

## Disclaimer

This study was created for the purposes of providing general planning information and guidance in regards to potential development heights and the limitations imposed by Peachtree-DeKalb Airport aviation activities. It should be noted that there exists a disagreement within the aviation community in regards to the description of the constraints created by the departure procedures on runways 21L and 21R. The interpretations made by Capitol Airspace Group are detailed on page. 8 of this study.

Prospective developers should exercise due diligence and coordinate with the Federal Aviation Administration when undertaking engineering and construction activities. The processes and directives that define this procedure are detailed in Title 14 Part 77 of the Code of Federal Regulations.

# Buford Highway Corridor Height Zoning

City of Brookhaven

*Brookhaven, Georgia*

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*Obstruction Evaluation & Airspace Analysis*

April 27, 2017



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## Summary

Capitol Airspace conducted an obstruction evaluation and airspace analysis for the Buford Highway Corridor Height Zoning project in Brookhaven, Georgia. The purpose for this analysis was to identify obstacle clearance surfaces established by the Federal Aviation Administration (FAA) that could limit the height of structures proposed within the defined study area (red, **Figure 1**).

The FAA requires that all structures exceeding 14 CFR Part 77.9 notice criteria be submitted to the FAA so that an aeronautical study can be conducted. The FAA's objective in conducting aeronautical studies is to ensure that proposed structures do not have an effect on the safety of air navigation and the efficient utilization of navigable airspace by aircraft. The end result of an aeronautical study is the issuance of a determination of 'hazard' or 'no hazard' that can be used by the proponent to obtain necessary local construction permits. It should be noted that the FAA has no control over land use in the United States and cannot enforce the findings of its studies.

Height constraints overlying the study area range from 1,075 to 1,760 feet above mean sea level (AMSL) and are associated with DeKalb-Peachtree Airport (PDK) visual flight rules (VFR) traffic pattern airspace, visual glide slope indicators (VGSI), and instrument approach procedures. Proposed structures that exceed these surfaces would have an impact on VFR traffic pattern operations, VGSI glidepath angles, and instrument approach procedure minimum altitudes. If the FAA determines that one or the sum of these impacts would affect a significant volume of operations it could be used as the basis for determinations of hazard.

This study did not consider electromagnetic interference on communications, navigation, or radar surveillance systems. Impact on these systems could be used as the basis for determinations of hazard regardless of the lack of impact on the physical airspace surfaces described in this report.

*Capitol Airspace applies FAA defined rules and regulations applicable to obstacle evaluation, instrument procedures assessment and visual flight rules (VFR) operations to the best of its ability and with the intent to provide the most accurate representation of limiting airspace surfaces as possible. Capitol Airspace maintains datasets obtained from the FAA which are updated on a 56 day cycle. The results of this analysis/map are based on the most recent data available as of the date of this report. Limiting airspace surfaces depicted in this report are subject to change due to FAA rule changes and regular procedure amendments. Therefore, it is of the utmost importance to obtain FAA determinations of no hazard prior to making substantial financial investments in building projects.*

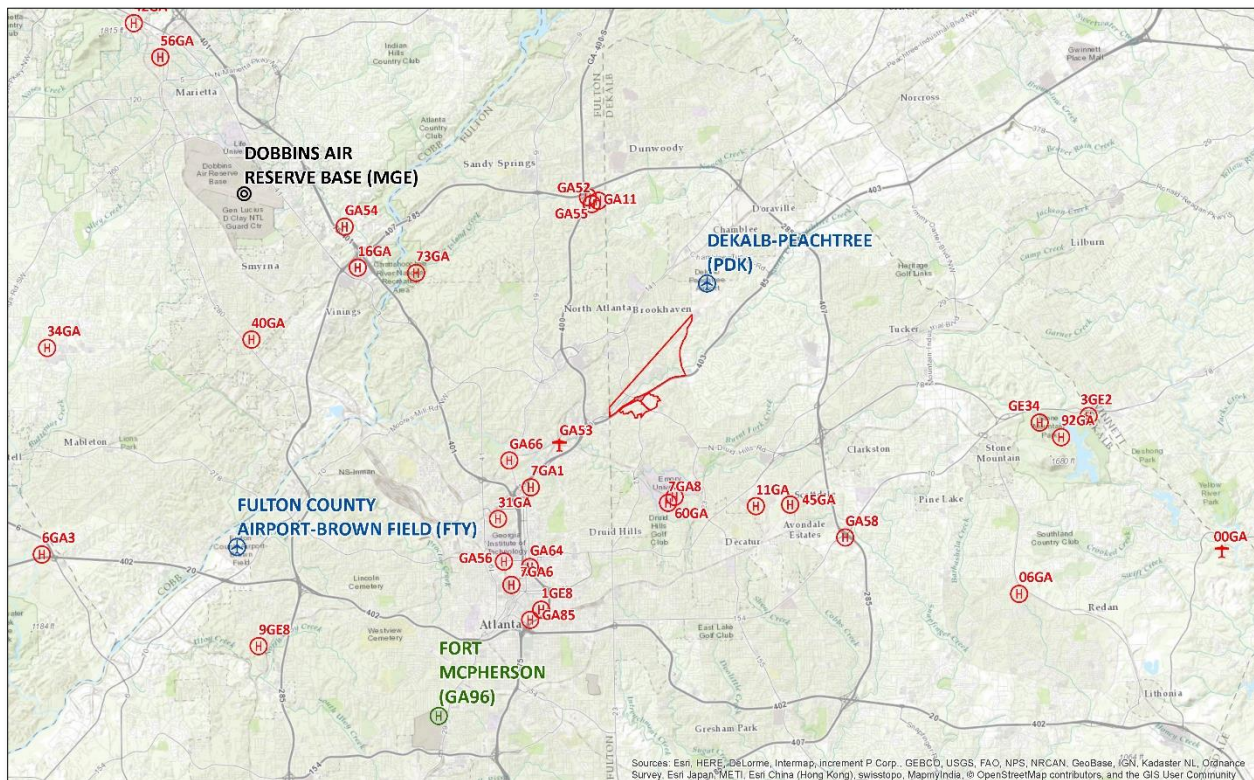


## Methodology

Capitol Airspace studied the proposed project based upon location information provided by the City of Brookhaven. Using this information, Capitol Airspace generated graphical overlays to determine proximity to airports (**Figure 1**), published instrument procedures, enroute airways, FAA minimum vectoring altitude and minimum instrument flight rules (IFR) altitude charts, and military airspace and training routes.

Capitol Airspace evaluated all 14 CFR Part 77 imaginary surfaces, published instrument approach and departure procedures, VFR operations, FAA minimum vectoring/IFR altitudes, and enroute operations. All formulas, headings, altitudes, bearings and coordinates used during this study were derived from the following documents and data sources:

- 14 CFR Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace
- FAA Order 7400.2L Procedures for Handling Airspace Matters
- FAA Order 8260.3C United States Standard for Terminal Instrument Approach Procedures
- FAA Order 8260.58A United States Standard for Performance Based Navigational (PBN) Instrument Procedure Design
- United States Government Flight Information Publication, US Terminal Procedures
- National Airspace System Resource Aeronautical Data



**Figure 1: Public-use (blue), private-use (red), and military (black & green) airports and heliports in proximity to Buford Highway Corridor study area**



## Study Findings

### 14 CFR Part 77 Imaginary Surfaces

The FAA uses level and sloping imaginary surfaces to determine if a proposed structure is an obstruction to air navigation. Structures that are identified as obstructions are then subject to a full aeronautical study and increased scrutiny. Structures that are not designated obstructions are, in most cases, automatically issued favorable determinations.

