United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Florida Ecological Services
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

FWS Log No. 04EF1000-2020-F-0507

July 29, 2020

John P. Fellows
Team Leader, Mining Team
Tampa Permits Section
Department of Army
Jacksonville District Corps of Engineers
10117 Princess Palm Avenue, Suite 120
Tampa, Florida 33610

Subject: Biological Opinion – Trail Ridge Mine

Dear Mr. Fellows:

This letter transmits the enclosed biological opinion (BO) of the U.S. Fish and Wildlife Service (Service) for the Trail Ridge Mine (Action). The U.S. Army Corps of Engineers (Applicants) proposes to provide a permit to the Applicant to discharge fill material for the purpose of mining for mineral sands in Bradford County, Florida. On January 30, 2020, the Service received your letter requesting formal consultation for the Action described in Biological Assessment. The Service and the Applicant agreed that the Action is likely to adversely affect the eastern indigo snake (*Drymarchon couperi*).

The Applicant also determined that the Action is not likely to adversely affect the Florida scrub-jay (*Aphelocoma coerulescens*) and the red-cockaded woodpecker (*Picoides borealis*). and would have no effect on the, wood stork (*Mycteria americana*) and the oval pigtoe (*Pleurobema pyriforme*). The Service concurs with these determinations, based on the implementation of the proposed conservation measures and the findings of the corresponding determination keys presented in the consultation request.

The enclosed BO answers your request for formal consultation, and concludes that the Action is not likely to jeopardize the continued existence of the species listed above. This finding fulfills the requirements applicable to the Action for completing consultation under §7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended.

The BO includes an Incidental Take Statement that requires the Applicants to implement reasonable and prudent measures that the Service considers necessary or appropriate to minimize

the impacts of anticipated taking on the listed wildlife species. Incidental taking of listed wildlife species that is compliance with the terms and conditions of this statement is exempted from the prohibitions against taking under the ESA.
Reinitiating consultation is required if the Applicants retains discretionary involvement or control over the Action (or is authorized by law) when:

a. the amount or extent of incidental take is exceeded;
b. new information reveals that the Action may affect listed species or designated critical habitat in a manner or to an extent not considered in this BO;
c. the Action is modified in a manner that causes effects to listed species or designated critical habitat not considered in this BO; or
d. a new species is listed or critical habitat designated that the Action may affect.

A complete administrative record of this consultation is on file in our office at the letterhead address. If you have any questions about the biological opinion, please contact Zakia Williams by phone at 904-731-3119 or by email at zakia_williams@fws.gov.

Sincerely,

JAY HERRINGTON

Digitally signed by JAY HERRINGTON
Date: 2020.07.29 10:37:47 -04'00'

Jay B. Herrington
Field Supervisor

Enclosure

Biological Opinion

Trail Ridge Mine

FWS Log No. 04EF1000-2020-F-0507

Prepared by:

U.S. Fish and Wildlife Service
North Florida Ecological Services Field Office
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517

JAY HERRINGTON

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Date: 2020.07.29 12:25:07 -04'00'

Jay B. Herrington, Field Supervisor

Date

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CONSULTATION HISTORY

This section lists key events and correspondence during the course of this consultation. A complete administrative record of this consultation is on file in the Service's North Florida Field Office.

2020-01-30 – The Service received an email from the US Army Corps of Engineers (Corps) requesting formal consultation for the Trail Ridge Mine project.

2020-03-06 – The Service sent a letter to the Corps, notifying the Corps that formal consultation had begun for the Trail Ridge Mine project.

2020-06-26 – Draft Biological Opinion

2020-07-16 – Final Biological Opinion

BIOLOGICAL OPINION

1. INTRODUCTION

A biological opinion (BO) is the document that states the findings of the U.S. Fish and Wildlife Service (Service) required under section 7 of the Endangered Species Act of 1973, as amended (ESA), as to whether a Federal action is likely to:

- jeopardize the continued existence of species listed as endangered or threatened; or
- result in the destruction or adverse modification of designated critical habitat.
-

The Federal action addressed in this BO is the permit issuance by the US Army Corps of Engineers (Corps) to discharge fill material for the purpose of mining for mineral sands (the Action) by the Chemours Company FC LLC (the Applicant). This BO considers the effects of the Action on the eastern indigo snake (*Drymarchon couperi*). The Action does not affect designated critical habitat, therefore, this BO does not address critical habitat.

BO Analytical Framework

A BO that concludes a proposed Federal action is *not* likely to *jeopardize the continued existence* of listed species and is *not* likely to result in the *destruction or adverse modification* of critical habitat fulfills the Federal agency's responsibilities under §7(a)(2) of the ESA.

> *"Jeopardize the continued existence* means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR §402.02).
> "*Destruction or adverse modification* means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR §402.02).

The Service determines in a BO whether we expect an action to satisfy these definitions using the best available relevant data in the following analytical framework (see 50 CFR §402.02 for the regulatory definitions of *action, action area, environmental baseline, effects of the action*, and *cumulative effects*).

a. *Proposed Action*. Review the proposed Federal action and describe the environmental changes its implementation would cause, which defines the action area.
b. *Status*. Review and describe the current range-wide status of the species or critical habitat.
c. *Environmental Baseline*. Describe the condition of the species or critical habitat in the action area, without the consequences to the listed species caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early consultation, and the impacts of State or private actions which are contemporaneous with the consultation.

d. *Effects of the Action*. Predict all consequences to species or critical habitat caused by the proposed action, including the consequences of other activities caused by the proposed action, which are reasonably certain to occur. Activities caused by the proposed action would not occur but for the proposed action. Effects of the action may occur later in time and may include consequences that occur outside the action area.
e. *Cumulative Effects*. Predict all consequences to listed species or critical habitat caused by future non-Federal activities that are reasonably certain to occur within the action area.
f. *Conclusion*. Add the effects of the action and cumulative effects to the environmental baseline, and in light of the status of the species, formulate the Service's opinion as to whether the action is likely to jeopardize species or adversely modify critical habitat.

2. PROPOSED ACTION

The proposed Trail Ridge Mine is located south of State Road (SR) 230 and east of SR 100, approximately four miles southeast of downtown Starke, in Sections 12, 13 and 24, Township 7 South, Range 22 East, Bradford County, and Sections 6, 7, 18, and 19, Township 7 South, Range 23 East, Clay County, Florida. The Chemours Company FC LLC (the Applicant) has applied for a Department of Army Permit to begin heavy mineral mining operations on a ±2,884.4 acre parcel (Figure 2-1). The Action will involve the harvesting of timber to prepare the site for mining activities and the extraction of minerals sands. All merchantable timber will be harvested throughout the project area in a manner consistent with silviculture best management practices (BMP's) and applicable regulations by timber owner. Mining activities are expected to occur after timber has been harvested. As a result of the proposed Action (timber harvesting, gopher tortoise relocation, and mining activities will occur throughout the entire project area at various stages) impacts to eastern indigo snake habitat is expected.

Conservation Measure 1

The Applicant will follow the Service's Standard Protection Measures for the Eastern Indigo Snake (SPM) 2013) to ensure that no eastern indigo snakes are harmed during timber harvesting and mining activities.

Conservation Measure 2

The Applicant has eliminated the use of multiple haul trucks from being used during the mining process by using the Mobile Mining Unit (MMU). Elimination of the haul trucks from the mining area reduces dust, noise and light impacts.

Conservation Measure 3

The Applicant has agreed to the restoration of pre-mining conditions. This includes the integration and creation of naturally occurring communities that are found within the Action Area.

2.1. Timber Harvesting

Prior to extraction of the mineral sands, the Applicant intends to harvest all merchantable timber. Upon completion of timber harvesting, silt fencing and other applicable erosion control measures will be installed around the proposed mine cells.

