DCA AIRPLANE NOISE ASSESSMENT PROJECT

FREYTAG & ASSOCIATES LLC
ACOUSTICAL CONSULTANTS

DEPARTMENT OF ENERGY & ENVIRONMENT

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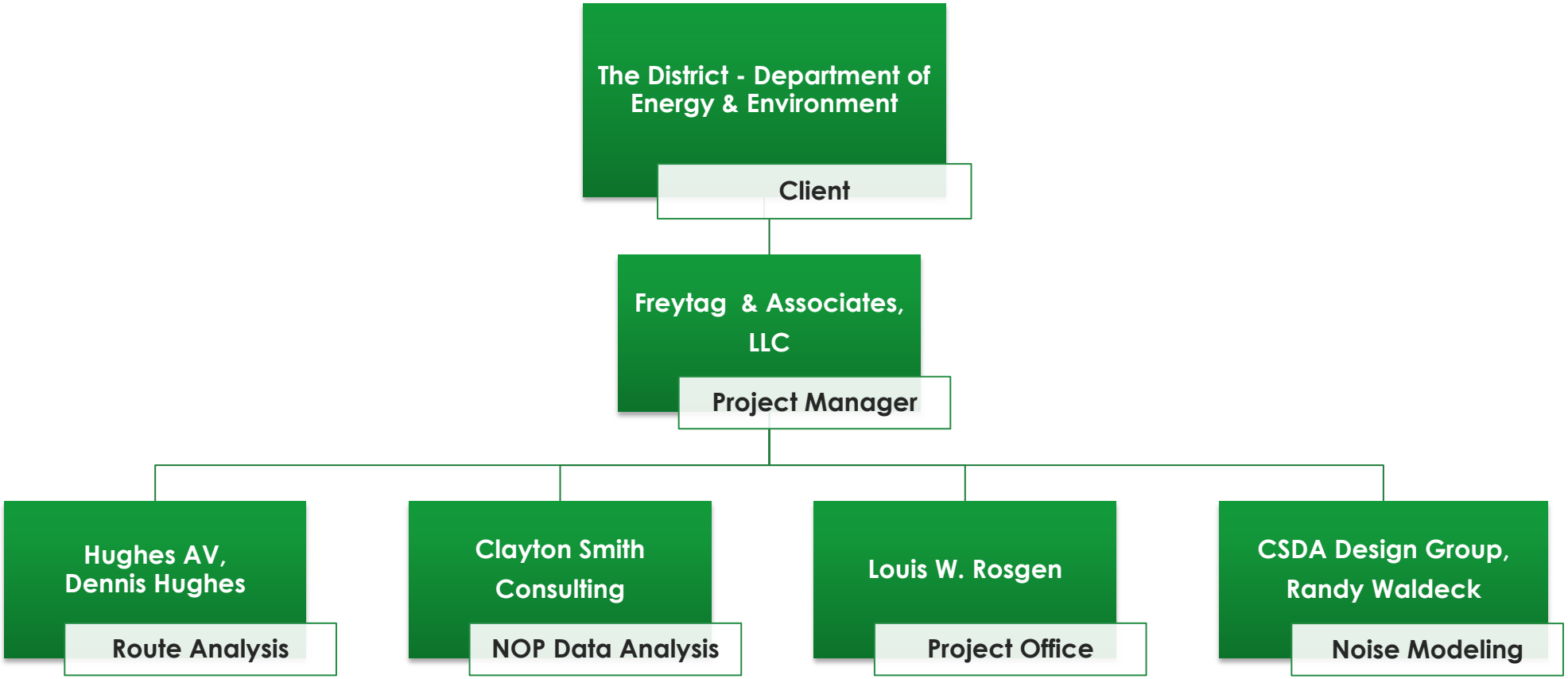
AIR QUALITY DIVISION, MONITORING AND ASSESSMENT BRANCH



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PROJECT OBJECTIVES

- Investigate noise impacts from DCA air traffic operations
- Thoroughly review existing data, supplemented by new investigations, to document the past and current airplane noise environment over the District
- Identify operational changes to minimize noise
- Review current noise abatement procedures
- Assist FAA in NextGen implementation while minimizing noise
- Develop revised air traffic procedures, acceptable to the FAA, to minimize the current noise impact on the District

NEXTGEN

- A new national airspace system transforming America's air traffic control system from a ground-based navigation/radar system with radio communication, to a satellite-based (GPS) system
- Implementation across the U.S. from 2012 to 2025
- Advantages:
  - shorter routes (more direct)
  - saves time and fuel
  - reduces traffic delays
  - increases capacity
  - minimizes voice communication
  - greater safety
  - reduces controller and cockpit work load
- Disadvantage: New air traffic control routes were established over noise-sensitive areas.