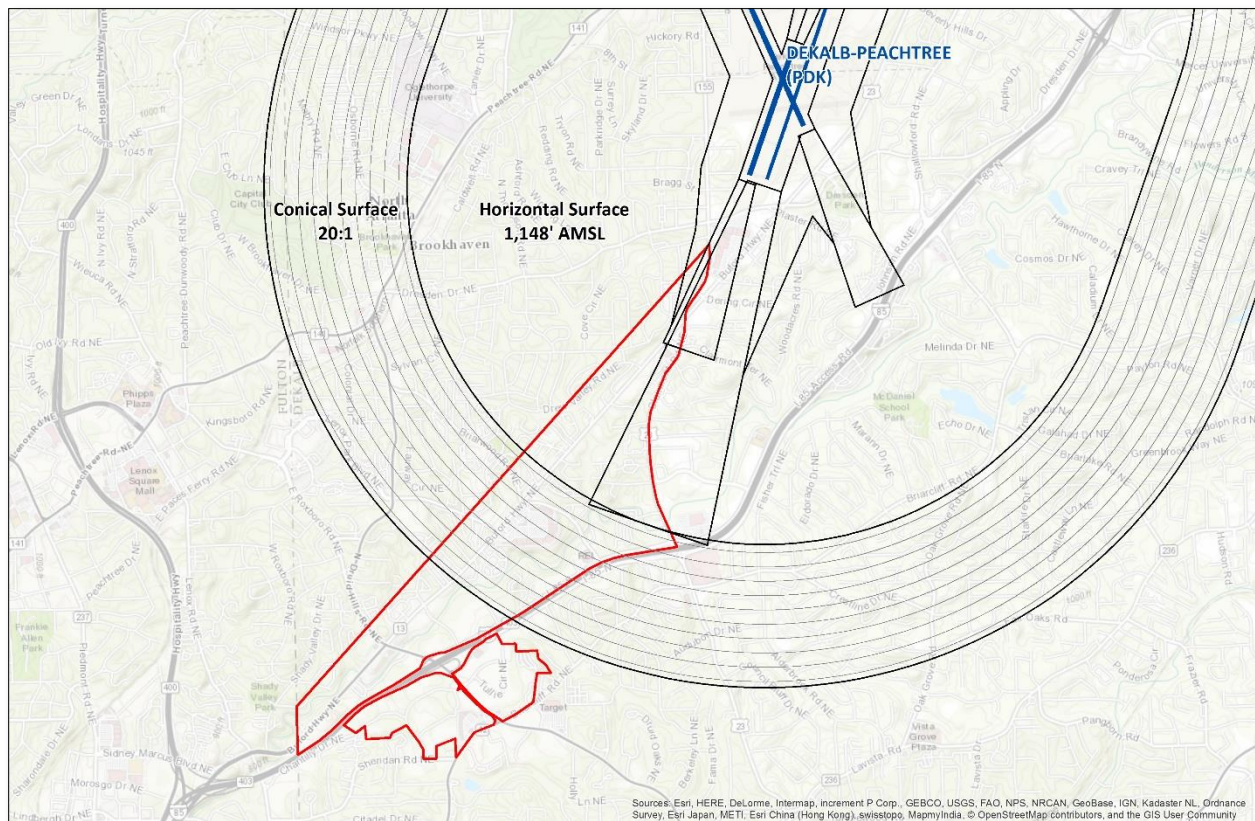
Proposed structures that exceed 14 CFR Part 77 imaginary surfaces will be identified as obstructions and may require marking and lighting in accordance with FAA Advisory Circular 70/7460-1L. However, exceeding a Part 77 imaginary surface does not automatically result in the issuance of a determination of hazard. Proposed structures must have airspace impacts that constitute a substantial adverse effect in order to warrant the issuance of determinations of hazard.

14 CFR Part 77 imaginary surfaces (**Figure 2 & Figure 3**) overlying the Buford Highway Corridor project:

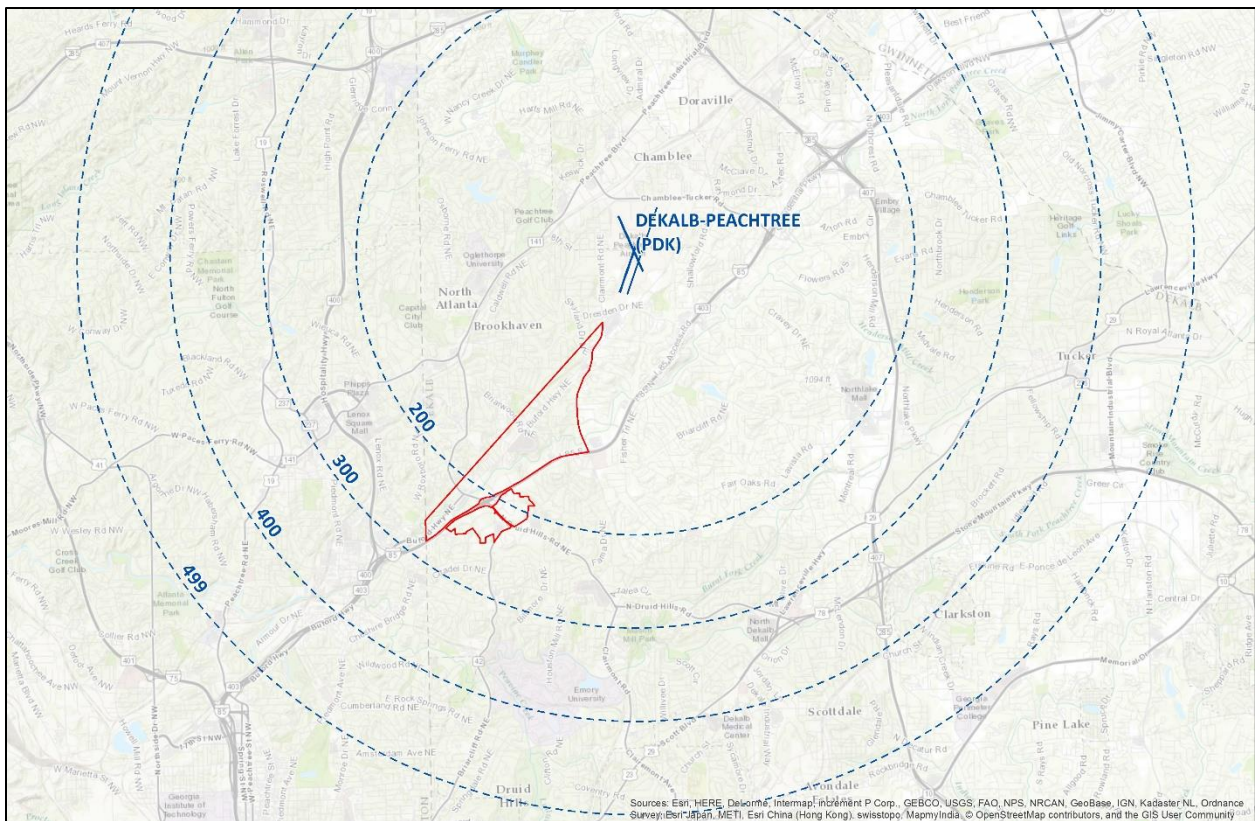
#### Dekalb-Peachtree (PDK)

