



Airport 3D Visualization Project

Prepared for:

The City of New Braunfels Planning Department

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Summary

Transition from Municipal Airport to Regional Airport

- ✈ Updated Business Plan
 - Financial performance
 - Economic development
- ✈ Runway expansion
 - Larger aircraft
 - More “business-friendly”
- ✈ Creation and adoption of zoning controls
 - Airport High Hazard Zoning District



Purpose

Goal: Create visual representations of airport zoning regulations so they can be understood by city staff, property owners, and the general public.

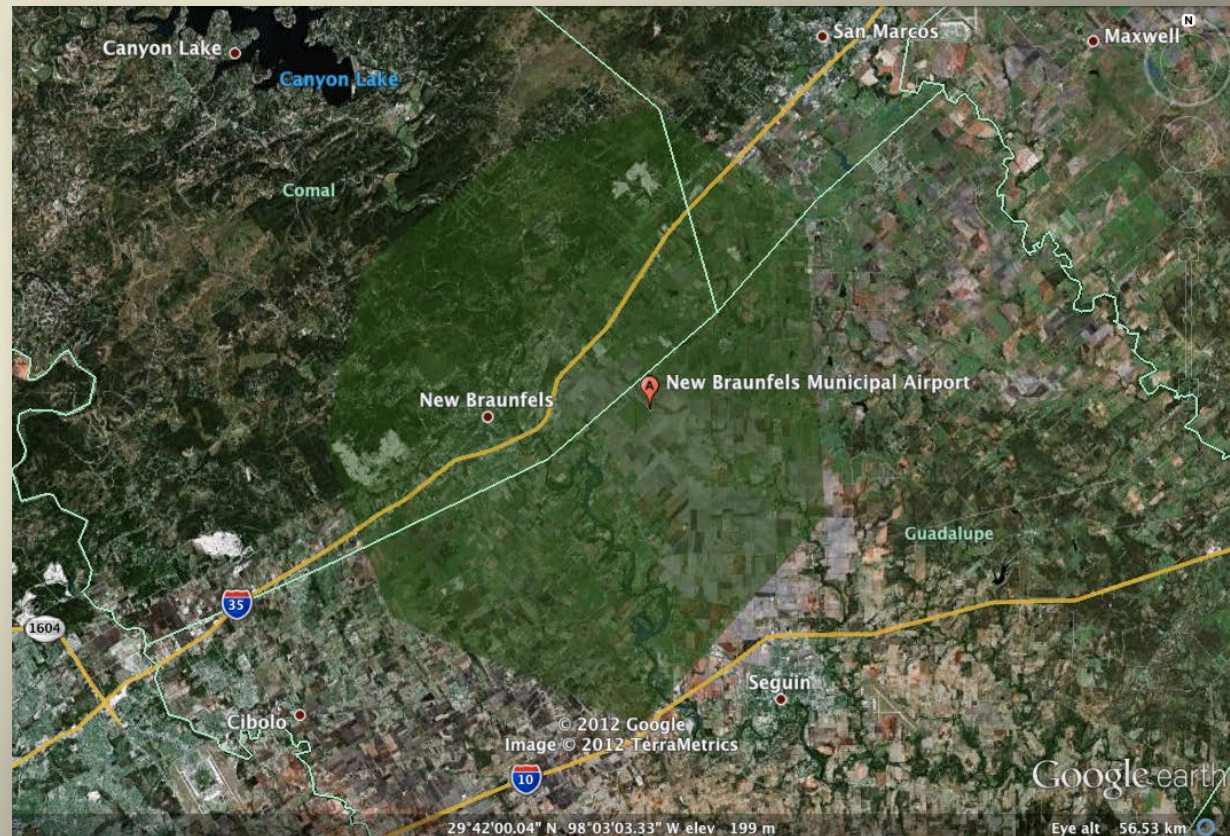
Objectives:

- ✈ Develop a 3-D model of restricted zones
- ✈ Create an Interactive Mapping Tool to display available building heights
- ✈ Import model into Google Earth for public access