PROJECT ACTIVITIES:
EXISTING DATA ASSESSMENT

- Noise complaints – historical review
- Published air routes – review and assess
- DCA noise monitoring records – review and assess
- Noise monitoring in the community

PROJECT ACTIVITIES:
PREDICTION AND RECOMMENDATIONS

- Sleep interference study
- Classroom disruption study
- Recommend new air traffic control routes and procedures
- Computer noise modeling – past and proposed
- Final report – written and presentation

AIR TRAFFIC CONTROL PROCEDURES
APPROACH AND DEPARTURE

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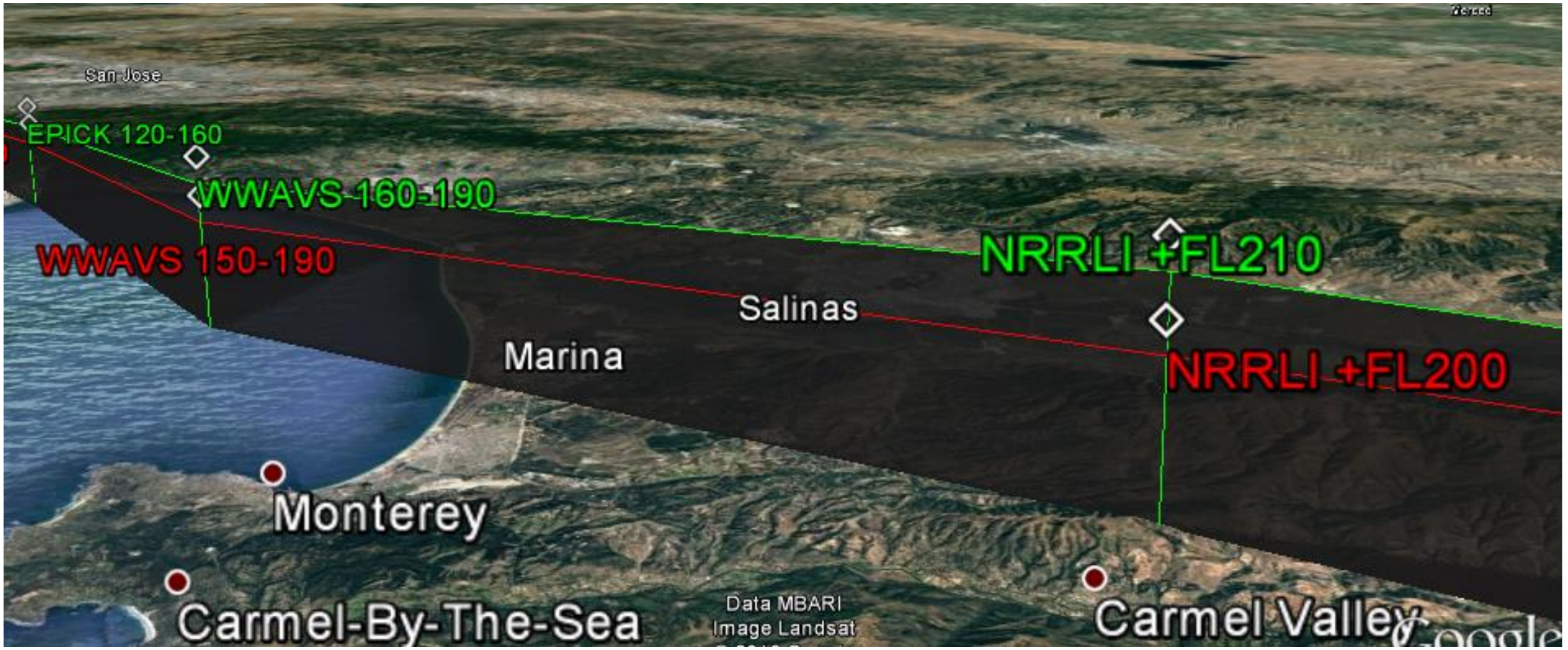
SAMPLE AIR TRAFFIC CONTROL APPROACH