77.17(a)(2): 1,198 to 1,277 feet AMSL

77.19: 1,065 to 1,348 feet AMSL



**Figure 2: Dekalb-Peachtree Airport (PDK) 14 CFR Part 77.19 (black) imaginary surfaces**



**Figure 3: Dekalb-Peachtree Airport (PDK) 14 CFR Part 77.17(a)(2) (dashed blue) imaginary surfaces**



### Visual Flight Rules (VFR) Traffic Pattern Airspace

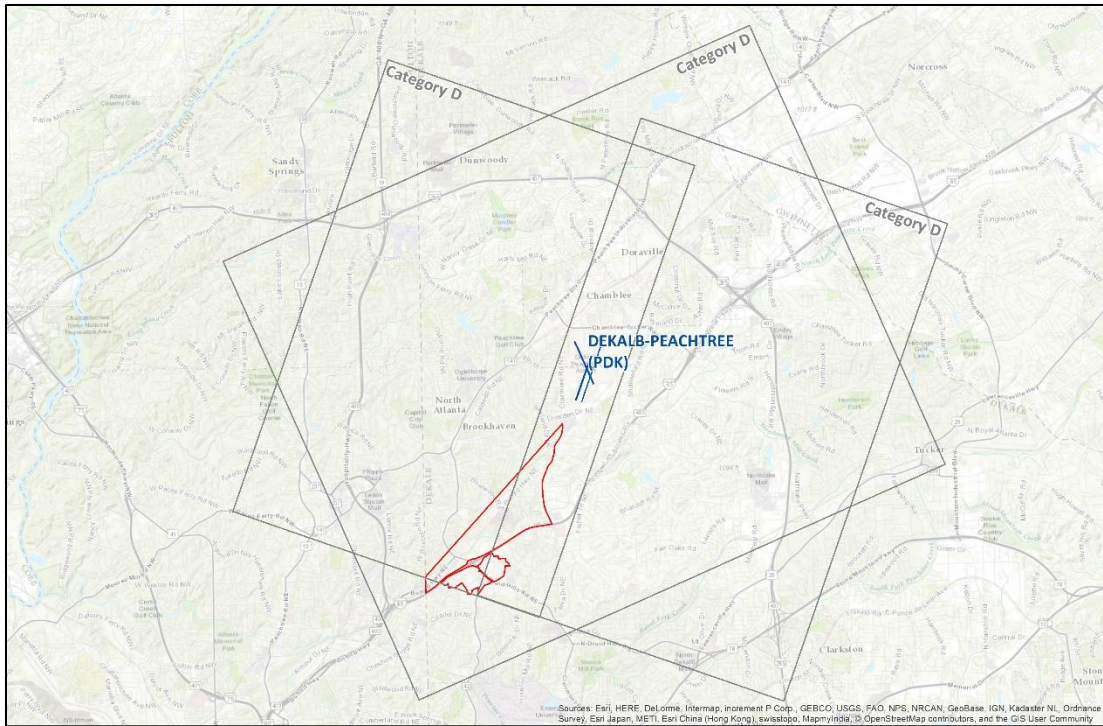
VFR traffic pattern airspace is used by pilots operating during visual meteorological conditions. The airspace dimensions are based upon the category of aircraft which, in turn, is based upon the approach speed of the aircraft. 14 CFR Part 77.17(a)(2) and 77.19 (as applied to a *visual* runway) imaginary surfaces establish the obstacle clearance surface heights within VFR traffic pattern airspace.

Dekalb-Peachtree Airport VFR traffic pattern airspace overlies the entire study area (*Figure 4*). While the FAA may initially protect for up to Category D VFR traffic pattern airspace, not all runways are likely to support a significant volume of Category D operations. As a result, the FAA will ultimately apply VFR traffic pattern airspace considering the airport’s likely operations and runway physical characteristics (*Table 1* & *Figure 5*).

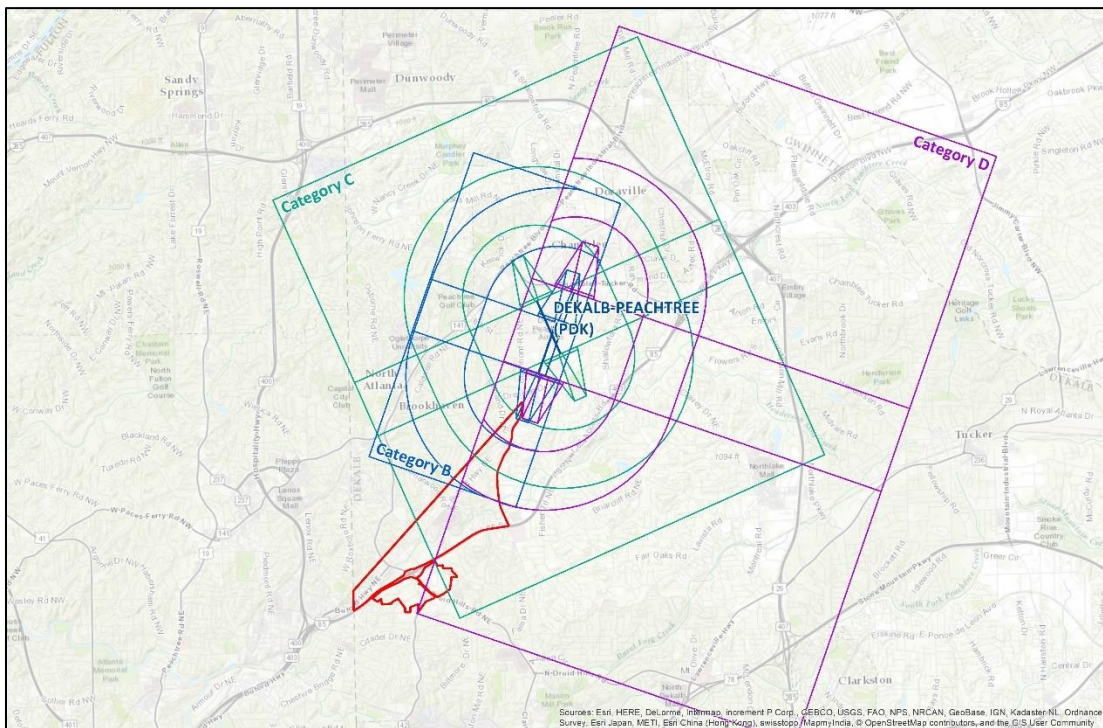
The likely VFR traffic pattern airspace applications at Dekalb-Peachtree Airport overlie the majority of the study area. The associated obstacle clearance surfaces range from 1,100 to 1,348 feet AMSL and are some of the lowest height constraints overlying the northeastern section of the study area.