Study Area

✈ Airport Hazard Zones

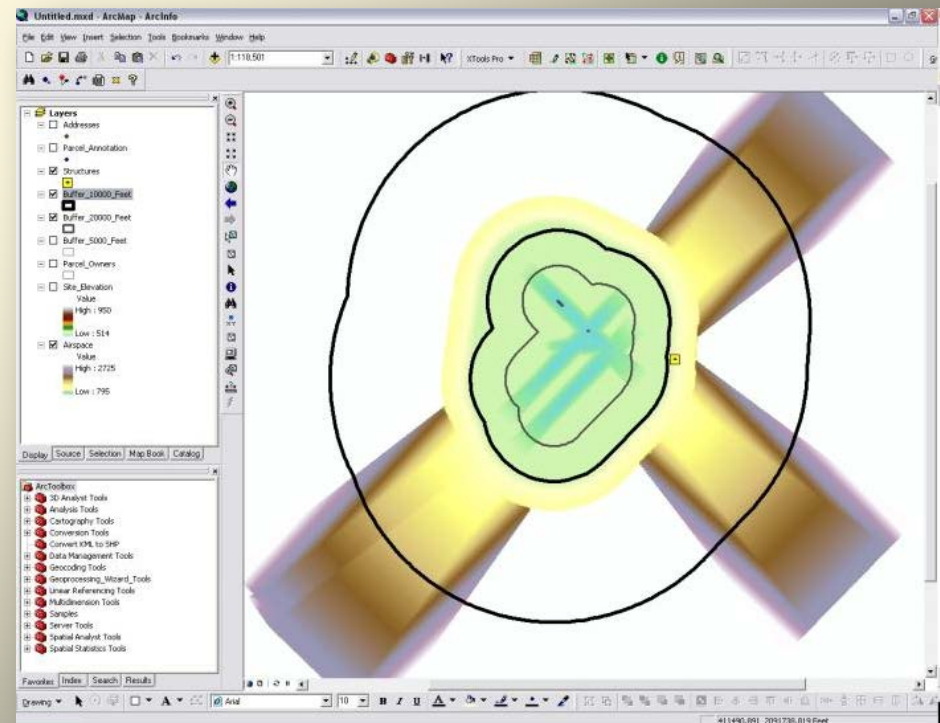
- Areas within 3.5 miles of airport
- 9.5 miles N toward San Marcos
- 9.5 miles S toward Seguin
- 9.5 miles NW toward Canyon Lake



Literature Research

3D Model and Interactive Map

- ➔ Fort Wayne International Airport, Indiana
 - Potential impacts due to current construction, proposed development, and land use
 - Used ESRI software: ArcView and 3D Analyst
 - Tool able to be in 2D and 3D
 - Created to be user-friendly



