREE			372112.08	-1215302.02	1B	164			102
		3572016							
CRANE			372013.49	-1215342.39	1A	315		250	253
		3572016							
BLDG			372016.02	-1215338.92	1A	233		152	171
		3572016							
BLDG			372014.44	-1215338.37	1A	255		172	193
		3572016							
BLDG			372010.35	-1215343.18	1A	306		225	244
		3572016							
BLDG			372402.78	-1215549.99	1B	129		106	67
		3572016							
TREE			372043.79	-1215309.38	1B	164			102
		3572016							
BLDG			372005.13	-1215344.70	1A	316		237	254
		3572016							
BLDG			372313.19	-1215800.44	1A	210		183	148
		3572016							
BLDG			372001.76	-1215347.00	1A	255		175	193
		3572016							
BLDG			372022.07	-1215322.64	1A	230		153	168
		3572016							
BLDG			372005.18	-1215340.08	1A	298		215	236
		3572016							
BLDG			372000.47	-1215342.38	1A	258		176	196
		3572016							
TREE			372030.88	-1215309.98	1A	169			107
		3572016							
BLDG			372015.62	-1215323.23	1A	267		186	205
		3572016							
BLDG			372012.37	-1215326.49	1A	237		152	175
		3572016							
BLDG			372005.14	-1215334.57	1A	281		193	219
		3572016							
BLDG			372001.62	-1215338.68	1A	301		219	239
		3572016							
BLDG			372006.26	-1215332.32	1A	328		242	266
		3572016							
BLDG			372013.16	-1215321.93	1A	277		191	215
		3572016							
BLDG			372009.59	-1215324.61	1A	342		256	280

		3572016							
BLDG			371956.94	-1215339.85	1A	241		156	179
		3572016							
BLDG			372002.70	-1215330.49	1A	311		226	249
		3572016							
BLDG			372307.88	-1215819.95	1A	204		173	142
		3572016							
BLDG			371958.83	-1215334.74	1A	255		173	193
		3572016							
BLDG			372004.25	-1215328.09	1A	302		213	240
		3572016							
BLDG			372021.15	-1215308.97	1A	179		98	117
		3572016							
BLDG			371954.09	-1215338.34	1A	255		169	193
		3572016							
BLDG			372308.48	-1215823.45	1A	209		179	147
		3572016							
TREE			372006.71	-1215320.93	1A	194			132
		3572016							
BLDG			371953.71	-1215336.19	1A	343		257	281
		3572016							
BLDG			372019.28	-1215308.22	1A	243		162	181
		3572016							
BLDG			371951.11	-1215338.83	1A	349		262	287
		3572016							
BLDG			371954.54	-1215334.04	1A	314		232	252
		3572016							
BLDG			372018.04	-1215308.24	1A	368		286	306
		3572016							
BLDG			372301.36	-1215830.93	1B	176		144	114
		3572016							
TREE			372319.04	-1215817.85	1A	155			93
		3572016							
BLDG			371951.62	-1215335.30	1A	321		234	259
		3572016							
BLDG			371957.48	-1215326.62	1A	300		211	238
		3572016							
BLDG			372001.88	-1215320.98	1A	362		275	300
		3572016							
BLDG			372015.61	-1215306.64	1A	358		276	296
		3572016							
BLDG			372016.06	-1215306.22	1A	371		292	309
		3572016							
BLDG			371945.46	-1215341.46	1A	319		230	257
		3572016							
BLDG			372006.19	-1215314.10	1A	369		286	307
		3572016							
BLDG			372000.33	-1215320.47	1A	323		233	261

		3572016							
BLDG			372314.56	-1215826.50	1A	217		192	155
		3572016							
BLDG			371959.58	-1215319.05	1A	347		260	285
		3572016							
BLDG			372317.05	-1215825.90	1A	218		192	156
		3572016							
BLDG			372008.60	-1215307.46	1A	233		151	171
		3572016							
BLDG			371943.59	-1215335.91	1A	317		228	255
		3572016							
BLDG			371956.76	-1215318.49	1A	256		167	194
		3572016							
ANT			372126.95	-1215223.26	1B	277		189	215
		3572016							
WATER TWR			371921.73	-1215410.20	1A	235		135	173
		3572016							
BLDG			371944.31	-1215329.15	1A	244		154	182
		3572016							
ANT			372129.09	-1215221.76	1B	263		176	201
		3572016							
BLDG			371945.39	-1215326.02	1A	310		222	248
		3572016							
ANT			372127.55	-1215221.10	1B	287		199	225
		3572016							
AMUSEMENT PARK STRUCTURE			372336.71	-1215817.93	1A	251		230	189
		3572016							
BLDG			371949.23	-1215317.58	1A	365		275	303
		3572016							
ANT			372128.73	-1215218.44	1B	286		199	224
		3572016							
TREE			372414.91	-1215721.27	1A	140			78
		3572016							
TREE			372232.59	-1215222.63	1B	199			137
		3572016							
BLDG			371948.29	-1215313.05	1A	359		265	297
		3572016							
BLDG			371902.86	-1215650.71	1B	310		170	248
		3572016							
TREE			372331.47	-1215833.46	1A	119			57
		3572016							
BLDG			371937.90	-1215321.26	1A	372		283	310
		3572016							
CRANE			372300.61	-1215900.56	1B	179		146	117
		3572016							
CRANE			372256.96	-1215902.72	1B	176		143	114
		3572016							
BLDG			372432.54	-1215646.49	1B	203		190	141

