Appendix D – Recreational Resources Final Study Report

Bad Creek Pumped Storage Project

Oconee County, South Carolina

January 2025

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1 Project Introduction and Background

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the owner and operator of the 1,400-megawatt Bad Creek Pumped Storage Project (Project) (FERC Project No. 2740) located in Oconee County, South Carolina, approximately eight miles north of Salem. The Project utilizes the Bad Creek Reservoir as the upper reservoir and Lake Jocassee, which is licensed as part of the Keowee-Toxaway Hydroelectric Project (FERC Project No. 2503), as the lower reservoir.

The existing (original) license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) for a 50-year term, with an effective date of August 1, 1977, and expiration date of July 31, 2027. The license has been subsequently and substantively amended, with the most recent amendment on August 6, 2018, for authorization to upgrade and rehabilitate the four pump-turbines in the powerhouse and increase the authorized installed and maximum hydraulic capacities for the Project.[1] Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process, as described at 18 Code of Federal Regulations (CFR) Part 5.

In accordance with 18 CFR §5.11 of the Commission's regulations, Duke Energy developed a Revised Study Plan (RSP) for the Project and proposed six studies for Project relicensing. The RSP was filed with the Commission and made available to stakeholders on December 5, 2022. FERC issued the Study Plan Determination on January 4, 2023, which included modifications to one of the six proposed studies. Duke Energy completed its first year of studies in 2023 with stakeholder consultation as required by the Commission's SPD. Duke Energy filed the Initial Study Report (ISR) on January 4, 2023, and per the Commission's regulations at 18 CFR §5.15(c), Duke Energy held an ISR meeting with participants and FERC staff within 15 days of filing the ISR on Wednesday, January 17, 2024. Duke Energy completed its second and final year of studies in 2024; this Updated Study Report [18 CFR §5.15(c)] describes the Licensee's methods and results of the studies conducted in support of preparing an application for a new license for the existing Project and construction of the proposed Bad Creek II Power Complex (Bad Creek II).

[1] *Duke Energy Carolinas LLC, 164 FERC ¶ 62,066 (2018)*

2 Recreational Resources Study

2.1 FERC Environmental Resource Issues

The Commission identified the following environmental resource issues to be analyzed in the National Environmental Policy Act (NEPA) document for the Project relicensing related to recreational, land use, and aesthetic resources. These resource issues address the effects of continued Project operations as well as potential construction and operation of Bad Creek II during the new license term:

- Effects of proposed project construction, operation, and maintenance on recreational use in the Project boundary, including access to the existing Foothills Trail.
- Use of Project lands for recreation activities, including fly fishing and birdwatching.
- Effects of Bad Creek II construction, operation, and maintenance existing land uses in project-affected area.
- Effects of land management activities within the Project boundary on environmental resources.
- Effects of Bad Creek II construction, operation (including the presence of project facilities), and maintenance activities on visual resources.

Resource issues identified by FERC have been and/or will be addressed through a combination of the Recreational Resources Study, Visual Resources Study, and Exhibit E of the license application. The Recreational Resources Study is complete, and this report presents methods and results of individual study tasks.

2.2 Study Goals and Objectives

Tasks carried out for the Bad Creek Recreational Resources Study employ standard methodologies that are consistent with the scope and level of effort described in the RSP. Goals of the Recreational Resources Study were met through four study tasks: (1) Recreation Use and Needs (RUN) Study for the 43-mile-long portion of the Foothills Trail managed by Duke Energy; (2) Foothills Trail Corridor Conditions Assessment of the 43-mile-long portion of the Foothills Trail managed by Duke Energy; (3) Existing Recreational Use Characterization of Whitewater River cove; and (4) Recreational Public Safety Evaluation of Whitewater River cove. Goals for each task are as follows:

- **Task 1 - RUN Study**: To assess current recreation use and identify any future recreation needs along the 43-mile-long segment of the Foothills Trail and associated access areas that are maintained by Duke Energy and referenced in the existing Recreation Plan for the Project.[2] Information collected during the RUN Study will be used to develop an updated Recreation Management Plan, as needed, for the new License term and will support characterization of existing recreational use levels for areas that could be temporarily impacted by Bad Creek II construction. Data collected during the RUN Study and Trail Conditions Assessment (Task 2) were used to estimate the Foothills Trail's hiking and backpacking carrying capacity.
- **Task 2 – Trail Conditions Assessment:** To evaluate the current condition of trail surface and corridor included in the 43-mile segment of the Foothills Trail maintained by Duke Energy and identify key areas of future maintenance needs or improvements.
- **Task 3 - Whitewater River Cove Existing Recreational Use Evaluation:** To characterize recreation use in Whitewater River cove and inform Duke Energy of the level of boating use disruption that could occur associated with Bad Creek II construction.
- **Task 4 - Recreational Public Safety Evaluation**: To evaluate potential public safety risks, specifically those associated with recreation activities at or near Whitewater River cove, that may be created or exacerbated by Bad Creek II during the construction and operation phases.

3 Report Layout

All tasks for the Recreational Resources Study are complete and study task reports have been developed in consultation with the Recreational Resources Resource Committee; final study task reports are attached to this report as shown in Table 1. Study task reports included as final in the

[2] Duke Energy filed a copy of the 1980 document, "A Plan for Development and Management of the Foothills Trail and a Supplement to the Bad Creek Pumped Storage Project #2740 Exhibit R," with the Commission on July 25, 2022, in response to additional information requested by FERC staff.

Initial Study Report are not being filed again with this Updated Study Report[3]. Documentation of consultation with the Resource Committee is presented in Attachment 5.

Table 1. Recreational Resources Study Tasks and Attachments

Study Report Title	Attachment	Attachment Title
Appendix D – Recreational Resources Study Report	1	Foothills Trail Corridor Recreation Use and Needs Final Report
	2	Foothills Trail Corridor Conditions Assessment Final Report
	3	Whitewater River Cove Existing Recreational Use Characterization Final Report – *Not attached/Filed with the Initial Study Report*
	4	Whitewater River Cove Recreational Public Safety Evaluation Final Report
	5	Consultation Documentation

[3] The complete study report with all attachments will be included in the draft license application and final license application.

Attachment 1

Foothills Trail Corridor Recreation Use and Needs Study Final Report

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Recreation Use and Needs Study

Bad Creek Pumped Storage Project

FERC No. 2740

Prepared for:

Duke Energy Carolinas, LLC

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November 2024

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1.0 INTRODUCTION

On February 23, 2022, Duke Energy Carolinas, LLC (Duke Energy) submitted the Bad Creek Pumped Storage Project (Bad Creek Project or Project; FERC No. 2740) Notice of Intent to Relicense (NOI) and Pre-Application Document (PAD) to the Federal Energy Regulatory Commission (FERC or Commission). The PAD included an alternative licensing proposal for installation of additional energy storage and generation capacity by constructing a new 1,400-megawatt power complex (Bad Creek II Complex) adjacent to the existing Bad Creek powerhouse to meet the growing need for energy storage and renewable energy production across Duke Energy's service territories. Duke Energy plans to make a final decision regarding the alternative licensing proposal for the construction of the Bad Creek II Complex prior to the submittal of a Final License Application for the Bad Creek Project.

In support of a new license, Duke Energy is conducting a Recreational Resources Study that consists of four main study tasks: (1) a Recreation Use and Needs (RUN) Study for the 43-mile-long portion of the Foothills Trail (or Trail) managed by Duke Energy; (2) a Foothills Trail Corridor Conditions Assessment (Conditions Assessment) of the 43-mile-long portion of the Foothills Trail managed by Duke Energy; (3) an Existing Recreational Use Characterization of Whitewater River cove; and (4) a Recreational Public Safety Evaluation of Whitewater River cove.

This RUN Study report characterizes current recreation use and identifies any future recreation needs along the 43-mile-long segment of the Foothills Trail and associated access areas that are maintained by Duke Energy and referenced in the existing Recreation Plan for the Project.[1] The report also includes a carrying capacity analysis relevant to future management of the Trail. The information provided in this report will be considered during development of protection, mitigation, and enhancement measures (PMEs) and an updated Recreation Management Plan (RMP) for the Project. In addition, this report supports characterization of existing recreation use levels for areas that could be temporarily impacted by the Bad Creek II Complex construction.

[1] Duke Energy filed a copy of the 1980 document, "A Plan for Development and Management of the Foothills Trail and a Supplement to the Bad Creek Pumped Storage Project #2740 Exhibit R," with the Commission on July 25, 2022 (Accession No. 20220725-5171), in response to additional information requested by FERC staff.

1.1 Process Summary

In Section 7.1.6.3 of the PAD, Duke Energy proposed to conduct a Recreational Resources Study in support of the proposed the Bad Creek II Complex. No study requests related to recreational resources were received during the scoping process; however, formal comments on the PAD and Scoping Document 1 regarding recreational resources were received from Upstate Forever and the Foothills Trail Conservancy. Comment responses were included in Appendix A of the Proposed Study Plan (PSP), which was filed with the Commission on August 5, 2022. Stakeholder comments on the PSP were submitted by the Commission, South Carolina Department of Natural Resources (SCDNR), Upstate Forever, and the Foothills Trail Conservancy. Resource issues and stakeholder comments pertinent to the Recreational Resources Study were considered in the development of the Revised Study Plan (RSP), which was filed with the Commission on December 5, 2022. Summaries of comments and responses were included in Appendix A and copies of all comments and correspondence were provided in Appendix B of the RSP. The Commission issued its Study Plan Determination (SPD) on January 4, 2023, and approved the Recreational Resources Study with modifications. Duke Energy adopted all staff recommendations specific to the RUN Study.

On January 4, 2024, Duke Energy filed the Initial Study Report (ISR) for the Project, which included the draft Conditions Assessment report and the final Existing Recreational Use Characterization of Whitewater River Cove report. During the ISR Meeting, which was held on January 17, 2024, a status update was provided for the RUN Study. In their comments on the ISR and associated meeting, FERC recommended that the RUN Study's carrying capacity analysis incorporate the use of computer-edited representative photographs to portray a range of visitor use levels. In their response, Duke Energy noted that the methods referenced by FERC were not appropriate for the carrying capacity analysis of the Foothills Trail due to a lack of strong anchor sites at which people per viewshed (PPV) or people at one time (PAOT) could be measured. The carrying capacity methods utilized during this study are described in more detail in Section 3.0.

1.2 Current Operation

The Bad Creek Project began operation in 1991 after roughly ten years of construction. Located in Oconee County, South Carolina, approximately eight miles north of Salem, South Carolina, the Bad Creek Reservoir was formed when Bad Creek and West Bad Creek were dammed and serves as the Bad Creek Project's upper reservoir. Lake Jocassee serves

as the Bad Creek Project's lower reservoir and is licensed as part of Duke Energy's Keowee-Toxaway Hydroelectric Project (KT Project; FERC No. 2503). The structures and features of the Bad Creek Project include the upper reservoir and dams, inlet/outlet structures in the upper and lower reservoirs, a water conveyance system, an underground powerhouse, tailrace tunnels, transmission facilities, and an approximately 9.25-mile-long transmission line corridor extending from the Bad Creek Project to the KT Project's Jocassee switchyard. The entirety of the Bad Creek Powerhouse is built within a large cavern inside a mountain. Similar to other hydroelectric stations, the engineering design of the Bad Creek Project involves the flow of water to produce electricity; however, the roughly 1,200-foot vertical distance between the upper and lower reservoirs makes the Bad Creek Project well-suited to take advantage of gravity to produce larger quantities of electricity for a given flow rate.

The 30-year-old Bad Creek Project is one of the most powerful and flexible energy generation and storage assets in Duke Energy's system. Built primarily to store surplus energy from baseload nuclear and fossil-fuel-driven power plants during times of low energy demand, today the Bad Creek Project is used to balance an increasingly complex energy grid. By pumping water from Lake Jocassee up to the Bad Creek Reservoir, the Bad Creek Project is able to provide storage of surplus baseload energy during low demand periods. While the Bad Creek Project is in turbine operation mode, water flows from the upper reservoir down to Lake Jocassee, providing power back to the grid when energy demand is higher or when renewable generation is unavailable.

1.3 Proposed Action

The demand for energy and energy storage has been steadily on the rise in the southeastern region of the country. In an effort to meet this growing demand, Duke Energy is proposing an expansion to the Bad Creek Project that will double the generating capacity of the station. The proposed Bad Creek II Complex would utilize the existing upper and lower reservoirs and consist of a new inlet/outlet within the existing upper reservoir, water conveyance system, and underground powerhouse. Additionally, a new inlet/outlet along the shoreline of the Whitewater River arm of Lake Jocassee would be constructed.

The Bad Creek II Complex underground powerhouse would be arranged and sized similarly to the existing Bad Creek Project powerhouse. In general, most of the features for the Bad Creek II Complex would be submerged, underground, and/or within lands

classified as "project operations," which are not accessible to the general public. However, due to the proposed spoil locations and other construction-related activities within the Project boundary, it is anticipated that the Bad Creek Hydro Access and Musterground Road access would need to be closed to the public for approximately 5 to 7 years during construction of the Bad Creek II Complex. Duke Energy will develop more specific schedules and plans for closures as construction plans advance.

2.0 DESCRIPTION OF STUDY AREA

Completed in 1981, the Foothills Trail is a 77-mile-long trail that connects Oconee State Park and Table Rock State Park. The 43-mile-long central section of the trail was built and is maintained by Duke Energy, while the eastern and western sections of the trail are managed by the Foothills Trail Conservancy.

The study area includes Duke Energy's 43-mile-long segment of the Foothills Trail, five spur trails and associated access areas maintained by Duke Energy per Exhibit R of the Original License. Duke Energy maintains the segment of the Foothills Trail from the western end of the trail at the North Carolina/South Carolina border at the Whitewater River near the Bad Creek Project to the Table Rock State Park property line approximately 1,000 feet southwest of the top of Pinnacle Mountain (Figure 1). The five spur trails are Bad Creek Spur, Coon Branch Spur, Lower Whitewater Falls Overlook, Hilliard Falls Spur, and Laurel Fork Falls Spur. Access areas comprise four trailheads with vehicular access including Bad Creek Hydro, Laurel Valley, Chimneytop Gap, and Sassafras Mountain; and four trailheads with boat-in or hike-in access only including Laurel Fork Falls, Toxaway River, Canebrake, and Horsepasture River (Figure 2).

In addition, the study area includes the Foothills Trail trailhead in Table Rock State Park, the entrance to Musterground Road located near the Bad Creek Hydro access area, and the Upper Whitewater Falls Access (Figure 2). Musterground Road provides the public vehicular access to 2,620 acres of SCDNR-owned Wildlife Management Area (WMA) and 4,118 acres of Duke Energy-owned property, leased by SCDNR and managed as a WMA. The Upper Whitewater Falls Trail Access is managed by the US Forest Service and provides vehicular access to the Foothills Trail and hiking access to view the Upper Whitewater Falls. Both access points were included in the study area to assess potential impacts associated with construction of the Bad Creek II Complex.

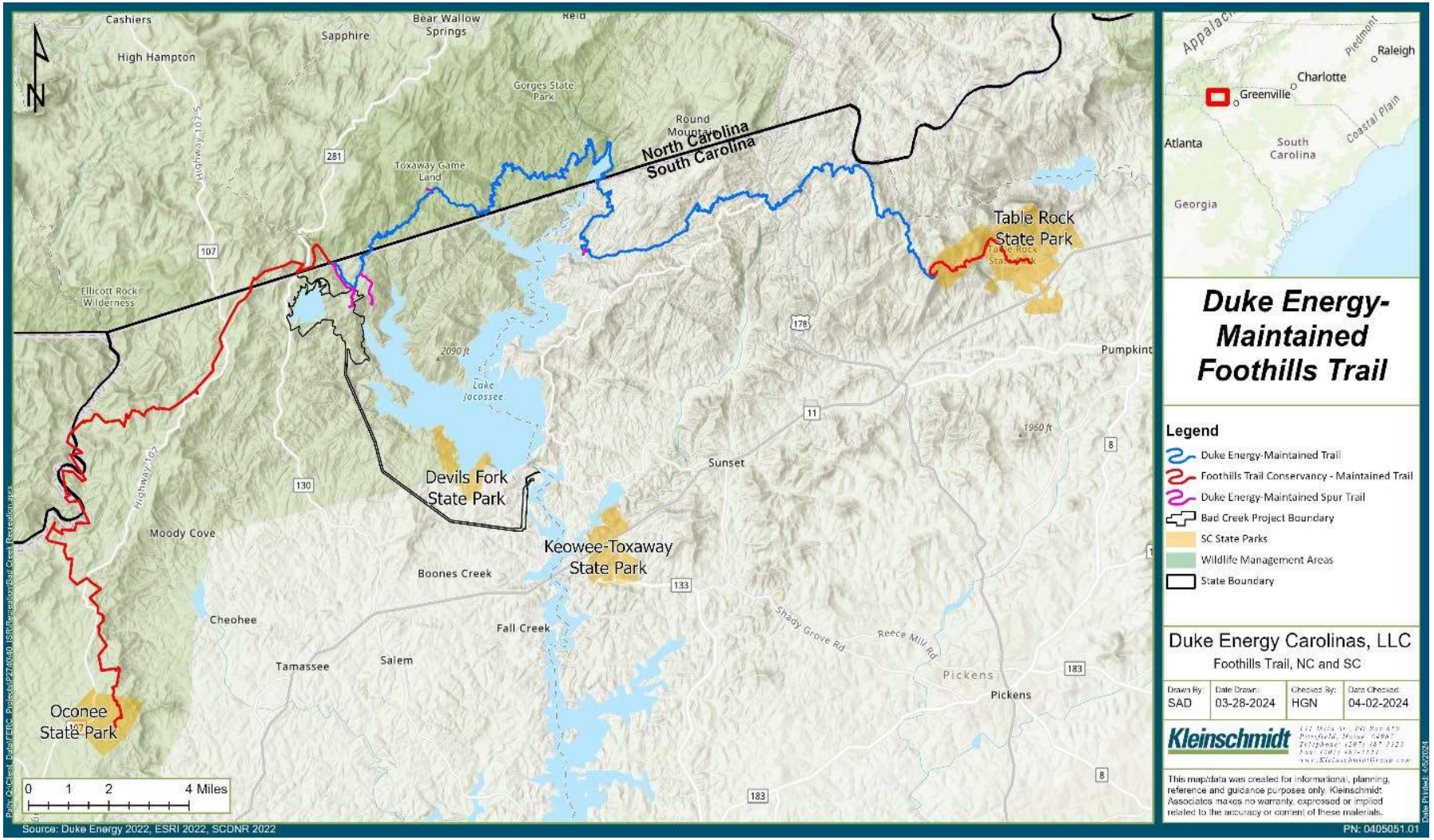

Figure 1 The Foothills Trail

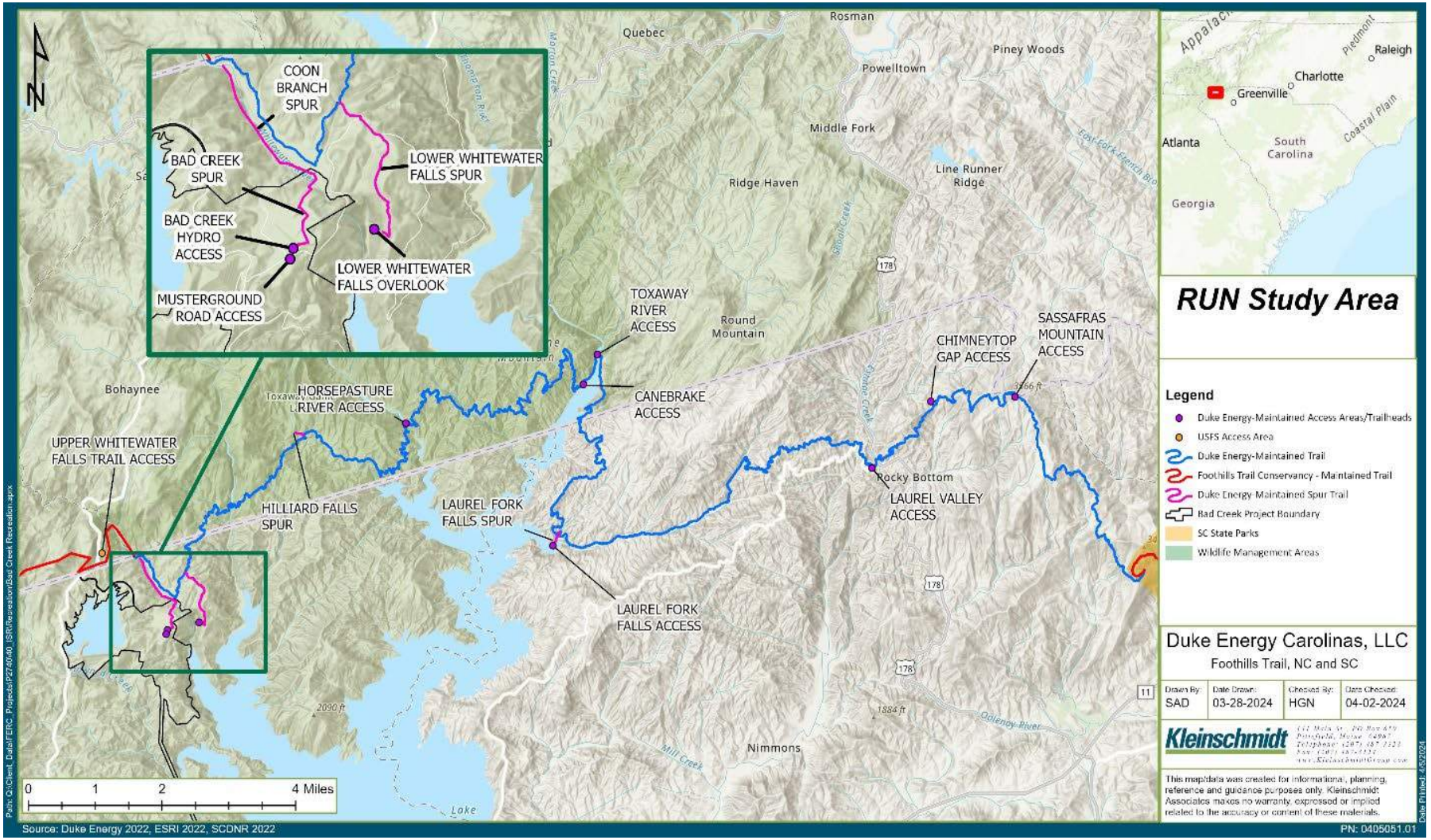

Figure 2 RUN Study Area

3.0 METHODS

A variety of methods were used to characterize current recreation use and determine future needs for the study area. The following sections describe these methods, including those for data collection and data analysis.

3.1 Data Collection Methods

Data collection methods included site inventories, traffic and trail counts, and user surveys. Data collection methods are summarized by location in Table 1. Overall, data collection occurred between March 1, 2023 and May 10, 2024, although the timing of each collection method varied. Sample data collection forms are provided in Appendix A. Additional information on each method is provided in the following sections.

Table 1 Summary of Data Collection Methods by Location

Locations	Data Collection Methods				
	Recreation Site Inventory	Traffic Counts	Trail Counts	In-Person User Survey	Online User Survey
Table Rock State Park			*		
Long Ridge Trail [a]			*		
Sassafras Mountain Access	*	*	*		*
Chimneytop Gap Access	*		*		*
Laurel Valley Access [b]	*	*	*	*	*
Laurel Fork Falls Access	*		*		*
Toxaway River Access	*		*	*	*
Canebrake Access	*		*		*
Horsepasture River Access	*		*	*	*
Lower Whitewater Falls Overlook	*		*		*
Bad Creek Hydro Access	*	*	*	*	*
Coon Branch Spur Trail			*		*
Musterground Road Access		*			
Upper Whitewater Falls Access		*			

[a] The trail counter at Long Ridge Trail was added after FERC issued the SPD following discussions with stakeholders and was therefore not included in the RSP.
[b] Spot counts were collected at Laurel Valley Access to support traffic counts.

3.1.1 Trail Access Area Inventory

A Recreation Site Inventory Form was completed for each of the eight Duke Energy-maintained access areas along the Foothills Trail and the Lower Whitewater Falls

Overlook[2]. The purpose of the inventory was to document the type, number, and size of facilities and amenities (restrooms, parking areas, boat ramps, picnic shelters and tables, etc.) located at each access area. A qualitative condition rating for each facility was noted and recorded via photograph. Facilities that qualify as compliant under the Americans with Disabilities Act (ADA) were identified.

To supplement the information collected during the inventory, detailed maps of the Duke Energy-maintained portion of the Foothills Trail were developed. The maps identify parcel boundaries, current property owner(s), access locations, spur trails, structures, and facilities/amenities. Completed site inventory forms and maps are provided in Appendix B.

3.1.2 Traffic and Trail Counts

TRAFx traffic and trail counters were installed to determine use estimates at the locations identified in Table 2 and shown in Figure 3. Traffic counters were only installed at those sites that allow for vehicle access[3], including Sassafras Mountain Access, Laurel Valley Access, Bad Creek Hydro Access[4], Musterground Road Access, and Upper Whitewater Falls Access. Traffic counter data collected at Musterground Road Access will be used to inform potential impacts related to the road closure during Bad Creek II Complex construction. Traffic counter data collected at Upper Whitewater Falls Access will be used to inform potential impacts related to potential increased use during Bad Creek II Complex construction.

Trail counters were installed in the study area at the four trailheads with vehicular access, the four trailheads with boat-in or hike-in access, and at Table Rock State Park, Long Ridge Trail, Coon Branch Spur, and Lower Whitewater Falls Overlook[5].

Counters collected data from March 1 to November 30, 2023, except for the trail counter at Long Ridge Trail and the traffic counter at Musterground Road Access. Following

[2] While the Lower Whitewater Falls Overlook is a spur trail, the trail leads to an overlook platform that provides views to the Lower Whitewater Falls. An inventory was collected at this area.
[3] Chimneytop Gap Access provides a small parking area on the western side of Sassafras Mountain Road, approximately 0.1 miles north of the trailhead. However, a traffic counter was not feasible at this location as the parking area is a wide pull-off that lacks an entrance/exit road.
[4] Two traffic counters were installed at Bad Creek Hydro Access, including one south of the parking area and one north of the parking area. Counts collected at the north counter were subtracted from those collected at the south counter to determine the number of vehicles that used the parking area.
[5] Two trail counters were installed at Sassafras Mountain Access, including one west of the observation tower and one southeast of the observation tower near the parking area.

discussions with the Recreational and Visual Resources Committee (RC), a trail counter was added at Long Ridge Trail to identify use patterns on the segment of trail between Table Rock State Park and Sassafras Mountain Access. The trail counter was installed on April 20, 2023 and collected data through November 30, 2023. The traffic counter at Musterground Road Access collected data when public access was available, which occurs annually from September 15-January 15 and again from March 20-May 10. The traffic counter at Musterground Road Access was installed and set to collect data from September 15, 2022 through January 15, 2023 and March 20, 2023 through May 10, 2023. However, several large data gaps occurred due to counter malfunctions, resulting in an incomplete dataset. A new counter was installed, and data were collected from September 15, 2023 through January 15, 2024 and March 20, 2024 through May 10, 2024. This complete dataset is presented in Section 5.1.2.

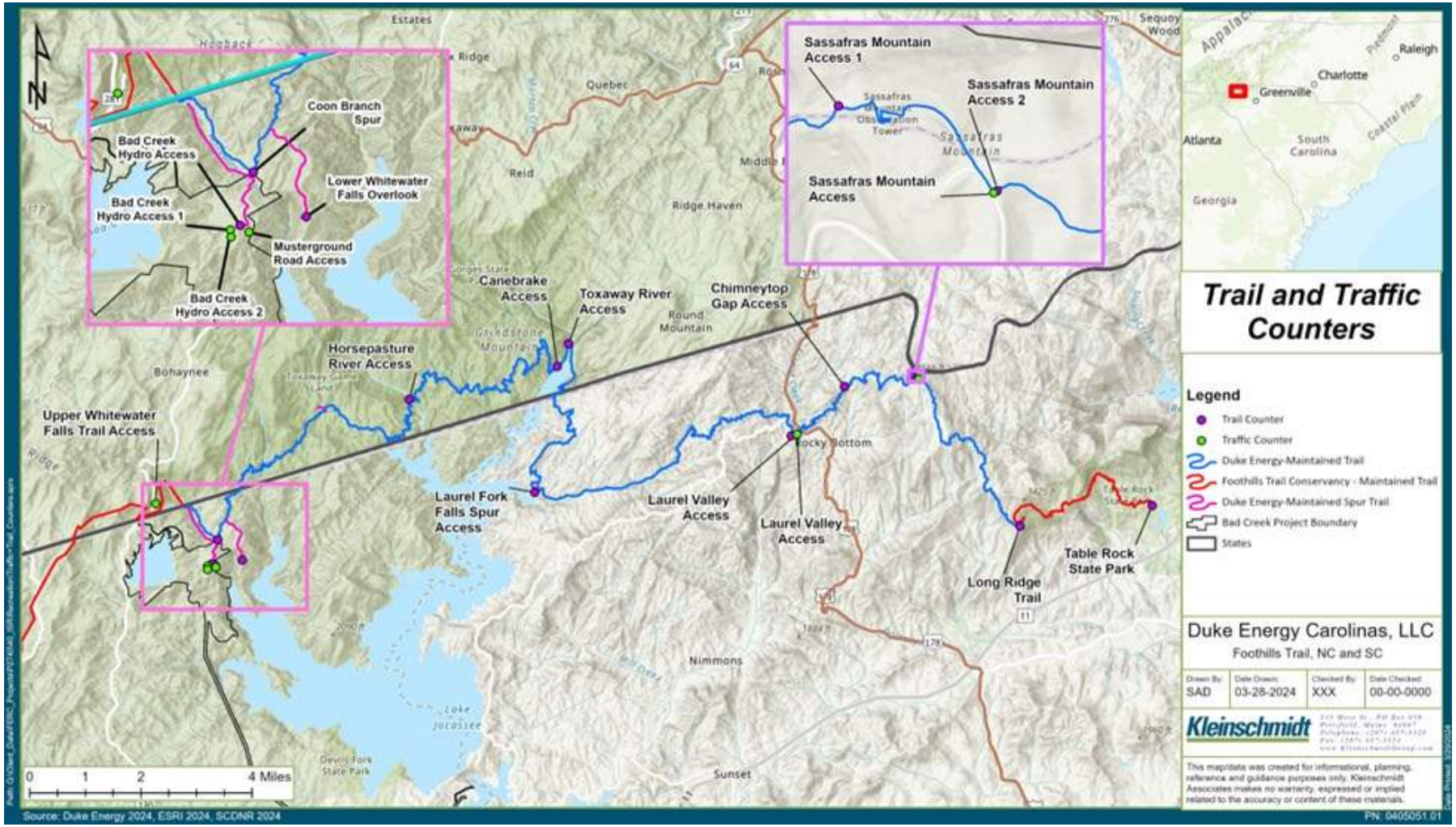

Figure 3 Traffic and Trail Counter Locations

Table 2 Traffic and Trail Counter Locations

Locations	Traffic Counters	Trail Counters
Table Rock State Park		35° 01'56.4"N, 82°42'03.4"W
Long Ridge Trail		35° 01'34.8"N, 82°44'34.0"W
Sassafras Mountain Access	35° 03'51.40"N, 82°46'32.6"W	35° 03'55.2"N, 82°46'41.2"W 35° 03'51.5"N, 82°46'32.4"W
Chimneytop Gap Access		35° 03'42.8"N, 82°47'56.9"W
Laurel Valley Access	35° 02'57.3"N, 82°48'50.2"W	35° 02'57.1"N, 82°48'51.2"W
Laurel Fork Falls Access		35° 01'58.5"N, 82°53'48.6"W
Toxaway River Access		35° 04'18.1"N, 82°53'12.9"W
Canebrake Access		35° 03'56.8"N, 82°53'25.5"W
Horsepasture River Access		35° 03'23.4"N, 82°56'13.6"W
Lower Whitewater Falls Overlook		35° 00'50.0"N, 82°59'21.1"W
Bad Creek Hydro Access	35° 00'43.7"N, 83°00'00.6"W 35° 00'40.7"N, 83°00'00.3"W	35° 00'45.7"N, 82°59'55.6"W
Coon Branch Spur Trail		35° 01'08.6"N, 82°59'49.4"W
Musterground Road Access	35° 00'42.9"N, 82°59'50.9"W	
Upper Whitewater Falls Access	35° 01'41.3"N, 83°01'00.9"W	

Traffic and trail counters were serviced by staff approximately every two weeks in an effort to minimize the potential for lost data through counter malfunctions or vandalism. However, some data gaps did occur as summarized in Table 3. Use estimates during these periods include data extrapolated using TRAFx software.

Table 3 Data Gaps during the Study Season

Location	Data Gap Timeframe	Reason
Chimneytop Gap Access	April 4-May 6, 2023	Trail counter was stolen, and a replacement counter had to be ordered
Horsepasture River Access	October 10-November 5, 2023	Trail counter malfunction and access issues during replacement

3.1.3 Spot Counts

Spot counts were conducted to supplement traffic counter data at the Laurel Valley Access parking area. During study planning, the Recreation RC noted that the parking area at Laurel Valley was often full during hunting season due to the presence of vehicles with ATV trailers taking up more than one parking space. Spot counts were conducted at Laurel

Valley Access to provide insight into the frequency at which vehicles with trailers were at the area and determine capacity impacts. Staff collected information on the number of vehicles present during each spot count, including those with and without trailers. Spot counts were collected when staff were on-site conducting in-person surveys.

3.1.4 User Surveys

In-person and online user surveys were utilized to collect information from Foothills Trail recreators. In-person surveys were conducted at four locations, including Laurel Valley Access, Toxaway River Access, Horsepasture River Access, and Bad Creek Hydro Access. In-person surveys were conducted for 4 hours at each access area on 30 days between March and November 2023. In-person surveys were conducted during morning and afternoon hours on a mix of weekdays, weekends, and holiday weekends[6]. Surveys collected information on user demographics, group size, length of stay, recreation activities, and perceptions of crowding and site condition. Table 4 provides the date, day type, and time of day the in-person surveys were conducted.

Table 4 In-Person Survey Schedule

Date	Day Type	Survey Times by Access Area[a]	
		Toxaway River/ Horsepasture River	Bad Creek Hydro/ Laurel Valley
Wednesday, March 8, 2023	Weekday	Afternoon	Morning
Sunday, March 19, 2023	Weekend	Morning	Afternoon
Friday, April 21, 2023	Weekday	Afternoon	Morning
Saturday, April 22, 2023	Weekend	Morning	Afternoon
Friday, May 5, 2023	Weekday		Afternoon
Saturday, May 6, 2023	Weekend	Morning	Afternoon
Sunday, May 7, 2023	Weekend	Morning	
Sunday, May 28, 2023	Holiday		Afternoon
Monday, May 29, 2023	Holiday	Afternoon	Morning
Tuesday, May 30, 2023	Weekday	Morning	
Friday, June 2, 2023	Weekday		Afternoon
Saturday, June 3, 2023	Weekend	Morning, Afternoon	
Sunday, June 4, 2023	Weekend		Morning
Saturday, June 17, 2023	Weekend		Afternoon

[6] Holiday weekends, also referred to as non-peak weekends, are weekends when recreational use is at its peak for the season (e.g., Memorial Day, July 4th, and Labor Day). Holiday weekends include all three days in the holiday weekend (e.g., Saturday, Sunday and Monday of Labor Day weekend) (FERC 2014). Holiday weekends during this study were identified as May 27-29, 2023 (Memorial Day weekend), July 2-4, 2023 (July 4th weekend), and September 2-4, 2023 (Labor Day weekend).

Date	Day Type	Survey Times by Access Area[a]	
		Toxaway River/ Horsepasture River	Bad Creek Hydro/ Laurel Valley
Sunday, June 18, 2023	Weekend	Morning, Afternoon	
Monday, June 19, 2023	Weekday		Morning
Monday, July 3, 2023	Holiday		Afternoon
Tuesday, July 4, 2023	Holiday	Morning, Afternoon	
Wednesday, July 5, 2023	Weekday		Morning
Friday, July 21, 2023	Weekday		Afternoon
Saturday, July 22, 2023	Weekend	Morning, Afternoon	
Sunday, July 23, 2023	Weekend	Morning	Afternoon
Monday, July 24, 2023	Weekday		Morning
Tuesday, August 8, 2023	Weekday		Afternoon
Wednesday, August 9, 2023	Weekday	Morning, Afternoon	
Thursday, August 10, 2023	Weekday		Morning
Friday, August 25, 2023	Weekday		Afternoon
Saturday, August 26, 2023	Weekend	Morning, Afternoon	
Sunday, August 27, 2023	Weekend		Morning
Saturday, September 2, 2023	Holiday		Afternoon
Sunday, September 3, 2023	Holiday	Morning, Afternoon	
Monday, September 4, 2023	Holiday		Morning
Friday, September 22, 2023	Weekday		Afternoon
Saturday, September 23, 2023	Weekend	Morning, Afternoon	
Sunday, September 24, 2023	Weekend		Morning
Sunday, October 8, 2023	Weekend		Afternoon
Monday, October 9, 2023	Weekday	Morning, Afternoon	
Tuesday, October 10, 2023	Weekday		Morning
Friday, October 27, 2023	Weekday		Afternoon
Saturday, October 28, 2023	Weekend		Morning, Afternoon
Saturday, November 4, 2023	Weekend	Morning, Afternoon	
Sunday, November 5, 2023	Weekend	Morning	
Monday, November 27, 2023	Weekday	Afternoon	
Tuesday, November 28, 2023	Weekday		Morning

[a] Survey times include Morning (8:00 AM – 12:00 PM) or Afternoon (12:00 PM – 4:00 PM).

In addition to in-person surveys, an online survey was available for recreators to access at any time during the study period of March-November 2023. Signage was posted at the eight Duke Energy-maintained access areas along the Foothills Trail and on Coon Branch Spur and Lower Whitewater Falls Overlook that included a Quick Response (QR) code and URL linking to the online survey. Recreators could take a picture of the signage while on the trail and access the survey later when internet access was available. The online survey

questions were the same as the in-person survey questions, however, the data were analyzed separately due to the difference in collection methods.

3.2 Data Analysis Methods

Data collected via the methods described in Section 3.1 were analyzed to characterize trail use, user types and satisfaction levels, estimate future trail use, and identify recreation needs. Methods for analysis are described in further detail in the sections below.

3.2.1 Current Use Estimates

The Foothills Trail allows recreators the flexibility to create their own recreation experience, whether that consists of hiking the entire trail from start to finish or hiking smaller segments of the trail over one or more days. The trail provides multiple entrance and exit points allowing each hike to be tailored to one's desired hiking experience. For the purposes of this study, use estimates focus on specific access areas and spur trails. This approach provides insight into the levels of use in specific areas of the trail and will inform future needs and management strategies in specific areas. Therefore, this report provides current use estimates at 13 points on the trail rather than one overall use total.

To estimate use, trail counter data were used to identify the number of visitors that utilized the Foothills Trail at the eight Duke Energy-maintained access areas, Coon Branch Spur, Lower Whitewater Falls Overlook, Long Ridge Trail, and Table Rock State Park during the study period. Use is presented as monthly total and daily average visitors summarized by month and day type for each trail counter location. To estimate use at the Musterground Road Access, traffic counter data were used to identify the number of vehicles that utilized the access point when it was publicly available.

Calibration counts were conducted at Bad Creek Hydro, Horsepasture River, Toxaway River, and Laurel Valley to determine correction values to correct for any over- or under counting by the trail counters. Correction factors were also applied to the raw trail counter data to address different trail uses (e.g., day hiking versus backpacking) at the following sites: Table Rock State Park, Bad Creek Hydro Access, Coon Branch Spur Trail, Horsepasture River Access, Laurel Falls Access, Laurel Valley Access, Toxaway River Access, and Lower Whitewater Falls Overlook. The raw traffic counter data collected at Upper Whitewater Falls Access, Bad Creek Hydro Access, Musterground Road Access, Laurel Valley Access, and Sassafras Mountain Access were divided by two to account for vehicles entering and exiting the parking areas.

3.2.2 User Survey Summaries

In-person surveys and online surveys were the only methods employed during the study that collected direct feedback from visitors to the Foothills Trail. In-person surveys were used to collect feedback from visitors during their recreation experience. Online surveys were used to collect feedback from visitors that had recently visited the trail. Data collected via both survey types were analyzed separately and are summarized to characterize user types and satisfaction levels.

3.2.3 Parking Demand Analysis

A parking demand analysis was conducted for Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access. The purpose of the parking demand analysis was to determine if sufficient parking is available to account for current demand. When assessing parking demand, an estimate of the percent of parking capacity that is occupied (occupancy rate) during a given time period is made. Average daily vehicles, parking capacity, and turnover were used to estimate each access area's parking occupancy rate, shown below.

$$\left(\frac{\frac{Average\ Daily\ Vehicles}{Turnover}}{Parking\ Capacity}\right) * 100$$

A parking occupancy rate was estimated for Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access. Parking occupancy rates and survey data were used to analyze parking demand at each site. Spot count data were collected at Laurel Valley Access and were also considered qualitatively when evaluating parking demand for that site.

3.2.4 Trail Carrying Capacity Analysis

In support of this study, Applied Trails Research, LLC (ATR) was contracted to estimate current hiking and backpacking/camping carrying capacity of the Duke Energy-maintained portion of the Foothills Trail. ATR applied use estimates, parking capacity information, and user survey information along with information collected during the Conditions Assessment (Task 2 of the Recreation Resources Study) and campsite information collected during an on-site visit to inform their analysis.

3.2.5 Future Use Estimates

Future recreation use estimates for the eight Duke Energy-maintained access areas, Coon Branch Spur, Lower Whitewater Falls Overlook, Long Ridge Trail, and Table Rock State Park were developed using projected population estimates for the four counties in which the Duke Energy-maintained portion of the Foothills Trail is located (Oconee and Pickens counties, South Carolina and Jackson and Transylvania counties, North Carolina), as well as the counties that were frequently noted during surveys as the respondents' home counties[7]. These include Greenville, Anderson, Charleston, and Spartanburg counties, South Carolina and Mecklenburg, Buncombe, and Wake counties, North Carolina. Population projection data were collected from the North Carolina Office of State Budget and Management and the South Carolina Revenue and Fiscal Affairs Office. The population projections were applied to the current use estimates developed in Section 3.2.1. This information was used to identify future population trends and understand potential future recreation demand for the Foothills Trail. Results were considered when assessing future recreation needs.

3.2.6 Future Needs Analysis

The potential need for new or improved facilities or amenities on the trail was evaluated by assessing the study results described in Section 5.0 while considering the available recreation resources on the trail and within the region as described in Section 4.0. Duke Energy will consult with the Recreation RC on the needs evaluation and determine if PMEs related to recreation are warranted at the Project. Any recreation PMEs proposed by Duke Energy would be included in the Final License Application, the RMP, and/or the Bad Creek Relicensing Agreement.

[7] The RSP notes that population projections for any counties in South Carolina, North Carolina, and Georgia that are noted during the recreation user surveys will be included in the future use analysis. However, 55 counties within these three states were noted during user surveys, with most of these counties being noted by one respondent. To provide a more accurate estimate of future use, counties that were noted by 2 percent or more of survey respondents were included in the analysis. Additional information on survey respondents' home counties, including a complete list of all counties noted during the survey, is discussed in Section 5.2.

4.0 RECREATION RESOURCES

The Foothills Trail was constructed in the early 1980s and spans 77 miles between Oconee State Park and Table Rock State Park. During the original licensing of the Bad Creek Project, Duke Energy agreed to build and maintain the central segment of the trail as mitigation for the loss of recreation opportunities associated with Project construction and in response to stakeholder request for a recreation trail in the area. The original plan for the trail is described in Exhibit R of the existing Project license, filed with the Commission on July 25, 2022, in response to additional information requested by FERC staff.

The following sections describe the Foothills Trail, including those portions maintained by Duke Energy and those maintained by the Foothills Trail Conservancy, as well as other significant recreation areas near the Bad Creek Project (Figure 4). Information collected during the inventory of the Duke Energy-maintained portion of the trail is summarized within and provided in full in Appendix B.

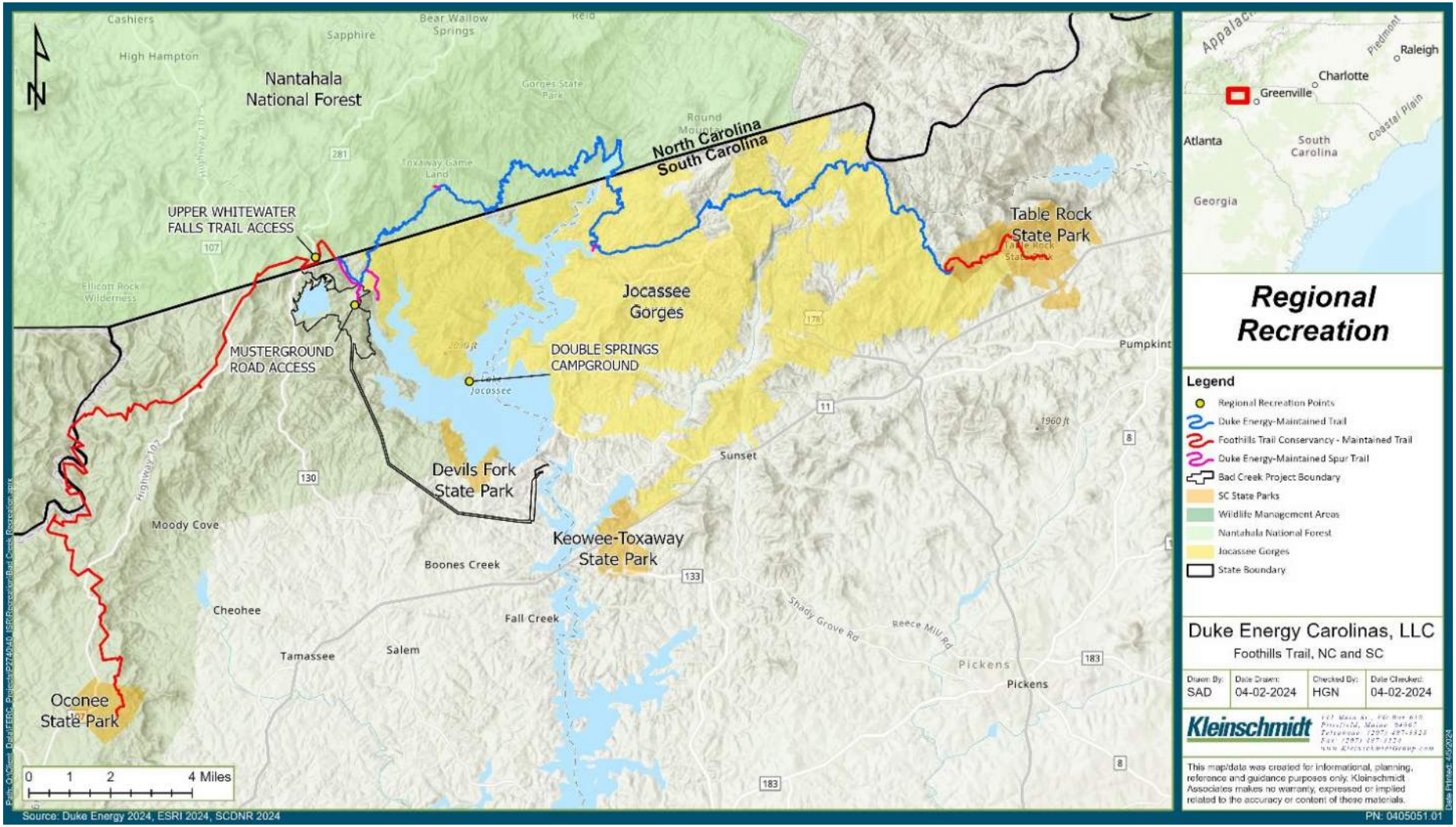

Figure 4 Recreation Opportunities near the Bad Creek Project

4.1 Recreation Resources included in the Existing Bad Creek License

Per the existing license, Duke Energy constructed and maintains the central 43-mile-long segment of the Foothills Trail and five spur trails between Pinnacle Mountain at the western extent of Table Rock State Park, and the North Carolina/South Carolina border at the Whitewater River. This portion of the trail, primarily located on non-Project lands, it is maintained by Duke Energy and private contractors with coordination and assistance from the Foothills Trail Conservancy.