Airport	Runway	Dimensions	Surface	Weight Bearing Capacity (pounds)	Potential Category	Likely Category
Dekalb-Peachtree (PDK)	03L/21R	3,746 x 150	Asphalt	20,000 (Single Wheel)	-	B
	03R/21L	6,001 x 100	Concrete	46,000 (Single Wheel) 75,000 (Double Wheel)	-	D
	16/34	3,967 x 150	Asphalt	20,000 (Single Wheel)	-	C

*Table 1: Runway physical characteristics and likely VFR traffic pattern airspace application*



**Figure 4: Dekalb-Peachtree Airport (PDK) VFR traffic pattern airspace**



**Figure 5: Dekalb-Peachtree Airport (PDK) likely VFR traffic pattern airspace**



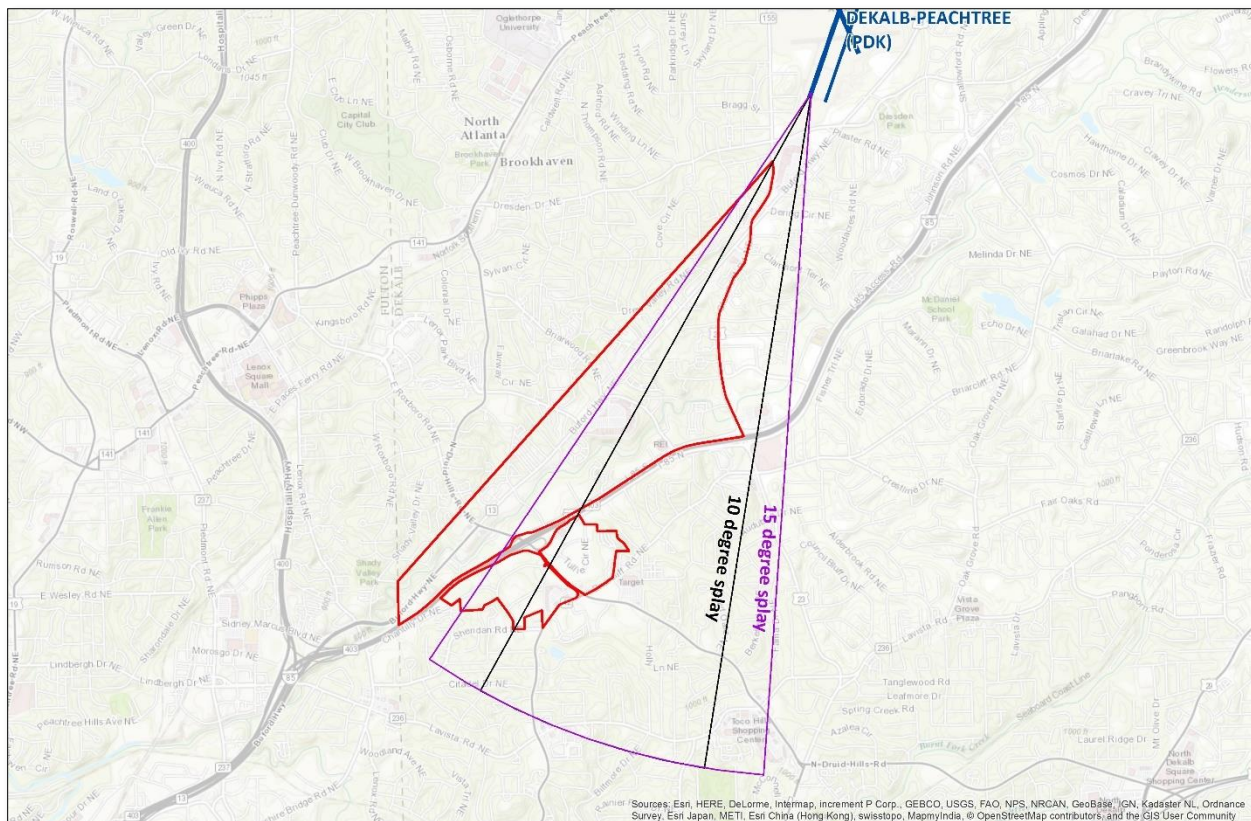


### Visual Glide Slope Indicators

Visual Glide Slope Indicators (VGSI) provide a visual aid to aircraft approaching to land. Different light combinations indicate an approaching aircraft’s position relative to the published visual glide path angle. Proposed obstacles that exceed VGSI obstacle clearance surfaces would require an increase to the published visual glidepath angle and/or threshold crossing height. If the FAA determines this impact to constitute a substantial adverse effect it could be used as the basis for determinations of hazard.

Dekalb-Peachtree Airport Runway 03L (black and purple, **Figure 6**) and Runway 03R precision approach path indicator (PAPI) obstacle clearance surfaces overlie the Buford Highway Corridor study area. The Runway 03L PAPI obstacle clearance surfaces are the lowest and range from 1,075 to 1,612 feet AMSL where they overlie the study area. These surfaces are the lowest height constraints in the northeastern section of the Buford Highway Corridor study area.

Proposed structures that exceed the PAPI 15 degree splay (purple, **Figure 6**) obstacle clearance surfaces would require an FAA Flight Inspection. The purpose of this flight inspection would be to identify the lateral limits of the PAPI visible light beam and to determine if “baffling” is necessary. The costs associated with this flight inspection and with the potential baffling would be the responsibility of the building developer.