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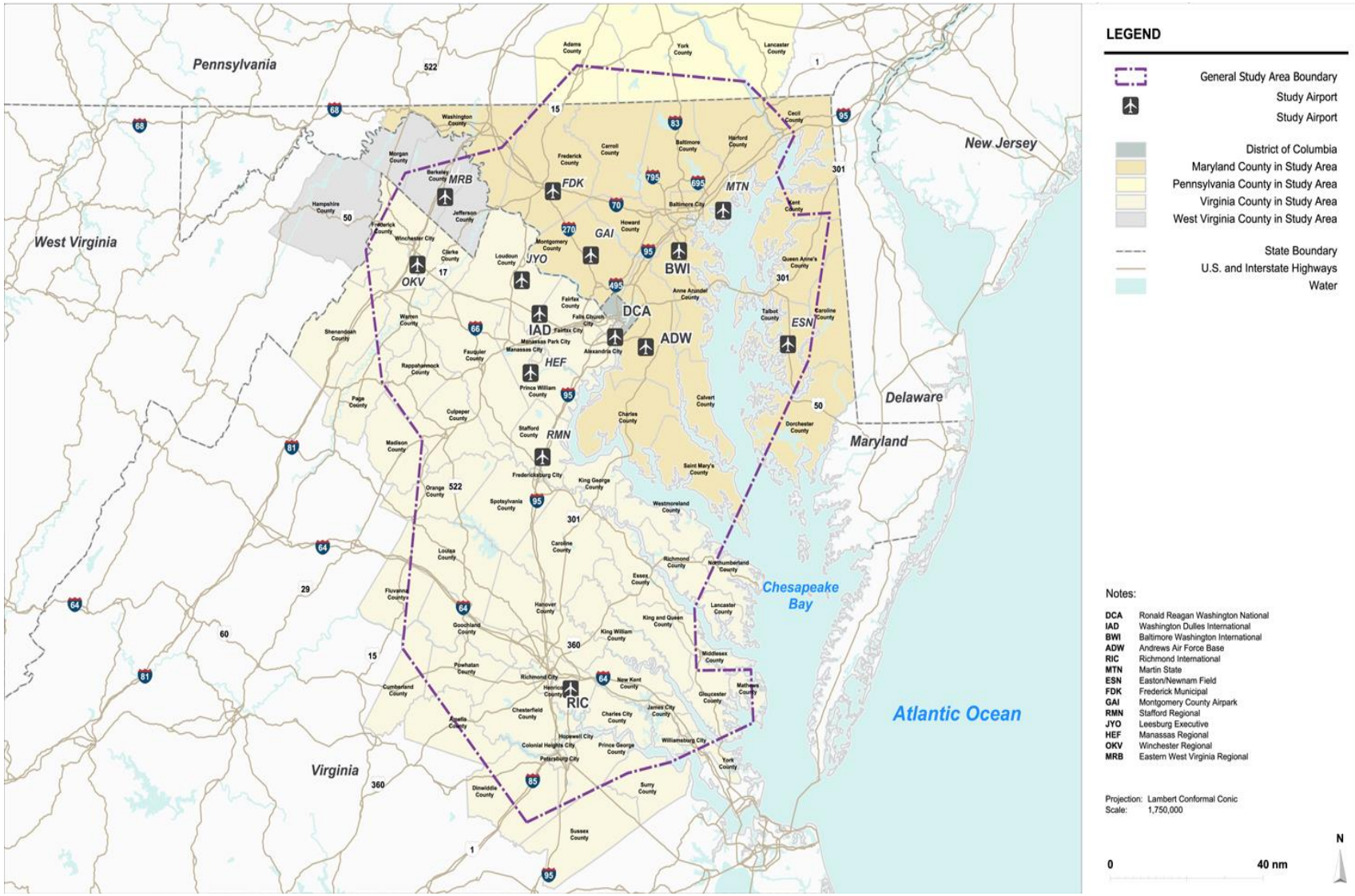
WASHINGTON METROPLEX STUDY AREA