Areas to be mined will be "root raked" and all wooden material will be burned per appropriate State/County regulations. The top 12 inches of topsoil will be removed and used to form the perimeter containment berms around the mining area for control of storm water runoff. All stormwater will be captured in the excavated pit. Perimeter containment berms are to be stabilized with slopes at a minimum of 3H:1V or flatter and seeded as needed to prevent erosion. Silt fencing will be utilized along the exterior edges of perimeter containment berms adjacent to wetlands to control erosion and sedimentation.

In an effort to minimize adverse effects to the eastern indigo snake, the removal of tree stumps and brush is only conducted immediately prior to the advance of mining operations and completed in small blocks 10 to 20 acres, limiting the amount of new land disturbed by mining activities at any one time. The applicant will also implementSPM (2013).

2.2. Gopher Tortoise Relocation

The Applicant intends to relocate gopher tortoises (*Gopherus polyphemus*) within the Action Area as required by the Florida Fish and Wildlife Conservation Commission (FWC) in order to start mining activities within the Action Area. The survey and relocation activities will be conducted in small blocks in front of the immediate path of mining operations. Gopher tortoise burrows will be excavated in accordance with FWC regulations and tortoises will be relocated to recipient sites previously approved by FWC. Tortoise relocations involve the excavation of burrows using a backhoe loader or excavator to dig the burrow out until the tortoise is located. Once tortoises are removed from the burrow, they are safely relocated to a recipient site and the burrow is backfilled.

Should temperatures be too low for gopher tortoise relocations, the Applicant will maintain a 25 ft. buffer, as indicated by FWC, from occupied gopher tortoise burrows when clearing.

2.3. Mining

The Trail Ridge South mining footprint will consist of two (2) MMUs and a land-based separation plant site, Mobile Concentrator (MC). The MMUs move as mining progresses. The MMUs consist of a feed hopper and shredder to break apart oversize (roots, rocks and hardpan) from the excavated material prior to being slurried and pumped. The oversize material from the screen will be used as backfill in the mined-out cells.

The excavation process will be conducted within mining cells designed at approximately 10 to 20 acres in size and will be in various stages from clearing to reclamation. This "block type" mining minimizes environmental impacts as actively disturbed areas are kept to a minimum.

The excavation process will occur in the "Active Mining Cell". The excavation will progress through the cells using multiple excavators to feed a MMU. This unit will process the feed and slurry the ore to the near-by MC. The mine cells will be dewatered as excavation progresses and the water incorporated into the process water for reuse. Mining depth will average approximately 22 feet with a maximum depth of 40 feet.

Once the tailings are sufficiently dewatered, reclamation activities, including re-contouring of the site to its pre-mining conditions will be conducted, this includes: topsoil placement and revegetation. Temporary groundcover may be seeded/planted to assist with erosion control, as needed.

Approximately 160 acres (± 80 acres per MMU) may be in various stages of the mining process at the active mining areas at one time including:

1. Site Preparation
2. Active Mining
3. Tailings
4. Contouring/Reclamation

Approximately ±1,749.92 acres within the ±2884.4-acre project area is proposed for impact associated with mining and another 30.06 acres associated with the construction of a plant site. A total of ±1,104.42 acres are to remain undisturbed (see attached Biological Assessment).

In its request for consultation, the Corps did not describe, and the Service is not aware of, any additional activities caused by the Action that are not included in the previous description of the proposed Action. Therefore, this BO does not address further the topic of "other activities" caused by the Action.

2.4. Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR §402.02). Delineating the action area is necessary for the Federal action agency to obtain a list of species and critical habitats that may occur in that area, which necessarily precedes any subsequent analyses of the effects of the action to particular species or critical habitats.

It is practical to treat the action area for a proposed Federal action as the spatial extent of its direct and indirect "modifications to the land, water, or air" (a key phrase from the definition of "action" at 50 CFR §402.02). Indirect modifications include those caused by other activities that would not occur but for the action under consultation. The action area determines any overlap with critical habitat and the physical and biological features therein that we defined as essential to the species' conservation in the designation final rule. For species, the action area establishes the bounds for an analysis of individuals' exposure to action-caused changes, but the subsequent consequences of such exposure to those individuals are not necessarily limited to the action area.

Figure 2-2 shows the locations of all activities that the proposed Action would cause and the spatial extent of reasonably certain changes to land, water, or air caused by these activities, based

on the descriptions and analyses of these activities in sections 2.1–2.3. The Action Area for this BO includes all lands within the project footprint. The Action is located in Sections 6, 7, 12, 13, 18, 19, and 24, Township 7 South, Range 22 and 23 East on the border between Bradford and Clay Counties, Florida, along a narrow sand ridge known as the Trail Ridge. The projects' biological assessment evaluated the potential effects on the eastern indigo snake within the Trail Ridge Mine project area.

2.5. Tables and Figures for Proposed Action

Figure 2-1. Project Location Map

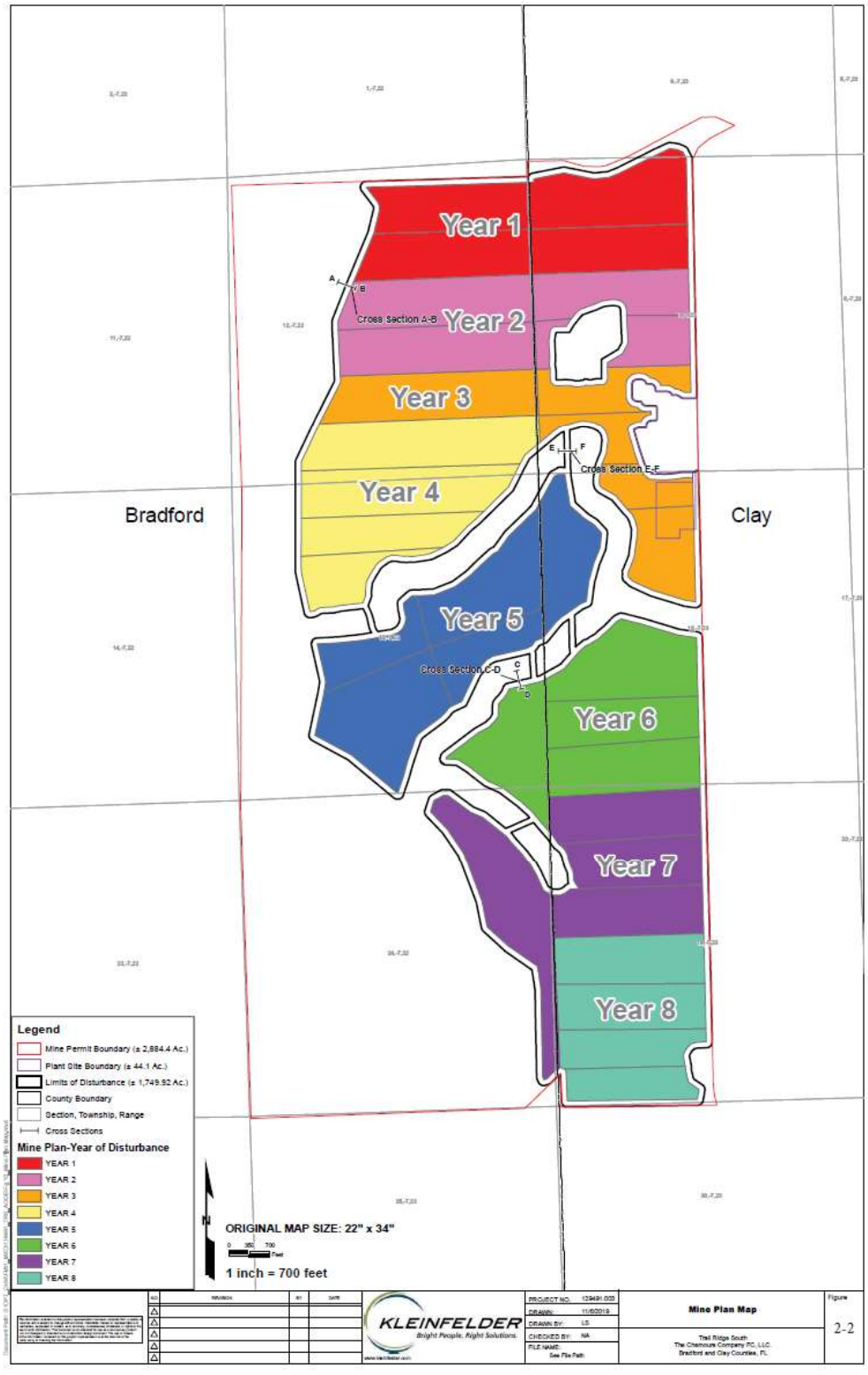

Figure 2-2. Mine Plan Activity Map

3. SOURCES OF CUMULATIVE EFFECTS

A BO must predict the consequences to species caused by future non-Federal activities within the action area, *i.e.,* cumulative effects. "Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR §402.02). Additional regulations at 50 CFR §402.17(a) identify factors to consider when determining whether activities are reasonably certain to occur. These factors include, but are not limited to: existing plans for the activity; and any remaining economic, administrative, and legal requirements necessary for the activity to go forward.