Within the 43-mile-long segment, Duke Energy maintains five spur trails (Bad Creek Spur, Coon Branch Spur, Lower Whitewater Falls Overlook, Hilliard Falls Spur, and Laurel Fork Falls Spur), four trailheads with vehicular access (Bad Creek Hydro Access, Laurel Valley Access, Chimneytop Gap Access, and Sassafras Mountain Access), and four trailheads with boat-in or hike-in access only (Laurel Fork Falls Access, Toxaway River Access, Canebrake Access, and Horsepasture River Access). Spur trails and trailheads are described in further detail below.

4.1.1 Bad Creek Hydro Access

The Bad Creek Hydro Access is located at the Bad Creek Project facility, approximately 45.5 miles west of Table Rock State Park (Photo 1). The trailhead includes a hardened parking area with space for approximately 90 vehicles including 2 ADA spaces, 2 unisex portable toilets including one ADA-accessible toilet, and two kiosks. The area connects to the main trail through the Bad Creek Spur trail and provides access to the Coon Branch Spur trail and the Lower Whitewater Falls Overlook. This access area is located within the Bad Creek Project boundary.

Photo 1 Bad Creek Hydro Access

Located at the trailhead is the public access point for Musterground Road (Photo 2). Musterground Road and associated secondary roads provide the public vehicular access to 2,620 acres of SCDNR-owned Wildlife Management Area (WMA) and 4,118 acres of Duke Energy-owned property, leased by SCDNR and managed as a WMA. A portion of these lands are part of SCDNR's Jim Timmerman Natural Resources Area at Jocassee Gorges. Although these WMA lands and Jocassee Gorges may be accessible via Musterground Road at the Bad Creek Hydro Access, they are not part of the Bad Creek Project. Duke Energy and SCDNR maintain a Memorandum of Agreement (MOA) for the cooperative management of the road system in Jocassee Gorges which includes Musterground Road. Musterground Road originates at the Bad Creek Hydro Access and is only open to the public seasonally between September 15-January 15 and March 20-May 10. In addition to vehicular access via Musterground Road, the public can access the WMA shoreline by boat, utilizing the boat ramps at Devils Fork State Park on Lake Jocassee. Popular activities within the Musterground area include hunting for bear and other game, camping, and waterfall viewing, among others.

Photo 2 Entrance to Musterground Road

4.1.2 Horsepasture River Access

Located northeast of Bad Creek Hydro Access and approximately 36.3 miles from Table Rock State Park is the Horsepasture River Access. The trailhead provides hike-in or boat-in access only. Boaters on Lake Jocassee can travel north to Horsepasture River near the trailhead, park their boat along the shoreline when lake levels are sufficient and fish or swim in the river. A timber truss bridge crosses Horsepasture River at the trailhead and allows hikers uninterrupted passage along the trail (Photo 3).

Other than the bridge, no other developed facilities are located at Horsepasture River Access. However, this area is a popular destination among visitors, including large tour groups on Lake Jocassee.

Photo 3 Horsepasture River Access Bridge

4.1.3 Canebrake Access

Moving east from Horsepasture River Access along the Foothills Trail is the Canebrake Access, located approximately 28.6 miles from Table Rock State Park. Canebrake Access is only available by boat or foot. Boaters on Lake Jocassee can park their boats along the rock and clay shoreline and join the trail, fish along the shoreline, or camp in the area (Photo 4).

Photo 4 Canebrake Access Informal Campsite

4.1.4 Toxaway River Access

Just northwest of Canebrake Access, approximately 28 miles from Table Rock State Park is the Toxaway River Access. The trailhead provides hike-in or boat-in access only. Boaters on Lake Jocassee can travel north to Toxaway River near the trailhead, park their boat along the shoreline when lake levels are sufficient and fish or swim in the river. Located at the Toxaway River Access is a campground with 9 campsites, 9 fire rings, one active recreation area, 11 lantern hooks, 7 picnic tables, and 1 kiosk and other trail signage (Photo 5). Camping, fishing, and swimming are popular activities at the access area. A suspension bridge is also located at the Toxaway River Access, providing hikers uninterrupted passage along the Foothills Trail.

Photo 5 Toxaway River Access - Campground Amenities

4.1.5 Laurel Fork Falls Access

South of the Toxaway River Access on the Foothills Trail is the Laurel Fork Falls Access, located approximately 22.4 miles from Table Rock State Park. The area provides boat-in or hike-in access and connects to the Foothills Trail via the 0.2-mile-long Laurel Fork Falls Spur. Boaters can park their boats on the shoreline at Laurel Fork Falls Access, hike the spur trail to join the main trail and view the Laurel Fork Falls waterfall (Photo 6). Visitors also camp at the primitive campsite located a few hundred feet from the falls.

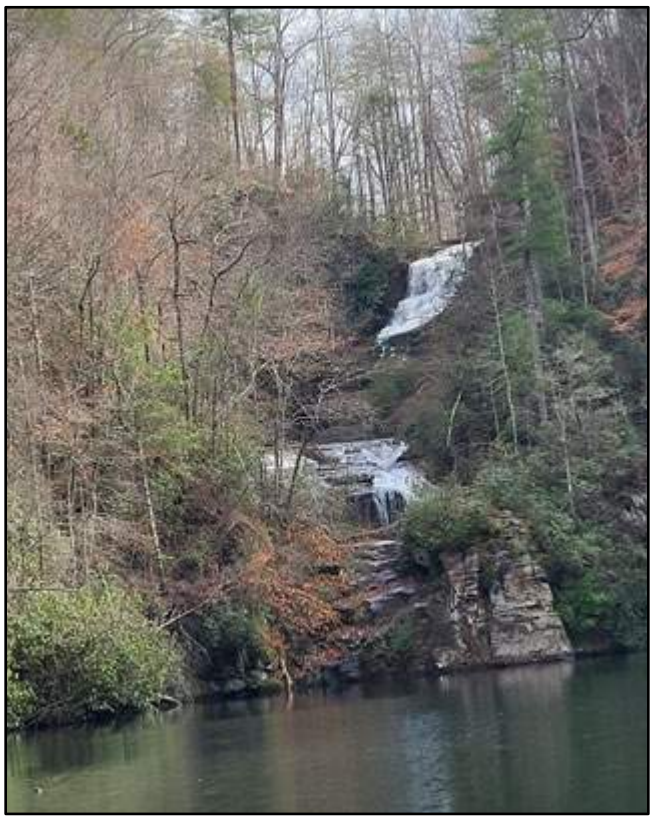

Photo 6 Laurel Fork Falls

4.1.6 Laurel Valley Access

From Laurel Fork Falls Access continuing west along the trail is the Laurel Valley Access, located approximately 14.3 miles from Table Rock State Park. Laurel Valley Access provides vehicular access to the Foothills Trail via Horsepasture Road and includes a gravel parking lot with space for approximately 20 vehicles (Photo 7). This access point is often used by visitors utilizing the parking area for loading and unloading their ATVs. Laurel Valley also provides access to the Estatoe Gorge Spur Trail. Interpretive signage is located at the area with information related to the Jim Timmerman Natural Resources Area at Jocassee Gorges.

Photo 7 Laurel Valley Access Parking Area

4.1.7 Chimneytop Gap Access

Northwest of Laurel Valley Access and approximately 12.2 miles from Table Rock State Park is the Chimneytop Gap Access (Photo 8). North of the trailhead on the eastern side of the F Van Clayton Memorial Highway is a gravel parking area with space for approximately 10 vehicles (Photo 9). Recreators can park and hike SCDNR's Beech Bottom Falls Trail or walk down the road to join the Foothills Trail. At the trailhead is one kiosk.

Photo 8 Chimneytop Gap Access at the Foothills Trail

Photo 9 Chimneytop Gap Access Parking Area

4.1.8 Sassafras Mountain Access

Continuing east on the Foothills Trail from Chimneytop Gap Access is the Sassafras Mountain Access, located approximately 9.5 miles from Table Rock State Park at the North Carolina/South Carolina border. At the trailhead is a gravel parking area with space for approximately 30 vehicles and 1 ADA-designated space (Photo 10). There is also an overflow parking area approximately one-tenth of a mile south of the main parking area with space for approximately 7 vehicles. The trailhead also has two ADA-accessible unisex vault toilets. Besides serving as a trailhead for the Foothills Trail, hikers can access the Palmetto Trail and the Caesar Head State Park Spur trail.

Photo 10 Sassafras Mountain Access

Just before reaching the trailhead, hikers traveling east on the Foothills Trail will encounter the Sassafras Mountain Overlook (Photo 11). The Sassafras Mountain Overlook is owned and managed by SCDNR and provides mountainous views of South Carolina, North Carolina, and Georgia. The overlook is accessible by stairs or by ADA-compliant ramp and shares parking and restroom facilities with the trailhead. Some visitors to the overlook

walk the loop that surrounds it, while others may travel further utilizing one of the connecting trails.

Photo 11 Sassafras Mountain Overlook

4.1.9 Spur Trails

Duke Energy maintains five spur trails that branch from the 43-mile-long segment of the Foothills Trail. These include Bad Creek Spur, Coon Branch Spur, Lower Whitewater Falls Overlook Spur, Hilliard Falls Spur, and Laurel Fork Creek Falls Spur. Duke Energy maintains these spur trails in accordance with the Foothills Trail Maintenance Program included in Appendix C.

The Bad Creek Spur is approximately 0.7 miles long and connects the Bad Creek Hydro Access trailhead to the main Foothills Trail. Two steel truss bridges are located approximately 0.5 miles from the Bad Creek Hydro parking area, providing access over the Whitewater River.

The Coon Branch Spur is approximately 1.0 mile long and originates from the Bad Creek Spur just before the two bridges at the Whitewater River. The Coon Branch Spur trail follows the southwestern side of the Whitewater River through the Coon Branch Natural Area, which is owned by Duke Energy and protected under a conservation easement as part of the Jocassee Gorges.

The Lower Whitewater Falls Overlook is approximately 1.0 mile long and connects the observation platform to the main Foothills Trail. The wooden observation platform provides views of the Lower Whitewater Falls.

The Hilliard Falls Spur is approximately 0.1 mile long and branches from the main Foothills Trail near Bearcamp Creek, between Horsepasture River and Thompson River. The spur trail leads to the Hilliard Falls waterfall.

Laurel Fork Falls Spur is approximately 0.2 miles long and connects the main Foothills Trail to the Laurel Fork Falls Access on Lake Jocassee.

4.2 Other Recreation Resources near the Bad Creek Project

The 43 miles of the Foothills Trail maintained by Duke Energy provide a fraction of the unique and extensive recreation opportunities available in the region, many of which are distinctly intertwined with the Foothills Trail. Nearby public recreation areas include the remaining 34 miles of the Foothills Trail and a network of spur trails, the Toxaway Game Lands of North Carolina, Lake Jocassee and Devils Fork State Park, Table Rock State Park, Oconee State Park, the Upper Whitewater Falls within the Nantahala National Forest, remote parts of Gorges State Park and the remainder of the Jim Timmerman Natural Resources Area at Jocassee Gorges, among others. Information on some of these areas is summarized in the following sections.

4.2.1 Foothills Trail – East and West Segments

The Foothills Trail was originally conceived in the 1960s in response to the construction of the KT Project (FERC No. 2503) and the Bad Creek Project. In the 1970s, the Foothills Trail Conference (now the Foothills Trail Conservancy) was established as a non-profit 501(c)(3) organization and construction of the trail began (FTC 2024). By the time Duke Energy began constructing their section of trail, two sections of trail were currently in use. The first section included a 23-mile-segment of trail in the Sumter National Forest, which was designated as the Foothills National Recreation Trail. The second section connected

Pinnacle Mountain with Table Rock State Park (DPC 1980). These two sections, with many additions since the early 1980s, are still maintained and cared for by the Foothills Trail Conservancy and provide a range of hiking experiences for all hikers from beginners to experts.

The western section of the trail spans approximately 30 miles, starting in Oconee State Park and meandering north, past waterfalls and along the Chattooga River, before turning east then northeast. The trail crosses the North Carolina/South Carolina line and eventually meets the Whitewater River which it follows back down to the states' border entering Duke Energy's territory. Along the entire western section, spur trails are numerous and include the Round Mt. Spur trail, the Fork Mountain Trail, and the Big Bend Trail, among others (FTC 2024).

The eastern section of the trail picks up at the end of Duke Energy's section, approximately 1,000 feet southwest of the top of Pinnacle Mountain through Table Rock State Park to the Table Rock Summit Trailhead. This approximately 4-mile section of the trail includes unique trees and rock formations, waterfalls, and mountainous views (FTC 2024).

4.2.2 Table Rock State Park and Oconee State Park

Table Rock State Park, which serves as the eastern terminus of the Foothills Trail, is located in Pickens County, SC and is managed by the South Carolina Department of Parks, Recreation, and Tourism (SCPRT). For a small fee, visitors can access the park and partake in activities such as swimming, picnicking, geocaching, hiking, and camping. Non-motorized boating is allowed on Lake Oolenoy and Lake Pinnacle during daylight hours (SCPRT 2024a).

Oconee State Park, which serves as the western terminus of the Foothills Trail, is located in Oconee County, SC and is managed by the SCPRT. Similar to Table Rock, admission requires a small fee. Visitors can fish, boat, swim, bike and hike at the park. A campground, mini-golf course, and three playgrounds are also available (SCPRT 2024a).

4.2.3 Lake Jocassee and Devils Fork State Park

Lake Jocassee is located in Oconee and Pickens counties, South Carolina and Transylvania County, North Carolina, 20 miles north of Seneca, South Carolina. The lake is one of two reservoirs at the KT Project (FERC No. 2503) and has a surface area of approximately 7,980 acres with over 90 miles of shoreline (Duke Energy 2014). Most of the shoreline is

undeveloped and set aside for future public recreation and only 8.5 miles of the shoreline is developed for residential use or set aside for future residential use (Duke Energy 2014). In addition to the 4 boat-in access areas on the Foothills Trail described in Section 4.1, public recreation opportunities around the lake include the Jim Timmerman Natural Resources Area at Jocassee Gorges and Devils Fork State Park.

Devils Fork State Park, managed by SCPRT, provides the only public access to Lake Jocassee and includes 3 boat ramps, 2 picnic shelters, the Oconee Bell Loop Trail, and 2 campgrounds. One campground is located at the park on the southern end of Lake Jocassee and allows tent and RV camping. The second campground is located at the base of Musterground Mountain and is only accessible by boat. The area is open seasonally and includes 25 backcountry campsites (SCPRT 2024b). The boat ramps at Devils Fork State Park provide the only public boat access to the 4 boat-in trailheads on the Foothills Trail.

4.2.4 Nantahala National Forest – Upper Whitewater Falls

The Whitewater River feeds into Lake Jocassee and includes two waterfalls that can be viewed from the Foothills Trail. The Upper Whitewater Falls is the highest waterfall east of the Rocky Mountains and is located within the Nantahala National Forest. The US Forest Service maintains the Whitewater Falls day-use site[8], which provides public access to view the Upper Whitewater Falls. The area includes two picnic shelters, restrooms, and a parking area with space for approximately 58 vehicles and 5 buses[9]. From the site, hikers can walk the Whitewater Falls Trail loop which connects to the Foothills Trail and provides views of the waterfall from two overlooks. The site is open year-round from dawn to dusk and requires a daily fee or annual pass. Camping is not allowed at the site (USFS 2024).

4.2.5 Jim Timmerman Natural Resources Area at Jocassee Gorges

The Jim Timmerman Natural Resources Area at Jocassee Gorges (often referred to as Jocassee Gorges) is a 43,500-acre tract of land in South Carolina's Oconee and Pickens counties that is managed by SCDNR for the protection of natural and recreation resources. A portion of these lands are owned by Duke Energy and held in a conservation easement

[8] The Whitewater Falls day-use site is referred to throughout this report as the "Upper Whitewater Falls Access" area, to better distinguish it from the Lower Whitewater Falls Overlook and Whitewater River.
[9] Approximately ¼ mile southwest of the Upper Whitewater Falls Access parking area is a gravel parking lot with space for approximately 20 vehicles. The lot is maintained by the US Forest Service (Nantahala National Forest) and provides access to the Foothills Trail and the Whitewater Falls.

to ensure access and inclusion of the lands in SCDNR's WMA Program. Jocassee Gorges is home to a variety of wildlife and botanical species, many of which are not easily found in other areas of the state. Recreation opportunities are numerous throughout the area and include public access for hunting and fishing, camping, hiking, and nature viewing (SCDNR 2016). The Foothills Trail from the North Carolina/South Carolina border near the Toxaway River to end of the Duke Energy-maintained trail portion at Table Rock State Park is located within Jocassee Gorges. The portion of Jocassee Gorges in the Musterground area is accessible by vehicle through the Musterground Road access point located near the Bad Creek Hydro Access.

5.0 RESULTS

5.1 Current Use Estimates

5.1.1 Duke Energy-Maintained Access Areas

Trail counter data were used to estimate use of the Foothills Trail at the eight Duke Energy-maintained access areas and at the Lower Whitewater Falls Overlook and Coon Branch Spur. Trail counter data were also collected just before the eastern terminus of the Foothills Trail within Table Rock State Park and between Table Rock State Park and Sassafras Mountain at Long Ridge Trail. The total and average daily number of visitors at these points along the Foothills Trail are included in Table 5 and Table 6, respectively.

Locations that received the highest use during the study period were Table Rock State Park (65,788 total visitors with an average of 239 visitors per day), Sassafras Mountain west of the observation tower (26,140 total visitors with an average of 95 visitors per day), and Bad Creek Hydro (9,223 total visitors with an average of 67 visitors per day). Table Rock State Park is a destination area that receives high use throughout the year from visitors seeking not only access to the Foothills Trail, but other recreation opportunities as noted in Section 4.2.2. The observation tower at Sassafras Mountain is also a tourist attraction, particularly during the fall months or "peak leaf season" in October and November. The Bad Creek Hydro Access is a popular area due to its large parking area and proximity to the Upper and Lower Whitewater Falls overlooks and Coon Branch Spur.

Locations that received the least amount of use during the study period were Laurel Fork Falls (2,522 total visitors or an average of 9 visitors per day) and Canebrake Access (2,702 total visitors or an average of 10 visitors per day). The trail counter at Laurel Fork Falls was located on the spur trail that connects the boat-in access to the main Foothills Trail. Although use of the spur trail is low, higher use may occur in the vicinity of the waterfall, with visitors camping in the area and viewing the waterfall. Canebrake Access experienced the second lowest number of visitors during the study season which can be attributed to the lack of amenities at the access area and its proximity to the Toxaway River Access. Toxaway River Access is a popular area due to the nearby campsites and the suspension bridge that crosses Toxaway River. For these reasons, boaters on Lake Jocassee may be more likely to stop at Toxaway to access the Foothills Trail rather than Canebrake.

Overall, use was generally higher at the boat-in access areas during late spring and summer and lower in the fall. This coincides with typical boating patterns in the region. Use at areas with close access to large viewsheds, such as Sassafras Mountain, Bad Creek Hydro, Coon Branch and Lower Whitewater Falls, tended to increase in the fall, coinciding with the peak leaf season.

During the construction of the Bad Creek II complex, the Bad Creek Hydro Access trailhead may be closed to public access for 5-7 years. During that time, visitors would need to utilize other areas to access the Foothills Trail, Coon Branch Spur, and Lower Whitewater Falls Spur and overlook. This would impact an estimated 9,000 to 11,000 (Table 5 and Table 31) visitors, annually, between March and November and additional visitors in December, January and February.

Table 5 2023 Use Estimates – Foothills Trail from Bad Creek Hydro Access to Table Rock State Park – Total Visitors by Month

Month	Total Visitors at Trail Counter Locations by Month												
	Bad Creek Hydro	**Coon Branch Spur**	**Lower Whitewater Falls**	**Horsepasture River**	**Canebrake**	**Toxaway River**	**Laurel Fork Falls**	**Laurel Valley**	**Chimneytop Gap**	**Sassafras Mountain 1[a]**	**Sassafras Mountain 2[a]**	**Long Ridge Trail[b]**	**Table Rock State Park**
March	1,605	358	384	192	259	297	279	531	776	1,815	708	-	6,711
April	2,155	988	341	397	508	939	288	872	592	1,966	771	218	6,876
May	1,896	891	369	520	338	781	273	590	425	1,357	525	430	6,637
June	2,372	845	291	369	213	907	201	418	329	4,023	503	344	8,063
July	2,018	692	253	590	374	1,074	340	286	246	1,112	356	186	9,359
Aug	1,842	579	178	395	115	744	254	221	215	1,297	187	171	6,031
Sept	1,965	677	311	310	217	705	333	401	222	1,080	418	424	7,017
Oct	2,385	945	481	77	411	772	329	667	741	6,134	1,024	836	8,812
Nov	1,606	943	430	90	267	254	227	521	518	7,356	815	445	6,284
Total	**9,223**	**6,916**	**3,035**	**2,939**	**2,702**	**6,473**	**2,522**	**4,507**	**4,064**	**26,140**	**5,307**	**3,054**	**65,788**

[a] The trail counter identified as "Sassafras Mountain 1" was located on the Foothills Trail approximately 200 ft. west of the observation tower; the trail counter identified as "Sassafras Mountain 2" was located southeast of the observation tower where the parking area meets the Foothills Trail.

[b] The trail counter at Long Ridge Trail was not installed until April 20, 2023.

Table 6 2023 Use Estimates – Foothills Trail from Bad Creek Hydro Access to Table Rock State Park – Average Daily Visitors by Month

Month	Average Daily Visitors at Trail Counter Locations by Month												
	Bad Creek Hydro	**Coon Branch Spur**	**Lower Whitewater Falls**	**Horsepasture River**	**Canebrake**	**Toxaway River**	**Laurel Fork Falls**	**Laurel Valley**	**Chimneytop Gap**	**Sassafras Mountain 1[a]**	**Sassafras Mountain 2[a]**	**Long Ridge Trail[b]**	**Table Rock State Park**
March	70	28	12	8	12	13	9	23	25	59	23	-	216
April	72	33	11	13	17	31	10	29	20	66	26	22	229
May	61	29	12	17	11	25	9	19	14	44	17	14	214
June	79	28	10	12	7	30	7	14	11	134	17	11	269
July	65	22	8	19	12	35	11	9	8	36	11	6	302
Aug	59	19	6	13	4	24	8	7	7	42	6	6	195
Sept	65	23	10	10	7	23	11	13	7	36	14	14	234
Oct	77	30	16	2	13	25	11	22	24	198	33	27	284
Nov	54	31	14	3	9	8	8	17	17	245	27	15	209
Total	**67**	**27**	**11**	**11**	**10**	**24**	**9**	**17**	**15**	**95**	**19**	**14**	**239**

[a] The trail counter identified as "Sassafras Mountain 1" was located on the Foothills Trail approximately 200 ft. west of the observation tower; the trail counter identified as "Sassafras Mountain 2" was located southeast of the observation tower where the parking area meets the Foothills Trail.

[b] The trail counter at Long Ridge Trail was not installed until April 20, 2023.

Recreation use may vary not only seasonally but also by day type, including weekdays, weekends, and holiday weekends. Average visitors at each trail counter location across all sampled months are shown by day type in Table 7. Use is often lowest on weekdays and highest on holiday weekends throughout the Foothills Trail. Exceptions include Canebrake, Toxaway River, Chimneytop Gap, both locations at Sassafras Mountain Access, and Long Ridge Trail, where use was higher on weekends than on holiday weekends. This is likely due to high use experienced at these areas during fall months, when there are no holidays.

Table 7 2023 Use Estimates – Foothills Trail from Bad Creek Hydro Access to Table Rock State Park – Average Daily Visitors by Day Type

Access Area/Counter Location	Average Daily Visitors by Day Type		
	Weekday	Weekend	Holiday
Bad Creek Hydro Access	57	90	93
Coon Branch Spur	20	42	42
Lower Whitewater Falls Overlook	8	17	21
Horsepasture River Access	10	11	28
Canebrake Access	10	10	9
Toxaway River Access	22	31	18
Laurel Fork Falls Access	6	15	26
Laurel Valley Access	16	19	20
Chimneytop Gap Access	11	26	14
Sassafras Mountain Access 1 (west of Observation Tower)	80	136	80
Sassafras Mountain Access 2 (east of Observation Tower)	15	30	20
Long Ridge Trail	10	23	14
Table Rock State Park	146	452	510

5.1.2 Musterground Road

Access to the Musterground property of Jocassee Gorges is available seasonally between September 15-January 15 and again between March 20-May 10. During this time, the gate at the entrance to Musterground Road is open to vehicular traffic. A traffic counter was installed and collected data from September 15, 2023 through January 15, 2024 and from March 20 through May 10, 2024. Data are summarized as total vehicles and average daily vehicles in Table 8. Daily vehicle totals are shown in Figure 5.

Table 8 Musterground Road – Total and Average Daily Vehicles by Month, 2023-2024

Month	Total Vehicles	Average Daily Vehicles
September 15-30, 2023	187	12
October 1-31, 2023	410	13
November 1-30, 2023	399	13
December 1-31, 2023	307	10
January 1-15, 2024	148	10
March 20-31, 2024	151	13
April 1-30, 2024	312	10
May 1-10, 2024	62	7
Total	1,976	-

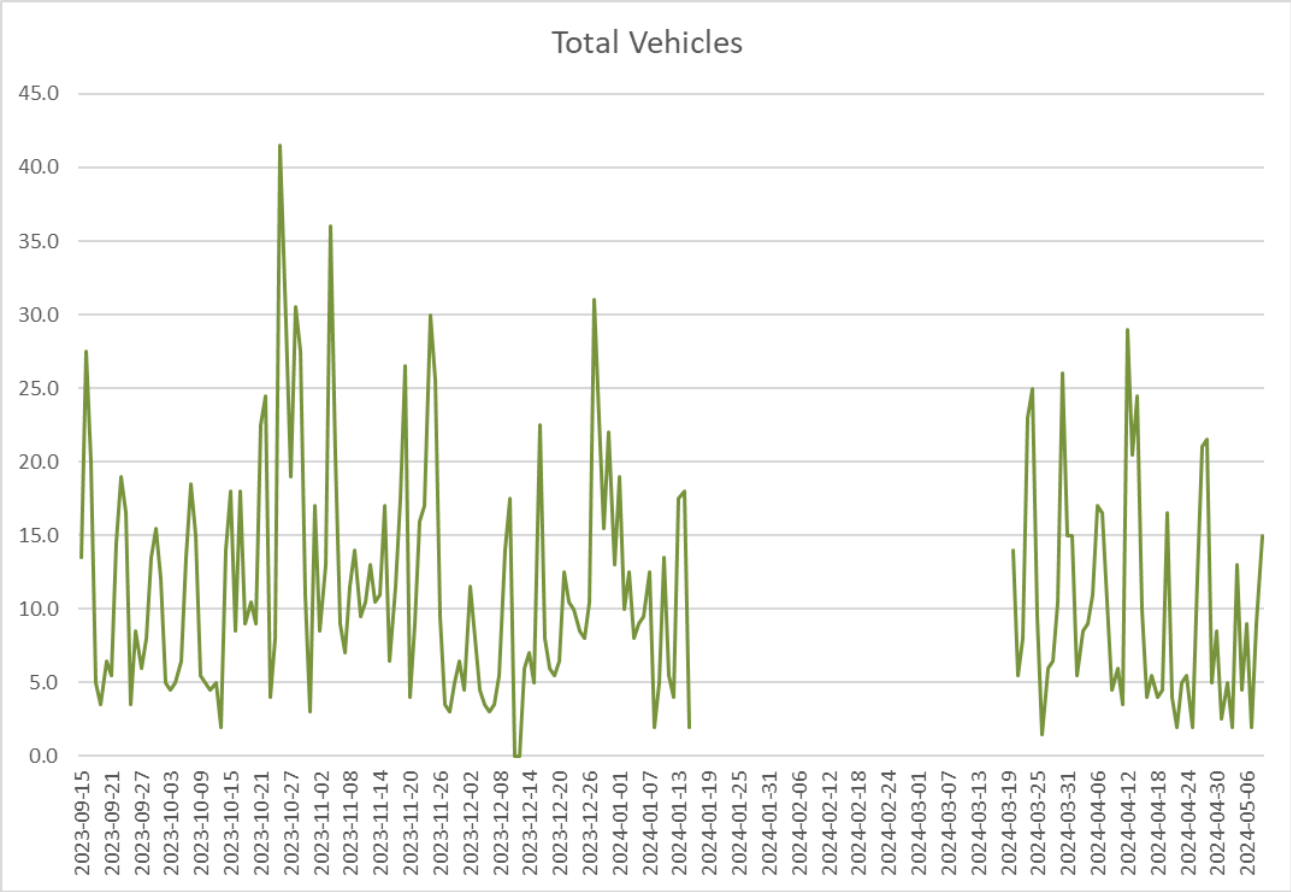

Figure 5 Musterground Road - Total Daily Vehicles, 2023-2024

The Musterground property is managed by SCDNR as a WMA within Game Zone 1 (SCDNR 2024a). Various hunting seasons coincide with public access to Musterground Road, as noted in Table 9. In addition, Musterground Road provides public vehicular access to trout fishing in Thompson River, Coley Creek, Wright Creek, and Mill Creek (SCDNR 2024b).

Table 9 Hunting Seasons in Game Zone 1

Species	Method	Season
Small Game [a]	--	September 1 – March 1
Deer	Primitive weapons	October 2-10
	Archery only	October 17-30
	Still gun hunts	October 11-16; October 31-January 1
Bear	Still hunt	October 17-23
	Party dog hunts	October 24-30
Turkey	--	April 1-30
Hog	Coordinates with weapons allowed for other open seasons	Any open season for game unless otherwise restricted
	Special hog hunts with dogs	January 2-10, March 20-28

[a] Small game includes quail, squirrel, rabbit, raccoon, opossum, fox, beaver, bobcat, mink, muskrat, otter, skunk, grouse, and weasel.
Source: SCDNR 2024a

To better understand how use of Musterground Road between September 15, 2023 and May 10, 2024 may correlate to various hunting seasons, total vehicles and daily average vehicles summarized by month in Table 8 were further summarized by shorter timeframes in Table 10 and Figure 6. Use at Musterground Road peaks during the last week of bear season (October 24-30) and the last week of deer season (December 26-January 1). Use is also high during the first 10 days after Musterground Road is opened (September 15-24), the first week of bear season (October 17-23), the week that includes Thanksgiving (November 21-27) and generally throughout the month of November, and the end of March through mid-April (March 20-April 4).

Table 10 Musterground Road – Total and Average Daily Vehicles by Specified Timeframe, 2023-2024

Timeframe [a]	Total Vehicles	Daily Average Vehicles
September 15-24, 2023	132	13
September 25 – October 1, 2023	67	10
October 2-10, 2023	79	9
October 11-16, 2023	52	9
October 17-23, 2023	98	14
October 24-30, 2023	167	24
October 31 – November 6, 2023	107	15
November 7-13, 2023	76	11
November 14-20, 2023	94	13
November 21-27, 2023	111	16
November 28 – December 4, 2023	43	6
December 5-11, 2023	47	7
December 12-18, 2023	55	8
December 19-25, 2023	62	9
December 26, 2023 – January 1, 2024	134	19
January 2-8, 2024	64	9
January 9-15, 2024	66	9
March 20-31, 2024	151	13
April 1-7, 2024	83	12
April 8-14, 2024	99	14
April 15-21, 2024	49	7
April 22-28, 2024	69	10
April 29-30, 2024	14	7
May 1-10, 2024	62	7

[a] In an effort to coordinate with various hunting seasons, timeframes listed are generally in 1-week increments, although there are instances where timeframes include more or less days.

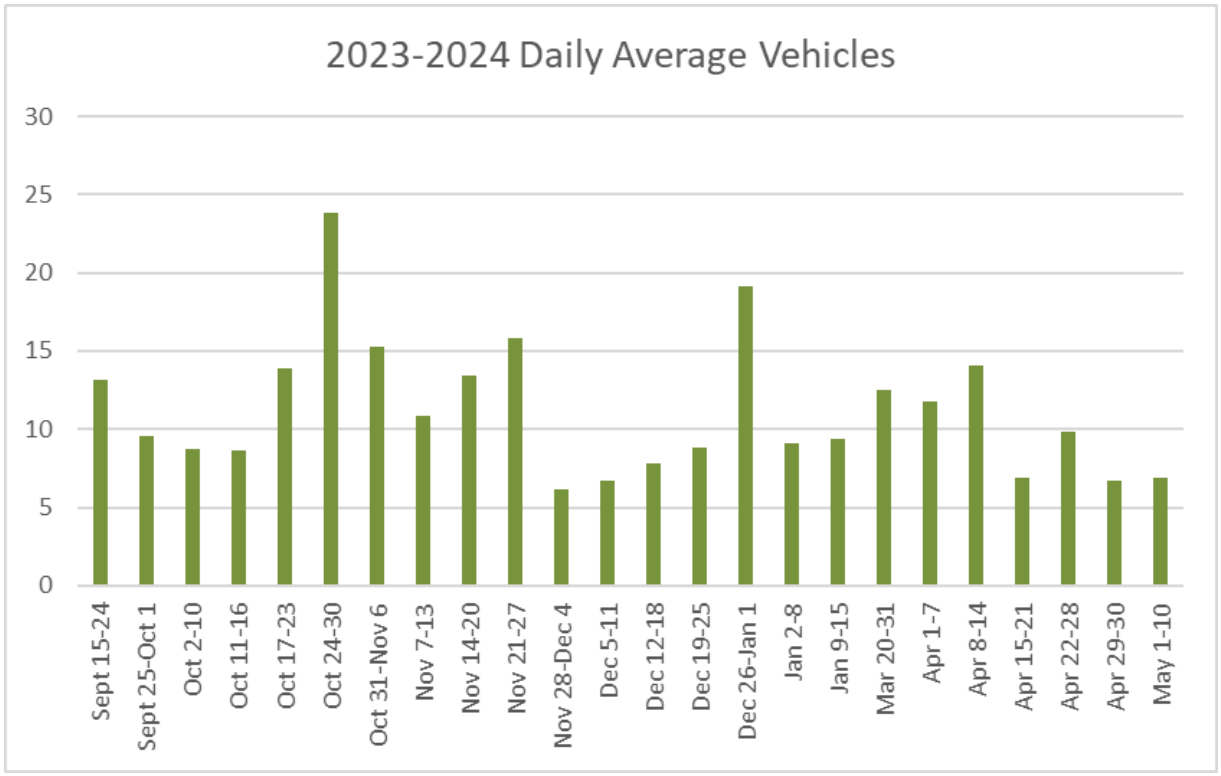

Figure 6 Musterground Road – Daily Average Vehicles by Specified Timeframe, 2023-2024

During construction of the Bad Creek II complex, Musterground Road would be closed for public access for 5-7 years. While some public access to the Musterground property would still be possible by foot via the Foothills Trail and by boat via Devils Fork State Park, vehicular access similar to the levels identified in Table 8, or approximately 2,000 vehicles per year, would be unavailable. Public access to WMA lands during popular bear, deer, and turkey hunting seasons would also be unavailable.

5.2 User Survey Summaries

User surveys were conducted in-person at Bad Creek Hydro, Horsepasture River, Laurel Valley, and Toxaway River between March and November 2023. An online version of the survey was also available for access between March and November 2023. During the study period, 315 surveys were collected (Table 11).

Table 11 Foothills Trail User Surveys Collected in 2023

Site	# of Surveys
Bad Creek Hydro	96
Horsepasture River	32
Laurel Valley	72
Toxaway River	54
Online	61
Total	**315**

5.2.1 User Demographics

Survey respondents were asked to report on the country, state, and county in which they reside. All survey respondents indicated they lived in the USA, except for one who reported living in Brazil. Of the respondents living in the USA, 60.6 percent reported South Carolina as their home state, with North Carolina (16.5 percent), Georgia (6.1 percent) and Florida (4.5 percent) also commonly reported (Table 12).

Table 12 In-Person and Online Survey Respondents' Home States

State	Percentage
South Carolina	60.6%
North Carolina	16.5%
Georgia	6.1%
Florida	4.5%
Kentucky	1.6%
Tennessee	1.3%
Pennsylvania	1.3%
Ohio	0.6%
Maine	0.6%
New Hampshire	0.6%
Virginia	0.6%
Alabama	0.6%
Colorado	0.6%
Connecticut	0.6%
Michigan	0.6%
Minnesota	0.6%
Illinois	0.3%
Massachusetts	0.3%
Mississippi	0.3%

State	Percentage
Missouri	0.3%
Texas	0.3%
West Virginia	0.3%
Wisconsin	0.3%

The home counties of the 261 survey respondents that reported living in South Carolina, North Carolina, or Georgia are listed in Table 13. The most common counties survey respondents reported living in include Greenville (23.6 percent), Pickens (10.5 percent), Oconee (10.5 percent), and Anderson (6.2 percent) counties, South Carolina. A complete list of reported states and counties in which survey respondents live is in Appendix D.

Table 13 In-Person and Online Survey Respondents' Home Counties

State	County	Percent
South Carolina	Greenville	23.6%
	Oconee	10.5%
	Pickens	10.5%
	Anderson	6.2%
	Spartanburg	3.9%
	Charleston	2.3%
	Richland	1.9%
	Aiken	1.6%
	Beaufort	1.6%
	Dorchester	1.6%
	Greenwood	1.6%
	Laurens	1.6%
	Lexington	1.6%
	York	1.6%
	Florence	0.8%
	Berkeley	0.4%
	Darlington	0.4%
	Horry	0.4%
	Lancaster	0.4%
	Newberry	0.4%
	Williamsburg	0.4%
North Carolina	Jackson	3.1%
	Mecklenburg	3.1%
	Buncombe	2.7%
	Wake	2.3%
	Henderson	1.6%

State	County	Percent
	Transylvania	1.2%
	Haywood	0.8%
	Union	0.8%
	Cabarrus	0.4%
	Caldwell	0.4%
	Catawba	0.4%
	Cherokee	0.4%
	Iredell	0.4%
	Lee	0.4%
	Macon	0.4%
	Moore	0.4%
	New Hanover	0.4%
	Orange	0.4%
	Polk	0.4%
Georgia	DeKalb	1.2%
	Fulton	1.2%
	Forsyth	0.8%
	Hart	0.8%
	Butts	0.4%
	Chatham	0.4%
	Chattooga	0.4%
	Clark	0.4%
	Cobb	0.4%
	Fayette	0.4%
	Gwinnett	0.4%
	Oconee	0.4%
	Richmond	0.4%

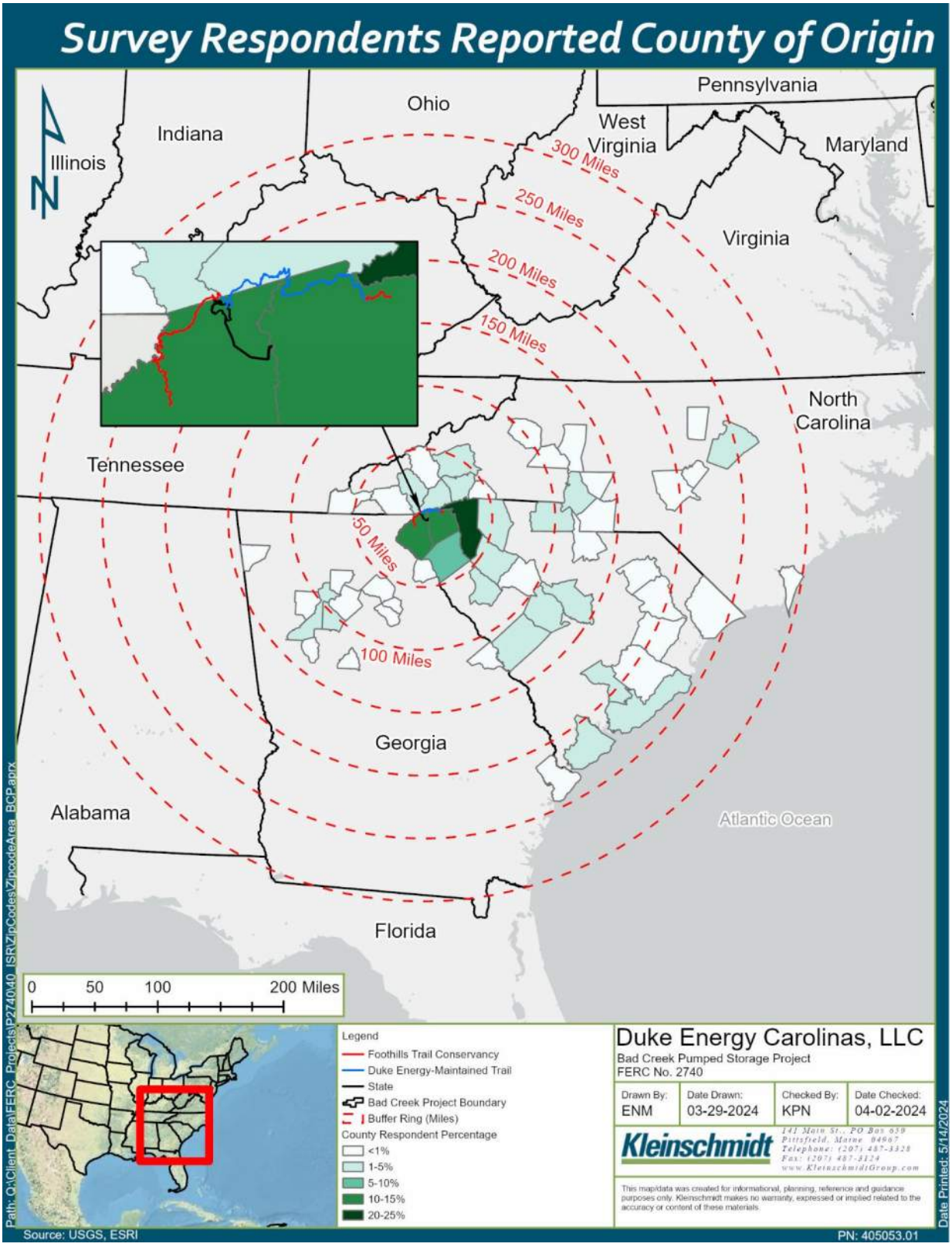

Figure 7 Survey Respondents' Home Counties in South Carolina, North Carolina, and Georgia

Survey respondents were asked to report their age within a specific range, how many people were in their group, and the age ranges of those in their group. The most common group size was two people except at Laurel Valley, where the group size was most commonly one person. The average group size as reported by interview site was 2.7 people at Bad Creek Hydro, 1.9 people at Horsepasture River, 2.3 people at Laurel Valley, 3.6 people at Toxaway River, and 3.7 people from online survey respondents. These averages included two groups that were greater than 20 people, but 90 percent of the groups contained 5 or fewer visitors.

Age ranges of survey respondents by interview site are in Table 14. Overall, survey respondents were more likely to be in the 55+ range, except those interviewed at Horsepasture River and Toxaway River, where they were more likely to be in the 45-54 range or 35-44 range, respectively. Less than 10 percent of groups included children or youth, and slightly under 50 percent included seniors (Table 15).

Table 14 Age Ranges of Survey Respondents

Age Range	Bad Creek Hydro	Horsepasture River	Laurel Valley	Toxaway River	Online Survey	Total
18-24	6%	3%	6%	6%	7%	6%
25-34	17%	22%	13%	11%	10%	14%
35-44	17%	16%	24%	35%	21%	22%
45-54	20%	31%	28%	31%	21%	25%
55+	41%	28%	31%	17%	41%	33%

Table 15 Reported Age Ranges Included in Groups

Age Range	Bad Creek Hydro	Horsepasture River	Laurel Valley	Toxaway River	Online Survey	Total
Children (infants-12)	10%	0%	7%	9%	13%	9%
Youth (13-17)	4%	3%	1%	7%	13%	6%
Adults (18-55)	72%	91%	78%	91%	75%	79%
Senior Adults (over 55)	47%	44%	35%	30%	53%	42%

Survey respondents were asked how they heard about the Foothills Trail. Forty-five percent of respondents noted they heard about the trail through a friend or relative (27 percent) or social media (18 percent). The remaining 55 percent of respondents noted other reasons with the most common being locals/live in the area, All Trails and/or other internet sources, word of mouth, hiking guides including Foothills Trail Conservancy, and local maps, signs, or advertisements.

5.2.2 User Visitation and Access

Respondents were also asked how many times, including the day of their interview, they had visited the Foothills Trail in the previous 30 days. More than half (52 percent) of in-person survey respondents reported that this was their only visit, 38 percent reported 2-4 total visits, and 3 percent reported 11-33 visits in the previous 30 days. For the online survey, 48 percent of respondents reported one visit, 41 percent reported 2-4 visits, and 2 percent reported 20 visits in the previous 30 days. Respondents not answering the question or reporting that they hadn't visited the trail at all were not included in these reported percentages.

Survey respondents were asked if they had a vehicle parked at one of the following access areas, and if so, which one: Sassafras Mountain, Chimneytop Gap, Laurel Valley, Bad Creek Hydro, or Upper Whitewater Falls. Responses are listed by interview site in Table 16. Where interview sites included parking areas, specifically Bad Creek Hydro and Laurel Valley, survey respondents most often indicated they were parked at that site (96 percent and 72 percent, respectively). Where interview sites didn't include parking areas, specifically Horsepasture River and Toxaway River, survey respondents were varied in the parking area they reported. Thirteen percent and 15 percent of survey respondents at Horsepasture River and Toxaway River, respectively, indicated they had a vehicle parked at Bad Creek Hydro. However, visitors at Horsepasture River and Toxaway River indicated they had a vehicle parked at a location other than one of the five listed most often (47 percent and 67 percent, respectively). Other parking areas used by survey respondents are listed by interview site in Table 17. The most common other parking areas used by survey respondents were Table Rock State Park, Devils Fork State Park, and Oconee State Park, although several others were also noted.

Table 16 Parking Area Use by Interview Site

Interview Site	Parking Area	Percent
Bad Creek Hydro	Bad Creek Hydro	95.8%
	Other	3.2%
	Upper Whitewater Falls	1.1%
Horsepasture River	Other	46.9%
	None	21.9%
	Bad Creek Hydro	12.5%
	Laurel Valley	12.5%
	Sassafras Mountain	3.1%

Interview Site	Parking Area	Percent
	Upper Whitewater Falls	3.1%
Laurel Valley	Laurel Valley	71.8%
	Other	22.5%
	None	2.8%
	Bad Creek Hydro	1.4%
	Chimneytop Gap	1.4%
Toxaway River	Other	66.7%
	Bad Creek Hydro	14.8%
	None	13.0%
	Laurel Valley	5.6%
Online Survey	Bad Creek Hydro	46.6%
	Other	25.9%
	Laurel Valley	10.3%
	Upper Whitewater Falls	6.9%
	None	6.9%
	Sassafras Mountain	3.4%

Table 17 "Other" Parking Areas by Interview Site

Interview Site	Parking Area	Percent
Bad Creek Hydro	Table Rock State Park	66.7%
	Devils Fork State Park	33.3%
Horsepasture River	Table Rock State Park	53.3%
	Devils Fork State Park	13.3%
	Oconee State Park	13.3%
	Dropped off and picked	6.7%
	Gorges State Park	6.7%
	Lower Whitewater	6.7%
Laurel Valley	Table Rock State Park	87.5%
	Oconee State Park	12.5%
Toxaway River	Devils Fork State Park	30.6%
	Table Rock State Park	30.6%
	Frozen Creek Access	25.0%
	Boat ramp	5.6%
	Canebrake	2.8%
	Oconee State Park	2.8%
	The Wilds Christian Camp	2.8%
Online Survey	Devils Fork State Park	20.0%
	Table Rock State Park	20.0%
	Estatoe Heritage Preserve trail access	6.7%

Interview Site	Parking Area	Percent
	Boat	6.7%
	Horsepasture Rd	6.7%
	Jackie's Ridge Rd.	6.7%
	Near ATV drop off area	6.7%
	The Wilds Christian Camp	6.7%

Survey respondents were asked if they did have a vehicle parked somewhere to access the Foothills Trail, how long the vehicle would be parked at that location. The Foothills Trail provides both overnight and day uses so it is expected that some survey respondents would be parked at an access area for days while others would be parked for only hours. For this reason, responses were separated into those that were parked for one day or more (days) and those that were parked for less than one day (hours). This information is summarized below by interview site and by reported parking area. Only two parking areas at Duke Energy-maintained access areas were reported frequently by survey respondents, including Bad Creek Hydro and Laurel Valley. Only one survey respondent reported parking at Chimneytop Gap and three survey respondents reported parking at Sassafras Mountain. Therefore, estimates on average lengths of stay were only determined for Bad Creek Hydro and Laurel Valley. For overnight users parking at Bad Creek Hydro, average length of stay was around 3 days. Day users parking at Bad Creek Hydro stayed for an average of 3 hours. For overnight users parking at Laurel Valley, average length of stay was around 2 days. Day users parking at Laurel Valley stayed for an average of 4 hours.

