

# GREENVILLE-SPARTANBURG INTERNATIONAL AIRPORT



2040  
**WINGSPAN**  
A VISION FOR THE FUTURE

**APPENDIX A**  
**FLORA AND FAUNA**  
**TECHNICAL MEMORANDUM**  
MASTER PLAN EA  
NOVEMBER 2021



**McFarland Johnson**



TECHNICAL MEMORANDUM

August 24, 2021

To: File

From: Corinne Steinmuller, Environmental Analyst  
Daniel Good, Environmental Engineer

RE: Greenville-Spartanburg International Airport  
Flora and Fauna Technical Memorandum

The purpose of this technical memorandum is to summarize McFarland Johnson, Inc.'s (MJ) investigation into flora and fauna species that have the potential to occur on lands included in the Greenville-Spartanburg International Airport (GSP) Master Plan Environmental Assessment (EA). The GSP is located in the Town of Greer, between Greenville and Spartanburg Counties in South Carolina.

Project Study Area

The project study area (PSA) encompasses approximately 190 acres as shown on the attached site Figures 1 and 2 and encompasses six (6) key projects:

1. New South MRO Facility – 42 Acres
2. New West MRO Facility – 111 Acres
3. Expansion of Concourse A – 1 Acre
4. Expansion of Concourse B – 4 Acres
5. Construction of Parking Garage C – 5 Acres
6. Expansion of the FBO Facility – 27 Acres

The PSA lies within the GSP boundaries, including the existing airport footprint. Most of the PSA has been mechanically disturbed by past construction, agricultural (e.g., timbering) and human activities, including by the surrounding urban and rural developments.

Field Study

A field investigation took place on July 26 – July 29, 2021. An MJ field biologist transected the PSA, noting the general species composition of the ecological communities. General site photographs collected during the field screenings have been included with this technical memorandum as **Attachment A**. Following is provided a description of the PSAs.

- *New South Maintenance, Repair, and Overhaul (MRO) Facility – 42 Acres*

This area is predominantly forested, sloping toward airside. A narrow buffer of grasses separated the forested section from the airside, which contains a maintained drainage structure and closely maintained vegetation such as bahia grass (*Paspalum notatum*) and Bermuda grass (*Cynodon dactylon*). One wetland and stream feature were identified in this section. Dominant tree species included loblolly pine (*Pinus taeda*), tulip tree (*Liriodendron tulipifera*), and white oak (*Quercus alba*) with an understory of American holly (*Ilex opaca*) and maple saplings (*Acer* spp.).

One small seep wetland was identified and was associated with a stream. This wetland was dominated by sensitive fern (*Onoclea sensibilis*) and was not a bog type wetland, ruling out the presence of bunched arrowhead (*Sagittaria fasciculata* – federally Endangered), mountain sweet pitcher-plant (*Sarracenia rubra* ssp. *Jonesii* – federally Endangered), and white fringeless orchid (*Platanthera integrilabia* – federally Threatened). Swamp pink (*Helonias bullata* – federally Threatened) was also not identified within this wetland. It also lacked the deep, mucky soils and as a forested wetland, was not representative of preferred habitat of the bog turtle (*Clemmys muhlenbergii* – federal Similarity of Appearance – Threatened). Associated species and habitat characteristics were lacking for the dwarf-flowered heartleaf (*Hexastylis naniflora* – federally Threatened) and the small whorled pogonia (*Isotria medeoloides* – federally Threatened) and neither of these species were encountered. Neither deep gorges or steep rock faces were found, eliminating the possibility for rock gnome lichen (*Gymnoderma lineare* – federally Endangered) to be present. The lack of rock-outcrops or manmade structures also eliminated the potential for impact to the eastern small-footed bat (*Myotis leibii* – state Threatened). The woodland area was not open with a dense understory; no evidence of Bewick's wren (*Thyromanes bewickii* – state Endangered) was encountered. Additionally, lack of suitable breeding or foraging habitat was noted for the bald eagle (*Haliaeetus leucocephalus* – state Threatened) and peregrine falcon (*Falco peregrinus anatum* – state Threatened).

