ENVIRONMENTAL CONSULTANTS

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May 7, 2025

U.S. Fish & Wildlife Service
South Carolina Ecological Services Field Office
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558

Attention: USFWS South Carolina Ecological Services Field Office
charleston_regulatory@fws.gov

Reference: **Threatened and Endangered Species Habitat Assessment and Survey**
Luck Companies / Luck Cherokee
Cherokee County, South Carolina
HHNT Project No. 4780-025

To Whom It May Concern:

Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) is pleased to submit our Threatened and Endangered Species Habitat Assessment and *Hexastylis naniflora* Survey for the above-referenced project located north of I-85 and west of Old Post Road in Cherokee County, South Carolina (35.074379, -81.748196) (Appendix A, Figures 1 and 2).

This assessment was directed by Mr. Brandon F. Smith of HHNT. Mr. Smith is a Professional Wetland Scientist (PWS) and a senior environmental consultant with over 25 years of experience, inclusive of hundreds of protected species habitat assessments and surveys across the southeastern United States. The proposed development at this location will not require a Section 404 permit from the U.S. Army Corps of Engineers. However, as a part of the permit process with the South Carolina Department of Environmental Services (SCDES), coordination with USFWS concerning protected species is warranted

HHNT appreciates the opportunity to assist your review of this project however we can. Please contact us at (912) 298-0230 or at bsmith@hhnt.com with questions regarding this report or if you require additional information.

Sincerely,

Brandon F. Smith, PWS
Senior Environmental Consultant

BFS/MM

THREATENED AND ENDANGERED SPECIES ASSESSMENT AND SURVEY
May 2025

PROPOSED LUCK CHEROKEE

CHEROKEE COUNTY, SOUTH CAROLINA

Prepared For:

Luck Stone Corporation

Prepared By:

613 Stephenson Avenue, Suite 110 | Savannah, Georgia | Phone: (912) 298-0230 | Fax: (912) 298-0234

TABLE OF CONTENTS

1. PROJECT BACKGROUND

The study area for the project, henceforth referred to as Luck Cherokee, is ~567.13-acres, located north of I-85 and west of Old Post Road in Cherokee County, South Carolina (Appendix A, Figures 1 and 2). In preparation for the proposed future development of this property, Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) performed a Waters of the U.S. delineation as well as an assessment for the potential presence of protected species on the site.

HHNT is requesting the technical assistance (in the form of a written Response Letter or stamp) of the U.S. Fish and Wildlife Service (USFWS) as to whether site development would likely result in an "effect determination" on any federally listed endangered species.

2. SITE AND HABITAT DESCRIPTIONS

The site is located in northern Cherokee County, South Carolina within the Piedmont Level 3 ecoregion and the Southern Outer Piedmont Level 4 ecoregion of South Carolina (Appendix A, Figure 7). During the aforementioned Waters of the U.S. delineation that was conducted by HHNT in November of 2024, the following habitat types were encountered on-site: planted pine stands, mixed hardwoods with scattered pine, aquatic features (wetlands, streams, and surface water) as well as streamside riparian areas inclusive of the Thicketty Creek and Thicketty Mountain Creek floodplains. Field observations are described in detail below.

2.1 Planted Pines

Planted pine stands of varying stages of maturity were observed throughout the site, occupying most of the project area. The planted pine stands were observed to have undergone multiple thinning operations from approximately 2012 to 2017. The dominant overstory species is described as loblolly pine (Pinus taeda) with an understory comprised of primarily blackberry (Rubus argutus) and sweetgum (Liquidambar styraciflua).

2.2 Mixed Hardwoods

The project area also contains areas of mixed hardwood forest with scattered pine. The dominant overstory species consisted of American beech *(Fagus grandifolia)*, sugar maple *(Acer saccharum),* southern red oak *(Quercus falcata)*, and sweetgum. The understory consisted of sapling red maple *(Acer rubrum),* eastern red cedar *(Juniperus virginiana),* sweetgum, and American beech. Chinese privet *(Ligustrum sinense)*, Christmas fern *(Polystichum acrostichoides),* and little sweet Betsy *(Trillium cuneatum)* commonly occupied the herbaceous layer.

2.3 Floodplain and Streamside Riparian Areas

The Thicketty Creek floodplain laterally transects the center of the project area, encompassing approximately 62.91 acres. The Thicketty Mountain Creek floodplain extends approximately 4.26 acres into the northeast corner of the project area. Site conditions and habitat types for these areas are characteristically similar. The canopy layer was primarily comprised of American hornbeam *(Carpinus caroliniana)* and river birch *(Betula nigra)*. The understory was comprised of sapling American hornbeam, red maple, and sweetgum. The herbaceous layer was typically open with occasional Christmas fern. The Thicketty Creek Watershed No. 19 Reservoir is situated within the Thicketty Creek floodplain along the eastern boundary of the site. This surface water feature is further discussed in Section 2.4.

2.4 Aquatic Features

The site contained numerous aquatic features including wetlands and both intermittent and perennial stream channels. Forested wetlands were observed near the on-site streams and could be described as slope and riverine wetlands. Dominant overstory species observed within wetland features included sweetgum, red maple, American hornbeam, river birch, American sycamore *(Platanus occidentalis)*, blackgum *(Nyssa sylvatica),* and water oak. Understory species consisted of the aforementioned species as well as American holly *(Ilex opaca)*. The woody vine and herbaceous layer were comprised of woolgrass *(Scirpus cyperinus)* and soft rush *(Juncus effusus)*.

The on-site streams were generally observed to be first or second order streams. With the exception of Thicketty Mountain Creek and Thicketty Creek, these features had sand/silt, rock and gravel substrate stream bottoms and steep gradients, ranging from two to twenty-five feet in width. In general, these streams were observed to have relatively low sinuosity, moderate baseflow, and were present in strong natural valleys. Thicketty Creek and Thicketty Mountain Creek had much greater flows with moderate to high sinuosity. Little to no fish or macroinvertebrate populations were observed in intermittent streams, however they are assumed to be strongly present within the five onsite perennial streams (Thicketty Creek, Thicketty Mountain Creek and three unnamed tributaries to Thicketty Creek).

The reservoir (Thicketty Creek Watershed No. 19 Reservoir) is an approximately 16.61-acre surface water feature formed west behind a man-made dam. The impounded water reaches a maximum depth of approximately 30 feet, and supports several freshwater fish species from largemouth bass *(Micropterus salmoides),* green sunfish *(Lepomis cyanellus),* bluegill *(Lepomis macrochirus)*, and other typical freshwater fish species. To the west of this man-made waterbody, several natural impoundments created by beavers *(Castor canadensis)* were observed.

3. PROTECTED SPECIES BACKGROUND

As part of the initial review of the site, HHNT ecologists reviewed the U.S. Fish and Wildlife Service website and obtained an official IPaC resource list (Appendix B). This information was gathered to determine those species that are currently listed as federally protected (threatened or endangered) that could have ranges that extend into Cherokee County, South Carolina.

Descriptions of the species and their respective federal protection listings are identified in the below Table 3-1. Although the IPaC report (Appendix B) did not identify the tricolored bat as a listed species, HHNT has been involved in multiple projects that have shown that addressing this species is warranted, despite its exclusion from the USFWS IPaC document. It is the understanding of HHNT that listing of the tricolored bat is imminent; given that proposed development of this site will require land clearing, the tricolored bat was also considered in this assessment.