5.2.3 User Activities and Experiences

Survey respondents were asked to report their primary reasons for visiting the Foothills Trail on the day of their interview (Table 18). Most respondents indicated that a primary reason for visiting the Foothills Trail was for hiking (72 percent) or backpacking (35 percent). Other popular primary activities were camping, wildlife viewing, picnicking, swimming, and shoreline relaxation. Some respondents noted other reasons for visiting besides the ones listed in the survey. These include photography, boating and Jet-skiing, trail running, ATV use, drone use, and sightseeing/waterfall viewing.

Table 18 Survey Respondents Listing Activities as a Primary Reason for Visiting by Interview Site[1]

Primary Reason	Bad Creek Hydro	Horsepasture River	Laurel Valley	Toxaway River	Online Survey	Total
Hiking	92%	50%	72%	57%	64%	72%
Backpacking	9.4%	69%	39%	67%	23%	35%
Camping	5.2%	19%	13%	50%	11%	17%
Wildlife Viewing	7.3%	6.3%	9.7%	9.3%	15%	9.5%
Picnicking	7.3%	0.0%	0.0%	30%	4.9%	8.3%
Swimming	7.3%	6.3%	4.2%	19%	4.9%	7.9%
Shoreline Relaxation	3.1%	6.3%	5.6%	17%	8.2%	7.3%
Other	6.3%	0.0%	4.2%	9.3%	9.8%	6.3%
Fishing	8.3%	3.1%	1.4%	13%	3.3%	6.0%
Wildflower Viewing	6.3%	3.1%	2.8%	3.7%	11%	5.7%
Birdwatching	4.2%	3.1%	8.3%	3.7%	1.6%	4.4%
Canoeing	1.0%	0.0%	0.0%	5.6%	0.0%	1.3%
Biking	0.0%	0.0%	2.8%	0.0%	0.0%	0.6%
Hunting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1]Note that rows do not sum to 100% because respondents were allowed to list multiple activities.

Hikers were asked to rate their hiking experience between 1 (very poor) and 5 (very good) (Table 19). Most survey respondents at each interview site rated their hiking experience as very good or good.

Table 19 Hiking Experience by Interview Site

Rating	Bad Creek Hydro	Horsepasture River	Laurel Valley	Toxaway River	Online Survey	Total
1 - Very Poor	0.0%	0.0%	0.0%	2.1%	0.0%	0.3%
2 - Poor	2.1%	0.0%	0.0%	0.0%	1.6%	1.0%
3 - Fair	2.1%	0.0%	0.0%	2.1%	1.6%	1.3%
4 - Good	21.1%	18.8%	22.2%	21.3%	19.7%	20.9%
5- Very Good	74.7%	81.3%	77.8%	74.5%	77.0%	76.5%

Survey respondents were also asked to rate the quality of various facilities and other aspects of the Foothills Trail (Table 20). Most survey respondents were favorable when rating the facilities they utilized on the Foothills Trail. Responses regarding restroom quality was varied with 6 percent of survey respondents across all surveys indicating restrooms were of poor quality. Few survey respondents rated the quality of fishing areas, although most noted they were of very good quality. Nearly all survey respondents noted

the cleanliness of the trail was very good (80 percent) or good (15 percent). During in person surveys, respondents most often noted crowding on the trail was very low, however during online surveys, respondents most often noted crowding was low.

Table 20 Survey Respondents Rating of Foothills Trail Facilities, Cleanliness and Crowding

Trails						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n = 310)**
1 Very Poor	1.0%	0.0%	0.0%	0.0%	0.0%	0.3%
2 Poor	0.0%	0.0%	0.0%	1.9%	1.7%	0.6%
3 Fair	3.1%	6.3%	0.0%	0.0%	3.4%	2.3%
4 Good	15.6%	34.4%	26.4%	21.2%	19.0%	21.6%
5 Very Good	80.2%	59.4%	73.6%	76.9%	75.9%	75.2%
Bridges						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=296)**
1 Very Poor	1.1%	0.0%	0.0%	0.0%	0.0%	0.3%
2 Poor	0.0%	0.0%	0.0%	1.9%	0.0%	0.3%
3 Fair	2.1%	6.3%	0.0%	3.8%	1.9%	2.4%
4 Good	26.6%	25.0%	27.7%	13.5%	20.8%	23.3%
5 Very Good	70.2%	68.8%	72.3%	80.8%	77.4%	73.6%
Restrooms						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=114)**
1 Very Poor	2.3%	0.0%	0.0%	0.0%	0.0%	0.9%
2 Poor	6.8%	0.0%	0.0%	5.9%	10.3%	6.1%
3 Fair	13.6%	11.1%	13.3%	5.9%	48.3%	21.1%
4 Good	29.5%	33.3%	33.3%	17.6%	17.2%	25.4%
5 Very Good	47.7%	55.6%	53.3%	70.6%	24.1%	46.5%
Parking						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=270)**
1 Very Poor	1.1%	0.0%	0.0%	0.0%	0.0%	0.4%
2 Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 Fair	1.1%	4.8%	0.0%	0.0%	7.7%	2.2%
4 Good	12.9%	33.3%	28.8%	26.3%	30.8%	23.7%
5 Very Good	84.9%	61.9%	71.2%	73.7%	61.5%	73.7%
Picnic Areas						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=88)**
1 Very Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

2 Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 Fair	0.0%	0.0%	0.0%	3.1%	4.8%	2.3%
4 Good	16.7%	5.3%	30.0%	9.4%	57.1%	22.7%
5 Very Good	83.3%	94.7%	70.0%	87.5%	38.1%	75.0%
Campsites						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=142)**
1 Very Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 Fair	0.0%	0.0%	2.9%	2.4%	10.0%	3.5%
4 Good	30.0%	22.2%	32.4%	9.8%	20.0%	21.1%
5 Very Good	70.0%	77.8%	64.7%	87.8%	70.0%	75.4%
Fishing Areas						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=33)**
1 Very Poor	14.3%	0.0%	0.0%	11.1%	0.0%	6.1%
2 Poor	28.6%	0.0%	0.0%	0.0%	0.0%	6.1%
3 Fair	0.0%	0.0%	0.0%	0.0%	26.7%	12.1%
4 Good	0.0%	0.0%	0.0%	11.1%	6.7%	6.1%
5 Very Good	57.1%	100.0%	100.0%	77.8%	66.7%	69.7%
Cleanliness						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=304)**
1 Very Poor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2 Poor	1.0%	0.0%	0.0%	0.0%	0.0%	0.3%
3 Fair	3.1%	3.1%	1.4%	7.5%	7.8%	4.3%
4 Good	11.5%	12.5%	16.7%	17.0%	19.6%	15.1%
5 Very Good	84.4%	84.4%	81.9%	75.5%	72.5%	80.3%
Crowding						
Rating	**Bad Creek Hydro**	**Horsepasture River**	**Laurel Valley**	**Toxaway River**	**Online Survey**	**All (n=309)**
1 Very High	0.0%	0.0%	0.0%	1.9%	0.0%	0.3%
2 High	2.1%	0.0%	0.0%	0.0%	3.4%	1.3%
3 Moderate	7.3%	9.4%	2.9%	11.1%	13.8%	8.4%
4 Low	16.7%	21.9%	23.2%	24.1%	44.8%	25.2%
5 Very Low	74.0%	68.8%	73.9%	63.0%	37.9%	64.7%

Survey respondents were also asked to rate their current experience on the Foothills Trail (Table 21). Across all surveys, most respondents indicated their experience was very good (85 percent) or good (13 percent). Across all surveys, only 4 were collected where respondents rated their experience as poor (1 percent) or very poor (less than 1 percent).

When rating their experience as poor or very poor, survey respondents were asked to explain why. Reasons provided were for poor signage and open hazards/pits.

Table 21 Survey Respondents' Experience on the Foothills Trail

Rating	Bad Creek Hydro	Horsepasture River	Laurel Valley	Toxaway River	Online Survey	All
1 Very Poor	0.0%	0.0%	0.0%	0.0%	1.6%	0.3%
2 Poor	2.1%	0.0%	0.0%	0.0%	1.6%	1.0%
3 Fair	1.1%	0.0%	0.0%	0.0%	1.6%	0.6%
4 Good	12.8%	12.9%	15.7%	15.7%	16.4%	12.6%
5 Very Good	84.0%	87.1%	84.3%	84.3%	78.7%	85.4%

At the end of the survey, respondents were provided an opportunity to list any specific improvements they recommended for the Foothills Trail and/or associated access areas and provide any additional comments or suggestions if so desired. Table 22 provides a summary of received responses with the complete list of responses available in Appendix E. Common suggested improvements include better markers/signs at Bad Creek Hydro Access, removal of downed trees, improved and/or repaired bridges, better trail maintenance, additional and/or improved restrooms, and additional and/or improved bear cables.

Table 22 Summary of Recommended Improvements and Comments

Recommended Improvements/Comments	Frequency
Better markers/ signs at Bad creek	27
Downed trees	25
Bridge improvements/ repairs	19
Better trail maintenance	15
Restroom improvements/ Install	13
Improved/ added bear hangs/ cables	11
More signage	7
Less steep stairs	6
Trash cans	6
Leave no trace signage	4
Benches	3
Better information on overnight parking	3
Hunting season signs	3
Laurel Valley road improvements	2
More camping spots	2
ADA accessible sites	1
Better boat access to campsites	1

Recommended Improvements/Comments	Frequency
Better Cell coverage	1
Better maps	1
Better posting about controlled burns	1
Better signage for Estatoe spur Trail	1
Biology signage throughout trail	1
Hammock setups at campsites	1
Have food drops	1
More access points	1
More dirt bike access at Laurel Valley	1
More picnic tables	1
Pedestrian access across Lake Jocassee Dam	1
Reroute Heartbreak Ridge	1
Satellite phone access	1
Stairs to water at boat in sites	1
Stop developing it	1
Water spigots and shower access	1
Water bottle refill stations at park	1

5.3 Parking Demand Analysis

5.3.1 Parking Occupancy

Average daily vehicles, parking capacity, and turnover were used to estimate each access area's parking occupancy rate. Traffic counter data collected at Bad Creek Hydro Access, Laurel Valley Access[10], Sassafras Mountain Access, and Upper Whitewater Falls Access were used to estimate average daily vehicles at each site's parking area. Parking capacity is the total maximum number of vehicles that can park at a parking area at one time and were recorded for each parking area during the site inventory. Length of stay is the average amount of time a visitor spends at an access area per recreation trip and was estimated using survey data. For this analysis, a visitor's length of stay was used as a proxy for a vehicle's length of stay and informs the parking area's turnover. Turnover is how often a vehicle is replaced at a parking area over a 24-hour period (e.g., if the average length of stay is 3 hours at a parking area, the parking area's turnover over a 24-hour period is 8). Table 23 provides the parking capacity, length of stay, and turnover that were used to calculate the parking occupancy rates.

[10] Spot count data was also used qualitatively to inform parking demand at Laurel Valley Access.

Table 23 Parking Capacity and Average Length of Stay Estimates for Bad Creek Hydro, Laurel Valley, Sassafras Mountain, and Upper Whitewater Falls Access Areas

Access Area	Parking Capacity (# of vehicles) [a]	Estimated Average Length of Stay (hours) [b]	Turnover
Bad Creek Hydro Access	90	4	6
Laurel Valley Access	20	7	3.4
Sassafras Mountain Access	37	7[b]	3.4
Upper Whitewater Falls Access	63	3.5	6.9

[a] Parking lots at Laurel Valley and Sassafras Mountain are gravel and not delineated. Therefore, the number of spaces were estimated based on the lot size and the North American standard parking space width of 8 feet. The parking lot at Bad Creek Hydro is paved with one side of the parking lot delineated for 31 vehicles. The additional parking spaces were estimated based on the remainder of the lot size and the North American standard parking space width.

[b] The length of stay sample size collected at Sassafras Mountain Access was not large enough to conduct a reliable estimate for length of stay. Therefore, due to location on the trail, Laurel Valley Access length of stay was used as a proxy.

Traffic counters were installed at Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access that recorded the number of vehicles that entered the access areas. The average vehicles per day by month and day type for these sites are shown in Table 24 and Table 25, respectively.

Table 24 2023 Estimated Average Daily Vehicles by Month at Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access

	Estimated Average Daily Vehicles			
Month	Bad Creek Hydro	Laurel Valley	Sassafras Mountain	Upper Whitewater Falls
March	25.2	44.4	45.3	70.0
April	39.1	49.1	48.3	96.0
May	27.5	43.4	43.5	102.2
June	27.8	43.9	48.0	81.4
July	18.8	46.2	57.7	123.2
August	17.2	35.6	41.7	111.3
September	29.5	54.4	58.1	118.2
October	37.2	72.8	117.6	191.0
November	34.7	54.1	57.5	92.7

Table 25 2023 Estimated Average Daily Vehicles by Day Type at Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access

	Estimated Average Daily Vehicles			
Month	Bad Creek Hydro	Laurel Valley	Sassafras Mountain	Upper Whitewater Falls
Weekday	18.9	31.3	39.4	85.3
Weekend	52.0	91.0	101.5	164.6
Holiday	45.2	95.3	93.1	186.4

Parking occupancy rates for Bad Creek Hydro, Laurel Valley, Sassafras Mountain, and Upper Whitewater Falls are shown in Table 26 by month and in Table 27 by day type.

Table 26 Parking Occupancy Rates by Month at Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access

	Parking Occupancy Rate (%)			
Month	Bad Creek Hydro	Laurel Valley	Sassafras Mountain	Upper Whitewater Falls
March	5%	65%	36%	16%
April	7%	72%	38%	22%
May	5%	63%	34%	24%
June	5%	64%	38%	19%
July	3%	67%	46%	29%
August	3%	52%	33%	26%
September	5%	79%	46%	27%
October	7%	106%	93%	44%
November	6%	79%	45%	21%

Table 27 Parking Occupancy Rates by Day Type at Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access

	Parking Occupancy Rate (%)			
Month	Bad Creek Hydro	Laurel Valley	Sassafras Mountain	Upper Whitewater Falls
Weekday	3%	46%	31%	20%
Weekend	10%	133%	80%	38%
Holiday	8%	139%	73%	43%

5.3.2 Parking Demand by Access Area

To assess parking demand, many factors were considered including average daily vehicles and parking occupancy rates, access area use types, access area locations, and user feedback on parking facilities. Parking demand for Bad Creek Hydro Access, Laurel Valley Access, Sassafras Mountain Access, and Upper Whitewater Falls Access is discussed below.

Bad Creek Hydro Access

The parking area at the Bad Creek Hydro Access trailhead is a large, paved area with space for approximately 90 vehicles. The trailhead is centrally located on the Foothills Trail and in addition to providing access to the main trail corridor, the site provides access to the Lower Whitewater Falls spur and overlook, the Upper Whitewater Falls overlook, and the Coon Branch Spur and natural area.

Visitors may park for a few hours or for days, depending on their desired recreation experience. Survey results showed that most visitors parked at the site for less than one day, although some visitors did park for multiple days at a time. Reinforcing that finding were survey results indicating most visitors were at the site for day uses such as hiking (61 percent) rather than overnight uses such as backpacking (6 percent) or camping (4 percent). Most survey respondents rated the parking at Bad Creek Hydro Access as good (13 percent) or very good (85 percent) and crowding as low (17 percent) or very low (74 percent).

Although the Bad Creek Hydro Access trailhead is a hub for vehicular use, due to its size and parking capacity, parking occupancy rates are low over all months and day types. Survey respondents did not indicate that additional or improved parking was needed or that crowding at the site was issue. The parking area easily accommodates existing use levels.

Laurel Valley Access

The parking area at Laurel Valley Access trailhead is a gravel lot with space for approximately 20 vehicles, assuming vehicles are parked perpendicular to the lot edge with an appropriate amount of space between vehicles. However, at any time, more or less vehicles could be accommodated at the parking area depending on parking patterns. In addition, it is common for up to 3 vehicles to park along the bottom of the access road, although this area isn't designated for parking and parking in that area isn't encouraged.

No parking signs have been installed in the past but are often removed without permission. Laurel Valley Access is approximately 2 miles southwest from Chimneytop Gap Access, which also provides vehicular access to the Foothills Trail. In addition to the main trail corridor, Laurel Valley Access trailhead provides vehicular access to the Estatoe Gorge Spur trailhead.

Laurel Valley Access is a popular location for ATV loading and as such, vehicles often have trailers attached. Visitors may park at the site for a few hours or for days, depending on their desired recreation experience. In addition to ATV use, popular activities at the site include hiking (46 percent), backpacking (25 percent) and camping (8 percent). Most survey respondents noted the parking was good (29 percent) or very good (71 percent) and crowding was low (23 percent) or very low (74 percent). Spot counts and traffic counts identified the highest use at the site occurred on weekends and between the hours of 11:00 AM and 4:00 PM. During spot counts more than 10 vehicles were observed at the area multiple times with all occurrences on weekends. On Labor Day weekend 2023, 32 vehicles were observed parked at the site at one time.

Throughout the year, the parking occupancy rate was moderate with available parking between 60-70 percent occupied, except during October when parking occupancy was high (106 percent). Weekday occupancy was also moderate (46 percent) however weekend and holiday occupancies were very high (133 percent and 139 percent, respectively). Although these parking occupancy rates are conservative, based on the estimated parking capacity of 20 vehicles and an average length of stay of 7 hours, the Laurel Valley Access parking area is highly used and doesn't always accommodate existing use levels.

Sassafras Mountain Access

Sassafras Mountain Access has a gravel lot with space for approximately 30 vehicles and a gravel overflow lot with space for approximately 7 vehicles, assuming vehicles are parked perpendicular to the lot edge with an appropriate amount of space between vehicles. Sassafras Mountain Access is approximately 2 miles east of Chimneytop Gap Access and Beech Bottom Falls Trail. In addition to the Sassafras Mountain Observation Tower tourist attraction, this trailhead provides access to the main Foothills Trail corridor and Caesars Head Spur trail and is the first trailhead on the Foothills Trail after exiting Table Rock State Park.

Although surveys did not provide enough data to accurately estimate length of stay, due to its location on the Foothills Trail and the assumed likelihood that visitors park at the site for a variety of uses similar to those at Laurel Valley, the length of stay estimated for Laurel Valley was used as a proxy for Sassafras Mountain. In addition, average daily vehicles recorded at Sassafras Mountain by month and day type were typically similar, except during the month of October, when use at Sassafras Mountain was particularly high. Parking occupancy rates at Sassafras Mountain Access are conservative, based on the estimated parking capacity of 37 vehicles, and the average length of stay of 7 hours, which may be a high estimate. Parking occupancy rates during October (93 percent) were higher than other months of the year, indicating the parking area may not always accommodate existing use levels during this month.

Upper Whitewater Falls Access

The parking area at Upper Whitewater Falls Access is a paved parking lot with delineated spaces for 58 vehicles and 5 buses. Upper Whitewater Falls is managed by the USFS as a day use area and is open from dawn until dusk. Although most visitors park for a few hours while they view the waterfall, it was observed that some visitors park for multiple days while backpacking on the Foothills Trail. In addition to the Whitewater Falls Loop and the main corridor of the Foothills Trail, the Round Mt. Spur trail is also near the Upper Whitewater Falls Access area.

While not many survey respondents noted they were parked at Upper Whitewater Falls Access, those that did indicated the parking lot was very good and crowding was low to moderate. While the area received high average daily vehicles, parking occupancy rates over all months and day types at the access area were low due to the high parking capacity. Slight elevations occurred in October (44 percent) and on holiday weekends (43 percent), however the parking area easily accommodates existing use levels.

During construction of the Bad Creek II complex, the Bad Creek Hydro Access trailhead and parking area could be closed to the public for 5-7 years. Upper Whitewater Falls Access is the closest public vehicular access to the Bad Creek Hydro Access (approximately 2.3 miles between accesses) and is likely to experience increased use during the construction period. Based on the parking occupancy rates for both Bad Creek Hydro Access and Upper Whitewater Falls, Upper Whitewater Falls should be able to accommodate all use from Bad Creek Hydro Access during the construction period.

However, Upper Whitewater Falls is a day use site and may not accommodate overnight parking.

5.4 Trail Carrying Capacity Assessment

Public land managers planning for outdoor recreation sometimes establish a carrying capacity which defines the amount and type of use that an area can accommodate before resource conditions or visitor experiences begin to deteriorate. According to the Interagency Visitor Use Management Council, "visitor capacity is a component of visitor use management and is defined as the maximum amounts and types of visitor use that an area can accommodate while achieving and maintaining desired resource conditions and visitor experiences that are consistent with the purposes for which the area was established" (NPS 2022). ATR assessed carrying capacity of the Duke Energy-maintained Foothills Trail and associated campsites using data collected as described in Section 3.0, and supplemental information collected while on-site in November 2023. ATR's assessment is documented in full in Appendix F and summarized below.

5.4.1 Resource Conditions

The ability of a trail to withstand use over time results from complex and interacting factors including the durability of tread substrates, trail layout, construction methods, maintenance activities, the type, intensity, and timing of use, precipitation and climate, and more. While trail conditions on the Foothills Trail vary, much of the trail utilizes old road corridors which do not provide a long-term sustainable tread surface or a desirable experience for many trail users. In addition, some portions of trail that do not utilize historic road infrastructure have very steep segments with many wooden steps. Wooden staircases are used on steep slopes where earthen trail has eroded or is not feasible to support users. Many segments of trail have better alignments (contour aligned) but suffer from half-bench construction utilizing wooden cribbing wall that is rotting rapidly contributing to long-term maintenance needs and sustainability issues. The significant amount of wooden infrastructure requires time consuming maintenance, and increased use could require more frequent maintenance (ATR 2024); replacement with rock or other durable materials and reroutes to avoid the need for such infrastructure are recommended. As of 2023, use levels documented by the RUN study and current trail conditions across the Duke Energy managed portion of the Foothills trail are aligned with low-use backcountry trail experiences and conditions. Trail degradation due to use is minimal and appropriate for the setting (ATR 2024). The trail could be modified for long

term sustainability such as realigning the trail to avoid steep wooden steps and shorter wooden staircases over gullies. Redevelopment to full bench trail construction at these locations will reduce the long-term maintenance needs, by eliminating the wooden structures which rot rapidly (ATR 2024).

Camping activities are often responsible for damage to vegetation, soil, water, and wildlife, however, resource impacts can be minimized by limiting pioneering activities and instead constraining camping activities to designated or pre-established locations. The Duke Energy section of the Foothills Trail has a developed system of campsites, which are signed and include facilities such as bear cables, cisterns, metal fire rings, and developed tent pads. There is not significant expansion of developed sites, proliferation of user-created campsites, or unacceptable levels of other resource impacts, suggesting that in the context of camping related resource impacts, the current use levels on the Foothills Trail are below the carrying capacity. Table 28 contains campsite information based on observations and available data sources; mileage estimates are from the FarOut Foothills Trail app (ATR 2024).

Table 28 Foothills Trail Campsite Characteristics

Campsite Name	~FT Mile*[1]	# Tent Pads	Signed	Bear Cables	Cistern	Metal Fire Ring	Natural Water
Whitewater River (illegal)	45.9	4					x*[2]
Whitewater River (illegal)	45.1	2					x
Whitewater	44.2	5	x	x	x	x	0.5*[3]
Thompson River	42.1	6					x
Unnamed	41.5	4					0.1
Coley Creek	40.9	4	x	x	x	x	x
Glenn Hilliard	39.9	8	x	x		x	x
Bear Camp Creek	38.9	8	x	x		x	x
Unnamed	37.3	2					0.1
Bear Gap	33.7	5	x	x		x	x
Unnamed	32	3					0.5
Canebrake	28.4	2					x
Toxaway Campsites	27.6	9	x			x	x
Rock Creek	26.5	6	x	x		x	x
Jackies Branch	22.5	1					x
Laurel Fork Falls	22.1	6	x	x		x	x
Dawkins Flat	21.3	4	x				x
Virginia Hawkins	19.3	6	x	x		x	x
Unnamed	18.7	2					x

Campsite Name	~FT Mile*[1]	# Tent Pads	Signed	Bear Cables	Cistern	Metal Fire Ring	Natural Water
Flat Rock	17.3	4	x	x	x	x	x
Unnamed	16.4	3					0.1
Chimneytop	13.2	6	x	x	x	x	x
Unnamed	12.1	2					0.3
Big Rock	10.4	4					x
Cantrell	8.6	5	x	x	x	x	0.7
Unnamed	6.1	2					0.1
Pigeon Road	5.9	3					0.1
Lighthouse	5.1	3	x	x		x	0.2
Long Ridge	4.9	6					0.4

*[1] Mileage westbound from Table Rock SP to Oconee SP

*[2] An "X" indicates that the site is signed or the facilities or features (i.e., bear cables, cistern, etc.) are present

*[3] distance (miles) to nearest natural water source if there is not one at the site

Source: ATR, 2024

5.4.2 Day Use and Overnight Use Capacities

Campsites are well distributed along the trail with 29 locations along a 40-mile section. The average distance between campsite locations is 1.52 miles and the maximum distance between campsite locations is 4.4 miles. Each average campsite capacity is 4-5 tents or 8-16 backpackers. Considering the available campsites, the total capacity across all campsites in the trail segment is over 350 backpackers. At the time of assessment, the campsite system provides ample capacity for overnight backpacking use and resource impacts due to campsite enlargement, human waste, trash/litter or fire related impacts are not a concern (ATR 2024).

The overnight use estimates for 2023 indicate that an average of 17.8 overnight users per night are on the Duke Energy managed portion of the Foothills Trail. The maximum use estimated to occur over one night is 71 overnight users. These numbers are well below the campsite capacity, however continued monitoring of use and impacts at campsites along the trail is encouraged (ATR 2024).

Day use capacity is assessed by examining parking occupancy and related parking demand, as described in Section 5.3, and considering visitor feedback collected during user surveys. As noted previously, parking capacity appears to be an issue only at Laurel Valley Access, specifically during the fall season and on weekends and holidays. High to moderate crowding was reported on rare occasion (1.3 percent and 8.4 percent, respectively) by survey respondents at all interview sites typically during the months of

October and November. However, survey respondents most often noted that crowding was not a concern.

5.5 Future Use Estimates

As described by Cordell et al. (2004), population growth in surrounding counties is a primary contributing factor to future use of recreation facilities. The state and county data collected during the study indicates that most visitors to the Foothills Trail reside within six counties in South Carolina (Greenville, Pickens, Oconee, Anderson, Spartanburg, and Charleston counties) and four counties in North Carolina (Mecklenburg, Jackson, Buncombe, and Wake counties). Therefore, population projections from those counties plus Transylvania County, North Carolina[11] were used to estimate future use of the trail over the next 10-15 years.

Current population data and population projections through 2035 for Anderson, Charleston, Greenville, Oconee, Pickens, and Spartanburg counties, South Carolina were collected from the U.S. Census Bureau (2024) and the South Carolina Revenue and Fiscal Affairs Office (2021), respectively (Table 29).

Table 29 Population Projections through 2035 for South Carolina Counties

County	2023 Population Estimate	2030 Projection	2035 Projection
Anderson (SC)	213,076	224,293	233,986
Charleston (SC)	424,367	438,222	448,125
Greenville (SC)	558,036	597,805	632,226
Oconee (SC)	81,221	83,227	84,774
Pickens (SC)	135,495	154,412	166,437
Spartanburg (SC)	356,698	402,201	442,898
Six-County Subtotal	1,768,893	1,900,160	2,008,446
Percent Change from previous period	--	**7.4%**	**5.7%**

[11] Transylvania County, North Carolina is one of the four counties in which the Foothills Trail is located.

County	2023 Population Estimate	2030 Projection	2035 Projection
South Carolina	5,373,555	5,604,742	5,827,845
Percent Change from previous period	--	**4.3%**	**4.0%**

Source: US Census Bureau, 2024; SCRFAO, 2021

Current population data and population projections through 2040 for Buncombe, Jackson, Mecklenburg, Transylvania, and Wake counties, North Carolina were collected from the U.S. Census Bureau (2024) and from North Carolina Office of State Budget and Management (2023), respectively (Table 30).

Table 30 Population Projections through 2040 for North Carolina Counties

County	2023 Population Estimate	2030 Projection	2040 Projection	2050 Projection
Buncombe (NC)	275,901	297,113	326,751	356,389
Jackson (NC)	44,574	43,720	44,408	58,104
Mecklenburg (NC)	1,163,701	1,311,696	1,514,361	1,717,077
Transylvania (NC)	33,549	34,190	35,790	37,389
Wake (NC)	1,190,275	1,363,836	1,615,386	1,866,937
Five-County Subtotal	2,708,000	3,050,555	3,536,696	4,035,896
Percent Change from previous period	--	**12.6%**	**15.9%**	**14.1%**
North Carolina	10,835,491	11,740,822	12,993,208	14,241,032
Percent Change from previous period	**--**	**8.4%**	**10.7%**	**9.60%**

Source: US Census Bureau, 2024; NC OSBM, 2023

Based on projections, populations are expected to increase in the six South Carolina counties by approximately 13.1 percent by 2035 and in the five North Carolina counties by approximately 28.5 percent by 2040 and 42.6 percent by 2050. Although population projection data wasn't available for South Carolina beyond 2035, it can be assumed that

populations would continue to increase at some level through 2050, although likely not to the same level as the North Carolina counties.

To estimate future use through 2035, population projections for the North Carolina counties in 2035 were determined. To do this, the projected increase between 2023 and 2030 was added to half the projected increase between 2030 and 2040. This resulted in an overall projected population increase of 20.6 percent in the North Carolina counties by 2035. The South Carolina projected population increase of 13.1 and the North Carolina projected population increase of 20.6 percent were then averaged together to determine an overall estimated projected population increase for all 11 counties. This population increase (16.8 percent) was then applied to the current use estimates presented in Section 5.1.1 to determine future use estimates by access area (Table 31). Visitation is estimated to increase by 3,611 visitors at Bad Creek Hydro by 2035; 1,162 visitors at Coon Branch Spur; 510 visitors at Lower Whitewater Falls; 881 visitors at Horsepasture River; 454 visitors at Canebrake; 1,403 visitors at Toxaway River; 424 visitors at Laurel Fork Falls; 915 visitors at Laurel Valley; 683 visitors at Chimneytop Gap; 4,392 visitors in the area of the Sassafras Mountain 1 trail counter; 892 visitors in the area of the Sassafras Mountain 2 trail counter; 513 visitors at Long Ridge Trail; and, 11,052 visitors at Table Rock State Park.

Table 31 2035 Use Estimates – Foothills Trail from Bad Creek Hydro Access to Table Rock State Park – Total Visitors by Month

Month	Total Visitors at Trail Counter Locations												
	Bad Creek Hydro	**Coon Branch Spur**	**Lower Whitewater Falls**	**Horsepasture River**	**Canebrake**	**Toxaway River**	**Laurel Fork Falls**	**Laurel Valley**	**Chimneytop Gap**	**Sassafras Mountain 1[a]**	**Sassafras Mountain 2[a]**	**Long Ridge Trail[b]**	**Table Rock State Park**
March	1,875	418	449	224	303	347	326	620	906	2,120	827	-	7,838
April	2,517	1,153	398	464	593	1,097	336	1,019	691	2,296	901	255	8,031
May	2,214	1,041	431	607	395	912	318	689	496	1,585	613	502	7,752
June	2,771	987	339	431	249	1,059	234	488	384	4,699	588	402	9,418
July	2,357	808	295	689	437	1,255	397	334	287	1,299	416	217	10,931
Aug	2,151	676	207	461	134	869	297	259	251	1,515	218	200	7,044
Sept	2,295	791	363	362	253	823	388	468	259	1,261	488	495	8,196
Oct	2,785	1,104	561	90	480	901	384	779	865	7,165	1,196	976	10,292
Nov	1,876	1,101	502	105	312	297	265	608	605	8,592	952	520	7,339
Total	**10,773**	**8,077**	**3,544**	**3,433**	**3,156**	**7,560**	**2,945**	**5,264**	**4,747**	**30,532**	**6,199**	**3,567**	**76,840**

[a] The trail counter identified as "Sassafras Mountain 1" was located on the Foothills Trail approximately 200 ft. west of the observation tower; the trail counter identified as "Sassafras Mountain 2" was located southeast of the observation tower where the parking area meets the Foothills Trail.

[b] The trail counter at Long Ridge Trail was not installed until April 20, 2023.

5.6 Future Needs Analysis

Future recreation needs on the Duke Energy-maintained portion of the Foothills Trail can be assessed in part by comparing the current use estimates and parking occupancy rates determined for 2023 to the projected growth rate of the 11 South Carolina and North Carolina counties in which most visitors to the Foothills Trail live. Assuming trail use would increase at the same rate as population growth, future use would be approximately 16.8 percent higher by 2035 than it was in 2023. This increase in demand is not expected to affect the ability of most access areas to accommodate use. However, considering this increase and the closure of Bad Creek Hydro Access during the Bad Creek II Complex construction, access areas providing vehicular access to the trail may experience temporary crowding or inability to accommodate demand. Specifically, Laurel Valley Access, which already experiences high use, may not have adequate parking capacity to accommodate higher frequencies of increased use. However, additional parking opportunities near Laurel Valley Access include Chimneytop Gap Access, Sassafras Mountain Access, and Table Rock State Park. Survey respondents did not indicate that crowding on the trail was an issue or concern at this time, however depending on their desired recreation experience, some dissatisfaction may occur in the future. In addition, increased use of the trail corridor may require the need for additional or more frequent maintenance of the trail's wooden infrastructure and tread. Gradual replacement of existing infrastructure with more sustainable materials (e.g., pressure treated lumber or naturally decay-resistant wood) should be considered.

Survey respondents did note the desire for several improvements for the Foothills Trail, as noted in Section 5.2.3. The most common requested improvements included better, clearer, and more trail markers and signage; bridge improvements and repairs; increased trail maintenance, including increased removal of downed trees; additional and improved restroom facilities; and additional and improved bear cables. The most outstanding need identified by survey respondents was that for additional information on the trail, which could include more or updated signage, repainted trail markers, information on overnight parking locations, hunting signage, and Leave No Trace signage.

The potential for modified trail corridor management, additional parking and suggestions recommended by survey respondents will be considered by Duke Energy in consultation with the Recreation RC. Duke Energy's proposed PMEs for the Foothills Trail will be included in the Final License Application, the Recreation Management Plan, and/or the Bad Creek Relicensing Agreement.

6.0 SUMMARY

The objectives of this study were to assess current recreation use and identify future recreation use needs along the 43-mile-long segment of the Foothills Trail and associated Duke Energy-maintained access areas. To meet these objectives, data collection and analysis utilizing a variety of methods as described in Section 3.0 was conducted over the better portion of a year and is detailed herein. Study results are summarized by current and future use in the following sections and will be used to inform recreation planning and management discussions between Duke Energy and relicensing stakeholders.

6.1 Characterization of Current Use

Trail counters were used to record the number of visitors that utilized a specific access area, trailhead, or trail segment. Locations that received the highest use during the study period were the Foothills Trail trailhead at Table Rock State Park (65,788 total visitors with an average of 239 visitors per day), Sassafras Mountain west of the observation tower (26,140 total visitors with an average of 95 visitors per day), Bad Creek Hydro (9,223 total visitors with an average of 67 visitors per day), and Toxaway River (6,473 total visitors with an average of 24 visitors per day). Locations that received the least amount of use during the study period were Canebrake Access (2,702 total visitors or an average of 10 visitors per day) and Laurel Fork Falls (2,522 total visitors with an average of 9 visitors per day). The portion of the trail in the vicinity of Bad Creek Hydro Access, Coon Branch Spur, and the Upper and Lower Whitewater Falls, as well as Horsepasture River Access, Toxaway River Access, and Sassafras Mountain Access are highly utilized activity hubs. Other access areas, including Canebrake, Chimneytop Gap, Laurel Fork Falls, and associated trail segments provide greater potential for solitude and wilderness experiences.

Parking areas at Bad Creek Hydro, Laurel Valley, Sassafras Mountain, and Upper Whitewater Falls experience high use throughout the year, particularly on weekends and holidays and during the fall season. Some areas (i.e., Bad Creek Hydro and Upper Whitewater Falls) are better equipped to handle this use, while others (i.e., Laurel Valley) experience periods of crowding. The campsite system dispersed throughout the Duke Energy-maintained portion of trail provides ample capacity for overnight backpacking use, and resource impacts due to campsite enlargement, human waste, trash/litter or fire related impacts are not a concern.

Hiking and backpacking were the most popular activities on the Foothills Trail, although other activities including camping, picnicking, swimming, and shoreline relaxation were also popular in available areas. Survey respondents were typically pleased with their hiking experience and their overall experience on the Foothills Trail and generally rated the quality of the facilities available on the trail as good or very good. Respondents also typically noted the trail was clean and not crowded.

6.2 Characterization of Future Use

Population growth in surrounding counties is recognized as a primary contributing factor in future use of local recreation facilities. Based on projected population growth in the 11 counties in which most survey respondents live, recreation use is likely to increase by 16.8 percent. This may strain some areas in their ability to accommodate use and may affect user satisfaction of their desired recreation experience. Trail conditions may deteriorate at a faster rate due to increased use, requiring the need for modified trail infrastructure and/or increased maintenance.

6.3 Considerations Related to Bad Creek II Complex Construction

In addition to current and future use of the Duke Energy-maintained portion of Foothills Trail and associated access areas, this study examined potential impacts to recreation around the Bad Creek II Complex construction area. During construction, public access to Musterground Road would be closed for 5-7 years, resulting in a temporary impact to recreation in the area. While recreation opportunities in the Musterground area would still be available to the public via foot or boat access, vehicular access would be restricted, resulting in a sharp decline in public use. During construction, Bad Creek Hydro Access trailhead and parking area would also be closed for 5-7 years. This access area is a popular location to access the Foothills Trail and several spur trails and sightseeing destinations in the vicinity. Other access areas nearby, such as Upper Whitewater Falls Access, would be available to offset use and provide vehicular access to the area, although overnight parking may need to be pursued in other areas of the trail.

The 77-mile Foothills Trail provides a distinctive trail experience in the Upstate of South Carolina and the Mountains of North Carolina that ties together a bevy of unique recreational experiences, significant natural resources, and one-of-a-kind viewscapes and has become integral to the region. Duke Energy, along with the Foothills Trail Conservancy and many other partners, are essential to the continued care and protection of the trail.

Future management of the Duke Energy-maintained portion of the Foothills Trail will be detailed in a Recreation Management Plan that will span the term of a new Bad Creek Project FERC license. The Recreation Management Plan will include provisions for continued study of the trail to ensure future use and needs are accommodated appropriately.

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APPENDIX A

SAMPLE DATA COLLECTION FORMS

Duke Energy Bad Creek Pumped Storage Project Recreation Use Survey	Duke Energy is conducting this survey to learn about recreational use of the Foothills Trail, user satisfaction with existing recreation facilities, and whether facility improvements may be needed. Please take a few minutes to answer some questions about your visit today. Thank you for your participation.

Location:			Date:		Time:
Interviewer:					
1. What is your country, state, and county of residence?	Country:		State:		County:
2. How many people are in your group today? _____ people					
3. What is your age?	18-24	25-34	35-44	45-54	55+
4. If you came with others, what are their age groups? (circle all that apply)					
Children (Infants-12)	Youth (13-17)		Adults (18-55)		Senior Adults (over 55)
5. How did you hear about the area? (circle one)					
Friend/Relative	Social Media		_____Other		
6. How many times (including today), have you visited the Foothills Trail in the last 30 days? _____					
7. Do you have a vehicle parked at one of the access areas listed below? If so, indicate which one.					
No Vehicle	Sassafras Mtn.	Chimney Top Gap	Laurel Valley	Bad Creek Hydro	Upper WW Falls
8. If you have a vehicle parked at one of the access areas listed in Question 7, how long will it be parked there? _____ days, _____hours					
9. What is the primary reason for your visit today? (circle all that apply)					
Fishing/Flyfishing	Picnicking	Hiking	Canoeing/kayaking		
Camping	Swimming	Biking	Wildlife viewing		
Backpacking	Birdwatching	Hunting	Wildflower viewing		
Shoreline relaxation	Other:				
10. If you came to hike today, how would you rate your hiking experience? (circle one)					
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	
11. Please rate the quality of the following facilities as they relate to the Foothills Trail. (circle one for each)					
Trails:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Bridges:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Restrooms:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Parking:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Picnic Areas:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Campsites:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Fishing Areas:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Unavailable	N/A
Cleanliness:	Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	N/A	
Crowding:	Very Low (5)	Low (4)	Moderate (3)	High (2)	Very High (1)	N/A	
12. Overall, how would you rate your experience on the Foothills Trail during this trip? (circle one)					
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	
13. If you rated your experience as "Poor" or "Very Poor", please explain why.					

14. List any specific improvements you would like to see for the Foothills Trail and/or associated access areas, and any other comments or suggestions.

DUKE ENERGY CAROLINAS, LLC

RECREATION STUDY

BAD CREEK PUMPED STORAGE PROJECT

(FERC NO. 2740)

Recreation Site Inventory Form

Inspector: _____

Date: _____ **Trail Mile:** _____

Site Name: _____

Site Coordinates: _____

Road Access:

	Paved	Unpaved/Gravel
Road Access		

Name of Nearest Road: _____

Distance to that road from site: _____

Closest boat access: _____

Parking (# of spaces) if completing Access Area/ Parking lot:

	Paved	Unpaved/Gravel
Vehicle Spaces		
Vehicle with Trailer Spaces		
ADA/Barrier Free Spaces		

Restrooms:

	Latrine	Vault Toilets	Portable Toilets	ADA/Barrier Free
Women				
Men				
Unisex				

Shoreline Access (if applicable):

General shoreline description (document with photos):

_____

_____

Approximate slope: _____

Substrate description: _____

Camping:

	# of Sites	ADA/Barrier Free	Fire Rings
Primitive Sites			

Amenities:

	Yes	No	Additional Information/ADA/Barrier Free
Portage			
Reservoir Fishing			
Swim Area			
Trails (other than the Foothills Trail)			
Active Recreation Area			
Picnic Area			
Overlook/Vista			
Interpretive Display (Signage/Kiosk/Billboard)			
Hunting Area			
Trash Cans			
Bear Bag Cable			List Height:
Other			

Maintenance:

	Responsible Party	Frequency	Notes
Vegetation			
Waste Mgt.			

Spot Count Form

Duke Energy North Carolina, Inc.