As the area is predominantly forested, the potential presence of northern-longed ear bat (*Myotis septentrionalis* – federally Threatened) and Rafinesque's big-eared bat (*Corynorhinus rafinesquii* – state Endangered) has not been ruled out due to their preference for tree roosting. Snags and highly exfoliated bark were present with good foraging opportunities along the wetland and stream. In order to avoid and minimize environmental impacts to these species, it is recommended that tree clearing within this area occur within the Conservation Cutting Window, between November 1 – March 31<sup>st</sup> of any given year to reduce the possibility of take during the summer roost period.

- *New West Manufacturing, Maintenance, Repair, and Overhaul (MMRO) Facility – 111 Acres*

This area is predominantly unmaintained field that slopes away from the airfield through a forested area with several drainages. Small pockets of isolated emergent wetland were located in the field and three streams (one a manmade drainage feature flowing from the roadway) were located in the forest with two stream associated floodplain wetlands. All three of these streams drained into an existing retention pond just outside of the project boundary area that was also identified as a wetland. The field portion was dominated by thick stands of Chinese bushclover (*Lespedeza cuneata*), a Rubus species, slender lespedeza (*Lespedeza virginia*), and dog fennel (*Eupatorium capillifolium*). The small emergent wetlands located in the field were dominated by soft rush (*Juncus effusus*) and path rush (*Juncus tenuis*) and did not demonstrate any characteristics to support wetland dependent species such as the bog turtle, bunched arrowhead, mount sweet pitcher-plant, swamp pink, and white fringeless orchid. It also lacked thickets that would support the Bewick's wren. Dominant tree species included loblolly pine (*Pinus taeda*), sweetgum

(*Liquidambar styraciflua*), tulip tree (*Liriodendron tulipifera*), and white oak (*Quercus alba*) with an understory of American holly (*Ilex opaca*) and maple saplings (*Acer* spp.). The two wetlands within the forested section were dominated by soft rush, creeping rush (*Juncus repens*), sensitive fern, and black willow (*Salix nigra*) and were not bog type wetlands, ruling out the presence of bunched arrowhead, mountain sweet pitcher-plant, and white fringeless orchid. Swamp pink was also not identified within these wetlands. They also lacked the deep, mucky soils and suitable basking areas so were not representative of preferred habitat of the bog turtle. Associated species and habitat characteristics were lacking for the dwarf-flowered heartleaf and the small whorled pogonia and neither of these species were encountered. Neither deep gorges or steep rock faces were found, eliminating the possibility for rock gnome lichen to be present. The lack of rock-outcrops or manmade structures also eliminated the potential for impact to the eastern small-footed bat. The woodland area was not open with a dense understory; no evidence of Bewick's wren was encountered. Additionally, lack of suitable breeding or foraging habitat was noted for the bald eagle and peregrine falcon.

Potential impacts are possible to both the northern-longed ear bat and Rafinesque's big-eared bat due to their preference for tree roosting. Snags and highly exfoliated bark were present with good foraging opportunities along the wetland and stream. To reduce impact to these species, it is recommended that tree clearing within this area occur within the Conservation Cutting Window, between November 1 – March 31<sup>st</sup> of any given year to reduce the possibility of take during the summer roost period.

- *Expansion of Concourse A – 1 Acre*

The Concourse A expansion area consists of paved area. No vegetation is present.

- *Expansion of Concourse B – 4 Acres*

This area is predominantly paved with an area of mowed/maintained bahia grass and existing structures. No suitable habitat for species of concern is present.

- *Construction of Parking Garage C – 5 Acres*

This area is currently the employee parking lot and is open paved space with islands planted with landscape trees. It is unlikely bat species of concern would roost in these trees due to proximity to disturbance, lack of foraging area, and preferred bark characteristics.

- *Expansion of the Fixed Base Operator (FBO) Facility – 27 Acres*

This area is predominantly developed with the existing FBO facilities and associate parking. The area is currently undergoing development and is largely disturbed. One wetland and stream feature were identified in this section. This wetland was dominated by cattail (*Typha angustifolia*), sensitive fern (*Onoclea sensibilis*), red maple (*Acer rubrum*) and eastern cottonwood (*Populus deltoides*) and was not a bog type wetland, ruling out the presence of bunched arrowhead, mountain sweet pitcher-plant, and white fringeless orchid. Swamp pink was also not identified within this wetland. It also lacked the deep, mucky soils and as a forested wetland, was not representative of preferred habitat of the bog turtle.