Species	Listing	Habitat
Dwarf-flowered Heartleaf *Hexastylis naniflora*	LT	Acidic soils on forested north-facing slopes near streams.
Monarch Butterfly *Danaus plexippus*	Candidate	Prairies, meadows, grasslands and along roadsides.
Tricolored Bat *Perimyotis subflavus*	Proposed Endangered	Caves, abandoned mines, or forested habitats.

LT = Federally Threatened

3.1 Dwarf-flowered Heartleaf

Dwarf-flowered heartleaf *(Hexastylis naniflora)* is a low-growing perennial herb with evergreen, heart-shaped leaves. Each leaf is typically between 4-6 centimeters long and wide and supported by a long, thin stem (petiole) that emerges directly from an underground rhizome to form patches on the forest floor. Small, jug-shaped flowers that are purple to yellow in color can be found near the base of leaf stems and serve as the unique morphological characteristic used to differentiate *H. naniflora* from other members of the *Hexastylis* genus. Dwarf-flowered heartleaf flowers have calyx tube openings between 4-8 millimeters; other species in this genus that are frequently mistaken for *H. naniflora* have larger flowers with calyx tube openings greater than 9 millimeters. Therefore, surveys must be conducted during the flowering season, which occurs from March to May.

Dwarf-flowered heartleaf is endemic to the upper-Piedmont regions of North Carolina and South Carolina, the latter of which the site is within (Appendix A, Figure 7). This species occurs on north-facing slopes alongside streams or lakes, specifically in oak-pine-hickory communities with acidic, sandy loam soils and a relatively open understory.

3.1.1 Actions

Dwarf-flowered heartleaf is listed by the USFWS as federally threatened. Given that its restrictive range coincides with the project location and the species' preferred habitat occurs on-site, it was determined that a formal survey was warranted. Please refer to Sections 4.0 and 5.0 for the methodology and results of the survey effort that was undertaken for this species during the appropriate flowering survey window.

3.2 Monarch Butterfly

The Monarch butterfly (Danaus plexippus) is an easily identified butterfly with its black, orange, and white pattern and is best known for its migration from southern Canada and northern and central U.S. to Florida and Mexico.

3.2.1 Actions

The monarch butterfly is listed by the USFWS as a Candidate species, which are not afforded any protection under the Endangered Species Act (ESA) and is therefore not further considered herein. No further evaluation is necessary.

3.3 Tricolored Bat

The tricolored bat (Perimyotis subflavus) is a small insectivorous bat with short, round ears distinguished by tricolored fur that often appears yellowish to orange. The tricolored bat occupies caves, mines, and often culverts during the winter, and forested habitats where they roost in leaf clusters of live or recently dead deciduous hardwood trees during the spring, summer and fall. They prefer a large tract with a dense growth of trees and underbrush.

3.3.1 Actions

The tricolored bat is listed by USFWS as Proposed Endangered, which does not afford any protections under the Endangered Species Act; however, the listing is expected to be imminent. The project area does provide suitable habitat for tricolored bat; therefore, HHNT will consult with USFWS prior to site development. It is reasonable to assume that seasonal clearing guidance, such as avoiding vegetation clearing activities during summer months could be implemented should the need arise. Exact dates of any imposed clearing restrictions will be obtained and accounted for during development planning.

4. SURVEY METHODOLOGY

4.1 Background

The primary objective of this survey was to determine the presence or absence of *Hexastylis naniflora* (dwarf-flowered heartleaf) within the project site; other federally listed plant species were not the focus of this particular assessment. As outlined in Section 3.1.1, the recommendation to conduct a formal survey for *H. naniflora* was based on its highly localized distribution, confined to a limited portion of the Piedmont physiographic region along the North Carolina–South Carolina border, spanning 13 counties. Additionally, a review of the relevant ecological literature indicated that suitable habitat characteristics for this species are present within the project boundaries, further supporting the need for a formal field survey.

To assess the property's potential to support populations of dwarf-flowered heartleaf, several publicly available resources were evaluated. These supporting resources included historical aerial photography, topographic maps, soil surveys, land use and canopy cover information, and data from the National Wetlands Inventory. Additionally, HHNT ecologists recorded site observations during the Waters of the U.S. delineation effort; areas supporting unidentified *Hexastylis* species were documented and used to refine potential habitat during the formal survey effort.

To formally assess the presence/absence of this federally threatened species, HHNT collaborated with Jake Duncan of Duncan & Duncan Wetland & Endangered Species Training (D&D West) to conduct a Threatened and Endangered Species Assessment and Survey in April 2025.

4.2 Survey Methods

Based upon the aforementioned habitat limitations for dwarf-flowered heartleaf, survey areas were established and rated by suitability, in which factors such as soil type, slope aspect, vegetative community, and proximity to aquatic resources were considered.

Low suitability areas were considered as those with extreme low or high gradient slopes (greater than 30% or less than 10%), unsuitable soils (loam, clay loam, or sandy clay loam), with a vegetative structure dominated by pine or a dense, early-successional herbaceous layer. Highly suitable areas had sandy loam soils, representative slopes of around 20%, and were comprised of a mature hardwood canopy layer. Some of the survey areas exhibited a combination of these characteristics and were designated as low to moderate or moderate

to high suitability accordingly. Survey area boundaries and their relative suitability for *H. naniflora* occurrence are depicted in Appendix A, Figure 4.

The field survey was conducted in April of 2025, during the flowering season (March – May), by HHNT ecologists Myles McKnight and Tabitha Williams along with D&D West botanist Jake Duncan. The survey team implemented systematic transects within predefined habitat areas to assess the presence or absence of dwarf-flowered heartleaf. The results of the survey effort identified several populations of *H. naniflora* along two stream corridors in the southwestern portion of the property. All encountered *Hexastylis* individuals were subjected to morphological examination (if present) to determine whether the species was *H. naniflora* or another member of the genus. Confirmed individuals of *H. naniflora* were marked with high-visibility flagging and georeferenced using a sub-meter GPS device. All encountered *Hexastylis* species on the property were the *naniflora* genus. At each verified occurrence, detailed observations were recorded, including the total number of individuals within the localized population cluster and quantification of stems and leaves associated with each plant.

Photo documentation of survey areas and dwarf-flowered heartleaf plants can be found in Appendix C, photo locations are depicted in Appendix A, Figure 6.

5. FINDINGS AND CONCLUSIONS

Based upon the literature review, habitat assessment, and the extensive field survey of the project area, the following conclusions for the listed species have been reached:

5.1 Dwarf-flowered Heartleaf

The project team identified 90 federally threatened dwarf-flowered heartleaf plants (Appendix A, Figure 5) within the Luck Cherokee property. Of the ~57 acres of potential habitat that was surveyed, which represents 10% of the total project area, approximately 17% of the total area was considered to have low suitability, 54% was considered to have low to moderate suitability, 15% was considered to be moderate to high suitability, and 14% was considered to be highly suitable. The largest population observed was concentrated in one upstream portion of a perennial stream within Survey Area D (Appendix A, Figure 5).

