Aquatic Habitat Assessment Report For The Kings Mountain Lithium Mine, Cleveland County, North Carolina

OCTOBER 2022

PREPARED FOR

Albemarle U.S., Inc.

PREPARED BY

SWCA Environmental Consultants

AQUATIC HABITAT ASSESSMENT REPORT FOR THE KINGS MOUNTAIN LITHIUM MINE, CLEVELAND COUNTY, NORTH CAROLINA

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1 INTRODUCTION

On behalf of Albemarle Corporation (Albemarle), SWCA Environmental Consultants (SWCA) conducted an aquatic habitat assessment for the Kings Mountain Lithium Mining Project (Project) located in southeastern Cleveland County, North Carolina. The primary objective of the assessment was to determine the aquatic faunal assemblage of the ponds and streams within the Project area. Additionally, state-listed species with the potential to occur were surveyed for during this assessment. These data will be used to understand the potential impacts to the aquatic systems that might occur during mine construction and operations, including the discharge of water to Kings Creek during pit dewatering.

1.1 Location

The Project is on private land owned or leased by Albemarle and consists of approximately 1,403 acres (Project area). The Project is located approximately 2 miles south of downtown Kings Mountain, North Carolina, and is located on the U.S. Geological Survey (USGS) Kings Mountain, North Carolina, 7.5-minute quadrangle (Figure 1). The Project area is divided by Interstate 85 (I-85), with the main parcel on the north side of the highway (Main Site – North of I-85) and two smaller parcels on the south side of the highway (Main Site – South of I-85 and Albemarle East Property). The main parcel is bordered by South Battleground Avenue (Highway 216), Parkgrace Road, and Tin Mine Road to the west; Quarry Road to the north; and I-85 to the south and east.

1.2 Project Area Description

The main parcel is mostly developed/disturbed and includes Albemarle's lithium salts and compound processing facility and Albemarle's Global Technical Center. The west side includes an active drive-in theater, retired paper processing plant, and recreational vehicle (RV) campground. Five utility rights-of-way (ROWs) cross the northern and central portions of the parcel. The parcel directly south of I-85 is mostly undeveloped. The Kings Mountain Gateway Trail goes around the northern and eastern boundaries of this parcel with an access point and parking area off Galilee Church Road. Additionally, three utility ROWs cross the parcel running northeast–southwest. The easternmost parcel (Albemarle East Property), east of York Road, is undeveloped with only a few unpaved roads for access. Undeveloped land in the three parcels consists primarily of forest and wetland habitats. The Project area is surrounded by residential, commercial, and industrial development to the north, west, and south (Figure 2). The Martin Marietta mine borders the Project area to the north. To the east is primarily undeveloped land associated with Crowders Mountain State Park.

The Project area is located within the Kings Creek (hydrologic unit code [HUC] 0305010509) and Buffalo Creek (HUC 0305010508) watersheds of the Broad River Basin (North Carolina Department of Environmental Quality [NCDEQ] 2022). The Broad River is located approximately 15 miles west-southwest of the Project area. Kings Creek, a tributary of the Broad River, runs through the Project area. According to the USGS Kings Mountain 7.5-minute quadrangle maps, the headwaters of Kings Creek originate approximately 0.75-mile northeast of the Project area.

There are also on-site resources named by Albemarle for Project purposes. These are all man-made features including the Pit Lake, Mud Pond 1, Mud Pond 2, No. 1 Mill Pond, Executive Club Lake, South Creek, and South Creek Reservoir. Pit Lake is a mining pit that has filled with water since mining ceased. Mud Pond 1, Mud Pond 2, and Mill Pond No. 1 are isolated ponds on the Albemarle Main Site – North of I-85. South Creek is a south-flowing stream on the western portion of the Albemarle Main Site – North of I-85 with the South Creek Reservoir making up the dammed-up portion that eventually empties in Kings Creek to the east. Executive Club Lake is an old tailings pond on the Albemarle Main Site – South of I-85 that has an outflow channel to Kings Creek. Small tributaries contribute flow to this lake.

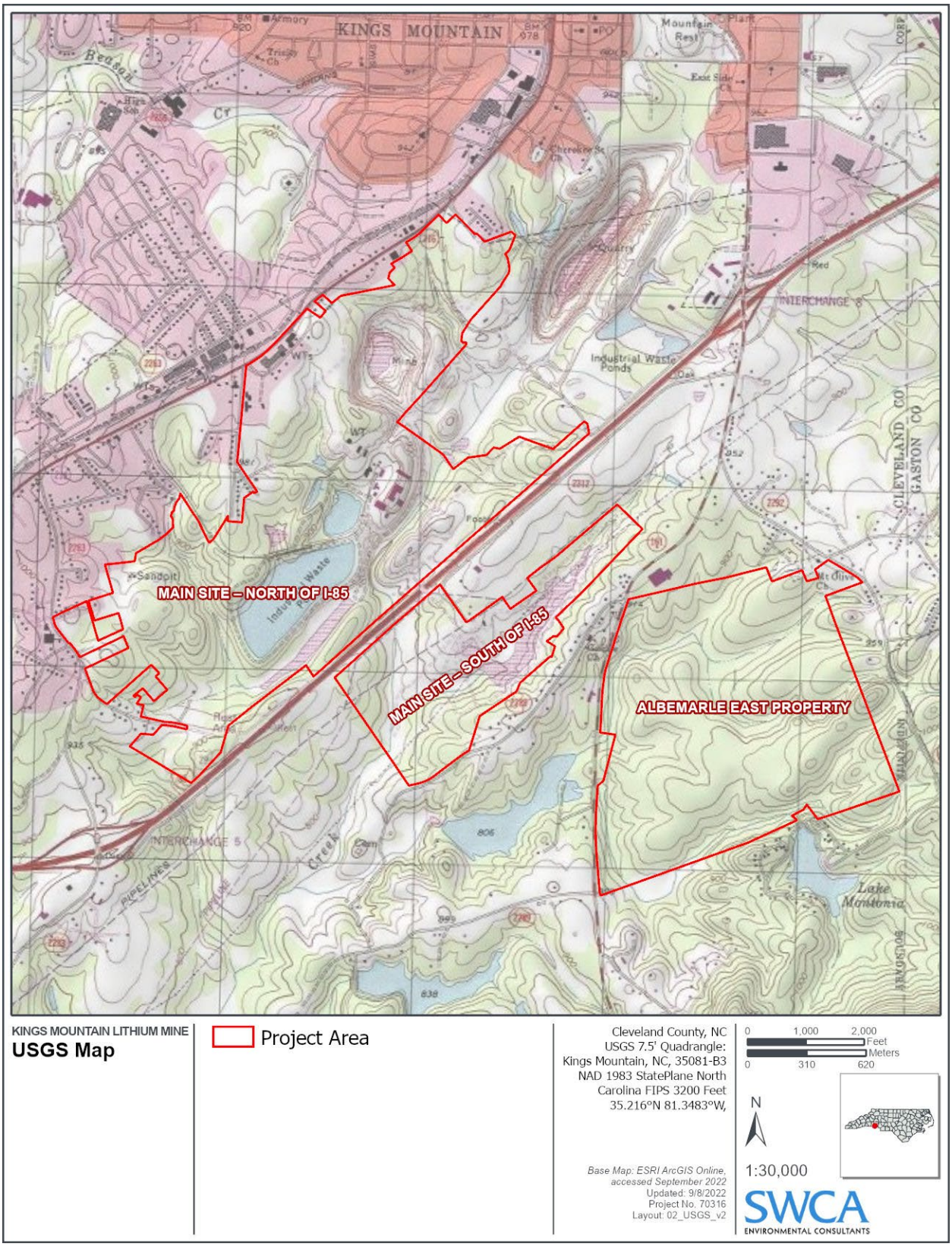


Figure 1. Project location.