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  |     |     |3572016|
|TREE                          | 372244.11|-1215217.26|1B|  208|     |     |  146|
  |     |     |3572016|
|AMUSEMENT PARK STRUCTURE      | 372345.23|-1215828.63|1A|  195|     |  176|  133|
  |     |     |3572016|
|TREE                          | 371930.00|-1215321.29|1A|  207|     |     |  145|
  |     |     |3572016|
|BLDG                          | 372006.05|-1215239.09|1B|  305|     |  210|  243|
  |     |     |3572016|
|AMUSEMENT PARK STRUCTURE      | 372350.24|-1215830.74|1A|  216|     |  200|  154|
  |     |     |3572016|
|TREE                          | 371842.78|-1215531.94|1B|  256|     |     |  194|
  |     |     |3572016|
|TREE                          | 371914.19|-1215321.85|1A|  205|     |     |  143|
  |     |     |3572016|
|STADIUM                       | 372416.00|-1215811.35|1A|  218|     |  198|  156|
  |     |     |3572016|
|BLDG                          | 372418.32|-1215834.95|1A|  181|     |  166|  119|
  |     |     |3572016|
|TREE                          | 371825.00|-1215446.31|1B|  262|     |     |  200|
  |     |     |3572016|
|TREE                          | 372503.58|-1215844.88|1A|  125|     |     |   63|
  |     |     |3572016|
|CRANE                         | 372506.44|-1215842.88|1A|  222|     |  164|  160|
  |     |     |3572016|
|CRANE                         | 372509.20|-1215843.21|1A|  229|     |  170|  167|
  |     |     |3572016|
|TREE                          | 371815.90|-1215256.76|1A|  227|     |     |  165|
  |     |     |3572016|
|TREE                          | 371912.54|-1215203.43|1A|  221|     |     |  159|
  |     |     |3572016|
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|Additional Information:
                                    |
|THE NATIONAL GEODETIC SURVEY (NGS) CONDUCTED A VALIDATION REVIEW ON THIS SURVEY.
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|THE SOURCE SURVEY DATA WAS RETRIEVED FROM THE FAA AIRPORTS SURVEY-GIS PROGRAM
PROJECT SJC-184363.                         |
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|THE DATA WAS COLLECTED IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5300-18B
SPECIFICATIONS.                              |
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                                    |
|THE DATA WAS VALIDATED THROUGH A MODIFIED NGS QA REVIEW PROCESS (DID NOT INCLUDE
VERIFICATION OF THE DATA RELATIVE TO A |
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|SOURCE OF KNOWN ACCURACY).                                                    |
|                                                                              |
|THIS UDDF WAS CREATED BY NGS AND POSTED TO THE FAA THIRD PARTY SURVEY SYSTEM (TPSS)
AS REQUESTED BY                                                              |
|FAA AERONAUTICAL INFORMATION SERVICES (AIS).                                  |
|                                                                              |
|ANCILLARY INFORMATION (NOT REPORTED IN THE RETRIEVED FILES) WAS OBTAINED FROM FAA
PUBLICATIONS AND ADDED TO THE FILE BY |
|NGS. COMPUTED DATA VALUES WERE DERIVED BY NGS USING THE SUBMITTED INFORMATION AND
ADDED TO THE FILE.                                                           |
|IN ADDITION, THE SUBMITTED DATA WAS CORRECTED WHEN NECESSARY AND PRACTICAL AND/OR
DATA WAS ADDED TO THE DATASET                                                |
|BY NGS.                                                                       |
|                                                                              |
|Features reported in the third segment of the NAVAID section are not considered
"safety critical" per                                                        |
|AC 150/5300-18B and were not reviewed by NGS.                                 |
|                                                                              |
|TO THE BEST OF NGS'S KNOWLEDGE THE AERONAUTICAL DATA IN THIS FILE REPRESENT
FEATURES THAT EXISTED AT THE TIME OF                                         |
|SURVEY.                                                                       |
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