As part of the client's continued commitment to responsible environmental stewardship, the proposed project has been carefully designed to completely avoid any direct impacts to *H. naniflora* individuals and or populations. To protect the species, Luck Stone proposes to establish a 50-foot undisturbed vegetative buffer around all existing plant populations and their associated habitat. These buffers will serve as physical barriers, not only protecting the species but also preserving the integrity of the species' ecosystem from potential disturbances.

In addition, the project team will implement comprehensive Best Management Practices (BMPs) before, during, and after construction activities, in respect to guidelines established by the South Carolina Department of Natural Resources (SCDNR) Heritage Trust Program. These measures will further reduce the potential for indirect effects, such as sedimentation, habitat degradation, or the introduction of invasive species.

During the site design process, it was determined that a temporary stream crossing would be necessary for site access and initial site plans did call for this crossing in an area where impacts to *H. naniflora* would be realized. The design team relocated and redesigned the crossing and successfully avoided all *H. naniflora* individuals and ensured that the crossing remains entirely outside the established protective buffers. To further safeguard the species and its habitat, the crossing will be positioned downstream of the nearest population in an unsuitable habitat for *H. naniflora*, thereby minimizing potential hydrological or ecological disruptions.

In HHNT's opinion, the establishment of habitat and species buffers, implementation of BMPs, and site design criterion will ensure that the proposed project will result in "no Effect" on the identified *H. naniflora* individuals and populations.

It should be noted that on April 23, 2020, USFWS proposed to remove the dwarf-flowered heartleaf from the federal list of threatened and endangered species due to population recovery. Known populations since listing has increased from 24 in 8 counties in 1989, to 119 in 13 counties in 2020. As of the date of this assessment, formal delisting has not been achieved; therefore, the dwarf-flowered heartleaf is still afforded protection under the ESA.

APPENDICES

Appendix A: Figures
Appendix B: USFWS IPaC Report
Appendix C: Site Photographs

APPENDIX A FIGURES

1. Vicinity Map
2. USGS Topographic Map
3. Soil Suitability Map
4. Dwarf-Flowred Heartleaf Habitat Map
5. Dwarf-Flowered Heartleaf Survey Map
6. Dwarf-Flowered Heartleaf Survey Photo Location Map
7. South Carolina Ecoregion Map

DISCLAIMER:
This drawing and the information contained herein is for general presentation purposes only and is a compilation of shapefile(s) provided by various source(s). The source and accuracy of the file(s) has not been verified by HHNT and therefore the drawing is not intended for use as an engineering drawing or for design purposes.

Figure 1
4/11/2025
0 0.5 1
1 inch equals 1 mile

Vicinity Map

Luck Cherokee
Luck Stone Corporation
Cherokee County, SC

Notes:
1. Basemap source: ESRI World Navigation Map.

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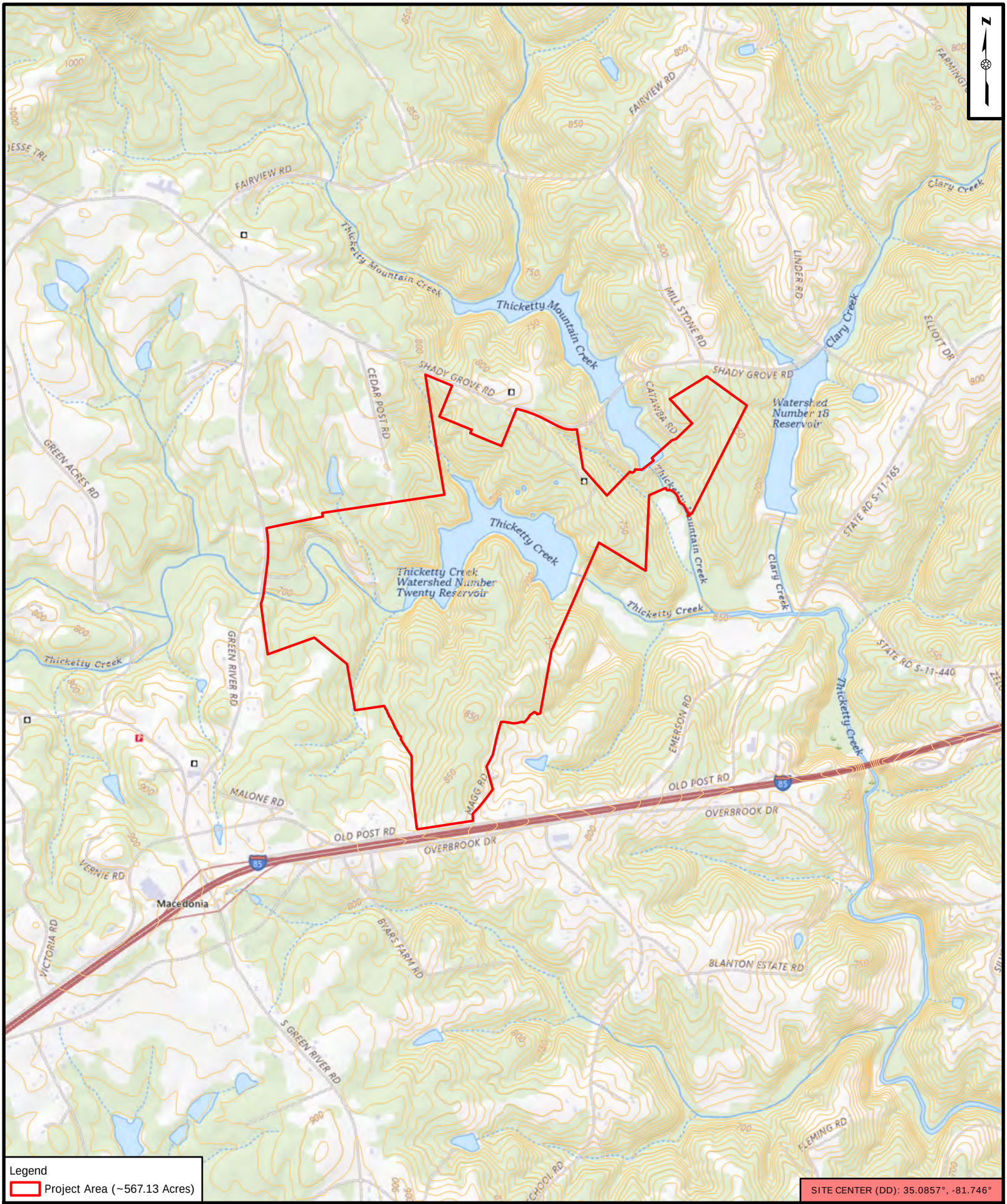

Legend

Project Area (~567.13 Acres)

SITE CENTER (DD): 35.0857°, -81.746°

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Figure 2
4/11/2025
0 1,000 2,000
1 inch equals 2,000 feet

USGS Topographic Map

Luck Cherokee
Luck Stone Corporation
Cherokee County, SC

Notes:
1. Topographic basemap obtained from USGS Topographic Map Cowpens, SC Quadrangle, 2024 and Gaffney, SC Quadrangle 2024.