In its request for consultation, the Corps did not describe, and the Service is not aware of, any future non-Federal activities that are reasonably certain to occur within the Action Area. Therefore, we anticipate no cumulative effects that we must consider in formulating our opinion for the Action.

4. EASTERN INDIGO SNAKE

This section provides the Service's biological opinion of the Action for the eastern indigo snake (*Drymarchon couperi*).

4.1. Status of Species

This section summarizes best available data about the biology and current condition of eastern indigo snake *(Drymarchon couperi)* throughout its range that are relevant to formulating an opinion about the Action. The eastern indigo snake was listed as threatened under the Endangered Species Act in 1978 (43 FR 4026 4029) on March 3, 1978, and is listed as federally designated threatened by the State of Florida. Critical habitat has not been designated for the eastern indigo snake.

In addition to the assessment below, the most recent review of this species is found in the *Eastern Indigo Snake* (*Drymarchon couperi*) *Species Status Assessment (SSA) Report* (Service 2018). This review builds on information found in the *Eastern Indigo Snake Recovery Plan* (Service 1982) and uses the *Species Status Assessment (SSA)* framework (Smith *et al*. 2018, entire). These documents are incorporated by reference and can be used to obtain more detailed information about this species.

4.1.1. Species Description

Eastern indigo snakes are among the largest non-venomous snakes in North America, obtaining lengths of up to 2.6 m - 8.5 ft. (Moler 1992). Its color is uniformly lustrous-black, dorsally and ventrally, except for a red or cream-colored suffusion of the chin, throat, and sometimes the cheeks. The scales are large and smooth with 17 anterior and mid-body scale rows (occasionally 18-19), and 14-15 scale rows above the vent. The anal plate is undivided. In the Florida Keys, adult eastern indigo snakes seem to have less red on their faces or throats compared to most mainland specimens (Lazell 1989). A study by Krysko *et al.* 2016 has suggested dividing

populations of eastern indigo snakes between an Atlantic and Gulf population segments based on genetic and morphological differences between these populations.

Presently, there are no studies on the longevity of wild eastern indigo snakes, though the oldest published record in captivity for eastern indigo snakes is 25 years and 11 months (Shaw 1959). Other information from captive breeding populations indicates some individuals may have lived up to 28 years old in captivity, though the date of acquisition of specimens older than 26 are not vouchered (Hoffman pers. comm. 2017). Because wild eastern indigos experience higher environmental and anthropogenic pressures than in captivity, life spans are likely reduced.

4.1.2. Life History

Most information on the reproductive cycle of eastern indigo snakes is from data collected in north Florida. In this geographical area, breeding occurs between November and April, and females deposit 4 to 12 eggs during May or June (Moler 1992). Speake et al. (1987) reported an average clutch size of 9.4 for 20 captive bred females. Throughout the entire range, eggs are laid from late May through August, and young hatch in approximately 3 months. Peak hatching activity occurs between August and September, and yearling activity peaks in April and May (Groves 1960, Smith 1987). Limited information on the reproductive cycle in south-central Florida suggests that the breeding and egg-laying season may be extended. In this region, breeding extends from June to January, laying occurs from April to July, and hatching occurs during mid-summer to early fall (Layne and Steiner 1996).

Analogous with many other species of snakes, female eastern indigo snakes can store sperm and delay fertilization of eggs. There is a single record of a captive snake laying five eggs (at least one of which was fertile) after being isolated for more than four years (Carson 1945). It has long been assumed that this event resulted from sperm storage. However, there have been several recent reports of parthenogenetic reproduction by virginal snakes. Hence, sperm storage may not have been involved in Carson's (1945) example (P. Moler, GFC, personal communication 1998). There is no information on how long eastern indigo snakes live in the wild. In captivity, the longest an eastern indigo snake has lived was 25 years, 11 months (Shaw 1959).

Eastern indigo snakes spend a great deal of time foraging and searching for mates. The species is diurnal throughout its range (Service 2008). The eastern indigo snake will eat most vertebrates small enough to be overpowered and swallowed. Food items include fish, frogs, toads, snakes (venomous, as well as non-venomous), lizards, turtles, turtle eggs, small alligators, birds, and small mammals (Keegan 1944; Babis 1949; Kochman 1978; Steiner et al. 1983; Stevenson et al. 2010).

Population Dynamics

Few detailed studies of population dynamics of eastern indigo snakes have been conducted, primarily because the species is secretive and difficult to study. Although the sex ratio at birth and in juveniles is not different from 1:1 (Moulis 1976, Steiner et al. 1983), adult sex ratios in the wild are strongly biased in favor of males (Layne and Steiner 1996, Stevenson et al. 2009). Stevenson et al. (2009) attributed this bias to lower rates of survival in females, even though

males have larger home range sizes and greater daily movement distances than females (Hyslop 2007).

Adult males are also significantly longer and heavier than females, which is attributed to male-male combat in this species (Shine 1994, Stevenson et al. 2009). Although both sexes mature at about the same total length (150 cm), males continue to grow after sexual maturity, whereas females apparently devote most available energy to vitellogenesis (Service 2008, Stevenson et al. 2009). Maturity is reached in 3-4 years (Service 2008).

Within Florida and southern Georgia, the eastern indigo snake occupies a wide range of habitat types including pine flatwoods, scrubby flatwoods, scrub and sandhill, oak and maritime hammocks, wetlands, coastal dunes, and human-altered habitats (Service 2008). Below-ground refugia include the burrows of gopher tortoises, nine-banded armadillos (*Dasypus novemcinctus*), rodents, and land crabs (*Cardisoma guanhumi*), as well as hollow logs, stump holes, and other crevices (Hyslop 2007, Hyslop et al. 2009).

Seasonal shifts in habitat use have been widely reported, especially in areas north of the frost line, with eastern indigo snakes typically spending the winter in gopher tortoise burrows in xeric uplands and foraging more frequently in wetlands during the warmer months (Layne and Steiner 1996, Hyslop 2007, Hyslop et al. 2009, Stevenson et al. 2009). In addition, many eastern indigos are known to return to the same hibernacula annually for over wintering (Speake 1978, Hyslop 2007).

Behavior and home range size are variable depending on the climate of the region. In the milder climates of south-central and southern Florida, over wintering sites may not be as important. However, gopher tortoise burrows and other refugia are important for refuge from high temperature conditions (Speake and Mount 1973, Lawler 1977, Landers and Speake 1980, Smith 1987). In the Gulf Hammock Wildlife Management Area, hollow root channels and rodent burrows in the base of live oak trees were the most common den sites, and the edges of wetlands were favored foraging locations (Moler 1985).

Home range and life history is variable based on the ecoclimate of the region, availability of habitat, and connectivity of those areas. Above the frost line in Florida, the species is known to have significantly higher fidelity for gopher tortoise burrows than below the frost line (Enge et al. 2013). These areas are likely still used during short cold snaps and to escape extreme heat and desiccation (Hyslop et al. 2009).

