SOUTH CAROLINA AERONAUTICS

AIRPORT COMPATIBLE LAND USE EVALUATION (CLUE) TOOL USER GUIDE

For Trial Area

South Carolina Aeronautics Commission (SCAC) | Version 4

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INTRODUCTION

History of Land Use Compatibility

Aviation is a widely used form of transportation and comprises an industry that is responsible for over one trillion dollars in economic activity in the United States each year. Unfortunately, as this industry continues to grow, incompatible land uses are encroaching upon our nation's airports, threatening the safety of people in the air and on the ground.

Historically, most airports were built in farm fields and other places well away from the nearest towns. As towns grew, they got closer to airports, and conflicts over noise, safety, and airspace protection arose. Often the result was closure of the airport and perhaps construction of its replacement farther from town. This option was workable when airports consisted of little more than dirt strips. Replacement is much less feasible today when airports represent investments of millions or even billions of dollars. Furthermore, as urban areas have expanded and the demand for buildable property has continued to escalate, sites on which new airports can be built have become increasingly difficult to find. Then, when a new site is found, communities tend to expand outward toward the airport and the whole cycle begins again. These conflicts play out across the nation daily - within large urban areas as well as the smaller rural towns - as communities and airports struggle to find a balance between airport operations and compatible land use.

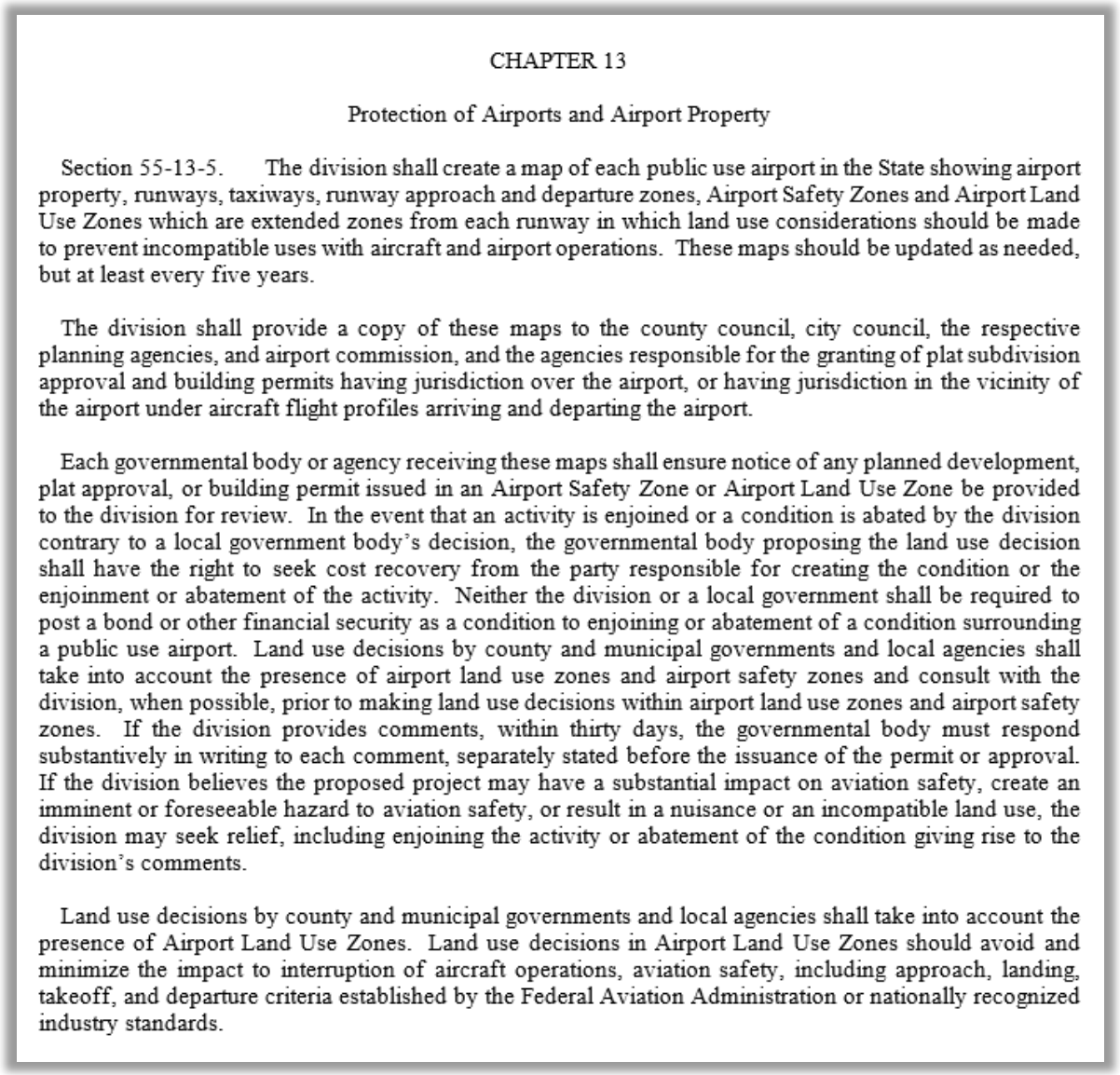
This incompatibility between airports and land uses that surround them is not a new phenomenon. A landmark study completed in 1952—the Doolittle Report—addressed many of the same issues that remain today. A point emphasized in that report was that airports and metropolitan areas should be jointly planned so that they each develop to serve the other. This concept has frequently been neglected, and incompatible land uses have flourished in proximity to many of the nation's airports. More than ever, it is now imperative that a cooperative approach to airport land use compatibility planning be embraced—the preservation of airports from the encroachment of incompatible land uses must be a priority for the nation, as well as individual states, local governments, host communities, and airports themselves.

Provisions of Title 55

South Carolina has taken a proactive approach in planning for compatible uses near the State's airports. On July 1, 2012, revisions to Title 55 of the South Carolina Code were enacted that require the South Carolina Aeronautics Commission (SCAC) to develop and provide maps of airport-specific Safety Zones and Land Use Zones to local jurisdictions owning or located near publicly owned airports and require jurisdictions to notify SCAC of certain land use changes in these zones. The intent of these requirements is to enhance the level of land use compatibility near all public-use airports in the state.

The specific excerpt from the revised code is included in Figure 1.

Figure 1 – Revised Title 55 of the South Carolina Code



CHAPTER 13

Protection of Airports and Airport Property

Section 55-13-5. The division shall create a map of each public use airport in the State showing airport property, runways, taxiways, runway approach and departure zones, Airport Safety Zones and Airport Land Use Zones which are extended zones from each runway in which land use considerations should be made to prevent incompatible uses with aircraft and airport operations. These maps should be updated as needed, but at least every five years.

The division shall provide a copy of these maps to the county council, city council, the respective planning agencies, and airport commission, and the agencies responsible for the granting of plat subdivision approval and building permits having jurisdiction over the airport, or having jurisdiction in the vicinity of the airport under aircraft flight profiles arriving and departing the airport.

Each governmental body or agency receiving these maps shall ensure notice of any planned development, plat approval, or building permit issued in an Airport Safety Zone or Airport Land Use Zone be provided to the division for review. In the event that an activity is enjoined or a condition is abated by the division contrary to a local government body's decision, the governmental body proposing the land use decision shall have the right to seek cost recovery from the party responsible for creating the condition or the enjoinment or abatement of the activity. Neither the division or a local government shall be required to post a bond or other financial security as a condition to enjoining or abatement of a condition surrounding a public use airport. Land use decisions by county and municipal governments and local agencies shall take into account the presence of airport land use zones and airport safety zones and consult with the division, when possible, prior to making land use decisions within airport land use zones and airport safety zones. If the division provides comments, within thirty days, the governmental body must respond substantively in writing to each comment, separately stated before the issuance of the permit or approval. If the division believes the proposed project may have a substantial impact on aviation safety, create an imminent or foreseeable hazard to aviation safety, or result in a nuisance or an incompatible land use, the division may seek relief, including enjoining the activity or abatement of the condition giving rise to the division's comments.

Land use decisions by county and municipal governments and local agencies shall take into account the presence of Airport Land Use Zones. Land use decisions in Airport Land Use Zones should avoid and minimize the impact to interruption of aircraft operations, aviation safety, including approach, landing, takeoff, and departure criteria established by the Federal Aviation Administration or nationally recognized industry standards.

Source: Title 55 of the South Carolina Code

What does it mean for SCAC?

In order to comply with the airport land use notification, evaluation, and comment process outlined in Title 55, the SCAC began development of an interactive web-based tool that would meet the requirements of Title 55 and streamline the notification and evaluation process that is established by the revised code.

What does it mean for the Local Community?

Local communities must notify SCAC of developments proposed within their municipality if it is located within any of the Airport Safety or Land Use Zones established in Title 55. The municipal planning entity for the community (such as a city or county planner) is responsible for coordinating with SCAC. This person or group of people is herein referred to as the Local Permitting Official (LPO).

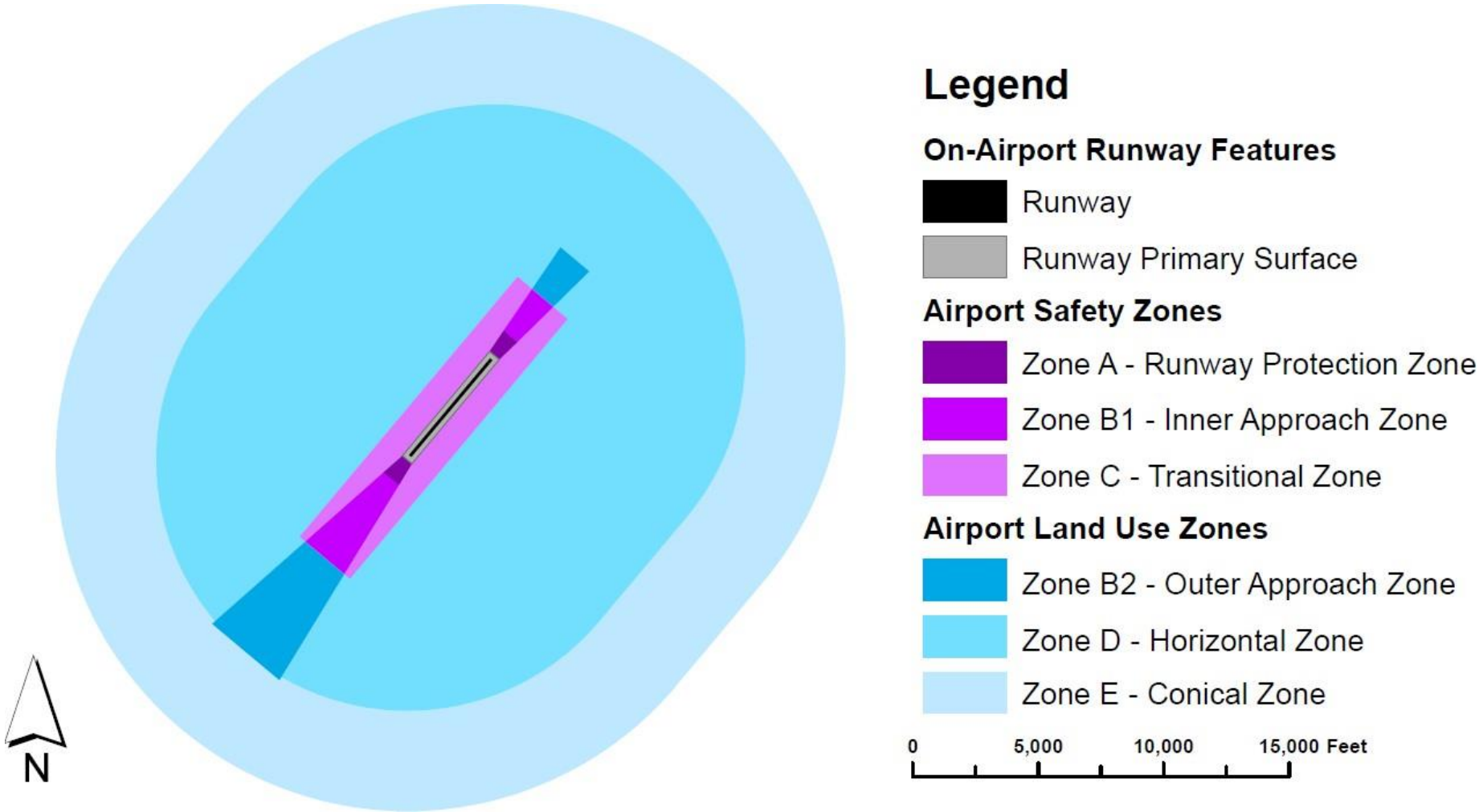
Airport Compatible Land Use Evaluation (CLUE) Tool

Meeting the provisions of Title 55 requires SCAC to coordinate with local municipalities and planning agencies that oversee development near each of South Carolina's public use airports. Due to the extensive number of agencies to coordinate with and the complexities of planning for airport compatible land uses, SCAC has developed the Compatible Land Use Evaluation Tool (herein referred to as the CLUE Tool) that streamlines the notification process between LPOs and SCAC. This tool allows for a more efficient exchange of development information, and the ability for the public and planning entities to "test" certain development scenarios (if located within an Airport Safety or Land Use Zone) for compatibility prior to submission to the SCAC for review. See the CLUE Tool Glossary on page 26 for definitions of various terminology used in the CLUE Tool and throughout this guide.

What are the Airport Safety and Land Use Zones?

SCAC has developed two sets of zones, per the requirements of Title 55. The first set – the Airport Safety Zones – are the zones closest to an airport's runway(s) and include the Runway Protection Zone, the Airport Inner Approach Zone, and the Transitional Zone. The second set – the Airport Land Use Zones – include the zones which surround the entire airport. Figure 2 illustrates the scope of these zones around what is a typical South Carolina general aviation (GA) airport. It is important to note that the size of the zones will change according to each airport's specific geometry and flight instrument procedures.

Figure 2 – Airport Land Use Evaluation



Source: South Carolina Aeronautics Commission

Introduction

The areas shown in Figure 2 – Airport Land Use Evaluation are the areas in which the SCAC has the authority and responsibility to review any proposed development.

What is being evaluated in the Airport Safety and Land Use Zones?

There are several characteristics of land uses that impact the level of compatibility that a use has with airport operations. Many of these characteristics are based upon the type of land use that is proposed. For example, institutional use (educational facilities, places of worship, healthcare facilities) is generally not considered to be compatible with airport operations due to aircraft noise that can interrupt learning, worshiping, or healing). By comparison, industrial use (manufacturing, etc.) is not typically impacted by aircraft noise since industrial activities are inherently noisy. Land uses can be categorized into five main types:

- Residential
- Commercial
- Industrial
- Institutional
- Recreational

Besides the type of land use, the following characteristics that will be evaluated for each proposed use within the Airport Safety and Land Use Zones include:

- Height of use
- Change in zoning (if required)
- Storage/sale/distribution of fuel (if applicable)
- Wildlife attractants

How the CLUE Tool Works

The CLUE Tool has been built on a platform of several data layers that include the locations and dimensions of each public use airport's runways, the Airport Safety and Land Use Zones around each airport, and FAA regulated areas around each airport. This allows a user of the tool to select a location on a map and determine whether that property is within one of the Airport Safety or Land Use Zones and therefore requires review by the SCAC.

Summary

Planning for compatible land uses near airports helps protect their continued operation and the investment that has been made in these facilities, as well as the safety of people both in the air and on the ground in proximity to them. As such, it is critical to establish and maintain compatible land uses in the vicinity of airports. The State of South Carolina has made a commitment to promote airport compatible land uses near the public use airports in the state through the passage of Title 55. SCAC has developed the CLUE Tool in response to Title 55 which can be used by the public, LPOs, and SCAC staff. The CLUE Tool User Guide for Applicants begins on the next page.

CLUE TOOL USER GUIDE FOR TRIAL AREA

HOW CAN THE CLUE TOOL BE USED FOR PROPOSED DEVELOPMENT?