Dominant vegetative species included loblolly pine (*Pinus taeda*), tulip tree (*Liriodendron tulipifera*), sassafras (*Sassafras albidum*), and princess tree (*Paulownia tomentosa*) with an understory of grapevine (*Vitis riparia*) and poison ivy (*Toxicodendron radicans*). Associated species and habitat characteristics were

lacking for the dwarf-flowered heartleaf and the small whorled pogonia and neither of these species were encountered. Neither deep gorges or steep rock faces were found, eliminating the possibility for rock gnome lichen to be present. The lack of rock-outcrops or manmade structures also eliminated the potential for impact to the eastern small-footed bat. The woodland area was not open with a dense understory; no evidence of Bewick's wren was encountered. Additionally, lack of suitable breeding or foraging habitat was noted for the bald eagle and peregrine falcon.

As the area is predominantly forested, the potential presence of northern-longed ear bat and Rafinesque's big-eared bat has not been ruled out due to their preference for tree roosting. Snags and highly exfoliated bark were present with good foraging opportunities along the wetland and stream. To avoid and minimize impact to these species, it is recommended that tree clearing within this area occur within the Conservation Cutting Window, between November 1 – March 31<sup>st</sup> of any given year to reduce the possibility of take during the summer roost period.

### Rare, Threatened or Endangered Species Screening

Prior to commencing field work, relevant and available scientific literature of protected species was reviewed. MJ utilized the United States Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) database to determine the potential for threatened and endangered species at the airport property (**Attachment B**). Additionally, publicly available information from the South Carolina Department of Natural Resources (DNR) GIS database and NatureServe Search (South Carolina Natural Heritage Program) was reviewed by the South Carolina Heritage Trust.

According to the USFWS IPaC, a total of 10 flora and fauna species has been reported in the vicinity of GSP, including the northern long-eared bat (*Myotis septentrionalis* – threatened), bog turtle (*Clemmys muhlenbergii* – Similarity of Appearance), bunched arrowhead (*Sagittaria fasciculata* - endangered), dwarf-flowered heartleaf (*Hexastylis naniflora* – threatened), mountain sweet pitcher-plant (*Sarracenia rubra* ssp. *jonesii* – endangered), small whorled pogonia (*Isotria medeoloides* - threatened), swamp pink (*Helonias bullata* - threatened), white fringeless orchid (*Platanthera integrilabia* – threatened), white irisette (*Sisyrinchium dichotomum* – endangered), rock gnome lichen (*Gymnoderma lineare* – endangered) (**Attachment B**).

Southern bog turtle populations are currently stable; however, due to the similarity of appearance to the northern population, they are listed to prevent false claims of origin in poaching cases. The southern bog turtle population is not subject to Section 7 of the Endangered Species Act.

Additionally, the DNR GIS database reports state listed species by county. The bald eagle (*Haliaeetus leucocephalus* – state threatened), bog turtle (state threatened), American peregrine falcon (*Falco peregrinus anatum* – state threatened), eastern small-footed bat (*Myotis leibii* – state threatened), Rafinesque's big-eared bat (*Corynorhinus rafinesquii* – state endangered), and Bewick's wren (*Thyromanes bewickii* – state endangered) were reported for Greenville County. Species reported for Spartanburg County include the bald eagle and Bewick's wren. According to the database from the DNR, there are no records of Bald Eagle roosting or nesting within the PSA. The closest reported Bald Eagle nest (ID N764-Y2019) is located over 20 miles away to the east. (<http://www.dnr.sc.gov/wildlife/baldeagle/locations.html>).

None of these protected species were detected during the field survey. For reference, the following is provided background information and natural history for these species.

Northern long-eared bat

The northern long-eared bat (NLEB) is a forest dependent bat species that selects roost tree's based on the tree size, bark characteristics, and position in the landscape. Generally, live or dead (snag) trees with greater than three-inches diameter at breast height (DBH) and exfoliating bark with cracks and crevices are preferred.

Bog turtle

The smallest of the emydid turtles, the bog turtle is a wetland dependent species that prefers deep, mucky soils in which to burrow. This species also requires open areas for basking and microtopographic relief. While this species is not subject to Section 7 of the ESA, it is listed as state threatened through South Carolina.