Radiotelemetry and mark-recapture techniques have been used to estimate home range size (minimum convex polygon; MCP), daily and seasonal movement patterns, habitat use, and the extent of habitat required to support population of this species. Because of the wide range of the species, behavior and home ranges size is variable in different portions of their extant range. In central Florida, Layne and Steiner (1996) estimated the mean home range size of 12 males to be 74.3 ha (183.6 ac) and seven females to be 18.6 ha (46.0 ac). Males also moved significantly more often between successive locations and moved greater distances. In the Gulf Hammock region of Florida, Moler (1985) reported mean home ranges of 48.2 ha - 533.0 ha (119.1 ac - 1,317.0 ac) for four males and 50.8 ha (125.5 ac) for one female. A single male occupied a home

range of 185 ha (457.1 ac) in north-central Florida (Dodd and Barichivich 2007). In southern Georgia the mean home range of 19 males (520.0 ha; 1,285.0 ac) was significantly larger than 13 females (103.4 ha; 255.5 ac), and males move more frequently and greater distances (Hyslop 2007). A compilation of home range sizes throughout Florida and Georgia may be found in Table 1.

Using a combination of radiotelemetry and population models, Breininger et al. (2004) investigated the effects of habitat fragmentation on the viability of eastern indigo snake populations in east-central Florida. In this study males had an average home range size of 120 ha [296.5 ac] and females = 41 ha [101.3 ac]; Breininger et al. 2004), snakes living along primary roads soon died, and edge/area effects were more important than area alone in determining population survival. Studies by Layne and Steiner (1996), Enge and Wood (2002), and Hyslop (2007) also found roads to be an important source of mortality in eastern indigo snakes. A study by Moler (1992) suggested that at least 1,000 ha (2,470 ac) of contiguous habitat is required to sustain eastern indigo snakes long term, though indigos often are present on smaller patch sizes when habitat has become isolated and fragmented.

Eastern indigos are known to utilize large home ranges, which is variable throughout their range (Breininger et al. 2011, Dodd and Barichivich 2007, Moler 1992, Bauder and Jenkins 2013, Hyslop 2007, Kehl and Breininger 1991, Layne and Steiner 1996, Moler 1985, Smith 1987, Speak et al. 1978). Male eastern indigos are known to have larger home range sizes than females, likely due to searching for mates in the area or due to their larger sexually dimorphic size (Dodd and Barichivich 2007, Moler 1985, Smith 1987). Home range size for the species ranges from 4 ac – 3,780.9 (Layne and Steiner 1996, Breininger et al. 2011).

Table 4-1. Home range size of eastern indigo snakes based on Minimum Convex Polygon (MCP) method in Florida and Georgia compiled from several research papers.

Citation	Study Site	Male (mean)	Male (range)
Ceilley et al. 2014	Martin County, FL	106 ac	57-163 ac
Layne and Steiner 1996	Highlands County, FL	183.6 ac	5-492 ac
Bauder and Jenkins 2013	Highlands County, FL	442 ac	69-1,184 ac
Legare and Breninger 2002	Highlands County, FL	153 ac	133-173 ac
Kehl et al 1991 as cited on NASA/Dynamac website	Brevard County, FL	690 ac	Unk
Breininger et al. 2011	Brevard County, FL	499 ac	96-1,441 ac
Dodd and Barichivich 2007	Putnam County, FL	457 ac	Unk
Moler 1985	Levy County, FL	348 ac	57-694 ac
Hyslop 2007	Southeastern GA, various	1,329 ac	86-3,800 ac

4.1.3. Numbers, Reproduction and Distribution

The eastern indigo snake was listed as threatened on January 31, 1978 (43 FR 4028), due to population decline caused by habitat loss, over-collecting for the domestic and international pet trade, and mortality caused by rattlesnake collectors who gas gopher tortoise (*Gopherus polyphemus)* burrows to collect snakes. At the time of listing, the eastern indigo snake was considered a subspecies, *Drymarchon corais couperi*. Currently, the eastern indigo snake is accepted by the scientific community as a separate species, *Drymarchon couperi* (Crother 2000). In 1991, Collins elevated this lineage to specific status based on allopatric speciation and diagnosability. Subsequent work has supported this designation (Wuster *et. al.* 2000).

The indigo snake ranges from the southeastern United States to northern Argentina (Conant and Collins 1998). Two species occur in the United States: the eastern indigo and the Texas indigo (*D. corais*). In the United States, the eastern indigo snake historically occurred throughout Florida and in the coastal plain of Georgia and has been recorded in Alabama and Mississippi (Diemer and Speake 1983; Moler 1985b). It may have occurred in southern South Carolina, but its occurrence there cannot be confirmed. Florida and Georgia currently support the remaining endemic populations of the eastern indigo snake (Lawler 1977). The eastern indigo snake occurs throughout most of Florida and is absent only from the Dry Tortugas and Marquesas Keys, and regions of north Florida where cold temperatures and deeper clay soils exist (Cox and Kautz 2000).

Historical Range
Historically, the eastern indigo snake occurred throughout Florida and in the coastal plain of Georgia, Alabama and Mississippi (Figure 4-1) (Löding 1922, Haltom 1931, Carr 1940, Cook 1954, Diemer and Speake 1983, Lohoefener and Altig 1983, Moler 1985a, Enge et al. 2013, entire). Although there are unsubstantiated reports of eastern indigo snakes from South Carolina, the species was removed from South Carolina's state list of native reptiles and amphibians in 2009 because of a lack of evidence that it ever occurred there as a part of the native fauna. In addition, the lack of any historic or recent records within the Savannah River Drainage in Georgia, adjacent to South Carolina, supports this contention (Enge et al. 2013, p.295).

Current Range
The current distribution of the eastern indigo snake has a reduced geographic area compared to its historic range (Figure 4-1). Enge *et al.* (2013, entire) described current extant populations (records post year 2000) to occur in much of its historical range in Georgia and Florida but records are lacking or scarce in portions of that range. Eastern indigo snakes are extirpated or are very rare in the Florida Panhandle and Southwest Georgia. Naturally occurring populations are probably no longer extant in Alabama and Mississippi based on lack of recent records (Enge *et al*. 2013, p. 296). As part of the current recovery strategy, repatriation of eastern indigo snakes back into former parts of its range is ongoing in Alabama and the Florida Panhandle (see section 4.8 below). In summary, the majority of recent records for the eastern indigo snake are from southeastern Georgia and peninsular Florida. The eastern indigo snake may persist in the panhandle of Florida, but only in low numbers.
Figure 6.

Current population size rangewide is unknown.

Threats

Throughout the eastern indigo snake's range, expanding urban areas are creating barriers to the dispersal of individuals and gene flow between populations, and habitat loss and degradation are a threat to the species (Lawler 1977, Moler 1985b). In northern areas of its range in Georgia and peninsular Florida, the species is impacted by a decline in longleaf pine forests, gopher tortoises, and gopher tortoise habitat (Van Lear et al. 2005). In central and southern Florida, the eastern indigo snake is less dependent on any one habitat type, but does avoid developed areas (Lawler 1977, Moler 1985a, Hyslop 2007). Throughout Florida, developed areas are expanding rapidly with population growth at the expense of wildlife habitat (Cerulean 2008).

At the time of listing, other threats to the eastern indigo snake included commercial collection for the pet trade and mortality during the gassing of gopher tortoise burrows by individuals attempting to drive rattlesnakes out for collection (43 FR 4026 4029). Since their listing additional potential threats to the species have expanded to include disease, road mortality, kills of indigo snakes by landowners and pets, and ATV use in gopher tortoise habitat (Service 2008).