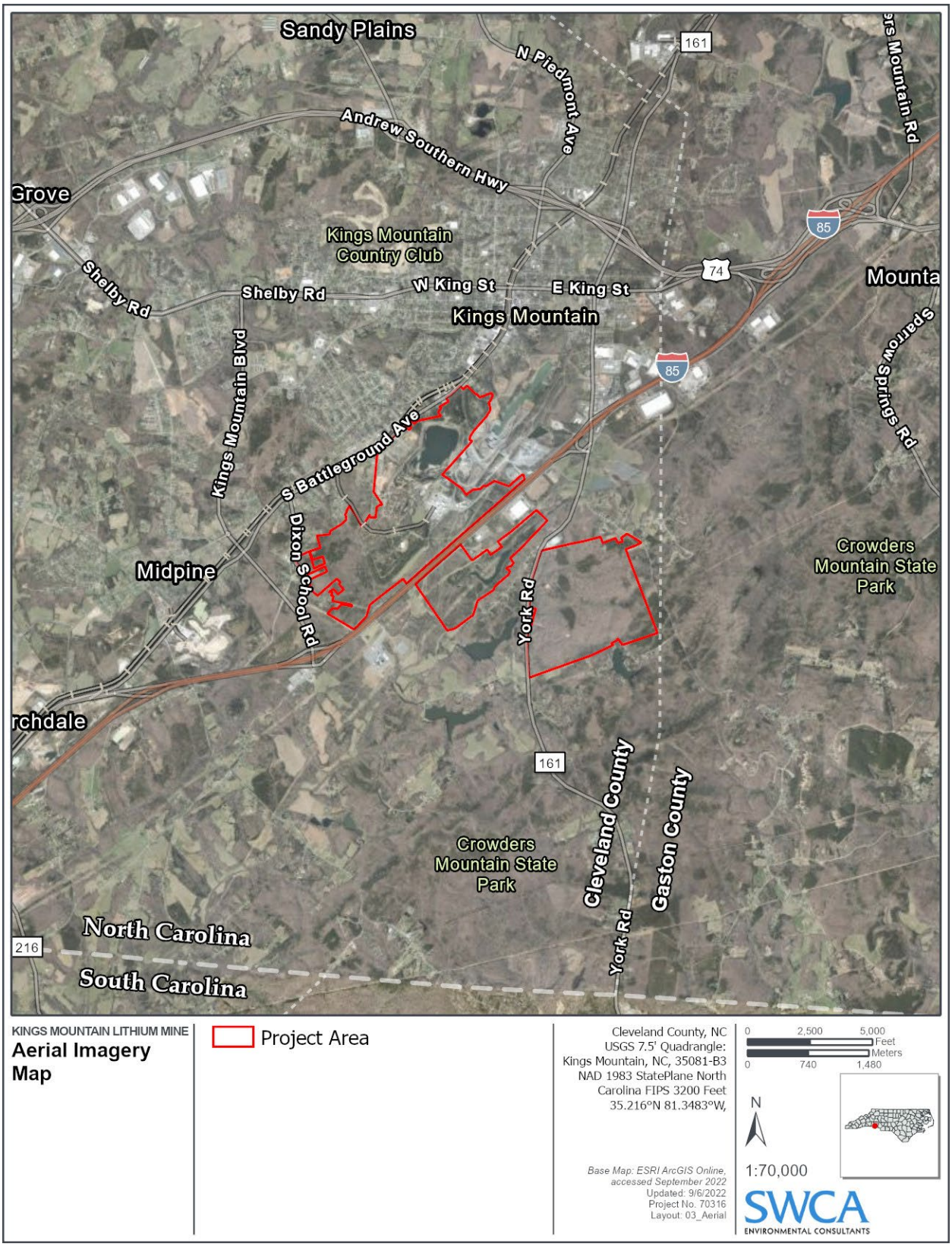


Figure 2. Aerial imagery of the Project area.

2 METHODS

2.1 Desktop Analysis and Previous Surveys

A preliminary desktop analysis was completed for the Project prior to field surveys by using a combination of existing information obtained from available public sources, including published literature, online databases, and geographic information system (GIS) data. The following publicly available data sources were used to characterize the lake, pond, wetland, and stream habitat within the Project area that would be surveyed:

- North Carolina Natural Heritage Program's (NCNHP's) *An Inventory of the Significant Natural Areas of Cleveland County, North Carolina* (NCNHP 2003)
- NCNHP List of Rare Animal Species of North Carolina (NCNHP 2020).
- NCNHP Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area (NCNHP 2022a)
- NCNHP Species/Community Search for Cleveland County (NCNHP 2022b)
- North Carolina Wildlife Resources Commission (NCWRC) Protected Wildlife Species of North Carolina (NCWRC 2021)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation Species List for Kings Mountain Area (USFWS 2022a)
- USFWS National Wetland Inventory (USFWS 2022b)
- USGS National Hydrography Dataset (USGS 2019)

SWCA previously conducted a wetland and waterbody delineation in February and March 2022 (SWCA 2022a). Observations from these surveys were also used when determining suitable habitat and sampling areas for the aquatic surveys. SWCA focused aquatic survey efforts on streams with potential suitable habitat for listed species, as well as all larger ponds and reservoirs.

Some areas, including small tributary streams, were not surveyed due to minimal habitat or unsuitable habitat for listed species. Upstream aquatic surveys were terminated at points where declining flows, fish density, and fish diversity rendered further sampling unlikely to add to the understanding of the aquatic environment, in terms of either species diversity or detecting sensitive species.

Aquatic surveys continued downstream until terminated due to flooding (from beaver dams) or at the Project property boundaries. Flooded areas were surveyed to obtain a representative species diversity but terminated where pools became too deep to electroshock (approximately 1 meter deep). Further sampling of flooded areas with hoop nets was deemed unlikely to add to the understanding of the aquatic environment, as the species transition from the fast-moving aquatic environment in the upper portions of Kings Creek to the typical pool/slow-water environment had already been noted from the electroshocking surveys.

The publicly available data sources were also used to determine a short list of aquatic species of concern with the potential to occur in the Project area (Table 1). Seven state-listed aquatic species were identified as having the potential to occur in Cleveland County, although none were listed as state threatened or endangered. No federally listed aquatic species were identified as having the potential to occur. More detailed species descriptions are provided under separate cover in the *Federally and State-Listed Species Report for the Kings Mountain Lithium Mine, Cleveland County, North Carolina* (SWCA 2022b).

Table 1. Aquatic Species of Concern with Potential to Occur in Cleveland County, North Carolina

Common Name	Scientific Name	Presence Likelihood	State Status	Habitat
"Carolina" quillback (fish)	*Carpiodes* sp. cf. *cyprinus*	Low	Significantly rare	P: Yadkin-Pee Dee, Catawba, Broad, and Roanoke River drainages
Seagreen darter (fish)	*Etheostoma thalassinum*	Low	Significantly rare	MP: Catawba and Broad River drainages
Yellowfin shiner (fish)	*Notropis lutipinnis*	Very low	Special concern	MP: Savannah and Little Tennessee River drainages [only the Savannah River drainage is listed as special concern]
Carolina foothills crayfish	*Cambarus johni*	Moderate	Significantly rare	MP: headwater streams in the Yadkin-Pee Dee, Catawba, and Broad River drainages
Broad River stream crayfish	*Cambarus lenati*	Low	Significantly rare	P: streams in the Broad River drainage
French Broad River crayfish	*Cambarus reburrus*	Very low	Significantly rare	M: streams in the French Broad, Little Tennessee, and Savannah River drainages
Broad River spiny crayfish	*Cambarus spicatus*	Very low	Special concern	P: streams in Broad River drainage

Region: M = mountain, P = Piedmont

2.2 Field Surveys

SWCA used three primary methods to assess the aquatic habitats observed within the Albemarle properties: trapping fish within pond habitats, electrofishing in streams, and conducting visual and tactile surveys of streams for aquatic macroinvertebrates (primarily freshwater mollusks and crayfish). Aquatic surveys were conducted August 22 through August 26, 2022.

All collected animals were identified to the species level and released at their capture location. Additional data including animal lengths and sexual characteristics were collected.