Wetland Plant Species (Bunched arrowhead, mountain sweet pitcher-plant, swamp pink, white fringeless orchid)

All reported wetland plant species are endemic to bog type wetlands with the exception of swamp pink, which prefers forested wetlands near small streams and seeps and is often found near conifer species.

Upland Plant Species (Dwarf-flowered heartleaf, small whorled pogonia, white irisette)

The dwarf-flowered heartleaf is found in oak-hickory-pine forests, particularly those dominated with scarlet oak (*Quercus coccinea*), chestnut oak (*Quercus montana*), and black oak (*Quercus velutina*). It is often found growing under mountain laurel (*Kalmia latifolia*) in undisturbed landscapes. Small whorled pogonia is also typically found in beech, birch, maple, and oak forests, particularly in thick leaf litter along braided streams. White irisette is historically a woodland plant along forest edges with a thin canopy and little to no leaf litter, unlike the small whorled pogonia.

Rock gnome lichen

One of only two protected lichen species, the rock gnome lichen's particular habitat needs include steep rock faces that are frequently under fog or deep gorges.

State protected raptor species (Bald eagle and peregrine falcon)

The bald eagle and peregrine falcon are both species that prefer river valleys and coastlines for foraging. Bald eagles prefer to nest in tall trees while peregrine falcons often nest on cliff ledges or manmade structures that provide similar cover (skyscrapers and bridges).

State protected bat species (Eastern small-footed and Rafinesque's big-eared bat)

The eastern small-footed bat prefers to roost at emergent rock-outcrops or manmade structures rather than trees, often in mountains areas with high elevation. Rafinesque's big-eared bat are a coastal plain species that prefers to roost in dilapidated buildings or tree cavities near streams. This species is particularly sensitive to human disturbance and will readily leave its roost.

Bewick's wren

The Bewick's wren is a medium sized wren that favors dry brush and thickets in open country or open woodlands. It forages on insects and spiders near streams.

Based on the available Wildlife Hazard Assessment (WHA) performed by GSP, the majority of the Airport's air operations area (AOA) are dominated by warm season grasses such as Bermudagrass (*Cynodon dactylon*), ticklegrass (*Panicum capillare*), Johnsongrass (*Sorghum halepense*), purpletop (*Tridens flavus*), and goosegrass (*Eleusine indica*). The WHA also indicated that the most common bird species utilizing the Airport's AOA were American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), Eastern meadowlark (*Sturnella magna*), mourning dove (*Zenaida macroura*), and killdeer (*Charadrius vociferus*). Observed mammals included raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*) and coyote (*Canis latrans*).

Conclusions

During the field study, no federally or state listed species were detected within six (6) areas (PSA) to be redeveloped as part of the GSP's Master Plan projects.

Based on our investigation and review of available documentation, including most recent Categorical Exclusions recently approved by the Federal Aviation Administration (FAA) for adjacent projects at GSP, there was no potential for the federal listed species: bog turtle, bunched arrowhead, dwarf-flowered heartleaf, mountain sweet pitcher-plant, small whorled pogonia, swamp pink, white fringeless orchid, white irisette, or rock gnome lichen to occur within the PSA.

Additionally, no suitable habitat was identified for the following Greenville and Spartanburg Counties state listed species: The bald eagle, bog turtle, American peregrine falcon, eastern small-footed bat, and Bewick's wren.

However, given the suitable habitat for the federally protected northern long-eared bat and state protected Rafinesque's big-eared bat and associated tree removals at the South MRO, West MRO, and FBO expansion sites, it is recommended that tree clearing within this area occur within the Conservation Cutting Window, between November 1 – March 31st of any given year to avoid and minimize impacts to the species.

ATTACHMENTS:

Attachment A- Photograph Log

Attachment B- IPaC Report

LITERATURE CITED:

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Nature Serve Explorer. Small Whorled Pogonia. [https://explorer.natureserve.org/Taxon/ELEMENT\\_GLOBAL.2.137976/Isotria\\_medeoloides](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.137976/Isotria_medeoloides). Accessed 8/10/2021.