**Figure 6: Dekalb-Peachtree Airport (PDK) Runway 03L PAPI obstacle clearance surfaces**

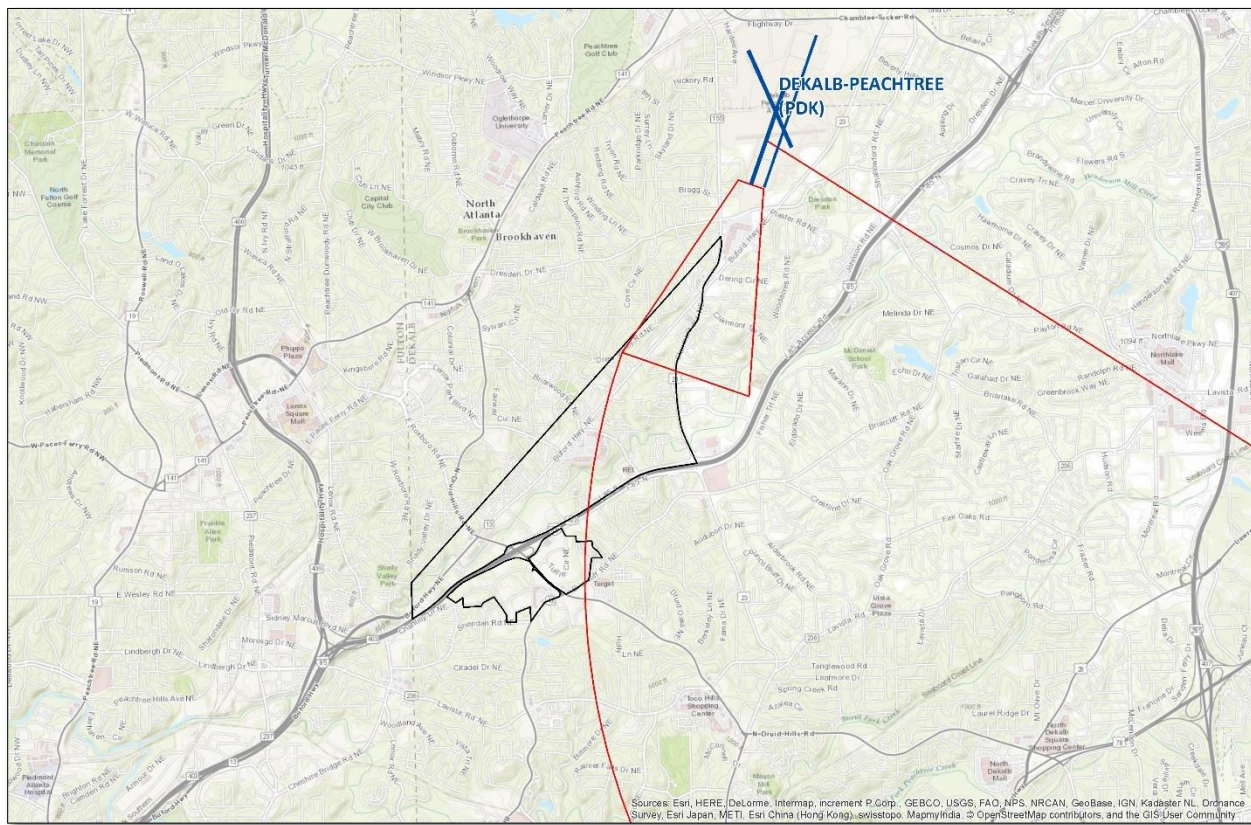


### Instrument Departures

In order to ensure that aircraft departing during marginal weather conditions do not fly into terrain or obstacles, the FAA publishes instrument departure procedures that provide obstacle clearance to pilots as they transition between the terminal and enroute environments. These procedures contain specific routing and minimum climb gradients to ensure clearance from terrain and obstacles.

Proposed structures that exceed instrument departure procedure obstacle clearance surfaces would require an increase to minimum climb gradients and/or change to routing.<sup>1</sup> If the FAA determines that this impact would constitute a substantial adverse effect, it could be used as the basis for determinations of hazard.

Instrument departure procedures (e.g., **Figure 7**) overlie the Buford Highway Corridor project. However, the associated obstacle clearance surfaces are in excess of other lower surfaces and do not result in the lowest height constraint overlying the Buford Highway Corridor project.



**Figure 7: Dekalb-Peachtree Airport (PDK) Runway 21R obstacle departure procedure assessment**

<sup>1</sup> Proposed obstacles located within the initial climb area (ICA) that require a minimum climb gradient termination altitude of 200 feet or lower above the departure end of runway would meet “low, close-in” criteria. Low, close-in obstacles do not impact published minimum climb gradients and only require notation on the departure procedure. Since there is no impact on the minimum climb gradient, the FAA has historically not considered the notation of low, close-in obstacles to constitute a substantial adverse effect. As a result of this practice, Capitol Airspace only created height constraints associated with obstacles that could not meet “low, close-in” criteria.



## Instrument Approaches

Pilots operating during periods of reduced visibility and low cloud ceilings rely on terrestrial and satellite based navigational aids (NAVAIDS) in order to navigate from one point to another and to locate runways. The FAA publishes instrument approach procedures that provide course guidance to on-board avionics that aid the pilot in locating the runway.

Capitol Airspace assessed a total of five published instrument approach procedures at one public-use airport in proximity to the Buford Highway Corridor project:

### Dekalb-Peachtree (PDK)

- ILS or Localizer Approach to Runway 21L
- RNAV (RNP) Approach to Runway 03R
- RNAV (RNP) Z Approach to Runway 21L
- RNAV (RNP) Y Approach to Runway 21L
- VOR/DME-D Circling Approach

Proposed structures that exceed instrument approach procedure obstacle clearance surfaces would require an increase to their minimum altitudes. Increases to these altitudes, especially critical *decision altitudes (DA)* and *minimum descent altitudes (MDA)*, can directly impact the efficiency of instrument approach procedures. If the FAA determines this impact to constitute a substantial adverse effect it could be used as the basis for determinations of hazard.

### Dekalb-Peachtree (PDK)

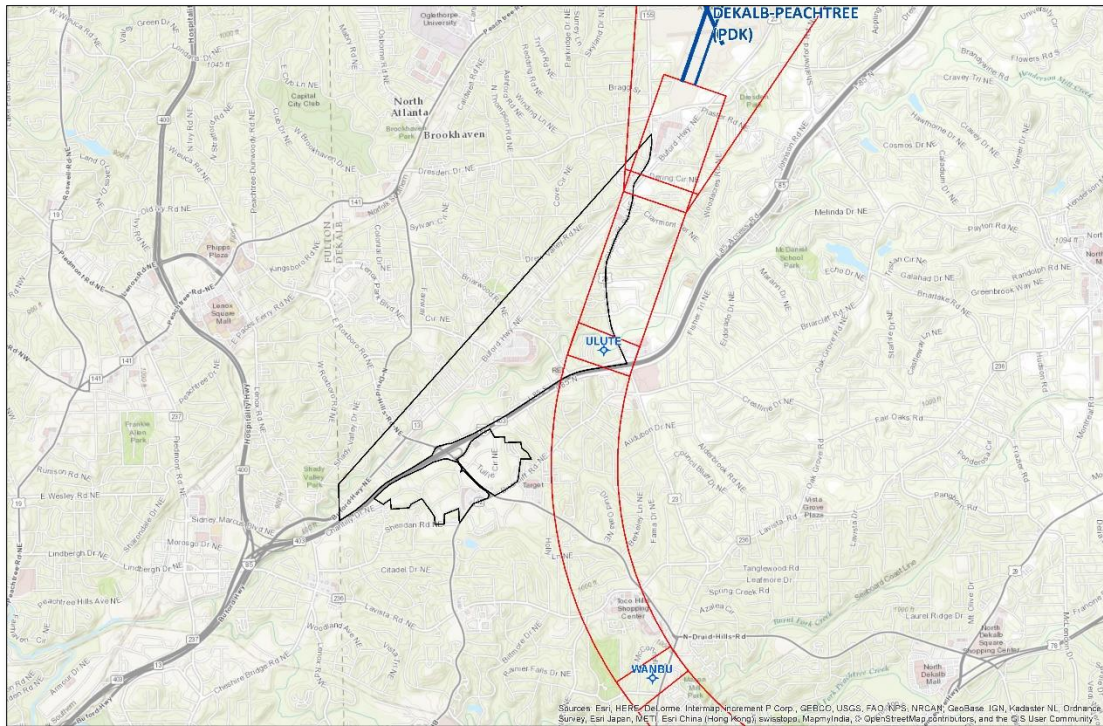
*RNAV (RNP) Approach to Runway 03R*

The RNP 0.10 ([Figure 8](#)) and RNP 0.30 ([Figure 9](#)) final and missed approach segments overlie the Buford Highway Corridor project. The associated obstacle clearance surfaces range from 1,101 to 1,720 feet AMSL and are some of lowest height constraints overlying a northeastern section of the study area.

