



NUREG-1437  
Supplement 53

United States Nuclear Regulatory Commission Official Hearing Exhibit		
In the Matter of:		DTE ELECTRIC CO. (Fermi Nuclear Power Plant, Unit 3) Commission Mandatory Hearing
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# Generic Environmental Impact Statement for License Renewal of Nuclear Plants

## Supplement 53

## Regarding Sequoyah Nuclear Plant, Units 1 and 2

Draft Report for Comment

## Affected Environment

### 1 *Crustacean*

2 Chickamauga crayfish are threatened in the State of Tennessee but not Federally listed. They  
3 have a very small range and are found in the South Chickamauga Creek basin in Hamilton  
4 County and in Walker and Whitfield Counties in Georgia. They prefer moderately flowing  
5 shallow streams; are usually found under rocks or in leaf litter debris; and are omnivorous  
6 scavengers that eat aquatic vegetation, small fish, snails, and aquatic insects (Georgia Museum  
7 of Natural History 2008). South Chickamauga Creek enters the Tennessee River downstream  
8 of Chickamauga Dam. For this reason, Chickamauga crayfish would not be affected by  
9 operation of SQN and are not discussed further in this SEIS.

### 10 *Fish*

11 The State deems the highfin carpsucker, the smallest carpsucker in Tennessee, as “in need of  
12 management” for Hamilton County. They live in areas of gravel substrate in relatively clear  
13 medium-to-large rivers. Highfin carpsuckers are more susceptible to impoundment and siltation  
14 than other carpsuckers and, in Tennessee, are known to persist in the Nolichucky, French  
15 Broad, Clinch, Hiwassee, Sequatchie, and Duck River systems (Etnier and Starnes 1993). In  
16 2004, TVA found a single individual approximately 5 mi (8 km) upstream from the intake of the  
17 SQN plant during an electrofishing survey (TVA 2013d-f).

### 18 *Amphibians*

19 Tennessee cave salamanders are listed as threatened. They are found only in the southern  
20 Appalachian Mountains of Tennessee, Georgia, and Alabama. They inhabit limestone caves  
21 with subterranean waters (SREL 2013). No caves are present on the SQN site. For this  
22 reason, the Tennessee cave salamander would not be affected by operation of SQN and is not  
23 discussed further in this SEIS.

### 24 Reintroductions

25 The State of Tennessee and various partner groups are working to reintroduce the lake  
26 sturgeon into the upper Tennessee River watershed (TWRA 2013f). Since 2000, the TWRA  
27 has stocked over 125,000 lake sturgeon (Tennessee Aquarium 2013) into rivers including the  
28 French Broad, Holston, and Tennessee rivers downstream of Douglas and Cherokee  
29 Reservoirs (TWRA 2013f). In addition, the Tennessee Aquarium introduced approximately  
30 100 lake sturgeon into Nickajack Reservoir between 2010 and 2011 (TWRA 2013a). The  
31 sampling studies conducted by TVA between 1999 and 2011 identified a single lake sturgeon,  
32 collected in 2003 by gillnet, from the sampling site located upstream of the SQN intake at  
33 Tennessee RM 490.5 (TVA 2012c).

34 Lake sturgeon are considered endangered by the State of Tennessee, but are not Federally  
35 listed by the Fish and Wildlife Service. Lake sturgeon are large fish that can reach 4 m (13 ft)  
36 and 310 lb (141 kg). They are slow to mature; first spawning occurs between 14 and 25 years  
37 for females and 12 and 20 years for males. Lake sturgeon are considered to be the longest  
38 lived North American freshwater fish, with a maximum age estimate of 154 years, although  
39 populations in Tennessee would be expected to have a smaller size and shorter life span than  
40 those farther north (Etnier and Starnes 1993).

### 41 **3.8 Special Status Species and Habitats**

42 This section addresses species and habitats that are Federally protected under the ESA and the  
43 Magnuson–Stevens Fishery Conservation and Management Act, as amended  
44 (16 U.S.C. §1801–1884, herein referred to as Magnuson–Stevens Act). The ESA, along with  
45 the Magnuson–Stevens Act, put requirements on Federal agencies such as the NRC. The

1 terrestrial and aquatic resource sections of this SEIS (Sections 3.6 and 3.7, respectively)  
2 discuss other species and habitats protected by other Federal acts and the State of Tennessee  
3 that do not put requirements on the NRC.

#### 4 **3.8.1 Species and Habitats Protected Under the Endangered Species Act**

5 The FWS and the National Marine Fisheries Service (NMFS) jointly administer the ESA. The  
6 FWS manages the protection of, and recovery effort for, listed terrestrial and freshwater  
7 species, and NMFS manages the protection of and recovery effort for listed marine and  
8 anadromous species. This section describes the action area and considers those species that  
9 could occur in the action area under both FWS's and NMFS's jurisdictions. Section 4.8  
10 assesses potential impacts to Federally listed species and habitats that could result from the  
11 proposed action and alternatives, and Appendix C describes the NRC's consultation with FWS  
12 pursuant to section 7 of the ESA.

##### 13 *3.8.1.1 Action Area*

14 The implementing regulations for section 7(a)(2) of the ESA define "action area" as all areas  
15 affected directly or indirectly by the Federal action and not merely the immediate area involved  
16 in the action (50 CFR 402.02). The action area effectively bounds the analysis of  
17 ESA-protected species and habitats because only species that occur within the action area may  
18 be affected by the Federal action.

19 For the purposes of the ESA analysis in this SEIS, the NRC staff considers the action area to be  
20 the SQN site (described in Sections 3.1 and 3.6) and the Chickamauga Reservoir (described in  
21 Section 3.7) from the point of river water intake at the site (at Tennessee River Mile (TRM)  
22 485.1) and extending 4.1 mi (6.6 km) downstream to TRM 481.0. This area of the reservoir  
23 corresponds to the area over which the thermal plume extends during the summer  
24 measurement period (as discussed in Section 4.7). The NRC staff expects all direct and  
25 indirect effects of the proposed action to be contained within these areas.

26 The NRC staff recognizes that while the action area is stationary, Federally listed species can  
27 move in and out of the action area. For instance, a migratory fish species could occur in the  
28 action area seasonally as it travels up and down the river past SQN. Similarly, a flowering plant  
29 known to occur near, but outside, of the action area could appear within the action area over  
30 time if its seeds are carried into the action area by wind, water, or animals. Thus, in its analysis,  
31 the NRC staff considers not only those species known to occur directly within the action area,  
32 but those species that occur near the action area. The staff then considers whether the life  
33 history of each species makes the species likely to move into the action area where it could be  
34 affected by the proposed SQN license renewal.

35 Within the action area, Federally listed terrestrial species could experience impacts such as  
36 habitat disturbance associated with refurbishment or other ground-disturbing activities, cooling  
37 tower drift, collisions with cooling towers and transmission lines, exposure to radionuclides, and  
38 other direct and indirect impacts associated with station, cooling system, and in-scope  
39 transmission line operation and maintenance (NRC 2013d). The proposed action has the  
40 potential to affect Federally listed aquatic species in several ways: impingement or entrainment  
41 of individuals into the cooling system; alteration of the riverine environment through water level  
42 reductions, changes in dissolved oxygen, gas supersaturation, eutrophication, and thermal  
43 discharges from cooling system operation; habitat loss or alteration from dredging; and  
44 exposure to radionuclides (NRC 2013d).