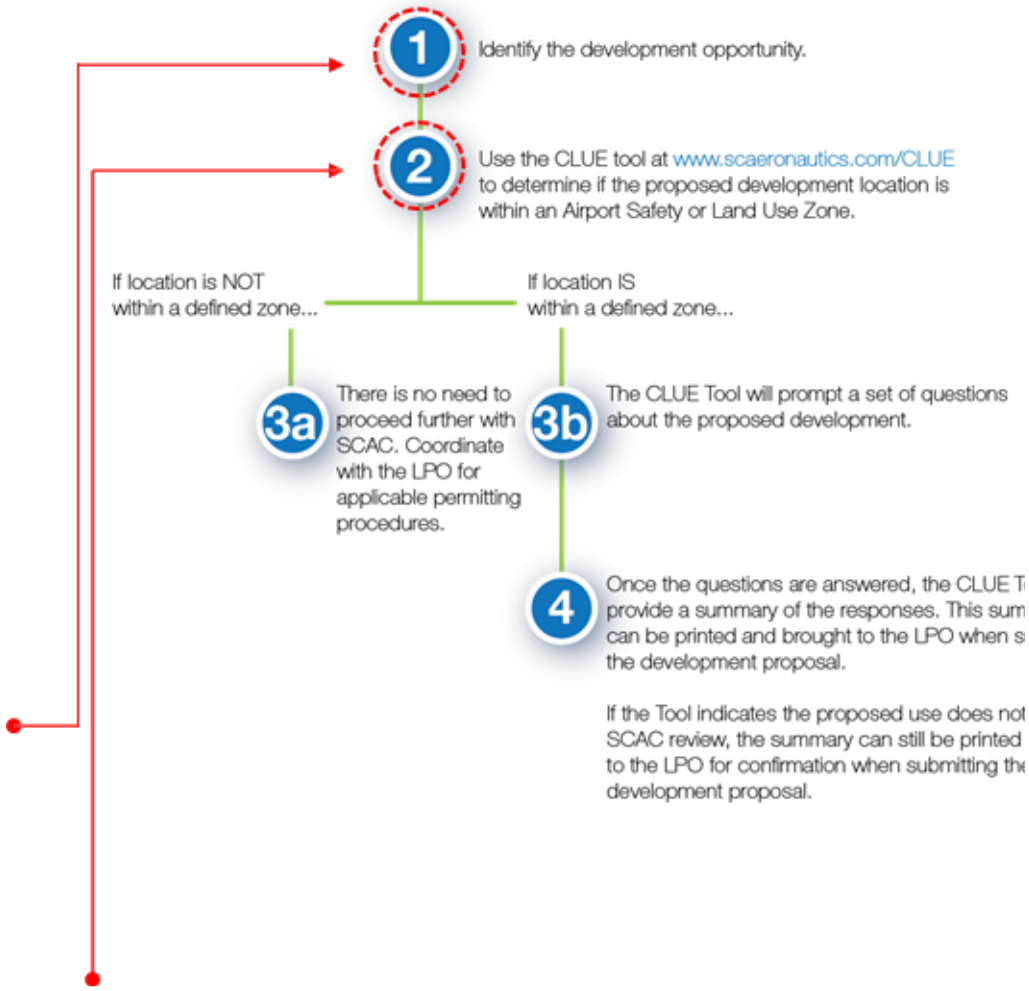
A special portal of the CLUE Tool has been developed for use by applicants (such as property owners and developers). This portal is called the "Trial Area" and can be accessed here: www.scaeronautics.com/clue/trialarea. The Trial Area can be

used to determine if a proposed use is located within any of the Airport Safety and Land Use Zones established by Title 55, and if the use requires review by SCAC.

Use of the CLUE Tool Trial Area by applicants is voluntary and is not required prior to visiting the Local Permitting Official (LPO). However, the CLUE Tool will be used by the LPO prior to issuing permits to the applicant, since any permit, subdivision, and/or rezoning application

that triggers SCAC notification must be reported by the LPO to SCAC. As such, following the CLUE Tool process illustrated in **Figure 3** is optional (but recommended) for the applicant. Each step is discussed in greater detail in the following pages.

Figure 3 – CLUE Tool Process



Step 1. Identify future development opportunity

Whether applicants (typically the property owner[s] or developer[s]) have been planning for years, or recently identified a development opportunity to pursue, they can determine if the Airport.
Safety and Land Use Zones established by the SCAC apply to their proposed development.

Step 1

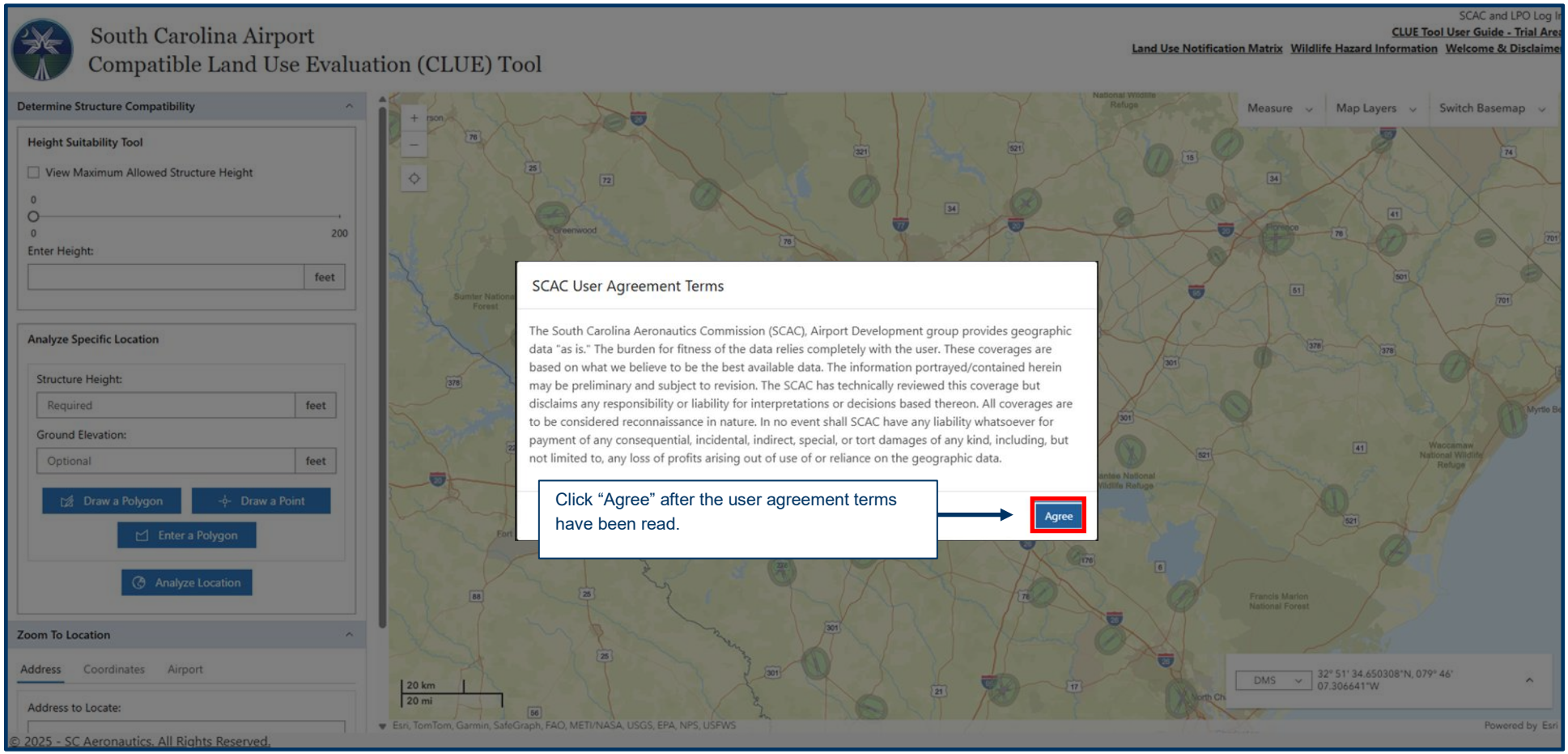
Step 2. Determine if Airport Safety and Land Use Zones apply

A special portal of the CLUE Tool has been developed for use by applicants, which can be accessed here: www.scaeronautics.com/clue/trialarea shown in **Figure 4** – . This "Trial Area" will help applicants determine if their proposed development property is within the Airport Safety and Land Use Zones. Applicants can access this tool from most internet-enabled devices, which allows them to quickly determine if their proposed development location is within one of the defined zones. It is recommended that a desktop or laptop computer be used for navigating the CLUE Tool.

Once an applicant launches their web browser and navigates to the tool, they will be prompted with two welcome screens shown in **Figure 4** – and **Figure 5** - User Agreement Screen. The first screen explains the purpose of the tool, Title 55, and what they will be prompted to do if their proposed use is within one of the Airport Safety or Land Use Zones. The second screen includes the user agreement terms that they will need to agree with to use the tool.

Figure 4 – CLUE Tool Welcome Screen

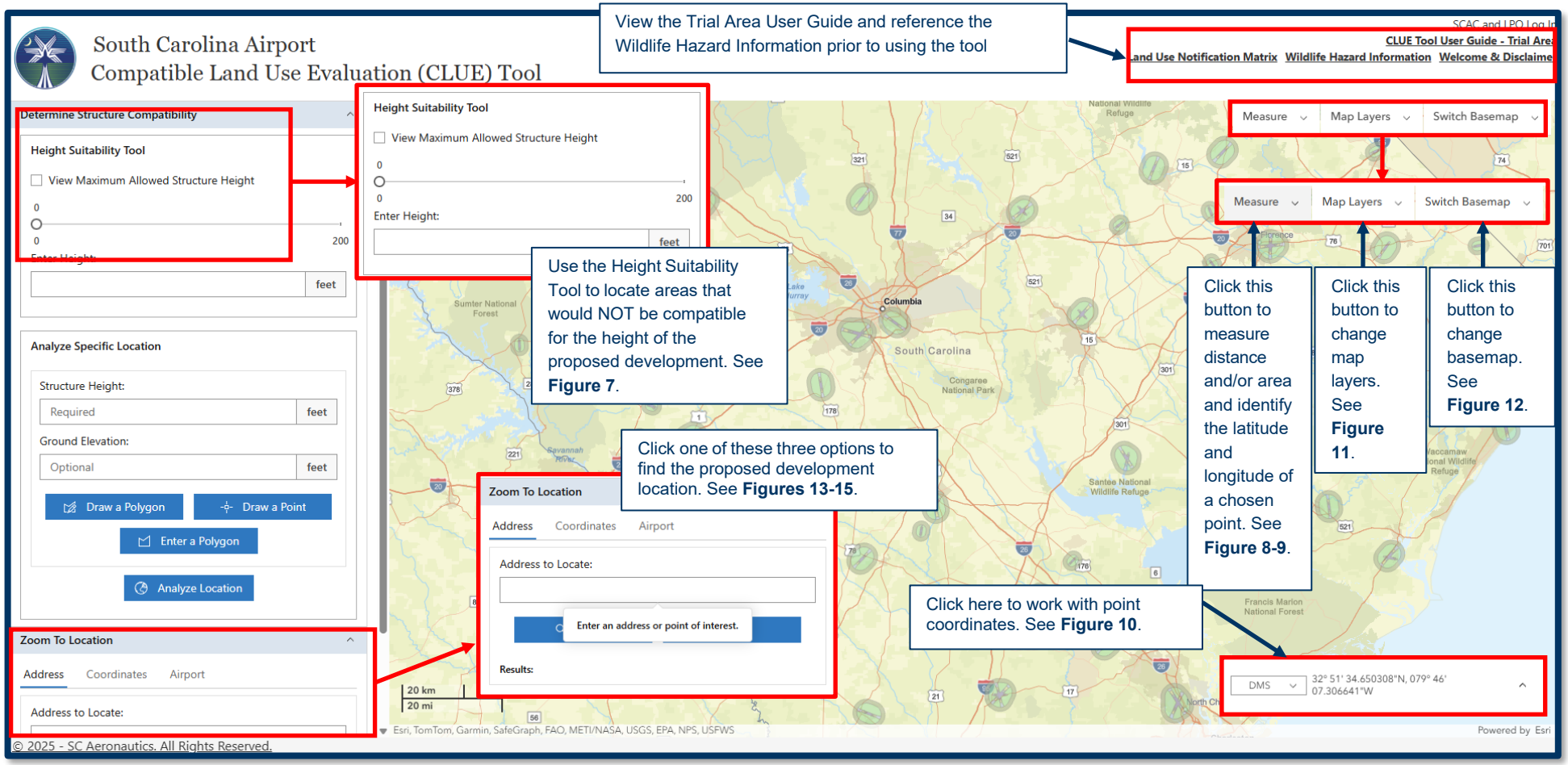
Figure 5 - User Agreement Screen



Step 2

Once the applicant passes the two initial screens, they will be brought to the "home screen" shown in **Figure 6** - Home Screen. The home screen has many options to explore to help applicants navigate and visualize their proposed development location. Instructions and illustrations are provided for each option in **Figures 7-15**.

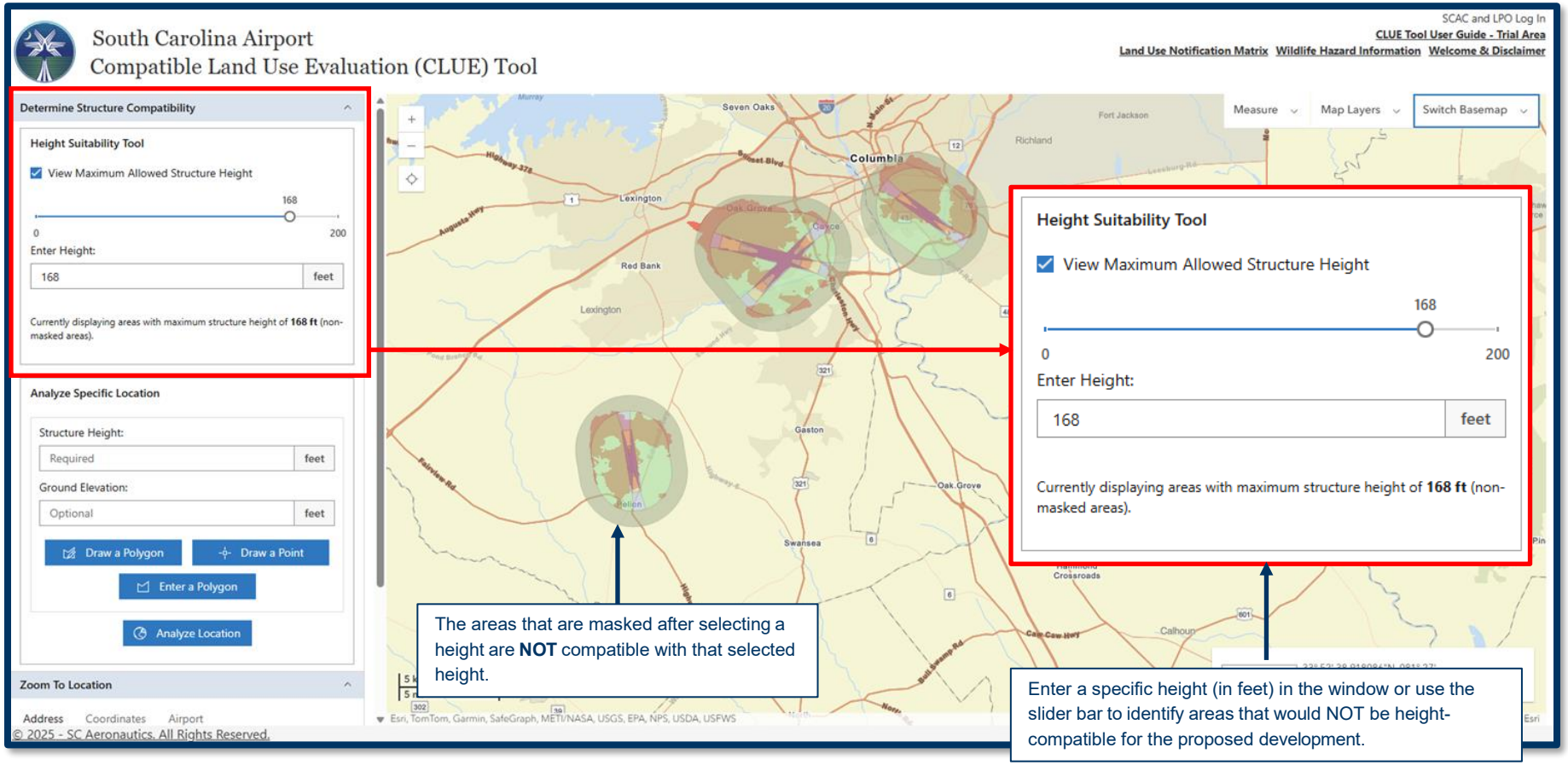
Figure 6 - Home Screen



Step 2

Optional: The Height Suitability Tool is an easy-to-use feature to visually identify areas where structures of a specified height can be built. Often one of the biggest issues with proposed development is the height of the proposed structure. This tool allows the user to enter a specific height (in feet) or use the slider bar to view areas (highlighted in red) that would NOT be height-compatible for that proposed development. The higher the height, the more areas will appear in red, and vice versa. This tool is to be used to determine the compatibility of a proposed structure for height only and help development proposers to more quickly identify compatible areas to build. A development proposer should still analyze the compatibility of their proposed development using the process outlined in this guide (starting on page 15) once a height-compatible location is identified.