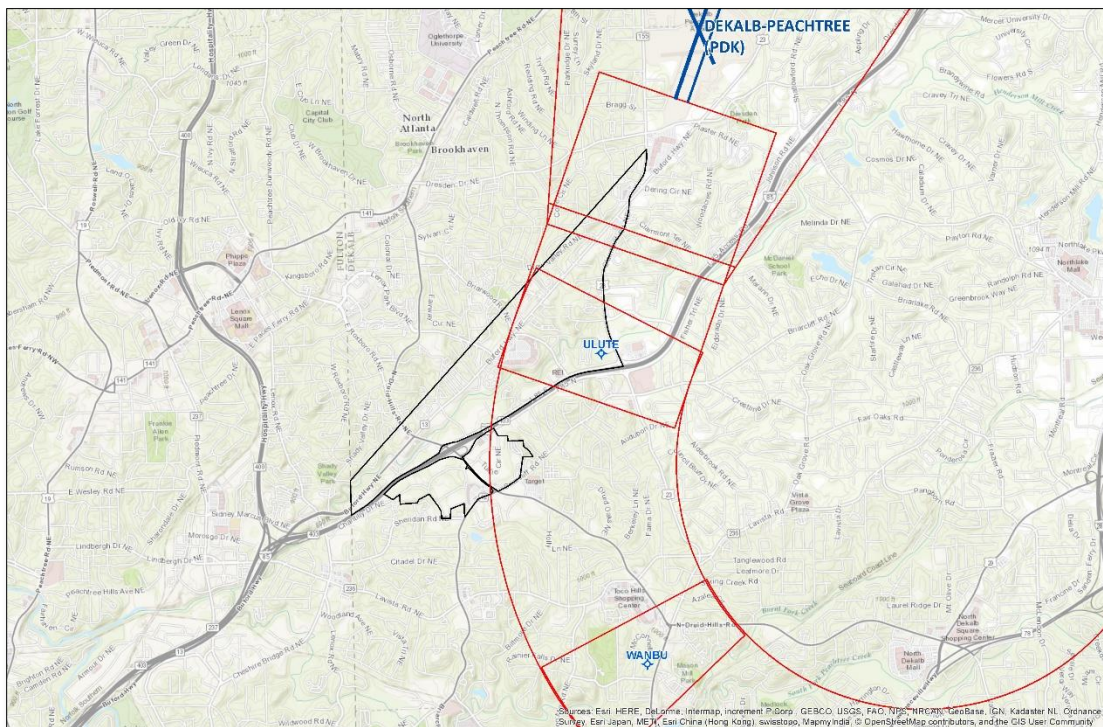
### *Circling Approach Areas*

The airport's circling approach areas have not been updated to use current "Change 21" instrument approach procedure design criteria. These criteria result in larger circling approach areas (red, [Figure 10](#)) that can include higher terrain and obstacles requiring an increase to currently published circling MDA (CMDA). As a result, the FAA will assess proposed buildings for impact on *anticipated* CMDA derived from "Change 21" criteria.

Category A through D "Change 21" circling approach areas (red, [Figure 10](#)) overlie the Buford Highway Corridor project. Based on existing obstacles (black, [Figure 10](#)), the anticipated CMDA would likely be – Category A: 1,500 feet AMSL, Category B: 1,540 feet AMSL, Category C: 1,840 feet AMSL, Category D: 2,060 feet AMSL. The resulting obstacle clearance surfaces would be – Category A: 1,200 feet AMSL, Category B: 1,240 feet AMSL, Category C: 1,540 feet AMSL, Category D: 1,760 feet AMSL. These obstacle clearance surfaces are some of the lowest height constraints overlying the central and southwestern sections of the study area.



**Figure 8: Dekalb-Peachtree Airport RNAV (RNP) Approach to Runway 03R with RNP 0.10 final segment**



**Figure 9: Dekalb-Peachtree Airport RNAV (RNP) Approach to Runway 03R with RNP 0.30 final segment**

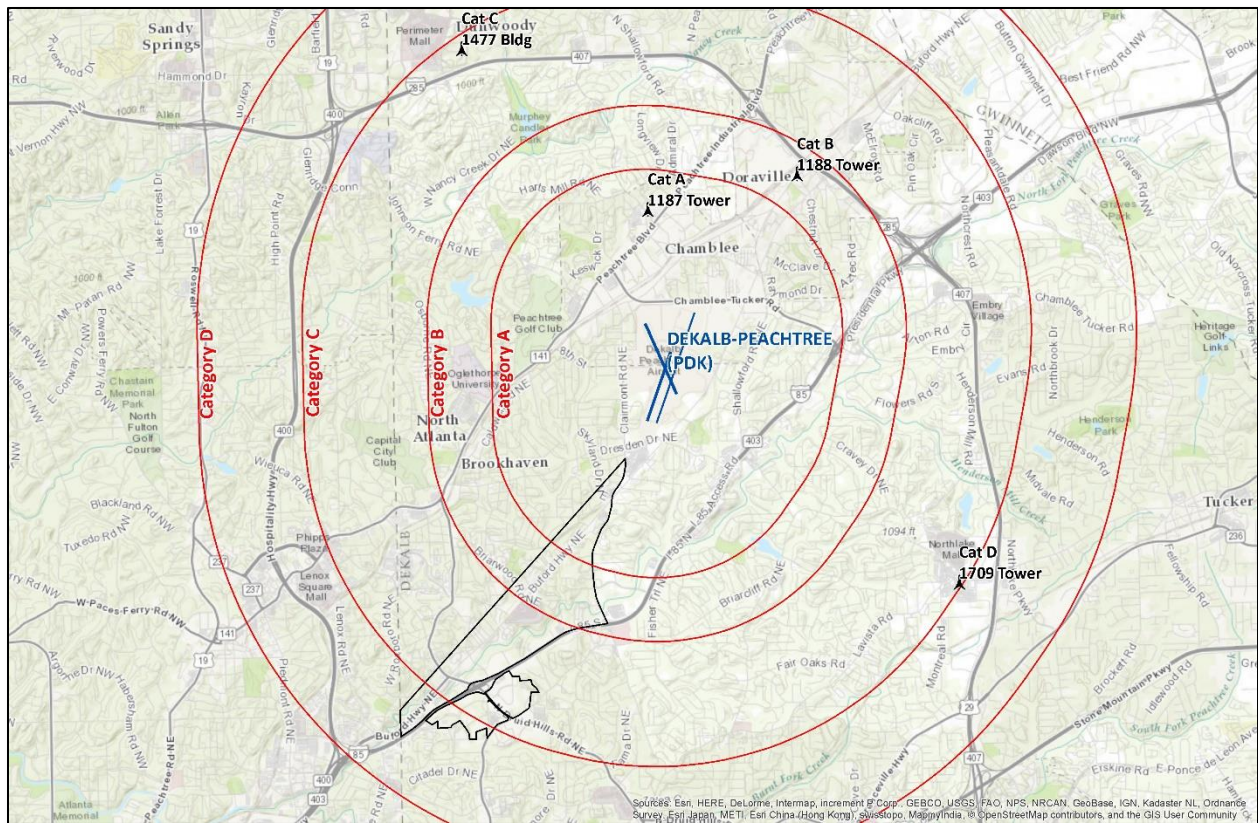


Figure 10: Dekalb-Peachtree Airport “Change 21” circling approach areas with controlling obstacles



### Enroute Airways

Enroute airways provide pilots a means of navigation when flying from airport to airport and are defined by radials between VHF omni-directional ranges (VORs). The FAA publishes minimum altitudes for airways to ensure clearance from obstacles and terrain. The FAA requires that each airway have a minimum of 1,000 feet of obstacle clearance in non-mountainous areas and normally 2,000 feet in mountainous areas.