## Affected Environment

### 1 3.8.1.2 *Species and Habitats Under the FWS's Jurisdiction*

2 Table 3–19 identifies the species under FWS's jurisdiction that may occur within Hamilton  
3 County. Hamilton County includes approximately 369,000 ac (149,000 ha) of varying land uses  
4 and habitat types. Thus, a Federally listed species that occurs within Hamilton County does not  
5 necessarily occur within the action area. The NRC staff uses this geographical range as a  
6 starting point for its analysis because Federally listed species distribution and critical habitat  
7 information is readily available at the county level. Additionally, the action area is a small area  
8 of land near the center of and wholly contained within the geographical boundaries of the  
9 county. Following the table, descriptions of each species include a determination of whether  
10 each species occurs in the action area based on the species' habitat requirements, life history,  
11 and available occurrence information.

12 The NRC compiled the list of species in Table 3–19 from the FWS's Endangered Species  
13 Program online database (FWS 2014); correspondence between the NRC and the FWS  
14 (FWS 2013b, 2013c; NRC 2013g); information from TVA's ER (TVA 2013n) and Natural  
15 Heritage Database (TVA 2013j); and available scientific studies, surveys, and literature.

16 The NRC staff did not identify any candidate species or proposed or designated critical habitats  
17 within the action area.

1

**Table 3–19. Federally Listed Species in Hamilton County, TN**

Species <sup>(a)</sup>	Common Name	Federal Status	Habitat
<b>Mammals</b>			
<i>Myotis grisescens</i>	gray bat	Endangered	limestone karst areas within the southeastern United States
<i>Myotis septentrionalis</i>	northern long-eared bat	Protected	Hardwood forests; caves and mines with cool, moist air
<i>Myotis sodalis</i>	Indiana bat	Endangered	Hardwood forests and hardwood-pine forests; old-growth forest; agricultural lands, and old fields
<b>Fish</b>			
<i>Percuba tanasi</i>	snail darter	Threatened	Sand and gravel shoals of moderately flowing, vegetated, large creeks
<b>Freshwater Mussels</b>			
<i>Dromus dromas</i>	dromedary pearlymussel	Endangered	Medium to large rivers with riffles and shoals with relatively firm rubble, gravel, and stable substrates
<i>Lampsilis abrupta</i>	pink mucket	Endangered	Generally a large river species, preferring sand-gravel or rocky substrates with moderate to strong currents
<i>Plethobasus cooperianus</i>	orangefoot pimpleback	Endangered	Large rivers in sand-gravel-cobble substrates in riffles and shoals in deep flowing water
<i>Pleurobema plenum</i>	rough pigtoe	Endangered	Medium to large rivers in sand, gravel, and cobble substrates of shoals
<b>Plants</b>			
<i>Isotria medeoloides</i>	small whorled pogonia	Threatened	Hardwood or conifer-hardwood forest floors near stream beds
<i>Scutellaria montana</i>	large-flowered skullcap	Threatened	Mid- to late-successional forests dominated by oak and pine trees
<i>Spiraea virginiana</i>	Virginia spiraea	Threatened	Floodplains, riverbanks, and other riparian habitat in the southern Appalachian Mountains

<sup>(a)</sup> The NRC preliminarily considered two additional species—the Cumberland monkeyface (*Quadrula intermedia*; Federally endangered) and the white fringeless orchid (*Platanthera integrilabia*; candidate for Federal listing)—in its early correspondence with FWS (NRC 2013g). However, the NRC staff determined that these species do not occur within Hamilton County, and thus, would not occur within the action area based on historical and known occurrence information and habitat requirements.

Sources: FWS 2013b, 2013c, 2014; NRC 2013g; TVA 2013j, 2013n

## Affected Environment

### 1 Gray Bat (*Myotis grisescens*)

2 The FWS listed the gray bat as endangered in 1976 (40 FR 17590). No critical habitat has been  
3 designated for this species. White nose syndrome, human disturbance, water impoundments,  
4 and other activities resulting in loss of habitat are factors that have contributed to this species'  
5 decline. Unless otherwise indicated, information on this species below is derived from the  
6 FWS's *Gray Bat Recovery Plan* (Brady et al. 1982).

7 The gray bat is the largest *Myotis* species with a wingspan of 40 to 46 mm (1.7 to 1.8 in.), and it  
8 is distinguishable from other bat species by its unicolor dorsal fur, which is dark gray after  
9 molting in July and August and chestnut brown to russet between moltings. The species mainly  
10 inhabits five states in the southeastern United States (Alabama, Arkansas, Kentucky, Missouri,  
11 and Tennessee) and is also found in small numbers as far north as Illinois and as far south as  
12 northwestern Florida. Distribution of the species has always been patchy, but fragmentation  
13 and isolation of populations has increased as the species has become more in danger of  
14 extinction.

15 Gray bats migrate seasonally between hibernating and maternity caves. Upon arrival at  
16 hibernating caves in September through early October, adults mate and enter hibernaculum.  
17 Adults emerge beginning in late March, at which time they migrate to summer habitat. Mortality  
18 is typically high during this time because fat reserves and food supplies are low. Summer  
19 colonies occupy traditional home ranges that include a maternal cave and several roost caves  
20 typically located along a river or reservoir. Hibernating females store sperm until spring, and  
21 give birth to one pup in late May or early June. Females raise young in maternity colonies.

22 Gray bats possess very specific microclimate requirements and are limited to limestone karst  
23 areas, typically within 1 km (0.6 mi) of rivers or reservoirs. Foraging territories may include  
24 lands farther from water. Brady et al. (1982) indicates that because of its habitat requirements,  
25 the species is restricted to fewer than five percent of available caves, and in 1982, 95 percent of  
26 the known population hibernated in only nine caves each winter. In 1982, the gray bat  
27 population was estimated to include 1,575,000 individuals, of which 300,000 individuals were  
28 located in Tennessee. Mitchell and Martin (2002) estimated the population to have risen to  
29 2.3 million bats by 2001.

30 In a final environmental statement for operation of Watts Bar 2 in Rhea County (located 31 mi  
31 [50 km] north of SQN), the NRC (2013b) found that gray bats are known to roost in two caves  
32 near the Watts Bar 2 site. The gray bat has also been documented within the Chickamauga  
33 and Chattanooga National Military Park according to a FWS (2012) press release announcing  
34 the discovery of white-nose syndrome in a park cave. The Military Park includes lands in  
35 Hamilton County, Tennessee, and Catoosa, Dade, and Walker Counties, Georgia. Three caves  
36 exist near the action area (within 6 mi (10 km) of the SQN site): Posey Cave, Havens Cave,  
37 and Harrison Bluff Cave (TVA 2013a). However, none of these caves are associated with  
38 occurrences of Federally listed species (TVA 2013a, 2013b). Additionally, during the NRC  
39 staff's environmental site audit, TVA provided NRC staff with records for review from its Natural  
40 Heritage Database, which included detailed occurrence information on Federally listed species,  
41 State-listed species, and other special status species throughout the TVA power service area.  
42 The NRC reviewed database records of species and habitat occurrences within a 6-mi (10-km)  
43 radius of the SQN site and found that TVA (2013b) has not identified the gray bat within this  
44 area.