4.1.4. Conservation Needs

Major threats to the eastern indigo snake include habitat fragmentation, destruction, and reduced gene flow. At the current time, the range wide status of the species is unknown. Range wide surveys and monitoring are required to help understand the current status of the species. The recovery strategy for the eastern indigo snake consists of maintaining and enhancing existing populations; monitoring the status of existing populations; identifying and securing additional eastern indigo snake populations and habitat; establishing new populations through translocations or reintroductions; and supporting research that guides land management and provides demographic and ecological data. Management plans should be developed and implemented for all recovery populations. Appropriate habitat management includes maintaining road-less corridors allowing dispersal between occupied upland and wetland habitats; minimizing soil disturbance and loss of native herbaceous groundcover vegetation; conducting prescribed burning, particularly during the growing season; maintaining appropriate wetland habitat; and restoring degraded upland habitat.

Monitoring programs to track population trends and the response of this species to habitat management activities are needed for all recovery populations. Gopher tortoise populations should be regularly monitored, and augmented if necessary, at areas where both indigo snakes and tortoises co-occur. Monitoring programs should be critically evaluated and revised as needed. Since recovery of the eastern indigo snake will necessitate finding or creating new, currently unknown populations, assessment of potentially suitable habitat within the range of the species and additional presence/absence surveys are needed. Suitable habitat for translocations/reintroductions needs to be identified, and programs developed and implemented to establish and monitor these new populations and manage the habitat that supports them.

Tracts of habitat in private ownership that could be managed for eastern indigo snakes need to be identified. Site analyses and habitat management actions that improve the connectivity between upland and wetland habitats utilized by indigo snakes are needed.

Additional research is needed to gain a better understanding of the natural history of the eastern indigo snake and its habitat for use in developing and implementing management plans. Data gathered from these studies will ensure that recovery efforts are supported by the best available scientific information.

4.2. Environmental Baseline

This section describes the best available data about the condition of the eastern indigo snake in the Action Area without the consequences caused by the proposed Action.

4.2.1. Action Area Numbers, Reproduction, and Distribution

Eastern indigos are often difficult to detect during surveys based on the biology of the species and its cryptic nature. Many species observations in the Service's records are opportunistic or are from long-term surveys performed by researchers. Current survey methodology recommends a 5-day survey period during the winter season. However, even during appropriate winter temperature windows, eastern indigos may not be detected by surveyors due to the species camouflage, ability to shelter in below ground refugia, short survey duration, variable temperature windows, and the species general cryptic nature. Further, detecting eastern indigos within gopher tortoise burrows may be difficult because burrows are often structurally complex, containing several corkscrew type passages and side passages which are habitable by eastern indigo snakes, but are not accessible to surveyors (Doonan and Stout 1994).

The eastern indigo snake is known to utilize a variety of habitats in Florida, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, xeric oak, xeric oak scrub, turkey-oak barrons, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (Service 1999). Additionally, the presence of a mosaic of habitats including uplands and wetlands, and presence of gopher tortoises and other refugia, are important for the eastern indigo snake (Landers and Speake 1980, Auffenberg and Franz 1982).

The Action Area existing land use is dominated by silviculture practices (Coniferous Plantations – 441). The coniferous plantation areas primarily contain slash pine (Pinus elliottii) of varying age class depending on rotation cycle. The logging rotation for these areas averages twenty (20) to twenty-five (25) years. Review of historical aerial imagery identify several rotations of pine have been harvested and replanted throughout the site from 2002 to 2014.

Understory and ground cover species associated with the pine plantations vary according to the past and current management practices, and the existing topography, soils, and hydrology of the area. In the drier, sandier areas of planted pine, understory vegetation often mimics xeric oak communities, with species including turkey oak (Quercus laevis), sand live oak (Q. geminata), saw palmetto (Serenoa repens), gallberry (Ilex glabra), wiregrass (Aristrida stricta), shiny blueberry (Vaccinium myrsinites), wax myrtle (Myrica cerifera), and bracken fern (Pteridium aquilinum). Throughout the lower elevations and areas with higher groundwater soil conditions, the groundcover is often characterized by various combinations of saw palmetto, gallberry, bracken fern, wax myrtle, water oak (Q. nigra), loblolly bay (Gordonia lasianthus), and red maple (Acer rubrum). Ground cover is variable depending upon density of pines and age class

of trees which shade shrub and ground cover.

Modeling
In addition to observational data within the Action Area from GIS database, the Service reviewed the Maxent Model for eastern indigo snakes. The Maxent Model for eastern indigo snakes is a statistical model used to determine the probability that the species inhabits an area based on previous observations, soils, land use/land cover, dominant drainage classes, and percent clay. For the current action, the Service utilized the Maxent Model for eastern indigo snakes developed by the Florida Fish and Wildlife Conservation Commission to assist with determining areas of occupancy (FWC 2017). Information in the model indicates the Action Area has a high probability for eastern indigo snake occurrence.

The model further supports the determination that the site is occupied by eastern indigo snakes. Because of the elusive nature of the species, it is difficult to quantify the density or number of eastern indigos, which may be within the Action Area. However, the link between eastern indigo snakes and gopher tortoises, presence of xeric habitat, and use of the Maxent Model show a strong correlation that acres of habitat lost within the Action Area is a surrogate for the loss of individual eastern indigo snakes.

Section 402.14 of the regulations, which implement section 7(b) (4) of the Act, allow the use of surrogates to express the amount or extent of take in an Incidental Take Statement. The Service will utilize acres of suitable habitat, as a surrogate for take. Within the project footprint, the Maxent Model verified that approximately 663 acres within the project footprint have a higher probability to support the species and is likely being used as a habitat corridor and foraging area for indigo snakes.

The Action Area is adjacent to Camp Blanding Training Center which borders the eastern boundary of the project. There have been several documented eastern indigo snake sightings on this property. The closest sighting documented is less than a mile away from the southern boundary of the Action Area. Other sightings are scattered throughout the Camp Blanding Training Center (Figure 4-2). The project also borders the Triangle Preserve which borders the northern portion of the Action Area. Although, there are no documented eastern indigo snake sighting on the property. This area provides valuable suitable habitat for eastern indigo snake. Based on the expected home range size of eastern indigo snakes, as described in the Status of the Species section, and considering the information about eastern indigo snake life span, the Service is reasonably certain the Action Area is occupied by the species.

4.2.2. Action Area Conservation Needs and Threats

Conservation significance
The primary negative factors influencing the viability of the species are from habitat fragmentation and loss due to land changes, especially urbanization. Urbanization includes a variety of impacts which remove or alter available habitat or impact snakes directly including: residential and commercial development, road construction and expansion, direct mortality (e.g. road mortality, human persecution) (USFWS 2018). The Action Area is a part of the Santa Fe Swamp Conservation Area and is also adjacent to the Camp Blanding Joint Training Center and

the Triangle Preserve where eastern indigo snakes have been sighted and documented. These areas include upland and wetland habitats that are highly suited for eastern indigo snakes.

In an effort to maintain, improve or restore eastern indigo snake populations in strategic areas Conservation Focus Area (CFA) have been identified throughout the eastern indigo snake historic range. The Action Area is a part of the Suwannee Trail Ridge which has been identified as a CFA (USFWS 2018). The loss of habitat on the Trail Ridge Mine and loss of 710.59 acres of wetlands throughout the Action Area is not likely to result in a large loss of habitat for the species overall, as on-site reclamation and restoration is planned and the adjacent habitat is maintained and preserved. However, habitat destruction and fragmentation that will occur during mining operations and although these actions are temporary will further contribute to threats to the species through injury or death of individual snakes (Layne and Steiner 1996, Enge and Wood 2002, and Hyslop 2007).