HHNT ENVIRONMENTAL CONSULTANTS

NRCS Soils		
Texture	% Slope	% of Project Area
Clay loam	4-8%	13%
	13-20%	14%
Loam	1%	7%
Sandy clay loam	6%	5%
	23%	10%
Sandy loam	4-8%	20%
	13-20%	15%
	30%	13%

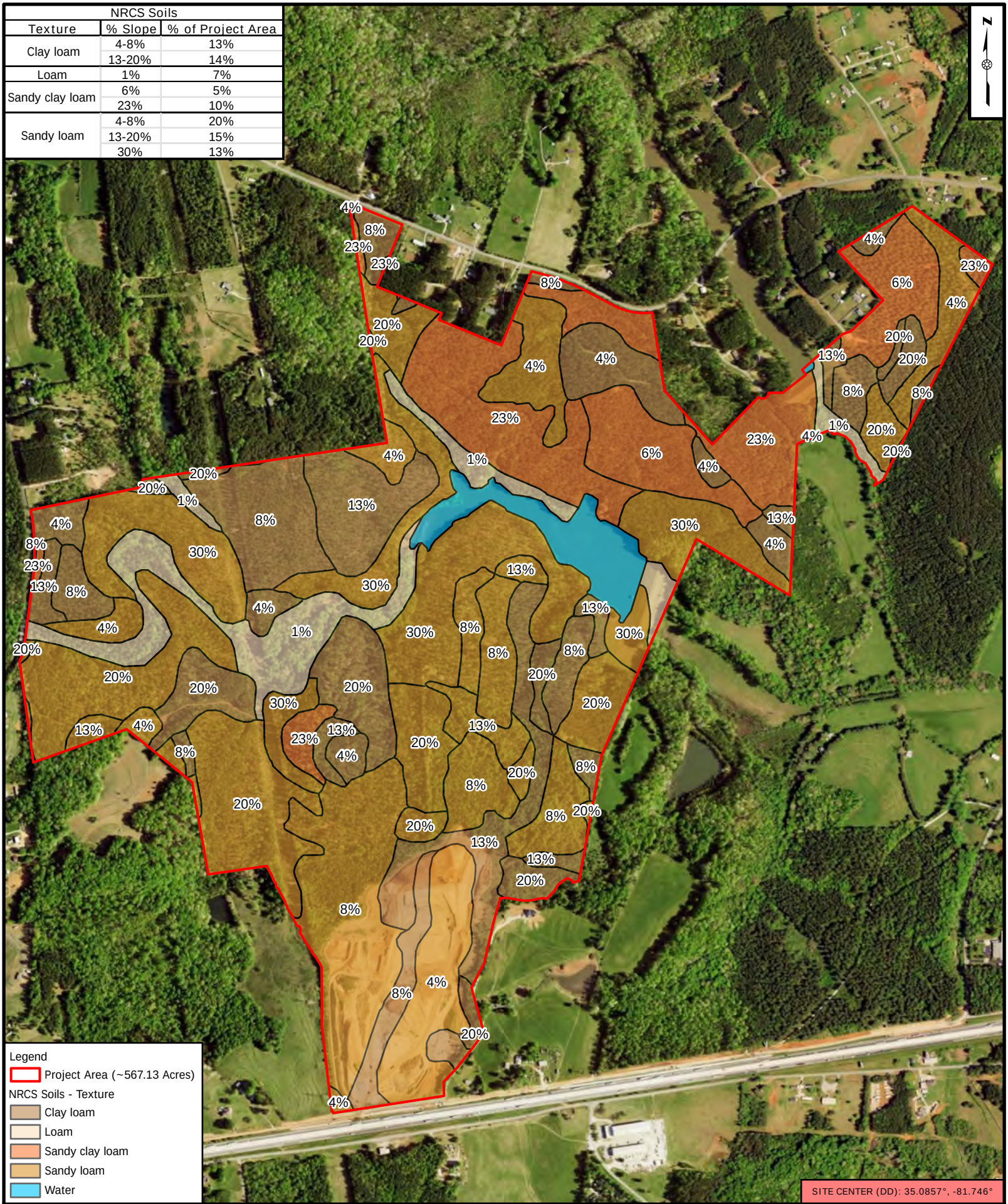

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Figure 3
4/11/2025
0 500 1,000
1 inch equals 1,000 feet