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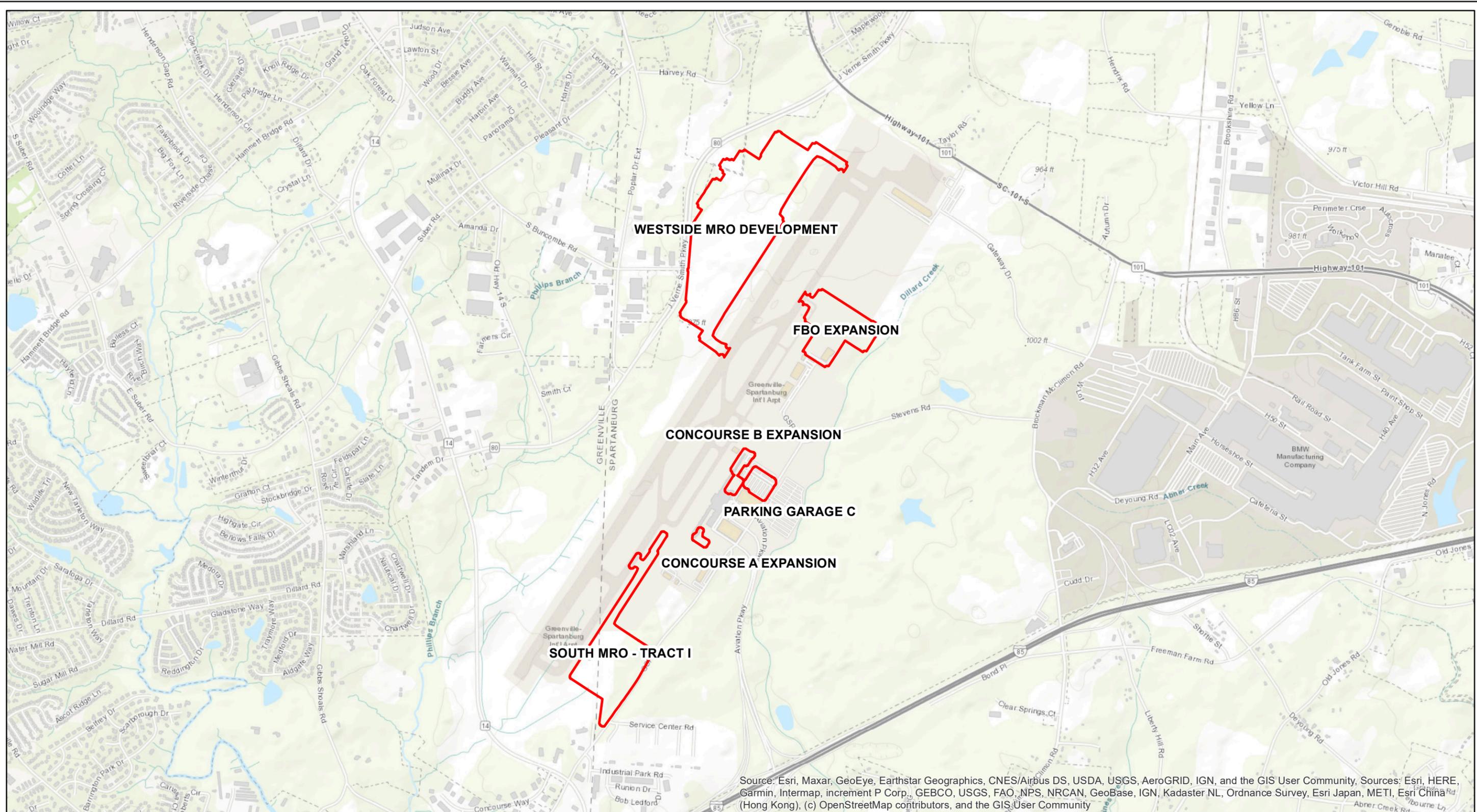
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United States Fish and Wildlife Service. Rock Gnome Lichen. [https://www.fs.fed.us/wildflowers/Rare\\_Plants/profiles/TEP/gymnoderma\\_lineare/index.shtml#:~:text=Gymnoderma%20lineare%2C%20rock%20gnome%20lichen%20This%20rare%20lichen,fog%20or%20in%20deep%20gorges%20at%20lower%20elevations](https://www.fs.fed.us/wildflowers/Rare_Plants/profiles/TEP/gymnoderma_lineare/index.shtml#:~:text=Gymnoderma%20lineare%2C%20rock%20gnome%20lichen%20This%20rare%20lichen,fog%20or%20in%20deep%20gorges%20at%20lower%20elevations). Accessed 8/10/2021.