45 Given the available information, the NRC staff concludes that the gray bat is unlikely to occur  
46 within the action area.

1 Northern Long-Eared Bat (*Myotis septentrionalis*)

2 The FWS published a proposed rule to list the northern long-eared bat as endangered  
3 throughout its range on December 2, 2013 (78 FR 72058). The FWS did not propose to  
4 designate critical habitat for the species because it found that such habitat is “not determinable  
5 at this time” (78 FR 61046). White nose syndrome, wind energy development, and loss of  
6 habitat specifically linked to surface coal mining in prime summer habitat are factors that have  
7 contributed to this species’ decline. Unless otherwise indicated, information on this species is  
8 derived from the FWS’s *Federal Register* notice for the proposed rule to list the species  
9 (78 FR 61046).

10 The northern long-eared bat is a medium-sized bat that is distinguished from other *Myotis*  
11 species by its long ears, which average 0.7 in. (17 mm) in length. This bat inhabits 39 states in  
12 the eastern and north central United States and all Canadian provinces west to the southern  
13 Yukon Territory and eastern British Columbia. Populations tend to be patchily distributed and  
14 are typically composed of small numbers. More than 780 winter hibernacula have been  
15 recorded in the United States (11 in Tennessee), most of which contain only a few (1 to 3)  
16 individuals. The FWS recognizes four United States populations, and northern long-eared bats  
17 inhabiting Tennessee are considered part of the Southern population. The northern long-eared  
18 bat is less common in the southern portion of its range than in the northern portion of the range.  
19 Thompson (2006) considers the species common within Tennessee, and in 2010, individuals  
20 were caught in summer mist-net surveys as well as observed in 11 caves during Tennessee  
21 hibernacula censuses. The proximity of these occurrences to the SQN site is unknown because  
22 survey locations are not provided in the proposed rule or otherwise published.

23 In summer, northern long-eared bats roost alone or in small colonies under the bark of live or  
24 dead trees; in caves or mines; or in man-made structures, such as barns, sheds, and other  
25 buildings. The species opportunistically roosts in a variety of trees, including several species of  
26 oaks, maples, beech, and pine. Northern long-eared bats forage both in-flight and on the  
27 ground and eat a variety of moths, flies, leafhoppers, caddisflies, and beetles. The species  
28 breeds from late July to early October, after which time it will migrate to winter hibernacula.  
29 Northern long-eared bats are short-distance migrators and will travel 35 to 55 mi (56 to 89 km)  
30 from summer roosts to winter hibernacula. Hibernating females store sperm until spring, and  
31 give birth to one pup approximately 60 days after fertilization. Females raise young in maternity  
32 colonies of up to 30 individuals.

33 The action area does not contain suitable habitat for hibernation. As indicated in the description  
34 of the gray bat, three caves exist near the action area, but none of the caves are associated  
35 with occurrences of Federally listed species (TVA 2013a, 2013b). For roosting and foraging,  
36 over half of the action area is developed or composed of unsuitable habitat types. The  
37 remainder of the action area includes approximately 278 ac (113 ha) of suitable habitat types:  
38 150 ac (60 ha) of forest habitat of various types; 120 ac (50 ha) of grasslands or agricultural  
39 lands; and 8 ac (3 ha) of wooded wetlands (TVA 2013a). However, none of the available FWS  
40 records indicate occurrences of hibernacula, maternity colonies, or individual northern long-  
41 eared bats in the action area or in the larger geographical area of Hamilton County.  
42 Additionally, during the NRC staff’s environmental site audit, TVA provided NRC staff with  
43 records for review from its Natural Heritage Database, which included detailed occurrence  
44 information on Federally listed species, State-listed and other special status species throughout  
45 the TVA power service area. The NRC reviewed database records of species and habitat  
46 occurrences within a 6-mi (10-km) radius of the SQN site and found that TVA (2013b) has not  
47 identified northern long-eared bat hibernacula, maternity colonies, or individuals within this area.

## Affected Environment

1 Given the available information, the NRC staff concludes that the northern long-eared bat is  
2 unlikely to occur within the action area.

### 3 Indiana Bat (*Myotis sodalis*)

4 The FWS listed the Indiana bat as endangered in 1967 (32 FR 4001). The FWS designated  
5 critical habitat for the Indiana bat in 1976 (41 FR 41914) to include 11 caves and 2 mines in  
6 six states including a cave in Blount County, Tennessee. No critical habitat for this species  
7 occurs in Hamilton County.

8 The Indiana bat is an insectivorous, migratory bat that inhabits the central portion of the eastern  
9 United States and hibernates colonially in caves and mines. The decline of Indiana bats is  
10 attributed to urban expansion, habitat loss and degradation, human-caused disturbance of  
11 caves or mines, insecticide poisoning, and white nose syndrome (FWS 2007, 2011).

12 During summer months, reproductive female bats tend to roost in colonies under slabs of  
13 peeling tree bark or cracks within trees in forest fragments, often near agricultural areas  
14 (FWS 2007). Colonies may also inhabit closed-canopy, bottomland deciduous forest; riparian  
15 habitats; wooded wetlands and floodplains; and upland communities (FWS 2007). Maternity  
16 colonies typically consist of 60 to 80 adult females (Whitaker and Brack 2002). Colonies occupy  
17 multiple trees for roosting and rearing young (Watrous et al. 2006) and, once established,  
18 usually return to the same areas each year (FWS 2007). Nonreproductive females and males  
19 do not roost in colonies during the summer; they may remain near the hibernacula or migrate to  
20 summer habitat (FWS 2007). High-quality summer habitat includes mature forest stands  
21 containing open subcanopies, multiple moderate- to high-quality snags, and trees with  
22 exfoliating bark (Farmer et al. 2002). In summer, bats forage for insects along forest edges,  
23 riparian areas, and in semiopen forested habitats. In the winter, Indiana bats rely on caves for  
24 hibernation. The species prefers hibernacula in areas with karst (limestone, dolomite, and  
25 gypsum) and may also use other cave-like locations, such as mines.

26 The FWS's *Indiana Bat Recovery Plan* (FWS 2007) indicates that Indiana bats are distributed  
27 across 21 Tennessee counties. Thirty-four winter hibernacula (21 extant, 7 of uncertain status,  
28 and 6 historic) are located throughout these counties. Three extant maternity colonies occur in  
29 Blount and Monroe Counties. Additionally, adult males and/or nonreproductive females have  
30 been captured during summer surveys within 9 of the 21 counties. In 2007, the FWS estimated  
31 that Tennessee's total population of Indiana bats was 8,906 individuals (FWS 2009). According  
32 to more recent estimates based on winter surveys conducted in January and February of 2013,  
33 the FWS (2013d) estimate that the Tennessee population of Indiana bats is currently  
34 15,537 individuals.