Task 1 – 3D Model

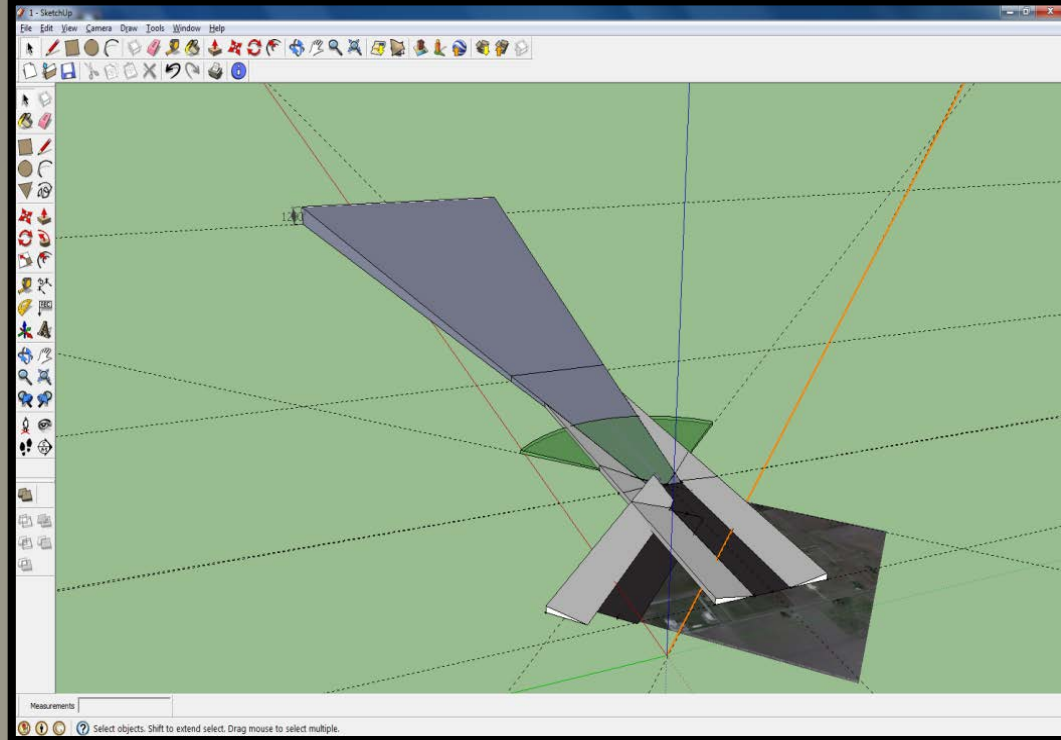
→ Process

- Created individual restricted zone polygons in SketchUp
- Merged polygons together
- Imported SketchUp file to ArcGlobe
- Created fly-through animation
 - Created with Adobe Premier

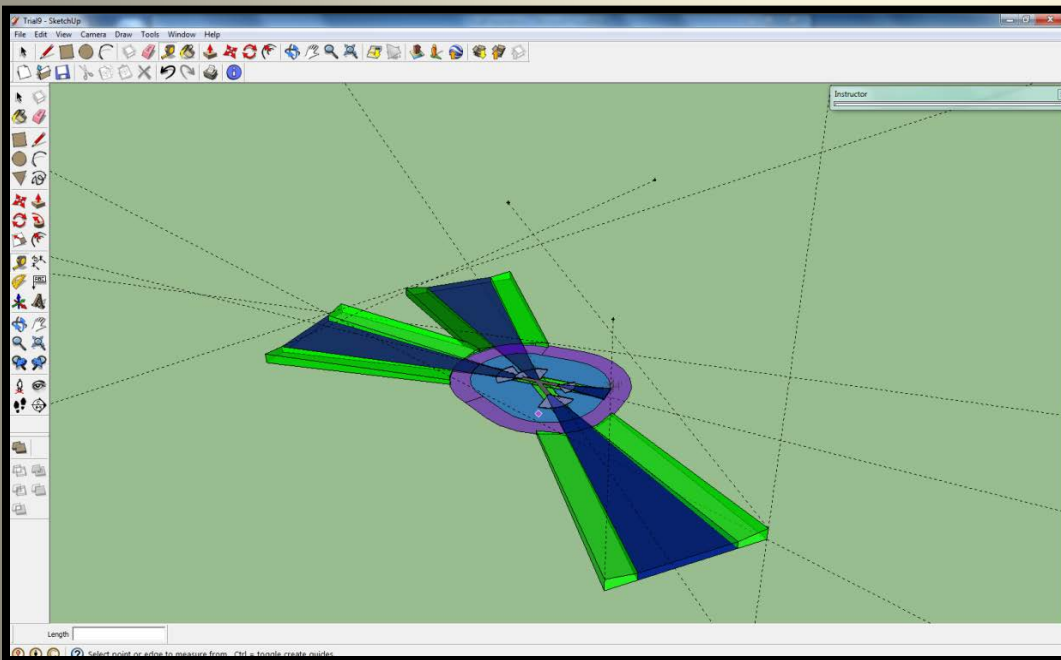


Demo

Video



Google SketchUp



Task 2 – Interactive Map Tool

✈ Process

- Identified and collected necessary data
- Assigned elevation values to hazard zone polygons
- Calculated slope for each zone
- Converted polygons to 3-D shapes
- Calculated maximum building heights (Difference between zones & DEM)
- Configured restricted zones to show lowest value for overlapping zones
- Completed interactive mapping tool
- Assigned a graduated color scheme to display difference in height restrictions



Airport High Hazard Zones

Primary Zone

Inner Turning Zone

Cal Zone

ontal Zone

Precision Approach Zone

ision Approach Zone

cision Approach

n Zone

F
I

Conic
Horiz
Inner

Non Prec
Outer Pre
Transition

Miles

0 0.5 1 2 3 4



Airport High Hazard Zones

Available
Building
Height (ft)