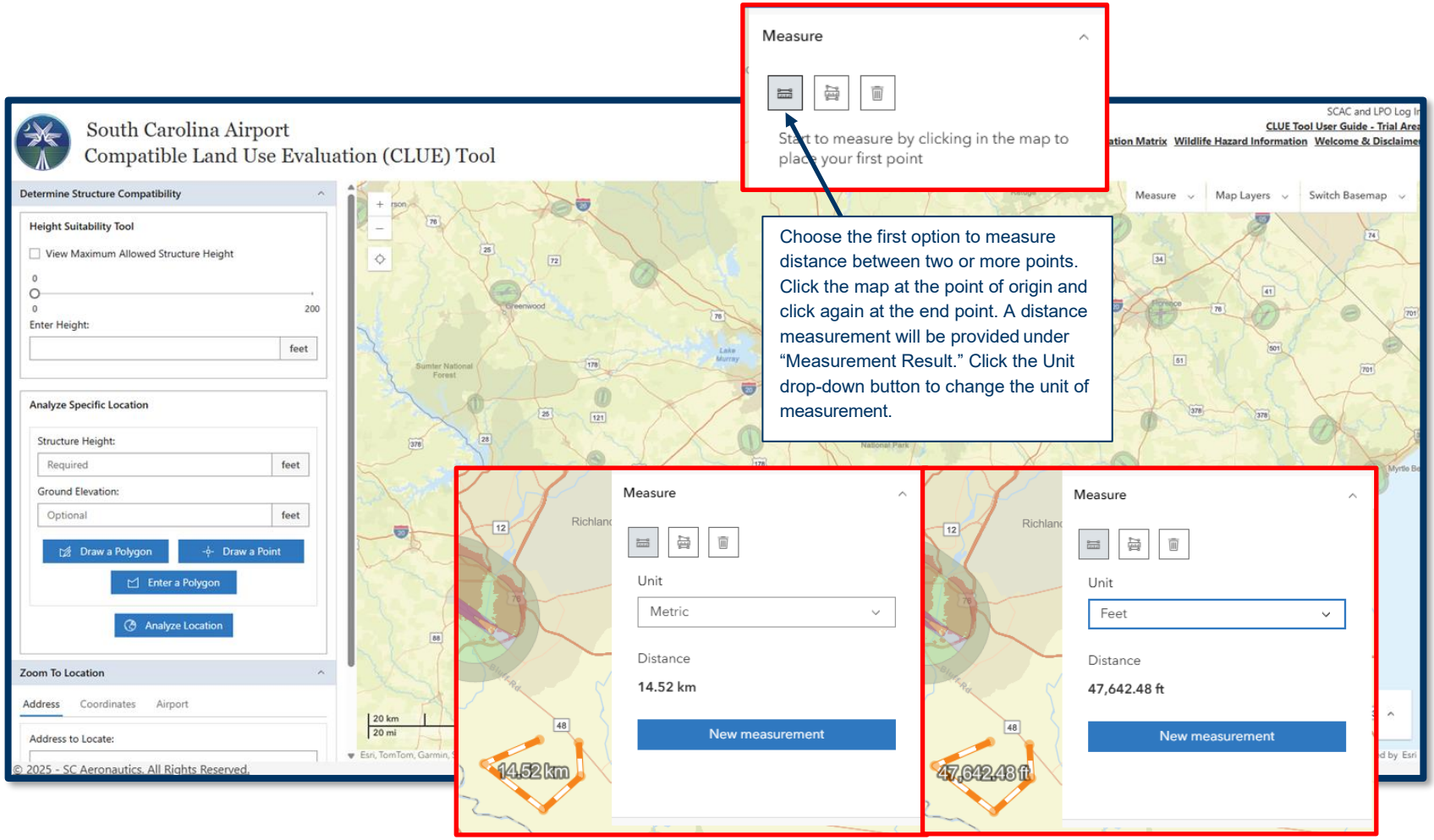
Figure 7- Using the Suitability Tool



Step 2

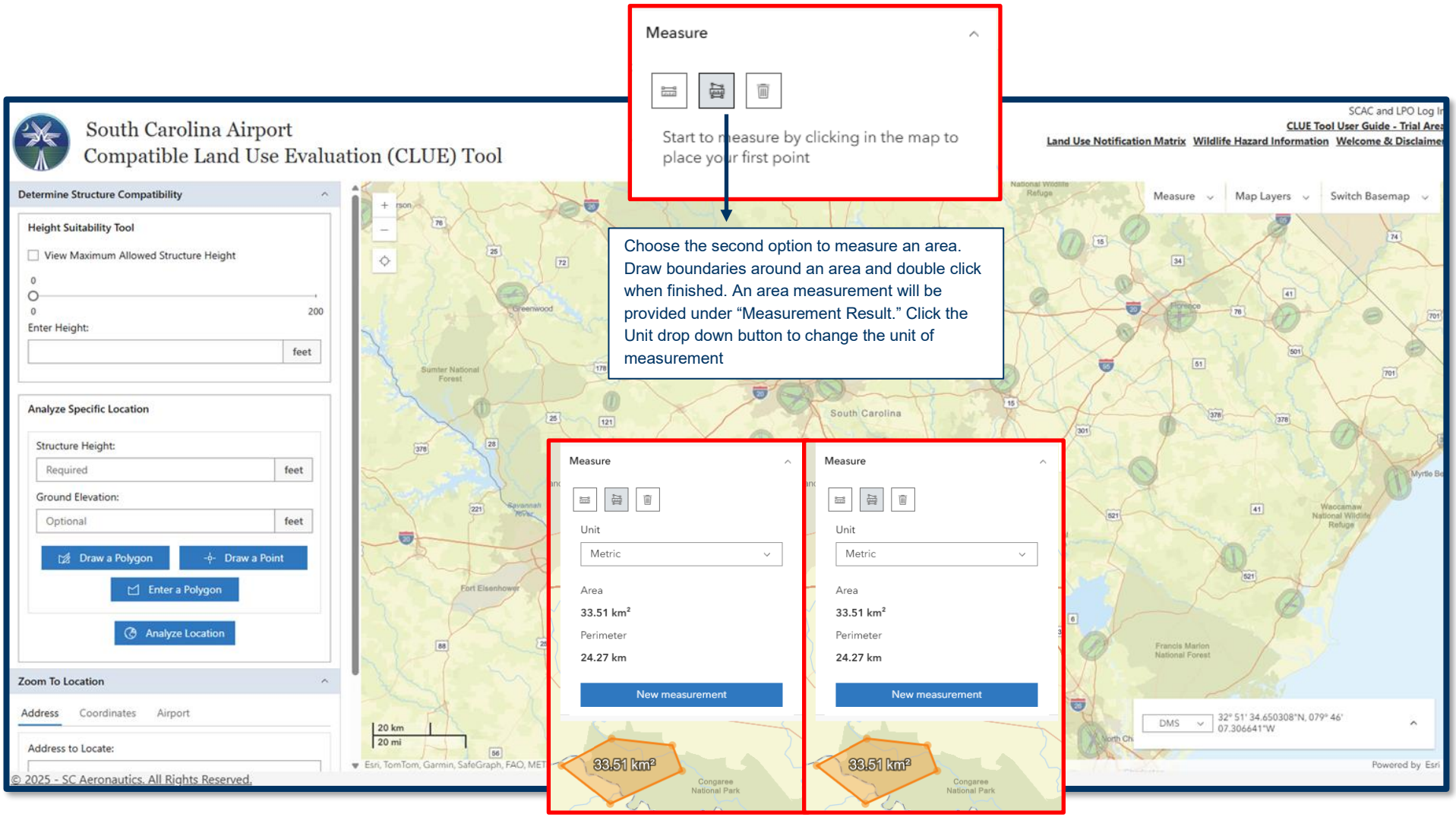
Optional: The Measure feature of the program can be used to measure distance or area. This feature is provided to help users spatially reference their proposed development location by measuring distance (as the crow flies) from the proposed development to nearby locations (such as distance to the nearest airport), and measure areas (such as the area of the proposed development if unknown). These measurements can be helpful when using the CLUE Tool and when discussing the proposed development with the LPO and the SCAC.