35 The action area does not contain suitable habitat for hibernation. As indicated in the description  
36 of the gray bat, three caves exist near the action area, but none of the caves are associated  
37 with occurrences of Federally listed species (TVA 2013j, 2013n). For roosting and foraging,  
38 over half of the action area is developed or composed of unsuitable habitat types. The  
39 remainder of the action area includes approximately 278 ac (113 ha) of suitable habitat types:  
40 150 ac (60 ha) of forest habitat of various types; 120 ac (50 ha) of grasslands or agricultural  
41 lands; and 8 ac (3 ha) of wooded wetlands (TVA 2013n). However, none of the available FWS  
42 records indicate occurrences of hibernacula, maternity colonies, or individual Indiana bats in the  
43 action area or in the larger geographical area of Hamilton County. Additionally, during the NRC  
44 staff's environmental site audit, TVA provided NRC staff with records for review from its Natural  
45 Heritage Database, which included detailed occurrence information on Federally listed species  
46 throughout the TVA power service area. The NRC reviewed database records of species and  
47 habitat occurrences within a 6-mi (10-km) radius of the SQN site and found that TVA (2013j)  
48 has not identified Indiana bat hibernacula, maternity colonies, or individuals within this area.

1 Given the available information, the NRC staff concludes that the Indiana bat is unlikely to occur  
2 within the action area.

3 Snail Darter (*Percina tanasi*)

4 The FWS listed the snail darter as endangered in 1975 (40 FR 47505) and reclassified the  
5 species as threatened in 1984 after additional populations were identified in several  
6 Tennessee River tributaries and reservoirs (FWS 2013e). The FWS designated critical habitat  
7 for the species in the Little Tennessee River at the time of listing. However, creation of  
8 Tellico Dam destroyed the darter's entire critical habitat area, and the FWS rescinded the critical  
9 habitat designation upon reclassifying the species as threatened in 1984 (FWS undated d).

10 Snail darters inhabit larger creeks where they frequent sand and gravel shoal areas in low  
11 turbidity water. They are also found in deeper portions of rivers and reservoirs where current is  
12 present (Etnier and Starnes 1993). The FWS believes the snail darter originally inhabited the  
13 main stem of the Tennessee River and possibly ranged from the Holston, French Broad,  
14 Lower Clinch, and Hiwassee rivers downstream within the Tennessee drainage to northern  
15 Alabama (FWS undated d). However, impoundments have fragmented much of the species'  
16 range (Etnier and Starnes 1993). The FWS (2013e) has records of the snail darter occurring in  
17 Chickamauga Reservoir in Hamilton, Meigs, and Rhea Counties in 1976 (before the  
18 construction of SQN). TVA has not collected the species during its stream samplings of  
19 tributaries to the Tennessee River within Chickamauga Reservoir in the available data years  
20 (1995–2009) (Simmons 2010b). The NRC staff's review of records from the TVA (2013j)  
21 Natural Heritage Database also did not identify information that would suggest the species  
22 occurs in vicinity of the plant. Furthermore, the snail darters' habitat requirements make it  
23 unlikely to occur in the portion of Chickamauga Reservoir within the action area.

24 Given the available information, the NRC staff concludes that the snail darter is unlikely to occur  
25 within the action area.

26 Dromedary Pearlymussel (*Dromus dromas*)

27 The FWS listed the dromedary pearlymussel as endangered in 1976 (41 FR 24062). The FWS  
28 has not designated critical habitat for this species.

29 The dromedary pearlymussel is a medium-sized freshwater mussel with a yellowish green shell  
30 that has two sets of broken green rays. Juveniles and adults inhabit riffles on sand and gravel  
31 substrates with stable rubble within small to medium streams that have low turbidity and high to  
32 moderate gradients. Individuals have also been observed in slower waters and to depths of  
33 5.5 m (18 ft). The species has as many as 11 glochidial (larval) hosts. The fantail darter  
34 (*Etheostoma flabellare*) is a known host, and laboratory studies indicate that the following  
35 species may also be hosts: banded darter (*E. zonale*), tangerine darter (*Percina aurantiaca*),  
36 logperch (*P. caprodes*), gilt darter (*P. evides*), black sculpin (*Cottus baileyi*), greenside darter  
37 (*E. blennioides*), snubnose darter (*E. simotereum*), blotchside logperch (*P. burtoni*), channel  
38 darter (*P. copelandi*), and Roanoke darter (*P. roanoka*) (FWS undated a).

39 Dromedary pearlymussels, which were historically widespread in the Cumberland and  
40 Tennessee River systems, have been eliminated from the majority of the species' historic  
41 riverine habitat because of impoundments. Only three reproducing populations are thought to  
42 exist: one in the upper Clinch River, Tennessee; one in the Powell River, Tennessee; and one  
43 in Virginia above Norris Reservoir (NatureServe 2013a).

44 TVA's (2013j) Natural Heritage Database records indicate that one dromedary pearlymussel  
45 individual was identified near the mouth of Soddy Creek (approximately 2.4 mi (4 km) upstream  
46 of the action area) in a 1918 publication by A.E. Ortmann. The most recent observation of a

## Environmental Consequences and Mitigating Actions

1 required to comply with the State's NPDES permitting. If the site selected is a greenfield site, a  
2 new intake and discharge system would be required. If it is located at an existing nuclear site,  
3 such as the Bellefonte site in Alabama, the available infrastructure could be used in its current  
4 configuration or be modified or expanded. Any dredging or in-water work at sites other than on  
5 the Tennessee River or its tributaries, which are controlled by TVA, could require permits from  
6 USACE pursuant to Section 404 of the CWA as amended (33 U.S.C. 1251 et seq.). Other  
7 USACE permits could be required, depending on the location of the site. Dredging activities  
8 would also require BMPs for in-water work to minimize sedimentation and erosion. Due to the  
9 short-term nature of the dredging activities, the effect on the aquatic habitats would likely be  
10 relatively localized and temporary (recovery time for aquatic communities typically takes several  
11 years).

12 The new nuclear units would use a closed-cycle cooling system so that water consumption  
13 would be less than for the SQN units, which operate in open-cycle and helper modes. As a  
14 result, the withdrawal of water and the thermal input from the discharge would be less than for  
15 the SQN units. This in turn would reduce entrainment, impingement, and thermal impacts to  
16 aquatic organisms. Without knowing the location of the new nuclear units and the aquatic  
17 species and their ecosystem interactions, NRC staff cannot assume that the overall impacts of  
18 operation of a new nuclear unit would be less than those for the license renewal term at the  
19 SQN site. Impacts on aquatic organisms from construction and operation of a new nuclear  
20 facility would be SMALL to MODERATE.

### 21 **4.7.6 Combination Alternative - Aquatic Resources**

22 The staff assumes that construction activities for the combination alternative would occur at  
23 another site, other than the SQN site, and could affect drainage areas or other onsite aquatic  
24 features. The NRC staff assumes TVA will implement BMPs to minimize erosion and  
25 sedimentation in nearby streams, ponds, or rivers. The State's NPDES permitting would require  
26 stormwater control measures. During operations, the land-based wind and solar alternative  
27 would not require withdrawal of water or consumptive water use. Thus, the impacts on aquatic  
28 ecology from the land-based wind and solar combination alternative would be SMALL.

### 29 **4.8 Special Status Species and Habitats**

30 This section describes the potential impacts of the proposed action (license renewal) and  
31 alternatives to the proposed action on special status species and habitats.