4.2.3. Tables and Figures

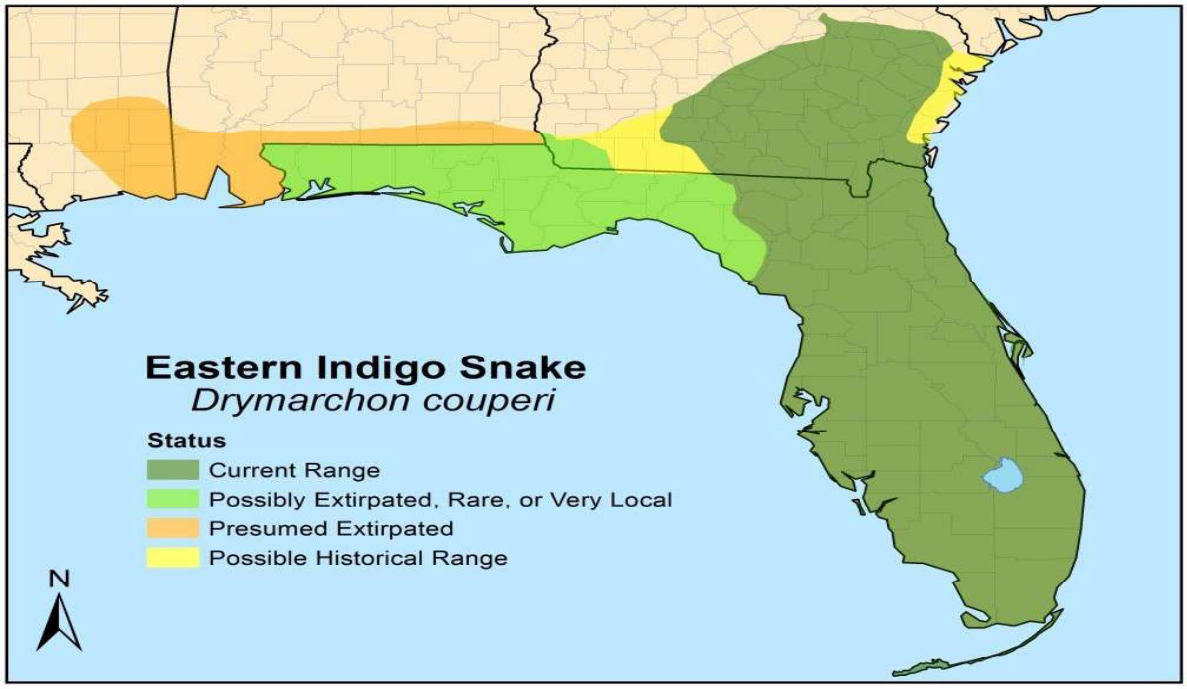

Figure 4-1. Historical and current range of the eastern indigo snake. Map by Javan Bauder

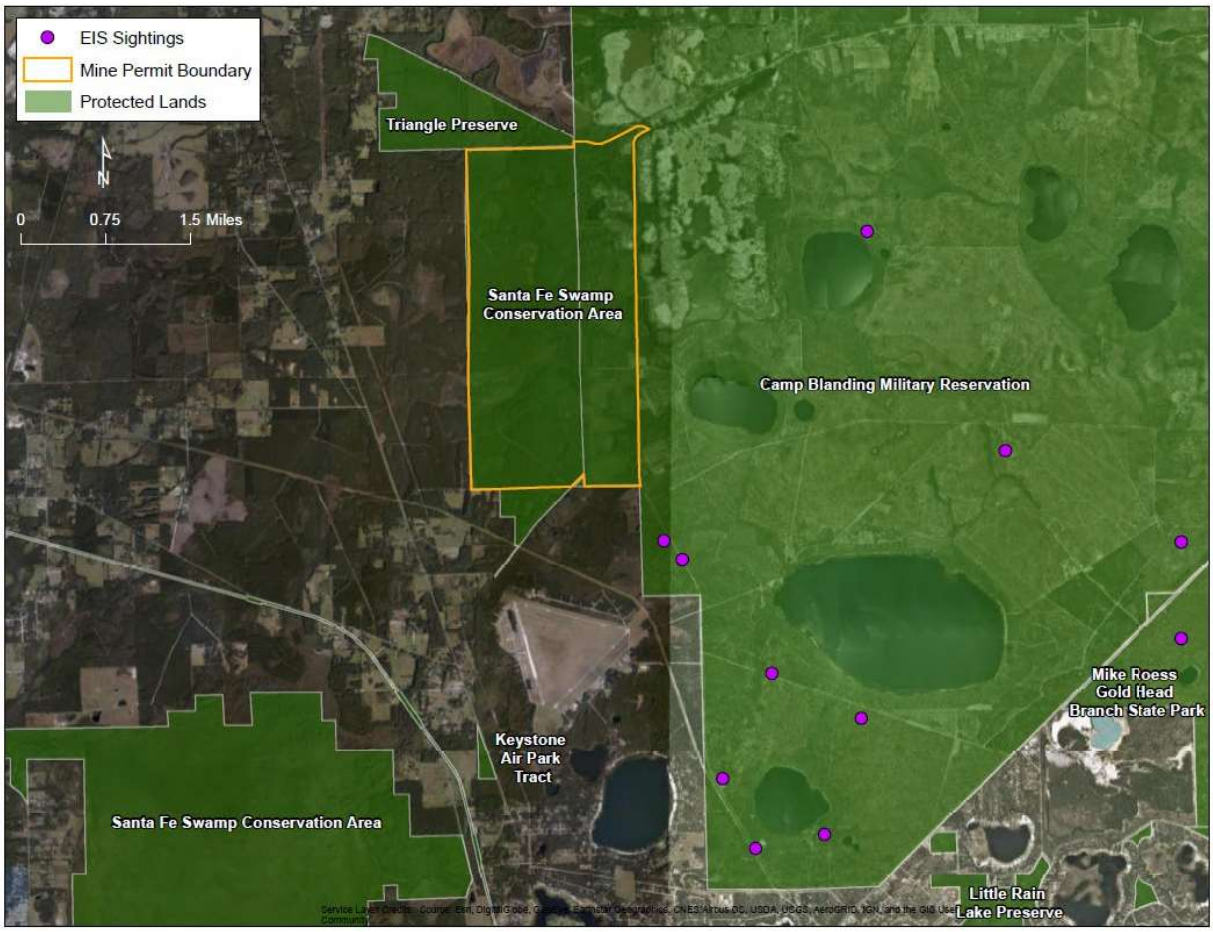

Figure 4-2 Protected land surrounding Trail Ridge Mine and eastern indigo snake sightings

4.3. Effects of the Action

In a BO for a listed species, the effects of the proposed action are all reasonably certain consequences to the species caused by the action, including the consequences of other activities caused by the action. Activities caused by the action would not occur but for the action. Consequences to species may occur later in time and may occur outside the action area.

We identified and described the activities included in the proposed Action in sections 2.1–2.3.

4.3.1. Effects of Timber Harvesting

Timber harvesting will result in a permanent change in areas of ideal eastern indigo habitat. Changes to this landscape will result in eastern indigo snakes being injured or killed through habitat modification. Harvesting will occur with large machinery to remove trees, vegetation and debris. This area will later be prepared for mining activities.

Because of the large home range of eastern indigos, the species is vulnerable to habitat loss, degradation, and habitat fragmentation (Lawler 1977, Moler 1985, Breininger *et al*. 2004, Breininger *et al*. 2011, 2012; Hyslop *et al*. 2012). The study by Moler (1992) estimates larger tracks (~2471 ac) of habitat are needed to provide conservation benefits and support the species (Enge *et al*. 2013). The proposed mining activities, will degrade and fragment the landscape and impact the Trail Ridge Area, further reducing the available habitat and causing harm due to long-term fecundity of the adjacent population of eastern indigo snakes being reduced.

During harvesting, eastern indigos that may be within the project footprint may also be harmed due to strikes from heavy machinery, entombment in underground refugia, burned or crushed in debris piles when incinerating debris, and/or crushed under vehicles during ingress/egress from the Action Area. The Service notes that the SPMs (Service 2013) will be implemented during construction of the project. The SPMs require: the education of contractors and equipment operators; posting of speed limit signs on all roadways during the project construction and operation; on-site signs explaining the penalties of intentionally running over indigo snakes; and that construction will cease if eastern indigo snakes are observed. Based on the implementation of these measures, we find that the potential for injuries and deaths of indigo snakes due to harvesting and site preparation activities will be reduced, but injuries and mortalities could occur.