Bad Creek Pumped Storage Project (FERC No. 2740)

Monitor: _____	**DATE:** ____ /____ / _____ (month) (day) (year)	**Day Type: 1 Weekday 2 Weekend 3 Holiday**

WEATHER AT START (Please circle as many descriptors as apply)	1. Sunny	4. Light Showers	
	2. Partly Sunny	5. Heavy Rainy	
	3. Cloudy	6. Windy	

Site Name	
Time	
Total vehicles w/o Trailers	
Total Vehicles W Boat Trailers	
Total Vehicles W ATV Trailer	

Site Condition/ Notes/ Events:

APPENDIX B

INVENTORY AND ASSOCIATED MAPS AND PHOTOS

Sassafras Mountain Access			
Miles to Table Rock		**9.5**	
Access Road			
		Paved/Unpaved/Gravel	
Sassafras Mountain Rd		Paved	
Distance to Road from site		0 miles	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	30	1
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	2	Vault	Y
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	--	
Amenities			
	#	**Additional Information**	
Portage	--	--	
Reservoir Fishing	--	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	1	ADA accessible via dirt trail	
Interpretive Display	1	Kiosk good condition	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Palmetto Trail			
Caesar Head State Park			
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Chimneytop Gap Access			
Miles to Table Rock		**12.2**	
Access Road			
		Paved/Unpaved/Gravel	
F Van Clayton Memorial Hwy		Paved	
Distance to Road from site		0 miles	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	Gravel lot	
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	--	
Amenities			
	#	**Additional Information**	
Portage	--	--	
Reservoir Fishing	--	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	1	Kiosk good condition	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Beach Bottom Falls Trail			
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Laurel Valley Access			
Miles to Table Rock		**14.3**	
Access Road			
		Paved/Unpaved/Gravel	
Horsepasture Rd		Gravel	
Distance to Road from site		0 miles	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	Gravel lot- 20	
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	1	
Amenities			
	#	**Additional Information**	
Portage	--	--	
Reservoir Fishing	--	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	3	Kiosk good condition	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Eastatoe Gorge Trail			
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Laurel Fork Falls Access

Miles to Table Rock		**22.4**	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	--	--
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	--	
Amenities			
	#	**Additional Information**	
Portage	Y	--	
Reservoir Fishing	Y	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	--	--	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Laurel Fork Falls Boat Access Spur Trail			
Shoreline Access			
General Shoreline Description		Steeply sloped dense clay bank	
Approximate slope		73%	
Substrate Description		Clay/ rocky	
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Toxaway River Access			
Miles to Table Rock		**28**	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	--	--
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
9	--	9	
Amenities			
	#	**Additional Information**	
Portage	Y	--	
Reservoir Fishing	Y	--	
Swim Area	Undesignated	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	1	Kiosk Good Condition	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	7 Silver and 4 Black	Silver at 6'9" and Black at 6'5"	
Other	7 Picnic tables	--	
Trails Nearby			
Canebrake Trail			
Frozen Creek Access Foothills Trail			
Shoreline Access			
General Shoreline Description		Somewhat stable clay bank with herbaceous cover	
Approximate slope		24%	
Substrate Description		Clay/ rocky	
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Canebrake Access

Miles to Table Rock		**28.6**	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	--	--
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	1	
Amenities			
	#	**Additional Information**	
Portage	Y	--	
Reservoir Fishing	Y	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	--	--	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Shoreline Access			
General Shoreline Description		Steep actively eroding clay bank lacking vegetation	
Approximate slope		42%	
Substrate Description		Clay	
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Horsepasture River Access

Miles to Table Rock		**36.3**	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	--	--	--
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	1	
Amenities			
	#	**Additional Information**	
Portage	Y	--	
Reservoir Fishing	Y	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	--	--	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Shoreline Access			
General Shoreline Description		Steep rocky banks with dense vegetation	
Approximate slope		56%	
Substrate Description		mixed- silt and sand with cobble	
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Lower Whitewater Falls Overlook			
Miles to Table Rock		**46.5**	
Access Road			
		Paved/Unpaved/Gravel	
Foothills Trailhead Access Area Rd		Paved	
Distance to Road from site		0 miles	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	Utilizes Bad Creek	--	--
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	--	--	--
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	--	
Amenities			
	#	**Additional Information**	
Portage	--	--	
Reservoir Fishing	--	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	Y	Wooden overlook	
Interpretive Display	--	--	
Hunting Area	--	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Bad Creek Access Spur			
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Bad Creek Hydro Access

Miles to Table Rock		**45.5**	
Access Road			
		Paved/Unpaved/Gravel	
Foothills Trailhead Access Area Rd		Paved	
Distance to Road from site		0 miles	
Parking			
	# Paved	**# Unpaved/ Gravel**	**ADA/ Barrier Free**
Vehicle-Only Spaces	31 Marked. Open lot	--	2
Vehicles with Trailer Spaces	--	--	--
Restrooms			
	#	**Type**	**ADA/ Barrier Free**
Women	--	--	--
Men	--	--	--
Unisex	2	Portable	1 of 2
Camping			
# of Sites	**ADA/Barrier Free**	**# of Fire Rings**	
--	--	1	
Amenities			
	#	**Additional Information**	
Portage	--	--	
Reservoir Fishing	--	--	
Swim Area	--	--	
Active Recreation Area	--	--	
Picnic Area	--	--	
Overlook/Vista	--	--	
Interpretive Display	2	Kiosks Maps faded and may need update for readability	
Hunting Area	Muster Ground Rd Nearby	--	
Trash Cans	--	--	
Bear Bag Cables	--	--	
Other	--	--	
Trails Nearby			
Lower Whitewater falls Spur		Whitewater River Foothills Trail	
Vegetation Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Annually between April - October	Trimming/ Clearing 2-foot width with side and overhead trimmed for 4 ft by 8ft tall path. Any dug sections max of 10 degrees of side slope. Water bars cleared of leaves. Reblaze every 2-3 years. Maintain Access area.	
Waste Management Maintenance			
Responsible Party	Frequency	Notes	
Duke Energy	Every 2- 3 week	Trash Pickup	

Sassafras Mountain Trail Access

Photo 1 Sassafras Mountain Trail Parking Area

Photo 2 Sassafras Mountain Trail Restrooms

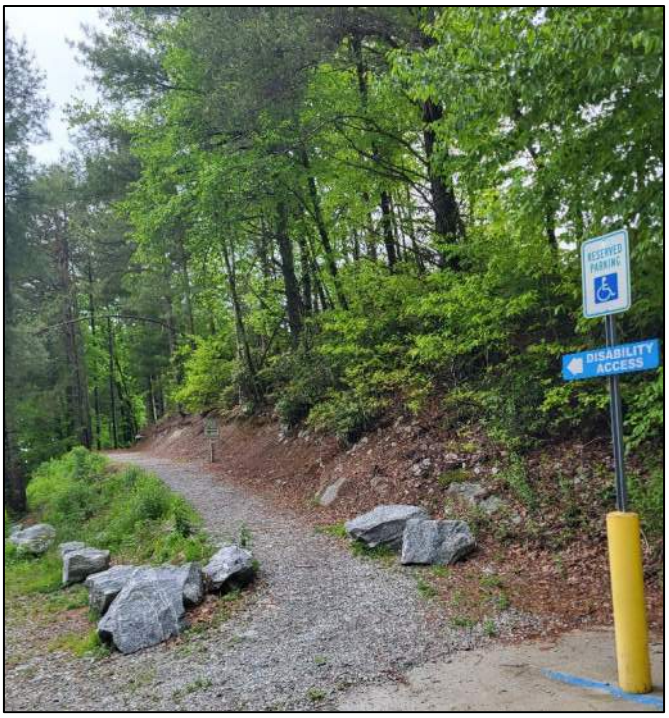


Photo 3 Sassafras Mountain Disability Access Trail

Photo 4 Sassafras Mountain Overlook

Photo 5 Sassafras Mountain Overlook Entrance

Chimneytop Gap Trail Access

Photo 6 Chimneytop Gap Trail Access Point

Photo 7 Chimneytop Gap Closest Parking Area

Laurel Valley Trail Access

Photo 8 Laurel Valley Access Signage

Photo 9 Laurel Valley Parking Area

Photo 10 Laurel Valley Kiosk Map

Photo 11 Laurel Valley Informal Fire Ring

Laurel Fork Creek Falls Spur Trail Access

Photo 12 Laurel Fork Spur Boat Access Signage

Photo 13 Laurel Fork Spur Trail

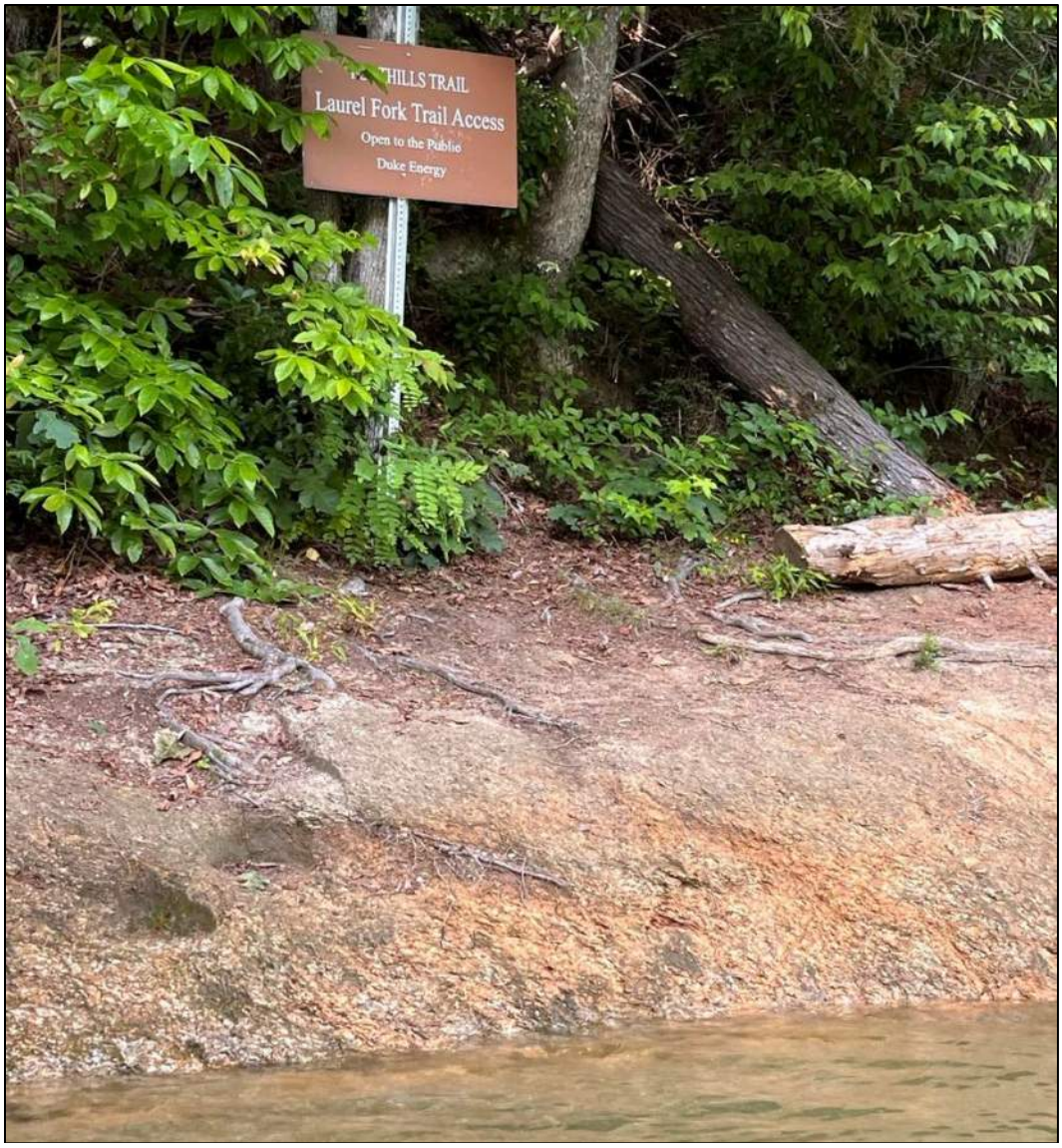


Photo 14 Laurel Fork Falls Shoreline

Toxaway River Trail Access

Photo 15 Toxaway River Shoreline Visualization

Photo 16 Toxaway River Access Area signage

Photo 17 Toxaway River Campsite with Bag hang

Photo 18 Toxaway River Campsite

Photo 19 Toxaway River Campsite Bridge

Photo 20 Toxaway River

Canebrake Trail Access

Photo 22 Canebrake Fire Ring

Photo 21 Canebrake Signage

Photo 23 Canebrake Shoreline Visualization

Horsepasture River Trail Access

Photo 24 Horsepasture River Access Area

Photo 25 Horsepasture River Signage

Photo 26 Horsepasture River Bridge

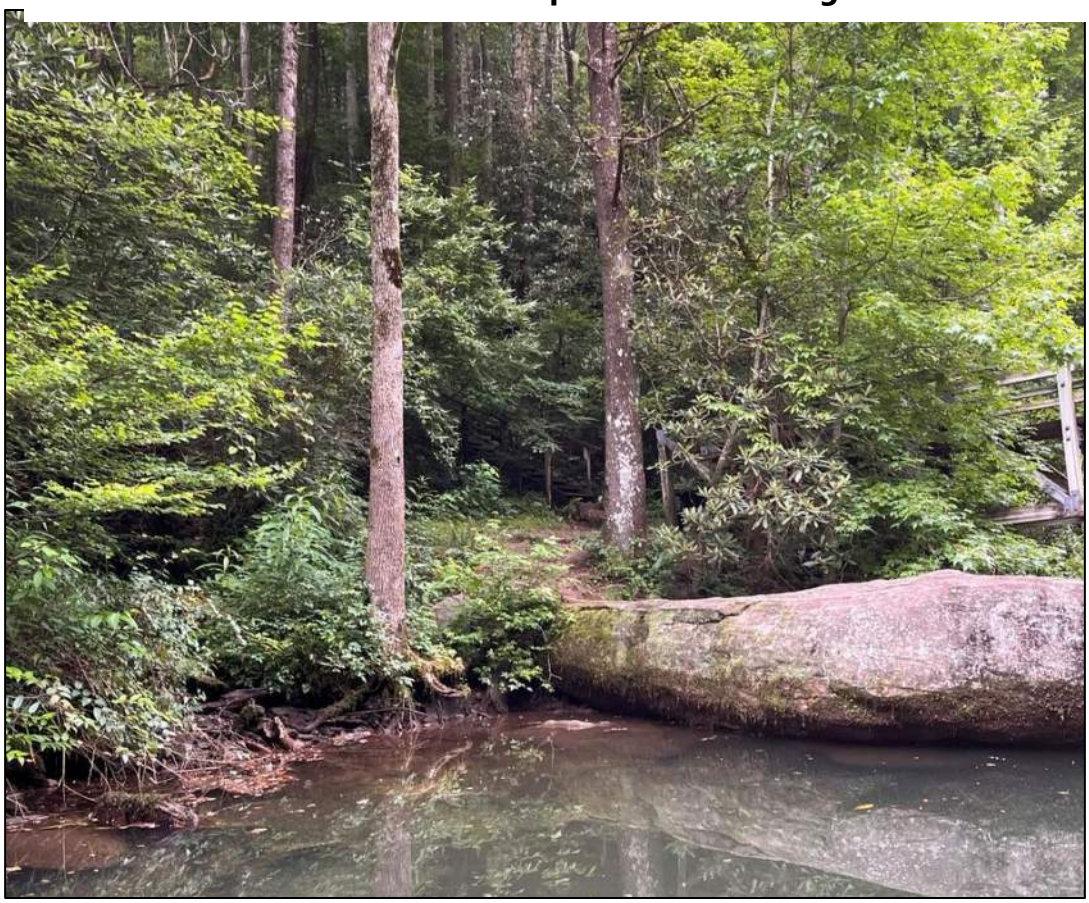


Photo 26 Horsepasture River Shoreline Visualization

Photo 27 Horsepasture River

Lower Whitewater Falls Overlook

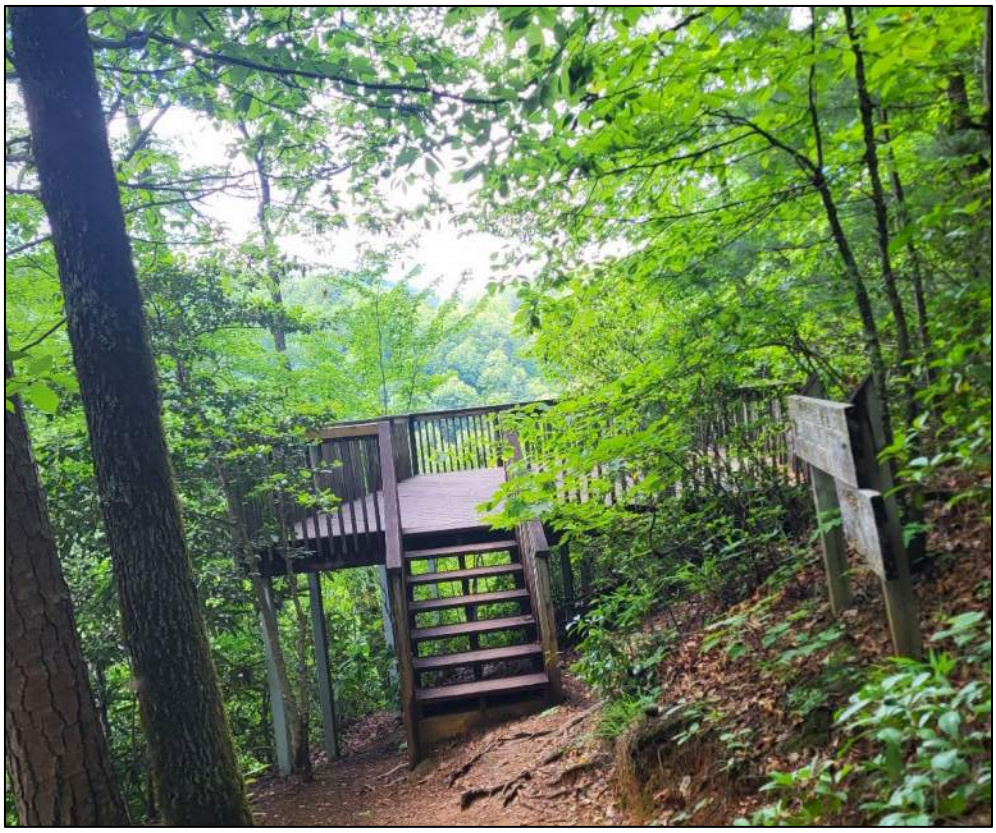


Photo 28 Lower Whitewater Falls overlook

Photo 29 Lower Whitewater Falls View

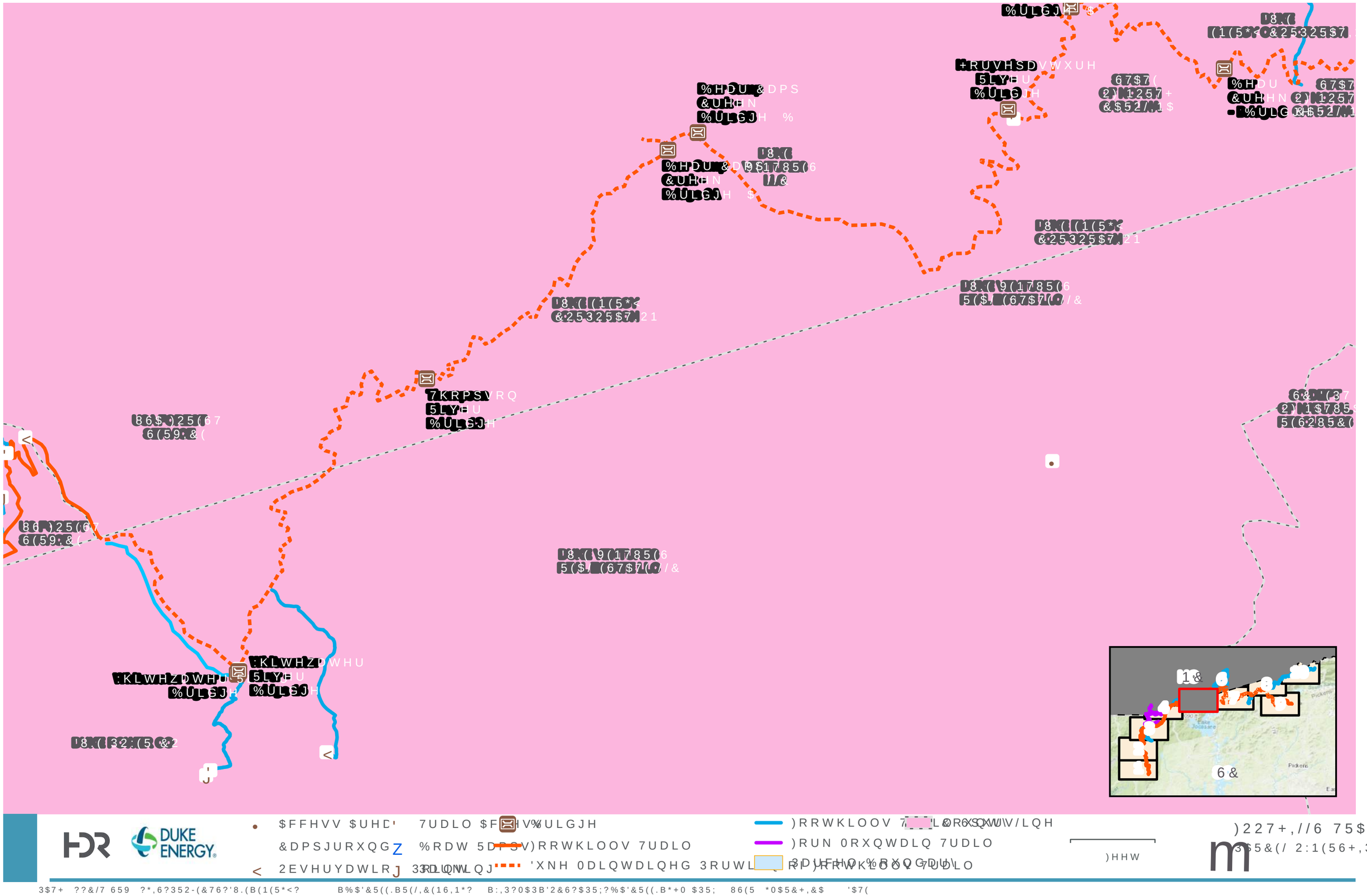
Bad Creek Hydro Project Trail Access

Photo 30 Bad Creek Parking Area

Photo 31 Bad Creek Signage

Photo 32 Bad Creek Trail Map

Photo 33 Bad Creek Signage



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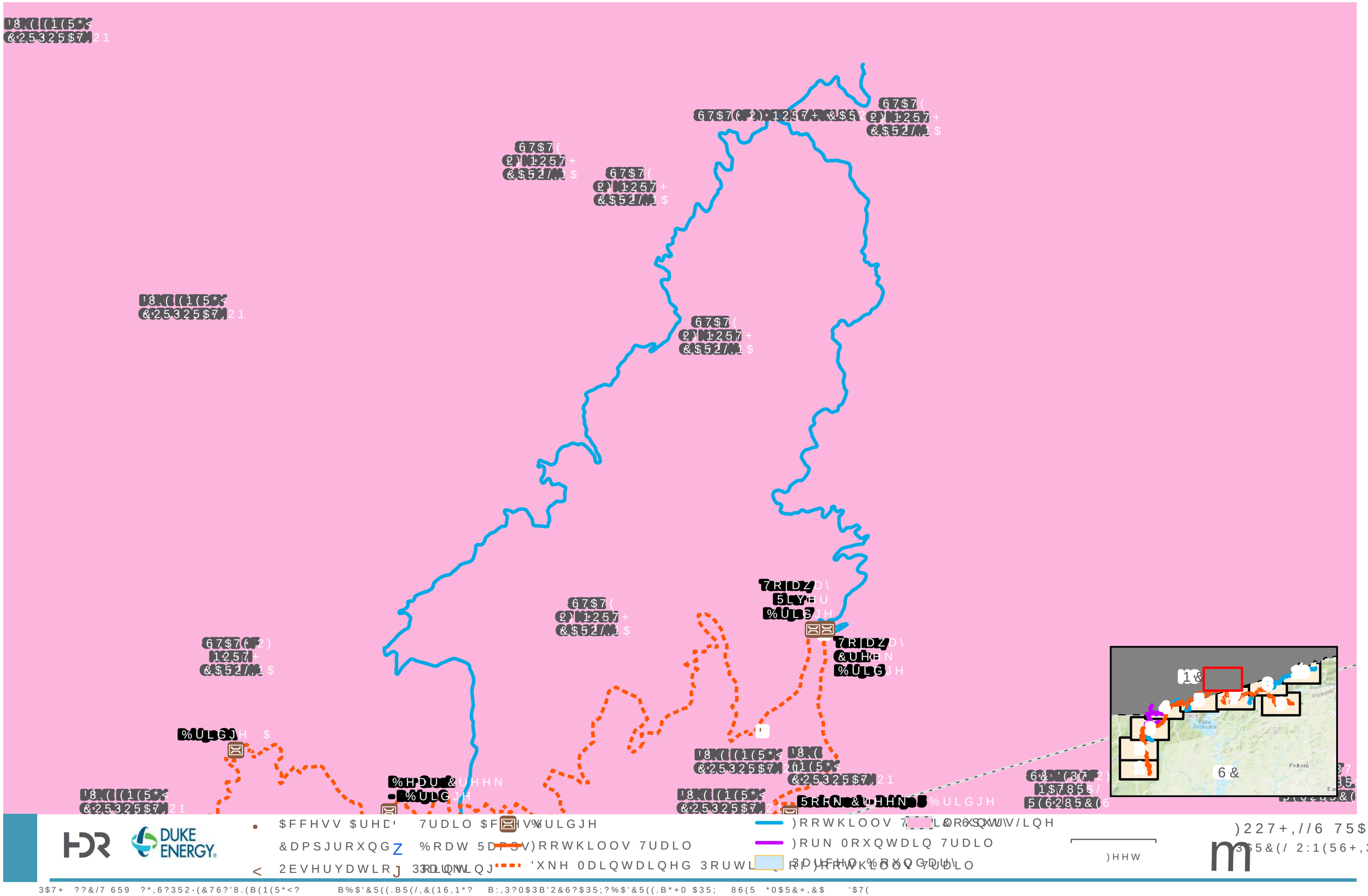
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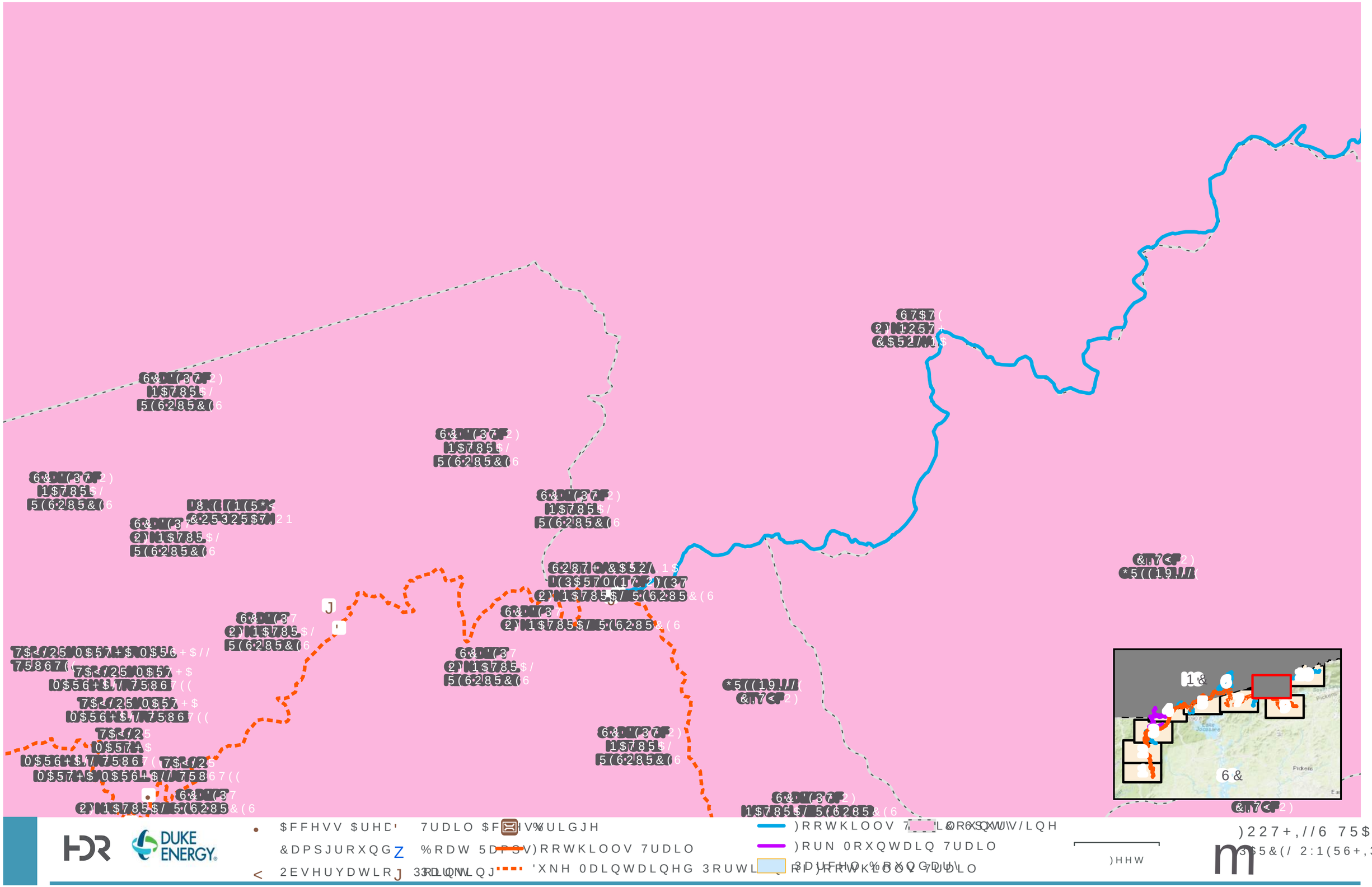
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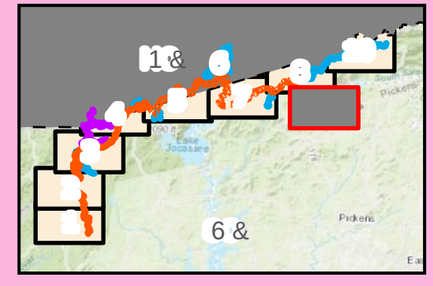

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APPENDIX C

FOOTHILLS TRAIL MAINTENANCE AND MOA

DUKE POWER COMPANY

LAKE MANAGEMENT

FOOTHILLS TRAIL MAINTENANCE PROGRAM

POLICY AND PROCEDURES

FERC LICENSE #2740-SC

I. Duke Power Section of the Foothills Hiking Trail

Duke Power Company provides for maintenance of the main trail and four spurs that were constructed on Duke Power and Crescent Resources, Inc. properties to satisfy public recreational requirements of the Bad Creek Hydro Project license (FERC No. 2740). The trail extends from the current Duke/SCPRT property line on Pinnacle Mountain to the Duke/USFS property line on the Whitewater River (see Attachment A). The total distance including spur trails is approximately 46 miles and is protected by a 200 foot minimum width corridor.

II. Safety Requirements

Duke Power Company is committed to occupational health and safety as reflected in the company's Safe Work Practices (SWP) manual. This manual describes the work practices employees and suppliers are expected to use when engaged in on-the-job activities. The company also expects supervisors to ensure that employees and suppliers understand and use these safe work practices. The safe work practices are grouped into categories based on the type of work performed or the hazard. The following SWP manual categories most apply to trail maintenance work:

1. Heavy/Light Equipment
2. Personal Protective Equipment
3. Tools
4. Water Safety

*Note: Other categories may be applicable, depending on the task.

III. Unauthorized Activities

Vehicle and horse travel are not authorized on the trail.
*NOTE: Vehicle access for maintenance support is allowed along the maintenance roads shown on Attachment B.

Maintenance personnel should inform Duke Power of any unauthorized activities.

IV. Access Points

Two types of access points are provided for trail users: Access from vehicles, and boat access from Lake Jocassee (see Attachment A).

A. Vehicle Accesses
   1. Sassafras Mountain
   2. Chimneytop Gap
   3. Laurel Valley
   4. Bad Creek Hydro Project

B. Boat Access from Lake Jocassee
   1. Laurel Fork Falls

2. Rock Creek
3. Toxaway River
4. Horsepasture River

*Note: Maintenance of Access Points is detailed under Item VI, Maintenance Guidelines.

V. Spur Trails

There are six spur trails that connect with the Duke section of the main trail. The following four spur trails are to be maintained under the same guidelines as the main trail:

A. Laurel Fork Falls (Lake Jocassee - 0.2 miles)
B. Hilliard Falls (Bearcamp Creek - 0.2 miles)
C. Lower Whitewater Falls Overlook (Whitewater River - 1.7 miles)
D. Coon Branch (Whitewater River - 1.0 miles)

Maintenance of the Caesar's Head Spur (Sassafras Mountain - 10.9 miles - marked with blue blazes) and the Eastatoe Gorge Spur (Laurel Valley - 2.6 miles - marked with yellow blazes) is not Duke Power's responsibility and is therefore not covered by these guidelines.

VI. Maintenance Guidelines

A. Trimming/Clearing/Trash Pickup

1. Ground cover should generally be removed to maintain a clear footpath not less than two (2) feet in width.
    a. This is easiest obtained by using string heads on power trimmers.
    b. Rare or desirable plants should not be trimmed unless totally obstructing the view of the footpath. Examples of such plants are Oconee Bells, all ferns, trilliums, and partridge pea.
2. Side and overhead growth must be trimmed to maintain a cleared passageway along the footpath at least four (4) feet wide and eight (8) feet overhead. Desirable and slow growing trees and bushes such as Hemlocks and Rhododendrons should be left whenever possible.
3. When trimming old roadbeds, leave as much shade as possible to reduce growth of grasses and weeds.
4. All trees blown across the footpath must be removed unless they can be easily walked under by a backpacker in an upright position.
    a. Trees that require climbing over or leaving the trail to walk around are considered high priority and should be removed within one (1) week of first identification.
    b. Trees that can be easily stepped over are considered lower priority and can be removed at a later date.
5. Trash should be picked up whenever a section of the trail is walked by maintenance personnel, and properly disposed of in a landfill.

B. Digging and Erosion Control

1. Any dug sections of the trail may have a maximum of ten degrees of side slope across the footpath.
    a. Retaining walls should be placed along dug sections of the trail.
    b. When re-digging a trail section, always inspect any existing retaining walls for decay and replace as necessary.
    c. Only Black Locust logs, rock or rot resistant timbers are to be used for retaining walls.
    d. The footpath must have a clear width of two (2) feet.
2. Water bars

    All existing water bars must be cleaned of leaves and silt as needed, especially in the fall and winter. Additional water bars should be added as needed to control erosion, mainly on old road beds. Only Black Locust or rot resistant timbers secured with rebar are acceptable materials for construction of water bars.

C. Bridge Inspection and Repair

All bridges should be thoroughly inspected at least once a year by maintenance personnel and once every five (5) years by a licensed Engineer.

1. Repair broken boards within one (1) week of first identification.
2. Inspect all cables for rust and wear.
3. Remove any bee nests.
4. Replace missing hardware within one (1) week of first identification.
5. Remove debris around bridge support structures.
6. Inspect all bridge foundations and anchors.

D. Step Maintenance

Steps and handrails (both on-grade and above grade) are installed at a number of locations where the footpath is very steep. Steps and handrails should be inspected annually and necessary repairs made within one (1) week of first identification. Only Black Locust or rot resistent timbers secured with rebar or rock should be used to construct steps on-grade.

E. Sign Maintenance

1. There are several types of signs located at access points along the trail.
    a. Entrance Signs: Located at each point of access to the trail.
    b. Information Boards: Located at each point of access to the trail. These include a map of the trail, data concerning the Bad Creek Hydro Project, pertinent regulations, and contacts for further information.
    c. Directional Arrows: Assists hikers in identifying which direction the trail turns and the distances to points of interests.
2. All signs should be inspected annually.
    a. Letters on entrance signs must be painted as needed.

b. Regulatory maps on information boards must be kept legible and in good repair.
c. Distance signs and arrows must be painted and the wood replaced as needed.

F. Blazing

Blazes are used to guide hikers along the trail. A single blaze consists of a painted mark approximately four (4) inches wide by six (6) inches long on the side of a tree facing the trail. Single blazes should be visible about every 100 yards to let the hiker know he/she is still on the trail. Note that placing blazes more than 100 yards apart is acceptable and even desirable along sections where the trail location is very obvious (e.g. frequent dug/ stepped sections, old roadways, etc.). Double blazes (consisting of two single blazes on the same tree) are used to warn hikers of areas requiring caution, such as places where the trail location may be difficult to distinguish. Blazes should be maintained as follows:

1. Existing blazes should be repainted every two (2) to three (3) years (repaint existing blazes only). Do not add or delete blazes without consulting Duke Power.
2. Old loose paint must be scraped away before repainting blazes.
3. Use only white, boundary marker paint for blazes on the main trail and blue boundary marker paint for blazes on the Duke spur trails.
4. Refrain from painting light colored bark (e.g. Poplar and Maple) since blazes may be hard to see from a distance.

G. Maintaining Vehicle Access Points

Vehicle access points are the most visible part of the trail, therefore, they must be kept clean of trash as well as mowed and landscaped.

1. Grass should be mowed and trimmed every four (4) to six (6) weeks during the growing season or more frequently if necessary so that grass height does not exceed eight (8) inches.
2. Fresh mulch should be placed in mulched areas every spring.
3. Mulched areas should be weeded twice each summer.
4. Litter should be picked up every two (2) to three (3) weeks year-round and properly disposed of in a landfill.
5. Gravel areas should be scraped twice per year with new gravel added as needed.
6. All fire rings and burnt wood should be removed when found.
7. All metal gates that are visible from the trail should be painted white as needed.

H. Trail comment card and Map holders

1. Fill holders with comment cards and maps as needed.
2. Replace holders as needed.

VII. Maintenance Schedule and Inspections

All parts of Duke Power's section of the trail should be inspected and maintained annually and as described above. Maintenance personnel will keep a running logbook indicating completion of maintenance on a section-by-section basis. The majority of this work will be done from April - October. Duke Power and the FERC will make periodic inspections of the trail corridor on a year-round basis.

Jocassee Gorges Road Management

Memorandum of Agreement
between the
South Carolina Department of Natural Resources,
and
Duke Energy Carolinas, LLC

I. AUTHORITY

This Memorandum of Agreement (MOA) is made and entered into by and between the South Carolina Department of Natural Resources (including its successors in function and assigns), an agency of the State of South Carolina hereafter referred to as SCDNR, and Duke Energy Carolinas, LLC (including its successors and assigns), a utility owning or controlling lands in the Jocassee Gorges for the purposes of energy production and transmission, hereafter referred to as Duke Energy. SCDNR and Duke Energy may be singularly referred to herein as "Party" and collectively as the "Parties".

II. PURPOSE

SCDNR and Duke Energy have various interests in managing resources including timber lands, wildlife management areas, recreation facilities, and transmission lines in the Jocassee Gorges. These activities utilize a network of roads. Without appropriate management of this road system, erosion from the roads adversely affects the resources of the Jocassee Gorges and makes access to portions of the Jocassee Gorges very difficult.

Duke Energy has entered into a separate Wildlife Management Area (WMA) agreement to lease its transmission line Rights-of-Way (ROWs) of 1,483 acres within the Jocassee Gorges to SCDNR for inclusion in the WMA Program for a 10-year term effective July 25, 2013. This agreement is addressed in a separate lease agreement between SCDNR and Duke Energy. Roads within the WMA Agreement are maintained under this MOA.

Therefore, the purpose of this MOA is to provide a framework for the cooperative management of the road system in the Jocassee Gorges.

III. SCOPE OF WORK

A. Work Area

The work area includes certain roads, where Duke Energy retains privileges of ingress and egress, located within the Jocassee Gorges (Attachment 1).

B. Planning, Implementation and Schedule

This MOA will cover the period of January 1, 2021, or the date of the last signature on this MOA, whichever is later, through December 31, 2025. Within three months prior to expiration of this MOA, the Parties will convene to evaluate the MOA for potential renewal.

IV. FUNCTIONS

- Both Parties: Both Parties agree they will convene annually to review and contribute to the road management plan for each upcoming year.

- SCDNR: SCDNR agrees to assume the responsibility for implementation of the road management plan. SCDNR will maintain the roads in accordance with South Carolina's Best Management Practices for Forestry (BMP), as published by the South Carolina Forestry Commission.

- Duke Energy: Duke Energy will provide $25,000 per year for Jocassee Gorges road maintenance for the term of this MOA. Payments will be made during the first quarter of each calendar year, or as requested by SCDNR during each calendar year.

V. MUTUAL AGREEMENTS

It is mutually agreed by the Parties that:

- This MOA supersedes the previous MOA terms and conditions, executed on January 5, 2015, and such prior MOA is of no further force or effect.

- This MOA may be revised as necessary only by mutual consent of both Parties, by the issuance of a written amendment, signed and dated by both Parties. This MOA may be terminated by either Party upon two months written notice to the other.

- Each Party shall not be responsible for the acts of the other Party and the results thereof. Duke Energy will assume all risk and liability to itself, its agents or employees, for any injury to persons or property resulting in any manner from the conduct of its own operations, and the operation of its agents or employees under this MOA, for any loss, cost, damage, or expense resulting at any time from any and all causes due to any act or acts, negligence, or the failure to exercise proper precautions, of or by itself or its agents or its own employees, while occupying or visiting the premises under and pursuant to the MOA. The liability of the SCDNR is subject to the S.C. Tort Claims Act and other applicable law.

- SCDNR shall not be obligated to expend any of its funds for construction, maintenance, or other matters set forth hereinabove except to the extent that funds have been appropriated and budgeted for these purposes.

VI. EFFECTIVE DATE

IN WITNESS WHEREOF, the Parties hereto have executed this MOA as of the last written date below.

SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES

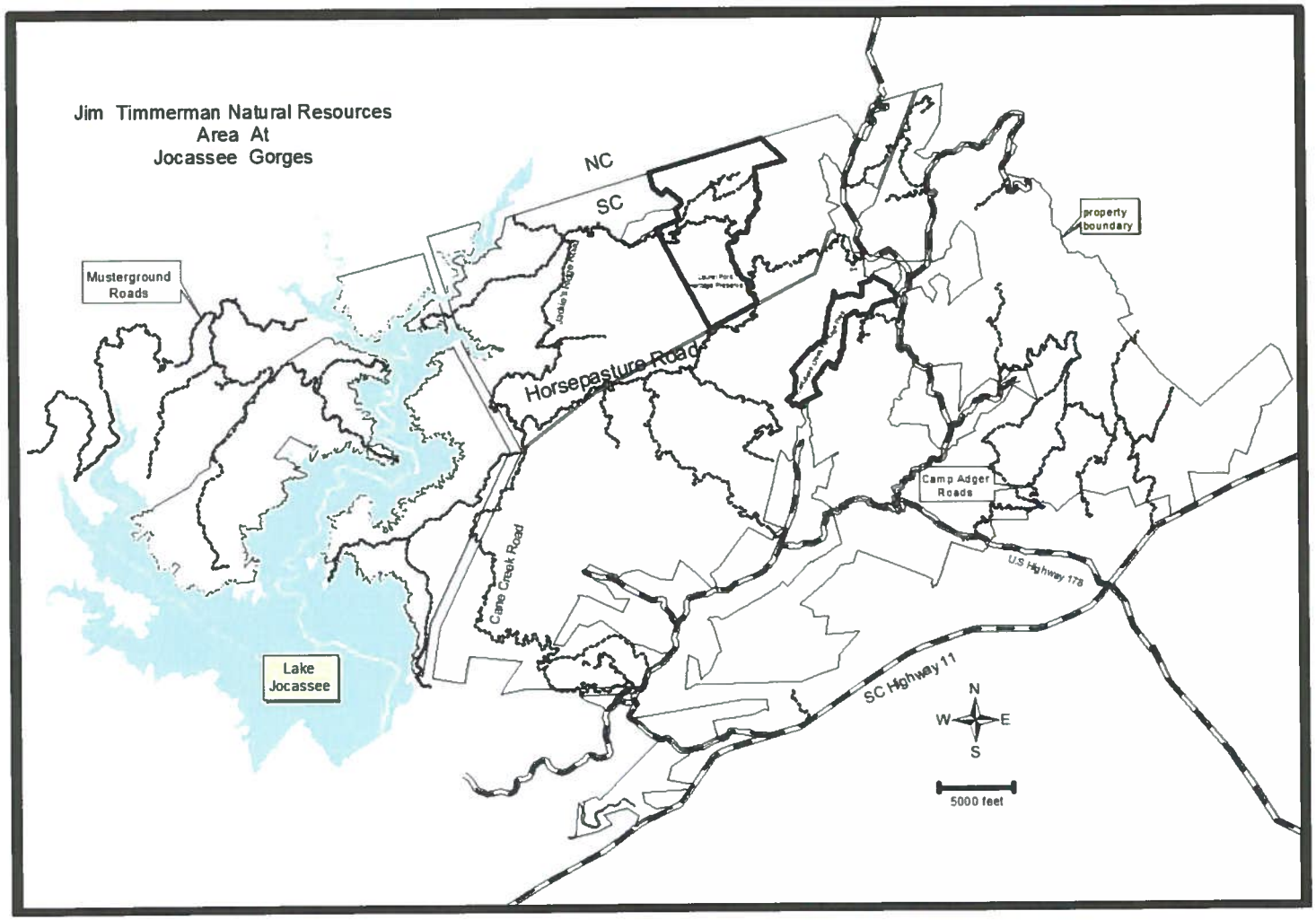
By: _____ Date: 1-12-2021

Robert H. Boyles Jr., Director

DUKE ENERGY CAROLINAS, LLC

By: _____ Date: 1/14/2021

Steven D. Jester, Vice President
Water Strategy, Hydro Licensing and Lake Services



Attachment 1. Jocassee Gorges primary road system covered under the Jocassee Gorges Road Management Memorandum of Agreement (MOA) (Note the map does not show secondary roads which are also maintained under this Agreement).

APPENDIX D

COUNTIES OF RESIDENCE FOR SURVEY RESPONDENTS

Appendix D. County of residence of survey respondents.

State	County	Count	Percent
South Carolina	Greenville	61	19.7
	Oconee	27	8.7
	Pickens	27	8.7
	Anderson	16	5.2
	Spartanburg	10	3.2
	Charleston	6	1.9
	Richland	5	1.6
	Aiken	4	1.3
	Beaufort	4	1.3
	Dorchester	4	1.3
	Greenwood	4	1.3
	Laurens	4	1.3
	Lexington	4	1.3
	York	4	1.3
	Florence	2	0.6
	Berkeley	1	0.3
	Darlington	1	0.3
	Horry	1	0.3
	Lancaster	1	0.3
	Newberry	1	0.3
	Williamsburg	1	0.3
North Carolina	Jackson	8	2.6
	Mecklenburg	8	2.6
	Buncombe	7	2.3
	Wake	6	1.9
	Henderson	4	1.3
	Transylvania	4	1.3
	Haywood	2	0.6
	Union	2	0.6
	Cabarrus	1	0.3
	Caldwell	1	0.3
	Cherokee	1	0.3
	Iredell	1	0.3
	Lee	1	0.3
	Macon	1	0.3
	Moore	1	0.3

State	County	Count	Percent
	New Hanover	1	0.3
	Orange	1	0.3
	Polk	1	0.3
Georgia	DeKalb	3	1.0
	Fulton	3	1.0
	Forsyth	2	0.6
	Hart	2	0.6
	Butts	1	0.3
	Chatham	1	0.3
	Chattooga	1	0.3
	Clarke	1	0.3
	Cobb	1	0.3
	Fayette	1	0.3
	Gwinnett	1	0.3
	Oconee	1	0.3
	Richmond	1	0.3
Florida	Duval	3	1.0
	Orange	2	0.6
	Brevard	1	0.3
	Broward	1	0.3
	Hillsborough	1	0.3
	Jefferson	1	0.3
	Nassau	1	0.3
	Pinellas	1	0.3
	Seminole	1	0.3
	St. Johns	1	0.3
	Leon	1	0.3
Kentucky	Jefferson	3	1.0
	Kenton	1	0.3
	Oldham	1	0.3
Tennessee	Carter	1	0.3
	Knox	1	0.3
	Lincoln	1	0.3
	Unicoi	1	0.3
Ohio	Butler	1	0.3
	Fairfield	1	0.3
Pennsylvania	Beaver	1	0.3
	Chester	1	0.3

State	County	Count	Percent
	Philadelphia	1	0.3
	Wyoming	1	0.3
Maine	Cumberland	1	0.3
	Kennebec	1	0.3
New Hampshire	Grafton	2	0.6
Virginia	Montgomery	1	0.3
	Roanoke	1	0.3
Alabama	Limestone	1	0.3
	Baldwin	1	0.3
Colorado	Boulder	1	0.3
	Larimer	1	0.3
Connecticut	Fairfield	1	0.3
	Hartford	1	0.3
Illinois	DuPage	1	0.3
Massachusetts	Hampshire	1	0.3
Michigan	Washtenaw	1	0.3
	Oakland	1	0.3
Minnesota	Stearns	1	0.3
	Olmsted	1	0.3
Mississippi	Tate	1	0.3
Missouri	St Louis	1	0.3
Texas	Travis	1	0.3
West Virginia	Berkeley	1	0.3
Wisconsin	Dane	1	0.3

Country	Count
Brazil	1
USA	310

APPENDIX E

ADDITIONAL COMMENTS FROM SURVEY RESPONDENTS

In-Person Survey Comments/ Improvements
"Leave no trace" signs and explanations as to what that means for nature preservation & conservation near campgrounds. Start a "pack it in, pack it out" policy especially for toilet paper. Bear bag hangs or cables needed at all campsites. Bear cable at Bear Gap is broken. Hikers hanging fodd off bridge at Toxaway, is this allowed? If so post signs. Signs posted for hikers about active hunting seasons (bear, deer, pig, etc.) to wear orange. Trash receptacles at bad creek hydro. Railing at heartbreak bridge needs repairs. Bear cables needed at Toxaway.
Access trail down to the falls
Accurate mileage from parking lot to lower whitewater falls overlook
Better bridge access
Better blazes on the trail along musterground road. Also have signage at the John Gardon sugn kisting that trail as part of the lower whitewater falls overlook
Better mile marking for the true distance between parking lot and lower whitewater falls trail. the hike was longer than 1. 7miles one way. better blue trail blazes on Musterground Rd. to denote path to follow for lower whitewater falls trail
Better restrooms
Better signage especially at intersections, more clear mile markings for start, and miles left to hike at the intersections Picnic tables at parking lot
Blazes need to be more clearly marked along splits in the trails
Bridge repair needed on one of the bridges (due to a missing slat) some of the natural bridges may need repairs in the future due to wobbliness
Clear dead trees near bridges for better water/stream access
Clearer blazes on trail at intersections of muster ground road. Better denotation that lower whitewater falls is just an observation platform and does not bring you anywhere close to the actual falls.
Confusion at crossing musterground road
Dead trees on 50 percent of site: one tree major at ww falls 1/2 milebefore the bridge: signage for trail for white waterfalls could be better. all others are great.
Duke needs to do a better job maintaining these trails.
Felled tree about 4 feet off ground between bridges and atv parking needs removing or warning better blaze markings where trails with blue and white trails intersect, more frequent blue blazes on road
Fix the bridge
Food drops

In-Person Survey Comments/ Improvements
Handrails would benefit the hikers.
Improving signage to reflect accurate mileage between locations Maintaining hiking trails to the quality currently is
Just maintain everything, loves everything
lohs need to be removed from the trail they are partially sawn through
Markings on road directing you to waterfalls
More accurate signage for trail mile distances. mile markers along trails to help keep younger children motivated during the hike
More camping locations
Clearer map of the trails specifically a map of trails meeting at parkinglot & where they intersect
More clear trail markings for lower whitewater falls overlook
More permanent bathroom
More signage for lower whitewater falls
More signs especially for fishing areas access and what trail to take
One of the bridges has a rail down
Paint on signs
Paper maps, better views of waterfalls
Replace "blue blazes spur to lower whitewater falls overlook" signage. Everything in blue is too faded to see well
Satellite phone access at convenient locations
Shorter steps, correct sign distances, built in wooden benches
Signage issue walking towards the lower whitewater falls trail across musterground road
Signage. Once you reach the gravel road the direction to hike to reach the overlook is not clear and we guessed which way to go.
Signs for turn off miles seemed off
Signs need some repairs Switchbacks well maintained Have cost for parking listed on websites for parks suck as upper whitewater
signs to the falls, bad creek foothill trails - hand rail on steep bridge steps
Aome areas where the seconary bridges needed repairs, trail had post without railing on a secondary bridge was a specific example
Aome wooden blocks need to be replaced
The signs are confusing, none are clearly marked with "you are here" and on trail signs don't clearly list where to go
Trail blazes need to be clearly marked.