#### 32 **4.8.1 Proposed Action**

33 The special status species and habitats issue applicable to SQN during the license renewal  
34 term is listed in Table 4-13. Section 3.8 of this SEIS describes the special status species and  
35 habitats that have the potential to be affected by the proposed action. The discussion of  
36 species and habitats protected under the Endangered Species Act of 1973, as amended (ESA),  
37 includes a description of the action area as defined by the ESA section 7 regulations at  
38 50 CFR Part 402.02. The action area encompasses all areas that would be directly or indirectly  
39 affected by the proposed SQN license renewal.

40 Appendix C.1 contains information on the NRC staff's section 7 consultation with the U.S. Fish  
41 and Wildlife Service (FWS) for the proposed action. The NRC did not consult with the National  
42 Marine Fisheries Service (NMFS) as part of the SQN license renewal review because (as  
43 described in Section 3.8 and 4.8.1.1) no species or habitats under NMFS's jurisdiction occur  
44 within the action area.

1

**Table 4–13. Special Status Species and Habitats**

Issue	GEIS Section	Category
Threatened, endangered, and protected species, critical habitat, and essential fish habitat	4.6.1.3	2

Source: Table B–1 in Appendix B, Subpart A, to 10 CFR Part 51

2 *4.8.1.1 Species and Habitats Protected under the Endangered Species Act*

3 Species and Habitats under FWS Jurisdiction

4 Section 3.8 considers whether the 11 Federally listed and proposed species identified in  
 5 Table 4–14 occur in the action area based on each species’ habitat requirements, life history,  
 6 scientific surveys and studies, and other available information. In that section, the NRC staff  
 7 concludes that none of these species are likely to occur in the action area. The NRC staff also  
 8 concludes that no candidate species (CS) or proposed or designated critical habitat occur in the  
 9 action area. Thus, the NRC staff concludes that the proposed action would have no effect on  
 10 Federally listed species or habitats under FWS’s jurisdiction.

11

**Table 4–14. Effect Determinations for Federally Listed Species**

Species	Common Name	Federal Status <sup>(a)</sup>	Effect Determination
<b>Mammals</b>			
<i>Myotis grisescens</i>	gray bat	E	no effect
<i>Myotis septentrionalis</i>	northern long-eared bat	P	no effect
<i>Myotis sodalis</i>	Indiana bat	E	no effect
<b>Fish</b>			
<i>Percuba tanasi</i>	snail darter	T	no effect
<b>Freshwater Mussels</b>			
<i>Dromus dromas</i>	dromedary pearlymussel	E	no effect
<i>Lampsilis abrupta</i>	pink mucket	E	no effect
<i>Plethobasus cooperianus</i>	orange-foot pimpleback	E	no effect
<i>Pleurobema plenum</i>	rough pigtoe	E	no effect
<b>Plants</b>			
<i>Isotria medeoloides</i>	small whorled pogonia	T	no effect
<i>Scutellaria montana</i>	large-flowered skullcap	T	no effect
<i>Spiraea virginiana</i>	Virginia spiraea	T	no effect

<sup>(a)</sup> E = endangered; T = threatened; P = proposed

## Environmental Consequences and Mitigating Actions

1 If in the future a Federally listed species is observed on the SQN site, the NRC has measures in  
2 place to ensure that NRC staff would be appropriately notified. SQN's operating licenses,  
3 Appendix B, "Environmental Protection Plan," Section 4.1.1 (NRC 1980, 1981) require TVA to  
4 report to the NRC within 24 hours any occurrence of a species protected by the ESA on the  
5 SQN site. Additionally, the NRC's regulations containing notification requirements require that  
6 operating nuclear power reactors report to the NRC within 4 hours "any event or situation,  
7 related to...protection of the environment, for which a news release is planned or notification to  
8 other government agencies has been or will be made" (10 CFR Part 50.72(b)(2)(xi)). Such  
9 notifications include reports regarding Federally listed species, as described in Section 3.2.12 of  
10 NUREG-1022 (NRC 2013b). Further, as a Federal agency, TVA has the responsibility to  
11 comply with section 7 of the ESA if listed species or effects of the action are identified that were  
12 not previously considered.

### 13 Species and Habitats under NMFS's Jurisdiction

14 As discussed in Section 3.8, no species or habitats under NMFS's jurisdiction occur within the  
15 action area. Thus, the NRC staff concludes that the proposed action would have no effect on  
16 Federally listed species or habitats under NMFS's jurisdiction.

### 17 Cumulative Effects

18 The ESA regulations at 50 CFR Part 402.12(f)(4) direct Federal agencies to consider cumulative  
19 effects as part of the proposed action effects analysis. Under the ESA, cumulative effects are  
20 defined as "those effects of future State or private activities, not involving Federal activities, that  
21 are reasonably certain to occur within the action area of the Federal action subject to  
22 consultation" (50 CFR Part 402.02). Unlike the NEPA definition of cumulative impacts (see  
23 Section 4.16), cumulative effects under the ESA do not include past actions or other Federal  
24 actions requiring separate ESA section 7 consultation. When formulating biological opinions  
25 under formal section 7 consultation, the FWS and NMFS (1998) consider cumulative effects  
26 when determining the likelihood of jeopardy or adverse modification. Therefore, consideration  
27 of cumulative effects under the ESA is necessary only if listed species will be adversely affected  
28 by the proposed action (FWS 2014).

29 In the case of SQN, because the NRC staff concluded earlier in this section that the proposed  
30 license renewal would have no effect on listed, proposed, or CS or on designated or proposed  
31 critical habitat, consideration of cumulative effects is not necessary.

### 32 *4.8.1.2 Species and Habitats Protected under the Magnuson–Stevens Act*

33 As discussed in Section 3.8, NMFS has not designated essential fish habitat (EFH) pursuant to  
34 the Magnuson–Stevens Fishery Conservation and Management Act, as amended  
35 (Magnuson–Stevens Act) in the Chickamauga Reservoir. Thus, the NRC staff concludes that  
36 the proposed action would have no effect on EFH.

### 37 **4.8.2 No-Action Alternative – Special Status Species and Habitats**

38 Under the no-action alternative, SQN would shut down. Federally listed species and designated  
39 critical habitat can be affected not only by operation of nuclear power plants but also by  
40 activities during shutdown. The ESA action area for the no-action alternative would most likely  
41 be the same or similar to the action area described in Section 3.8. Because the plant would  
42 require substantially less cooling water, potential impacts to aquatic species and habitats would  
43 be reduced, although the plant would still require some cooling water for some time. Changes  
44 in land use and other shutdown activities might affect terrestrial species differently than under  
45 continued operation.