2.2.1 Baited Minnow and Hoop Trap Surveys

SWCA deployed baited minnow traps and hoop nets at five locations on the Main Site – North of I-85 (No. 1 Mill Pond, Mud Pond 1, Mud Pond 2, South Creek, and Pit Lake) and one location on Main Site – South of I-85 (Executive Club Lake) (Figure 3; Appendix A). A total of 61 minnow traps and 21 hoop nets were deployed during the survey period. Traps were baited using Purina Aquamax dry fish food. Minnow traps were fully submerged in the water and used to capture fauna larger than the ¼-inch mesh and smaller than the 1-inch opening of the traps. Hoop nets were partially submerged in water and used to capture fauna larger than the ¼-inch mesh and smaller than the 4-inch opening. All traps were checked the day after they were placed, and all animals were identified and measured before being released at the same location.

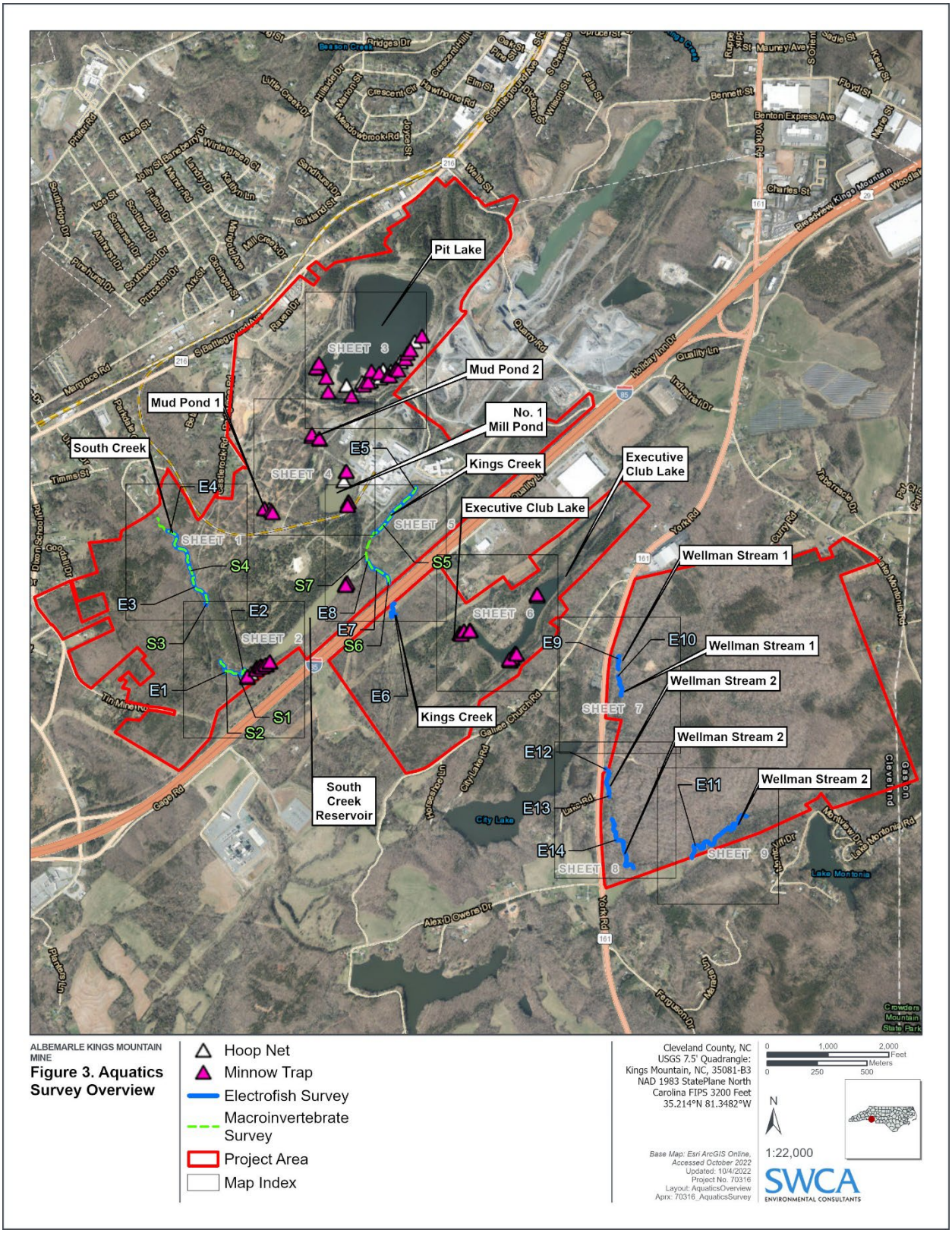


Figure 3. Overview map of aquatic survey areas.

2.2.2 Electrofishing Surveys

SWCA conducted assessments of four streams within the Albemarle properties (Appendix A; see Figure 3; Appendix A): South Creek, located on the Main Site – North of I-85; Kings Creek, located on the Main Site – North of I-85 and Main Site – South of I-85; and two unnamed streams located on the Albemarle East Property (referred to as Wellman Stream 1 and Wellman Stream 2).

SWCA used a Smith-Root LR-24 backpack electrofishing unit to perform electrofishing sampling within the stream habitat on the Albemarle properties. The electrofishing sampling started at the downstream portion of a site, then moved upstream. Two netters were located on either side of the operator. Affected animals were captured with hand nets and collected in plastic buckets.

Fourteen sites representing a total of 2,426 meters of stream habitat were sampled.

2.2.3 Aquatic Macroinvertebrate Surveys

SWCA conducted assessments of the four streams listed above. Due to the shallow waters of all four streams, SWCA did not use snorkeling equipment, but rather conducted visual and tactile surveys by wading each of the 14 stream segments within which electroshock fishing had been conducted. In addition, in several cases, SWCA surveyed beyond the electroshocking segments within the main Albemarle property. These sections are designated with an S-number in Figure 3 and the maps in Appendix A. During these surveys, two or three biologists visually scanned the stream bottom for live freshwater mussels, snails, and crayfish, as well as other evidence of these taxa, such as shells. The biologists also conducted tactile searches in areas with soft substrates or where the water was too turbid for visual surveys.

Fourteen sites representing a total of 2,712 meters of stream habitat were sampled

3 RESULTS

3.1 Minnow and Hoop Traps

In total, 82 baited traps sets were used for sampling the Project area. This included 21 hoop net sets and 61 minnow trap sets. The baited traps had an average sampling time of 20.51 hours per trap.
No threatened or endangered species were trapped during the survey period. In total, 957 fish were trapped at the Project site using minnow traps and hoop nets. Bluegill (*Lepomis macrochirus*) was the most common fish species, accounting for 98.4% of observations. Other fish species trapped included the redbreast sunfish (*Lepomis auritus*), spotted bass (*Micropterus punctulatus*), largemouth bass (*Micropterus salmoides*), and pumpkinseed (*Lepomis gibbosus*). Other fauna captured in traps included mud turtles (*Kinosternon subrubrum*), musk turtles (*Sternotherus odoratus*), painted turtles (*Chrysemys picta*), a yellow-bellied slider (*Trachemys scripta scripta*), a northern water snake (*Nerodia sipedon*), and bullfrog tadpoles and adults (*Lithobates catesbeianus*).

A complete list of fish species encountered in ponds is provided in Table 2. All species have an International Union for Conservation of Nature (IUCN) status of Least Concern, which is a species that the IUCN has classified as not being a priority for species conservation because the species is still abundant in the wild. They are not endangered, vulnerable, threatened, near threatened, or conservation dependent (IUCN 2022); Additionally, none are listed by the USFWS under the Endangered Species Act,

and none are state listed. Detailed maps of trap locations are in Appendix A, and photographs are in Appendix B.

3.2 Electrofishing Sampling

Fourteen stream sections (E1–E14) were sampled using backpack electrofishing surveys. South Creek was represented by stream sections E1 through E4. Kings Creek was represented by stream sections E5 through E8. Wellman Stream 1 was represented by stream sections E9 and E10, and Wellman Stream 2 was represented by stream sections E11 through E14. Each site had an average sampling/shocking time of 14.4 minutes. A total of 2,426 linear meters of stream habitat were sampled. Each electrofishing site was sampled using a single pass only in order to sample the largest area possible. General species composition, abundance, and distribution data were collected in order to identify possible species of concern.