2069

1800

New Braunfels

Dittlinger

es

N

Marion

Ma

McQueeney

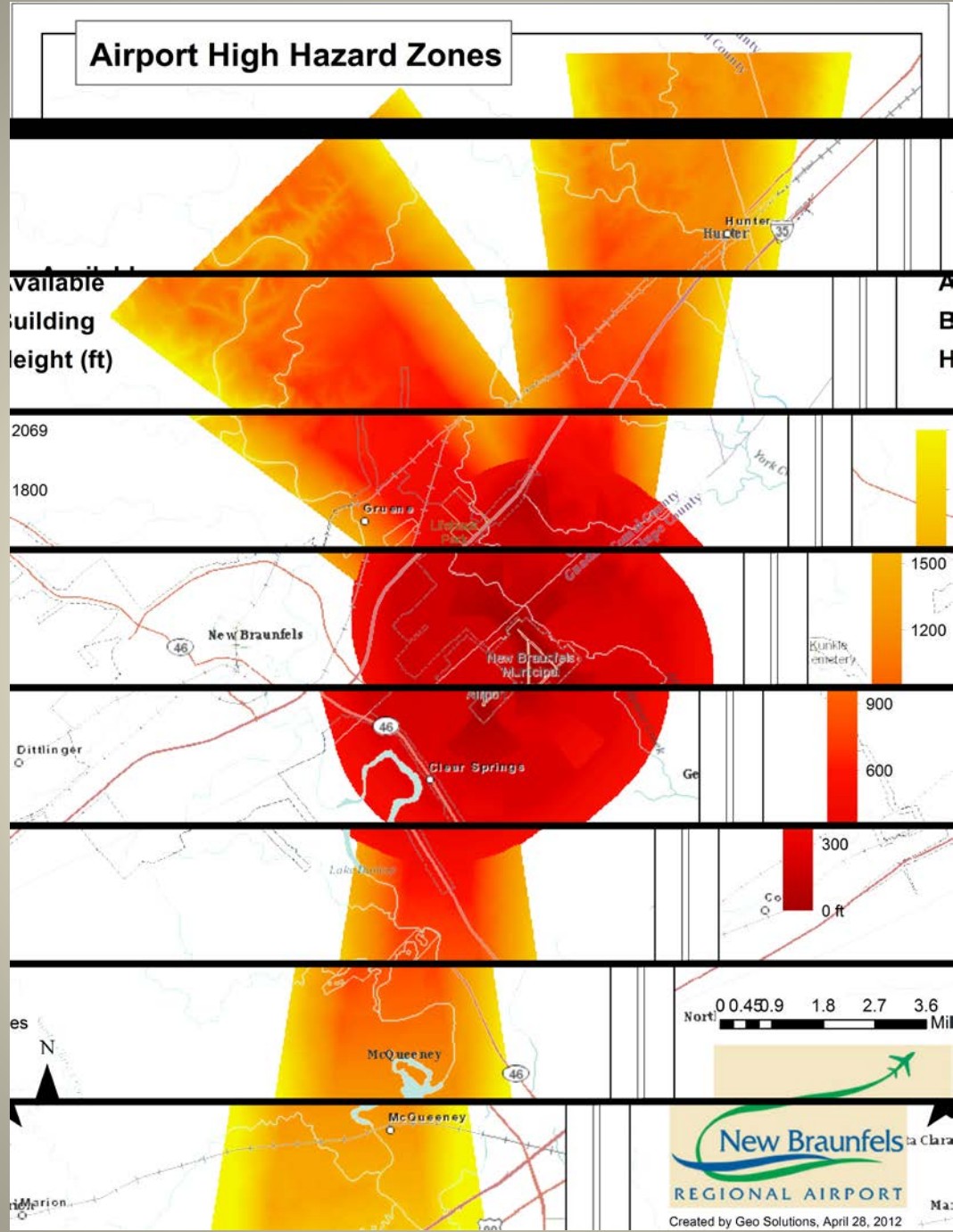
McQueeney

Ma

0 0.45 0.9 1.8 2.7 3.6
Miles



Created by Geo Solutions, April 28, 2012



Demo

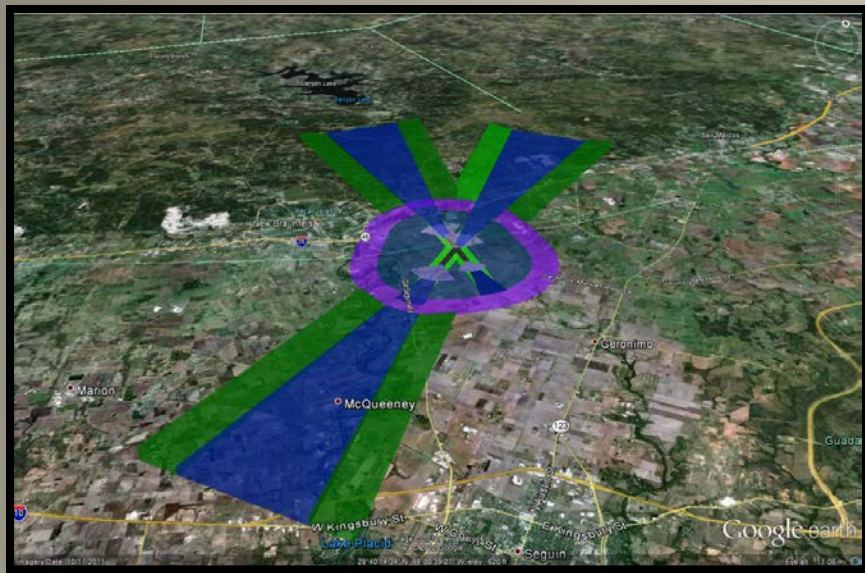
ArcMap

Task 3 – Interactive 3D Map

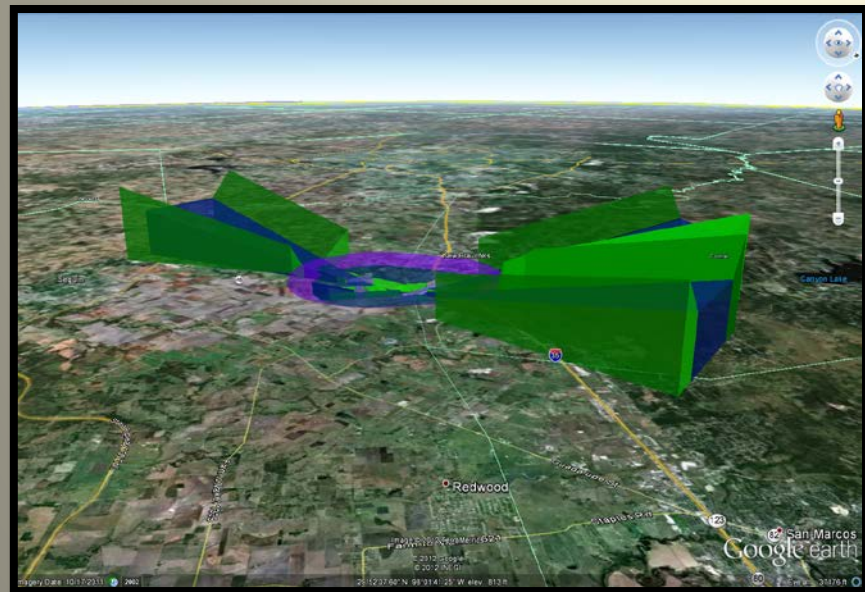
✈ Process

- Exaggerated height values in the model from Task 1
- Imported SketchUp model into Google Earth
- Created a set of instructions for users to open 3D model in Google Earth





Google Earth



Height exaggerated 5
times



Final Deliverables

Geo Solutions will present the following deliverables to the client:

- ➔ Final Report with maps (hard copy)
- ➔ Professional Poster Display (36"X48")
- ➔ Project Dedicated Website
- ➔ CD containing:
 - All data
 - Metadata
 - Report
 - PowerPoint Presentation
 - Instructions on how to use the CD
 - Readme file

Limitations – 3D Model

✈ ArcGlobe

- Model should not be used for measurements
- Not georeferenced, placed over runways

✈ Google Earth

- Model should not be used for measurements
- Runway polygons traced over aerial photograph



Limitations – Interactive Mapping Tool

- ✈ Original polygons not *originally* 100% accurate
- ✈ Map should be used as reference tool



Conclusion

- ✈ The City of New Braunfels is growing rapidly
- ✈ Necessity for proactive approach
- ✈ Geo Solutions has provided visual representations of restricted airspace zones to better communicate regulations to city staff and the public



A photograph taken from the perspective of a passenger looking out of an airplane window. The wing of the aircraft is visible on the right side of the frame, extending towards the horizon. Below the wing, a vast expanse of white, fluffy clouds stretches across the entire lower half of the image. In the upper left, the sun is setting or rising, creating a bright, warm glow that illuminates the clouds and the sky. The sky is filled with soft, wispy clouds in shades of orange, yellow, and blue. The overall mood is serene and contemplative.

Questions?