1 Because no Federally listed species or habitats occur in the action area, the no-action  
2 alternative would likely have no effect on any such species or habitats. However, NRC would  
3 assess the need for ESA consultation upon plant shutdown. The ESA forbids the taking of a  
4 listed species, where to “take” means “harass, harm, pursue, hunt, shoot, wound, kill, trap,  
5 capture, or collect, or attempt to engage in any such conduct.” In the case of a take, ESA  
6 section 7 requires that NRC initiate consultation with the FWS or NMFS. The implementing  
7 regulations at 50 CFR Part 402.16 also direct Federal agencies to reinstate consultation in  
8 circumstances where (a) the incidental take limit in a biological opinion is exceeded, (b) new  
9 information reveals effects to Federally listed species or designated critical habitats that were  
10 not previously considered, (c) the action is modified in a manner that causes effects not  
11 previously considered, or (d) new species are listed or new critical habitat is designated that  
12 may be affected by the action. An ESA Section 7 consultation could identify impacts on  
13 Federally listed species or critical habitat, require monitoring and mitigation to minimize such  
14 impacts, and provide a level of exempted takes. Regulations and guidance regarding the ESA  
15 Section 7 consultation process are provided in 50 CFR Part 402 and in the *Endangered Species*  
16 *Consultation Handbook* (FWS and NMFS 1998). Upon shutdown, if the NRC determined that  
17 the no-action alternative would result in take of listed species or that one or more of the  
18 reinstitution criteria at 50 CFR Part 402.16 would be met, the NRC would reinstate consultation,  
19 as appropriate, with FWS at that time. TVA, as a Federal agency, would also have  
20 responsibilities under section 7 of the ESA upon SQN shutdown.

21 The effects on ESA-listed aquatic species would likely be smaller than the effects under  
22 continued operation but would depend on the listed species and habitats present when the  
23 alternative is implemented. The types and magnitudes of adverse impacts to terrestrial  
24 ESA-listed species would depend on the shutdown activities and the listed species and habitats  
25 present when the alternative is implemented, and thus, the NRC cannot forecast a particular  
26 level of impact for this alternative.

27 The no-action alternative would not affect EFH because NMFS has not designated EFH in the  
28 Chickamauga Reservoir.

### 29 **4.8.3 NGCC Alternative – Special Status Species and Habitats**

30 This alternative entails shutdown and decommissioning of SQN and construction of a new  
31 NGCC alternative at an existing power plant site other than the SQN site or at a brownfield site  
32 with available infrastructure in the TVA region. Section 4.8.2 discusses ESA considerations for  
33 the shutdown of SQN.

34 Unlike the proposed action, no-action alternative, and new nuclear alternative, the NRC does  
35 not license NGCC facilities, and the NRC would not be responsible for initiating section 7  
36 consultation if listed species or habitats might be adversely affected under this alternative. The  
37 facilities themselves would be responsible for protecting listed species because the ESA forbids  
38 the taking of a listed species. If TVA were to implement the NGCC alternative, as a Federal  
39 agency, TVA would be required to consult with FWS or NMFS under section 7. Similarly, TVA,  
40 and not NRC, would be responsible for engaging in EFH consultation with NMFS under the  
41 Magnuson–Stevens Act if EFH could be affected by construction or operation of the NGCC  
42 alternative.

43 Because the NGCC alternative would be built on an existing power plant site other than the  
44 SQN site, the special status species and habitats affected by the action would be different than  
45 those considered under the proposed action. The types and magnitudes of adverse impacts to  
46 ESA-listed species and EFH would depend on the proposed site, plant design, operation, and

## Environmental Consequences and Mitigating Actions

1 listed species and habitats present when the alternative is implemented. Therefore, the NRC  
2 cannot forecast a particular level of impact for this alternative.

### 3 **4.8.4 SCPC Alternative – Special Status Species and Habitats**

4 This alternative entails shutdown and decommissioning of SQN and construction of a new  
5 SCPC alternative at an existing power plant site other than the SQN site or at a brownfield site  
6 with available infrastructure in the TVA region. Section 4.8.2 discusses ESA considerations for  
7 the shutdown of SQN.

8 Unlike the proposed action, no-action alternative, and new nuclear alternative, the NRC does  
9 not license SCPC facilities, and the NRC would not be responsible for initiating section 7  
10 consultation if listed species or habitats might be adversely affected under this alternative. The  
11 facilities themselves would be responsible for protecting listed species because the ESA forbids  
12 the taking of a listed species. If TVA were to implement the NGCC alternative, as a Federal  
13 agency, TVA would be required to consult with FWS or NMFS under section 7. Similarly, TVA,  
14 and not NRC, would be responsible for engaging in EFH consultation with NMFS under the  
15 Magnuson–Stevens Act if EFH could be affected by construction or operation of the NGCC  
16 alternative.

17 Because the SCPC alternative would be built on an existing power plant site other than the SQN  
18 site, the special status species and habitats affected by the action would be different than those  
19 considered under the proposed action. The types and magnitudes of adverse impacts to ESA-  
20 listed species and EFH would depend on the proposed site, plant design, operation, and listed  
21 species and habitats present when the alternative is implemented. Therefore, the NRC cannot  
22 forecast a particular level of impact for this alternative.

### 23 **4.8.5 New Nuclear Alternative – Special Status Species and Habitats**

24 This alternative entails shutdown and decommissioning of SQN and construction of a new  
25 nuclear alternative at an existing power plant site other than the SQN site in the TVA region.  
26 Section 4.8.2 discusses ESA considerations for the shutdown of SQN.

27 The NRC would remain the licensing agency under this alternative, and thus, the ESA would  
28 require NRC to initiate consultation with the FWS and NMFS, as applicable, prior to construction  
29 to ensure that the construction and operation of the new nuclear plant would not adversely  
30 affect any Federally listed species or adversely modify or destroy designated critical habitat. If  
31 the new nuclear plant is sited in an area that could affect water bodies with designated EFH, the  
32 Magnuson–Stevens Act would require the NRC to consult with NMFS to evaluate potential  
33 impacts to that habitat. TVA, as a Federal agency, would have consultation responsibilities  
34 under the ESA and Magnuson–Stevens Act.

35 Because the new nuclear alternative would be built on an existing power plant site other than  
36 the SQN site, the special status species and habitats affected by the action would be different  
37 than those considered under the proposed action. The types and magnitudes of adverse  
38 impacts to ESA-listed species and EFH would depend on the proposed site, plant design,  
39 operation, and listed species and habitats present when the alternative is implemented.  
40 Therefore, the NRC cannot forecast a particular level of impact for this alternative.

### 41 **4.8.6 Combination Alternative – Special Status Species and Habitats**

42 This alternative entails shutdown and decommissioning of SQN and construction and operation  
43 of wind turbines, possibly outside of the TVA region through purchased power agreements, and

1 solar photovoltaic systems throughout the TVA region. Section 4.8.2 discusses ESA  
2 considerations for the shutdown of SQN.

3 Unlike the proposed action, no-action alternative, and new nuclear alternative, the NRC does  
4 not license wind turbines or solar photovoltaic systems, and the NRC would not be responsible  
5 for initiating section 7 consultation if listed species or habitats might be adversely affected under  
6 this alternative. The facilities themselves would be responsible for protecting listed species  
7 because the ESA forbids the taking of a listed species. If TVA were to implement this  
8 alternative, as a Federal agency, TVA would be required to consult with FWS or NMFS under  
9 section 7. Similarly, TVA, and not NRC, would be responsible for engaging in EFH consultation  
10 with NMFS under the Magnuson–Stevens Act if EFH could be affected by any component of  
11 this alternative.

12 Because this alternative would involve several sites throughout the TVA region, the special  
13 status species and habitats affected by the action would be different than those considered  
14 under the proposed action. The types and magnitudes of adverse impacts to ESA-listed  
15 species and EFH would depend on the proposed sites, alternative design, operation, and listed  
16 species and habitats present when the alternative is implemented. Therefore, the NRC cannot  
17 forecast a particular level of impact for this alternative.