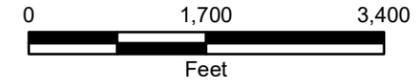




Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

 Project Study Areas



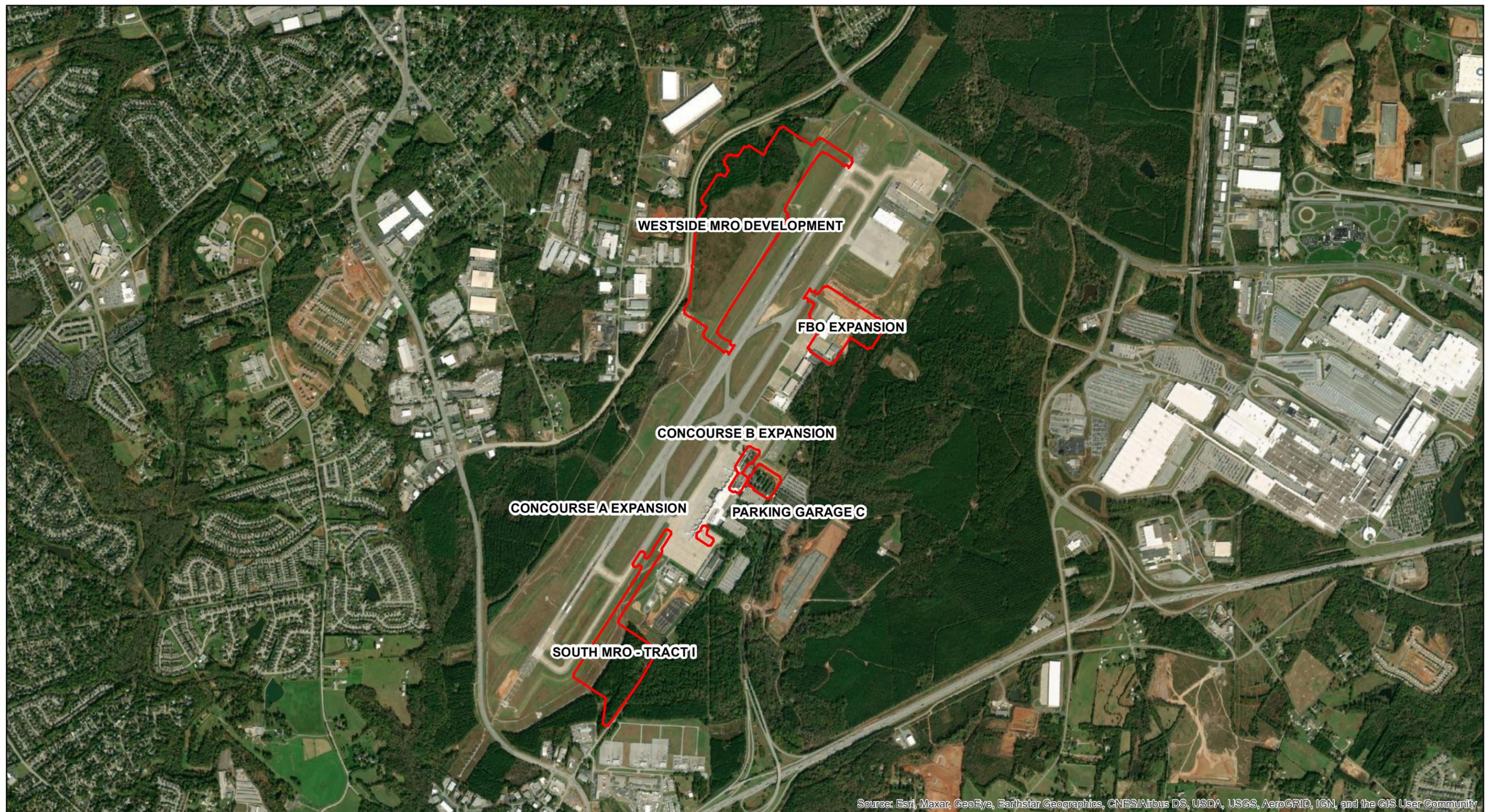
Greenville-Spartanburg International Airport  
Greer, South Carolina

**Master Plan EA**  
**Topographic Mapping**

SCALE: 1 inch = 1,750 feet	DATE: AUGUST 2021	FIGURE: 1
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 **McFarland Johnson**

K:\Greenville Spartanburg\T-18219.11 GSP Master EA and FF CATEX\Draw\GIS\Environmental\Figure 2 - Aerial Imagery.mxd



### Legend

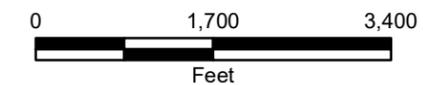
 Project Study Areas



Greenville-Spartanburg International Airport  
Greer, South Carolina

## Master Plan EA Aerial Imagery

SCALE: 1 inch = 1,750 feet	DATE: AUGUST 2021	FIGURE: 2
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Photo 1. Concourse A Expansion Area.