Figure 8 – Taking Measurements – Measure Lengths



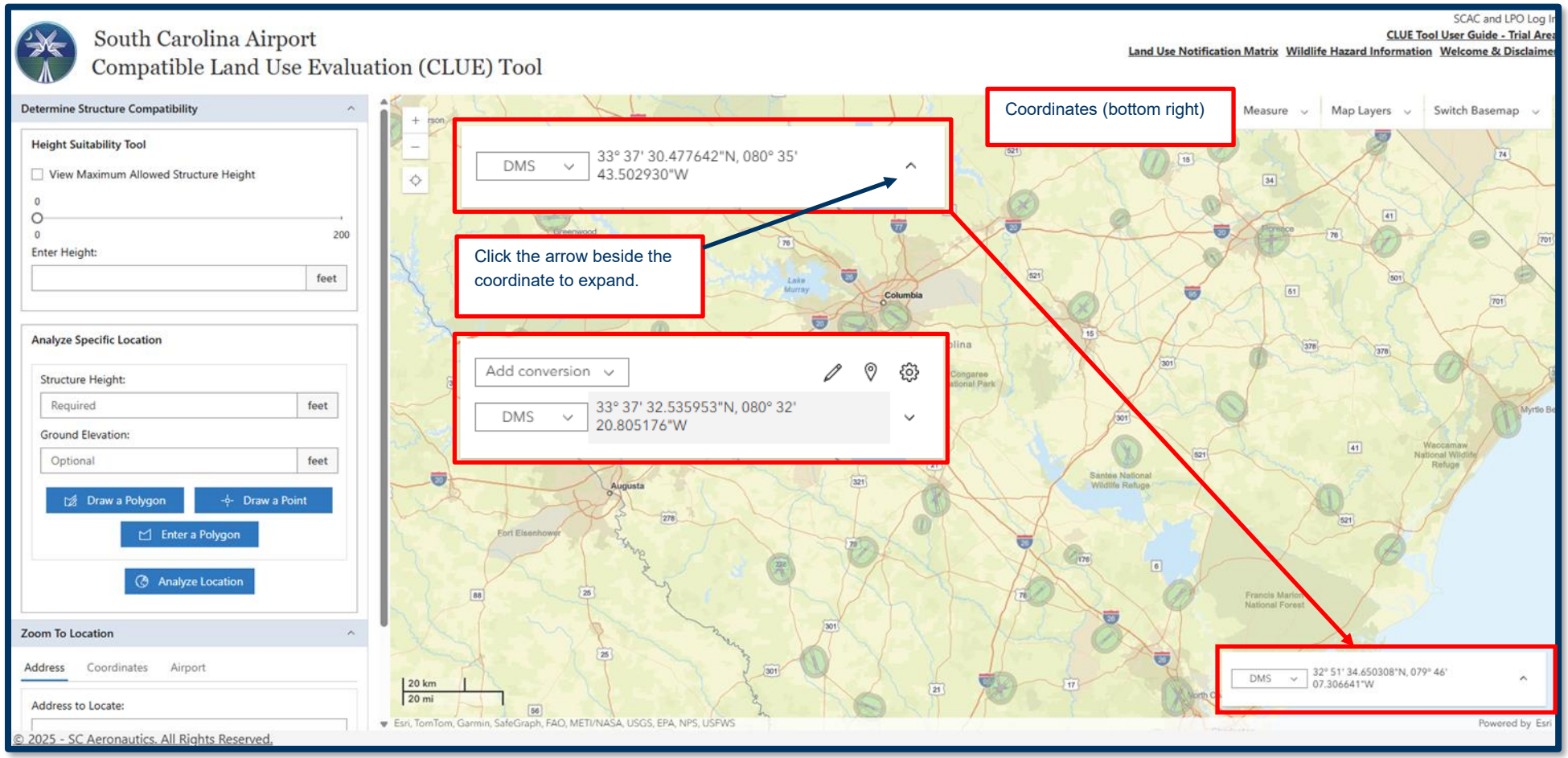
Step 2

Figure 9 – Taking Measurements – Measure Areas



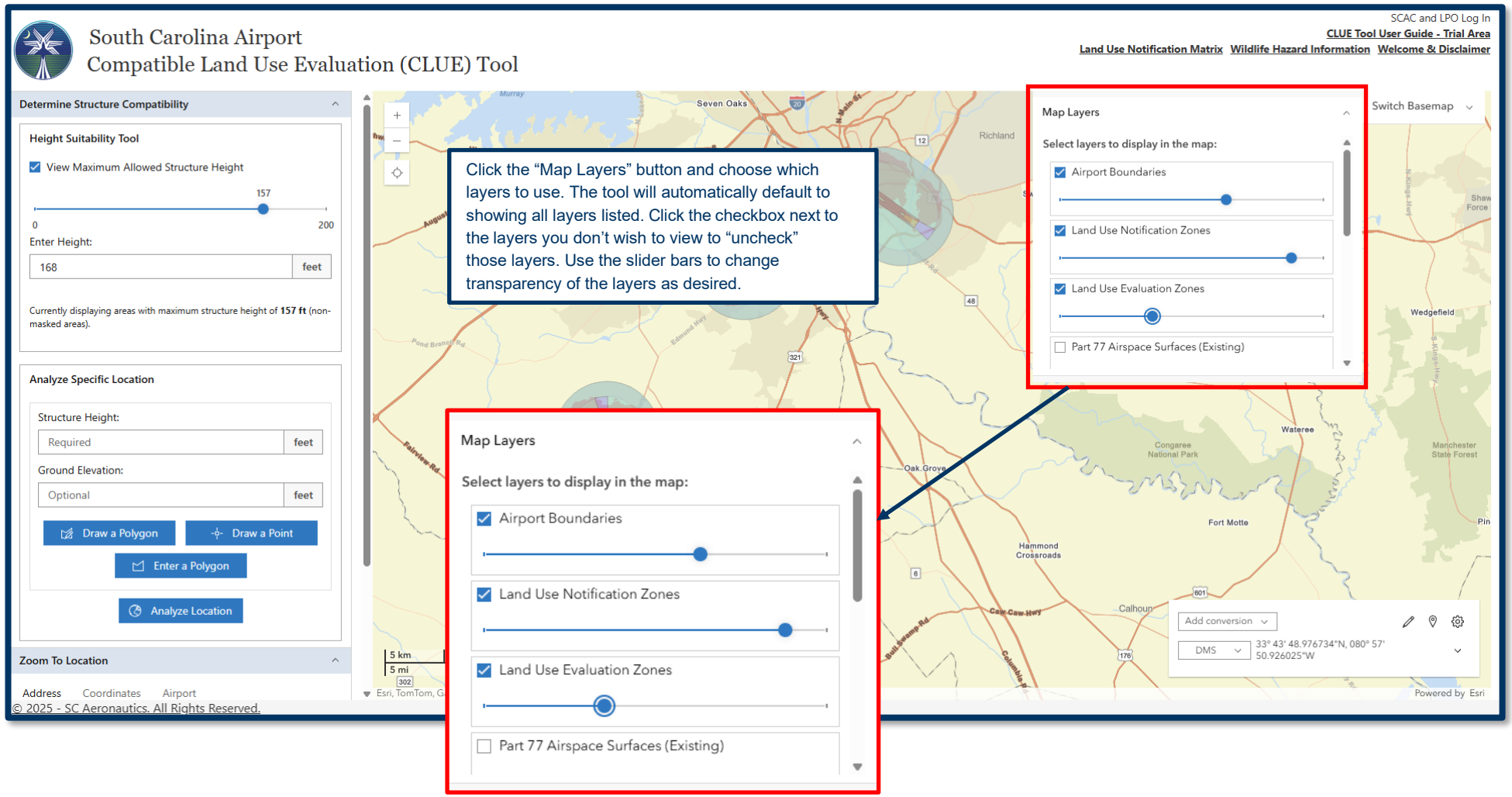
Step 2

Figure 10 – Coordinates



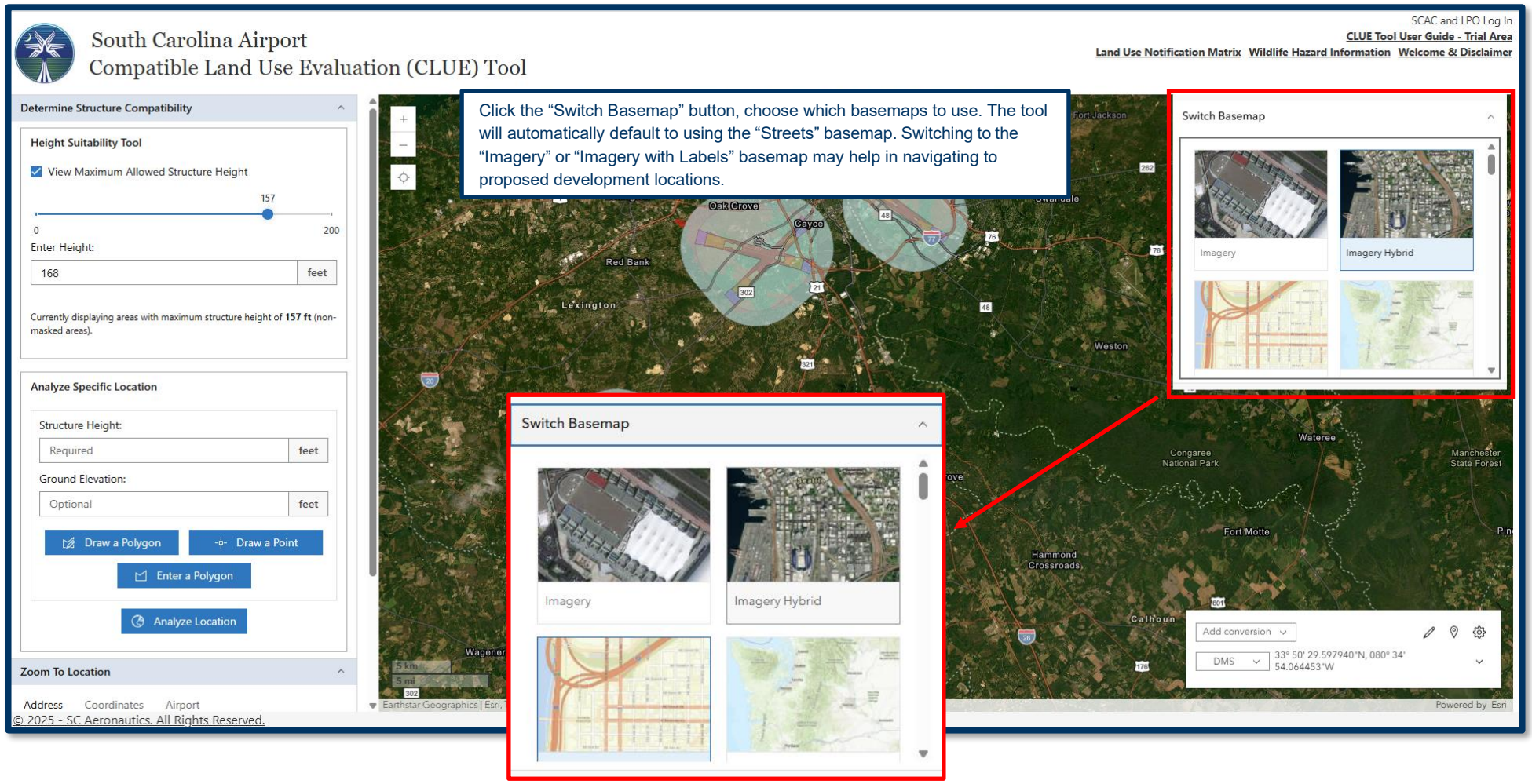
Step 2

Figure 11 – Selecting the Map Layers



Step 2

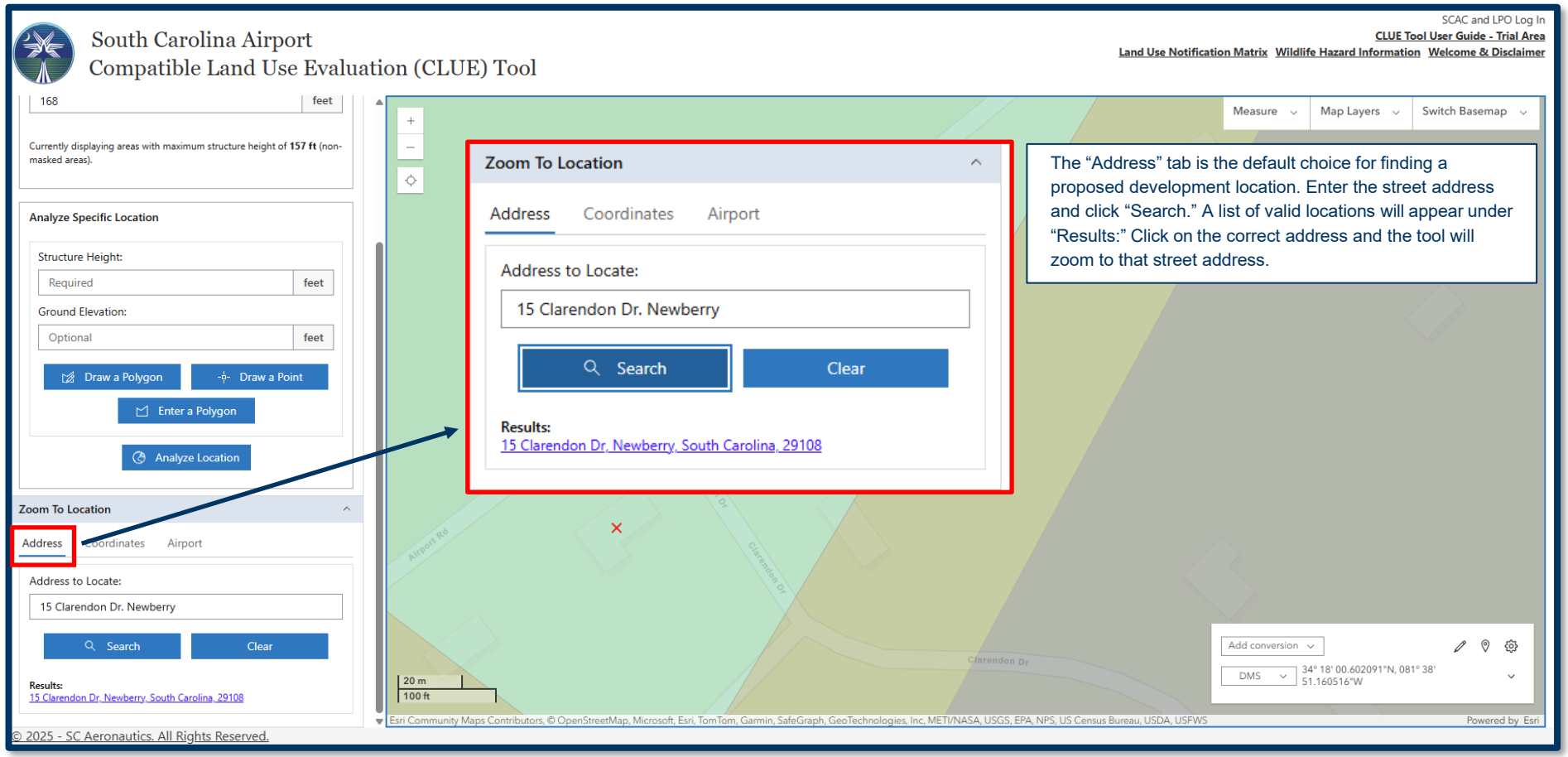
Figure 12 – Switching the Base Map



Step 2

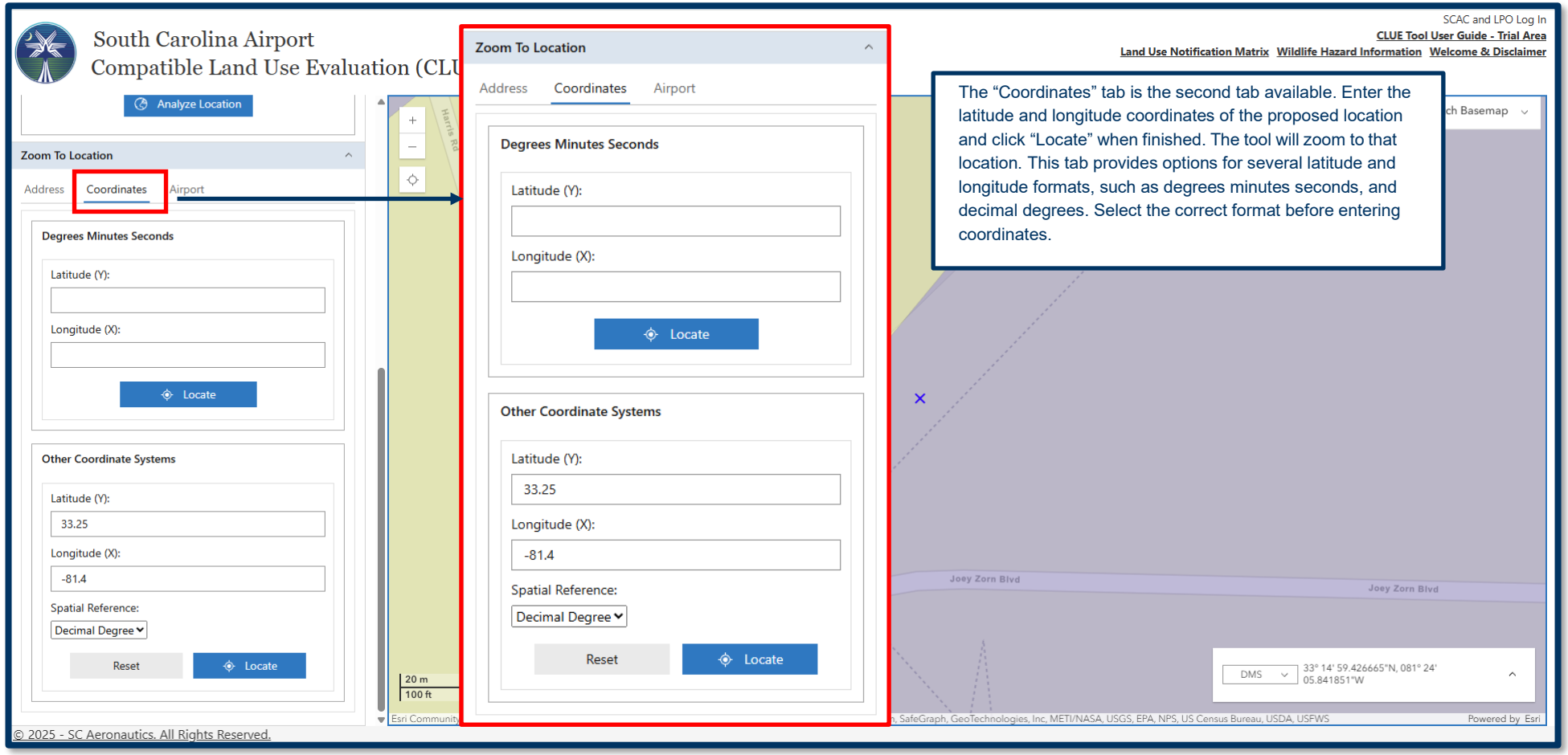
Once the applicant has picked the basemap and layers that they would like to use, they can find their proposed development location on the map by navigating to the left-hand side of the screen and choosing "Address," "Coordinates," or "Airport" based on the locational information available. **Figure 13** illustrates the use of the "Address" tab where a simple street address can be entered. **Figures 14-19** illustrate the use of the "Coordinates" tab using latitude and longitude coordinates (which could be used if the location does not have a street address). **Figures 20** illustrate the use of the "Airport" tab which will auto-fill with the name of a South Carolina airport as the applicant begins to type the name (this could be used if the applicant does not know the street address or coordinates of the proposed location but could identify the location within the area surrounding the nearby airport).

Figure 13 – Using the Address Tab to Locate Proposed Development Location



Step 2

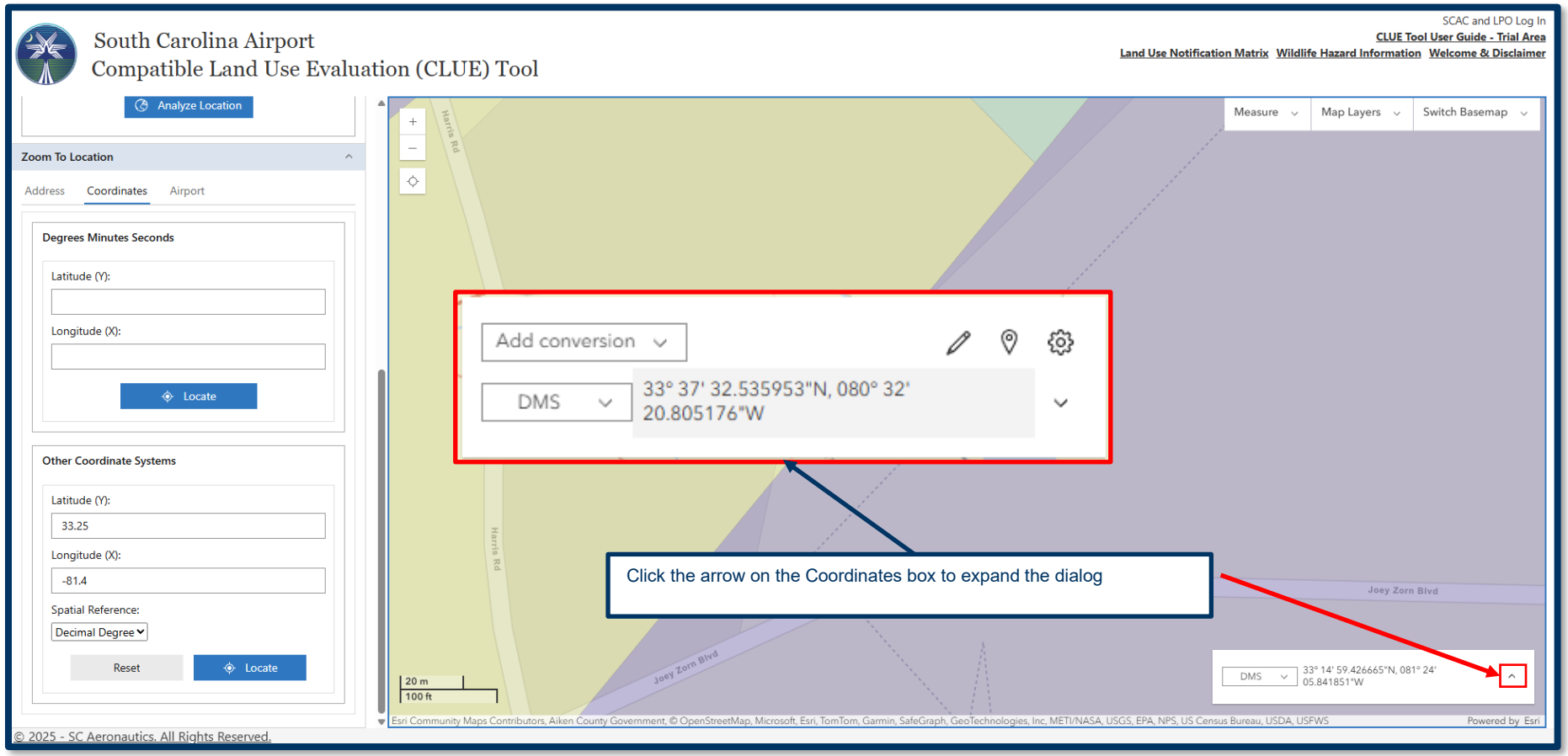
Figure 14 – Using the Coordinates Tab to Locate Proposed Development Location