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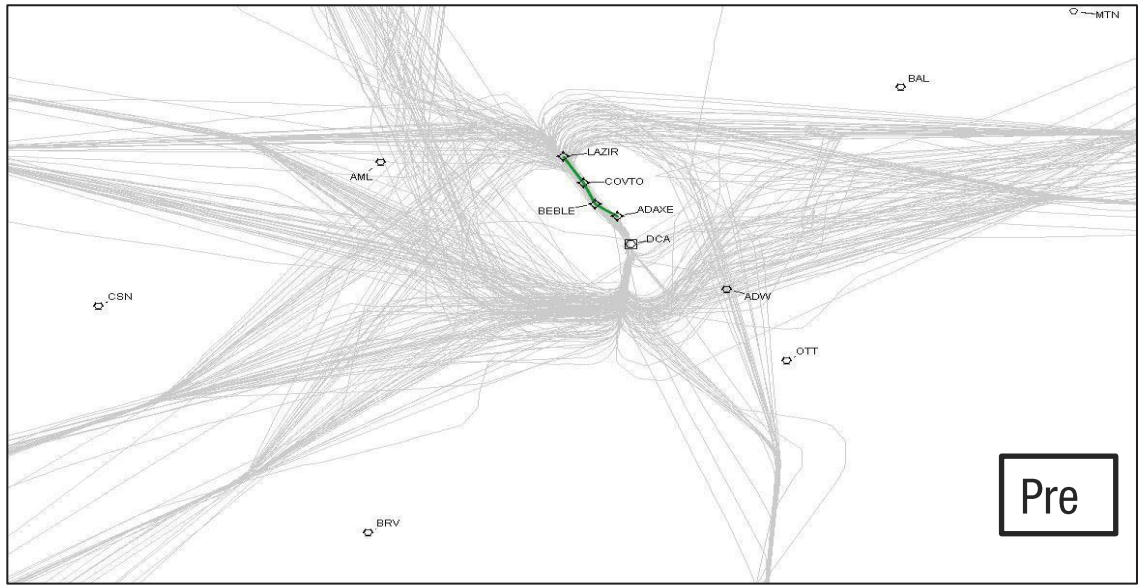
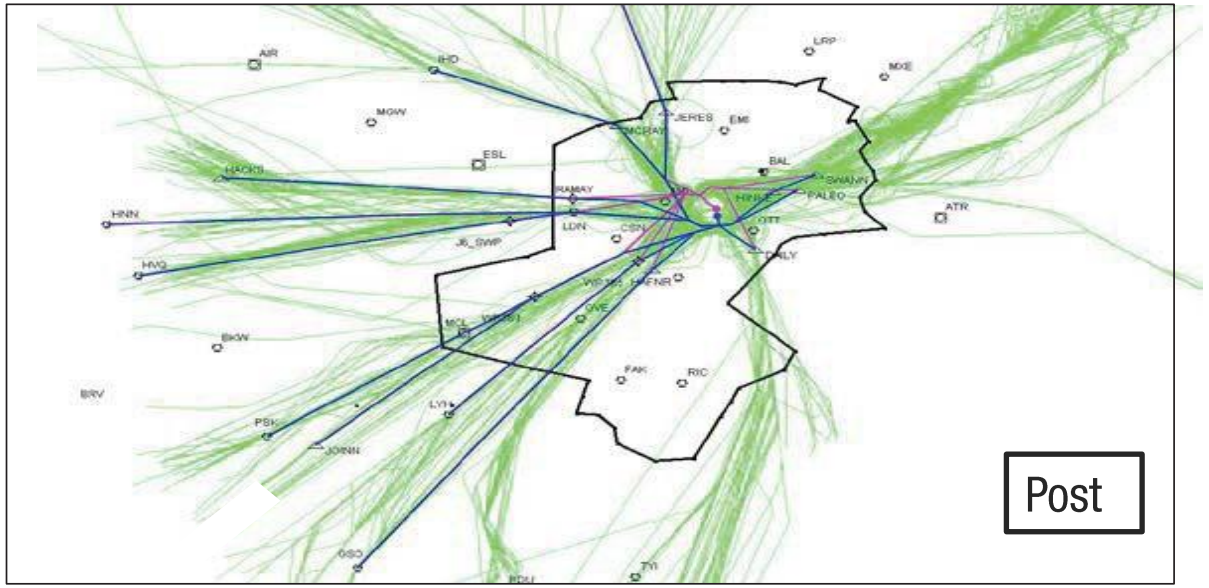
WASHINGTON, DC METROPLEX