In streams, a total of 895 fish were observed from 11 species (see Table 2). The most abundant species observed in the stream habitats was the creek chub (*Semotilus atromaculatus*), which accounted for 51.1% of observed individuals. In-stream riffle/runs were dominated by creek chub, bluehead chub (*Nocomis leptocephalus*), and rosyside dace (*Clinostomus funduloides*). Pool structures in the streams were dominated by bluegill and redbreast sunfish. Less common, but also observed in pool structures with woody debris or other cover, were spotted bass and warmouth (*Lepomis gulosus*).

All species have an IUCN status of Least Concern (IUCN 2022); none are listed by the USFWS under the Endangered Species Act, and none are state listed by the NCWRC (see Appendices A and B).

Table 2. Fish Species Caught during Trapping and Electrofishing Surveys in Project Area Ponds and Streams

Family	Common Name	Scientific Name	Federal Status	Number of Observations in Ponds (Traps)	Number of Observations in Streams (Electrofishing)
Centrarchidae	Bluegill	*Lepomis macrochirus*	LC	942	182
	Pumpkinseed	*Lepomis gibbosus*	LC	1	0
	Redbreast sunfish	*Lepomis auritus*	LC	9	98
	Warmouth	*Lepomis gulosus*	LC	0	17
	White crappie	*Pomoxis annularis*	LC	0	1
	Spotted bass	*Micropterus punctulatus*	LC	2	20
	Largemouth bass	*Micropterus salmoides*	LC	3	1
Cypriniformes	Creek chub	*Semotilus atromaculatus*	LC	0	457
	Bluehead chub	*Nocomis leptocephalus*	LC	0	61
Leuciscidae	Rosysid dace	*Clinostomus funduloides*	LC	0	47
Poeciliidae	Mosquitofish	*Gambusia affinis*	LC	0	10
Ictaluridae	Flathead catfish	*Pylodictis olivaris*	LC	0	1
			Total	**957**	**895**

LC = IUCN Least Concern

Table 3. Fish Species Observations by Survey Site

Common Name	MP1	MP2	N1MP	ECL	PL	SCR	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14
Bluegill		X	X	X	X	X	X					X	X	X			X	X	X	X
White crappie							X													
Pumpkinseed			X			X														
Redbreast sunfish				X								X	X		X	X	X	X	X	X
Warmouth									X								X	X	X	X
Creek chub							X	X		X					X	X	X		X	X
Bluehead chub												X	X		X	X				
Mosquitofish									X		X		X	X		X				
Largemouth bass			X			X						X								
Spotted bass				X								X	X	X					X	X
Rosysid dace															X	X	X			X
Flathead catfish																			X	

MP1 = Mud Pond 1, MP2 = Mill Pond 2, N1MP = No. 1 Mill Pond, ECL = Executive Club Lake, PL = Pit Lake, SCR = South Creek Reservoir

3.2.1 Aquatic Macroinvertebrate Surveys

Fourteen sites representing a total of 2,712 meters of stream habitat were sampled. No native bivalves were observed in the four streams surveyed. The only freshwater bivalve observed was Asian clam (*Corbicula* sp.). This is an introduced species of mollusk that is considered invasive. Asian clams were observed only on the Albemarle East Property, in Wellman Stream 2. The presence of Asian clams in Wellman Stream 2 suggests this stream may be capable of supporting native bivalve species as well. No aquatic snail species were observed in the four streams surveyed. One unidentified crayfish was observed, but not caught, in Kings Creek. Numerous individuals of crayfish were observed and captured in the two streams within the Albemarle East Property. All crayfish photographed are members of the *Cambarus* (*Puncticambarus*) sp. *C* (*acuminatus*) complex. No species within this complex are considered rare.

4 SUMMARY AND CONCLUSIONS

The main aquatic habitat types within the Project areas are ponds and creeks. Pond substrate was generally soft silt or muck. Minnow traps and hoop nets were placed at varying depths in ponds to diversify habitat and capture fish from different life stages. The surveyed creeks were generally less than 3 feet in depth and averaged closer to 1 foot in depth. Creek substrate ranged from soft silt and muck to combinations of sand, gravel, cobble, and some boulder. The soft substrates were primarily found in areas of beaver impoundment.

Fish species composition differed between pond and creek habitats (see Tables 2 and 3). Only five fish species were observed within the ponds surveyed, versus eleven species within creek habitat. Bluegill was the most common species, occurring in all ponds and all creeks surveyed. This common sunfish species, as well as three other species observed within pond habitats (redbreasted sunfish, largemouth bass, and spotted bass) were also observed within some stream sections. Pumpkinseed was observed only in South Creek Reservoir.

Differences in species composition were observed between creeks within the Main Site and the Albemarle East Property. Nine fish species were observed in South Creek and/or Kings Creek within the Main Site, and nine fish species were observed in creeks surveyed in the Albemarle East Property. Species were observed in South Creek (five species), Kings Creek (six species), Wellman Stream 1 (five species), and Wellman Stream 2 (seven species). White crappie (*Pomoxis annularis*) and largemouth bass were observed in the Main Site only, and rosyside dace and flathead catfish (*Pylodictis olivaris*) were observed only in the Albemarle East Property. All other species were observed in both survey areas. Another notable difference between the creeks of the Main Site versus those of the Albemarle East Property is the apparent low density of crayfish within the Main Site (only one individual observed) in contrast with the numerous crayfish observed within both creeks on the Albemarle East Property. This observation is likely due residential and mine development within and surrounding the Main Site and its aquatic resources, while the Albemarle East Property has remained undeveloped.

Overall South Creek showed very low species diversity above the lower sections that were flooded by beaver dams, with the upper stream sections being composed of only creek chub. King's Creek had a significant fish barrier (a low water dam), and no species were observed above the dam except a single mosquito fish. Below the dam, some species diversity was observed including bluehead chub, bluegill, redbreast sunfish, spotted bass, and mosquito fish. The Albemarle East Property streams had the highest species diversity longitudinally across entire stream sections. Sampled sections demonstrated classic species compositions associated with pool vs. riffle run habitats, with deeper pools containing bluegill, warmouth, and occasionally spotted bass. Riffle/run habitats contained primarily chub and dace species

with some bluegill. Larger-bodied creek chub and rosyside dace were also found in pools with associated woody debris or other cover.

All species of fish, crustaceans, and bivalves encountered during surveys are listed as Least Concern by IUCN. The results of SWCA's aquatic survey indicate that it is unlikely that federal or state-listed aquatic species of concern occur in the Project area. Because there is no evidence of rare species occurring within the survey areas, SWCA is not providing any management recommendations beyond the typical water quality best management practices.

5 LITERATURE CITED

North Carolina Department of Environmental Quality (NCDEQ). 2022. Find Your HUC in North Carolina. Available at: https://ncdenr.maps.arcgis.com/apps/PublicInformation/index.html?appid=ad3a85a0c6d644a0b97cd069db238ac3#!. Accessed May 2022.

North Carolina Natural Heritage Program (NCNHP). 2003. *An Inventory of the Significant Natural Areas of Cleveland County, North Carolina*. Prepared by North Carolina Natural Heritage Program Office and Foothills Conservancy of North Carolina. April.

_____. 2020. List of Rare Animal Species of North Carolina. Available at: https://www.ncnhp.org/media/522/open. Accessed May 2022.

_____. 2022a. Natural Heritage Element Occurrences, Natural Areas, and Managed Areas within a One-mile Radius of the Project Area, Albemarle Main Boundary, Project No. 00070316-000-RDU. February 9, 2022

_____. 2022b. Species/Community Search. Cleveland County. Available at: https://www.ncnhp.org/data/speciescommunity-search. Accessed August 2022.

North Carolina Wildlife Resources Commission (NCWRC). 2021. Protected Wildlife Species of North Carolina. Available at: https://www.ncwildlife.org/Portals/0/Conserving/documents/Protected-Wildlife-Species-of-NC.pdf. Accessed September 2022.

SWCA Environmental Consultants (SWCA). 2022a. *Wetland and Waterbody Delineation Report for the Albemarle Kings Mountain Lithium Mining Project, Cleveland County, North Carolina*. April.

_____. 2022b. *Federally and State-Listed Species Report for the Kings Mountain Lithium Mine, Cleveland County, North Carolina*. September.