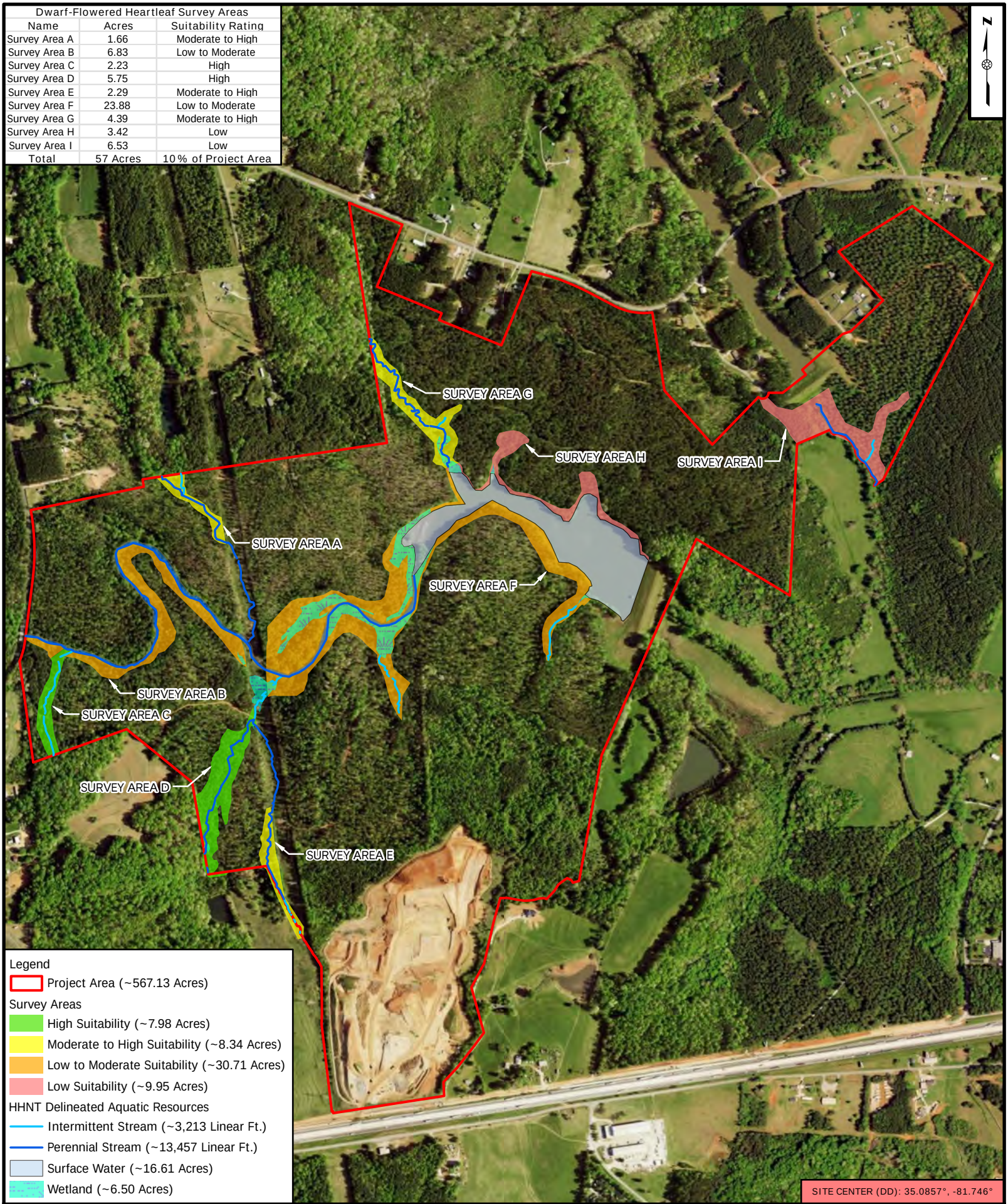
Soil Suitability Map

Luck Cherokee
Luck Stone Corporation
Cherokee County, SC

Notes:
1. Imagery obtained from the USDA NAIP Imagery Index, dated April 2021.
2. Soils data obtained from NRCS USDA Web Soil Survey.
3. Labels depict the representative slope per soil map unit.

HHNT
ENVIRONMENTAL CONSULTANTS

Dwarf-Flowered Heartleaf Survey Areas		
Name	Acres	Suitability Rating
Survey Area A	1.66	Moderate to High
Survey Area B	6.83	Low to Moderate
Survey Area C	2.23	High
Survey Area D	5.75	High
Survey Area E	2.29	Moderate to High
Survey Area F	23.88	Low to Moderate
Survey Area G	4.39	Moderate to High
Survey Area H	3.42	Low
Survey Area I	6.53	Low
Total	57 Acres	10% of Project Area



Legend

Project Area (~567.13 Acres)

Survey Areas

- High Suitability (~7.98 Acres)
- Moderate to High Suitability (~8.34 Acres)
- Low to Moderate Suitability (~30.71 Acres)
- Low Suitability (~9.95 Acres)

HHNT Delineated Aquatic Resources

- Intermittent Stream (~3,213 Linear Ft.)
- Perennial Stream (~13,457 Linear Ft.)
- Surface Water (~16.61 Acres)
- Wetland (~6.50 Acres)

SITE CENTER (DD): 35.0857°, -81.746°

Figure 4

4/11/2025

0 500 1,000

1 inch equals 1,000 feet

Dwarf-Flowered Heartleaf Habitat Map

Luck Cherokee

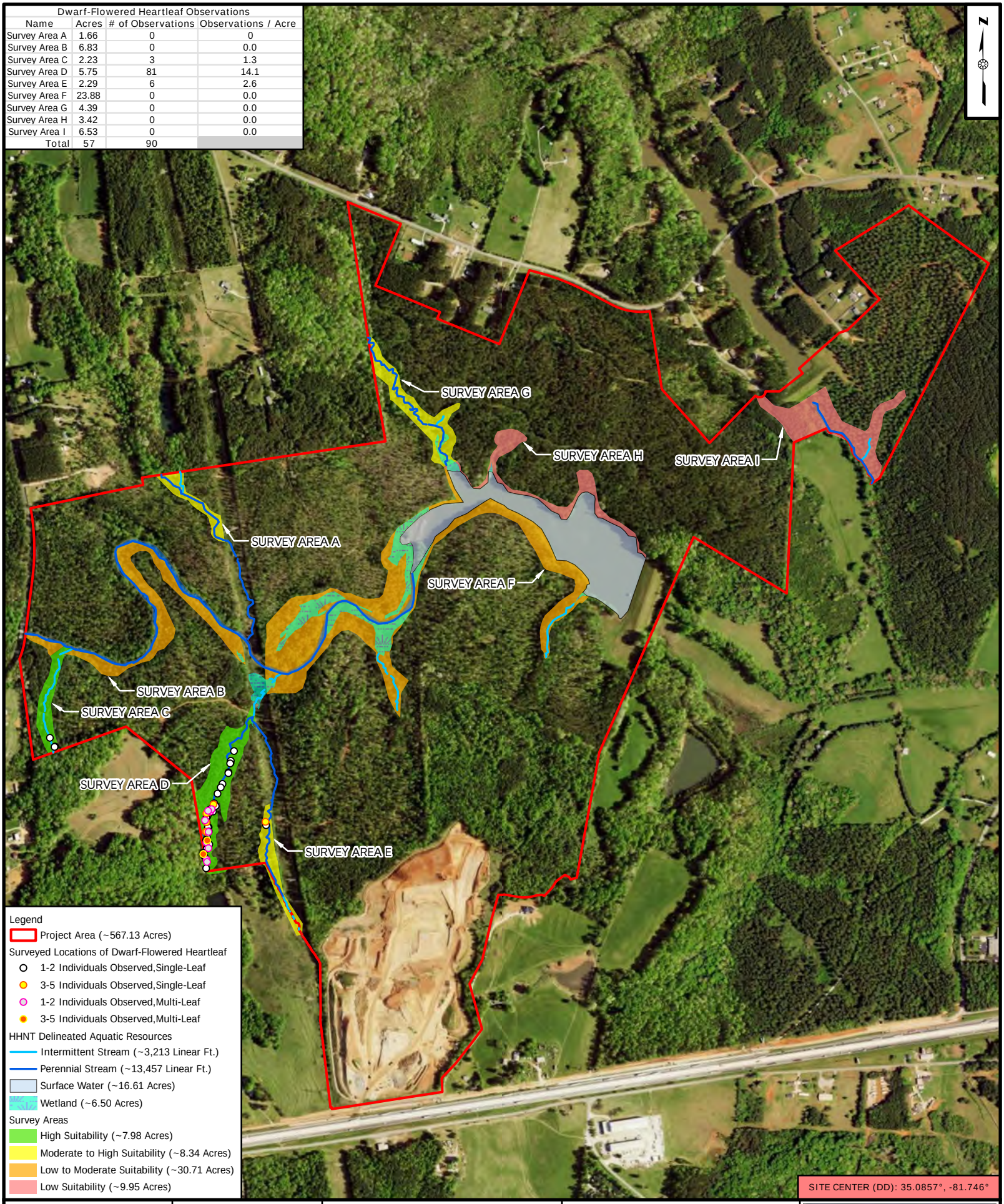
Luck Stone Corporation

Cherokee County, SC

Notes:
1. Imagery obtained from the USDA NAIP Imagery Index, dated April 2021.
2. Aquatic resource delineation performed by HHNT scientists 11/11/2024-11/13/2024.
3. Depicted Waters of the U.S. Delineation remains an opinion of HHNT until formally verified in writing by the U.S. Army Corps of Engineers via a formal determination letter.