18 **4.9 Historic and Cultural Resources**

19 This section describes the potential impacts of the proposed action (license renewal) and  
20 alternatives to the proposed action on historic and cultural resources.

21 **4.9.1 Proposed Action**

22 The historic and cultural resource issue applicable to SQN during the license renewal term is  
23 listed in Table 4–15. Section 3.9 of this SEIS describes the historic and cultural resources that  
24 have the potential to be affected by the proposed action.

25 **Table 4–15. Historic and Cultural Resources**

Issue	GEIS Section	Category
Historic and Cultural Resources	4.7.1	2

Source: Table B–1 in Appendix B, Subpart A, to 10 CFR Part 51

26 The National Historic Preservation Act of 1966, as amended (NHPA) requires Federal agencies  
27 to consider the effects of their undertakings on historic properties, and renewing the operating  
28 license of a nuclear power plant is an undertaking that could potentially affect historic properties.  
29 Historic properties are defined as resources eligible for listing in the National Register of Historic  
30 Places (NRHP). The criteria for eligibility are listed in 36 CFR Part 60.4, “Criteria for  
31 evaluation,” and include (1) association with significant events in history, (2) association with the  
32 lives of persons significant in the past, (3) embodiment of distinctive characteristics of type,  
33 period, or construction, and (4) sites or places that have yielded, or are likely to yield, important  
34 information.

35 The historic preservation review process (Section 106 of the NHPA) is outlined in regulations  
36 issued by the Advisory Council on Historic Preservation (ACHP) in 36 CFR Part 800, “Protection  
37 of historic properties.”

1  
2

**APPENDIX C  
CONSULTATION CORRESPONDENCE**



# 1    **CONSULTATION CORRESPONDENCE**

## 2    **C.1 Endangered Species Act (ESA) Section 7 Consultation**

### 3    **C.1.1 Federal Agency Obligations Under ESA Section 7**

4    As a Federal agency, the U.S. Nuclear Regulatory Commission (NRC) must comply with the  
5    Endangered Species Act of 1973, as amended (16 *United States Code* (U.S.C.) 1531 et seq.;  
6    herein referred to as ESA), as part of any action authorized, funded, or carried out by the  
7    agency, such as the proposed agency action that this supplemental environmental impact  
8    statement (SEIS) evaluates: whether to issue renewed licenses for the continued operation of  
9    Sequoyah Nuclear Plant, Units 1 and 2 (SQN) for an additional 20 years beyond the current  
10   license terms. Under section 7 of the ESA, the NRC must consult with the U.S. Fish and  
11   Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (referred to jointly as  
12   “the Services” and individually as “Service”), as appropriate, to ensure that the proposed agency  
13   action is not likely to jeopardize the continued existence of any endangered or threatened  
14   species or result in the destruction or adverse modification of designated critical habitat.

15   The ESA and the regulations that implement ESA section 7 (Title 50 of the *Code of Federal*  
16   *Regulations* (50 CFR) Part 402, “Interagency cooperation—Endangered Species Act of 1973,  
17   as amended”) describe the consultation process that Federal agencies must follow in support of  
18   agency actions. As part of this process, the Federal agency shall either request that the  
19   Services provide a list of any listed or proposed species or designated or proposed critical  
20   habitats that may be present in the action area or request that the Services concur with a list of  
21   species and critical habitats that the Federal agency has created (50 CFR 402.12(c)). If it is  
22   determined that any such species or critical habitats may be present, the Federal agency is to  
23   prepare a biological assessment to evaluate the potential effects of the action and determine  
24   whether the species or critical habitat are likely to be adversely affected by the action  
25   (16 U.S.C. 1536(c); 50 CFR 402.12(a)). Further, biological assessments are required for any  
26   agency action that is a “major construction activity” (50 CFR 402.12(b)), which the ESA  
27   regulations define to include major Federal actions significantly affecting the quality of the  
28   human environment under the National Environmental Policy Act of 1969, as amended  
29   (42 U.S.C. 4321 et seq.; herein referred to as NEPA) (50 CFR 402.02).

30   Federal agencies may fulfill their obligations to consult with the Services under ESA section 7  
31   and to prepare a biological assessment in conjunction with the interagency cooperation  
32   procedures required by other statutes, including NEPA (50 CFR 402.06(a)). In such cases, the  
33   Federal agency should include the results of the ESA section 7 consultation in the NEPA  
34   document (50 CFR 402.06(b)). Accordingly, Section C.1.2 describes the biological assessment  
35   prepared for the proposed agency action evaluated in this SEIS, and Section C.1.3 describes  
36   the chronology and results of the ESA section 7 consultation.

### 37   **C.1.2 Biological Assessment**

38   The NRC considers this SEIS to fulfill its obligation to prepare a biological assessment under  
39   ESA section 7. Accordingly, the NRC did not prepare a separate biological assessment for the  
40   proposed SQN license renewal.

41   Although the contents of a biological assessment are at the discretion of the Federal agency  
42   (50 CFR 402.12(f)), the ESA regulations suggest information that agencies may consider for  
43   inclusion. The NRC has considered this information in the following sections.

## Appendix C

1 Section 3.8 describes the action area and the Federally listed and proposed species and  
2 designated and proposed critical habitat that have the potential to be present in the action area.  
3 This section includes information pursuant to 50 CFR 402.12(f)(1), (2), and (3).

4 Section 4.8 provides an assessment of the potential effects of the proposed SQN license  
5 renewal on the species and critical habitat present and the NRC's effect determinations, which  
6 are consistent with those identified in Section 3.5 of the *Endangered Species Consultation*  
7 *Handbook* (FWS and NMFS 1998). The NRC also addresses cumulative effects and  
8 alternatives to the proposed action. This section includes information pursuant to  
9 50 CFR 402.12(f)(4) and (5).

### 10 **C.1.3 Chronology of ESA Section 7 Consultation**

11 Upon receipt of Tennessee Valley Authority's license renewal application, the NRC staff  
12 considered whether any Federally listed or proposed species or designated or proposed critical  
13 habitats may be present in the action area (as defined at 50 CFR 402.02) for the proposed SQN  
14 license renewal. No species under the NMFS's jurisdiction occur within the action area.  
15 Therefore, the NRC staff did not consult with the NMFS. With respect to species under the  
16 FWS's jurisdiction, the NRC staff compiled a list of ESA-protected species and critical habitats  
17 within the vicinity of the facility and requested the FWS's concurrence with this list in  
18 accordance with the ESA section 7 regulations at 50 CFR 402.12(c) in a letter dated  
19 March 20, 2013. The FWS concurred with the NRC staff's list in its letter dated July 3, 2013.  
20 The NRC staff used this list as a starting point for its analysis of effects to Federally listed  
21 species and critical habitat, which appears in Sections 3.8 and 4.8 of this SEIS. In Section 3.8,  
22 the NRC staff concludes that no ESA-protected species or critical habitat occur in the action  
23 area. In Section 4.8, the NRC staff concludes that the proposed agency action would have no  
24 effect on any ESA-protected species or critical habitat. FWS (2013) does not typically provide  
25 its concurrence with "no effect" determinations by Federal agencies. Thus, the ESA does not  
26 require further informal consultation or the initiation of formal consultation with the FWS for the  
27 proposed SQN license renewal. Nonetheless, because this SEIS constitutes the NRC's  
28 biological assessment, the NRC staff will submit a copy of this SEIS, upon its issuance, to the  
29 FWS for review in accordance with 50 CFR 402.12(j).