International Union for Conservation of Nature (IUCN). 2022. Red List of Threatened Species. https://www.iucnredlist.org/. Accessed September 2022

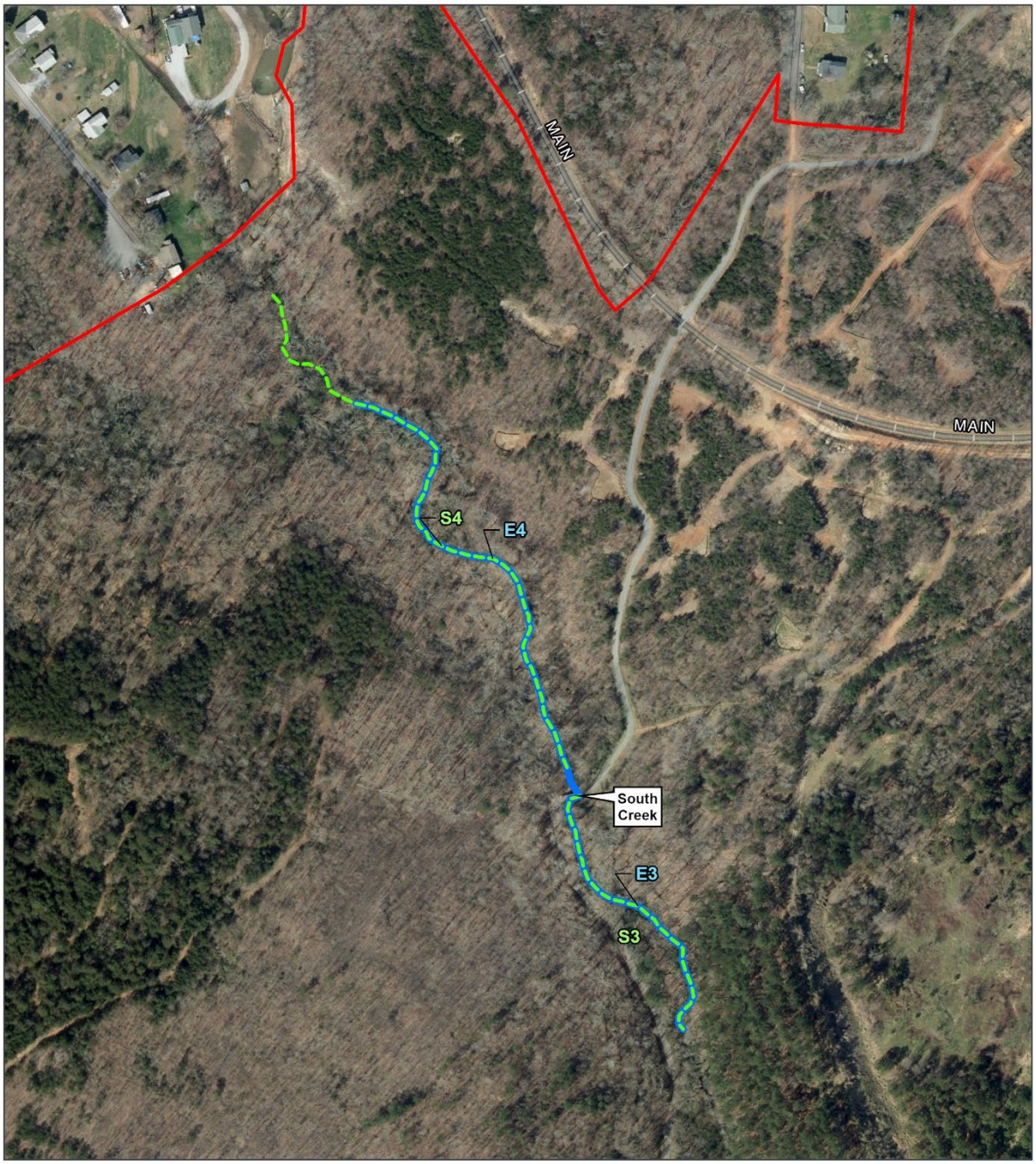
U.S. Fish and Wildlife Service (USFWS). 2022a. Information for Planning and Consultation (IPaC) – Explore Resources. Project Area List. Available at: https://ipac.ecosphere.fws.gov/location/52KWJIY2SZGELBJ5RMERHQX2CE/resources. Accessed February 2022.

———. 2022b. National Wetland Inventory (NWI) Surface Waters and Wetlands. Available at: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed February 2022.

U.S. Geological Survey (USGS). 2019. National Hydrography Dataset ver. USGS National Hydrography Dataset Best Resolution (NHD) for Hydrologic Unit (HU) 4 - 2001 (published 20191002). Available at https://www.usgs.gov/national-hydrography/access-national-hydrography-products. Accessed February 2022.

APPENDIX A

Detailed Survey Maps



ALBEMARLE KINGS MOUNTAIN MINE

Map 1. South Creek survey areas.

Macroinvertebrate Survey

Electrofish Survey

Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.2129°N 81.3641°W

0 100 200 Feet
0 40 80 Meters

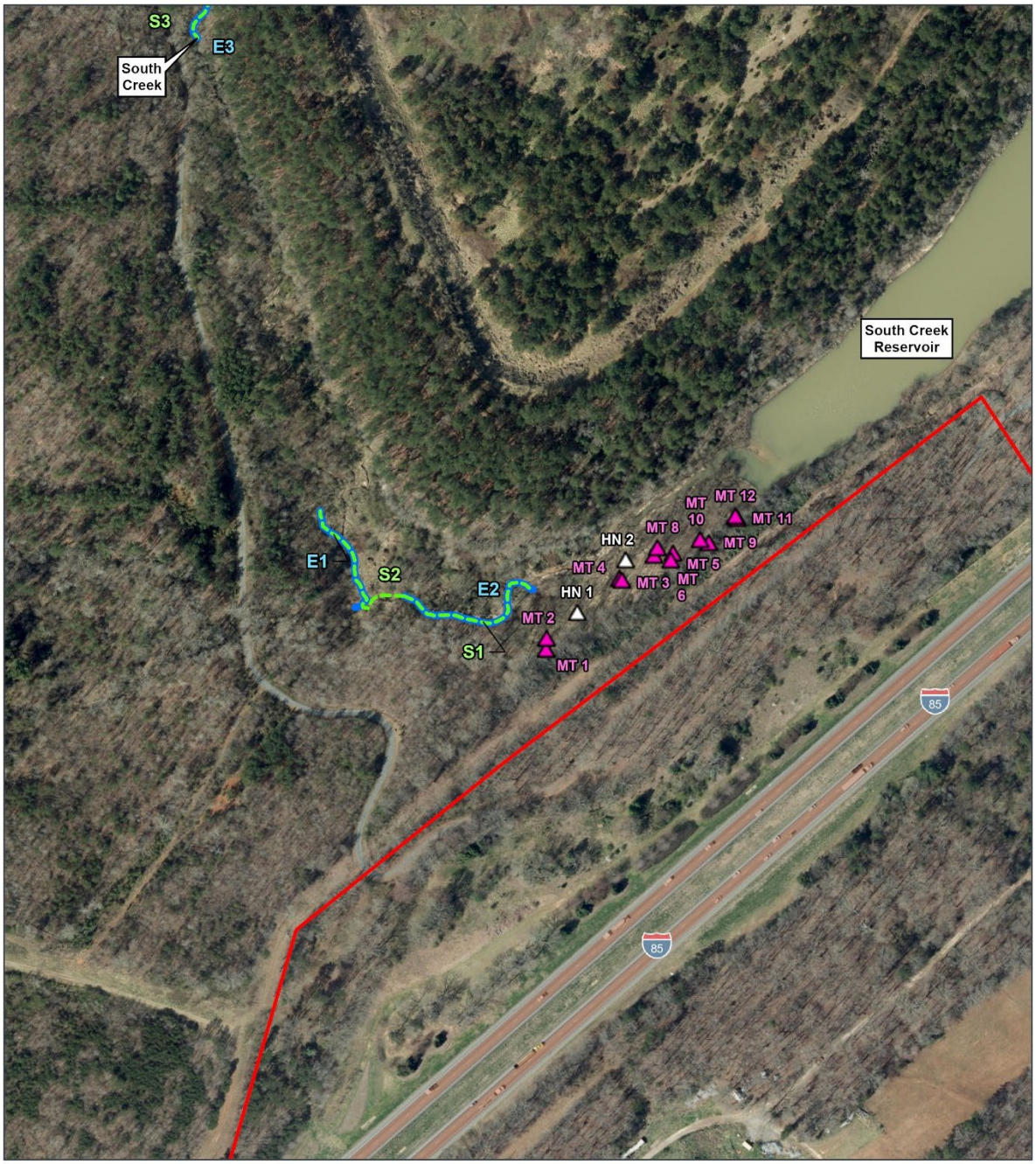
N

1:3,000

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

SWCA ENVIRONMENTAL CONSULTANTS

Map 1 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 2. South Creek and South Creek Reservoir survey areas.