Photo 2. Concourse B Expansion Area.



Photo 3. Concourse B Expansion Area.



Photo 4. Forested area of FBO Expansion Area.



Photo 5. Field area of West Side MRO Development Area.



Photo 6. Forested area of West Side MRO Development Area.



Photo 7. Forested area of South MRO Area.



Photo 8. Parking Garage C area.



Photo 9. Forested area of FBO Expansion.



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
South Carolina Ecological Services  
176 Croghan Spur Road, Suite 200  
Charleston, SC 29407-7558  
Phone: (843) 727-4707 Fax: (843) 727-4218  
<http://www.fws.gov/charleston/>

In Reply Refer To:

August 10, 2021

Consultation Code: 04ES1000-2021-SLI-0984

Event Code: 04ES1000-2021-E-02219

Project Name: GSP - Master Plan Environmental Assessment

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

<http://>

[www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html).

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
-

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**South Carolina Ecological Services**

176 Croghan Spur Road, Suite 200

Charleston, SC 29407-7558

(843) 727-4707

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## Project Summary

Consultation Code: 04ES1000-2021-SLI-0984

Event Code: 04ES1000-2021-E-02219

Project Name: GSP - Master Plan Environmental Assessment

Project Type: TRANSPORTATION

Project Description: The Greenville-Spartanburg airport is performing an environmental assessment for multiple projects slated to begin in the next several years.

Project Location:

Approximate location of the project can be viewed in Google Maps: [https://](https://www.google.com/maps/@34.895961549999996,-82.21661667169687,14z)

[www.google.com/maps/@34.895961549999996,-82.21661667169687,14z](https://www.google.com/maps/@34.895961549999996,-82.21661667169687,14z)



Counties: Greenville and Spartanburg counties, South Carolina

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## Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

### Reptiles

NAME	STATUS
Bog Turtle <i>Clemmys muhlenbergii</i> Population: U.S.A. (GA, NC, SC, TN, VA) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6962">https://ecos.fws.gov/ecp/species/6962</a>	Similarity of Appearance (Threatened)

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## Flowering Plants

NAME	STATUS
<p>Bunched Arrowhead <i>Sagittaria fasciculata</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1720">https://ecos.fws.gov/ecp/species/1720</a></p>	Endangered
<p>Dwarf-flowered Heartleaf <i>Hexastylis naniflora</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2458">https://ecos.fws.gov/ecp/species/2458</a></p>	Threatened
<p>Mountain Sweet Pitcher-plant <i>Sarracenia rubra ssp. jonesii</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4283">https://ecos.fws.gov/ecp/species/4283</a></p>	Endangered
<p>Small Whorled Pogonia <i>Isotria medeoloides</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1890">https://ecos.fws.gov/ecp/species/1890</a></p>	Threatened
<p>Swamp Pink <i>Helonias bullata</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4333">https://ecos.fws.gov/ecp/species/4333</a></p>	Threatened
<p>White Fringeless Orchid <i>Platanthera integrilabia</i></p> <p>Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1889">https://ecos.fws.gov/ecp/species/1889</a></p>	Threatened
<p>White Irisette <i>Sisyrinchium dichotomum</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8097">https://ecos.fws.gov/ecp/species/8097</a></p>	Endangered

## Lichens

NAME	STATUS
<p>Rock Gnome Lichen <i>Gymnoderma lineare</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3933">https://ecos.fws.gov/ecp/species/3933</a></p>	Endangered

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

# USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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## Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

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1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31

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NAME	BREEDING SEASON
<b>Prothonotary Warbler</b> <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
<b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
<b>Rusty Blackbird</b> <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Wood Thrush</b> <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.



Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

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Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

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**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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