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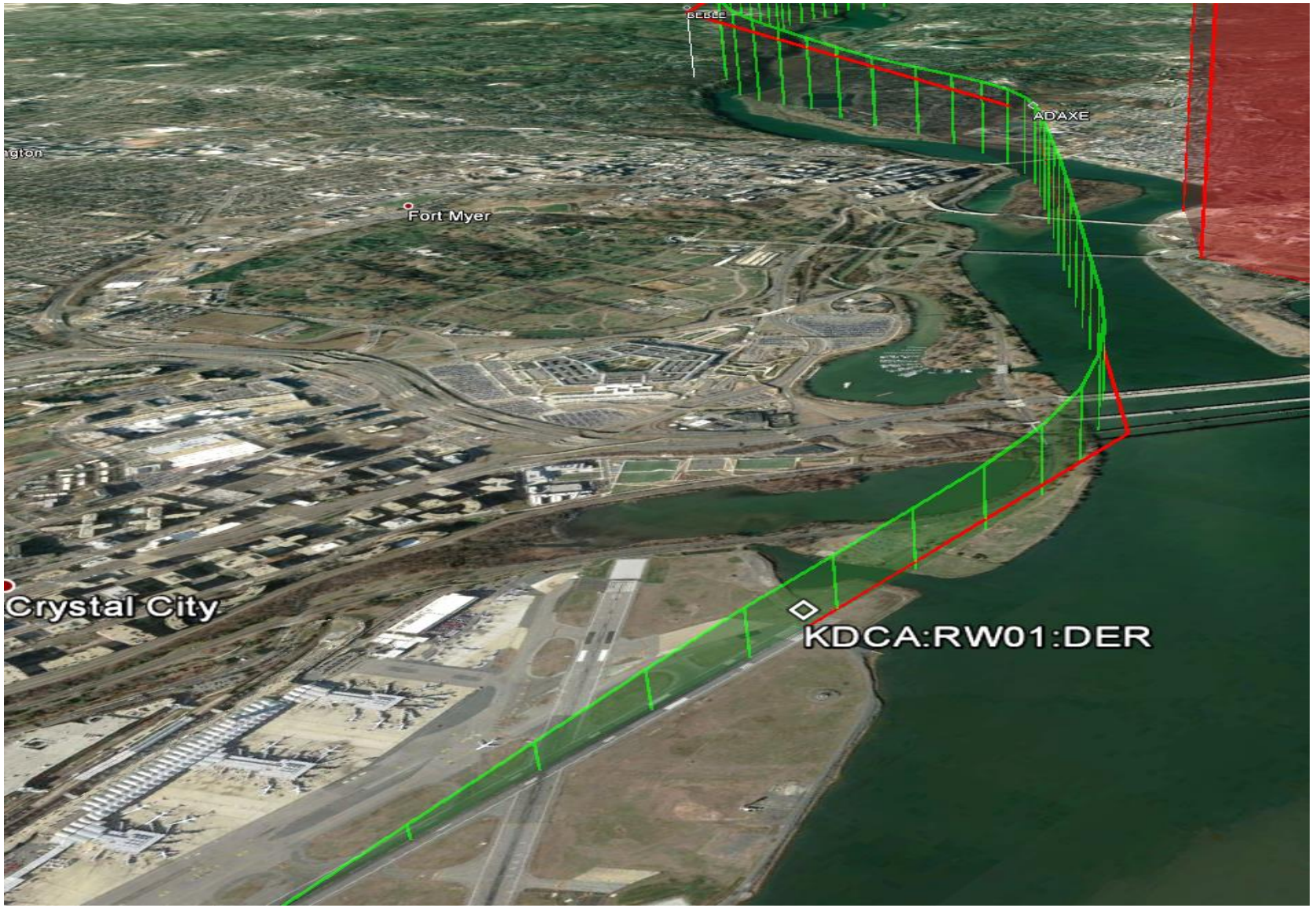
BOOCK TWO RNAV SID: INITIAL TRACK (RWY 01)