- Hoop Net
- Minnow Trap
- Macroinvertebrate Survey
- Electrofish Survey
- Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.2076°N 81.3608°W

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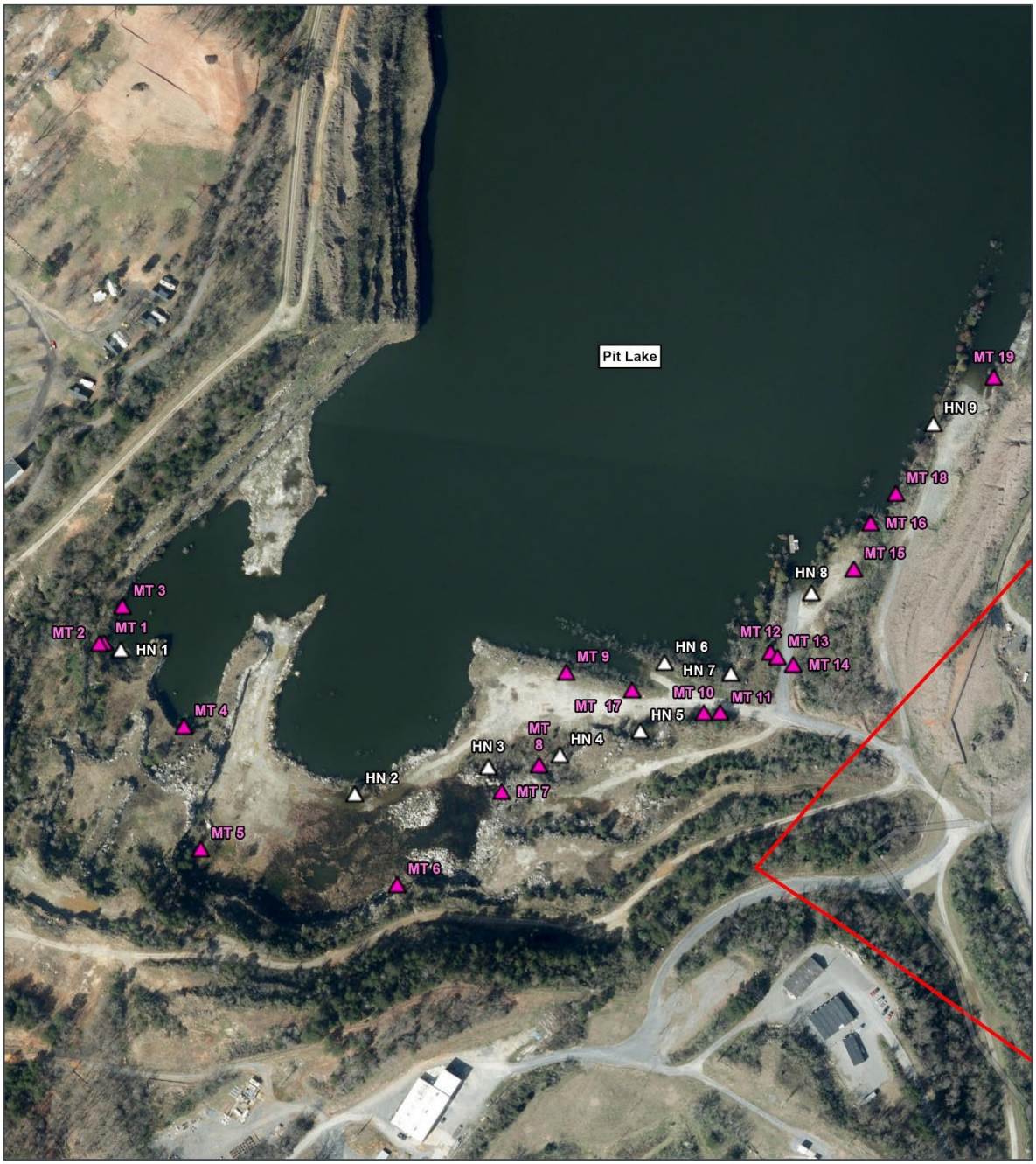
Map 2 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 3. Pit Lake survey areas.

Hoop Net
Minnow Trap
Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.2217°N 81.3545°W

0 100 200 Feet
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Base Map: Esri ArcGIS Online, Accessed October 2022
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Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

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ALBEMARLE KINGS MOUNTAIN MINE

Map 4. Survey areas for Mud Pond 1, Mud Pond 2, and No. 1 Mill Pond.

- Hoop Net
- Minnow Trap
- Macroinvertebrate Survey
- Electrofish Survey
- Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
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35.2168°N 81.3572°W

0 100 200 Feet
0 40 80 Meters

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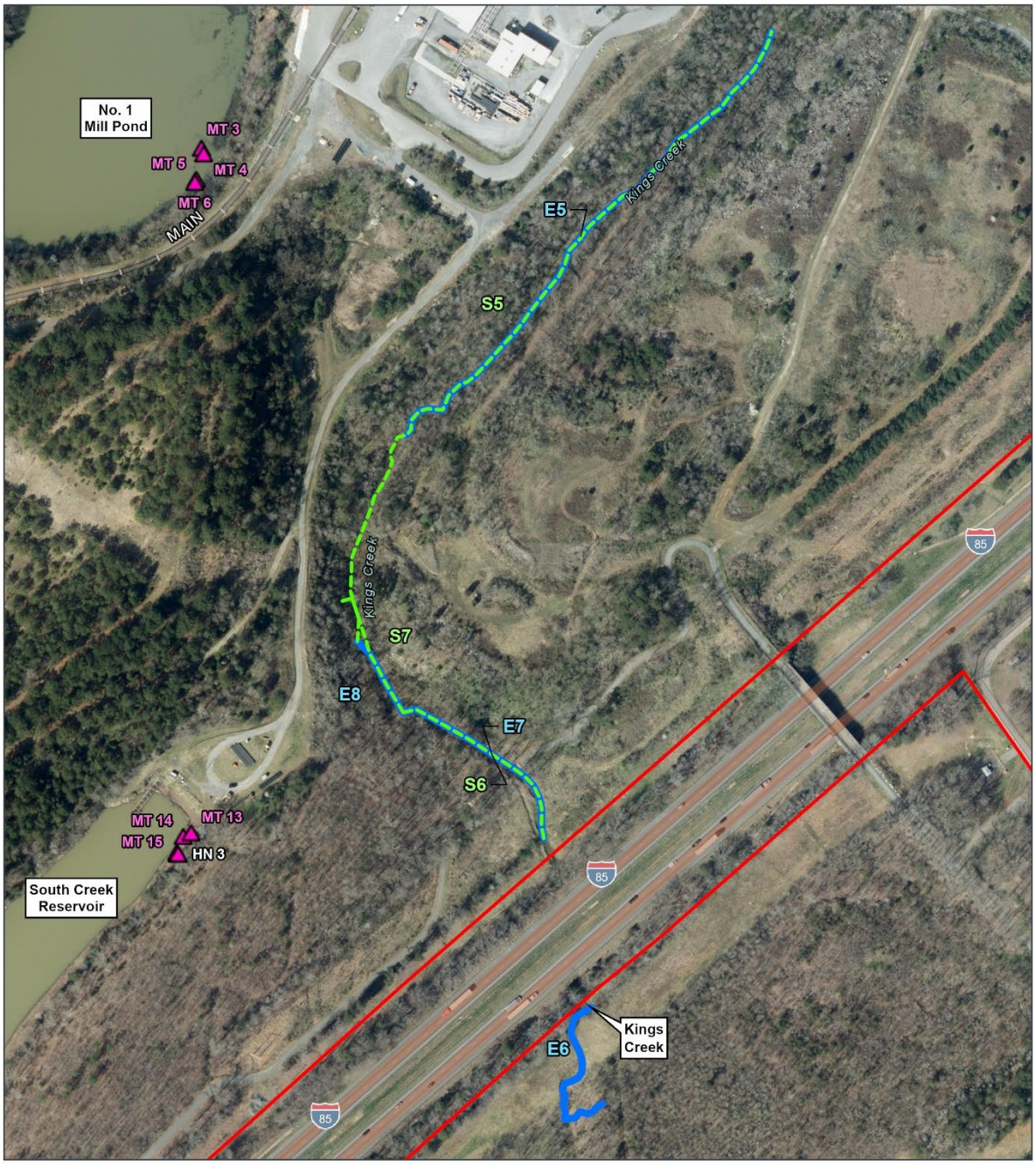
Map 4 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 5. Survey areas for No. 1 Mill Pond, South Creek Reservoir, and Kings Creek.