Step 2

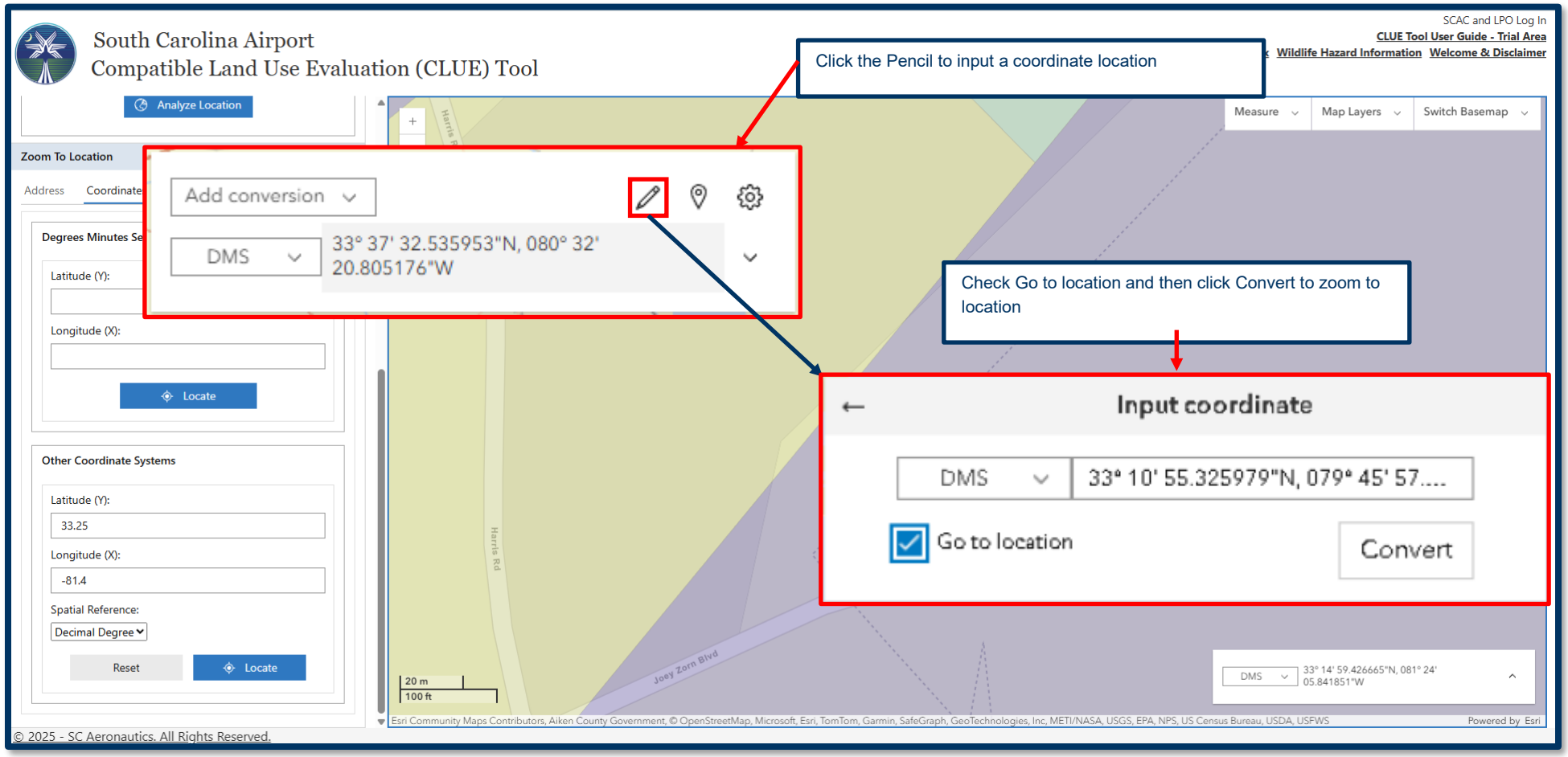
In addition to the Zoom to Location using Coordinates, there is also the out of the box coordinates widget located at the bottom right of the map. **Figures 15-19** show the different options for the Coordinates Widget.