In-Person Survey Comments/ Improvements
Trail markings clearer for lower whitewater falls overlook. Include clarity that john garton trail is still part of the lower whi tewater falls trail
Trash cans in parking lots. better trail marking & clear blazes from coon branch to bad creek hydro parking.
Tree down and needs to be removed nears upper whitewater falls deck
Tree down in trail 1/2 between upper foot trail
tree down needing to be removed on bad creek access trail
Trees at overlook need trimming to open up the overlook view
Well-marked, very clean
August more weed whacking, 2000 ft before horse pasture across small bridge ,bear cables should be a little higher
Bear gap_ bear cable tree obstructed the cable,
bear wires would like
Better maintained big trees
Better maintained.
Blow down an root ball took down between light house and catrell,
Bridge before site horsepasture that has a tree on it and it is damage to bridge,
General maintenance trees down
Hillard falls turn off and bear creak camp site overgrown & some down trees
remove trees blocking view of lower whitewater falls or top them to open view of falls
reroute steps for heart break ridge, really steep and need repair.
Restroom
Sleeping in cars at cold creek is not allowed, but no signage, so we were kicked out. signage would be nice. extend trail t o table rock to encourage usage. extra signage for mileage on trial.
Some bridges between Toxaway to Horsepasture some of the wood is rotten. no hammock set ups at campsite
Some trash cans or pit toilets reopen campsites between whitewater corridor
Switchbacks instead of steep staircases posting about control burns along trail & what parts of trail may be closed
Water bottle refill stations at the park
Seven day hike but did not park at listed areas (Table Rock). Would rate 10\5 if possible. Keep up the good work with trail, bridges, and restroom upkeep. Very pleased. Has been using QR code for last several crossings, but no signal.
A lot of trash in camp site from hikers, fire pits are having trash burnt in them.

In-Person Survey Comments/ Improvements
Hikers leaving a lot of trash hikers are not going off trail for bathroom use, they are not making cat holes, bear cables need more
Add porta potty or compost potty
Bathrooms maybe a picnic area by the rocks. More open gates
Bear box cable for bears easier access less poeple know or use them but they need them
Bear cables are not high enough,
Better signage for Easatoe Spur campsites. Very appreciative of access for these beautiful areas.
Better signs beach bottom falls is not good
Broken bear cables,
Camp site markers on smaller camp sites
camp sites trees down impressed with all the trail overall
Clear direction on website in regard to registration for hiking the trail, if it's madatory or not. Also listing on website which parking lots you can overnight park in and if it cost to park your vehicle there for days. (ex. costs to park at tablerock and upper whitewaterfalls but not at laurel valley.)
Clearblow down east of horse pasture river, broken glass at thompson river camp site,
Everything well maintaned. a few handrails were wobbly, but not unsafe.
great trails
informative value, give names tothe photos give value to biology for kids get them to learn the forest
Large tree down before the falls
Leave no trace training too much toilet paper. water source contamination
Metal grating on slippery bridges
More open gates. for more dirt bike access up laurel valley
More sign between camps
More signs
One bear hook for trash was a but high.
Plus: eagle scout projects like benches/bridges, bear hangs. improvements: spraying for poison ivy lots along trail edges
Porta potty at laurel valley
Privy, maybe add a porta potty at laurel parking area
Road to parking area was very rutted for car to drive up
Road to parking is too rutted,
Signs about hunting season when it is in - maybe add a porta potty to this site
Some stairs are pretty rough

In-Person Survey Comments/ Improvements
Stairs are washed out, trash in rock creek firepit,
Tree down at mile 4 before Virginia Hawkin falls.
Tree down before the stairs by Virginia Hawkins trail.
Trees down by the narrows , the road is very rutted
Went to the see falls
ADA accesbile areas, trash cans at sites, more boat parking at devils fork
Bear boxes or bear cables to secure food Outhouse advertising
Bear cables or bear lockers
Better boat access to campsites
Better cell coverage for trail, solar charging station for phones, better SUV/ATV/4wheel drive trail access.
Big huge shoutout to Taz with FTC for leaving water in a 9mile corridor without access to clean water (due to dry conditi ons) between 2miles WEST OF Pinnacle Mountain all the way to Laurel Valley. All the cisterns and water sources are really low & muddy from lack of rain. Forest behind campsites near Toxaway are littered with human waste and toilet paper.
Bridge after bear camp creek (approximately mile marker 41) has tree down across trail making it hard to safely cross trail. Stairwell and trail on oconee side of Toxaway Bridge has unseen walking hazards, one of the women in group slipped on acorns and injured wrist when falling.
Bridge improvements
Dead trees to dead branches potential risk to campers.
Downed trees need to be felled along trail. Alot have to be hiked far off trail to go around
Hand rails, steps are narrow for big feet
Heartbreak ridge has collapsed bench, some stairs are missing near there. Rock creek campsite has large pieces of litter
keep it as wilderness area and stop developing it more
Large trees down from bad creek on tothis point she had to crawl under the tree
Maintaining cleanliness of the campsites
More mile markers
More picnic tables
Outhouses at all primitive sites
Remove felled trees from trails between bad creek hydro & toxaway river
Repair stairs between laurel valley & "the bench" about 12 miles up trail near heartbreak ridge. Located in NC on route to Heartbreak Ridge & Toxaway

In-Person Survey Comments/ Improvements
Signs need a little paint
Some areas of trail too overgrown/brushy path is too narrow
Some steps along staircases are in need of repair
Stairs needing repair between heartbreak ridge & Toxaway river
Toxaway side of heartbreak ridge there's a hole in the bridge Near laurel fork creek bridge missing slats Tree down near heart break ridge
Trees need to be removed between Bear camp and whitewater camps. Really close to sore feet campsite.
water spigot in parking lots, shower access at parking lot, more parkable access points, updated foothills trail guidebook

Online Survey Comments/ Improvements
Beautiful trail, well maintained facilities (bridges, steps, trail). Something I've noticed when I have hiked the trail in the area managed by Duke, there is significant soil erosion occurring on the many logging roads that are in the area. I think there is vast room for improvement in controlling erosion; installing flow control features on those roads, such as water bars, catch basins, vegetation establishment, would be very beneficial to stream and ecologic health. Many of the small streams, and Laurel Fork Creek also, have enormous amounts of sediment in their stream bed. In many places, no rocks are visible on the stream bottom; instead, the rocks are buried under sand and mud that has washed in from precipitation runoff. Water bars to shunt the overland flow off to the side, with rock reinforcement to prevent scouring, would prevent much of that sediment from reaching the streams and choking them. Catch/settling basins would also help, as would installing mats.
Benches at view platform.
Best maintained Trail I have hiked.
Excellent trail Maintenance!!
Final section of spur to lower whitewater falls is damaged.
Heart Break ridge steps need improvements.
Honestly this is an amazing trail. Signage is great. Trails and campsites well maintained. I guess IF I had come to fish, I may not have readily known where allowed and not allowed....but I really wasn't looking for that information... Thank you.
I have hiked here for 25 years. It is an amazing trail. The upgrades to several sites are excellent with benches, fire ring, and bear cables. More secure parking areas with lighting would be a nice improvement.

Online Survey Comments/ Improvements
I have hiked the foothills trail from start to finish three total times. The trail is excellently maintained and has seen a number of upgrades with signage and designated campsites. I do think there needs to be a privy built at the Laurel Fork Falls campsite, and potentially at Toxoway campsite due to the high traffic area. This would help keep those areas very sanitary in human waste out of the water.
It would be amazing if the campsites on Jocassee had some stairs down to the water instead of just cliff.
Maybe brighten up some of the trail markers.
More campsites at Cane Creek trail lake area
More trail color indicators on the map boards. And ideally a qrs code to scan to get to a web-based trail map pdf that can be saved to phone for when you get no service
Pedestrian access across the Lake Jocassee Dam. This would unlock the potential for a massive loop system in the Upstate involving the Foothills Trail, Palmetto Trail and other trail system. This would be a world-class hiking & backpacking amenity.
Pit toilets at some of the back country campsites would be useful.
See above
Several small foot bridges were old split log type and could be updated. The conservancy has done a great job improving some of the campsites.
The date we visited was actually April 2nd, but the form assumes today's date, (I just dug out the picture of the sign).
The trail condition was very good and well marked
Trail maintenance is exceptional. The only thing I noted were a few steps that had rotted away with exposed rebar between the Toxaway Bridge and Laurel Fork access (steep decent heading east). Boat shuttle today but have/will park in each access on the trail for section hiking.
Trash cans at Sloan Bridge and Bad Creek Hydro. Wondering if the paved Upper Whitewater Falls parking lot is sliding down the mountain. Please trim trees at top of stairs of Upper Whitewater Falls and gazebo/overlook at Bad Creek Hydro to enhance the view.
Vault toilet near parking area. Thanks for all you do!
Very good although I might be bias. Love the FHT as a Peregrine hiker it has been my go to for backpacking, hiking, and trail running for many years. Keep up the good work.
Would love to see the portapotty upgraded to a restroom or at minimum a pit toliet. Overall, the trail and access from Bad Creek are excellent!

APPENDIX F

TRAIL CARRYING CAPACITY REPORT

FOOTHILLS TRAIL: CARRYING CAPACITY ANALYSIS

Prepared for:

Duke Energy Carolinas, LLC

Prepared by:
Applied Trails Research

Jeremy Wimpey, Applied Trails Research
Fletcher Meadema, Grouse Trail Works

June 2024

CARRYING CAPACITY ANALYSIS

Public land managers planning for outdoor recreation sometimes establish a carrying capacity which defines the amount and type of use that an area can accommodate before resource conditions or visitor experiences begin to deteriorate. According to the Interagency Visitor Use Management Council, "visitor capacity is a component of visitor use management and is defined as the maximum amounts and types of visitor use that an area can accommodate while achieving and maintaining desired resource conditions and visitor experiences that are consistent with the purposes for which the area was established" (https://visitorusemanagement.nps.gov/).

RESOURCE CONDITIONS

TRAIL CONDITIONS

TRAIL CARRYING CAPACITY CONSIDERATIONS

The ability of a trail to withstand use over time results from complex and interacting factors including the durability of tread substrates, trail layout, construction methods, maintenance activities, the type, intensity, and timing of use, precipitation and climate, and more.

Use and environmental processes can cause trail degradation including soil loss and trail widening.

- Soil loss is a significant environmental impact because it impairs trail functionality and downstream water resources. Trail users displace loose and/or wet soil, and incised treads funnel water that erodes soil, particularly on steep slopes. The severity of soil loss is heavily influenced by trail layout (i.e., the slope of the trail and the surrounding terrain) and the durability of tread substrates (i.e., soil characteristics and the amount, size, and type of rock in the tread).
- Trail widening occurs when users travel side-by-side, groups frequently pass each other and must step off the trail, and when users pioneer new areas to avoid tread issues like muddiness or rough roots or rocks. Trail expansion can significantly increase the total areal footprint of trail related resource impacts to vegetation and soils. Use level influences susceptibility to trail widening because many trail widening behaviors are caused by or related to high amounts of use (e.g., frequent passing, side-by-side travel). Trails routed through flat areas are susceptible to widening because off-trail travel is relatively easy. Trails routed directly up slopes

are also susceptible to widening because of the likelihood of soil loss that roughens treads by exposing rocks and roots.

In the context of trails "resource deterioration" consists of unacceptable levels of trail soil loss, widening or braiding, muddiness, or the proliferation of user created trails to shortcut formal trails or access locations to which a formal trail does not exist. As of 2023, use levels documented by the RUN study and current trail conditions across the Duke Energy managed portion of the Foothills trail are aligned with low-use backcountry trail experiences and conditions. Trail degradation due to use is minimal and appropriate for the setting. The carrying capacity of the trail is not close to being reached at current or forecasted future levels. We do note that long-term sustainability could be improved by addressing some shortcomings of trail development and infrastructure. This work could be phased in as conditions mandate replacement of the degraded infrastructure, see below.

FOOTHILLS TRAIL CONDITIONS

Trail conditions on the Foothills Trail (FT) vary.

- Much of the trail utilizes old road corridors which reduced initial trail construction efforts but does not provide a long-term sustainable tread surface or a desirable experience for many trail users.
- Many portions of trail that do not utilize historic road infrastructure have incredibly steep portions which include many wooden steps (e.g. heartbreak ridge). There are many shorter wooden staircases over gullies and up and down slopes; each poses long term maintenance needs and safety issues as rebar is exposed within rotting wood. Realigning the trail to avoid the need for these structures is a preferable long-term solution and should be considered at most of these locations.
- Many sections of trail have half-bench construction[1] and a natural wooden cribbing wall. This is a significant amount of wooden infrastructure which requires time consuming maintenance and replacement. Redevelopment to full bench trail construction[2] at these locations will reduce the long-term maintenance needs, by eliminating the wooden structures which rot rapidly.

[1] Half-bench (or partial-bench) trails are constructed with the trail tread being part hillside and part fill material.

[2] Full-bench trails are constructed by cutting the full width of the trail tread into the hillside and casting the excavated soil away from the trail.

CAMPSITE CONDITIONS

CAMPSITE CARRYING CAPACITY CONSIDERATIONS

Camping activities can damage vegetation, soil, water, and wildlife.

- Camping activities can damage vegetation through trampling and intentional tree cutting. Vegetation types vary in resistance (i.e., ability to withstand) and resilience (i.e., ability to recover) to trampling. Generally, sun-exposed grasses are more resistant and resilient than shaded herbaceous vegetation.
- Camping activities can damage soil through compaction and by pulverizing and displacing organic litter and exposing mineral soil which is then more susceptible to erosion. Because campers seek flat ground, damage to soil in campsites is more frequently related to visitor created trails in and around campsites than tent-sites.
- Camping activities can impair water quality by exposing soil to erosion as described above and through the introduction of improperly disposed human waste to watersheds. Campsites close to water sources are more likely to damage water quality.
- Camping activities can displace or disrupt wildlife or cause wildlife to become habituated to human introduced food. Encouraging or requiring proper food storage or providing food storage facilities can minimize impacts to wildlife.

Recreation ecology research demonstrates that most damage to vegetation and soils occurs when campsites are pioneered, and that subsequent use does not significantly increase damage. Consequently, the expansion or proliferation of excessive camping areas (i.e., more than is needed to accommodate peak visitation in an area) leads to unnecessary resource impacts.

Resource impacts can be minimized by limiting pioneering activities and instead constraining camping activities to designated or pre-established locations. This can be achieved through regulations, education, or through site development (i.e., providing facilities that attract and concentrate use).

In the context of campsites, "resource deterioration" could consist of campsite expansion, the proliferation of campsites or visitor created trails, unacceptable amounts of improperly disposed human waste, excessive damage to trees or other vegetation, damage to cultural resources, impairment of water quality, or impacts to wildlife.

FOOTHILLS TRAIL CAMPSITE CONDITIONS

The Duke Energy section of the Foothills Trail has a developed system of campsites; they are signed, and many have facilities including bear cables, cisterns, metal fire rings, and developed tent pads. There is not significant expansion of developed sites, proliferation of user-created campsites, or unacceptable levels of other resource impacts, suggesting that in the context of camping related resource impacts, the current use levels on the Foothills Trail are below the carrying capacity.

Many campsites on the Foothills Trail have characteristics which enable them to accommodate high levels of visitation while remaining in good condition including:

- Terrain and topography which concentrates camping activities on the campsite surface and limits campsite expansion and proliferation. Many campsites are located on old road benches and are surrounded by steep slopes.
- Facilities (e.g., bear cables, benches, metal fire pits, cisterns, etc.) which attract visitors and concentrate use in managerially established campsites.
- Dense vegetation in offsite areas limits site pioneering.

We observed some litter and improperly disposed human waste; we can review survey responses to further understand these conditions.

Table 1 contains campsite information based on our observations and available data sources; mileage estimates are from the FarOut Foothills Trail app.

Table 1: Foothills Trail Campsite Characteristics

Campsite Name	~FT Mile*[1]	# Tent Pads	Signed	Bear Cables	Cistern	Metal Fire Ring	Natural Water
Whitewater River (illegal)	45.9	4					x*[2]
Whitewater River (illegal)	45.1	2					x
Whitewater	44.2	5	x	x	x	x	0.5*[3]
Thompson River	42.1	6					x
Unnamed	41.5	4					0.1
Coley Creek	40.9	4	x	x	x	x	x
Glenn Hilliard	39.9	8	x	x		x	x
Bear Camp Creek	38.9	8	x	x		x	x

Unnamed	37.3	2					0.1
Bear Gap	33.7	5	x	x		x	x
Unnamed	32	3					0.5
Canebrake	28.4	2					x
Toxaway Campsites	27.6	9	x			x	x
Rock Creek	26.5	6	x	x		x	x
Jackies Branch	22.5	1					x
Laurel Fork Falls	22.1	6	x	x		x	x
Dawkins Flat	21.3	4	x				x
Virginia Hawkins	19.3	6	x	x		x	x
Unnamed	18.7	2					x
Flat Rock	17.3	4	x	x	x	x	x
Unnamed	16.4	3					0.1
Chimneytop	13.2	6	x	x	x	x	x
Unnamed	12.1	2					0.3
Big Rock	10.4	4					x
Cantrell	8.6	5	x	x	x	x	0.7
Unnamed	6.1	2					0.1
Pigeon Road	5.9	3					0.1
Lighthouse	5.1	3	x	x		x	0.2
Long Ridge	4.9	6					0.4

*[1] Mileage westbound from Table Rock SP to Oconee SP.

*[2] An "X" indicates that the site is signed or the facilities or features (i.e., bear cables, cistern, etc.) are present.

*[3] Distance (miles) to nearest natural water source if there is not one at the site.

FOOTHILLS TRAIL CAMPSITE CAPACITY ANALYSIS

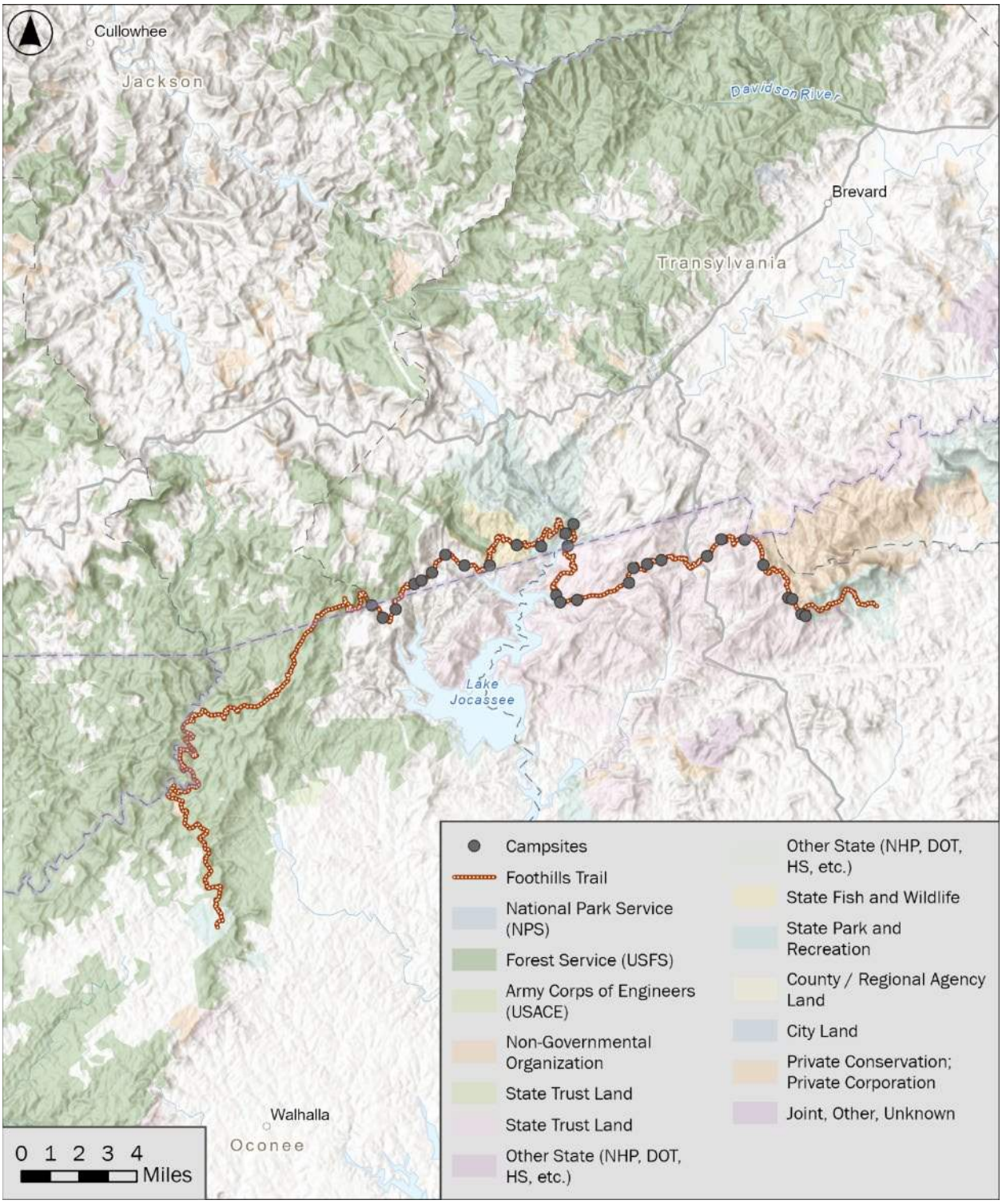
Calculations

- There are 29 camping locations on the 40.4-mile section of the Foothills Trail from Whitewater River (~FT mile 44.8) to Table Rock State (~FT mile 4.4).
- There are approximately 118 tent pads distributed between these 29 locations. Each of these tent pads could accommodate 2-4 campers. These campsites could comfortably accommodate approximately 354 campers (118 x 3).
- The average distance between sites is 1.5 miles.
- 354 people in the entire section / 40.4 miles = 8.8 overnight users / mile

Use estimates from field data collected in 2023 indicate that an average of 17.8 overnight users per night are on the Duke Energy managed portion of the Foothills Trail. Average use load is around 5% of the site capacity. Peak use estimated for the 2023 season estimated 71 overnight users on the Duke Energy managed portion of the Foothills Trail, resulting in 20% usage of available campsites.

Forecasted population growth and use increase through 2035 do not indicate excessive overnight use is expected on the Duke Energy managed portion of the Foothills Trail. However, managers should continue to monitor use and impacts to the campsites and trail, as changes in visitor behavior, temporal concentration of use, or large groups of overnight use could exceed capacity at times or locations along this portion of the Foothills Trail.

MAPS AND PHOTOGRAPHS



Map 1: The Foothills Trail connects Oconee State Park (western terminus) with Table Rock State Park (eastern terminus).

Map 2: The westernmost portion of Foothills Trail is on National Forest land.

*Note: This map is included as a reference; this section of trail is not included in the Duke Energy managed portion of Foothills Trail.

Map 3: The Foothills Trail is routed through land managed by Duke Energy.

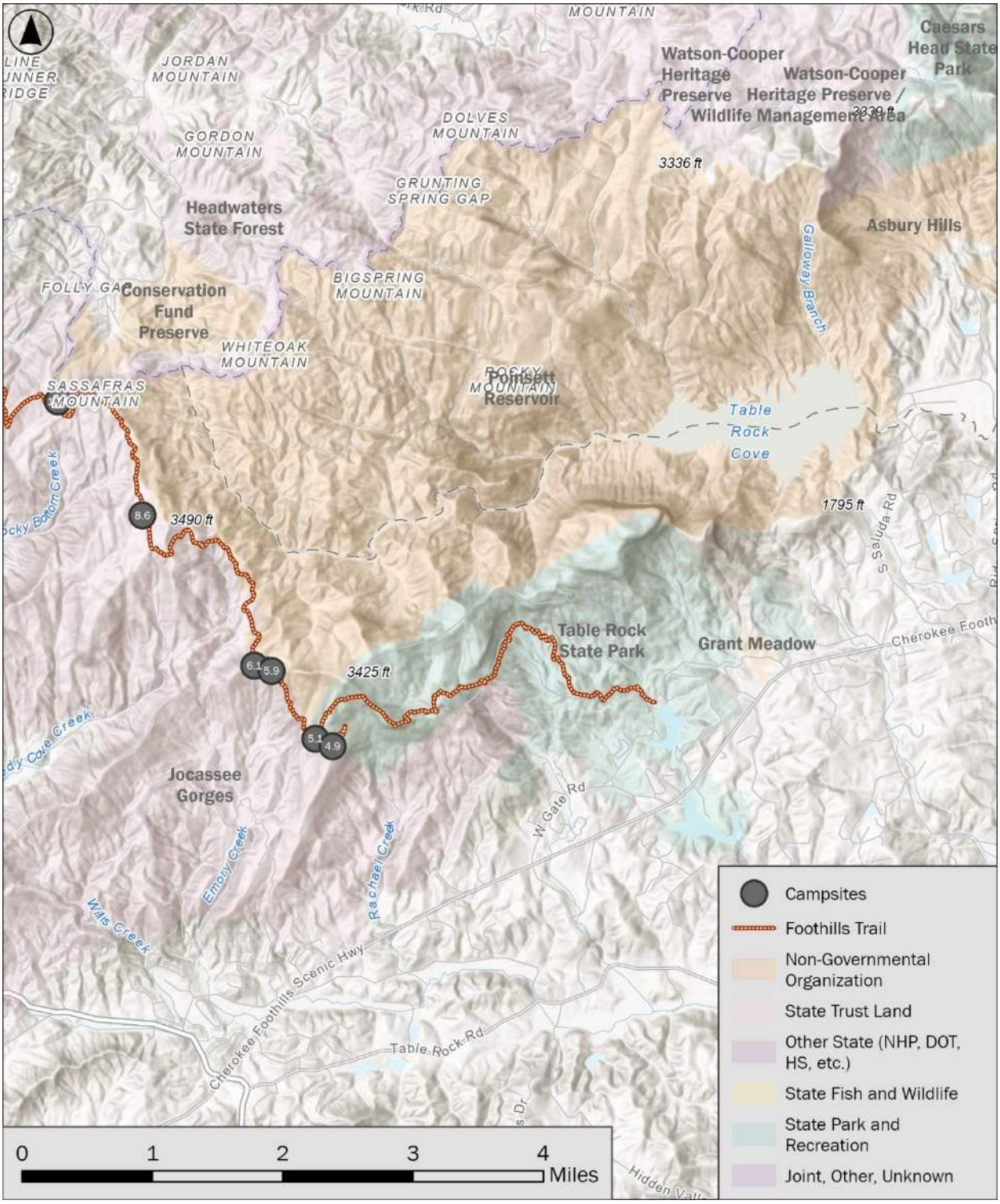
Note: The Bad Creek Reservoir is on the west side of this map. The numbers on campsites indicate mileage westbound from Table Rock State Park; see Table 1 for campsite information.

Map 4: The Foothills Trail is managed by Duke Energy on State Trust lands surrounding Lake Jocassee.

Note: The numbers on campsites indicate mileage westbound from Table Rock State Park; see Table 1 for campsite information.

Map 5: The Foothills Trail is managed by Duke Energy on State Trust lands surrounding Lake Jocassee.

Note: The numbers on campsites indicate mileage westbound from Table Rock State Park; see Table 1 for campsite information.



Map 6: The eastern terminus of the Foothills Trail is in Table Rock State Park.

Note: Camping is prohibited outside of designated campsites in Table Rock State Park.

Photo 1: Bad Creek Access trailhead kiosk with project survey QR code.

Photo 2: Trail counter at the bridge over the Whitewater River to Bad Creek Access (~FT mile 44.8).

Photo 3: Coley Creek Campsite (~FT mile 40.9)

Photo 4: Coley Creek Campsite fire-pit and benches (~FT mile 40.9).

Photo 5: 51 wooden steps on the Foothills Trail (~FT mile 40.5).

Photo 6: Benches and a fire-pit at Glenn Hilliard Campsite (~FT mile 39.9)

Photo 7: Campsite on the side trail to Hilliard falls (~FT mile 39.9).

Photo 8: Bear Camp Creek Campsite (~FT mile 38.9)

Photo 9: Bear Camp Creek Campsite (~FT mile 38.9).

Photo 10: Large wooden bridge over the Horsepasture River (~FT mile 36.2).

Photo 11: A staircase on the Foothills Trail.

Photo 12: Bear Gap Campsite (~FT mile 33.7)

Photo 13: Bear Gap Campsite (~FT mile 33.7)

Photo 14: Raised tent pad at the Toxaway Campsites (~FT mile 27.8)

Photo 15: Sign at the side trail to the Laurel Falls Campsite (~FT mile 22.1).

Photo 16: Benches and fire-pit at Dawkins Flat Campsite (~FT mile 21.3).

Photo 17: Stone campsite furniture at Cantrell Campsite (~FT mile 8.6).

Photo 18: Lighthouse Campsite (~FT mile 5.1).

Photo 19: Lighthouse Campsite (~FT mile 5.1).

Photo 20: Long Ridge Campsite (~FT mile 4.9).

Photo 21: Illegal campsite in Table Rock State Park (~FT mile 4.0).

SITE VISIT NARRATIVE

SUNDAY NOVEMBER 26, 2023

- We met Nicole Haibach (Kleinschmidt Group) at the eastern terminus of the Foothills Trail at Table Rock Trailhead in Table Rock State Park (~FT mile 0). We left our vehicle there and she shuttled us to the Bad Creek Access parking lot. Thanks Nicole!
- We accessed the Foothills trail at the Whitewater River (~FT mile 44.8) using the side trail from the Bad Creek Access parking lot. JW hiked westbound on the Foothills Trail to the Nantahala National Forest Boundary (~FT mile 45.9) where the FT exits Duke Energy property. FM hiked the Coon Branch Trail on the west side of the Whitewater River to where it dead ends and then forded the Whitewater River to the FT, meeting JW at the Nantahala NF boundary. We then hiked eastbound towards Table Rock State Park.
- We noted the presence of several campsites along the Whitewater River where camping is illegal (~FT mile 45.9, 45.8 and 45.1)
- We noted a trail counter on a tree just past the bridge near the junction of the Bad Creek Access Trail and the Foothills Trail. We noted that the trail is braided around the tree.
- At (~FT mile 44.3) we took the Lower Whitewater Falls Trail out and back to the overlook.
- We passed the Whitewater Campsite (~FT mile 44.2) which has bear cables and a cistern.
- We camped at the Thompson River (~FT mile 42.1); there is a string of campsites on the eastern side of the river. There was one other backpacker camping upstream, and two others came through seeking campsites and then got water and headed uphill.
- Over the entire day we saw four backpackers and one day hiker.

MONDAY NOVEMBER 27, 2023

- We saw the two backpackers that passed through the Thompson River on Sunday evening camped up the hill from the Thompson River (~FT mile 41.5).
- We passed the Coley Creek Campsite which has bear cables, benches, and a metal fire ring (~FT mile 40.9).

- We took the side trail to Hilliard Falls (~FT mile 39.9) and passed the Glenn Hilliard Campsite which has bear cables, a metal fire ring, and benches. There is an additional campsite on the side trail to the falls.
- We passed the Bear Camp Creek Campsite (~FT mile 38.9) which has bear bag cables, benches, and two metal fire rings. This is a large campsite.
- We crossed the Horsepasture River on the large bridge (~FT mile 36.2) which has some horizontal movement that suggests that portions of the structure are beginning to degrade. We also noted the many wooden staircases in this area.
- We passed the Bear Gap Campsite which has benches, bear cables, a metal fire ring, and a rock fire ring (~FT mile 33.7). In addition to the main signed site, there is a small site ~200' eastbound with a rock fire pit.
- We passed the junction with the Auger Hole Trail (~FT mile 32.9).
- We passed an unnamed dry campsite (~FT mile 32.0).
- We saw three westbound backpackers on our descent to Lake Jocassee (~FT mile 30).
- We passed the Canebrake Boat Access point (~FT mile 28.4) and noted a small unofficial campsite nearby.
- After a few staircases, we crossed the Toxaway River (~FT mile 27.8) on the suspension bridge and took a survey from a Kleinschmidt staff member.
- We passed through the Toxaway Campsites area which is in Gorges State Park (~FT mile 27.6). There are ~10 sites with raised tent pads, picnic tables, hooks for hanging, and currently a portable toilet. There is a large information kiosk.
- We climbed up and then immediately back down from Heartbreak Ridge. This section of trail is extremely steep and includes many (~285) wooden steps (18" x 4" x 4").
- We crossed Rock Creek and saw the campsites which have a bear cable, benches, a table, and fire rings (~FT mile 26.5).
- We passed the Laurel Fork Falls campsite (~FT mile 22.1) which is across Laurel Fork on a bridge from the FT; it has several sites, a bear cable, and fire pits.
- We crossed Dawkins Flat Road (~FT mile 21.3) which had a large and elaborate hunting camp set up but no one present. There is a nearby campsite (~FT mile 21.4) with some benches.
- We passed the Virginia Hawkins Campsite (~FT mile 19.3). We saw two eastbound backpackers here.
- We camped at an unnamed trailside campsite beside Laurel Fork Creek (~FT mile 18.7). There was a firepit here that contained a lot of trash.

- Two other hikers passed by the campsite, one well after dark. We saw a total of seven backpackers over the course of the day.

TUESDAY NOVEMBER 28, 2023

- We passed the Flat Rock campsite (~FT mile 17.3) which has benches, a metal fire ring, and a bear cable.
- We noted a trail counter on the staircase down to the Laurel Valley Access parking lot (~FT mile 14.5). We saw Nicole from Kleinschmidt in the parking lot.
- We passed the Chimneytop campsite which has a cistern, bear cables, benches, and a fire pit (~FT mile 13.2).
- We passed through Chimneytop Gap (~FT mile 12.4) where there is a kiosk that currently lacks signage. We noted a trail counter on a tree just trail west of the gap.
- We got great views from the observation tower on Sassafras Mountain (~FT mile 9.9). We saw one person on the rocks just trail west of the tower and one day hiker on the FT about ¼ mile east of the tower.
- There was a water cache of small water bottles where the FT leaves pavement and goes back onto trail after Sassafras Mountain (~FT mile 9.8). It is maintained by "TAZ."
- We passed the Cantrell Campsite which has a cistern, a bear cable, and elaborate stone campsite furniture (~FT mile 8.6). There are some interesting old stone ruins here.
- We passed the Lighthouse Campsite (~FT mile 5.1) which has a bear cable, benches, and a metal fire pit.
- We passed the Long Ridge Campsite which has a small fire ring and chunks of trees for seats (~FT mile 4.9). There is no water at this site.
- We entered Table Rock State (~FT mile 4.4), departing the Duke Energy managed section of Foothills Trail.
- We saw many (~15) day hikers on our descent to Table Rock State Park. We saw no backpackers over the course of this day.

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Attachment 2

Foothills Trail Corridor Conditions Assessment Final Report

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FINAL Foothills Trail Corridor Conditions Assessment

Bad Creek Pumped Storage Project

FERC No. 2740

Prepared for:

Duke Energy Carolinas, LLC

Prepared by:

Kleinschmidt Associates

December 2024

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1.0 INTRODUCTION

On February 23, 2022, Duke Energy Carolinas, LLC (Duke Energy) submitted the Bad Creek Pumped Storage Project (Bad Creek Project or Project; FERC No. 2740) Notice of Intent to Relicense and Pre-Application Document (PAD) to the Federal Energy Regulatory Commission (FERC or Commission). The PAD included an alternative licensing proposal for installation of additional energy storage and generation capacity by constructing a new 1,400-megawatt power complex (Bad Creek II Complex) adjacent to the existing Bad Creek Powerhouse to meet the growing need for energy storage and renewable energy production across Duke Energy's service territories. Duke Energy plans to make a final decision regarding the alternative licensing proposal for the construction of the Bad Creek II Complex prior to the submittal of a Final License Application for the Bad Creek Project.

In Section 7.1.6.3 of the PAD, Duke Energy proposed to conduct a Recreational Resources Study in support of the proposed the Bad Creek II Complex. No study requests related to recreational resources were received during the scoping process; however, formal comments on the PAD and Scoping Document 1 regarding recreational resources were received from Upstate Forever and the Foothills Trail Conservancy. Comment responses were included in Appendix A of the Proposed Study Plan, which was filed with the Commission on August 5, 2022. Stakeholder comments on the Proposed Study Plan were submitted by the Commission, South Carolina Department of Natural Resources (SCDNR), Upstate Forever, and the Foothills Trail Conservancy. Resource issues and stakeholder comments pertinent to the Recreational Resources Study were considered in the development of the Revised Study Plan, which was filed with the Commission on December 5, 2022. Summaries of comments and responses were included in Appendix A and copies of all comments and correspondence were provided in Appendix B of the Revised Study Plan (RSP). The Commission issued its Study Plan Determination on January 4, 2023, and approved the Recreational Resources Study with modifications.

The Recreational Resources Study consists of four main study tasks: (1) a Recreation Use and Needs (RUN) Study for the 43-mile-long portion of the Foothills Trail (or trail) managed by Duke Energy; (2) a Foothills Trail Corridor Conditions Assessment (Conditions Assessment) of the 43-mile-long portion of the Foothills Trail and associated spur trails managed by Duke Energy; (3) an Existing Recreational Use Characterization of Whitewater River cove; and (4) a Recreational Public Safety Evaluation of Whitewater River cove.

This Foothills Trail Corridor Conditions Assessment (Conditions Assessment) focuses on item 2 above, evaluating the current condition of trail surface and corridor included in the 43-mile segment of the Foothills Trail and associated spur trails maintained by Duke Energy and identifying key areas of future maintenance needs or improvements. The data collected during this study will be used during development of protection, mitigation, and enhancement (PME) measures for the Project.

1.1 Current Operation

The Bad Creek Project is located in Oconee County, South Carolina, approximately eight miles north of Salem, South Carolina. The Bad Creek Reservoir (upper reservoir) was formed when Bad Creek and West Bad Creek were dammed and serves as the Bad Creek Project's upper reservoir. Lake Jocassee (lower reservoir) serves as the Bad Creek Project's lower reservoir and is licensed as part of Duke Energy's Keowee-Toxaway Hydroelectric Project (KT Project; FERC No. 2503).

The 30-year-old Bad Creek Project is one of the most powerful and flexible energy generation and storage assets in Duke Energy's system. Built primarily to store surplus energy from baseload nuclear and fossil-fuel-driven power plants during times of low energy demand, today the Bad Creek Project is used to balance an increasingly complex energy grid. By pumping water from Lake Jocassee up to the Bad Creek Reservoir, the Bad Creek Project is able to provide storage of surplus baseload energy during low demand periods. While the Bad Creek Project is in turbine operation mode, water runs from the upper reservoir down to Lake Jocassee, providing power back to the grid when energy demand is higher or when renewable generation is unavailable.

1.2 Proposed Action

The demand for energy and energy storage has been steadily on the rise in the southeastern region of the country. In an effort to meet this growing demand, Duke Energy is proposing an expansion to the Bad Creek Project that will double the generating capacity of the station. The proposed Bad Creek II Complex would utilize the existing upper and lower reservoirs and consist of a new inlet/outlet within the existing upper reservoir, water conveyance system, and underground powerhouse. Additionally, a new inlet/outlet along the shoreline of the Whitewater River arm of Lake Jocassee, or the Whitewater River cove, would be constructed.

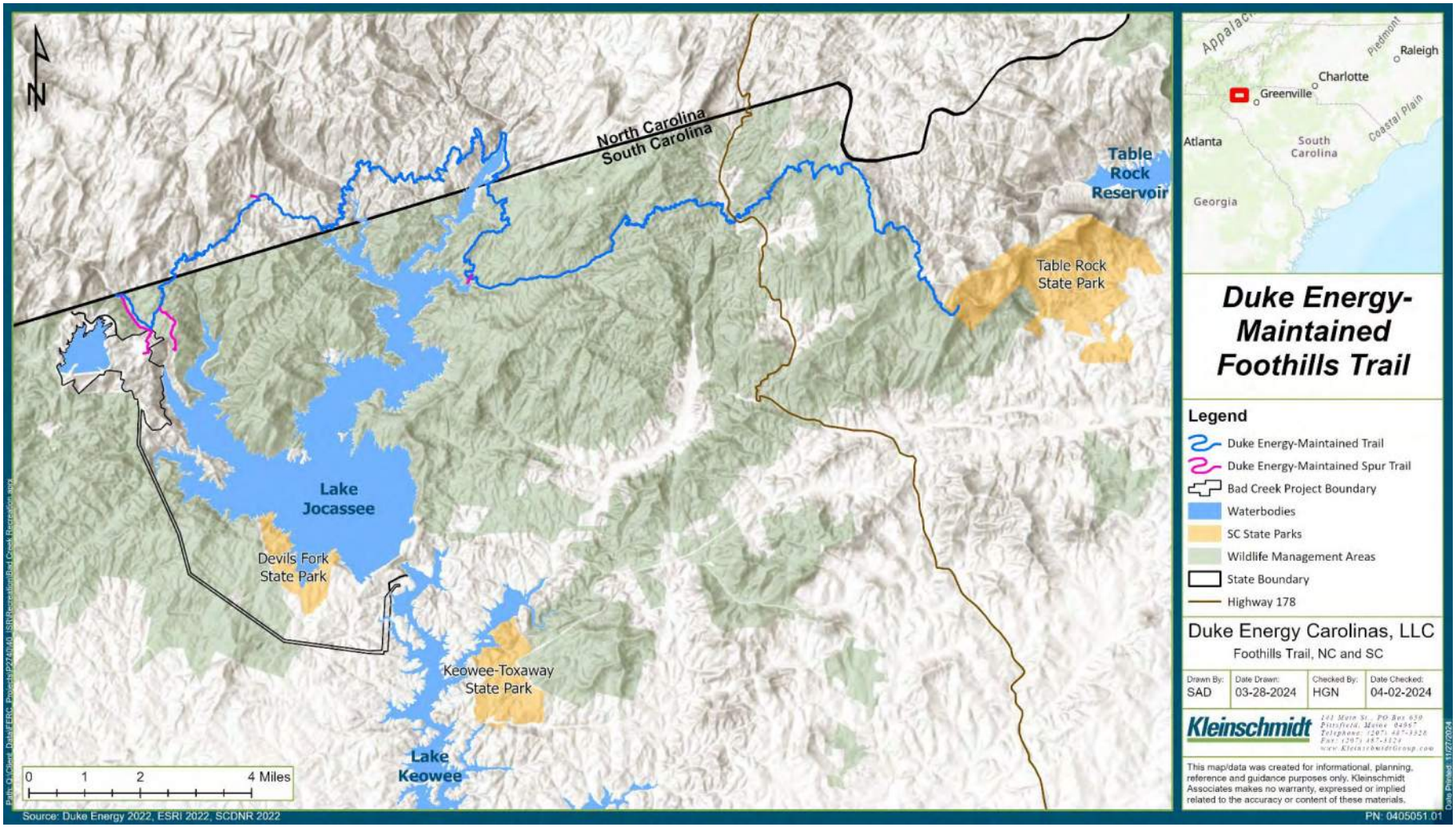
The Bad Creek II Complex underground powerhouse would be arranged and sized similarly to the existing Bad Creek Project powerhouse. In general, most of the features

for the Bad Creek II Complex would be submerged, underground, and/or within lands classified as "project operations," which are not accessible to the general public. The location of the proposed lower reservoir inlet/outlet structure has been chosen to minimize construction-related environmental impacts to the Whitewater River arm of Lake Jocassee. Nevertheless, the Whitewater River cove is anticipated to be closed to the public for approximately five years during construction of the Bad Creek II Complex. Duke Energy will develop more specific schedules and plans for closures as construction plans for the Bad Creek II Complex advance and in consultation with stakeholders.

2.0 DESCRIPTION OF STUDY AREA

The geographic scope (i.e., study area) of the Conditions Assessment includes the 43-mile-long segment of the Foothills Trail and five spur trails maintained by Duke Energy. The 43-mile Duke Energy-maintained trail segment begins on the western end of the Foothills Trail at the Duke Energy/U.S. Forest Service property line on the Whitewater River near the Bad Creek Project and extends east to the Duke Energy/Table Rock State Park property line approximately 1,000 feet southwest of the top of Pinnacle Mountain (Figure 2-1). There are five spur trails that connect with the Foothills Trail that are managed and maintained by Duke Energy including Laurel Fork Falls, Hilliard Falls, Lower Whitewater Falls Overlook, Bad Creek, and Coon Branch. Long Cane Trails categorizes this trail as difficult (MTP 2023) and very strenuous (NPS 2023).

Figure 2-1 Trail Conditions Assessment Study Area



3.0 METHODOLOGY

One objective for accomplishing study goals was identified in the Recreational Resources Study Plan. The methods for accomplishing this objective are outlined below.

Objective 1: Evaluate the current condition of trail surface and corridor and identify key areas of future maintenance needs or improvements for the 43-mile segment of the Foothills Trail maintained by Duke Energy

Duke Energy subcontracted Long Cane Trails to perform a trail conditions assessment involving analyzing sections of trail and determining its maintenance needs[1]. Long Cane Trails divided the 43-mile segment of the Foothills Trail maintained by Duke Energy into six sections using the Foothills Trail Guidebook (Foothills Trail Conservancy 2018) as a reference for location descriptions. All 43 miles of the main trail corridor as well as spur trails were assessed for trail tread, out slope, backslope, drainage, constructed structures (not including engineered bridges) and corridor condition. Trail standards from the Trail Solutions guide (Felton 2004) on building singletrack was used as a base for trail condition analysis. Constructed structures (such as stairs, hand railings, bridges, etc.) were identified and recorded and location tracked geospatially. Structures in need of significant maintenance or replacement were recorded in detail with photo documentation. Similarly, trail condition and corridor features requiring maintenance or repair as well as areas of significant erosion, areas with significant drainage issues (i.e., standing water), or obstructed areas along the trail (i.e., downed trees), and notable occurrences of litter and vandalism were recorded and tracked geospatially.

Long Cane Trails used the following methods to document the current trail conditions and identify key areas of trail surface for future maintenance needs or improvements:

- Populate the Assessment Form (Appendix A); includes trail assessment descriptions defined in Table 3-1.
- Locate issue/structure along the trail and record GPS waypoint.
- Take photos of significant issues/features for documentation.
- Identify type of issue/structure using categories provided in Table 3-1.

[1] Inspections of engineered bridges on the Duke Energy-maintained portion of the Foothills Trail are performed every five years by a licensed Professional Engineer in accordance with the Duke Energy Foothills Trail Maintenance Program.

- Measure issue/structure (i.e., bridges, culverts, eroded sections, washouts, wet areas, and diameters of fallen trees).
- If excessive grade is present (greater than 15 percent slope) in conjunction with erosion, utilize clinometer to measure percent slope.
- Provide additional description/comments about issues/structures identified.

Long Cane Trails added their recommendations/prescriptions to existing trail details already measured and noted in the Foothills Trail Guidebook (Foothills Trail Conservancy 2018).