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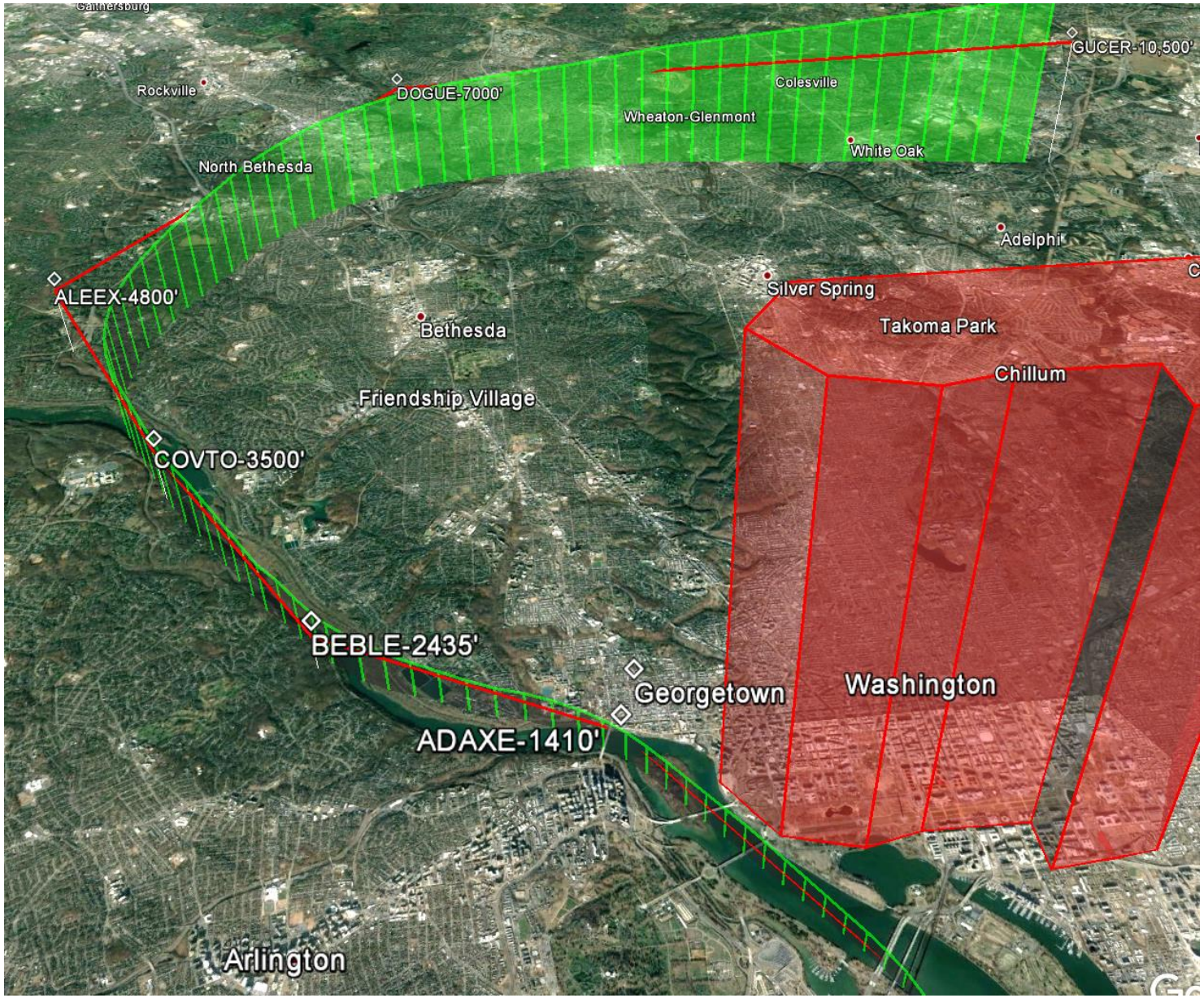

BOOCK TWO RNAV SID NORTH – EAST TRACK (ALTITUDES TARGETS CLIMB RATE)