Figure 15 – Working with Coordinates



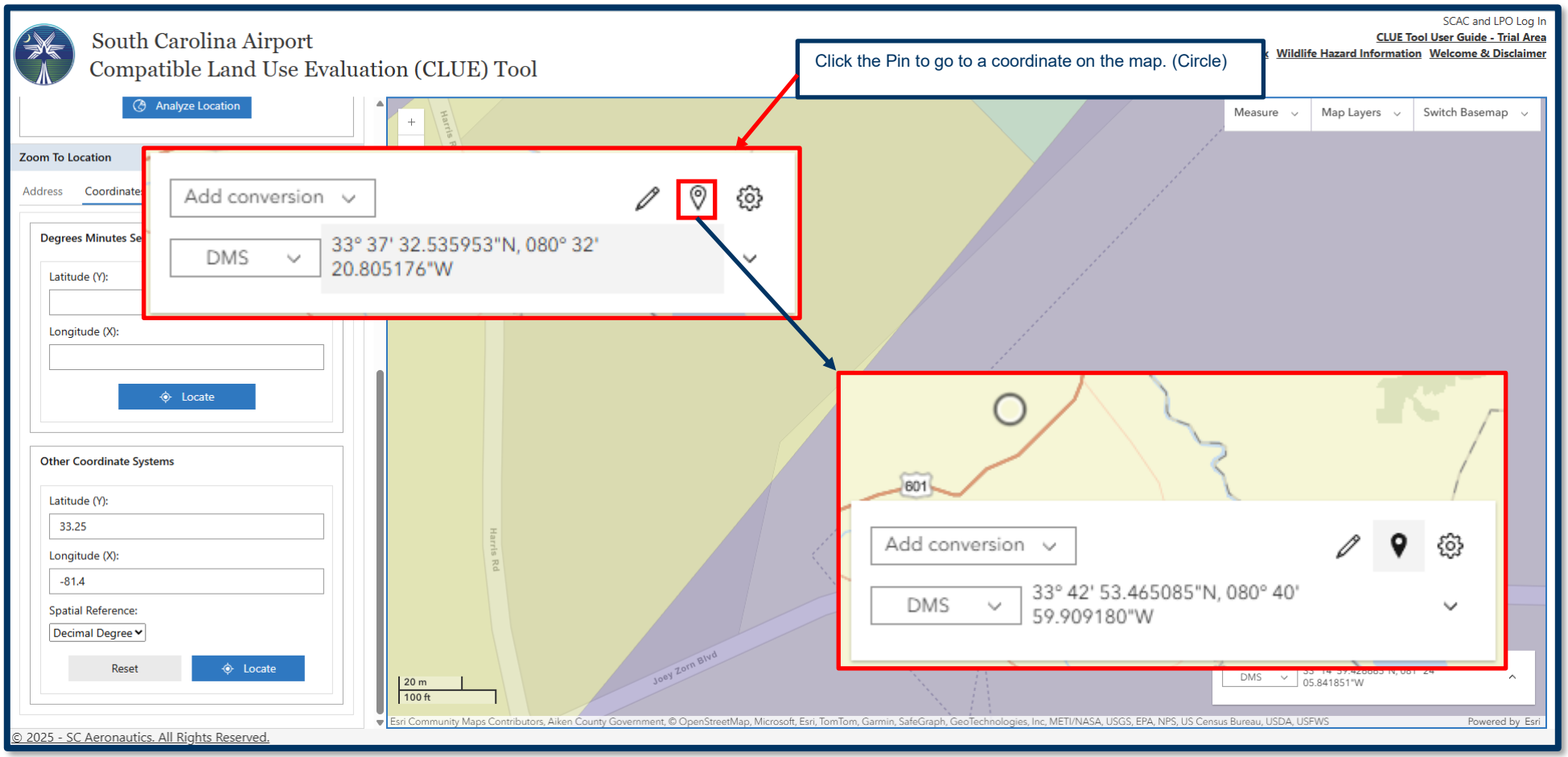
Step 2

Figure 16 – Input Coordinate



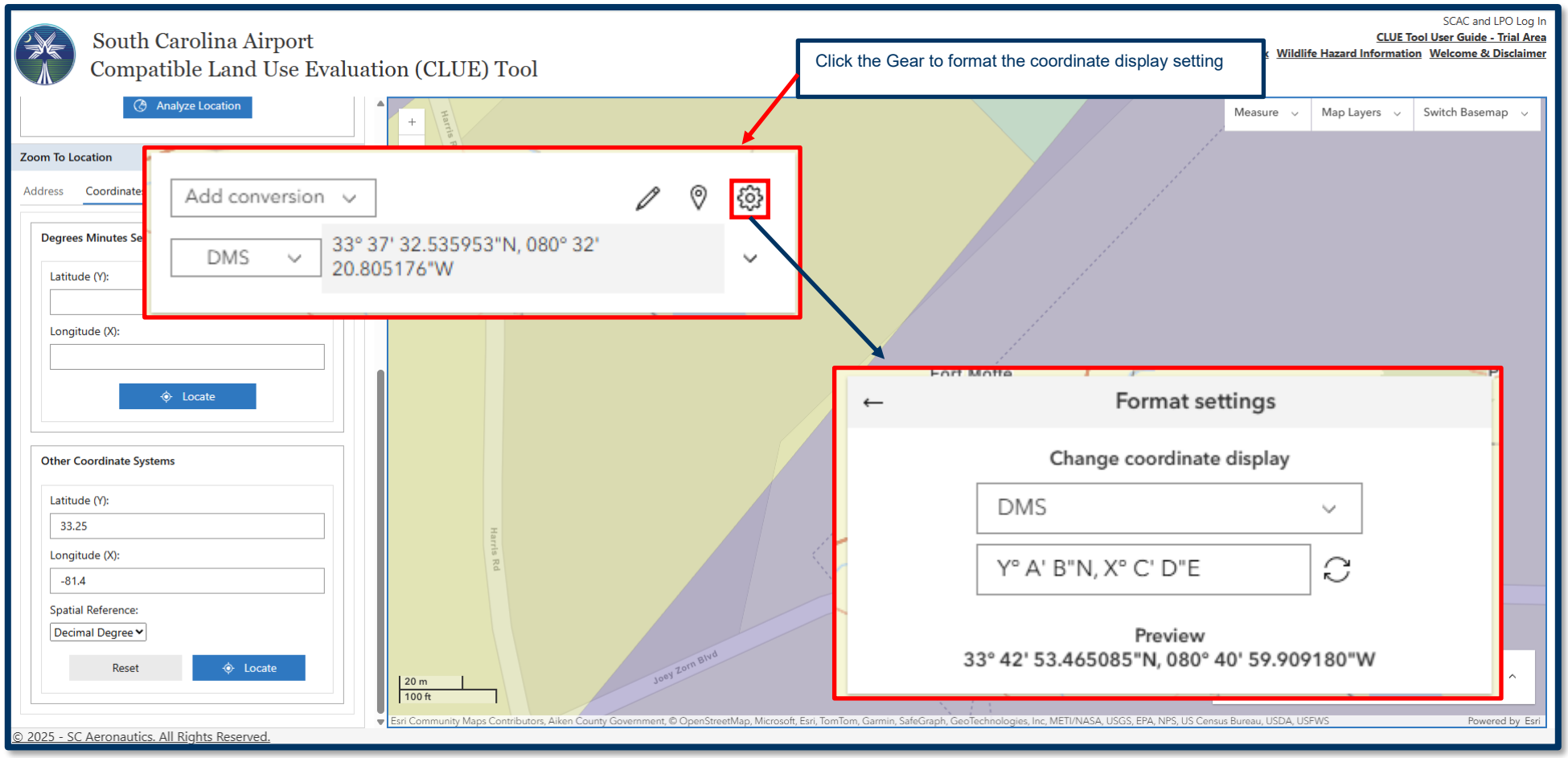
Step 2

Figure 17 – Input Coordinate – Click on the map



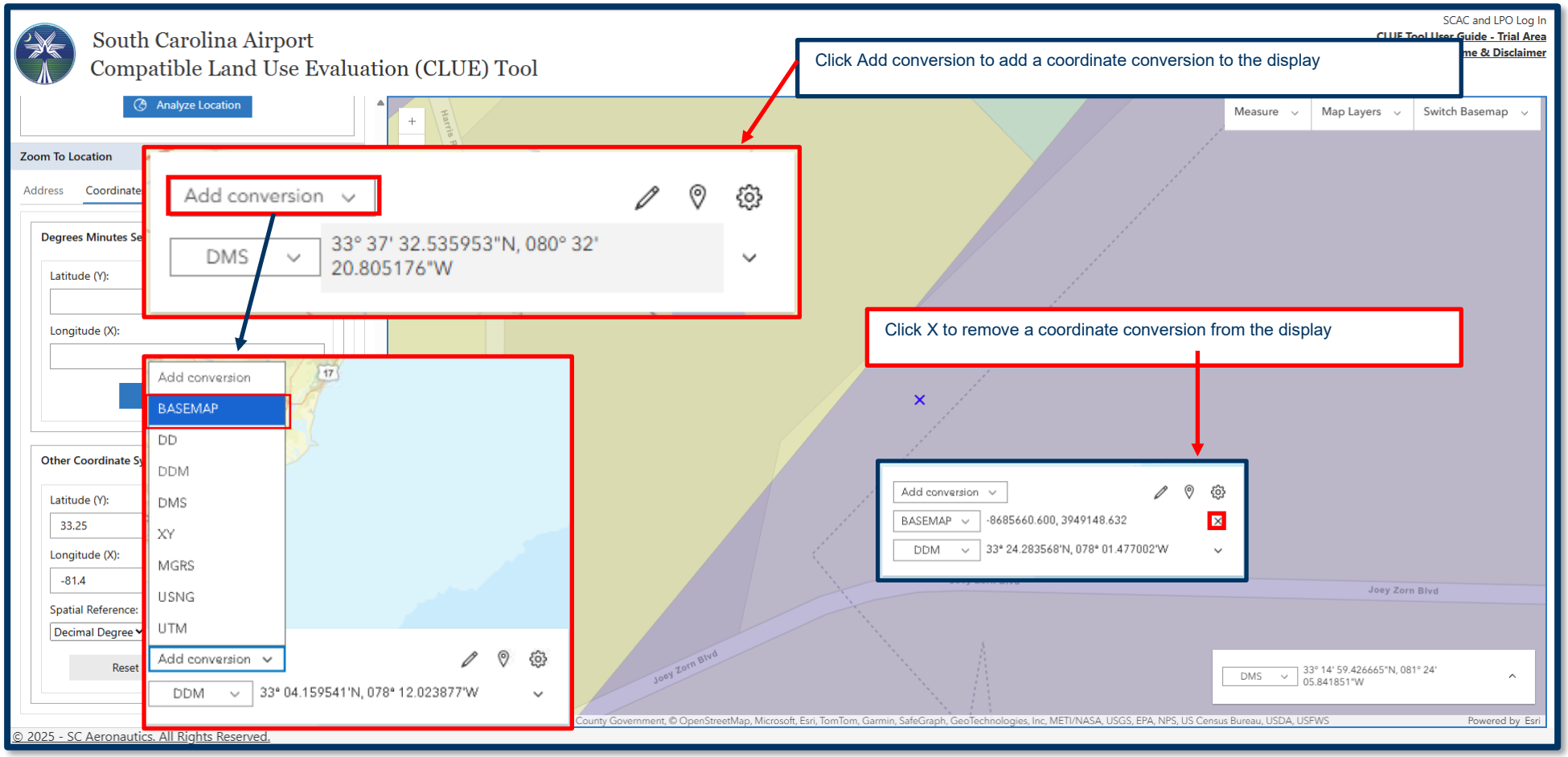
Step 2

Figure 18 – Coordinates Widget – Format Settings



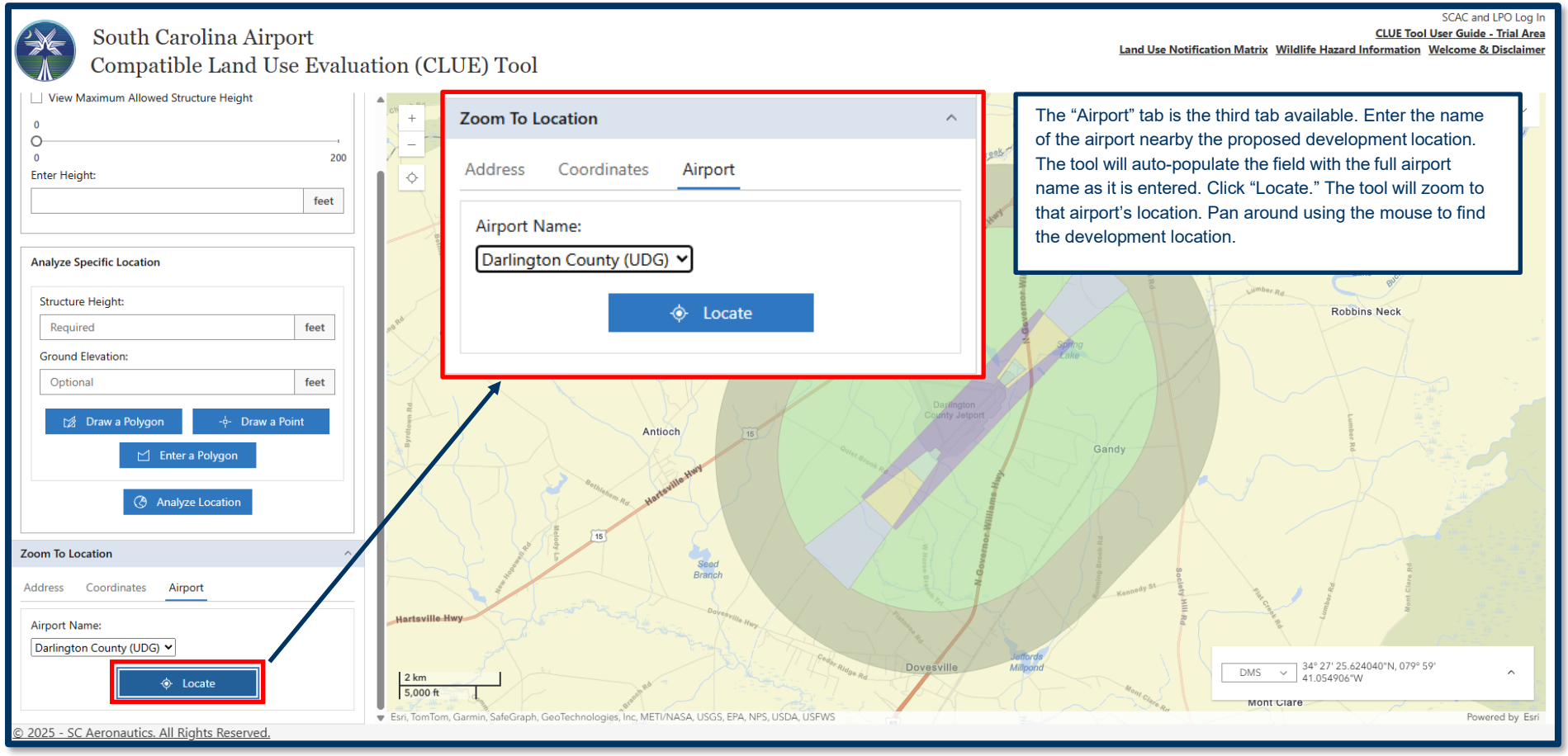
Step 2

Figure 19 – Coordinates Widget – Add or Remove Coordinate Conversion



Step 2

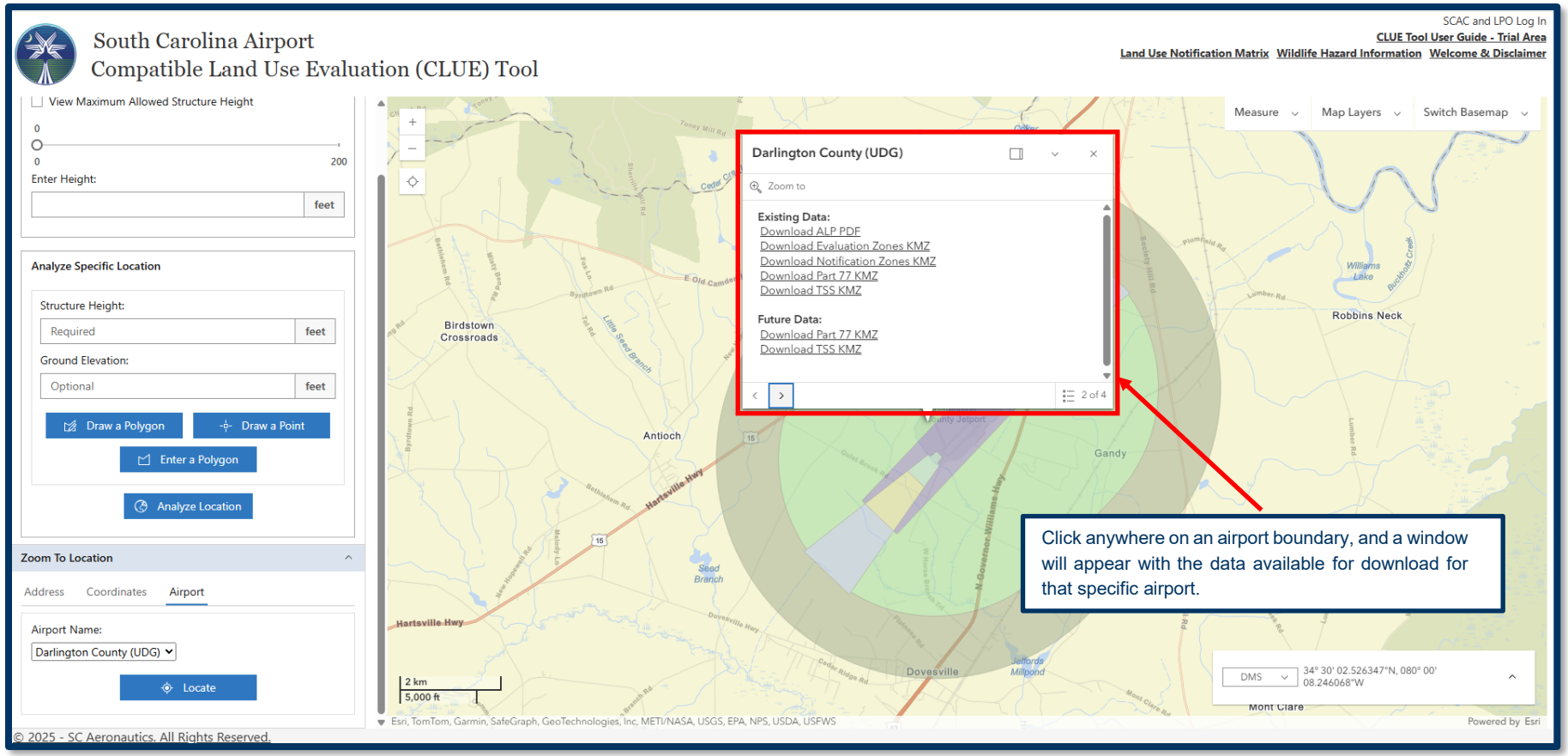
Figure 20 – Using the Airport Tab to Locate Propose Development Location



Step 2

Optional: Once the applicant has navigated to the general location of their proposed development, they can click on the nearby airport boundary to explore and review airport-specific data, such as the Airport Layout Plan (ALP) (which depicts current, future, and ultimate airport development) and the boundaries of the Federal Aviation Regulation (FAR) Part 77 Surfaces at an airport. ***Figure 21*** *includes a screen capture of the airport-specific data that is available for download after clicking on the airport boundary. Keyhole Markup Language (zipped) (KMZ) is a format for modeling and storing geographic features such as points, lines and polygons for display in Google Earth, Google Maps, and other applications. These files can be downloaded by the applicant and opened in Google Earth by clicking "File" then "Open" and selecting the KMZ file(s) that were downloaded from the CLUE Tool.*

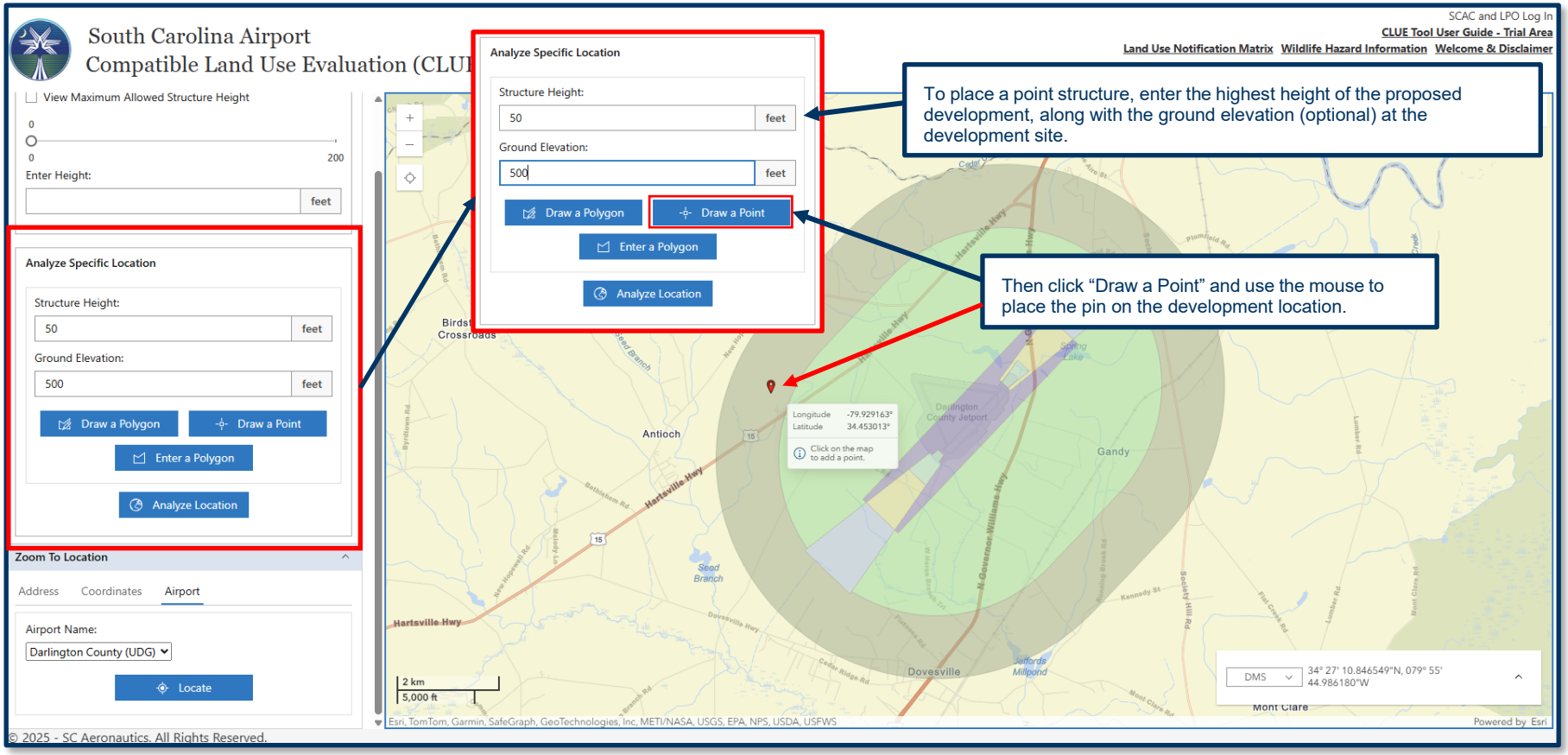
Figure 21 – Downloading Airport-Specific Data



Step 2

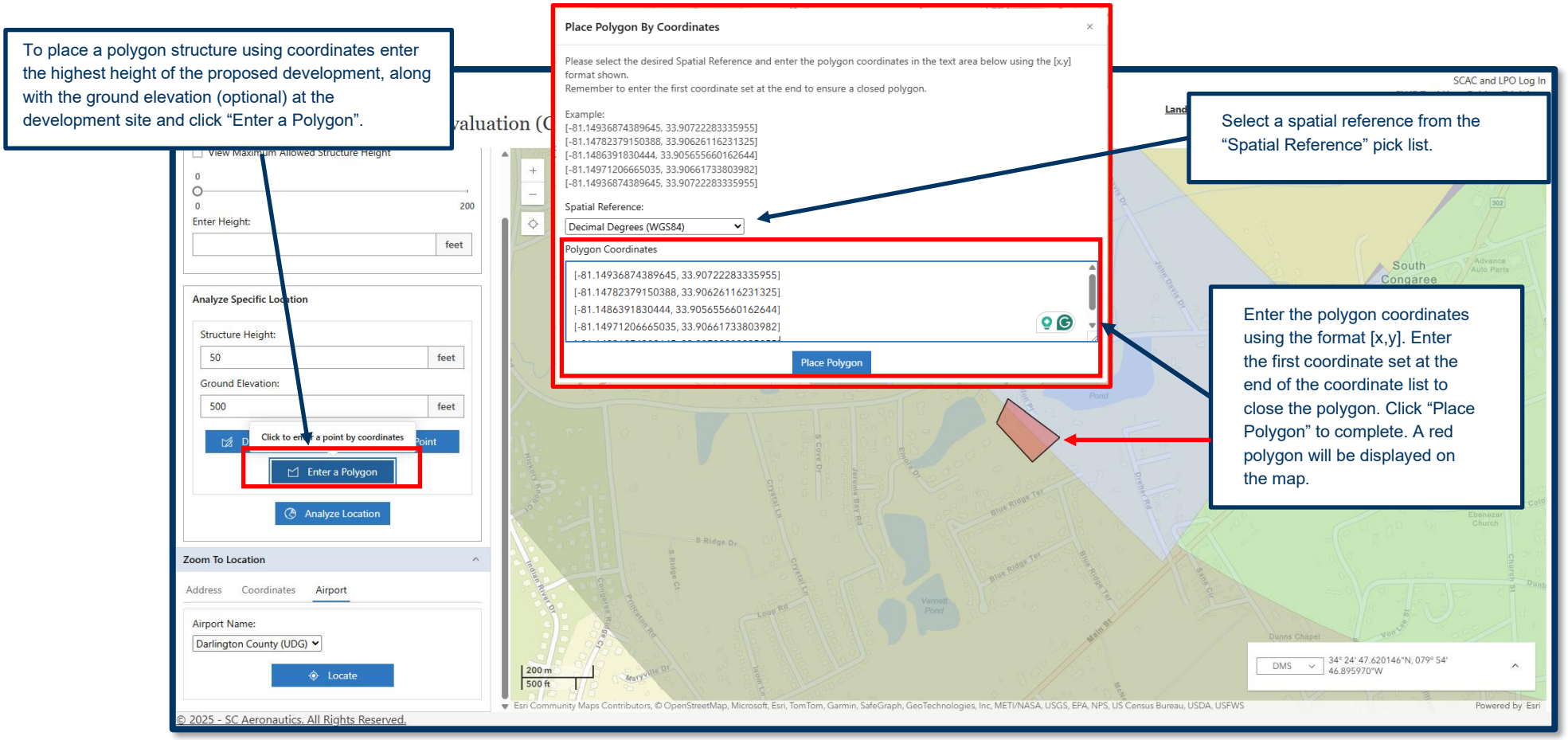
Once the applicant has navigated to their proposed development location, they will need to use the "Draw a Point", "Enter Polygon", or "Draw a Polygon" to create the exact location of the proposed development on the map. This allows the tool to evaluate the proposed development based on the location in which the applicant places the point or polygon. **Figure 22** illustrates the use of the "Draw a Point" feature. **Figure 23** and **Figure 24** illustrate the use of the "Enter Polygon" and "Draw a Polygon" feature respectively. Any of the three features can be used – the choice is up to the applicant. If they are proposing development that will have a significant footprint (or are unsure of the exact site for development), the polygon option would be better so the applicant can draw the general anticipated spot for construction. If they are proposing development with a more limited footprint, the point option is appropriate. In either case, the applicant should enter the height of the structure (required) and the ground elevation at the proposed development site (optional) as shown in **Figures 22-24**.