Table 3-1 Long Cane Trails' Trail Assessment Descriptions

Trail Assessment Descriptions:

Code	Description
B	Bridges, puncheon, bog bridges, turnpikes. ***Note construction material, length/width (feet) and condition of bridge.***
UC	Unimproved Crossing (stream crossing). ***Note if wading or rock steps and any maintenance required (unstable stepping stones). Note the width of the stream at the crossing point.***
C	Culvert – open or closed drain across the trail. ***Note condition of culvert, length/diameter and if sufficient size for situation.***
E	Erosion - look for exposed roots, rocks, or gullies on trail. ***Describe situation (exposed roots, gullies on tread, located on fall line (going straight down a hill regardless of grade) and length of eroded section (if greater than 25 ft, approximate distance).*** ***If excessive grade (>15% slope) in conjunction with erosion: measure steep slopes with clinometer (if numerous steep rocky slopes, no need to measure each one – note that trail has numerous steep rocky sections)***
EC	Erosion Control Devices – check dams, water bars. ***Note type and condition of structure.***
WO	Washout - section of trail has been mostly/completely washed away. ***Note length/width/depth and any hazards associated with washout. Take photo.***
WA	Wet Area/standing water (larger than 3ft diameter). ***Note length/width. Note any adjacent water feature.***
OB	Obstacle – fallen tree or other obstacle blocking treadway (include broken branches or trees leaning above/across the trail ("widow makers"). ***Note diameter of fallen tree.***
IB	Insufficient Blazing/Marking – if can't see next blaze/marker as you are moving past a blaze/marker or hard to locate next blaze/marker. ***Note if blazes/markers missing or worn off.***
SI	Signage – ***Identify if Trailhead, Directional or Interpretive and if in need of repair. Note type of repair.***
AC	Additional Comment – specific locations that warrant noting such as a scenic vista, unique feature (caves, mines, rock wall) and locations of invasive species. ***Note type of feature and associated details (such as name of invasive species and amount of plants (number, area).***

4.0 RESULTS

Long Cane Trail identified 89 areas needing maintenance or improvements (i.e., trail issues) along the 43-mile segment of the Foothills Trail and five spur trails maintained by Duke Energy, as listed in Table 4-1[2] and shown in Figure 4-1 through Figure 4-20. Photographs of individual trail issues are also included in Figure 4-1 through Figure 4-20 and in Appendix B.

[2] The Trail Conditions Assessment included Laurel Fork Falls and Hilliard Falls; however, no issues were identified and therefore are not included in Table 4-1.

Table 4-1 Foothills Trail Conditions Assessment Findings

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
1	Figure 4-2	2023-09-14	Bad Creek Access Spur	0.1	35.01273631	-82.99787808	Culvert, Open Drain	Concrete culvert needs cleaning. Sediment has gathered and is sitting, not allowing water to run down the drain.
2	Figure 4-2	2023-09-14	Bad Creek Access Spur	0.1	35.01296829	-82.99759536	Wet Area / Standing Water	Gravel needs to be added to the section of the trail to raise it approximately 2 inches. This is a very low area with standing water most of the time. In fact, there is some drainage that seems to be serving a purpose in this area also.
3	Figure 4-2	2023-09-14	Bad Creek Access Spur	0.2	35.01339791	-82.9977754	Wet Area / Standing Water	Low part of the trail, and gravel needs to be brought in. Easily accessible from the parking lot. This trail has had gravel on it in the past. It just needs a topping.
4	Figure 4-2	2023-09-14	Bad Creek Access Spur	0.3	35.01449413	-82.99786919	Erosion Control Devices, Other	Someone is putting barricades on the side of the trail, and these need to be removed. There are several in this section of the trail. These, in fact, hold water on the trail versus letting water off the trail. There should be a series of knicks or grade reversals in this section to divert water.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
5	Figure 4-2	2023-09-14	Bad Creek Access Spur	0.3	35.01413933	-82.99811383	Steps	The step is rotten and needs to be replaced.
6	Figure 4-3	2023-09-14	Bad Creek Access Spur	0.6	35.01723673	-82.99744404	Signage, Interpretive	Approximately 100 feet of trail has been rerouted. The user can still see the old relays in the corner as well as the old trail. The new trail is working great! The old trail needs to be closed, and the new trail needs to be blazed in the corner, so users know this is the trail. In this particular area, you have not seen a blaze in a while. Blue color is needed to apply a new blaze
7	Figure 4-3	2023-09-14	Bad Creek Access Spur	0.7	35.01869053	-82.99718057	Obstacle, Fallen Tree	A fallen tree across the trail needs to be removed.
8	Figure 4-3	2023-09-18	Coon Branch	0.2	35.01956213	-82.99972003	Bridge, Bridge	The upper railing needs to be replaced on both sides, and two decking boards need to be replaced.
9	Figure 4-3	2023-09-18	Coon Branch	0.2	35.01966168	-82.9999907	Bridge, Bridge	Two 2x4x12 railings need to be replaced.
10	Figure 4-3	2023-09-18	Coon Branch	0.4	35.02183009	-83.00243764	Bridge, Puncheon	Bog Bridge, two feet wide by four feet long, needs to be installed

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
11	Figure 4-3	2023-09-18	Coon Branch	0.4	35.02160249	-83.00233517	Erosion, Gully	A major drain needs to be unclogged. It is overflowing and going down the trail. The solution is to simply open the drain up more and get rid of the sediment that is raising the drain up.
12	Figure 4-4	2023-09-14	Lower Whitewater Falls Spur	0.4	35.02155442	-82.99014034	Washout	Trail needs water diversion in the form of grade dips or knicks.
13	Figure 4-4	2023-09-14	Lower Whitewater Falls Spur	0.9	35.01623192	-82.98947331	Washout	Trail needs some steps and grade dips or water diversion features added. Approximately 20 steps needed.
14	Figure 4-4	2023-09-14	Lower Whitewater Falls Spur	1	35.01476505	-82.98918722	Erosion, Gully	Trail is using an old roadbed that has a gully on each side and very few drains. all drains are clogged and need to be rerouted. New trail limit is very close to the old just elevated on the banks versus in the middle of the old roadbed.
15	Figure 4-3	2023-09-14	Foothills Trail	31.6	35.02092083	-82.99665677	Washout	The trail needs some grade reversals or knicks. Water has gotten on the trail and does not leave for some time, causing a gully if not fixed.
16	Figure 4-5	2023-09-30	Foothills Trail	32.4	35.02958049	-82.99437631	Steps	Replace three steps

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
17	Figure 4-5	2023-09-30	Foothills Trail	33.3	35.03730923	-82.98769713	Steps	Replace three steps
18	Figure 4-5	2023-09-30	Foothills Trail	33.9	35.03812814	-82.98336354	Steps	One step needs to be replaced.
19	Figure 4-5	2023-09-30	Foothills Trail	34.2	35.03822699	-82.98165951	Steps	Steps need to be replaced.
20	Figure 4-6	2023-09-30	Foothills Trail	35.5	35.04768531	-82.96974848	Obstacle, Fallen Tree	Tree across trail and needs to be removed.
21	Figure 4-6	2023-09-18	Foothills Trail	35.8	35.05077596	-82.96808629	Steps	Two steps need to be replaced.
22	Figure 4-7	2023-09-30	Foothills Trail	37.2	35.04848663	-82.95255533	Steps	One step is rotten and needs to be replaced.
23	Figure 4-7	2023-09-30	Foothills Trail	37.3	35.04886479	-82.95224431	Obstacle, Other	From mile 36.2 at Hilliard Falls Trail to 37.3 at Bear camp campsite – heavy brush removal needed.
24	Figure 4-7	2023-09-30	Foothills Trail	37.6	35.0484997	-82.94810344	Obstacle, Fallen Tree	Fallen tree across trail that needs to be cut out.
25	Figure 4-7	2023-09-30	Foothills Trail	37.6	35.04848623	-82.94800267	Obstacle, Fallen Tree	Two trees have fallen and need to be cleared.
26	Figure 4-7	2023-09-30	Foothills Trail	38.6	35.04622411	-82.93985485	Obstacle, Fallen Tree	
27	Figure 4-7	2023-09-30	Foothills Trail	38.7	35.04687284	-82.93946234	Obstacle, Fallen Tree	Brush from the top of a falling tree needs to be removed.
28	Figure 4-8	2023-09-30	Foothills Trail	39.4	35.05225218	-82.93751518	Obstacle, Fallen Tree	Large tree across Trail needs to be removed.
29	Figure 4-8	2023-09-30	Foothills Trail	39.5	35.05318844	-82.93657904	Obstacle, Fallen Tree	A top of a tree is crossing the trail and needs to be cut out.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
30	Figure 4-8	2023-09-30	Foothills Trail	39.8	35.05494625	-82.93714846	Erosion, Gully	At the foot of the bridge there is erosion. Rocks need to be added to armor the 2 x 2' area that is compromised.
31	Figure 4-8	2023-10-01	Foothills Trail	39.9	35.05678279	-82.93638778	Steps	One step needs to be replaced
32	Figure 4-8	2023-10-01	Foothills Trail	40.1	35.05636493	-82.93419022	Obstacle, Other	Trail needs to be trimmed for 2/10 of a mile from Horse Pasture River Bridge to mile 40.3.
33	Figure 4-8	2023-10-01	Foothills Trail	40.2	35.05690722	-82.93502841	Obstacle, Fallen Tree	Tree removal
34	Figure 4-9	2023-10-01	Foothills Trail	40.4	35.05892556	-82.93459743	Obstacle, Fallen Tree	Tree removal
35	Figure 4-9	2023-10-01	Foothills Trail	40.4	35.05894665	-82.93456431	Obstacle, Fallen Tree	Tree removal
36	Figure 4-9	2023-10-01	Foothills Trail	40.5	35.05893904	-82.9342663	Bridge, Bridge	Trees falling on bridge needs to be repaired.
37	Figure 4-9	2023-10-01	Foothills Trail	40.5	35.05894956	-82.93423148	Obstacle, Fallen Tree	Tree removal
38	Figure 4-9	2023-10-01	Foothills Trail	40.8	35.06270942	-82.93295438	Obstacle, Fallen Tree	Tree needs to be removed.
39	Figure 4-9	2023-10-01	Foothills Trail	40.9	35.06302301	-82.93270134	Washout	15 feet of trail needs to be re-benched.
40	Figure 4-10	2023-10-01	Foothills Trail	42.6	35.05953224	-82.92052046	Obstacle, Fallen Tree	Fallen tree needs to be removed.
41	Figure 4-10	2023-10-01	Foothills Trail	42.6	35.05954586	-82.92038139	Obstacle, Fallen Tree	Tree removal
42	Figure 4-11	2023-10-01	Foothills Trail	44.6	35.06174146	-82.90542222	Obstacle, Fallen Tree	Fallen tree needs to be cut out.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
43	Figure 4-11	2023-10-01	Foothills Trail	45.7	35.06475517	-82.90024767	Obstacle, Fallen Tree	Tree removal
44	Figure 4-11	2023-10-01	Foothills Trail	47.9	35.06632757	-82.88963219	Bridge, Bog Bridges	Bog bridge needs to be installed.
45	Figure 4-11	2023-10-01	Foothills Trail	48.3	35.07118731	-82.88726657	Obstacle, Fallen Tree	Tree needs to be removed from across trail.
46	Figure 4-12	2023-10-01	Foothills Trail	48.8	35.06624918	-82.8858863	Steps	Step replacement
47	Figure 4-12	2023-10-01	Foothills Trail	48.9	35.06471527	-82.88571508	Additional Comment	Bench needs to be replaced.
48	Figure 4-12	2023-10-01	Foothills Trail	48.9	35.06448911	-82.88557639	Bridge, Bog Bridges	Bog bridge needs to be added.
49	Figure 4-12	2023-10-01	Foothills Trail	48.9	35.06423394	-82.8852986	Steps	Two steps need to be replaced. They are missing. One step needs to be repaired.
50	Figure 4-13	2023-10-01	Foothills Trail	49.1	35.06204989	-82.88605607	Steps	One step needs to be replaced.
51	Figure 4-13	2023-10-01	Foothills Trail	49.2	35.06188881	-82.88646935	Obstacle, Fallen Tree	Tree across trail needs to be cut.
52	Figure 4-13	2023-10-01	Foothills Trail	49.2	35.06188238	-82.88636861	Steps	Two steps are missing and need to be replaced.
53	Figure 4-13	2023-10-01	Foothills Trail	49.2	35.06188773	-82.88644732	Steps	One step needs to be replaced.
54	Figure 4-14	2023-10-01	Foothills Trail	49.4	35.06033756	-82.88994145	Steps	One step needs to be replaced.
55	Figure 4-14	2023-10-01	Foothills Trail	49.5	35.06031437	-82.88911736	Steps	One step needs to be replaced.
56	Figure 4-14	2023-10-01	Foothills Trail	49.9	35.05836929	-82.89148322	Obstacle, Fallen Tree	Tree across trail needs to be cut.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
57	Figure 4-15	2023-09-17	Foothills Trail	53.9	35.03336423	-82.8943042	Obstacle, Fallen Tree	Tree has fallen across trail and holding back water, causing erosion before the tree fall.
58	Figure 4-15	2023-09-17	Foothills Trail	54.2	35.03126431	-82.89076147	Culvert, Open Drain	Culvert has collapsed and needs replacing
59	Figure 4-15	2023-09-17	Foothills Trail	54.2	35.03152907	-82.89171696	Signage, Directional	Insufficient blazes at this junction of foothills trail and laurel fork campsite. More white blades need to be added.
60	Figure 4-15	2023-09-17	Foothills Trail	54.6	35.03224254	-82.886101	Steps	One step needs to be replaced.
61	Figure 4-15	2023-09-17	Foothills Trail	54.8	35.03243434	-82.88302672	Bridge, Bog Bridges	Needs to be raised and lengthen to 12 feet long.
62	Figure 4-15	2023-09-17	Foothills Trail	55.5	35.03426627	-82.8715385	Bridge, Bog Bridges	3 feet wide by 20 feet long bog bridge needs to be installed.
63	Figure 4-15	2023-09-17	Foothills Trail	55.5	35.03426745	-82.87159877	Bridge, Bridge	Trail is starting to widen due to water flow on trail being blocked. 12-foot-long by 4-foot-wide bridge needs to be added.
64	Figure 4-16	2023-09-17	Foothills Trail	57.1	35.04325018	-82.85098593	Steps	Two steps are rotten and need to be replaced.
65	Figure 4-16	2023-09-17	Foothills Trail	57.3	35.04586891	-82.85120517	Steps	4 steps need to be replaced.
66	Figure 4-16	2023-09-17	Foothills Trail	57.9	35.04966325	-82.84604181	Steps	One step needs to be replaced.
67	Figure 4-16	2023-09-17	Foothills Trail	61.2	35.054138	-82.8166194	Steps	One step needs to be replaced.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
68	Figure 4-17	2023-07-16	Foothills Trail	62	35.05087322	-82.81288696	Bridge, Bridge	One 2x6x12 bore needs to be replaced. It is rotten.
69	Figure 4-17	2023-07-16	Foothills Trail	62	35.05092472	-82.81235406	Steps	Rotten. Needs to be replaced.
70	Figure 4-17	2023-07-16	Foothills Trail	62.1	35.05166502	-82.81183115	Steps	Needs to be replaced. Rotten.
71	Figure 4-18	2023-07-16	Foothills Trail	63.8	35.06192592	-82.79797438	Steps	
72	Figure 4-17	2023-07-16	Foothills Trail	63	35.05545323	-82.80436645	Obstacle, Fallen Tree	Tree across trail.
73	Figure 4-18	2023-07-16	Foothills Trail	64.5	35.06428672	-82.79296011	Erosion, Gully	Needs water break.
74	Figure 4-18	2023-07-16	Foothills Trail	64.5	35.06450762	-82.79284939	Erosion, Other	Tread is gone. It needs reestablished.
75	Figure 4-18	2023-07-16	Foothills Trail	64.9	35.06418329	-82.78862932	Erosion, Gully	Rail on side of trail needs to be removed. It is holding water on the trail. Grade dips need to be installed and steps need to be reinstalled.
76	Figure 4-18	2023-07-16	Foothills Trail	66.2	35.06514616	-82.77881549	Erosion, Gully	
77	Figure 4-19	2023-10-02	Foothills Trail	69.9	35.03597162	-82.75429371	Erosion, Exposed Roots	Tree has fallen on trail and uprooted 8 feet of trail. 8 feet needs to be re-benched.
78	Figure 4-19	2023-10-02	Foothills Trail	70.1	35.03574288	-82.75253624	Obstacle, Fallen Tree	Tree across trail needs to be cut out.
79	Figure 4-19	2023-10-02	Foothills Trail	70.2	35.03527295	-82.75187234	Obstacle, Fallen Tree	Tree needs to be cut out that is across trail.
80	Figure 4-19	2023-10-02	Foothills Trail	70.2	35.03507738	-82.75184794	Steps	One step needs to be replaced.

Trail Issue #	Figure #	Date Assessed	Trail Name	Mile Marker	Latitude	Longitude	Assessment Type	Description/Details
81	Figure 4-19	2023-10-02	Foothills Trail	70.3	35.03407215	-82.7509606	Obstacle, Fallen Tree	Tree across trail needs to be cut.
82	Figure 4-20	2023-10-02	Foothills Trail	70.8	35.02819674	-82.74681091	Obstacle, Fallen Tree	Remove tree that's across trail.
83	Figure 4-20	2023-10-02	Foothills Trail	70.8	35.02814792	-82.74679256	Obstacle, Other	Trail is extremely overgrown and needs to be trimmed from mile 70.2 at Pigeon Gap to mile 70.9 at Lighthouse Campsite.
84	Figure 4-20	2023-10-02	Foothills Trail	71.3	35.028678	-82.741463	Obstacle, Fallen Tree	Tree across trail in switchback. Fallen tree crosses trail twice.
85	Figure 4-20	2023-10-02	Foothills Trail	71.6	35.02797993	-82.74450542	Obstacle, Fallen Tree	Three trees across trail need to be cut out.
86	Figure 4-20	2023-10-02	Foothills Trail	71.7	35.02985095	-82.74414491	Obstacle, Fallen Tree	Tree across trail needs to be removed
87	Figure 4-20	2023-10-02	Foothills Trail	71.9	35.03149829	-82.74218004	Obstacle, Fallen Tree	Tree across trail needs to be removed
88	Figure 4-20	2023-10-02	Foothills Trail	71.9	35.03149667	-82.74159849	Obstacle, Fallen Tree	Tree across trail needs to be removed
89	Figure 4-20	2023-10-02	Foothills Trail	71.9	35.0316208	-82.74135269	Obstacle, Other	Corridor needs to be cleared and brushed removed from mile 70.9 at Lighthouse Campsite to 72.1 at Pinnacle Mountain Trail Junction.

Figure 4-1 Trail Issues Identified during the Foothills Trail Conditions Assessment