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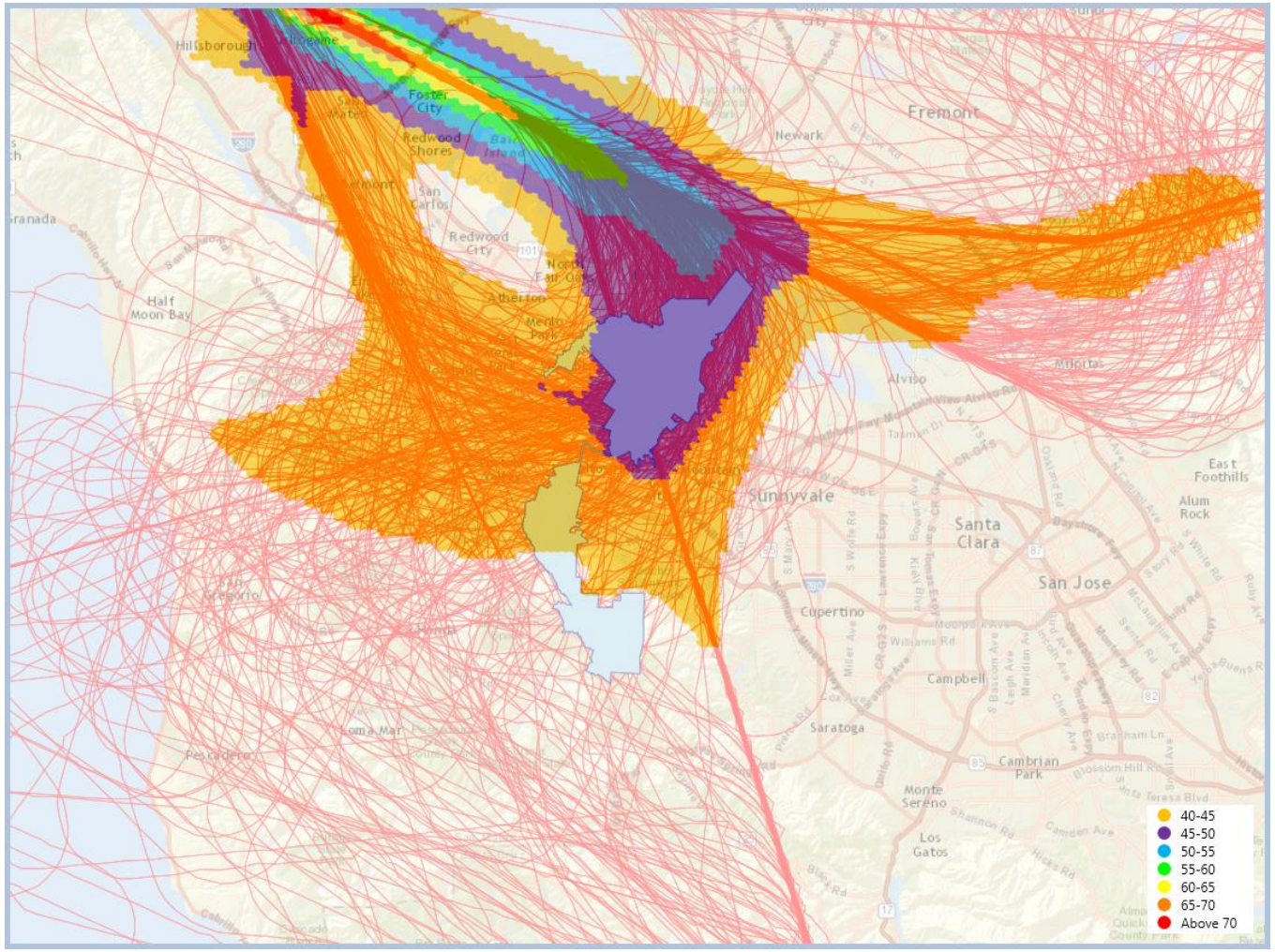
NOISE EXPOSURE CONTOUR (DNL)



- FAA AEDT Noise Model
- Actual flight tracks (in red)
- Models actual aircraft type, altitudes, operation time

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OPTIONS FOR REDUCING NOISE EXPOSURE TO DC COMMUNITIES

- Arrival and/or departure route (altitude) modification
- Arrivals: Optimized Profile Descent (OPD)
- Arrival traffic management: In-trail sequencing – inbound flights
- New and more precise Area Navigation (RNAV) procedures
- Amend descent profiles fix to fix
- Reduce track miles and amend track speed
- Minimize delayed vectoring

COMMUNITY INPUT

- **Record major noise events**
  - ✓ Date, time, location, direction, aircraft
- **Noise monitoring at three locations**
  - ✓ Greater noise impact, diverse communities, quiet locations
- **Nighttime noise monitoring in three homes**
  - ✓ Noise impact, diverse locations, quiet interior (no occupants)
- **Noise monitoring at two schools (school day)**
  - ✓ Noise impact, diverse locations, no occupants