30 Table C-1 lists the letters, e-mails, and other correspondence related to the NRC's ESA  
31 obligations with respect to its review of the SQN license renewal application. This table will be  
32 updated in the final SEIS, as applicable, to include correspondence transpiring between the  
33 issuance of the draft and final SEIS.

1

**Table C–1. ESA Section 7 Consultation Correspondence**

Date	Sender and Recipient	Description	ADAMS Accession No. <sup>(a)</sup>
March 20, 2013	M. Wong (NRC) to C. Dohner (FWS)	Request for concurrence with list of Federally listed species and habitats for the proposed SQN license renewal	<a href="#">ML13079A186</a>
June 5, 2013	B. Grange (NRC) to M. Jennings (FWS)	Request for update on the status of FWS’s review of the NRC’s list of Federally listed species and habitats	ML13177A193
July 3, 2013	M. Jennings (FWS) to M. Wong (NRC)	Concurrence with NRC’s list of Federally listed species and habitats	ML13184A228
July 15, 2013	B. Grange (NRC) to R. Sykes (FWS)	Request for clarification on whether to include white fringeless orchid in the NRC’s analysis of effects to Federally listed species and habitats	ML13197A395
July 15, 2013	R. Sykes (FWS) to B. Grange (NRC)	Reply to request for clarification on whether to include white fringeless orchid in the NRC’s analysis of effects to Federally listed species and habitats	ML13197A395

<sup>(a)</sup> These documents can be accessed through the NRC’s Agencywide Documents Access and Management System (ADAMS) at <http://adams.nrc.gov/wba/>.

## 2 C.2 Essential Fish Habitat Consultation

3 The NRC must comply with the Magnuson–Stevens Fishery Conservation and Management  
 4 Act, as amended, (16 U.S.C. §1801–1884, herein referred to as Magnuson–Stevens Act) for  
 5 any actions authorized, funded, or undertaken, or proposed to be authorized, funded, or  
 6 undertaken that may adversely affect essential fish habitat (EFH).

7 In Sections 3.8 and 4.8 of this SEIS, the NRC staff concludes that NMFS has not designated  
 8 EFH under the Magnuson–Stevens Act in the Chickamauga Reservoir, and that the proposed  
 9 SQN license renewal would have no effect on EFH. Thus, the Magnuson–Stevens Act does not  
 10 require the NRC to consult with NMFS for the proposed SQN license renewal.

## 11 C.3 National Historic Preservation Act of 1966 Consultation

12 The National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects  
 13 of their undertakings on historic properties and consult with applicable state and Federal  
 14 agencies, tribal groups, and individuals and organizations with a demonstrated interest in the  
 15 undertaking before taking action. Historic properties are defined as resources that are eligible  
 16 for listing on the National Register of Historic Places. The historic preservation review process  
 17 (Section 106 of the National Historic Preservation Act of 1966, as amended) is outlined in  
 18 regulations issued by the Advisory Council on Historic Preservation (ACHP) in 36 CFR Part 800.  
 19 In accordance with 36 CFR 800.8(c), the NRC has elected to use the NEPA process to comply  
 20 with its obligations under Section 106 of the NHPA.

Appendix C

1 Table C–2 lists the chronology of consultations and consultation documents related to the NRC  
 2 Section 106 review. The NRC staff is required to consult with the noted agencies and  
 3 organizations in accordance with the statutes listed above.

4 **Table C–2. NHPA Correspondence**

<b>Date</b>	<b>Sender and Recipient</b>	<b>Description</b>	<b>ADAMS Accession No. <sup>(a)</sup></b>
March 14, 2013	M. Wong (NRC) to R. Nelson (ACHP)	Request for scoping comments/notification of Section 106 review	ML13058A315
March 14, 2013	M. Wong (NRC) to E.P. McIntyre, Jr., Tennessee Historical Commission	Request for scoping comments/notification of Section 106 review	ML13058A180
March 15, 2013	M. Wong (NRC) to B. John Baker, Cherokee Nation	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to B. Anoatubby, The Chickasaw Nation	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to T. Yargee, Alabama Quassarte Tribal Town	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to G. Tiger, Muscogee (Creek) Nation	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to O.C. Sylestine, Alabama–Coushatta Tribe of Texas	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to G. Scott, Thlopthlocco Tribal Town	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to G.J. Wallace, Eastern Shawnee Tribe of Oklahoma	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to T. Hobia, Kialegee Tribal Town	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to M. Hicks, Eastern Band of the Cherokee Indians	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to G. Blanchard, Absentee Shawnee Tribe of Oklahoma	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to G.G. Wickliffe, United Keetoowah Band of Cherokee Indians in Oklahoma	Request for scoping comments/notification of Section 106 review	ML13058A243
March 15, 2013	M. Wong (NRC) to J. E. Billie, Seminole Tribe of Florida	Request for scoping comments/notification of Section 106 review	ML13058A243

Date	Sender and Recipient	Description	ADAMS Accession No. <sup>(a)</sup>
March 15, 2013	M. Wong (NRC) to L. M. Harjo, Seminole Nation of Oklahoma	Request for scoping comments/notification of Section 106 review	ML13058A243
March 25, 2013	L. LaRue-Baker, United Keetoowah band of Cherokee Indians in Oklahoma to E. Larson (NRC)	Response to request for scoping comments	ML13084A357
April 30, 2013	M. Wong (NRC) to the Eastern Tennessee Historical Society	Request for scoping comments/notification of Section 106 review	ML13112A141
May 6, 2013	M. Wong (NRC) to The Tennessee Historical Society	Request for scoping comments/notification of Section 106 review	ML13113A301

<sup>(a)</sup>These documents can be accessed through the NRC's ADAMS at <http://adams.nrc.gov/wba/>.

## 1 C.4 References

- 2 50 CFR Part 402. *Code of Federal Regulations*, Title 50, *Wildlife and Fisheries*, Part 402,  
3 "Interagency cooperation—Endangered Species Act of 1973, as amended."
- 4 Endangered Species Act of 1973, as amended. 16 U.S.C. §1531 et seq.
- 5 [FWS] U.S. Fish and Wildlife Service. 2013. "Consultations: Frequently Asked Questions."  
6 Available at <<http://www.fws.gov/endangered/what-we-do/faq.html#8>> (accessed  
7 20 June 2014).
- 8 [FWS and NMFS] U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998.  
9 *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and*  
10 *Conference Activities Under Section 7 of the Endangered Species Act*. March 1998. 315 p.  
11 Available at <[http://www.fws.gov/endangered/esa-library/pdf/esa\\_section7\\_handbook.pdf](http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf)>  
12 (accessed 8 July 2013).
- 13 Magnuson–Stevens Fishery Conservation and Management Act, as amended.  
14 16 U.S.C. §1801–1884.
- 15 National Environmental Policy Act of 1969, as amended. 42 U.S.C. §4321 et seq.