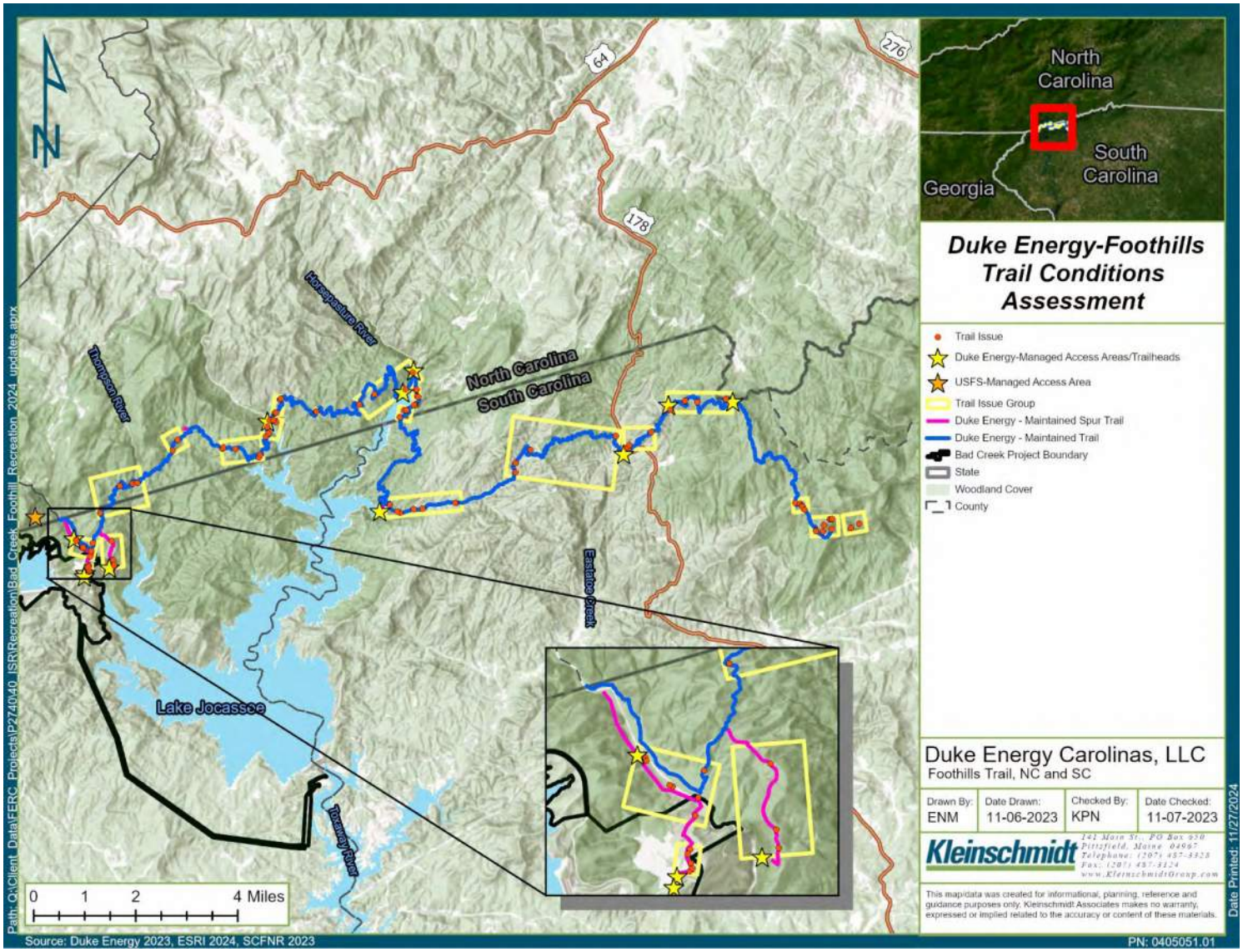


Figure 4-2 Foothills Trail Conditions Assessment – Figure 1 of 19

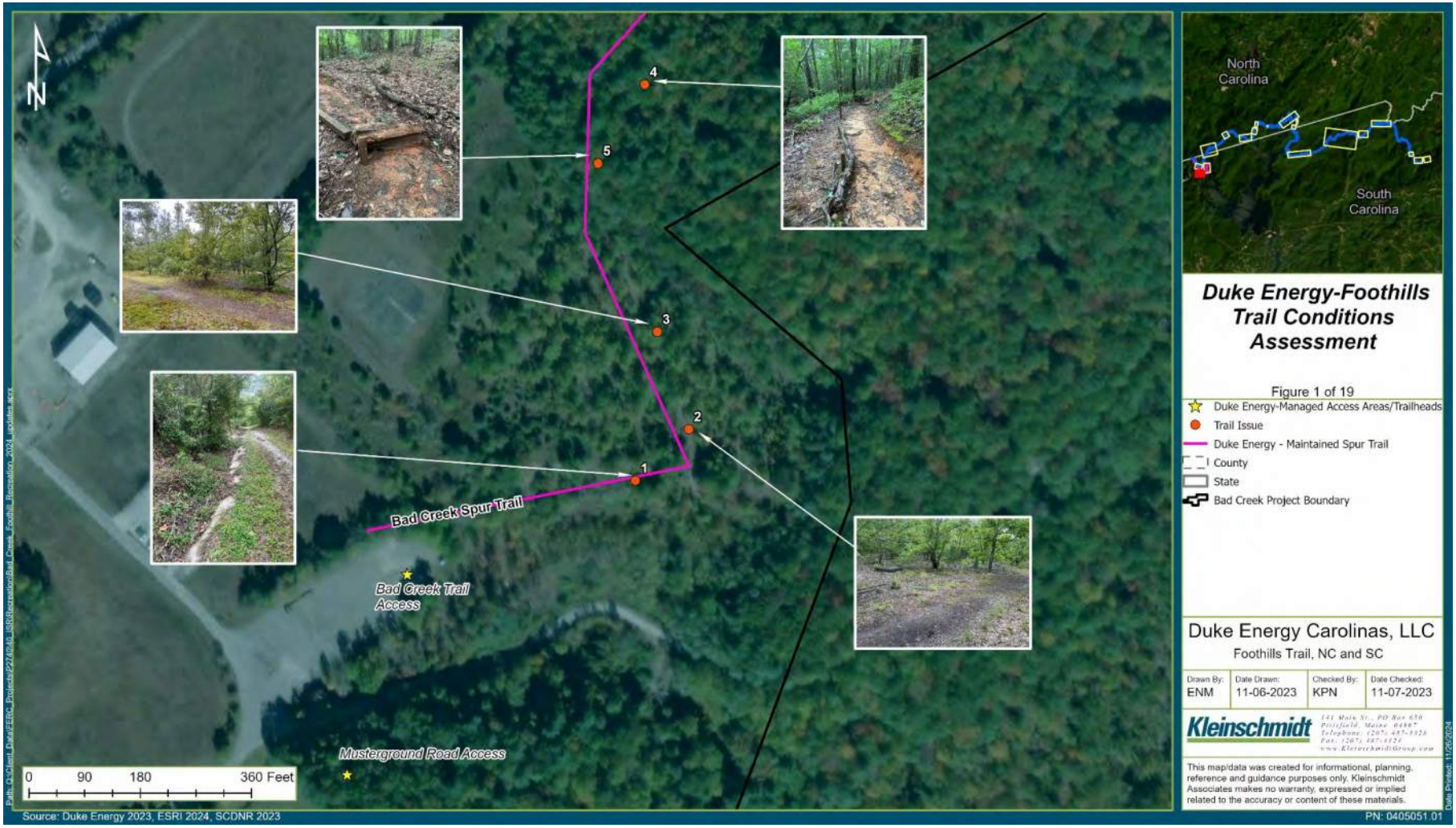


Figure 4-3 Foothills Trail Conditions Assessment – Figure 2 of 19

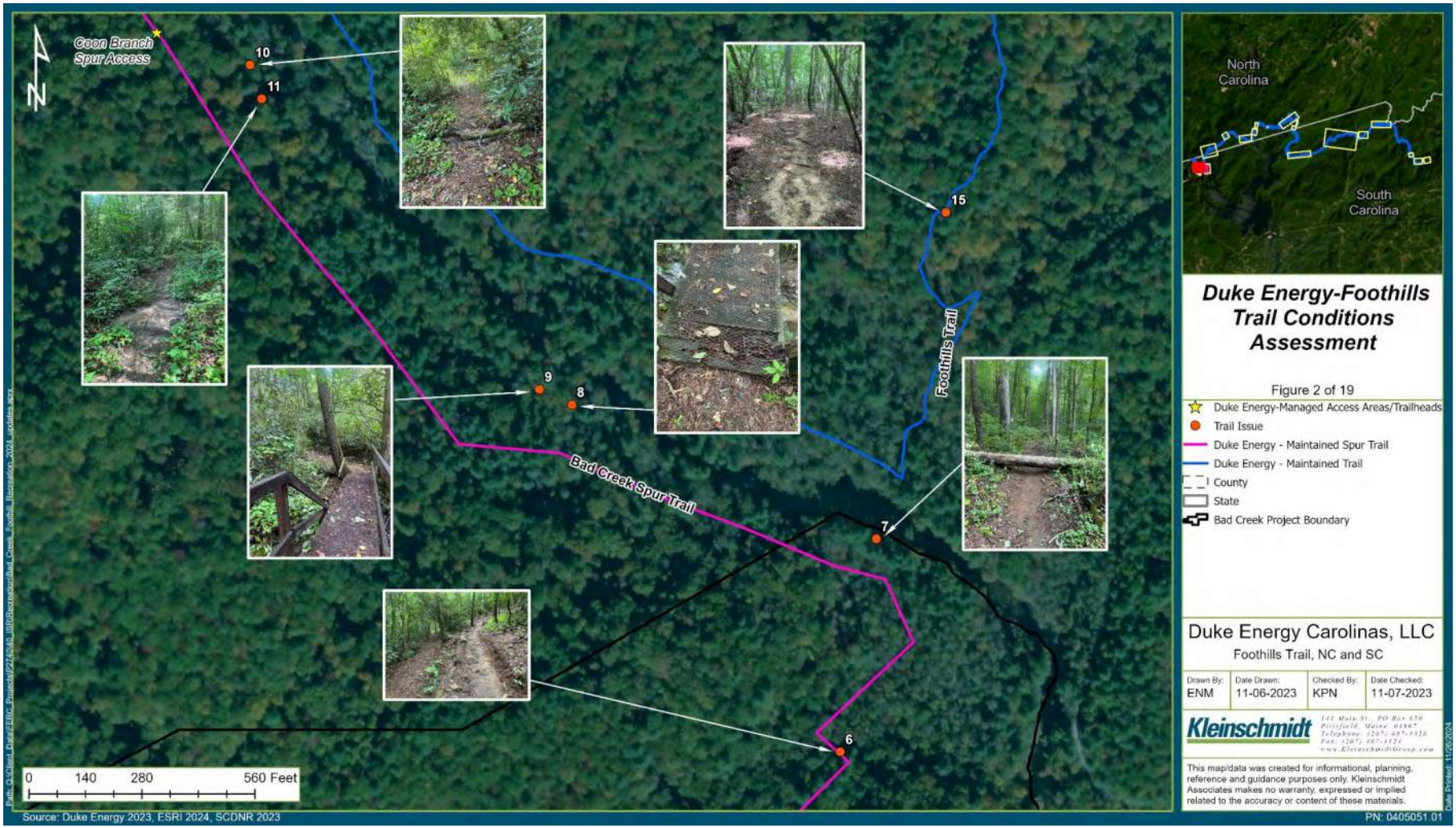


Figure 4-4 Foothills Trail Conditions Assessment – Figure 3 of 19

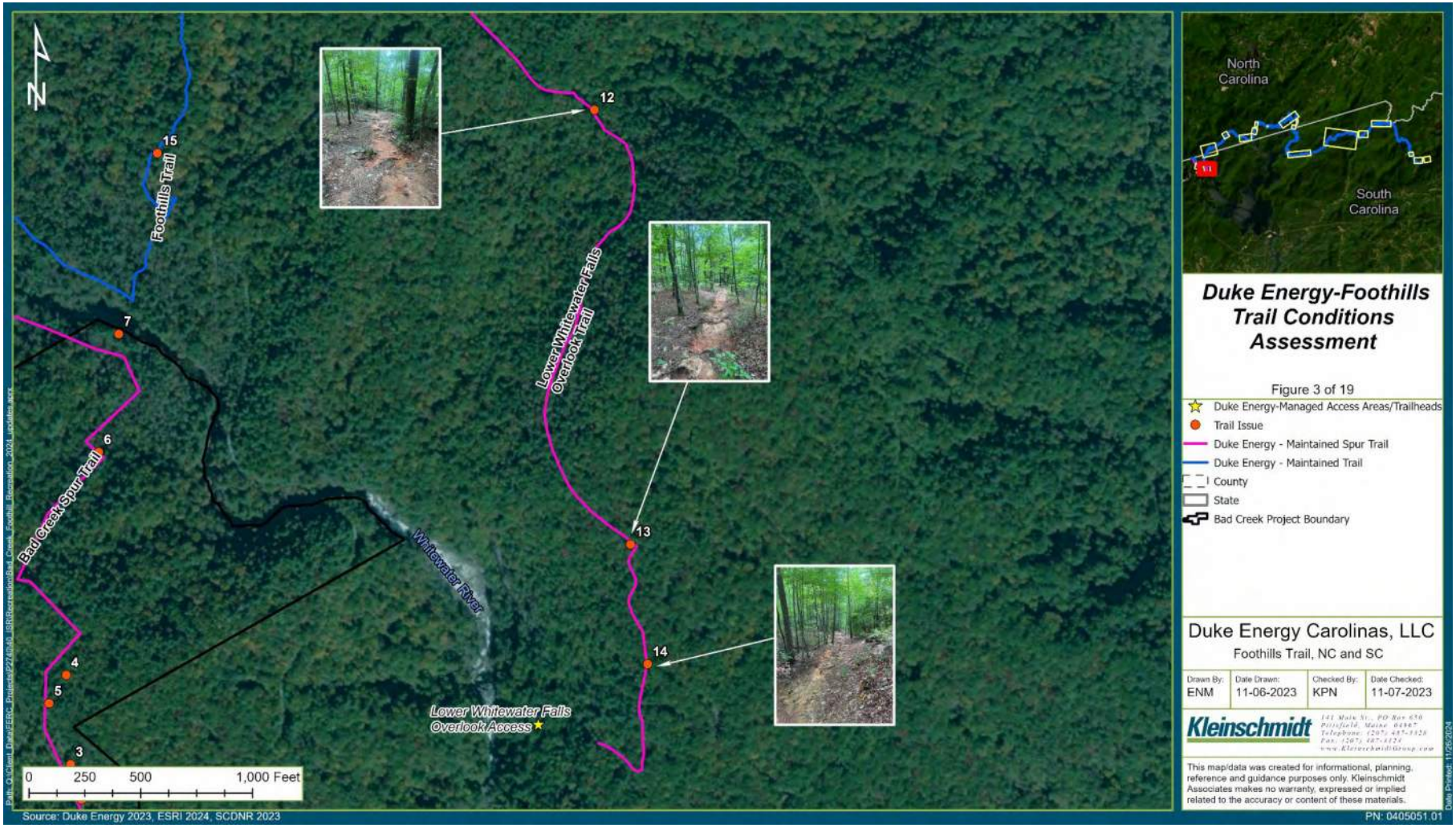


Figure 4-5 Foothills Trail Conditions Assessment – Figure 4 of 19

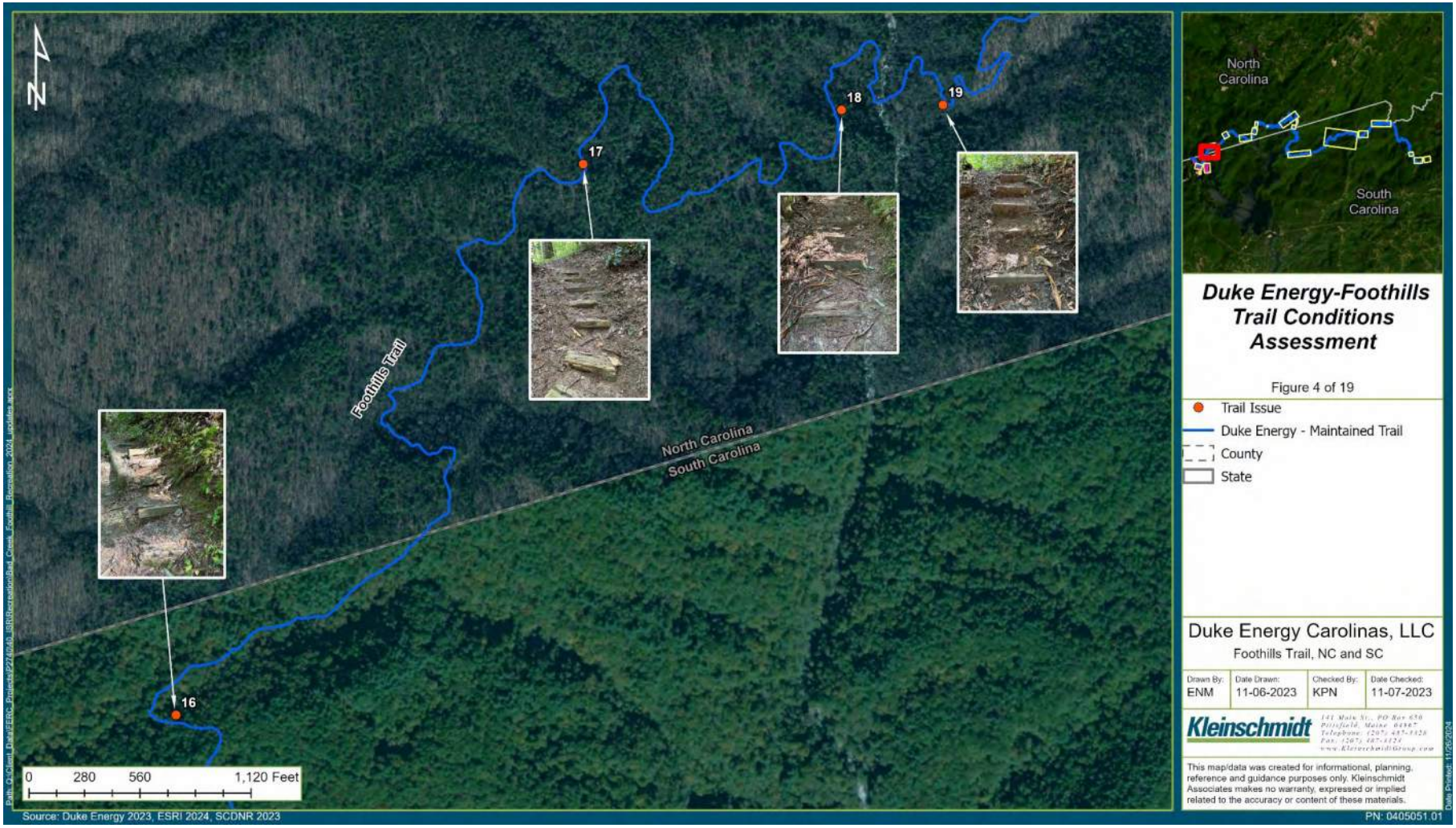


Figure 4-6 Foothills Trail Conditions Assessment – Figure 5 of 19

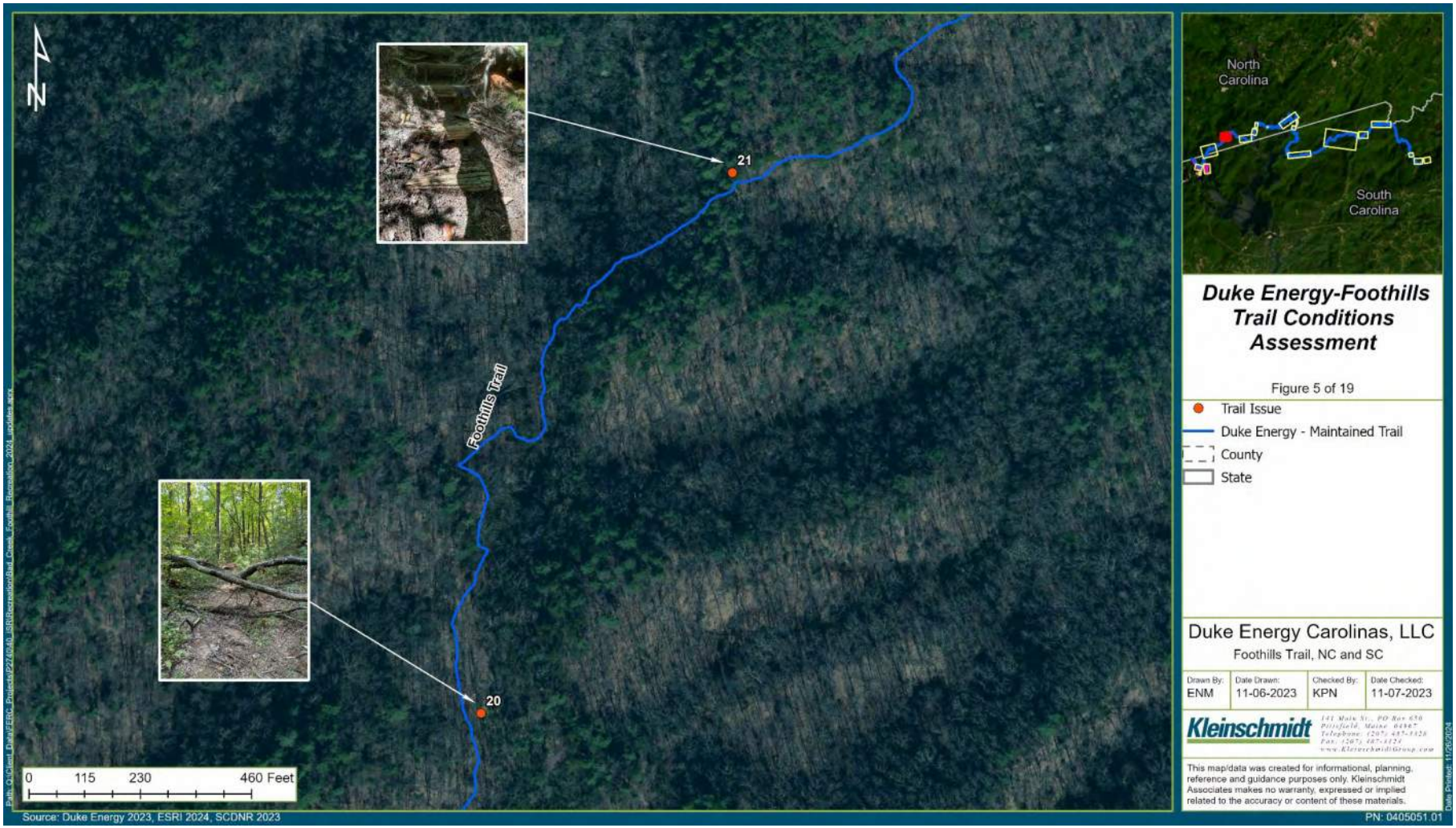


Figure 4-7 Foothills Trail Conditions Assessment – Figure 6 of 19

Figure 4-8 Foothills Trail Conditions Assessment – Figure 7 of 19

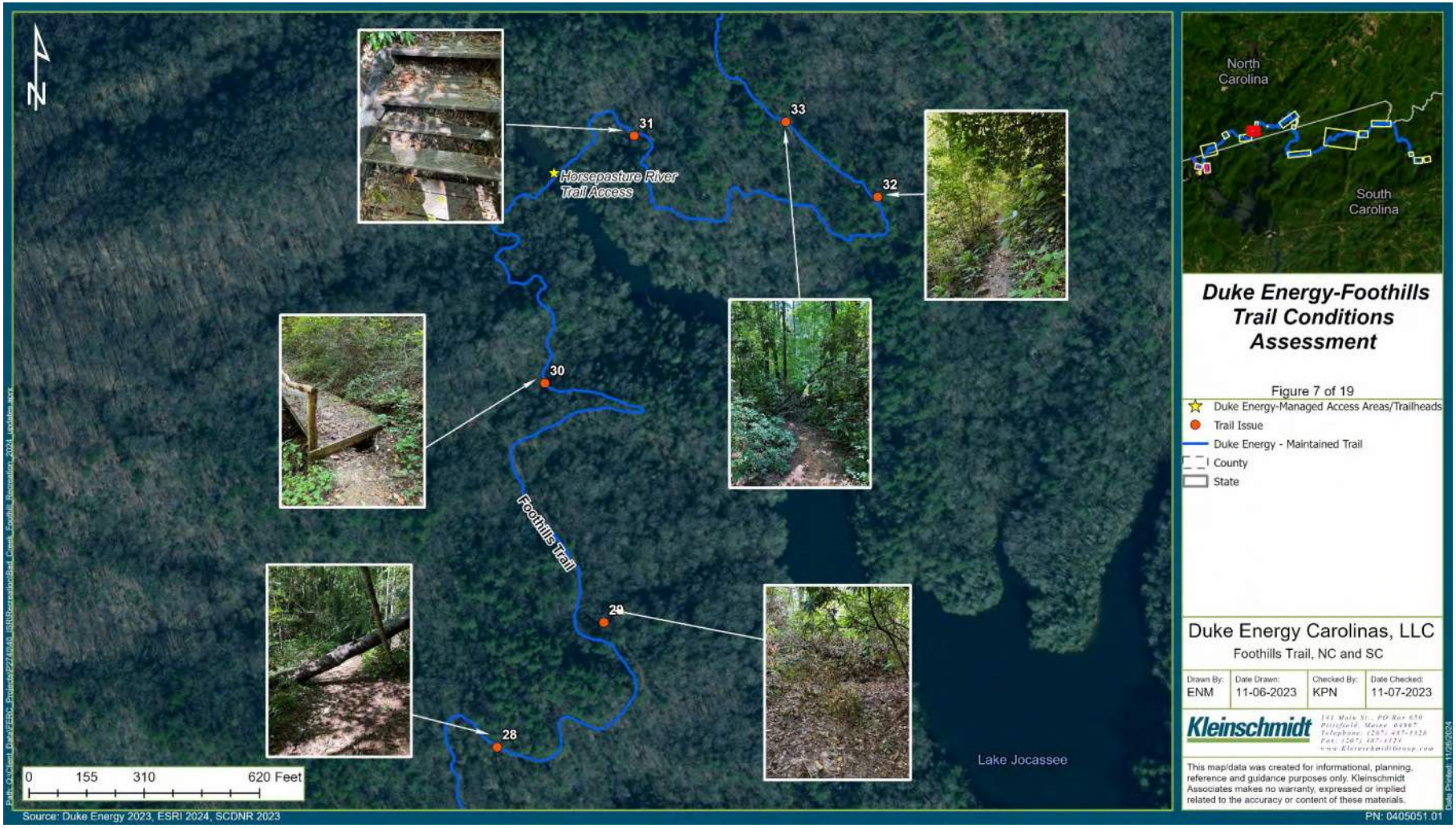


Figure 4-9 Foothills Trail Conditions Assessment – Figure 8 of 19

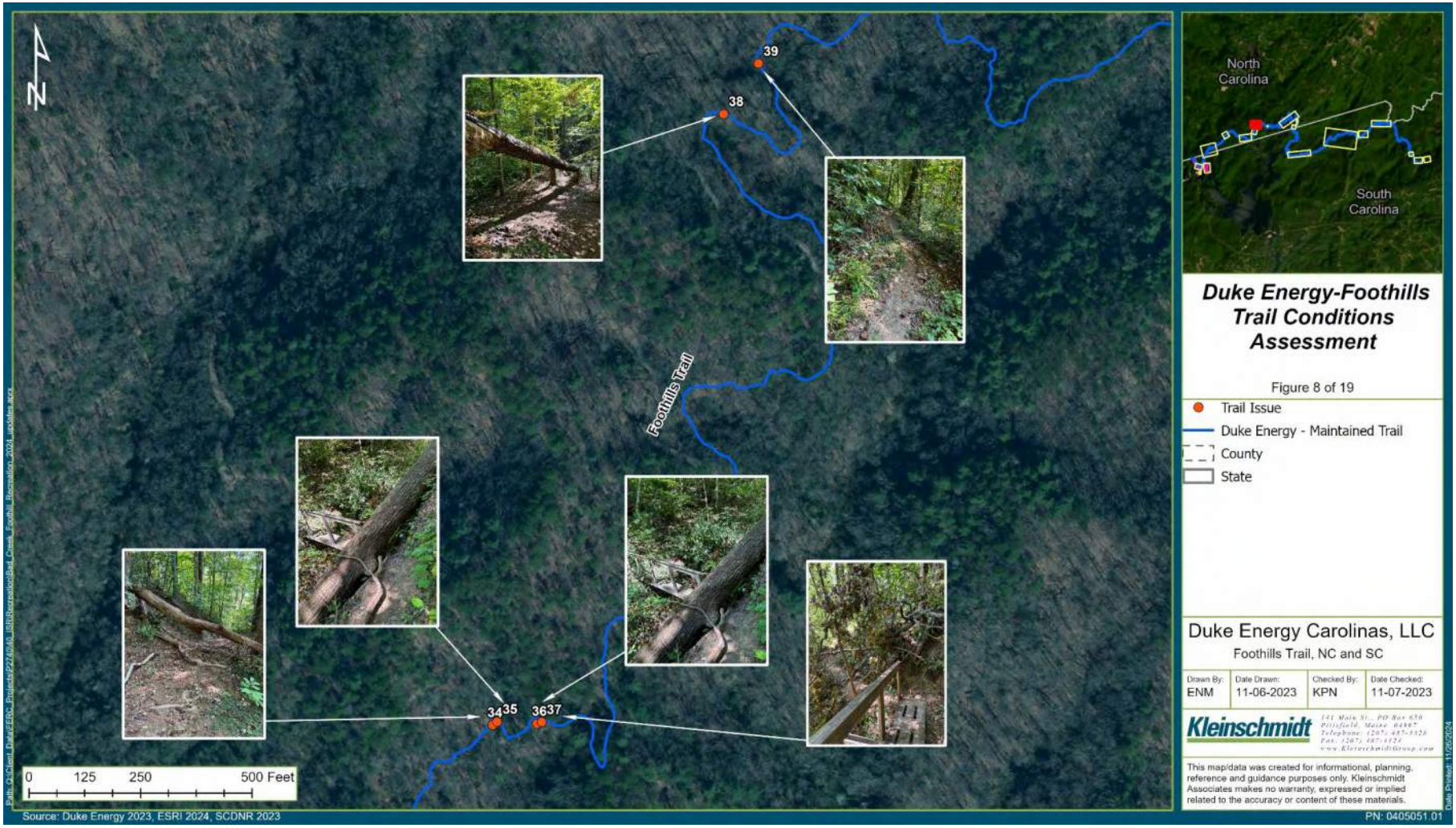


Figure 4-10 Foothills Trail Conditions Assessment – Figure 9 of 19

Figure 4-11 Foothills Trail Conditions Assessment – Figure 10 of 19

Figure 4-12 Foothills Trail Conditions Assessment – Figure 11 of 19

Figure 4-13 Foothills Trail Conditions Assessment – Figure 12 of 19

Figure 4-14 Foothills Trail Conditions Assessment – Figure 13 of 19

Figure 4-15 Foothills Trail Conditions Assessment – Figure 14 of 19

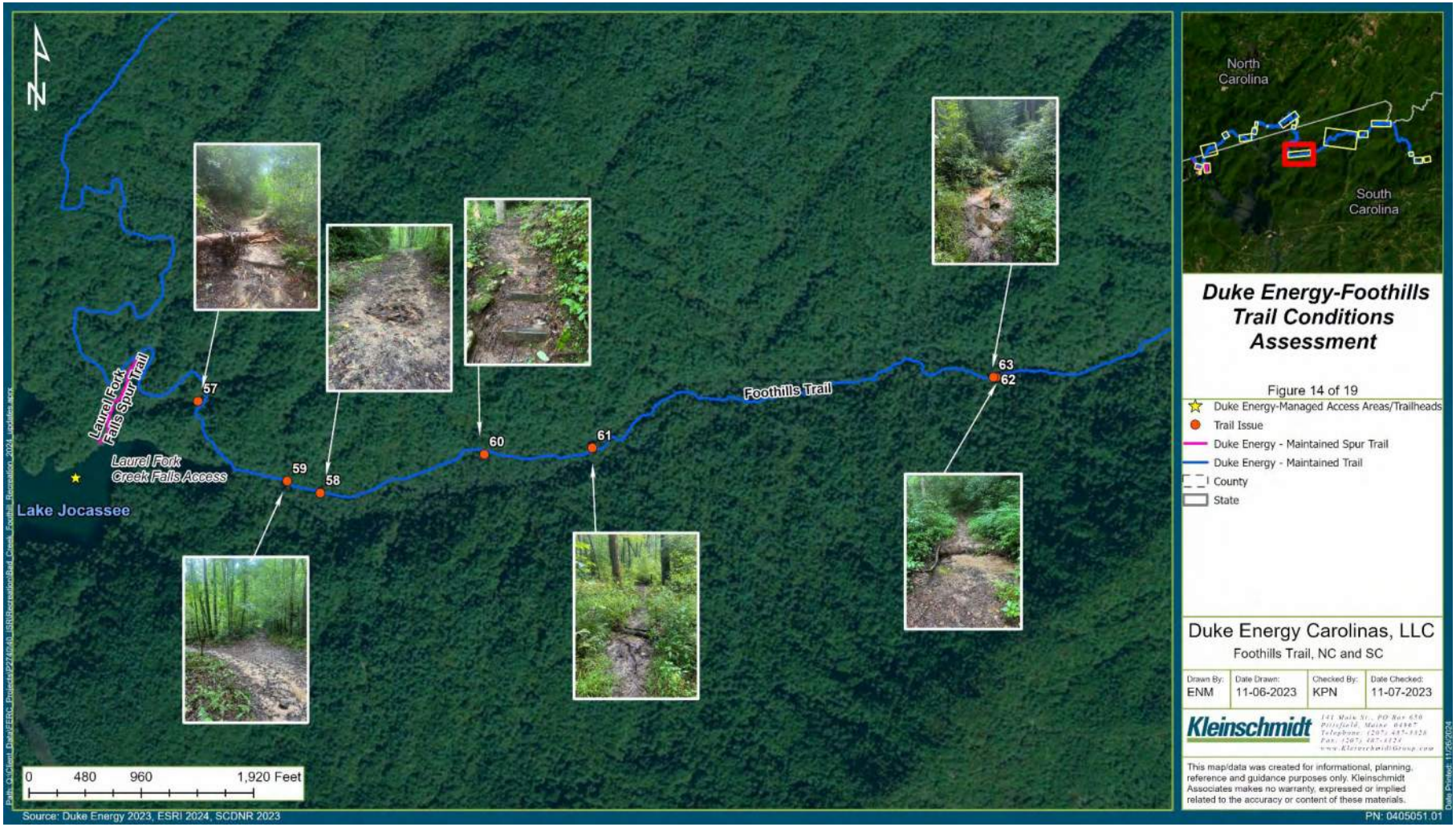


Figure 4-16 Foothills Trail Conditions Assessment – Figure 15 of 19

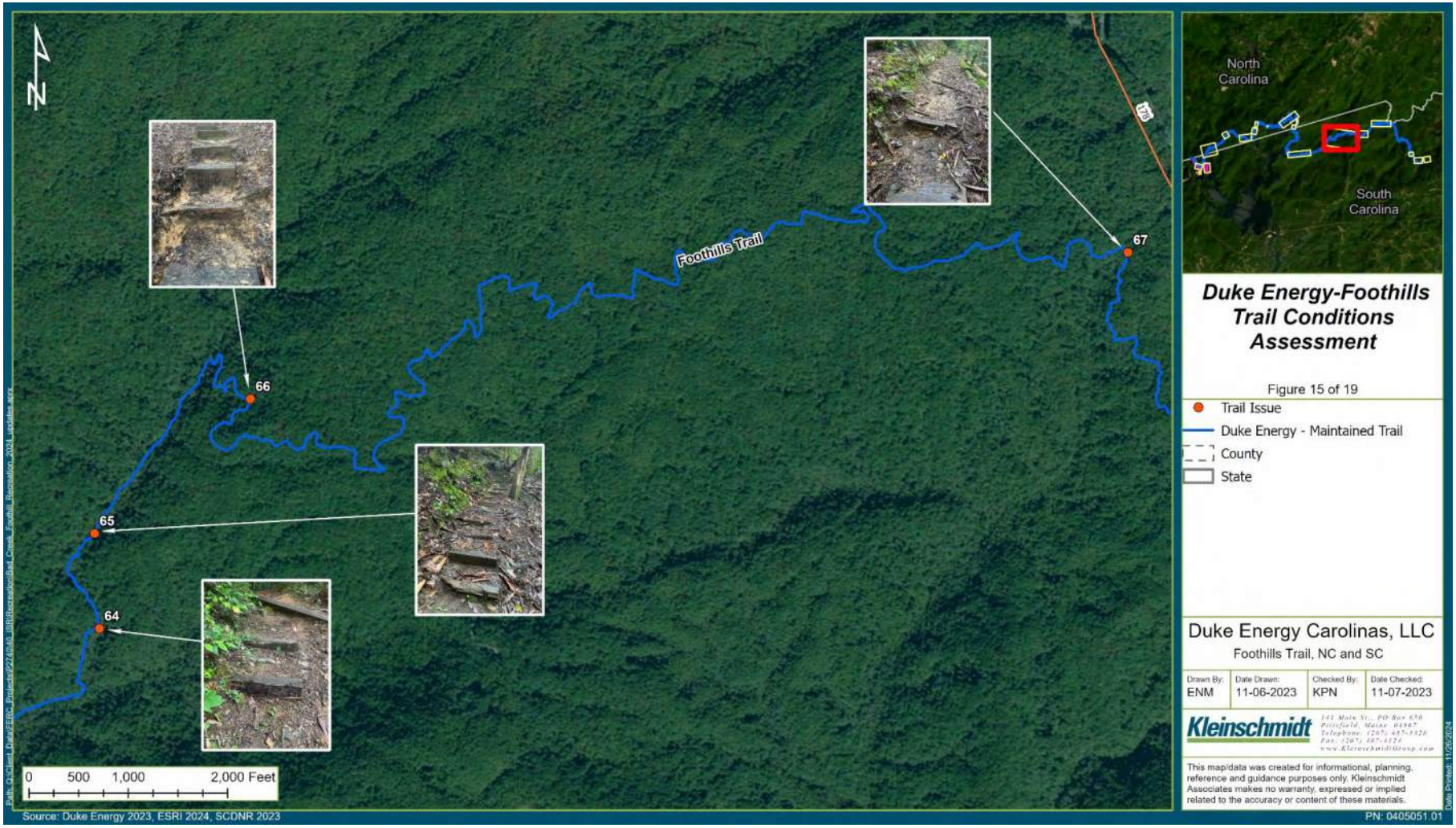


Figure 4-17 Foothills Trail Conditions Assessment – Figure 16 of 19

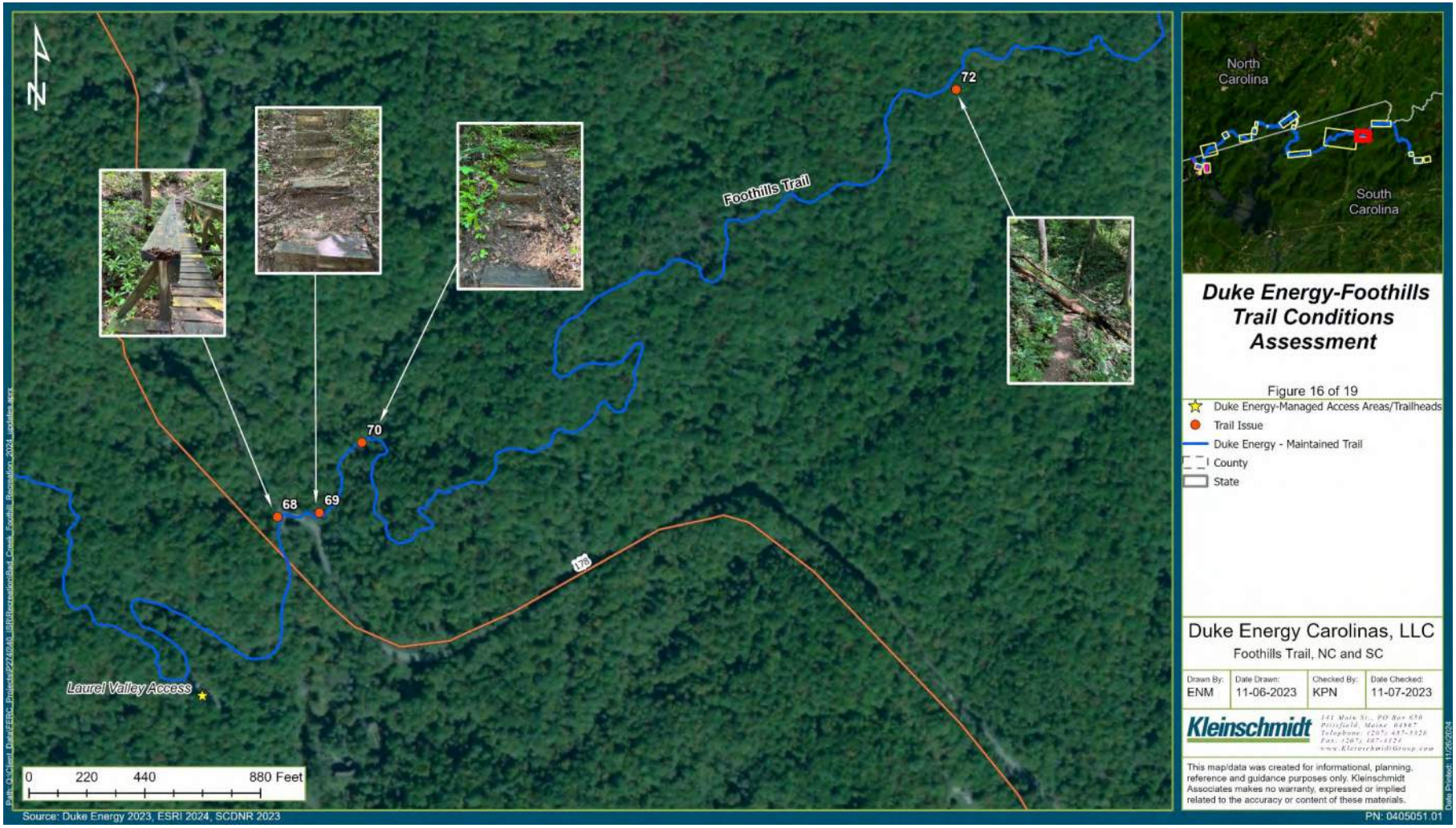


Figure 4-18 Foothills Trail Conditions Assessment – Figure 17 of 19

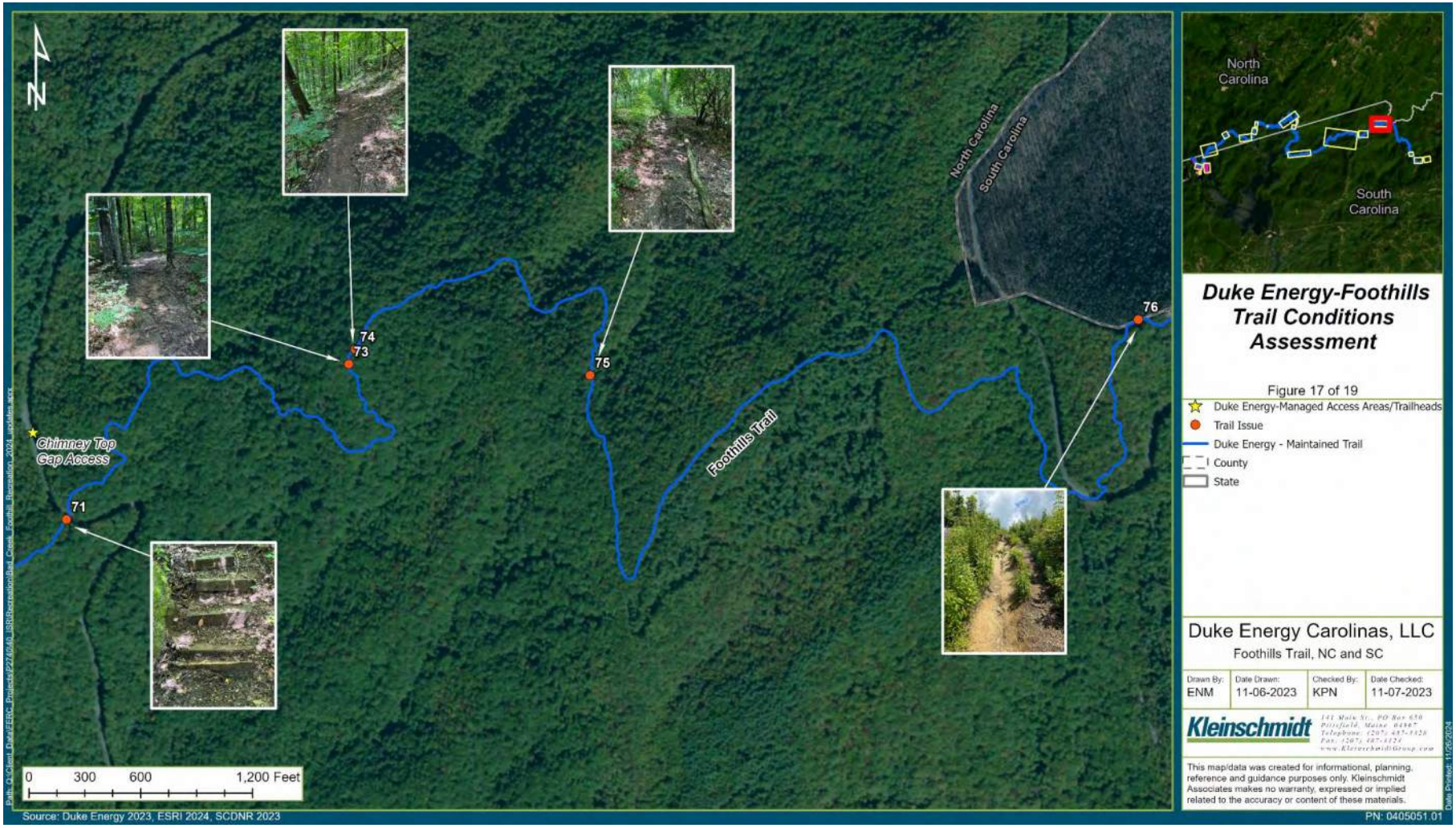


Figure 4-19 Foothills Trail Conditions Assessment – Figure 18 of 19

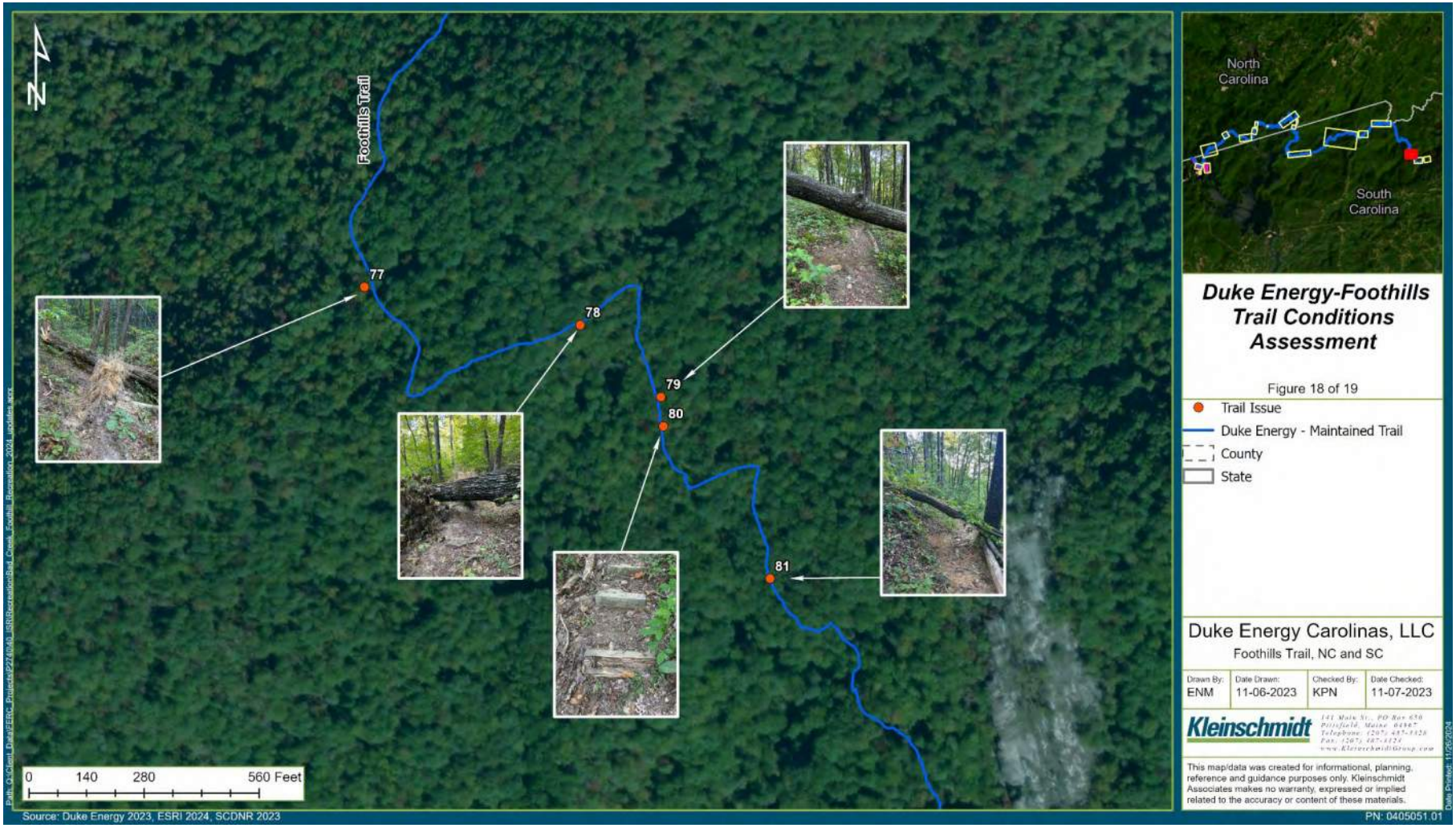
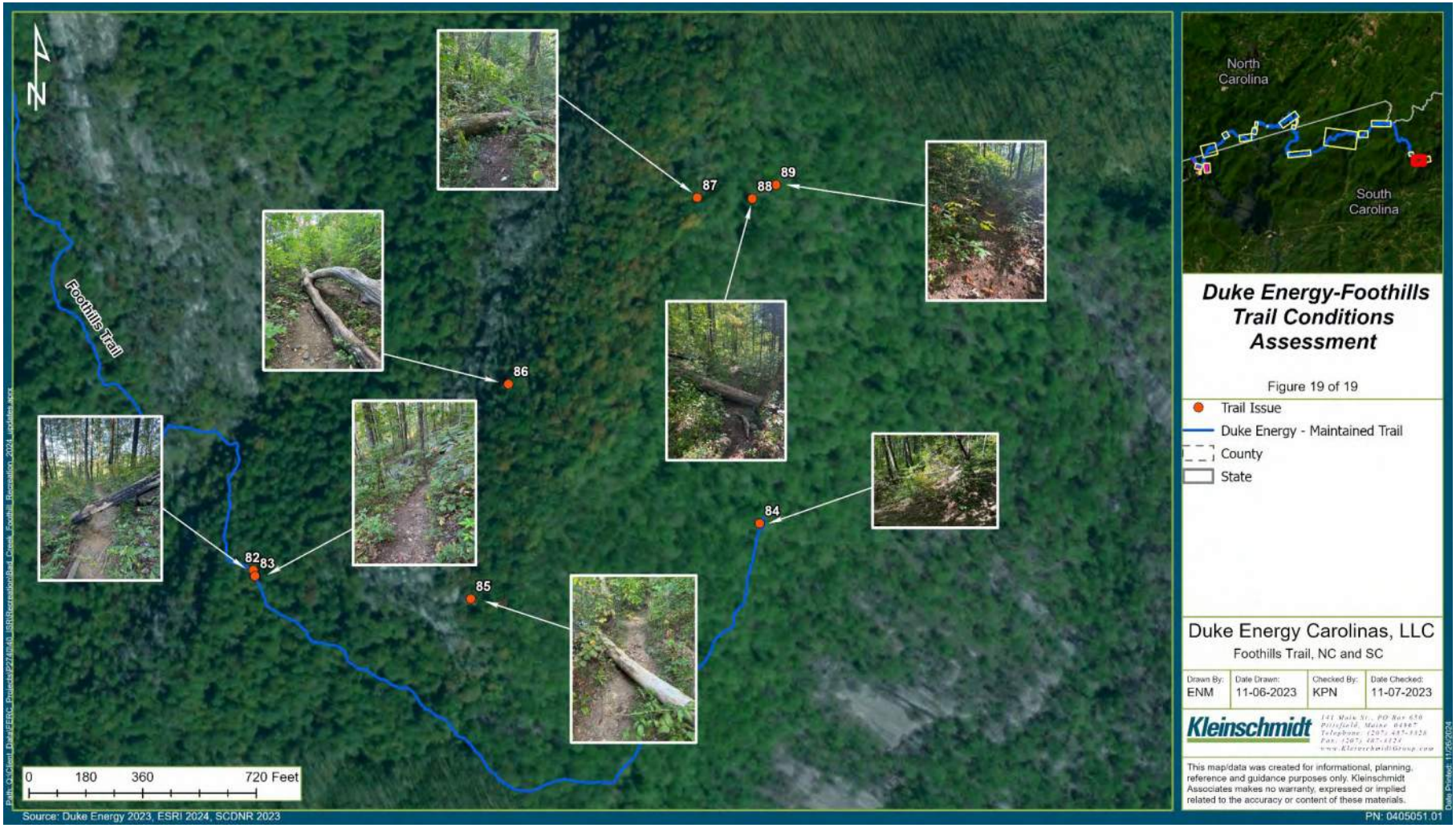


Figure 4-20 Foothills Trail Conditions Assessment – Figure 19 of 19



5.0 SUMMARY

During the Trail Conditions Assessment, Long Cane Trails identified 89 issues within the study area primarily related to trail maintenance and safety. Specifically, 75 issues were identified on the Foothills Trail, seven on the Bad Creek Access Spur, four on Coon Branch, and three on the Lower Whitewater Falls Spur. Issues identified include culvert cleaning, erosion control, steps replacement, signage improvement, bridge maintenance, fallen tree removal, and trail washout repair. Table 5-1 describes the key findings identified by Long Cane Trails for the Foothills Trail and spur trails. The information presented in this Trail Conditions Assessment will be considered by Duke Energy when developing Protection, Mitigation and Enhancement (PME) measures.

During consultation, the Foothills Trail Conservancy identified 30 additional items that they believe should be addressed, including maintenance of existing structures, upgrades to existing structures, and construction of new structures. Duke Energy will consider these items and consult with the Recreation Resource Committee to determine which items, if any, should be addressed or implemented as PME measures.

SCDNR also provided comments during consultation, noting that the clogged culverts identified by Long Cane Trails may need to be further evaluated to determine if expansion or conversion to a bridge is necessary to prevent future issues. Duke Energy will consult with the Recreation Resource Committee to determine which culverts, if any, require further evaluation.

Additional consultation related to this assessment will be documented in the Updated Study Report and Duke Energy's proposal for PME measures will be detailed in the Exhibit E of the Final License Application.

Table 5-1 Key Findings of Foothills Trail Conditions Assessment

Trail	Mile	Key Findings
Bad Creek Access Spur	0.1-0.7	• Culvert Maintenance: A culvert with a clogged drain spanning 80 feet requires cleaning to allow proper water flow. • Wet Areas: Low areas on the trail with standing water need gravel addition to raise and level the path, covering 60 feet and 30 feet sections. • Erosion Control: Removal of barricades placed on the side of the trail to address water retention issues. • Steps Replacement: Several steps need replacement due to rot. • Interpretive Signage: Approximately 100 feet of trail has been rerouted, and new blazes are needed to guide hikers.
Coon Branch Spur	0.2	• Bridge Maintenance: Railing and decking replacement for a bridge, involving handrails and decking boards. • Railing Replacement: Two handrails need replacement.
Coon Branch Spur	0.4	• Bog Bridge Installation: Installation of a bog bridge measuring 4 feet x 2 feet. • Drain Clearing: Major drain unclogging is required to prevent overflow onto the trail.
Foothills Trail	31.6-72.8	• Erosion Control: Multiple sections of the Foothills Trail require erosion control measures such as grade reversals, knicks, or drainage improvements. • Steps Replacement: Various steps along the trail need replacement or repair due to damage. • Fallen Trees: Several fallen trees across the trail need removal. • Bog Bridges: Installation of new bog bridges. • Signage: Adding new trail blazes and interpretive signage. • Brush Removal: Clearing overgrown sections of the trail. • Washout Repair: Addressing trail washouts and water diversion. • New Trail Sections: Creating new trail segments to address erosion and trail conditions.
Lower Whitewater Falls Spur	0.4-1.0	• Washout and Erosion: Trail washouts, the need for stairs, and grade dips have been identified, impacting a significant portion of this spur.

6.0 CONSULTATION RECORD

This report was provided in draft form to the Recreation Resources Committee for review and comment on November 21, 2023. Comments were accepted on the draft report through December 18, 2023. Comments on the draft report were provided by the following entities:

- SC Wildlife Federation – December 4, 2023
- Foothills Trail Conservancy – December 14, 2023
- SC Department of Natural Resources – December 15, 2023
- Friends of Lake Keowee Society (FOLKS) – December 18, 2023

On February 29, 2024, Duke Energy held a Recreation Resources Committee meeting to discuss the comments received on the draft report. Meeting discussion resulted in the Resource Committee agreeing that additional information was needed to better understand potential impacts associated with Trail Issues 1, 11, and 58 in the draft report and one item submitted in the FTC's comments on the draft report (FTC 21). A memo was prepared and is included as Appendix C.

The consultation record for the draft report was documented in the Initial Study Report (ISR). Consultation that occurred since filing of the ISR is included in the Updated Study Report Appendix D – Recreational Resources Study Report, Attachment 5.

7.0 REFERENCES

Felton, V. 2004. Trail Solutions: IMBA's Guide to Building Sweet Singletrack (IMBA (International Mountain Bicycling Association), Ed.). International Mountain Bicycling Association.

Foothills Trail Conservancy, Inc. 2018. Foothills Trail Guidebook: A Comprehensive Guide. Revised Seventh Edition. January 1, 2018.

National Park Service (NPS). 2023. How to Determine Hiking Difficulty. [Online] URL: How to Determine Hiking Difficulty - Shenandoah National Park (U.S. National Park Service) (nps.gov). Accessed December 19, 2023.

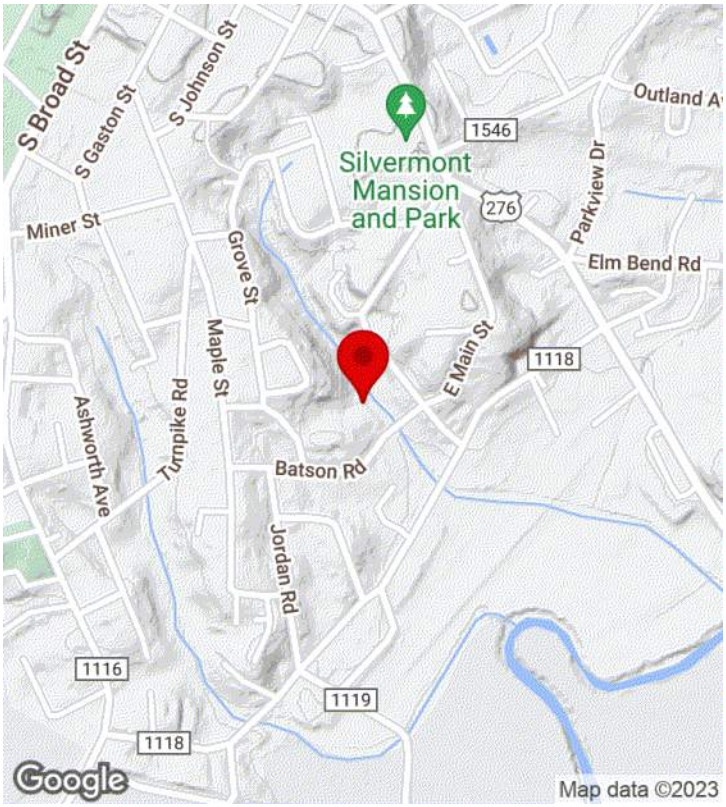
Manitoba Trails Project (MTP). 2023. Manitoba Trails Project: Hiking Trail Database. [Online] URL: Hiking Trail Database - Manitoba Trails Project. Accessed December 19, 2023.

APPENDIX A

ASSESSMENT FORM

Foothills Trail Assessment

Bad Creek Access Spur, 12, Bridge ▸ Bridge, 30' L x 5' W x 2' H



CREATED

6/17/2023, 12:33:52 PM UTC
by Todd Branham

UPDATED

6/19/2023, 4:20:41 PM UTC
by Todd Branham

STATUS

Needs Repair

LOCATION

35.224860, -82.729978

Date	June 17, 2023
Trail Name	Bad Creek Access Spur
Assessment's Name	
Mile Marker	12
Assessment Type	Bridge ▸ Bridge
Measurements	30' L x 5' W x 2' H
Description / Details / Comments	Wooden Bridge with handrails on both sides. Needs new bridge - old one completely gone

Photos

Videos	
Attachments	

APPENDIX B

PHOTOS

Photo 1. Trail Issue #1 - Bad Creek Access Spur Culvert/Open Drain (see Figure 4.2)

Photo 2a and Photo 2b. Trail Issue #2 - Bad Creek Access Spur, Wet Area/Standing Water (see Figure 4.2)

Photo 3. Trail Issue #3 - Bad Creek Access Spur, Wet Area/Standing Water (see Figure 4.2)

Photo 4. Trail Issue #4 - Bad Creek Access Spur, Erosion Control Devices/Other (see Figure 4.2)

Photo 5. Trail Issue #5 - Bad Creek Access Spur, Steps (see Figure 4.2)

Photo 6. Trail Issue #6 - Bad Creek Access Spur, Signage/Interpretive (see Figure 4.3)

Photo 7. Trail Issue #7 - Bad Creek Access Spur, Obstacle/Fallen Tree (see Figure 4.3)

Photo 8a. Trail Issue #8 - Coon Branch, Bridge/Bridge (see Figure 4.3)

Photo 8b. Trail Issue #8 - Coon Branch, Bridge/Bridge (see Figure 4.3)

Photo 8c. Trail Issue #8 - Coon Branch, Bridge/Bridge (see Figure 4.3)

Photo 9. Trail Issue #9 - Coon Branch, Bridge (see Figure 4.3)

Photo 10. Trail Issue #10 - Coon Branch, Bridge/Puncheon (see Figure 4.3)

Photo 11. Trail Issue #11 - Coon Branch, Erosion, Gully (see Figure 4.3)

Photo 12a. Trail Issue #12 - Lower Whitewater Falls Spur, Washout (see Figure 4.4)

Photo 12b. Trail Issue #12 - Lower Whitewater Falls Spur, Washout (see Figure 4.4)

Photo 13. Trail Issue #13 - Lower Whitewater Falls Spur, Washout (see Figure 4.4)

Photo 14. Trail Issue #14 - Lower Whitewater Falls Spur, Erosion/Gully (see Figure 4.4)

Photo 15. Trail Issue #15 – Foothills Trail, Washout (see Figure 4.3)

Photo 16. Trail Issue #16 - Foothills Trail, Steps (see Figure 4.5)

Photo 17. Trail Issue #17 - Foothills Trail, Steps (see Figure 4.5)

Photo 18. Trail Issue #18 - Foothills Trail, Steps (see Figure 4.5)

Photo 19. Trail Issue #19 - Foothills Trail, Steps (see Figure 4.5)

Photo 20. Trail Issue #20 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.6)

Photo 21. Trail Issue #21 - Foothills Trail, Steps (see Figure 4.6)

Photo 22. Trail Issue #22 - Foothills Trail, Steps (see Figure 4.7)

Photo 23. Trail Issue #23 - Foothills Trail, Obstacle/Other (see Figure 4.7)

Photo 24. Trail Issue #24 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.7)

Photo 25. Trail Issue #25 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.7)

Photo 26. Trail Issue #26 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.7)

Photo 27. Trail Issue #27 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.7)

Photo 28. Trail Issue #28 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.8)

Photo 29. Trail Issue #29 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.8)

Photo 30. Trail Issue #30 - Foothills Trail, Erosion, Gully (see Figure 4.8)

Photo 31. Trail Issue #31 - Foothills Trail, Steps (see Figure 4.8)

Photo 32. Trail Issue #32 - Foothills Trail, Obstacle/Other (see Figure 4.8)

Photo 33. Trail Issue #33 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.8)

Photo 34a. Trail Issue #34 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.9)

Photo 34b. Trail Issue #34 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.9)

Photo 35. Trail Issue #35 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.9)

Photo 36. Trail Issue #36 - Foothills Trail, Bridge/Bridge (see Figure 4.9)

Photo 37. Trail Issue #37 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.9)

Photo 38. Trail Issue #38 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.9)

Photo 39. Trail Issue #39 - Foothills Trail, Washout (see Figure 4.9)

Photo 40. Trail Issue #40 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.10)

Photo 41. Trail Issue #41 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.10)

Photo 42. Trail Issue #42 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.11)

Photo 43. Trail Issue #43 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.11)

Photo 44. Trail Issue #44 - Foothills Trail, Bridge/Bog Bridges (see Figure 4.11)

Photo 45. Trail Issue #45 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.11)

Photo 46. Trail Issue #46 - Foothills Trail, Steps (see Figure 4.12)

Photo 47. Trail Issue #47 - Foothills Trail, Additional Comment (see Figure 4.12)

Photo 48. Trail Issue #48 - Foothills Trail, Bridge/Bog Bridges (see Figure 4.12)

Photo 49. Trail Issue #49 - Foothills Trail, Steps (see Figure 4.12)

Photo 50. Trail Issue #50 - Foothills Trail, Steps (see Figure 4.13)

Photo 51. Trail Issue #51 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.13)

Photo 52. Trail Issue #52 - Foothills Trail, Steps (see Figure 4.13)

Photo 53. Trail Issue #53 - Foothills Trail, Steps (see Figure 4.13)

Photo 54. Trail Issue #54 - Foothills Trail, Steps (see Figure 4.14)

Photo 55. Trail Issue #55 - Foothills Trail, Steps (see Figure 4.14)

Photo 56. Trail Issue #56 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.14)

Photo 57. Trail Issue #57 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.15)

Photo 58. Trail Issue #58 - Foothills Trail, Culvert/Open Drain (see Figure 4.15)

Photo 59a. Trail Issue #59 - Foothills Trail, Signage/Directional (see Figure 4.15)

Photo 59a. Trail Issue #59 - Foothills Trail, Signage/Directional (see Figure 4.15)

Photo 60. Trail Issue #60 - Foothills Trail, Steps (see Figure 4.15)

Photo 61. Trail Issue #61 - Foothills Trail, Bridge/Bog Bridges (see Figure 4.15)

Photo 62. Trail Issue #62 - Foothills Trail, Bridge/Bog Bridges (see Figure 4.15)

Photo 63. Trail Issue #63 - Foothills Trail, Bridge/Bridge (see Figure 4.15)

Photo 64. Trail Issue #64 - Foothills Trail, Steps (see Figure 4.16)

Photo 65a. Trail Issue #65 - Foothills Trail, Steps (see Figure 4.16)

Photo 65b. Trail Issue #65 - Foothills Trail, Steps (see Figure 4.16)

Photo 66. Trail Issue #66 - Foothills Trail, Steps (see Figure 4.16)

Photo 67. Trail Issue #67 - Foothills Trail, Steps (see Figure 4.16)

Photo 68. Trail Issue #68 - Foothills Trail, Bridge/Bridge (see Figure 4.17)

Photo 69. Trail Issue #69 - Foothills Trail, Steps (see Figure 4.17)

Photo 70. Trail Issue #70 - Foothills Trail, Steps (see Figure 4.17)

Photo 71. Trail Issue #71 - Foothills Trail, Steps (see Figure 4.18)

Photo 72. Trail Issue #72 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.17)

Photo 73. Trail Issue #73 - Foothills Trail, Erosion/Gully (see Figure 4.18)

Photo 74. Trail Issue #74 - Foothills Trail, Erosion/Other (see Figure 4.18)

Photo 75a. Trail Issue #75 - Foothills Trail, Erosion/Gully (see Figure 4.18)

Photo 75b. Trail Issue #75 - Foothills Trail, Erosion/Gully (see Figure 4.18)

Photo 75c. Trail Issue #75 - Foothills Trail, Erosion/Gully (see Figure 4.18)

Photo 76. Trail Issue #76 - Foothills Trail, Erosion/Gully (see Figure 4.18)

Photo 77. Trail Issue #77 - Foothills Trail, Erosion/Exposed Roots (see Figure 4.19)

Photo 78. Trail Issue #78 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.19)

Photo 79. Trail Issue #79 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.19)

Photo 80. Trail Issue #80 - Foothills Trail, Steps (see Figure 4.19)

Photo 81. Trail Issue #81 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.19)

Photo 82. Trail Issue #82 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 83. Trail Issue #83 - Foothills Trail, Obstacle/Other (see Figure 4.20)

Photo 84. Trail Issue #84 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

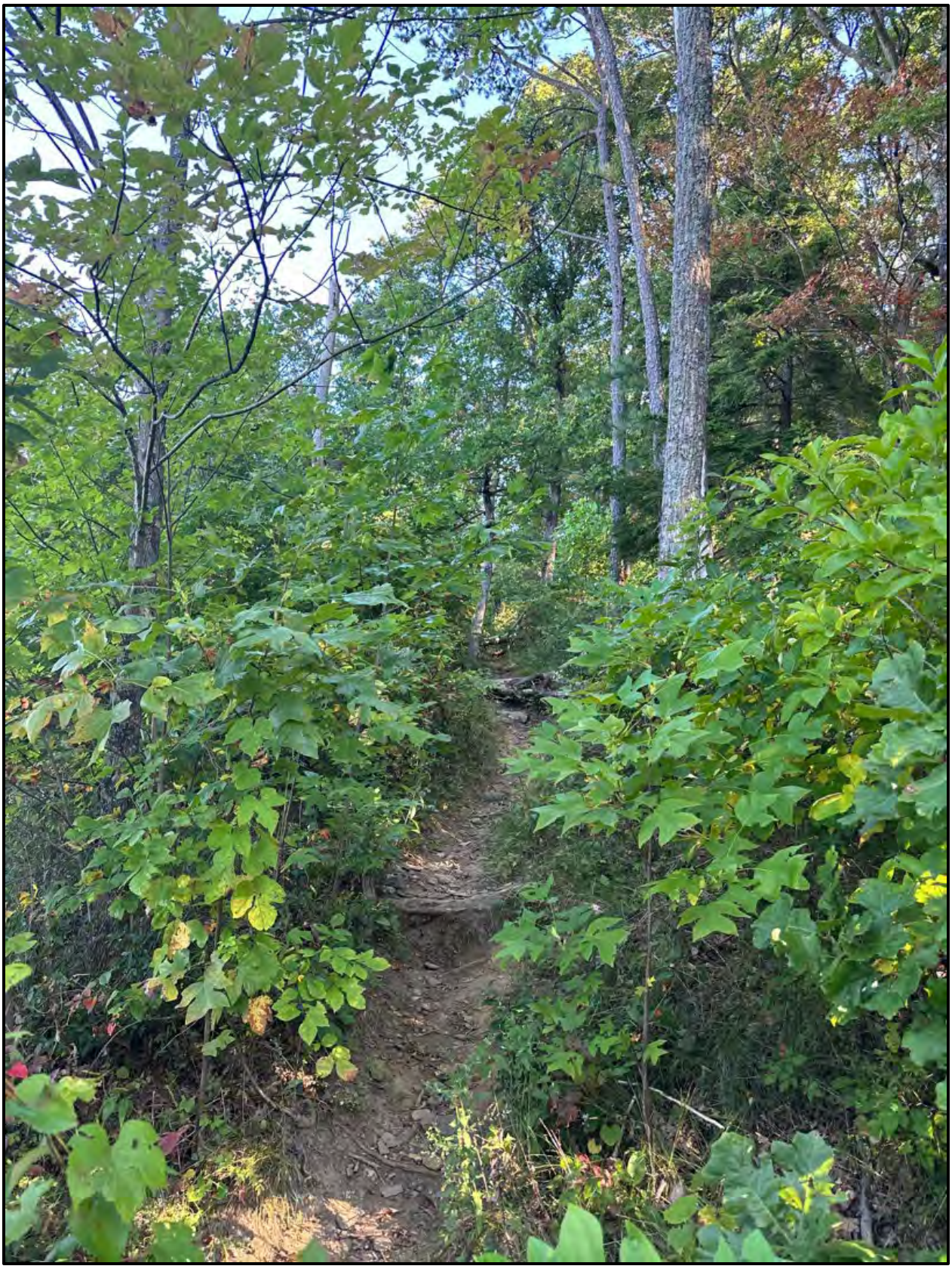


Photo 85a. Trail Issue #85 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 85b. Trail Issue #85 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 85c. Trail Issue #85 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 86. Trail Issue #86 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 87. Trail Issue #87 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 88. Trail Issue #88 - Foothills Trail, Obstacle/Fallen Tree (see Figure 4.20)

Photo 89. Trail Issue #89 - Foothills Trail, Obstacle/Other (see Figure 4.20)

APPENDIX C

FOOTHILLS TRAIL CORRIDOR CONDITIONS ASSESSMENT – ADDITIONAL INFORMATION MEMO, NOVEMBER 2024

MEMORANDUM

To:	Bad Creek Relicensing Recreation & Visual Resources Committee
From:	Duke Energy Carolinas, LLC
Cc:	Kleinschmidt Associates
Date:	November 21, 2024
Re:	Foothills Trail Corridor Conditions Assessment – Additional Information Bad Creek Pumped Storage Project (FERC No. 2740)

In support of the Bad Creek Pumped Storage Project (FERC No. 2740) relicensing, Long Cane Trails, LLC (LCT), conducted a trail corridor conditions assessment for the 43-mile-long portion of the Foothills Trail and five spur trails managed by Duke Energy. Trail conditions including trail tread, out slope, backslope, drainage, constructed structures (not including engineered bridges), and corridor condition were examined, and issues were documented. Trail standards from the Trail Solutions guide (Felton 2004)[1] on building singletrack were used as the base for the trail condition analysis.

The Draft Foothills Trail Corridor Conditions Assessment was distributed to the Recreation & Visual Resources Committee (RC) for review on November 21, 2023 and was included in the Initial Study Report (ISR) filed with the Federal Energy Regulatory Commission (FERC) on January 4, 2024. The South Carolina Department of Natural Resources (SCDNR) and the Foothills Trail Conservancy (FTC) provided comments on the draft report. FTC recommended enhancements and/or maintenance for 22 various types of bridge repairs, four various staircase repairs, three kiosk repairs, and one additional erosion repair. Maintenance items will be addressed as appropriate and enhancement recommendations will be considered during settlement agreement negotiations. SCDNR's comments focused on drainage issues identified on the trail and requested additional photographs of trail issues 1, 11, and 58. SCDNR noted that clogged culverts may need to be further assessed to determine if expansion or conversion to a bridge is needed to prevent future issues.

On February 29, 2024, Duke Energy held an RC meeting to discuss the comments received on the draft report with stakeholders. Meeting discussion resulted in the RC agreeing that additional information was needed to better understand potential impacts associated with Trail Issues 1, 11, and 58 in the draft report and one item submitted in the FTC's comments on the draft report (FTC 21). LCT collected the requested supplementary information for the four sites in March 2024. Based on additional discussion with FTC, LCT

[1] Felton, V. 2004. Trail Solutions: IMBA's Guide to Building Sweet Singletrack (IMBA (International Mountain Bicycling Association), Ed.). International Mountain Bicycling Association.

re-visited the Foothills Trail at site FTC 21 in October 2024. The supplemental data and associated recommendations are provided herein.

Trail Issue 1 – Culvert, Open Drain

Draft Report

Trail Issue 1 is located on the Bad Creek Access Spur and was identified in the draft report as a concrete culvert with gathered sediment that was preventing proper trail drainage. SCDNR requested additional photos to determine if the modifications to the culvert were needed.

Additional Information

LCT revisited the location of Trail Issue 1 and noted the concrete culvert is a half round, open culvert that appears to be from an old roadbed (Photo 1). The culvert is full of leaves and sediment, creating drainage issues. No damage to the culvert or trail was observed. Due to the open nature of the culvert LCT recommends cleaning the culvert to remove the leaf litter on an established interval in lieu of culvert expansion or bridge construction.

Photo 1 Trail Issue #1

Trail Issue 11 – Erosion, Gully

Draft Report

Trail Issue 11 is located on the Coon Branch Spur and was identified in the draft report as an area with erosion and associated gully. The draft report noted that a major drain needed to be unclogged, as water was overflowing from the existing drainage ditch and flooding the trail. Additional photos and context were requested to better understand potential impacts.

Additional Information

LCT revisited the location of Trail Issue 11 and noted that the existing narrow drainage ditch accommodates most rainfall or run-off (Photo 2). However, large rain events cause the ditch to overflow and wash over the trail. Photo 3 shows the downhill side of the trail and the drainage ditch. LCT noted that damage to the trail could occur over time if not addressed and recommends installation of a 12-inch culvert to capture water before it reaches the trail, and installation of a grade dip below the culvert on the downhill side of the trail. The grade dip would subvert any water that does get on the trail before it travels further and creates significant damage.