PALO ALTO RESULTS

- Identified new air traffic control procedures to minimize noise
- Showed noise exposure increases with NextGen
- Documented all results
- Community presentation
- Submitted to the FAA for review – Select Committee from local communities

CONCLUSIONS

- **Assessments:**
  - Published routes
  - Actual procedures
  - Old and new noise monitoring data
  - Noise modeling of existing and recommended procedures
- **Recommendations**
  - Viable changes in ATC procedures to minimize noise throughout the District

CONTACT INFO

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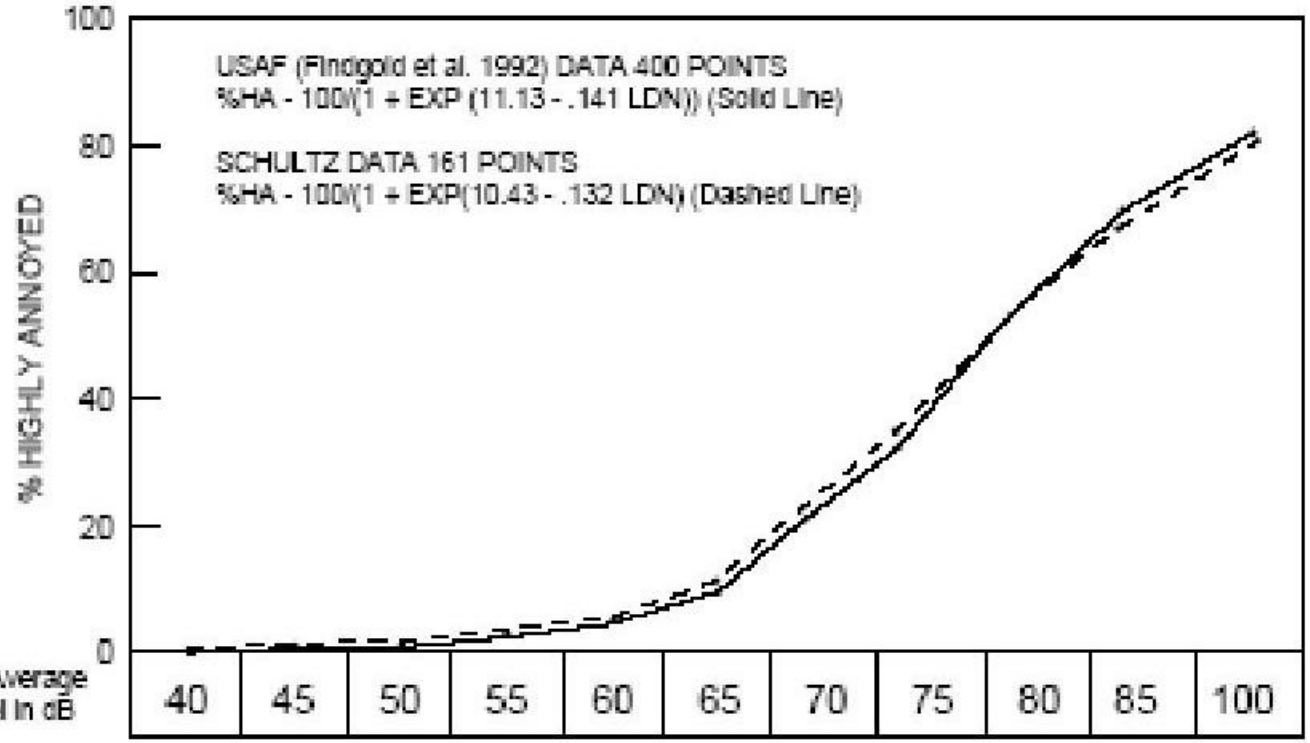
- **Monitoring and Assessment Branch, Air Quality Division**
  - **Phone: 202.535.2250**

FICON 1992 Re-Affirmation of Schultz Curve



Calculated %HA Points	40	45	50	55	60	65	70	75	80	85	100
USAF	0.41	0.831	1.66	3.31	6.48	12.29	22.1	36.47	53.74	70.16	82.64
SCHULTZ	0.576	1.11	2.12	4.03	7.52	13.59	23.32	37.05	53.25	68.78	81

FICON (1992) re-affirmation of Schultz (1978) and DNL was the last in-depth review for the FAA

Source: Federal Agency Review of Selected Airport Noise Analysis Issues, Volume 2: Technical Report, Federal Interagency Committee on Noise, August1992