- Hoop Net
- Minnow Trap
- Macroinvertebrate Survey
- Electrofish Survey
- Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North
Carolina FIPS 3200 Feet
35.213°N 81.3531°W

0 100 200 Feet
0 40 80 Meters

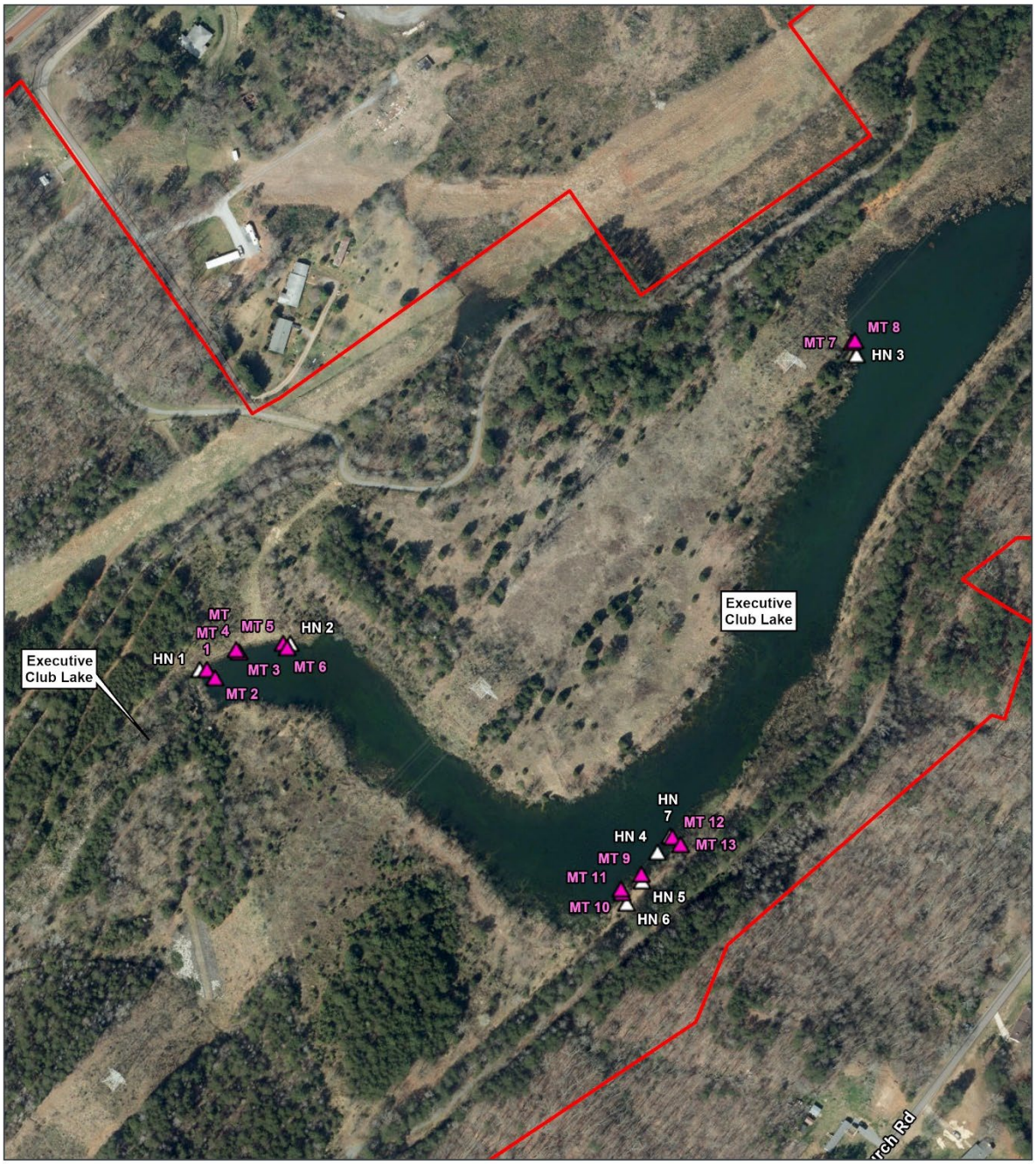
N

1:3,000

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

SWCA ENVIRONMENTAL CONSULTANTS

Map 5 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 6. Survey areas for Executive Club Lake.

△ Hoop Net
▲ Minnow Trap
▭ Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.21°N 81.3469°W