Proposed structures that exceed enroute airway obstacle clearance surfaces would require an increase to minimum obstruction clearance altitudes (MOCA) and/or minimum enroute altitudes (MEA). If the FAA determines that this impact would constitute a substantial adverse effect, it could be used as the basis for determinations of hazard.

Low altitude enroute airway (**Figure 11**) obstacle clearance surfaces are in excess of other lower surfaces and do not result in the lowest height constraints overlying the Buford Highway Corridor project.

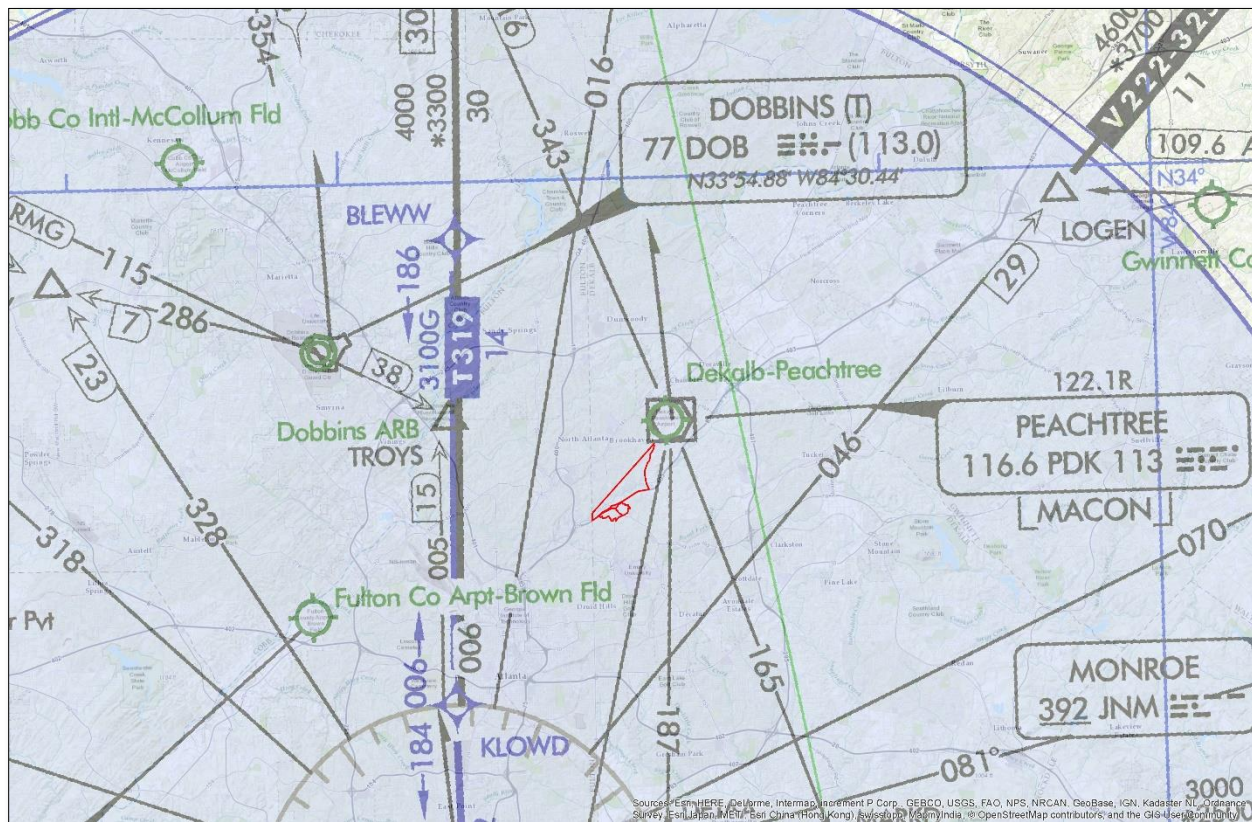


Figure 11: Low altitude enroute chart L-18 and Buford Highway Corridor study area



### Minimum Vectoring/IFR Altitudes

The FAA publishes minimum vectoring altitude (MVA) and minimum instrument flight rules (IFR) altitude charts that define sectors with the lowest altitudes at which air traffic controllers can issue radar vectors to aircraft based on obstacle clearance. The FAA requires that sectors have a minimum of 1,000 feet of obstacle clearance in non-mountainous areas and normally 2,000 feet in mountainous areas.

Proposed structures that exceed minimum vectoring/IFR altitude sector obstacle clearance surfaces would require an increase to the lowest altitudes useable by air traffic controllers for vectoring aircraft. If the FAA determines that this impact would affect a significant volume of operations, it could result in determinations of hazard.

Minimum IFR altitude and minimum vectoring altitude sector (e.g., **Figure 12**) obstacle clearance surfaces are in excess of other lower surfaces and do not result in the lowest height constraint overlying the Buford Highway Corridor project.