HHNT ENVIRONMENTAL CONSULTANTS

Dwarf-Flowered Heartleaf Observations			
Name	Acres	# of Observations	Observations / Acre
Survey Area A	1.66	0	0
Survey Area B	6.83	0	0.0
Survey Area C	2.23	3	1.3
Survey Area D	5.75	81	14.1
Survey Area E	2.29	6	2.6
Survey Area F	23.88	0	0.0
Survey Area G	4.39	0	0.0
Survey Area H	3.42	0	0.0
Survey Area I	6.53	0	0.0
Total	57	90	



Legend

Project Area (~567.13 Acres)

Surveyed Locations of Dwarf-Flowered Heartleaf

- 1-2 Individuals Observed,Single-Leaf
- 3-5 Individuals Observed,Single-Leaf
- 1-2 Individuals Observed,Multi-Leaf
- 3-5 Individuals Observed,Multi-Leaf

HHNT Delineated Aquatic Resources

- Intermittent Stream (~3,213 Linear Ft.)
- Perennial Stream (~13,457 Linear Ft.)
- Surface Water (~16.61 Acres)
- Wetland (~6.50 Acres)

Survey Areas

- High Suitability (~7.98 Acres)
- Moderate to High Suitability (~8.34 Acres)
- Low to Moderate Suitability (~30.71 Acres)
- Low Suitability (~9.95 Acres)

SITE CENTER (DD): 35.0857°, -81.746°

Figure 5

4/11/2025

0 500 1,000

1 inch equals 1,000 feet

Dwarf-Flowered Heartleaf Survey Map

Luck Cherokee

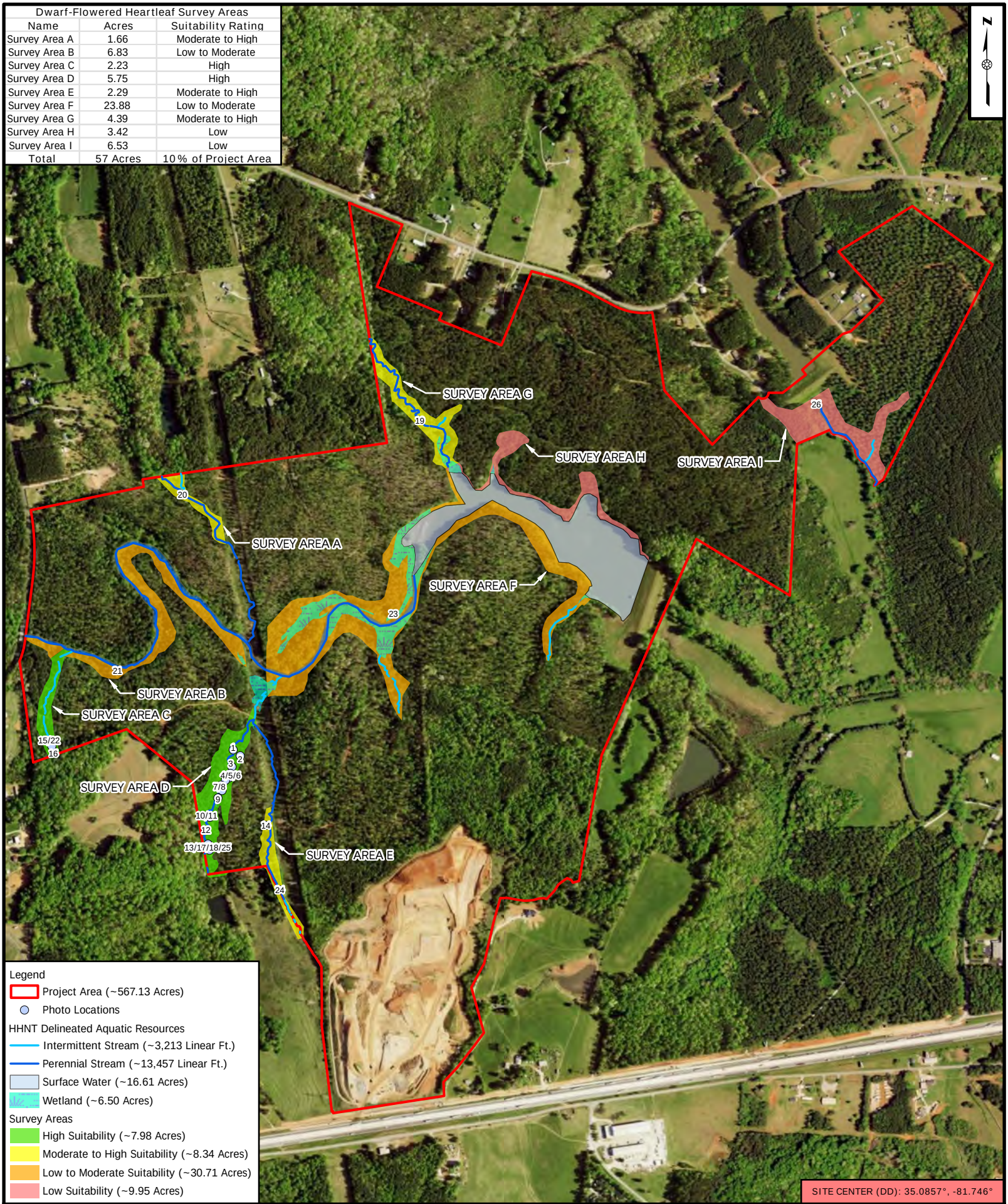
Luck Stone Corporation

Cherokee County, SC

Notes:
1. Imagery obtained from the USDA NAIP Imagery Index, dated April 2021.
2. Aquatic resource delineation performed by HHNT scientists 11/11/2024-11/13/2024.
3. Depicted Waters of the U.S. Delineation remains an opinion of HHNT until formally verified in writing by the U.S. Army Corps of Engineers via a formal determination letter.
4. Species locations recorded using a sub-meter GPS.

HHNT ENVIRONMENTAL CONSULTANTS

Dwarf-Flowered Heartleaf Survey Areas		
Name	Acres	Suitability Rating
Survey Area A	1.66	Moderate to High
Survey Area B	6.83	Low to Moderate
Survey Area C	2.23	High
Survey Area D	5.75	High
Survey Area E	2.29	Moderate to High
Survey Area F	23.88	Low to Moderate
Survey Area G	4.39	Moderate to High
Survey Area H	3.42	Low
Survey Area I	6.53	Low
Total	57 Acres	10% of Project Area



Legend

- Project Area (~567.13 Acres)
- Photo Locations

HHNT Delineated Aquatic Resources

- Intermittent Stream (~3,213 Linear Ft.)
- Perennial Stream (~13,457 Linear Ft.)
- Surface Water (~16.61 Acres)
- Wetland (~6.50 Acres)

Survey Areas

- High Suitability (~7.98 Acres)
- Moderate to High Suitability (~8.34 Acres)
- Low to Moderate Suitability (~30.71 Acres)
- Low Suitability (~9.95 Acres)

SITE CENTER (DD): 35.0857°, -81.746°

Figure 6

4/11/2025

0 500 1,000

1 inch equals 1,000 feet

Dwarf-Flowered Heartleaf Survey Photo Location Map

Luck Cherokee
Luck Stone Corporation
Cherokee County, SC

Notes:
1. Imagery obtained from the USDA NAIP Imagery Index, dated April 2021.
2. Aquatic resource delineation performed by HHNT scientists 11/11/2024-11/13/2024.
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HHNT ENVIRONMENTAL CONSULTANTS