0 100 200 Feet
0 40 80 Meters

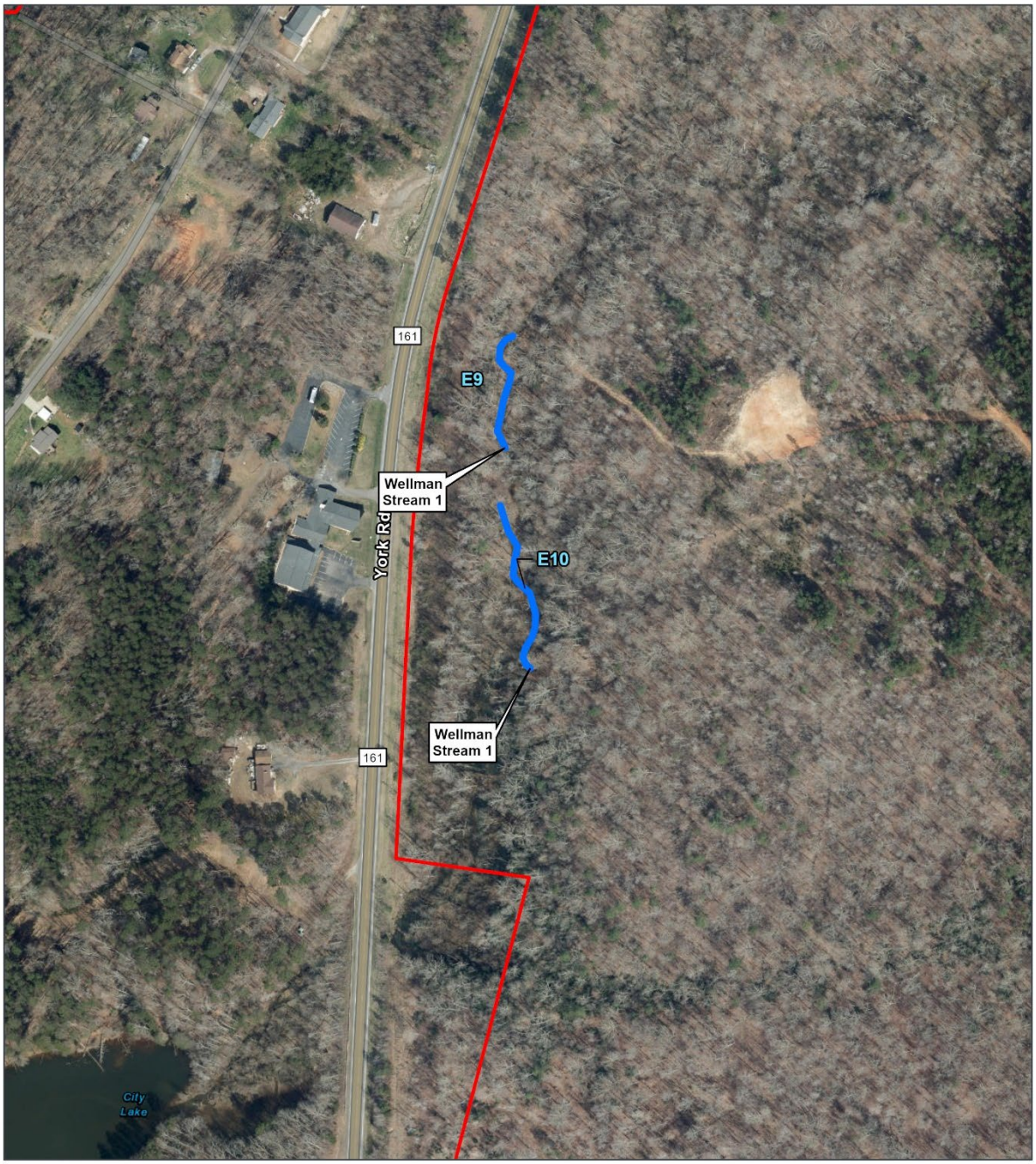
N

1:3,000

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

SWCA ENVIRONMENTAL CONSULTANTS

Map 6 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 7. Survey areas for stream sections E9 and E10 on the Albemarle East Property.

Electrofish Survey

Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North
Carolina FIPS 3200 Feet
35.2073°N 81.3401°W

0 100 200 Feet
0 40 80 Meters

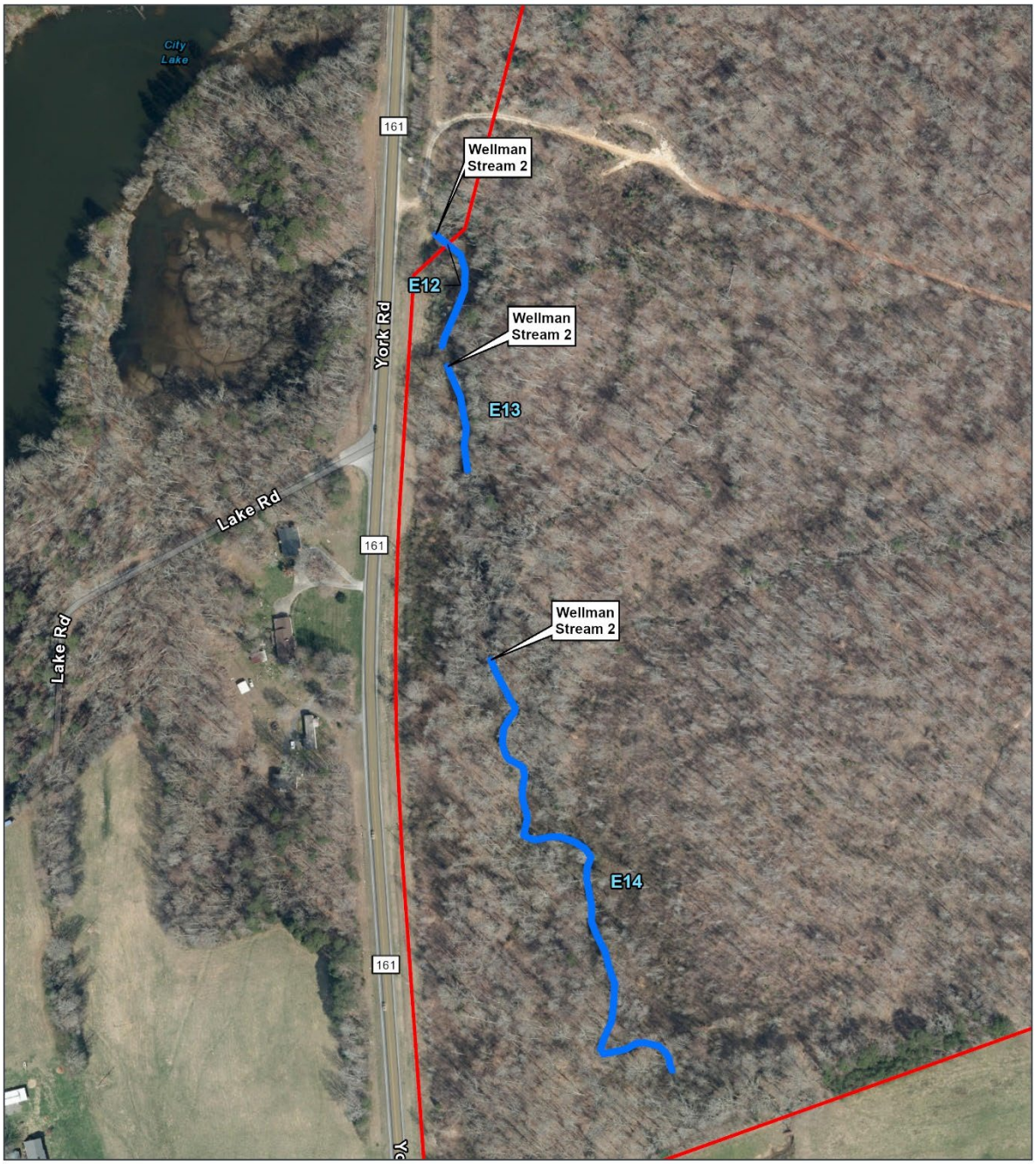
N

1:3,000

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

SWCA ENVIRONMENTAL CONSULTANTS

Map 7 of 9



ALBEMARLE KINGS MOUNTAIN MINE

Map 8. Survey areas for stream sections E12, E13, and E14 on the Albemarle East Property.

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.2017°N 81.3402°W

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

ALBEMARLE KINGS MOUNTAIN MINE

Map 9. Survey areas for stream section E11 on the Albemarle East Property.

Electrofish Survey

Project Area

Cleveland County, NC
USGS 7.5' Quadrangle:
Kings Mountain, NC, 35081-B3
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
35.2006°N 81.3345°W

0 100 200 Feet
0 40 80 Meters

N

1:3,000

Base Map: Esri ArcGIS Online, Accessed October 2022
Updated: 10/7/2022
Project No. 70316
Layout: AquaticsSheets
Aprx: 70316_AquaticsSurvey

SWCA ENVIRONMENTAL CONSULTANTS

Map 9 of 9

APPENDIX B

Photo Log

Photo 1. Representative habitat for minnow traps at Mud Pond 2.

Photo 2. Representative habitat for hoop net placement at Mud Pond 2.

Photo 3. Representative habitat for minnow traps at Mud Pond 1.

Photo 4. Representative habitat for minnow traps at No. 1 Mill Pond.

Photo 5. Representative habitat for hoop net placement at No. 1 Mill Pond.

Photo 6. Representative habitat for minnow traps at South Creek Reservoir.

Photo 7. Representative habitat for hoop net placement at South Creek Reservoir.

Photo 8. Representative habitat for hoop net and minnow trap placement at South Creek Reservoir.

Photo 9. Representative habitat for minnow traps at Pit Lake.

Photo 10. Representative habitat for minnow traps at Pit Lake.

Photo 11. Representative habitat for hoop net placement at Pit Lake.

Photo 12. Representative habitat for minnow trap placement at Executive Club Lake.

Photo 13. Representative habitat for minnow traps at Executive Club Lake.

Photo 14. Representative habitat for hoop net placement at Executive Club Lake.

Photo 15. Representative surveyed habitat along South Creek.

Photo 16. Representative surveyed habitat along Kings Creek.

Photo 17. Representative surveyed habitat along Kings Creek.

Photo 18. Representative surveyed habitat along a stream reach on the Albemarle East Property.

Photo 19. Representative surveyed habitat along a stream reach on the Albemarle East Property.

Photo 20. Representative surveyed habitat along a stream reach on the Albemarle East Property.