4.3.2. Effects of Gopher Tortoise Relocation

Specific habitat requirements for eastern indigos include gopher tortoise burrows, mammal burrows, and other refugia (Hyslop et al. 2009). Gopher tortoises will be bucket trapped and burrows will be excavated to facilitate relocation of the tortoises in accordance with Florida Fish and Wildlife Conservation Commission regulations for gopher tortoises. After relocation, burrows will be collapsed and tortoises relocated. Eastern indigos are non-excavator species and rely on primary excavators such as the gopher tortoise to provide refugia. Therefore, destruction of gopher tortoise burrows will result in a loss of habitat. These refugia are important for overwintering and protection from desiccation in the summer (Hyslop et al. 2009, Speake et al. 1978, Smith 1987).

In Georgia, eastern indigos have shown site fidelity for specific gopher tortoise burrows, with many returning to one of at least four burrows previously used (Hyslop 2009). Some snakes also use the same travel corridors to move to overwintering sites, despite areas where the corridor has been disturbed by clear cutting. The study by Hyslop (2009) further states that abandoned burrows are important for female eastern indigos oviposition, likely due to the chance of egg damage from tortoises in active burrows.

While eastern indigos are not as closely tied to gopher tortoise burrows below the frost line, eastern indigos are known to use gopher tortoise burrows 62% more than other underground refugia, such as armadillo burrows and other small animal burrows (Layne and Steiner 1996). Considering that gopher tortoise burrows are important for the survival and fecundity of eastern

indigo snakes, it is reasonable to determine that the backfill of gopher tortoise burrows within the project site will result in take of eastern indigos which may be utilizing gopher tortoise burrows within the Action Area.

Gopher tortoise relocations will follow the Florida Fish and Wildlife Conservation Commission (FWC) guidelines for surveys, burrow excavation, and relocation. Burrow excavation involves the use of heavy machinery, such as a backhoe, to dig out burrows and remove gopher tortoises for relocation. After completion of excavation, the burrows are backfilled and the soil is compressed. During excavation, harm to eastern indigo snakes in the area is reasonably certain to occur by direct strikes from machinery, entombment, or crushing from machinery. Because it is difficult to if individual eastern indigo snakes are within the area to be excavated, any eastern indigo snakes within the area being excavated will presumably be injured or mortality may occur.

If eastern indigos are not directly impacted through harm or harassment during burrow excavation, snakes may be impacted later. Eastern indigos may return to their overwintering site and are forced to find different refugia in a short time during cold conditions. This may result in indigos being unable to find suitable refugia within sufficient time to prevent desiccation or freezing conditions. Should eastern indigos be forced to find new winter refugia, this would result in a significant change to natural breeding and sheltering behavior.

4.3.3. Effects of Mining

Mining involves the use of multiple types of machinery which will move as mining progresses throughout the Action Area. Heavy minerals and quartz sand with be excavated, slurried and then pumped to various areas on-site. The Action Area will involve the disturbance of soils by equipment compacting and moving soils. The movement of machinery and ground disturbing activities will result in mortality, injury, or harassment of eastern indigo snakes present within the Action Area at the time of mining. Additionally, mining will result in the permanent modification of occupied eastern indigo snake habitat.

Habitat loss and fragmentation is anticipated due to the mining activities. Staging equipment, clearing, and mining within the Action Area will produce moderate sound and vibration levels. Reptiles are sensitive to vibrations and any eastern indigo snake within the Action Area may be disrupted from normal breeding, feeding, and sheltering behaviors, and may harass individuals present within the Action Area where vibrations may interrupt normal behaviors. The Service notes that the SPMs (Service 2013) will be implemented during the mining of the project.

The loss of occupied eastern indigo snake habitat due to mining will be offset by the restoration of pre-mining conditions that will integrate the creation of naturally occurring communities within the Action Area.

4.4. Cumulative Effects

In its request for consultation, the Corps did not describe, and the Service is not aware of, any future non-Federal activities that are reasonably certain to occur within the Action Area. Therefore, cumulative effects are not relevant to formulating our opinion for the Action.

4.5. Conclusion

In this section, we summarize and interpret the findings of the previous sections (status, baseline, effects, and cumulative effects) relative to the purpose of the BO for the eastern indigo snake, which is to determine whether the Action is likely to jeopardize its continued existence.

Status

The population of eastern indigo snakes within the Action Area is considered as "high" conservation significance because the Action Area is one of four areas throughout Florida and Georgia that has been designated as a CFA, in an effort to maintain, improve or restore eastern indigo snake populations. The Action Area is a part of the Suwannee Trail Ridge CFA as described in Section 4.2.2. Because of the elusive nature of the species, lack of data regarding density in various habitat types, and lack of survey data range wide, the Service is not certain of the population status range wide. We reviewed the project's biological assessment, the reclamation and mitigation plans and considered the fact that the project is adjacent to other preserves and conservation areas that provide suitable habitat for the eastern indigo snake. Considering, that the temporary loss of habitat is less than a fraction of one percent of suitable habitat in the area, it is the Service's opinion that this temporary loss of habitat is not likely to appreciably reduce the survival and recovery of the species in the wild.

Baseline

The existing land use for the Action Area is dominated by silviculture practices (Coniferous Plantations – 441). Understory and ground cover species associated with the pine plantations vary according to the past and current management practices, and the existing topography, soils, and hydrology of the area. The Action Area is adjacent to the Camp Blanding Joint Training Center to the south and east and borders the Triangle Preserve to the north of the Action Area. There have been several documented eastern indigo snake sightings on the Camp Blanding Training Center property. The closest sighting documented is less than a mile away from the southern boundary of the Action Area. Other sightings are scattered throughout the Camp Blanding Training Center (Figure 4-2). Although, there are no documented eastern indigo snake sighting on the Triangle Preserve property, this area provides valuable suitable habitat for the eastern indigo snake.

During numerous site visits conducted between November 2015 and October 2019, pedestrian surveys were completed by the Applicants consultants (Kleinfelder). Biologists looked for the presence of or potential utilization by the eastern indigo snake within the project area. No eastern indigo snakes were observed during the field reviews. Several small upland areas were observed to have and may provide suitable winter habitat for the eastern indigo snake.

However, a majority of the upland areas within the project area consisted of densely vegetated silviculture areas which have been fire suppressed for multiple decades. Observations of off-site habitats consisted of similar community types as those found within the Action Area.

Opinion

"*Jeopardize the continued existence*" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR §402.02). After reviewing the current status of the species, the environmental baseline for the Action Area, the effects of the Action and the cumulative effects, it is the Service's biological opinion that the Action is not likely to jeopardize the continued existence of the eastern indigo snake**.**

The Applicant has proposed to mitigate to the greatest extent practicable. Restoration of the pre-mining conditions will integrate the creation of naturally occurring communities as outlined in the reclamation and mitigation plans. The proposed project has been designed to ensure no adverse impacts will occur to downstream waters including turbidity, sedimentation, and erosional impacts. Permittee-responsible mitigation in compliance with the federal regulations for wetland impacts will restore and improve the existing ecological value found within the Action Area and provide benefits to the remaining off-site natural areas. Reclamation of these areas will enhance wildlife utilization within the Action Area and increase habitat connectivity for wildlife movement.

5. INCIDENTAL TAKE STATEMENT

ESA §9(a)(1) and regulations issued under §4(d) prohibit the take of endangered and threatened fish and wildlife species without special exemption. The term "take" in the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (ESA §3(19)). In regulations, the Service further defines:

- "harm" as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering;" (50 CFR §17.3) and
- "incidental take" as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant" (50 CFR §402.02).

Under the terms of ESA §7(b)(4) and §7(o)(2), taking that is incidental to a Federal agency action that would not violate ESA §7(a)(2) is not considered prohibited, provided that such taking is in compliance with the terms and conditions of an incidental take statement (ITS).