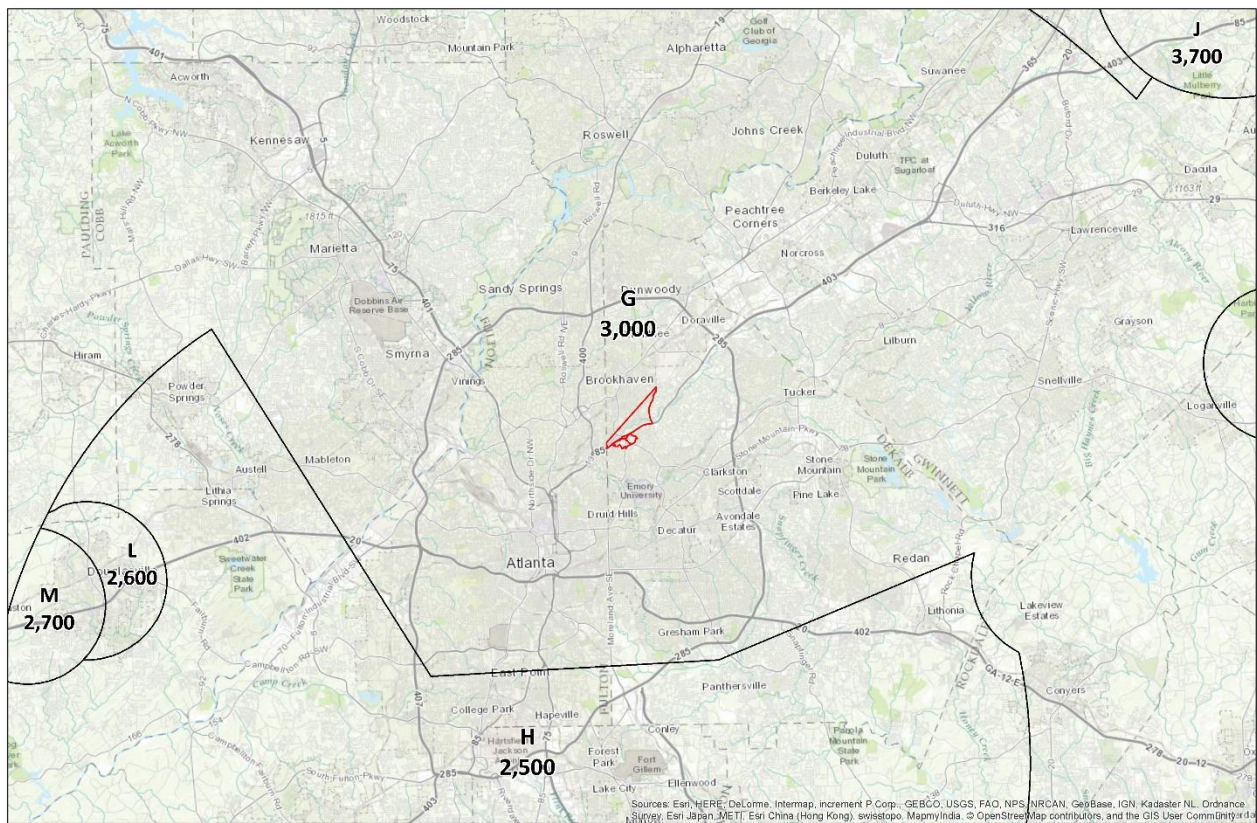


Figure 12: Atlanta (A80) TRACON minimum vectoring altitude sectors



## Military Airspace and Training Routes

Since the FAA does not protect for military airspace or training routes, impact on their operations cannot result in a determination of hazard. However, the FAA will notify the military of proposed structures located within these segments of airspace. If the planned development area is located on federal land, impact on military airspace or training routes may result in the denial of permits by the Bureau of Land Management.

Military airspace and training routes do not overlie the Buford Highway Corridor project. As a result, proximity to these segments of airspace should not result in military objections to proposed development.

## Conclusion

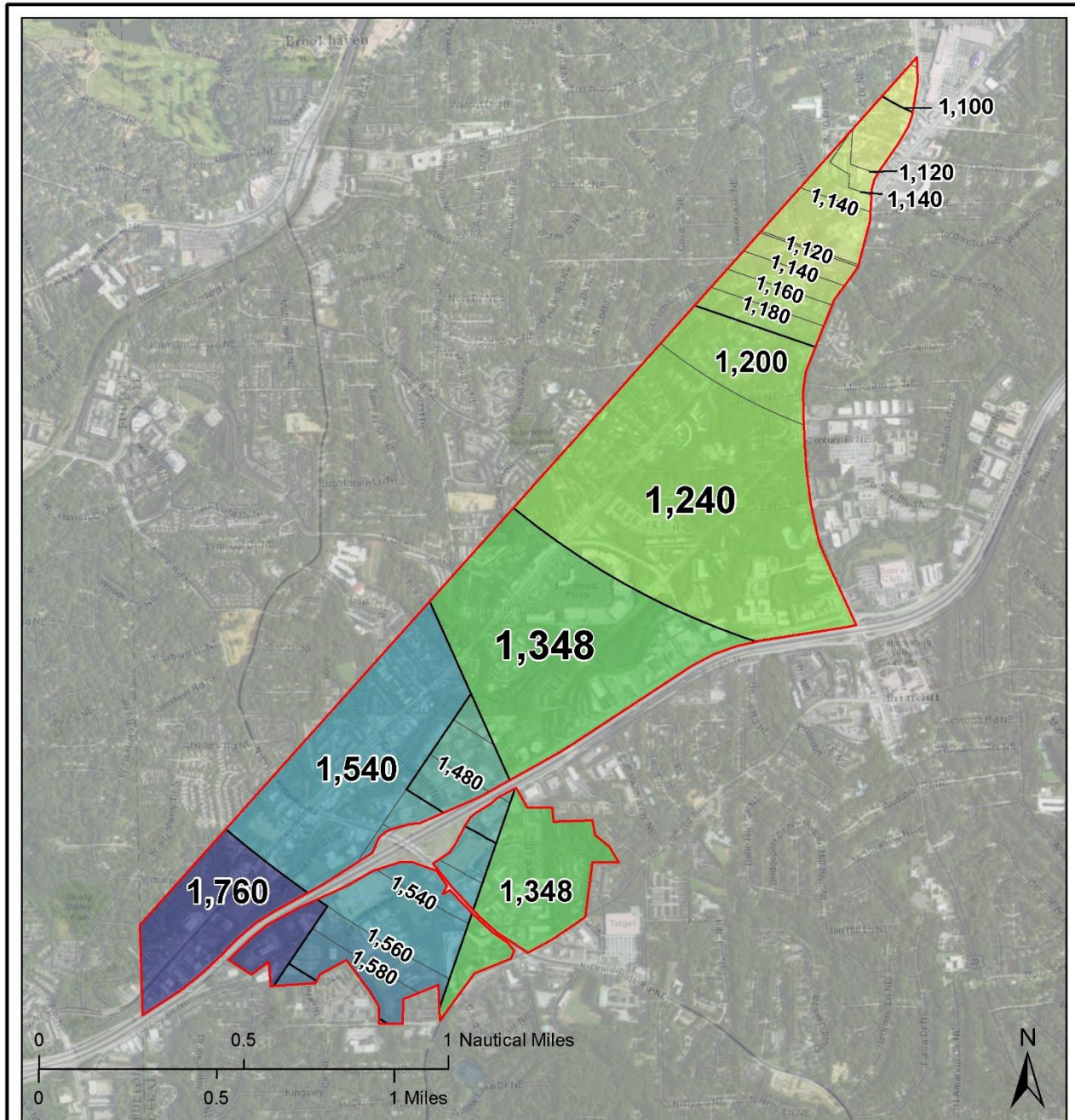
Structures that exceed DeKalb-Peachtree Airport 14 CFR Part 77.19 imaginary surfaces ([Figure 2](#) & [Figure 3](#)) will be identified as obstructions. However, proposed structures that are identified as obstructions can still receive favorable determinations of no hazard provided they do not have a substantial adverse effect on the safety and efficiency of air navigation. Proposed structures must not exceed FAA obstacle clearance surfaces in order to avoid an adverse effect on air navigation.





Obstacle clearance surfaces overlying the study area range from 1,075 to 1,760 feet AMSL and are associated with DeKalb-Peachtree Airport VFR traffic pattern airspace ([Figure 5](#)), PAPI ([Figure 6](#)), and instrument approach procedures ([Figure 8](#), [Figure 9](#), & [Figure 10](#)). Proposed structures that exceed these surfaces would have an impact on VFR traffic pattern operations, VGSI glidepath angles, and instrument approach procedure decision altitudes. If the FAA determines that one or the sum of these impacts would affect a significant volume of operations it could be used as the basis for determinations of hazard.

The AGL Clearance Map ([Figure 14](#)) is based on USGS National Elevation Dataset (NED) 1/3 Arc Second data which has a vertical accuracy of generally +/- 7 meters. Therefore, the AGL Clearance Map should only be used for general planning purposes and not exact structure siting. In order to avoid the likelihood of determinations of hazard, proposed structure heights must adhere to the height constraints depicted in the Composite Map ([Figure 13](#)).

If you have any questions regarding the findings of this study, please contact [Joe Anderson](#) or [Nick Lee](#) at (703) 256-2485.





<b>Legend</b> <b>Obstacle Clearance Surface</b> <b>Height - AMSL Feet</b>  High : 1,760 Low : 1,075 <b>Surface Contour</b>  20 Foot  100 Foot	<b>Buford Highway Corridor Project</b> Composite Height Constraint Map	
	<b>Plot Date:</b> 4 May 2017  <b>Coordinate System:</b> NAD 1983 UTM Zone 16N  Nick Lee	<b>Figure 13</b>   Capitol Airspace Group