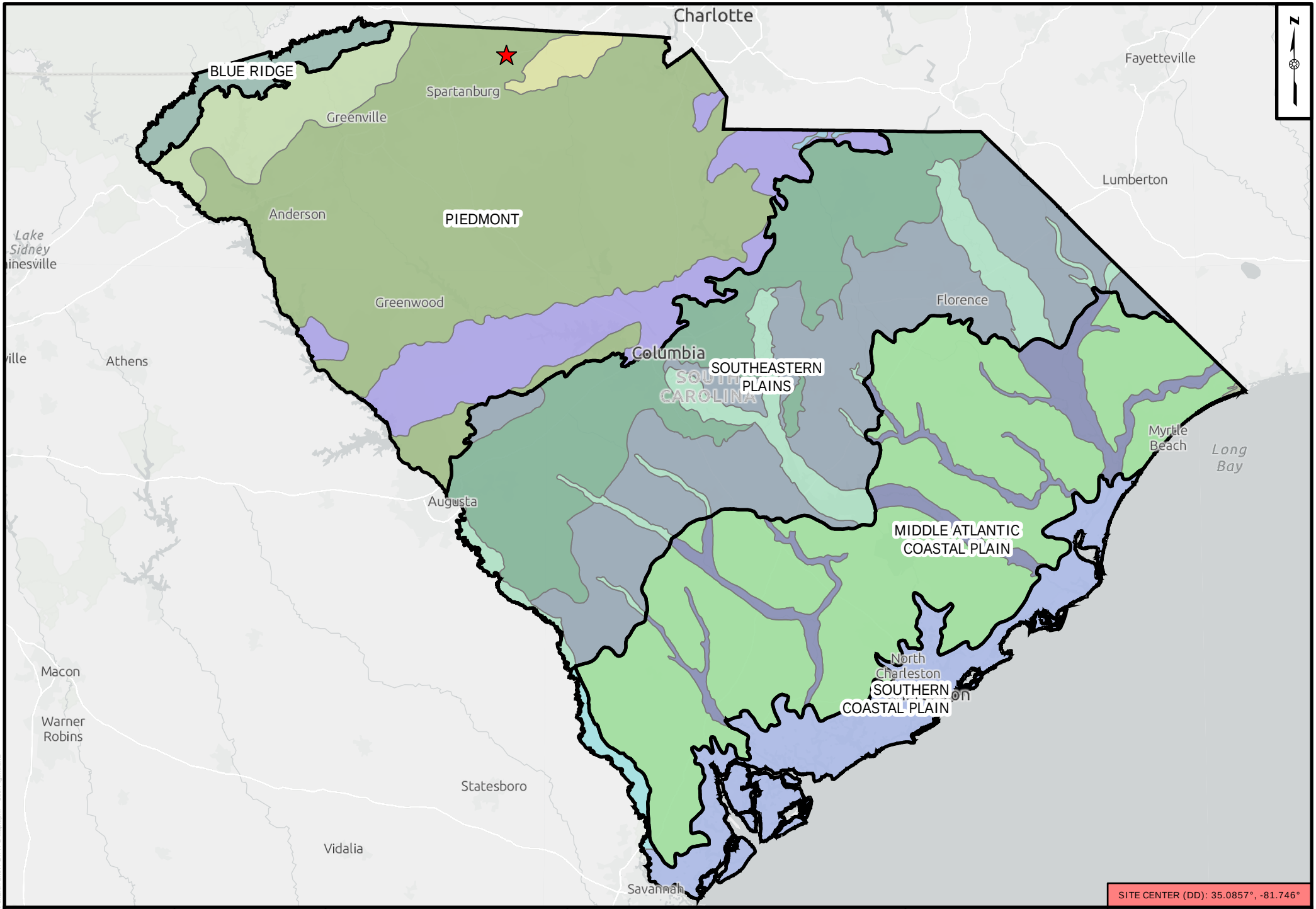

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Figure 7
4/11/2025
0 15 30
1 inch equals 30 miles

South Carolina Ecoregion Map
Luck Stone
Luck Stone Corporation
Cherokee County, SC

- Site Location
- Level 3 Ecoregions

Level 4 Ecoregions
- Atlantic Southern Loam Plains
- Carolina Flatwoods
- Carolina Slate Belt
- Carolinian Barrier Islands and Coastal Marshes
- Floodplains and Low Terraces
- Kings Mountain
- Mid-Atlantic Floodplains and Low Terraces
- Sand Hills
- Sea Islands/Coastal Marsh
- Southeastern Floodplains and Low Terraces
- Southern Crystalline Ridges and Mountains
- Southern Inner Piedmont
- Southern Outer Piedmont
- Triassic Basins

Notes:
1. South Carolina Ecoregions obtained from the United States Environmental Protection Agency (EPA) web portal.

HHNT ENVIRONMENTAL CONSULTANTS

Path: S:\ArcGIS\Luckstone\Beason-Church Site\Y-EIYT E Map.aprx User: tgwilliams

APPENDIX B USFWS IPAC REPORT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Cherokee County, South Carolina

Local office

South Carolina Ecological Services

(843) 727-4707
(843) 727-4218

176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. 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.

The following species are potentially affected by activities in this location:

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Dwarf-flowered Heartleaf Hexastylis naniflora Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2458	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence 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). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles 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 Rapid Avian Information Locator (RAIL) Tool.

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. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden

Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

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, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Chuck-will's-widow Antrostomus carolinensis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Jul 10
Grasshopper Sparrow Ammodramus savannarum perpallidus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush Hylocichla mustelina 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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "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.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

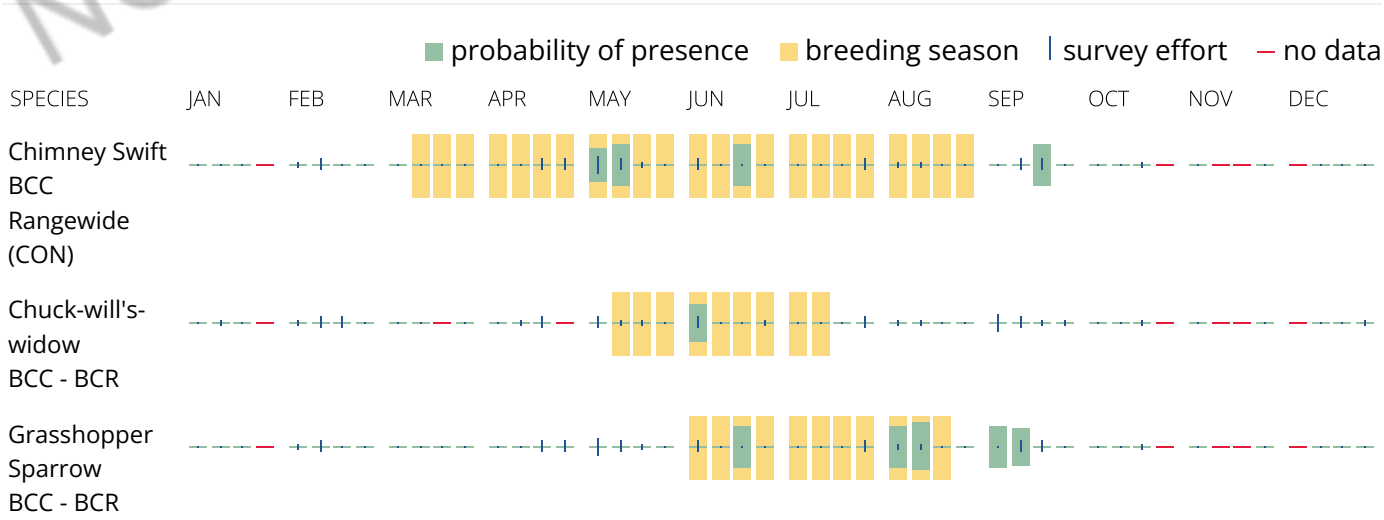
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