Figure 22 – Using the Draw a Point Feature



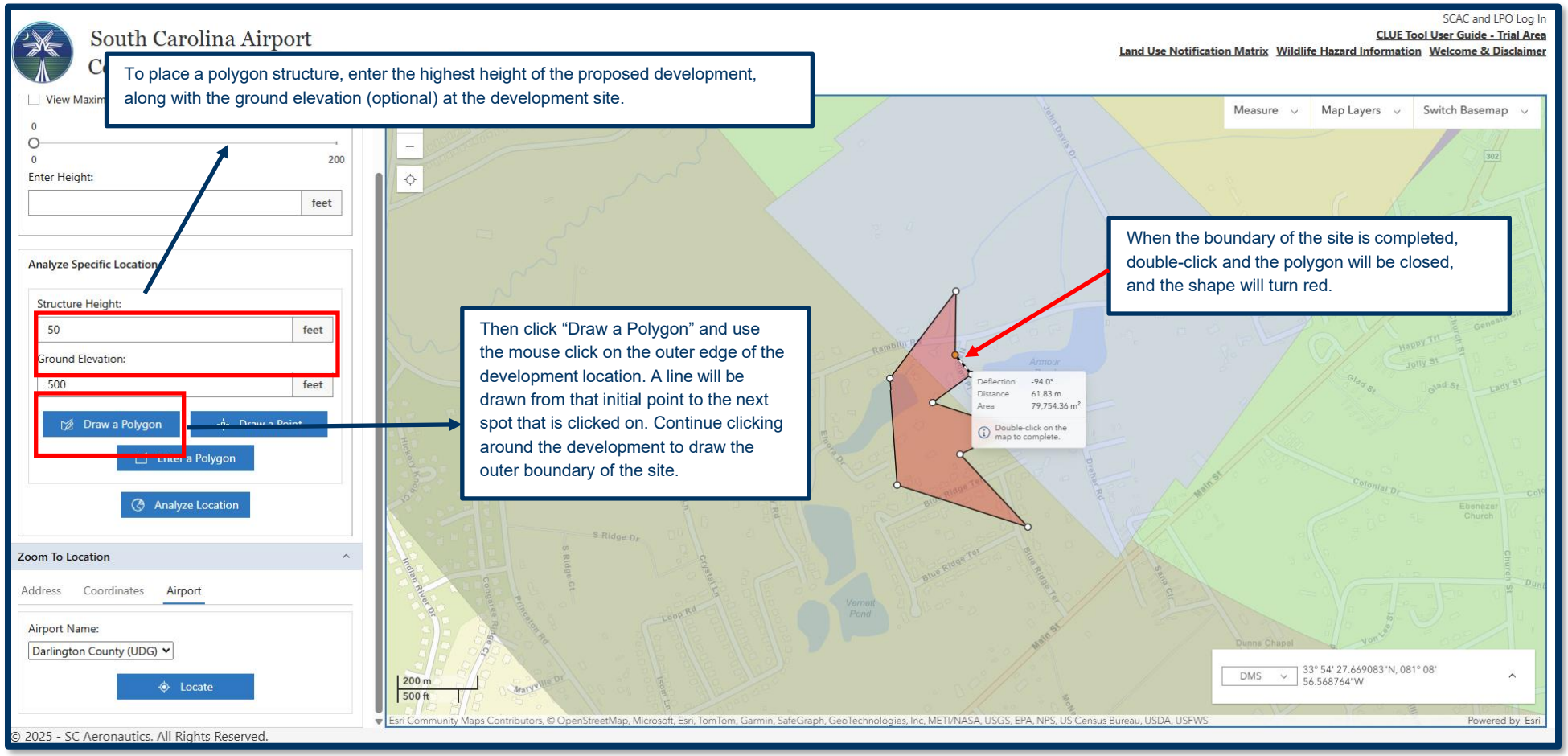
Step 2

Figure 23 – Using Enter a Polygon Feature



Step 2

Figure 24 – Using the Draw a Polygon Feature

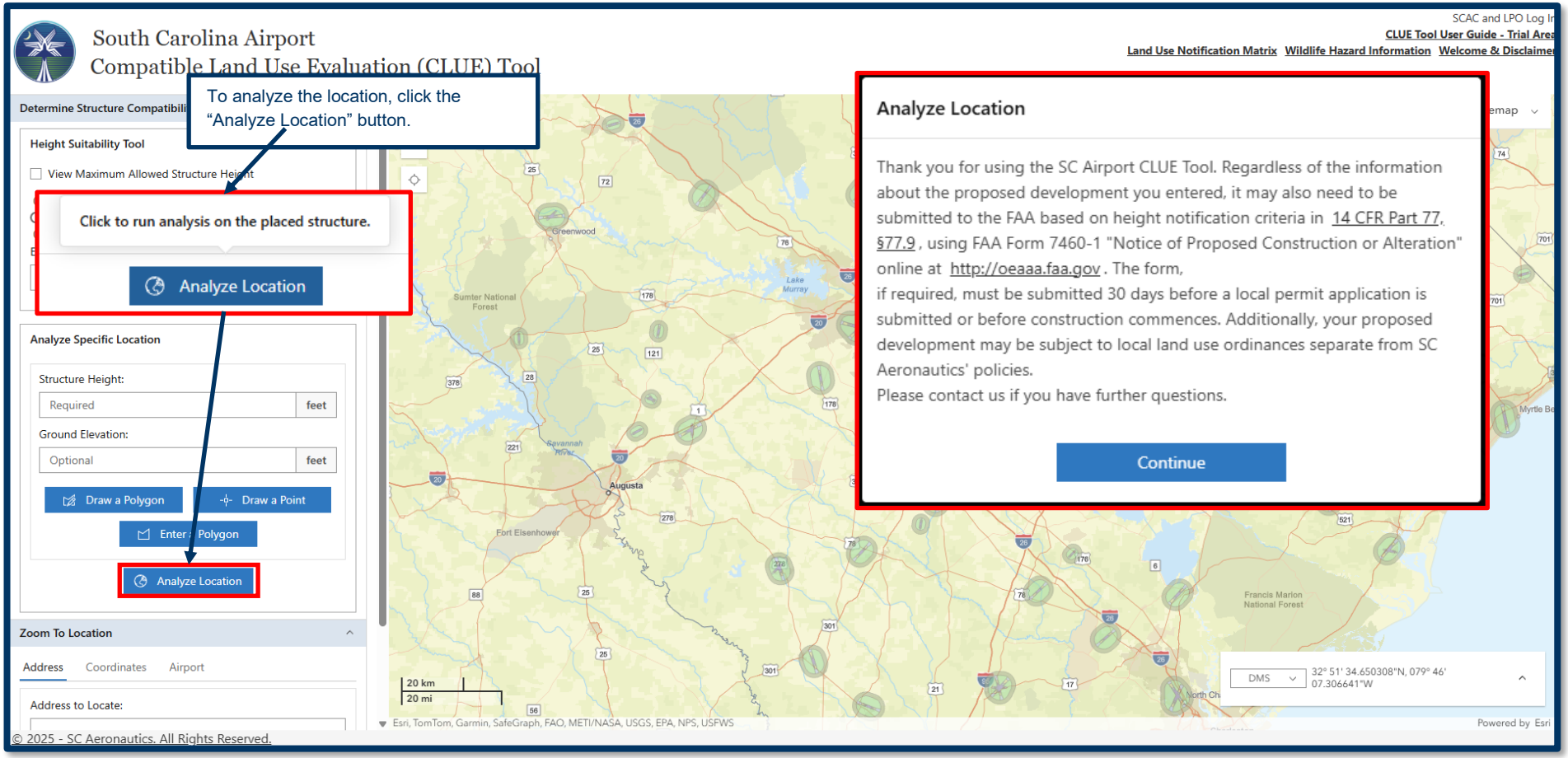


Step 2

Step 3. After the Property is Located

Once the point or polygon has been placed, the tool needs to analyze the location that was identified with a point or polygon. This can be done by clicking the “Analyze Location” button, shown in **Figure 25**.

Figure 25 – Analyzing the Development Location



Step 3

A prompt will appear with a window of information (**Figure 26**) notifying the applicant that regardless of the tool's analysis, their proposed development is still subject to Federal Aviation Administration (FAA) height regulations which may require them to submit an FAA Form 7460-1 "Notice of Proposed Construction or Alteration" to the FAA for federal review. To determine if an applicant's proposed development height falls under this FAA regulation, they should click on the http://oeaaa.faa.gov link. If it does – they will be required to complete and submit the FAA Form 7460-1 online at this website 30 days before they apply for local permits or start construction. If their proposed development does not require FAA review, then they are not required to submit a FAA Form 7460-1. In either case, they will click "Continue" after they have read and understand their responsibilities. After clicking "Continue", a dialog box will appear while the analysis is running.

Figure 26 – Checking Applicability of FAA Height Regulations

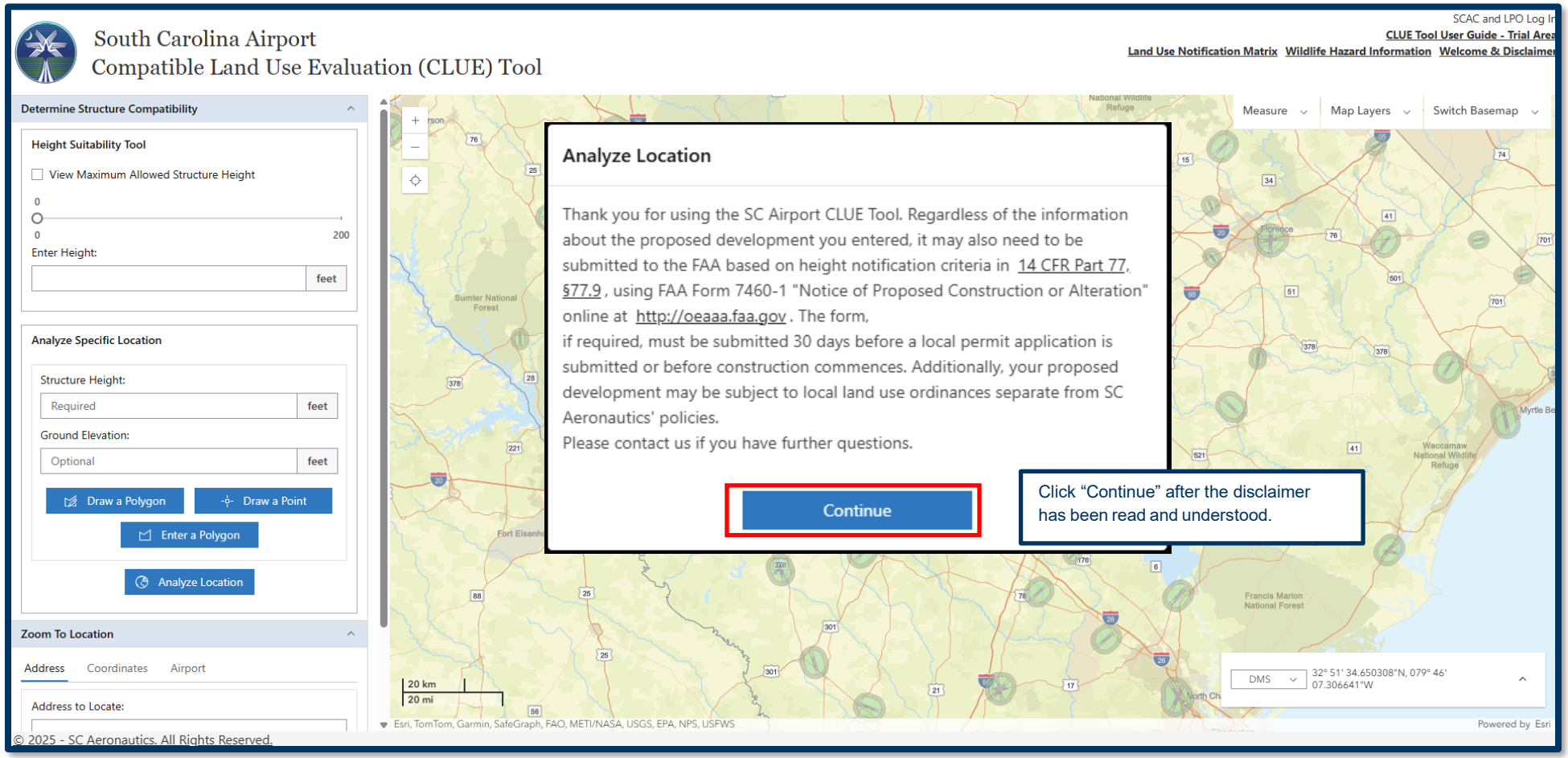
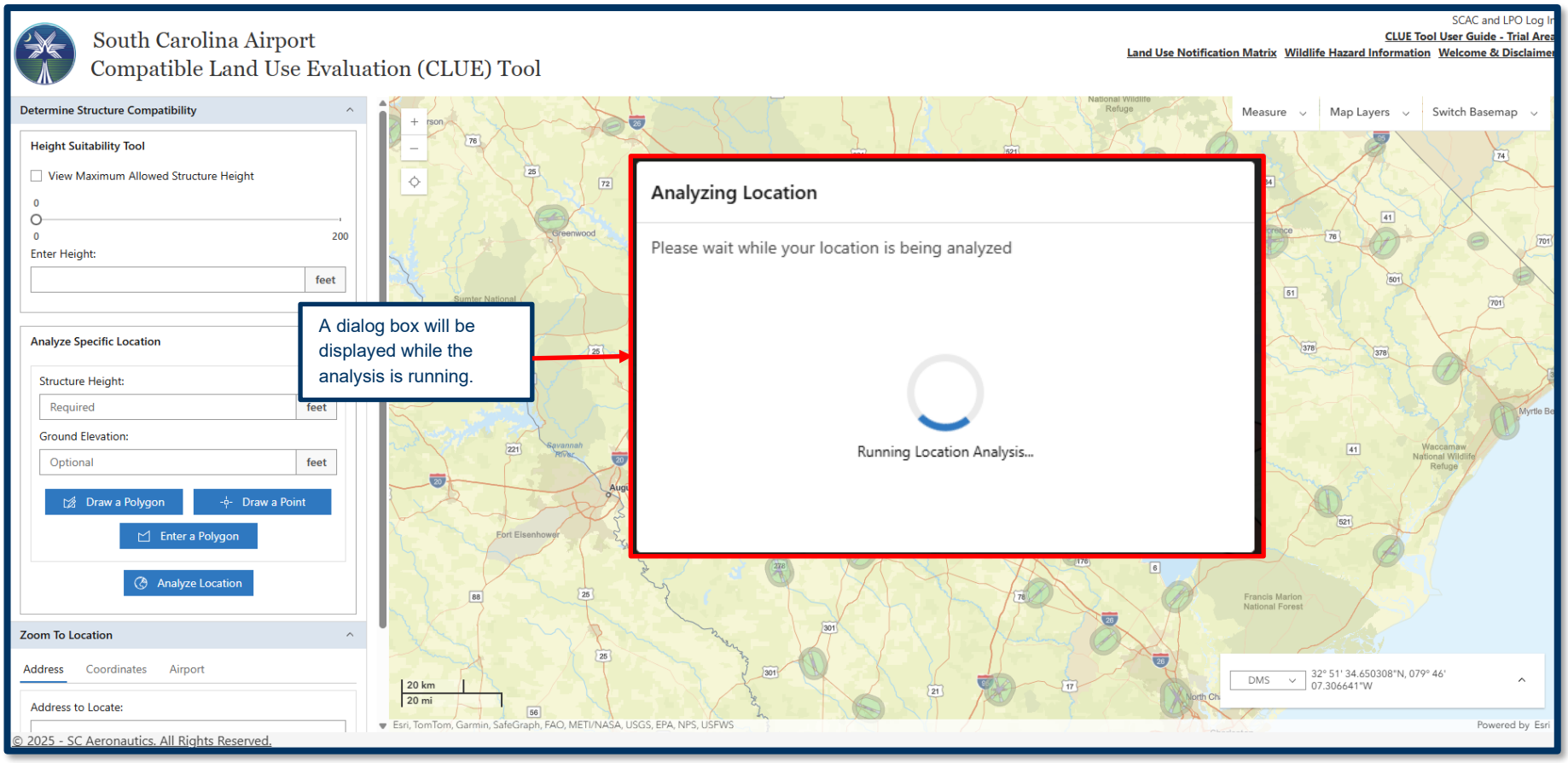


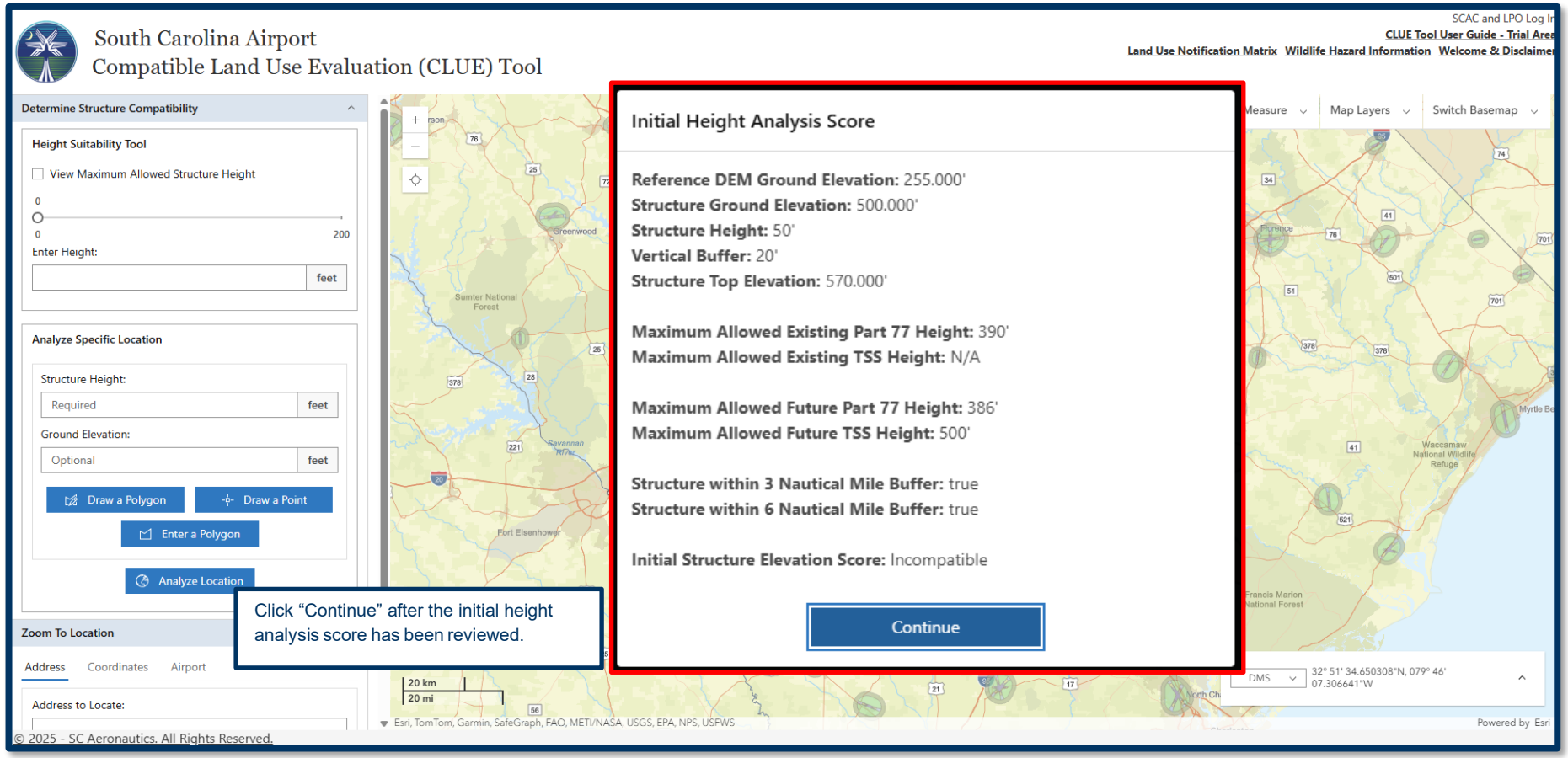
Figure 27 – Analyzing Location



Step 3

A second window (**Figure 28**) will appear with an initial analysis of the proposed structure height and ground elevation (using the measurements provided by the applicant in Step 2) as it relates to the FAR Part 77 Surfaces and the Threshold Siting Surfaces (TSS). This information is used to determine the initial height compatibility of the proposed use. In this example, the top elevation of the proposed structure is lower than the maximum allowed FAR Part 77 height and the allowed TSS height, making the use compatible as it relates to height only. The applicant should click "OK" after they've reviewed their initial height analysis score.