For the exemption in ESA §7(o)(2) to apply to the Action considered in this BO, the Corps must undertake the non-discretionary measures described in this ITS, and these measures must become binding conditions of any permit, contract, or grant issued for implementing the Action. The Corps has a continuing duty to regulate the activity covered by this ITS. The protective coverage of §7(o)(2) may lapse if the Corps fails to:

- assume and implement the terms and conditions; or
- require a permittee, contractor, or grantee to adhere to the terms and conditions of the ITS through enforceable terms that are added to the permit, contract, or grant document.

In order to monitor the impact of incidental take, the Corps must report the progress of the Action and its impact on the species to the Service as specified in this ITS.

5.1. Amount or Extent of Take

This section specifies the amount or extent of take of listed wildlife species that the Action is reasonably certain to cause, which we estimated in the "Effects of the Action" section(s) of this BO.

Surrogate Measures for Monitoring

The Service anticipates that the Action is reasonably certain to cause incidental take of individual eastern indigo snakes consistent with the definition of harm resulting from timber harvesting and mining (see sections 4.3 Effects of the Action).

Acres of habitat used as a surrogate in this BO maintain a causal link between take of individual eastern indigo snakes and loss of habitat. The loss of gopher tortoise burrows and high quality habitat as indicated by the Maxent Model are likely to result in the loss of individual eastern indigo snakes (Section 4.2.1 Action Area Numbers, Reproduction, and Distribution).

The Service will utilize acres of suitable habitat as a surrogate for take. Within the project footprint, approximately 633 acres of suitable habitat will be impacted due to the Action, which could result in incidental take of eastern indigo snakes. There have been no observations of eastern indigo sightings on the Action Area. However, there are known eastern indigo sightings and occurrences on the properties adjacent to the Action Area. For this reason, the best estimate is that one eastern indigo snake, with the possibility of one clutch of eggs may occur within in the Action Area. Utilizing acres of suitable habitat, as indicated by the Maxent Model, as a surrogate for take sets a clear standard for monitoring incidental take due to the direct correlation between reduction and fragmentation of habitat and take of individual eastern indigo snakes. Should the amount of habitat taken be exceeded, this would represent a taking that is not anticipated in this BO. Such take would represent new information requiring review of the reasonable and prudent measures provided. The Federal agency must immediately reinitiate consultation with the Service.

We have identified surrogate measures in our analyses of effects that satisfy these criteria for monitoring take of the species named above during Action implementation. Table 5-1 lists the species, life stage, surrogate measure, and the section of the BO that explains the causal link

between the surrogate and the anticipated taking. We describe procedures for this monitoring in section 5.4.

Table 5-1. Surrogate measures for monitoring take of listed wildlife species caused by the Action, based on the cited BO effects analyses.

Common Name	Life Stage	Surrogate (units)	Quantity	BO Effects Analysis Section
Eastern Indigo Snake	1 Adult 1 Clutch of Eggs	Habitat Acres	663	Section 4.3

5.2. Reasonable and Prudent Measures

The Service believes the reasonable and prudent measures (RPMs) we describe in this section for the species named in Table 5-1 are necessary or appropriate to minimize the impact, *i.e.,* the amount or extent, of incidental take caused by the Action.

RPM 1: Standard Protection Measures. Protection measures are designed to reduce the chance of harm of eastern indigo snakes found within the Action Area.

RPM 2: Timber Harvesting. Timber will be harvested in a manner consistent with silviculture best management practices (BMPs).

RPM 3: Debris Pile Destruction Conditions. Removal or burning of debris piles must be performed with care to reduce the likelihood of incidental take of eastern indigo snakes.

RPM 4: Mining. Mining operations were designed to reduce the chances of harm of eastern indigo snakes found within the action area.

5.3. Terms and Conditions

In order for the exemption from the take prohibitions of §9(a)(1) and of regulations issued under §4(d) of the ESA to apply to the Action, the Corps must comply with the terms and conditions (T&Cs) of this statement, provided below, which carry out the RPMs described in the previous section. These T&Cs are mandatory. As necessary and appropriate to fulfill this responsibility, the Corps must require the permittee (Chemours Company FC LLC), the contractor, or grantee to implement these T&Cs through enforceable terms that the Corps includes in the permit, contract, or grant document.

T&C 1: Standard Protection Measures (RPM 1). The Applicant shall incorporate the Standard Protection Measures for the Eastern Indigo Snake (2013), found on the Service's website at https://www.fws.gov/northflorida/indigosnakes/20130812_EIS%20Standard%20Protection%20Measures_final.pdf.

T&C 2: Timber Harvesting (RPM 2). Applicant must follow all silviculture BPMs and applicable regulations by the timber owner. Upon completion of timber harvesting, silt fencing and other applicable erosion control measures will be installed around the proposed mine cells.

T&C 3: Debris Pile Destruction Conditions (RPM 3). The Applicant shall remove, dispose of, or burn any debris or limb piles left during timber harvesting as soon as possible. For debris piles that are burned on site, fire ignition shall be set on one side of the pile and be allowed to burn slowly to allow any eastern indigo snakes within the debris piles to flee.

T&C 4: Mining (RPM 4).

1. Pre-construction surveys and relocation of all gopher tortoises within the project footprint in accordance with *FWC Gopher Tortoise Permitting Guidelines*.

2. The removal of tree stumps and brush will be conducted immediately prior to the advance of mining operations and completed in small blocks of 10 to 20 acres, limiting the amount of new land disturbed at any one time.

3. Designated mining access will minimize intrusion to areas outside of the Action Area.

4. Slow speed limits will be posted and enforced for all mining construction traffic.

5. Silt fences will be maintained around the project perimeter to discourage wildlife access into the Action Area.

6. Any eastern indigo snakes that are found injured within the Action Area shall be placed within a secure container with ample ventilation and notification shall be made to the Service and the Corps immediately. If the Service is unable to be reached, the Applicant shall notify the Florida Fish and Wildlife Conservation Commission Wildlife Alert Hotline at 1-888-404-3922, and follow up notification to the Service shall be made the next business day.

5.4. Monitoring and Reporting Requirements

In order to monitor the impacts of incidental take, the Corps must report the progress of the Action and its impact on the species to the Service as specified in the ITS (50 CFR §402.14(i)(3)). This section provides the specific instructions for such monitoring and reporting (M&R), including procedures for handling and disposing of any individuals of a species actually killed or injured. These M&R requirements are mandatory. We identify whether the Corps, the Applicant, or both are responsible.

As necessary and appropriate to fulfill this responsibility, the Corps must require any permittee, contractor, or grantee to accomplish the M&R through enforceable terms that the Corps includes in the permit, contract, or grant document. Such enforceable terms must include a requirement to

immediately notify the Corps and the Service if the amount or extent of incidental take specified in this ITS is exceeded during Action implementation.

M&R #1. Observations and Incidental Take**.** The Applicant shall report any eastern indigos, which are observed within the impacted area, or individuals that are incidentally taken as a result of the Action, within 24 hours. If an eastern indigo snake carcass is discovered, the specimen shall be placed on ice and kept in a secure location until contact has been with the Service North Florida Ecological Service Field Office. Reports should include photos of the snake, if possible, GPS location, date/time of observation, and any other relevant information.

6. CONSERVATION RECOMMENDATIONS

§7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by conducting conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary activities that an action agency may undertake to avoid or minimize the adverse effects of a proposed action, implement recovery plans, or develop information that is useful for the conservation of listed species. The Service is not proposing any conservation recommendations at this time.

7. REINITIATION NOTICE

Formal consultation for the Action considered in this BO is concluded. Reinitiating consultation is required if the Corps retains discretionary involvement or control over the Action (or is authorized by law) when:

a. the amount or extent of incidental take is exceeded;
b. new information reveals that the Action may affect listed species or designated critical habitat in a manner or to an extent not considered in this BO;
c. the Action is modified in a manner that causes effects to listed species or designated critical habitat not considered in this BO; or
d. a new species is listed or critical habitat designated that the Action may affect.

In instances where the amount or extent of incidental take is exceeded, the Corps is required to immediately request a reinitiation of formal consultation.

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ATTACHMENTS