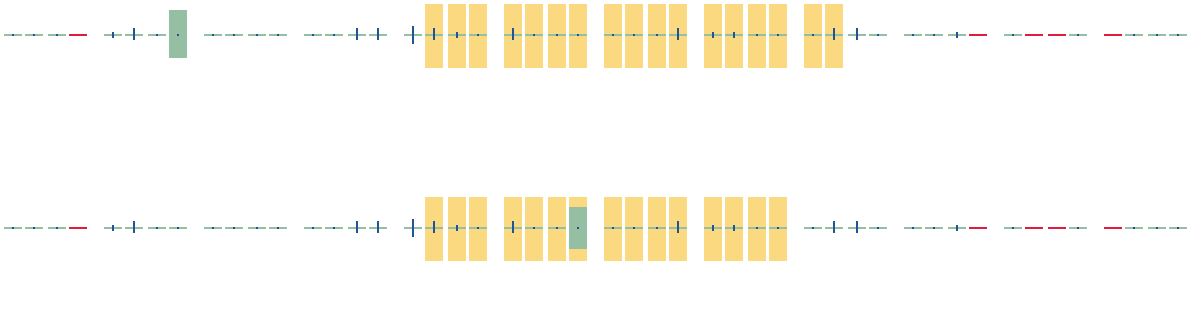
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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.

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 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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.

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.

Facilities

National Wildlife Refuge lands

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 at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1Ch
- PSS1Ch

FRESHWATER POND

- PUBHh
- PUBHx

RIVERINE

- R2UBH
- R4SBC
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX C SITE PHOTOGRAPHS

PHOTO 1: *Hexastylis naniflora* - Approximately 15' from Perennial Stream (Survey Area D)

PHOTO 2: *Hexastylis naniflora* Flower - Approximately 15' from Perennial Stream (Survey Area D)

Project No: 4780-025

Date: May 2025

Site Photographs
Luck Cherokee
Luck Stone Corporation

HNT ENVIRONMENTAL CONSULTANTS

PHOTO 3: *Hexastylis naniflora* Flower- Approximately 8' from Perennial Stream (Survey Area D)

PHOTO 4: *Hexastylis naniflora* – Perennial Streambank (Survey Area D)

PHOTO 5: *Hexastylis naniflora* - Perennial Streambank (Survey Area D)

PHOTO 6: *Hexastylis naniflora* - Perennial Streambank (Survey Area D)

Site Photographs
Luck Cherokee
Luck Stone Corporation

HNT ENVIRONMENTAL CONSULTANTS

PHOTO 7: *Hexastylis naniflora* Flower – Approximately 15' from Perennial Stream (Survey Area D)

PHOTO 8: *Hexastylis naniflora* – Approximately 8' from Perennial Stream (Survey Area D)

PHOTO 9: *Hexastylis naniflora* Flower - Approximately 18' from Perennial Stream (Survey Area D)

PHOTO 10: *Hexastylis naniflora* Flower - Approximately 20' from Perennial Stream (Survey Area E)

Site Photographs
Luck Cherokee
Luck Stone Corporation

HNT ENVIRONMENTAL CONSULTANTS

PHOTO 11: *Hexastylis naniflora* Flower - Approximately 6' from Perennial Stream (Survey Area C)

PHOTO 12: *Hexastylis naniflora* - Approximately 2' from Perennial Stream (Survey Area C)

Site Photographs
Luck Cherokee
Luck Stone Corporation

HNT ENVIRONMENTAL CONSULTANTS

PHOTO 13: *Hexastylis naniflora* – Perennial Streambank (Survey Area D – Wetland Area)

PHOTO 14: Representative Photo of *Hexastylis naniflora* Streambank Population (As Shown In Photo 13)

PHOTO 15: Representative Photo of Survey Area G

PHOTO 16: Representative Photo of Survey Area A

PHOTO 17: Representative Photo of Survey Area B

PHOTO 18: Representative Photo of Survey Area C

PHOTO 19: Representative Photo of Survey Area F

PHOTO 20: Representative Photo of Survey Area E

PHOTO 21: Representative Photo of Survey Area D

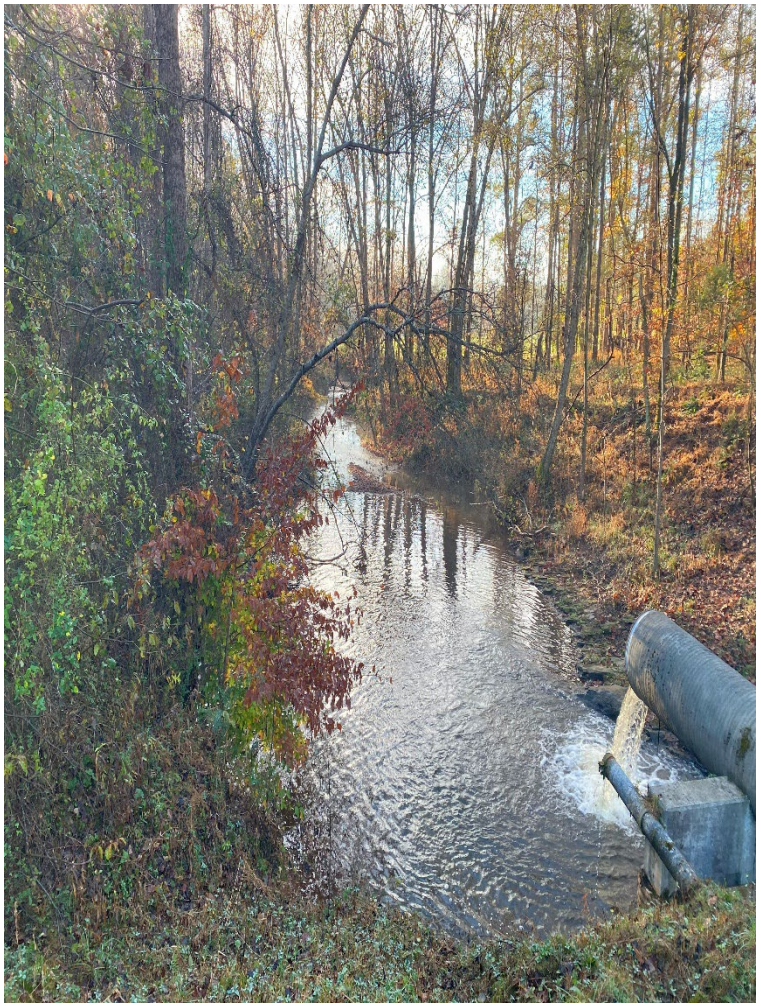


PHOTO 22: Representative Photo of Survey Area I

Site Photographs
Luck Cherokee
Luck Stone Corporation

HNT ENVIRONMENTAL CONSULTANTS