Figure 28 – Initial Height Analysis Score

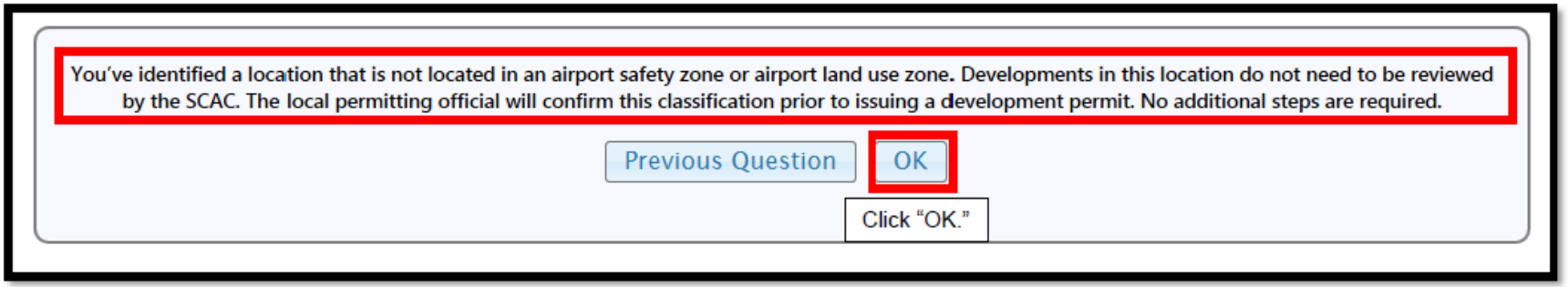


Step 3

Step 3a. Property outside the Airport Safety and Land Use Zones

If the applicant's proposed development is located outside of the Airport Safety and Land Use Zones, they are not required to proceed further with SCAC review and will receive the message shown in **Figure 29** indicating such.

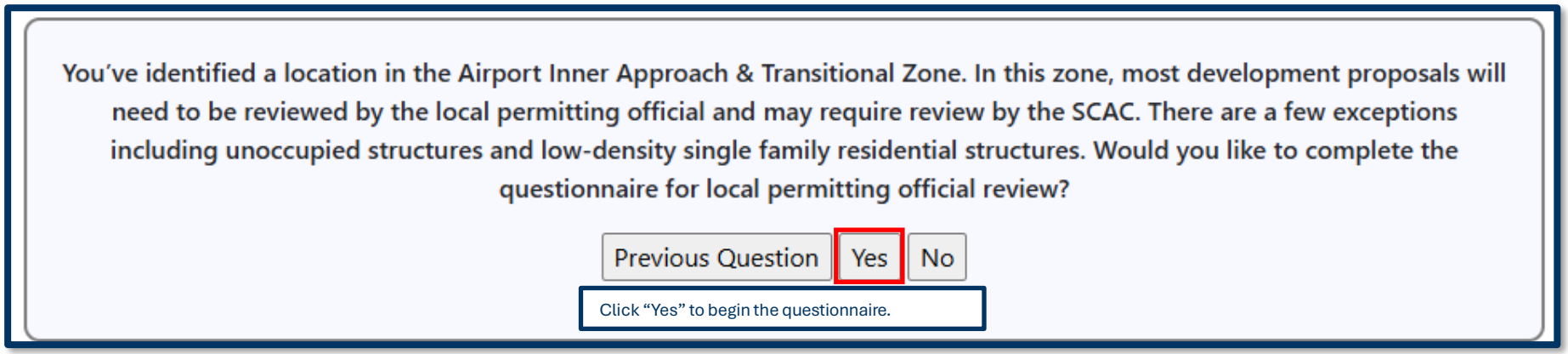
Figure 29 – Development outside Airport Safety and Land Use Zones do not Require Review



Step 3b. Property within the Airport Safety and Land Use Zones

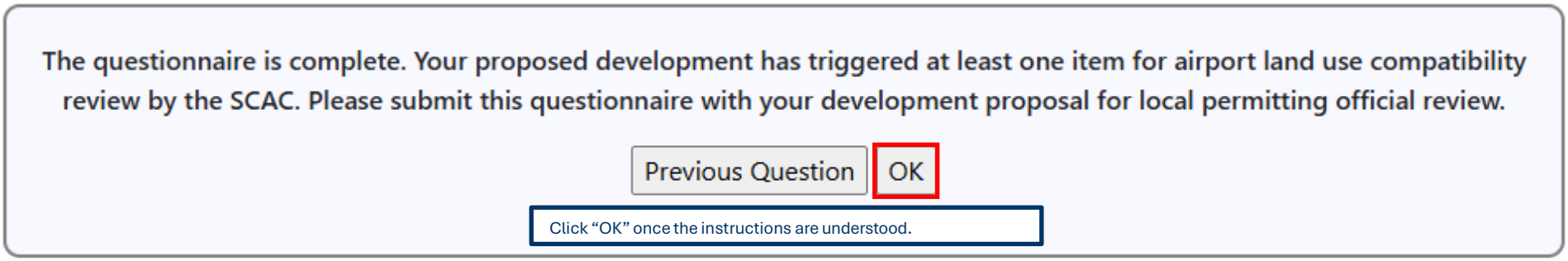
If the applicant's proposed development location lies within any of the Airport Safety and Land Use Zones, the tool will prompt the applicant to answer a short set of questions regarding the characteristics of their proposed development (see **Figure 30**). The applicant should answer these questions honestly and to the best of their ability. They may click "Previous Question" if they need to navigate back and modify any of their answers.

Figure 30 – Answering the Questionnaire



Once all questions on the questionnaire have been answered, a prompt will appear with a window telling the applicant that their questionnaire is complete (see **Figure 31**). It will notify them whether their proposed use has triggered review by SCAC.

Figure 31 – Completing the Questionnaire

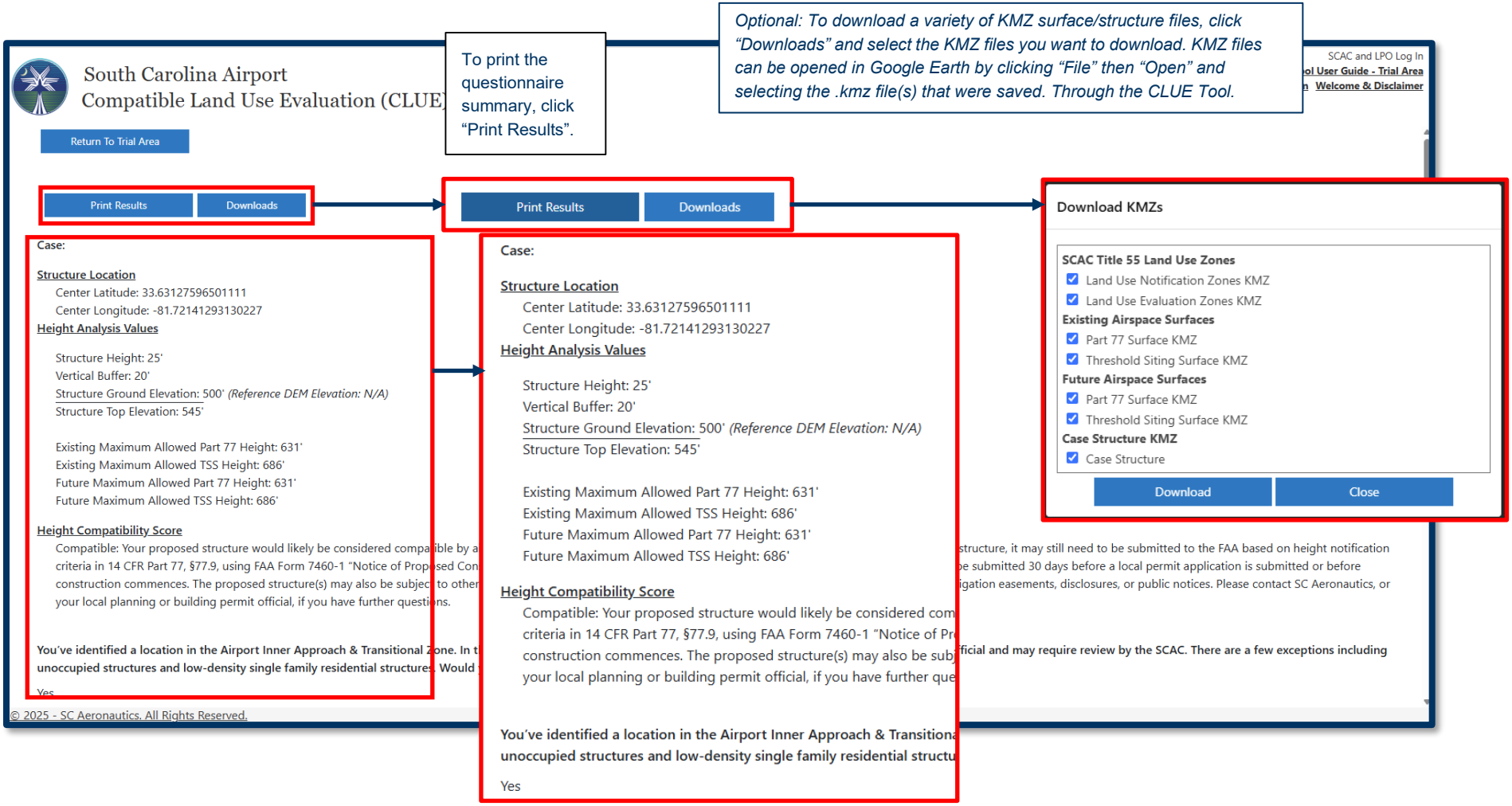


Step 3

Step 4. Questionnaire Summary

Once the applicant completes this questionnaire, the tool will provide a summary sheet of the applicant's answers (**Figure 32**) and note whether the proposed development triggered review by the SCAC.

Figure 32 – Questionnaire Summary



Regardless of whether the tool indicates the applicant's use has triggered SCAC review, the applicant can print a copy of their questionnaire summary which they can share with their LPO when applying for development permits/approval. If the proposed development does not require SCAC review, the applicants' LPO will review their questionnaire summary prior to issuing any permits to begin construction. If the proposed development triggered SCAC review, the LPO will work with the applicant to submit their proposed development for review.

Note: If the applicant's proposed development requires submission of an FAA Form 7460-1, they will receive a letter of findings from the FAA once they've reviewed the applicant's use. FAA's review and response may take up to several weeks to a few months to complete, so the applicant should submit the Form 7460-1 as soon as possible. The applicant should bring the FAA findings letter along with their questionnaire summary to their LPO. The applicant's LPO will upload a copy of the FAA letter to SCAC for their review.

CLUE TOOL GLOSSARY

Applicant – Likely the property owner(s) or developer(s) that are responsible for applying for local permits.

Case – The establishment of an applicant's proposed development circumstance within the LPO login area of the CLUE Tool. A case is given a reference number so it may be monitored, evaluated and closed out when appropriate. Cases are not created in the Trial Area of the CLUE Tool.

Flammable/Hazardous Materials – Large quantities of flammable or hazardous materials such as gas, propane, and chemicals. Small propane tanks and the like are not considered to be included in this grouping. Some facilities of concern include (but are not limited to) commercial fueling stations/truck stops and bulk fuel terminals.

Ground Elevation – The mean sea level (MSL) height of the ground on which the proposed development will be built.

Local Permitting Official (LPO) – Likely the local municipal planner(s) or building permit official responsible for permitting procedures.

Density –

Low Density – This is the second lowest density level established for the tool. This level of density varies between land use types based upon characteristics of the land use type. The following outlines what is considered Low Density for each of the major land use types:

Residential

- Up to four (4) dwelling units per 1 acre lot
- Example: single family homes

Commercial & Industrial

- Facility size of 10,000 square feet or less
- Examples: specialty shops, printing & shipping shops, banks, laundromats, vehicle repair shops, bakeries, hardware shops, towing/vehicle storage, building supply yards, exterminators

Institutional

- Not more than 25 persons
- Examples: single doctor offices, specialist offices, dentist/orthodontist offices, medical laboratories, urgent care facilities

Recreation

- Not more than 50 persons
- Examples: small gyms, dance studios

Medium Density – This level of density varies between land use types based upon characteristics of the land use type. The following outlines what is considered Medium Density for each of the major land use types:

Residential

- 2-10 dwelling units/acre or not more than 25 persons/acre
- Examples: apartment complexes, duplexes, townhomes

Commercial & Industrial

- Facility size of more than 10,000 square feet up to 50,000 square feet
- Examples: fast food restaurants, small cafés, small restaurants/bars, small & medium size offices, machine shops, general manufacturing, recycling centers

Institutional

- 25-100 people
- Examples: small libraries, small museums, small religious assemblies

Recreation

- 50-200 people
- Examples: bowling alleys, skating rinks, tennis/swimming facilities, sports parks

High Density – This level of density varies between land use types based upon characteristics of the land use type. The following outlines what is considered High Density for each of the major land use types:

Residential

- More than 10 dwelling units/acre or more than 25 persons/acre
- Examples: large apartment complexes, mobile home parks, high rise condominiums

Commercial & Industrial

- Facility size of 50,000 square feet up to 100,000 square feet
- Examples: big-box stores, large offices, multi-floor complexes, restaurants, shopping malls, nightclubs, heavy manufacturing, mining/extraction, water treatment

Institutional

- More than 100 but less than 500 people Examples
- Examples: colleges, universities, hospitals, community centers, large religious assemblies, conventions or performing arts centers

Recreation

- More than 200 but less than 500 people
- Examples: indoor theaters, small amusement parks, stadiums, casinos, large amusement parks, racetracks

Ultra-High Density – The highest density category established for the tool. This level of density varies between land use types based upon characteristics of the land use type. The following outlines what is considered Ultra High Density for each of the major land use types:

Residential

- No density established for this land use type (see High Density instead).

Commercial & Industrial

- 500+people
- Examples: big-box stores, large offices, multi-floor complexes, restaurants, shopping malls, nightclubs, heavy manufacturing, mining/extraction, water treatment

Institutional

- 500+ people
- Examples: colleges, universities, hospitals, community centers, large religious assemblies, conventions or performing arts centers

Recreation

- 500+ people
- Examples: indoor theaters, small amusement parks, stadiums, casinos, large amusement parks, racetracks

Note: these "Ultra-High Density" uses are the same uses shown under "High Density", but they have even higher density of 500+ people. For example, a local community college that has between 100 and 500 students and faculty would be considered "High Density" and a local university that has more 500+ students, and faculty would be considered "Ultra-High Density."

Very-Low Density: The lowest density category established for the tool. This level of density varies between land use types based upon characteristics of the land use type. The following outlines what is considered Very Low Density for each of the major land use types:

Residential

- One dwelling unit per one (1) acre or greater lot size
- Example: large lot single family home

Structure Height – The tallest point of the proposed development, including the height of church steeples, utility poles, cell towers, parking lot lights, etc.

Wildlife Attractants – Specific uses or characteristics of uses that are appealing to wildlife and draw them in. Examples of common wildlife attractants include landfills, wastewater treatment plants, open mining operations with water bodies, construction soil/debris piles, detention ponds, fountains, created wetlands, trash receptacles and certain types of crops.

Zoning Change – A change in zoning that requires a local zoning map amendment.