Photo 2 Trail Issue #11 – Existing Drainage

Photo 3 Trail Issue #11 – Drainage Ditch and Trail Corridor, Looking Downhill

Trail Issue 58 – Culvert, Open Drain

Draft Report

Trail Issue 58 is located at mile 54.2 of the Foothills Trail and was identified in the draft report as a culvert that had collapsed and needed replacing. During the meeting, LCT noted that the collapsed culvert had created a hole in the middle of the trail. The RC requested additional photos to determine potential impacts.

Additional Information

LCT revisited the location of Trail Issue 58 and determined that there was no existing culvert at the location (Photo 4). Since the initial inspection, a large rain event had caused the hole in the trail corridor to cave in and the surrounding sediment to wash away, creating a widened channel crossing the trail. LCT recommends installation of a 12-inch culvert at the site to focus the water across the trail and prevent future erosion.

Photo 4 Trail Issue #58 – Washed-Out Trail

FTC 21 – Bridge

Draft Report

In their comments on the draft report, FTC noted an issue at mile 56.3 of the Foothills Trail, identified as FTC 21, in which they recommended a handrail be installed for safety at an existing bridge. During the RC meeting, stakeholders viewed the photo that the FTC provided and noticed that it appeared as if there were signs of undercutting at the bridge. SCDNR requested additional information and supporting photos to determine if undercutting was occurring at the site.

Additional Information

LCT visited the FTC 21 site to determine if there were signs of bank undercutting in late October 2024. Approximately one month earlier, on September 27, 2024, Hurricane Helene passed through the area causing significant flooding and wind damage. At the time of LCT's visit, signs of undercutting were observed (Photo 5), and the bridge was covered with fallen trees and debris (Photos 6 and 7). LCT recommends replacing the existing bridge's boards, which are 12 feet in length, with 14-foot boards to address the undercutting on each side. Additionally, since the bridge is approximately 3-feet high, LTC recommends adding handrails to the bridge. at the time of reconstruction.

Photo 5 FTC 21 – Bridge Overlap with Trail

Photo 6 FTC 21 – Bridge

Photo 7 FTC 21 - Bridge

Attachment 3

Whitewater River Cove
Existing Recreational Use
Evaluation Final Report

<PLACEHOLDER; REFER TO ISR>

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Attachment 4

Whitewater River Cove
Public Recreational Safety
Evaluation Final Report

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Whitewater River Cove Recreational Public Safety Evaluation

Bad Creek Pumped Storage Project

FERC No. 2740

Prepared for:

Duke Energy Carolinas, LLC

Prepared by:

Kleinschmidt Associates

November 2024

Kleinschmidt

Kleinschmidtgroup.com

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ACRONYMS

B	
Bad Creek (or Project)	Bad Creek Pumped Storage Project
Bad Creek II Complex	Bad Creek II Power Complex
Bad Creek Reservoir	Upper Reservoir
C	
CFD	computational fluid dynamics
cfs	cubic feet per second
D	
Duke Energy or Licensee	Duke Energy Carolinas, LLC
F	
fps	feet per second
ft	feet
ft msl	feet above mean sea level
FERC or Commission	Federal Energy Regulatory Commission
I	
ISR	Initial Study Report
I/O	Inlet/Outlet
L	
Lower Reservoir	Lake Jocassee
R	
RSP	Revised Study Plan
S	
SCDNR	South Carolina Department of Natural Resources
W	
WWRC	Whitewater River Cove

1.0 PROJECT INTRODUCTION AND BACKGROUND

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the owner and operator of the 1,400-megawatt Bad Creek Pumped Storage Project (Project) (FERC Project No. 2740) located in Oconee County, South Carolina, approximately eight miles north of Salem. The Project utilizes the Bad Creek Reservoir as the upper reservoir (Upper Reservoir) and Lake Jocassee, which is licensed as part of the Keowee-Toxaway Hydroelectric Project (FERC Project No. 2503), as the lower reservoir.

The existing (original) license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) for a 50-year term, with an effective date of August 1, 1977, and expiration date of July 31, 2027. The license has been subsequently and substantively amended, with the most recent amendment on August 6, 2018, for authorization to upgrade and rehabilitate the four pump-turbines in the powerhouse and increase the authorized installed and maximum hydraulic capacities for the Project.[1] Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process, as described at 18 Code of Federal Regulations (CFR) Part 5.

Given the need for additional significant energy storage and renewable energy generation across Duke Energy's service territories over the Project's new 40 to 50-year license term, Duke Energy is evaluating opportunities to add pumping and generating capacity at the Project. Additional energy storage and generation capacity would be developed by constructing a new power complex (including a new underground powerhouse) adjacent to the existing Bad Creek powerhouse. Therefore, construction of the 1,400-megawatt Bad Creek II Power Complex (Bad Creek II Complex) is an alternative relicensing proposal presently being evaluated by Duke Energy.

In accordance with 18 CFR §5.11 of the Commission's regulations, Duke Energy developed a Revised Study Plan (RSP) for the Project and proposed six studies for Project relicensing, including a Recreational Resources Study. The Recreational Resources Study consists of four main study tasks: (1) a Recreation Use and Needs (RUN) Study for the 43-mile-long portion of the Foothills Trail managed by Duke Energy; (2) a Foothills Trail Corridor Conditions Assessment (Conditions Assessment) of the 43-mile-long portion of the Foothills Trail managed by Duke Energy; (3) an Existing Recreational Use Characterization

[1] *Duke Energy Carolinas LLC, 164 FERC ¶ 62,066 (2018)*

of Whitewater River cove; and (4) a Recreational Public Safety Evaluation of Whitewater River cove. Additionally, as part of the New License application, Duke Energy will develop an updated Recreation Management Plan.

The RSP was filed with the Commission and made available to stakeholders on December 5, 2022. FERC issued the Study Plan Determination on January 4, 2023, which included modifications to one of the six proposed studies (Recreational Resources Study). The Recreational Resources Study is ongoing in support of preparing an application for a new license for the Project in accordance with 18 CFR §5.15, as provided in the RSP. This report includes the methods and results of Task 4 (Whitewater River Cove Recreational Public Safety Evaluation) of the Recreational Resources Study.

2.0 STUDY GOALS AND OBJECTIVES

The operation of the Bad Creek II Complex could affect surface velocities in the Whitewater River Cove (WWRC) downstream of the existing and proposed inlet/outlet (I/O) structures. The goal of the Recreational Public Safety Evaluation is to assess potential public safety risks that may be created or exacerbated by proposed operations of the Bad Creek II Complex (i.e., increased pumping and generation), specifically those associated with boater recreation activities in WWRC.

Safety risks during construction of the proposed Bad Creek II Complex are not considered in this evaluation as the WWRC will be closed to public access during construction activities (estimated up to 7 years), thereby eliminating potential boater safety concerns during the construction phase. Tasks carried out for the Recreational Resources Study employ standard methodologies that are consistent with the scope and level of effort described in the RSP.

3.0 STUDY AREA

The study area for this evaluation is the WWRC of Lake Jocassee, which begins where the Whitewater River flows into Lake Jocassee and ends downstream at the confluence with the Thompson River arm of Lake Jocassee (Figure 3.1).

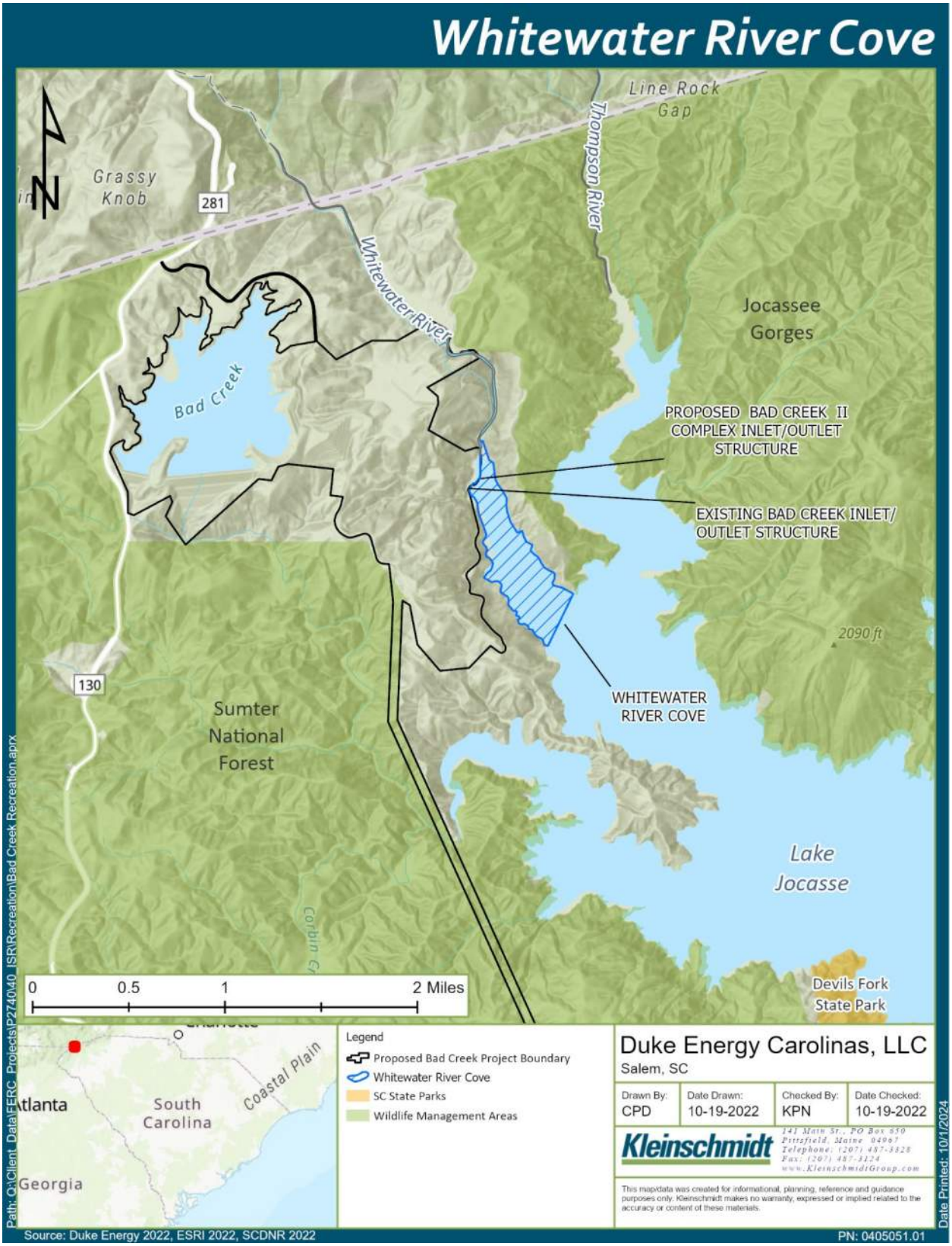

Figure 3.1 Study Area: Whitewater River Cove in Lake Jocassee

4.0 BACKGROUND

The operation (pumping and discharge) of the Bad Creek II Complex could affect surface velocities in the WWRC downstream of the I/O structure(s), thereby affecting recreational use (i.e., boating). The Project's existing lower reservoir I/O structure is located on the western shore of the WWRC of Lake Jocassee (Figure 3.1). If Duke Energy constructs the Bad Creek II Complex, construction of the new I/O structure will occur in this general area, approximately 700 ft upstream of the existing I/O structure in a recessed alcove. A rendering of the existing and proposed I/O structures is provided on Figure 4.1 and a plan view is provided on Figure 4.2.

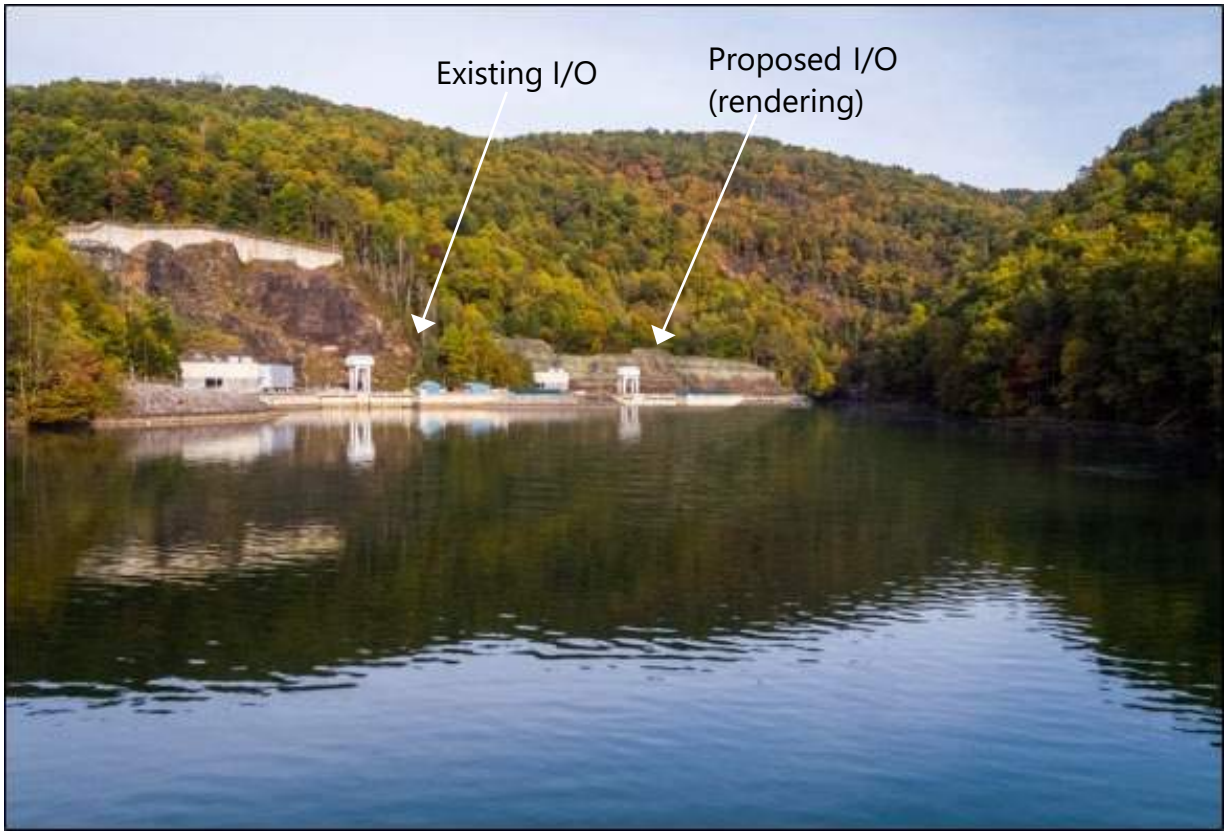

Figure 4.1 Rendering of Existing and Proposed I/O Portals on Western Shoreline of Whitewater River Cove

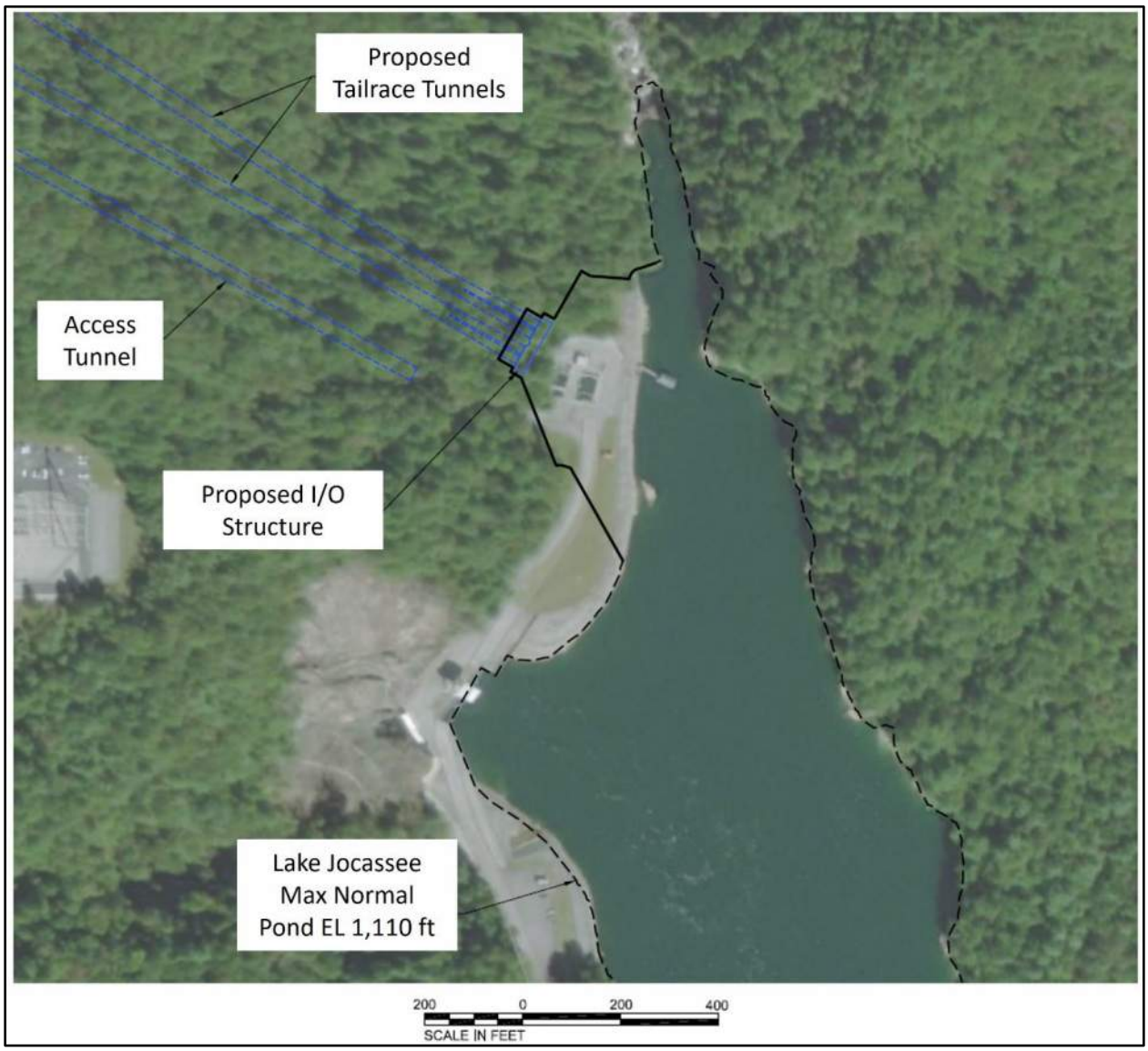

Figure 4.2 Locations of Existing and Proposed I/O Structures in Whitewater River Cove

To support the relicensing effort, Duke Energy carried out an existing use evaluation of WWRC under Task 3 of the Recreational Resources Study (Duke Energy 2023a) with the goal of characterizing the existing recreational use of WWRC to inform Duke Energy on the level of boating use disruption that could occur in the cove during the Bad Creek II Complex construction. These results were used to establish a baseline of boater use and boat type in WWRC, and the final study report, which was developed in consultation with relicensing stakeholders, was filed with the Initial Study Report and is summarized in Section 4.1.[2]

In addition, as part of the Bad Creek II Complex Feasibility Study authorized by Duke Energy, a Computational Fluid Dynamics (CFD) model for the lower reservoir (i.e., Lake Jocassee) was developed to support the evaluation of an additional I/O structure and the potential associated velocity effects on the WWRC of Lake Jocassee (HDR 2022).[3] This effort included the area of WWRC immediately downstream of the existing and proposed I/O structures for the purpose of evaluating flow velocities and flow patterns in the cove. For the relicensing effort, a second CFD model was developed as a part of the Water Resources Study for Duke Energy to support the evaluation of the proposed effects (i.e., velocities and vertical mixing) in WWRC downstream of the submerged weir (Duke Energy 2023b). Scenarios and alternatives modeled for the CFD relicensing study, which were developed in consultation with relicensing stakeholders and submitted with the Initial Study Report, are summarized in Section 4.2.[4]

Results from the Whitewater River Cove Existing Recreational Use Evaluation and the three-dimensional CFD modeling provide input to the current task of evaluating boater safety due to changes in surface water velocities as a result of an additional I/O structure in WWRC.

4.1 Whitewater River Cove Existing Recreational Use Evaluation

As indicated previously, construction of the new I/O structure would require WWRC to be substantively closed to public boating use for the duration of construction of the Bad Creek II Complex (estimated up to 7 years). To establish a baseline of recreational use

[2] The Whitewater River Cove Existing Recreational Use Evaluation Report was included in the Initial Study Report as Appendix E, Attachment 3.
[3] The Bad Creek Feasibility Study - Lower Reservoir CFD Flow Modeling Report was filed with the RSP as Appendix I.
[4] The Velocity Effects and Vertical Mixing in Lake Jocassee due to a Second Powerhouse Report was filed with Initial Study Report as Appendix A, Attachment 3.

within the WWRC, Duke Energy deployed a drone over WWRC to capture aerial images of boats within the cove (Duke Energy 2023a). Imagery was then used to create a comprehensive overview of boating use in WWRC, including estimating the total number of boats present in the cove each day, the estimated number of boat types captured each day, an approximate duration of time the boats spent in the cove, and the location of boats within the cove. Drone flights occurred on 20 individual days, including a mix of weekdays, weekends, and holidays between Memorial Day weekend and Labor Day weekend in 2023. Imagery was collected every hour generally between 9:00 AM and 4:00 PM, as weather allowed. Boats captured on imagery were categorized as motorboat, non-motorized boat (such as canoe or kayak), or personal watercraft (such as Jet-Ski). Results of the study showed most boats in WWRC were motorboats (83 percent), followed by personal watercraft (10 percent), kayaks (7 percent), and canoes (less than 1 percent). The total number of boats captured in aerial images and total number of each boat type by survey date is summarized in Table 4.1. The highest use occurred on weekends and holidays, where an average of 32 boats entered the cove per weekend day, and an average of 29 boats entered the cove per holiday day. The highest use occurred in the month of July, where an average of 30 boats entered the cove per day (Duke Energy 2023a).

Table 4.1 Boat usage of Whitewater River Cove on drone flight days

Flight/Survey Date	Day Type	Daily High Temperature (°F)	Total # of Boats	Total # of Each Boat Type			
				Kayak	Personal Watercraft	Canoe	Motorboat
Sunday, May 28, 2023	Holiday	63	4	0	2	0	2
Wednesday, May 31, 2023	Weekday	75	4	0	0	0	4
Friday, June 2, 2023	Weekday	86	8	4	1	0	3
Saturday, June 3, 2023	Weekend	88	25	7	0	1	17
Tuesday, June 13, 2023	Weekday	79	13	3	0	0	10
Saturday, June 24, 2023	Weekend	82	34	2	1	0	31
Wednesday, June 28, 2023	Weekday	89	20	0	0	1	19
Saturday, July 1, 2023	Weekend	93	38	2	3	0	33
Tuesday, July 4, 2023	Holiday	89	35	1	1	0	33
Friday, July 14, 2023	Weekday	92	15	0	3	0	12
Saturday, July 15, 2023	Weekend	95	47	0	10	0	37
Thursday, July 20, 2023	Weekday	82	12	4	0	0	8
Saturday, July 29, 2023	Weekend	90	41	0	1	1	39
Monday, July 31, 2023	Weekday	89	21	1	0	0	20
Sunday, August 6, 2023	Weekend	92	14	3	6	0	5
Monday, August 7, 2023	Weekday	92	1	0	0	0	1
Wednesday, August 23, 2023	Weekday	86	8	0	1	0	7
Sunday, August 27, 2023	Weekend	94	22	0	1	0	21
Sunday, September 3, 2023	Holiday	87	48	0	13	0	35
Monday, September 4, 2023	Holiday	91	30	2	0	0	28
Total			**440**	**29**	**43**	**3**	**365**

Source: Duke Energy 2023a

Aerial imagery was also analyzed to estimate the duration of time boats were in WWRC by documenting the first time a particular boat appeared in the cove and the last time the same boat was observed in the cove. Approximately 90 percent of boats spent less than one hour in the cove, approximately 9 percent spent between one and two hours in the cove, and approximately 1 percent spent more than two hours in the cove. The cove is known to be a sightseeing attraction due to the waterfalls located at the mouth of the Whitewater River. Data suggest that most visitors spent a minimal amount of time in the cove, likely boating to the waterfall and then leaving shortly thereafter. It can be assumed that boaters who spent more than 1 hour in the cove were likely there for other activities, such as fishing (Duke Energy 2023a).

To gain an understanding of boat dispersal within the WWRC, the location of each boat captured in aerial imagery was plotted within the cove. Aerial images showed that most boats followed the eastern shoreline of the cove and traveled to the mouth of the Whitewater River, in the vicinity of the waterfall (Duke Energy 2023a).

4.2 CFD Modeling

A CFD model was developed for the Bad Creek Project's lower reservoir (i.e., Lake Jocassee) to support the evaluation of an additional I/O structure and the potential associated velocity effects on the WWRC of Lake Jocassee. This effort included the area of WWRC immediately downstream of the existing and proposed I/O structures for the purpose of evaluating flow velocities and flow patterns in the cove (HDR 2022). A second CFD model was developed during relicensing to support the evaluation of potential effects (i.e., velocities and vertical mixing) in the WWRC downstream of the existing and proposed expanded submerged weir (Duke Energy 2023b). More recently, additional CFD modeling (Duke Energy 2024) was carried out and results were provided in an addendum report to incorporate updated velocities[5] resulting from a design change in type of turbines proposed for use at the Bad Creek II Complex (i.e., variable speed pump-turbines instead of single speed). The new units' performance characteristics resulted in increased hydraulic capacities than what were initially modeled. Modeling with the variable speed units' flow capacities did not appreciably increase the generation flows, however, the effects of increased pumping hydraulic capacity resulted in a measurable change (i.e., 9 percent). During feasibility and relicensing CFD modeling, unit operations in both the

[5] The addendum report incorporating updated pumping velocities and model results was distributed to stakeholders June 12, 2024 for review and the final report will be filed with the Updated Study Report.

turbine and pump mode were simulated with the existing and proposed I/O structures at full pond (1,110 feet [ft] above mean sea level [msl]), intermediate pond (1,096 ft msl)[6] and minimum pond (1,080 ft msl).

Surface velocity results (estimated by CFD modeling) have direct implications for boater safety, especially non-motorized boats, in the WWRC. An overview of results is included in the sections that follow.

4.2.1 Surface Velocities during Pumping

Surface velocity contours are shown on Figure 4.3 and Figure 4.4 for existing conditions[7] and Figure 4.5, Figure 4.6, and Figure 4.7 for proposed updated pumping conditions under full, intermediate, and minimum pond levels.

Under existing pumping conditions at full pond levels (i.e., licensed maximum Lake Jocassee surface elevation), surface velocities do not exceed 2.0 ft per second (fps) in WWRC and are on average below 1.0 fps. At minimum pond, existing maximum surface velocities across the weir could reach 3.5 fps and up to 5.0 fps directly in front of the existing I/O structure.

Under full pond conditions for proposed updated pumping operations, velocities are very similar to existing conditions with maximum velocities of 1.5 fps near the existing and proposed I/O structures. Under proposed updated pumping at the minimum pond level (i.e., licensed minimum Lake Jocassee surface elevation), surface velocities could reach 10.0 fps near the proposed I/O structure (Figure 4.7) which could have implications for non-motorized boats moving through WWRC; however, these higher velocities are confined to the area immediately adjacent to the proposed I/O structure within the recessed area of the shoreline where the proposed I/O will be constructed. As part of the Bad Creek II Complex construction, expansion of the submerged weir (in the downstream direction) is being considered; maximum velocities over the proposed expanded weir are 3.5 fps, which are consistent with maximum velocities over the existing submerged weir (under pumping).

[6] The elevation of 1,096 ft msl was selected as an intermediate lake elevation operating scenario because it is roughly halfway between full pond and maximum drawdown, and 1,096 ft msl is the elevation below which fish entrainment becomes elevated at Bad Creek (based on previous studies).

[7] A surface velocity map was not generated for the existing intermediate pond level as this scenario was not evaluated as part of the feasibility study; however, it is expected that the results would be similar to Figure 4.6.

The Bad Creek Project operates almost 100 percent of the time between full pond and an intermediate pond level (1,096 ft msl), so proposed pumping conditions at intermediate pond levels are included (Figure 4.6). Surface water velocities during pumping at intermediate pond levels can reach 3.5 fps near the proposed I/O structure, 3.0 fps near the existing I/O structure, and 2.5 fps near the proposed expanded weir (Figure 4.6).

Additionally, as shown on Figure 4.8, at low reservoir elevations, the northern portion of WWRC would be mostly dewatered and would therefore be inaccessible by boat as the reservoir bottom elevation in this area is higher than 1,080 ft msl. As a result, boating in this area of WWRC would largely be precluded by low lake levels, regardless of Bad Creek II Complex operations.

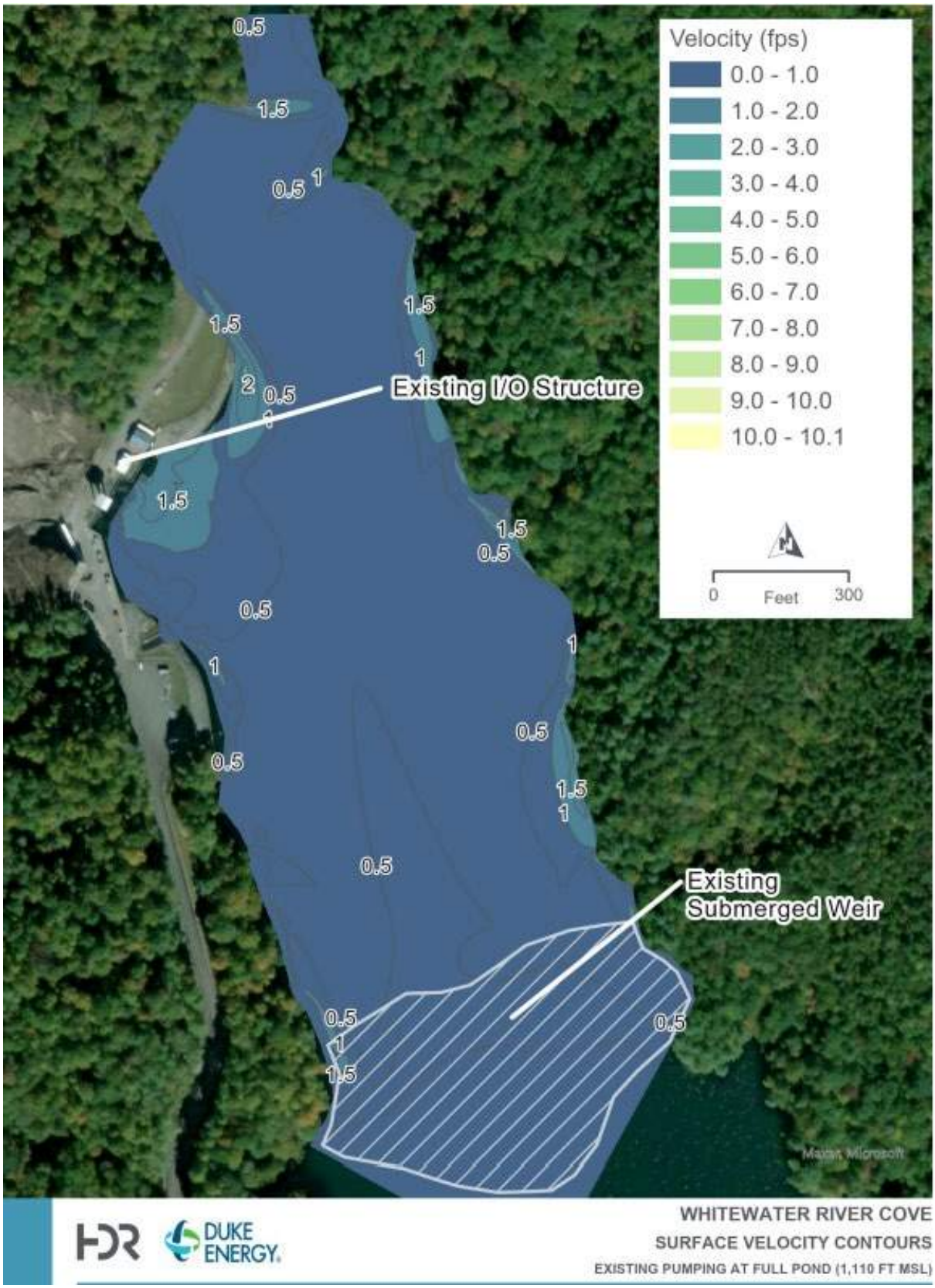

Figure 4.3 Existing Pumping at Full Pond

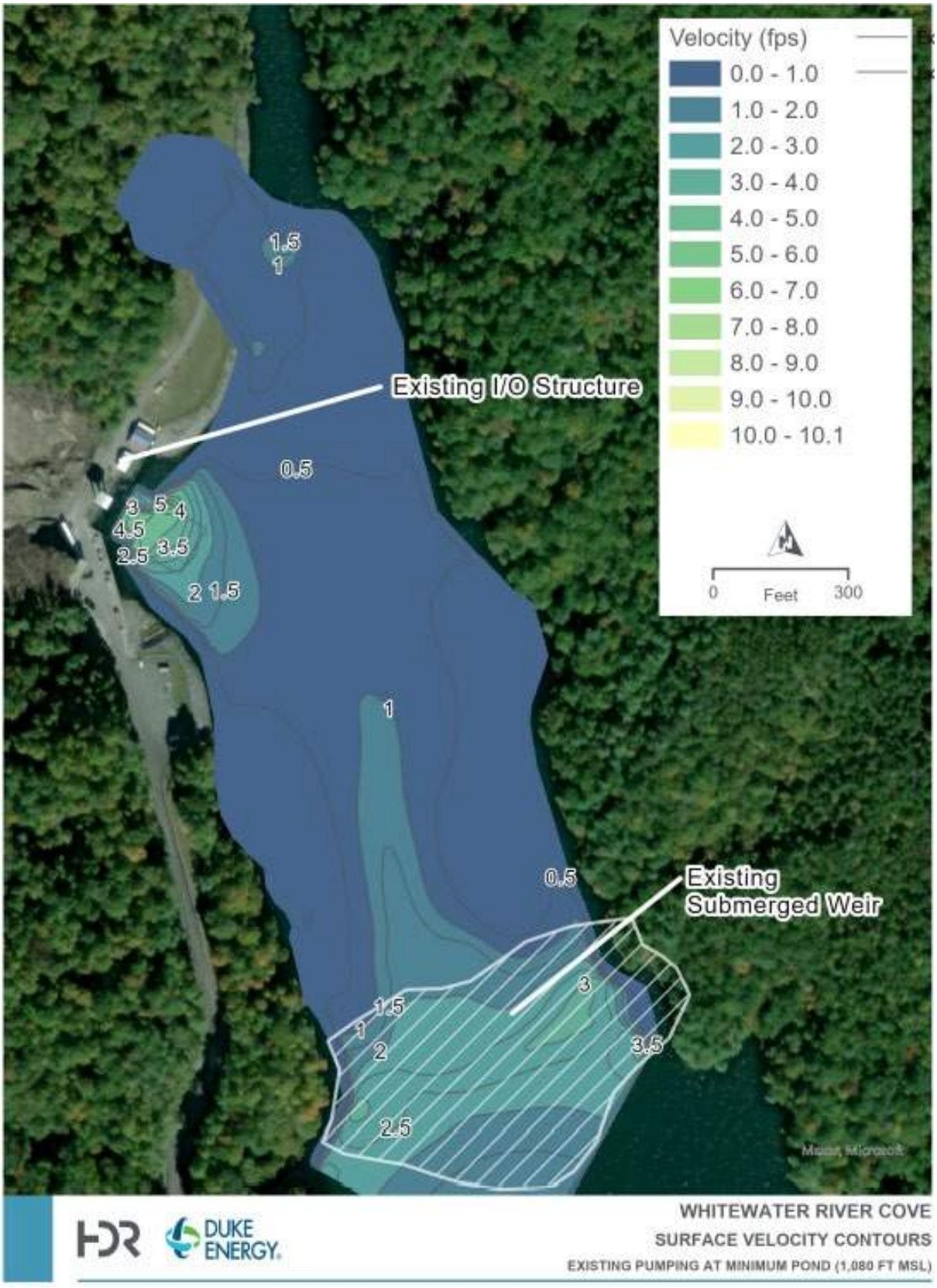

Figure 4.4 Existing Pumping at Minimum Pond

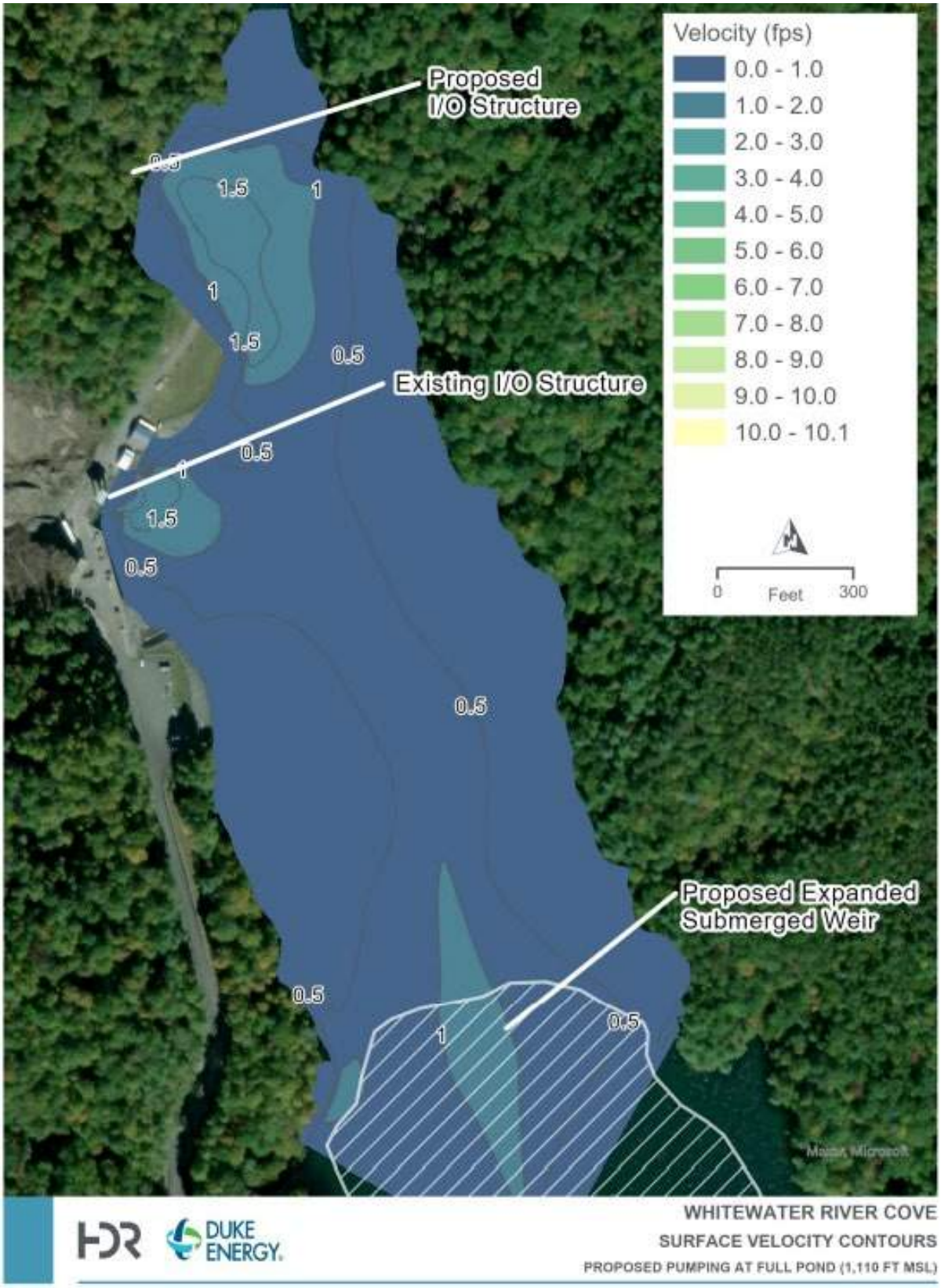

Figure 4.5 Proposed Pumping at Full Pond

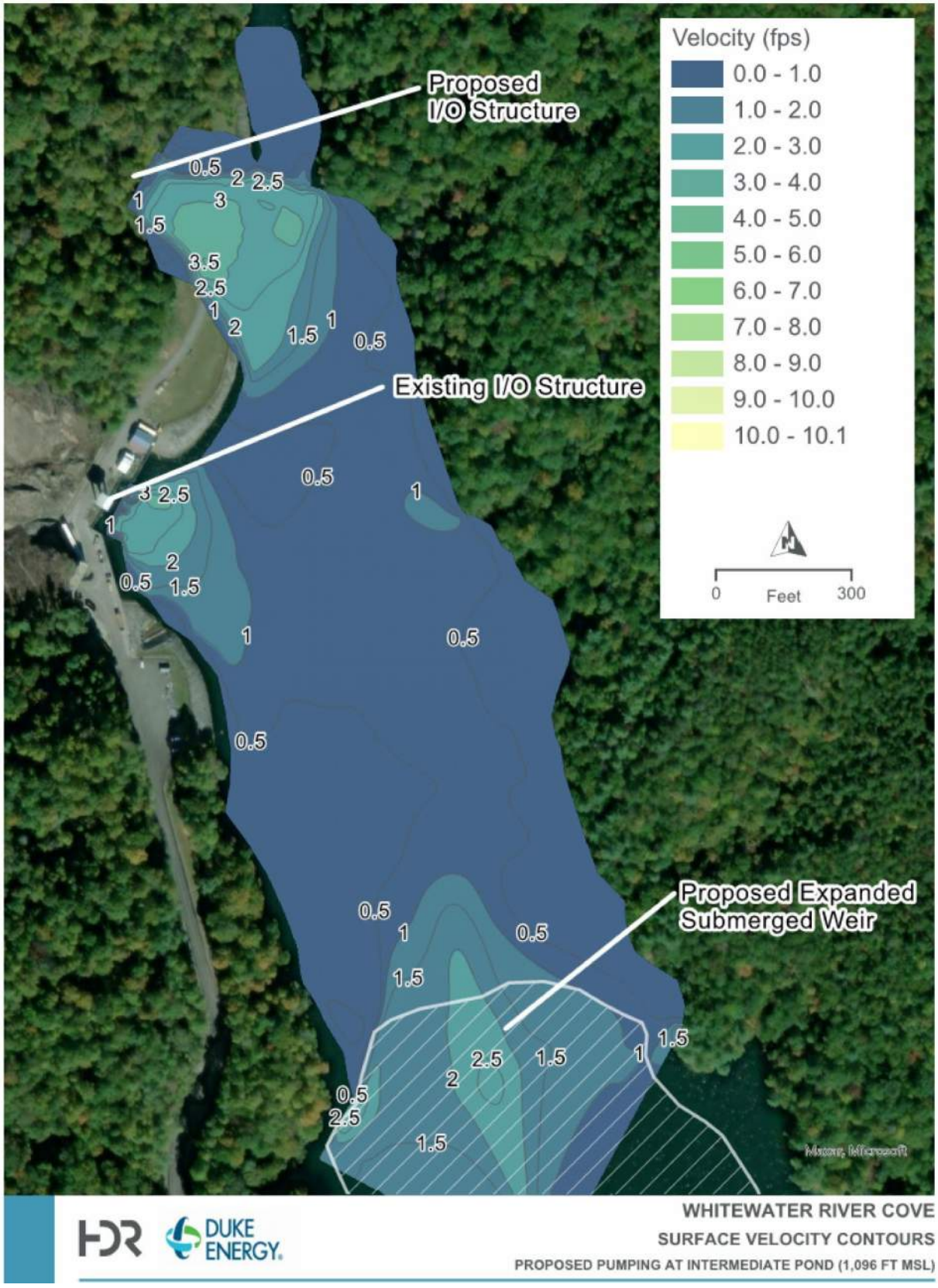

Figure 4.6 Proposed Pumping at Intermediate Pond

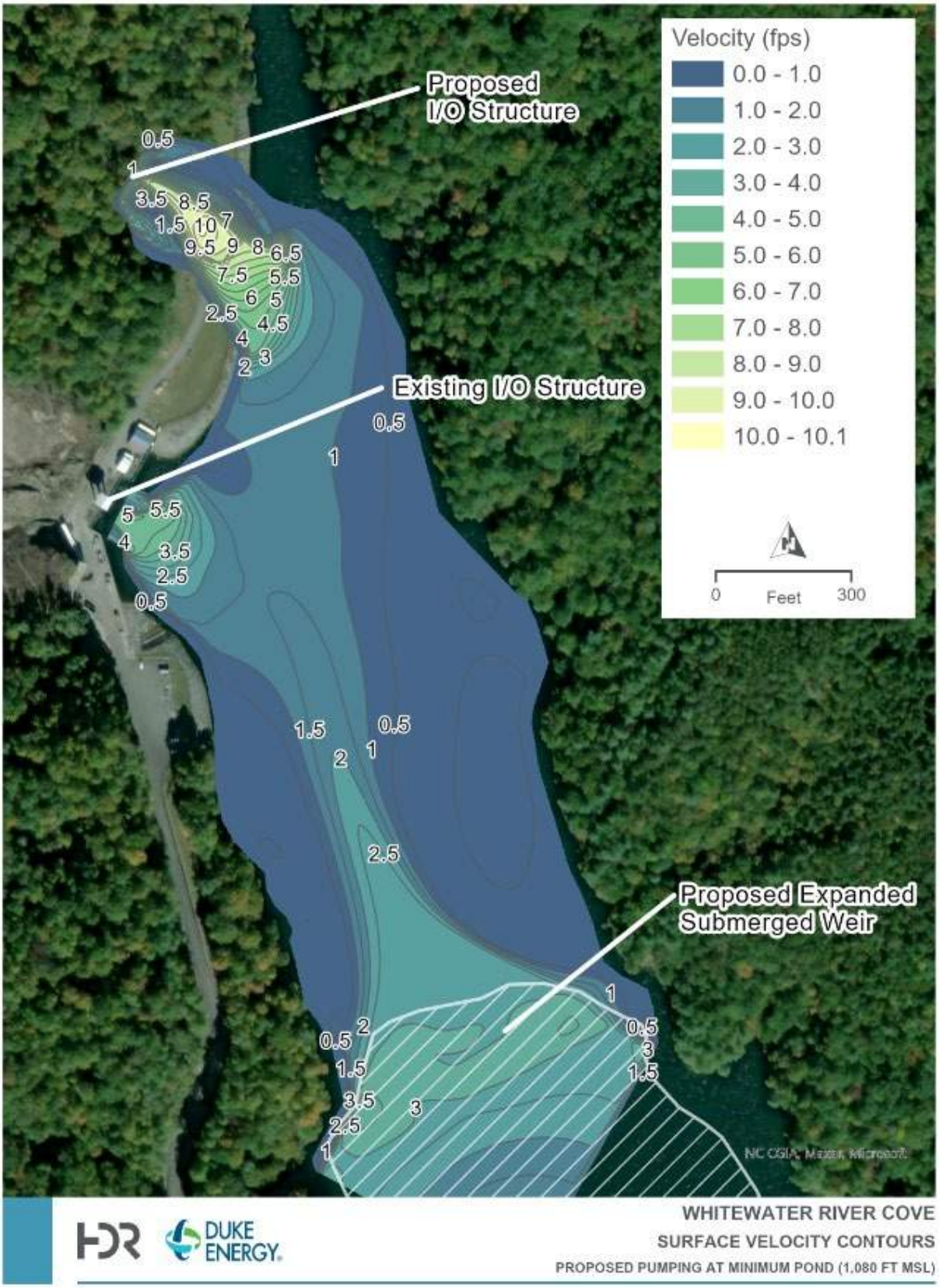

Figure 4.7 Proposed Pumping at Minimum Pond

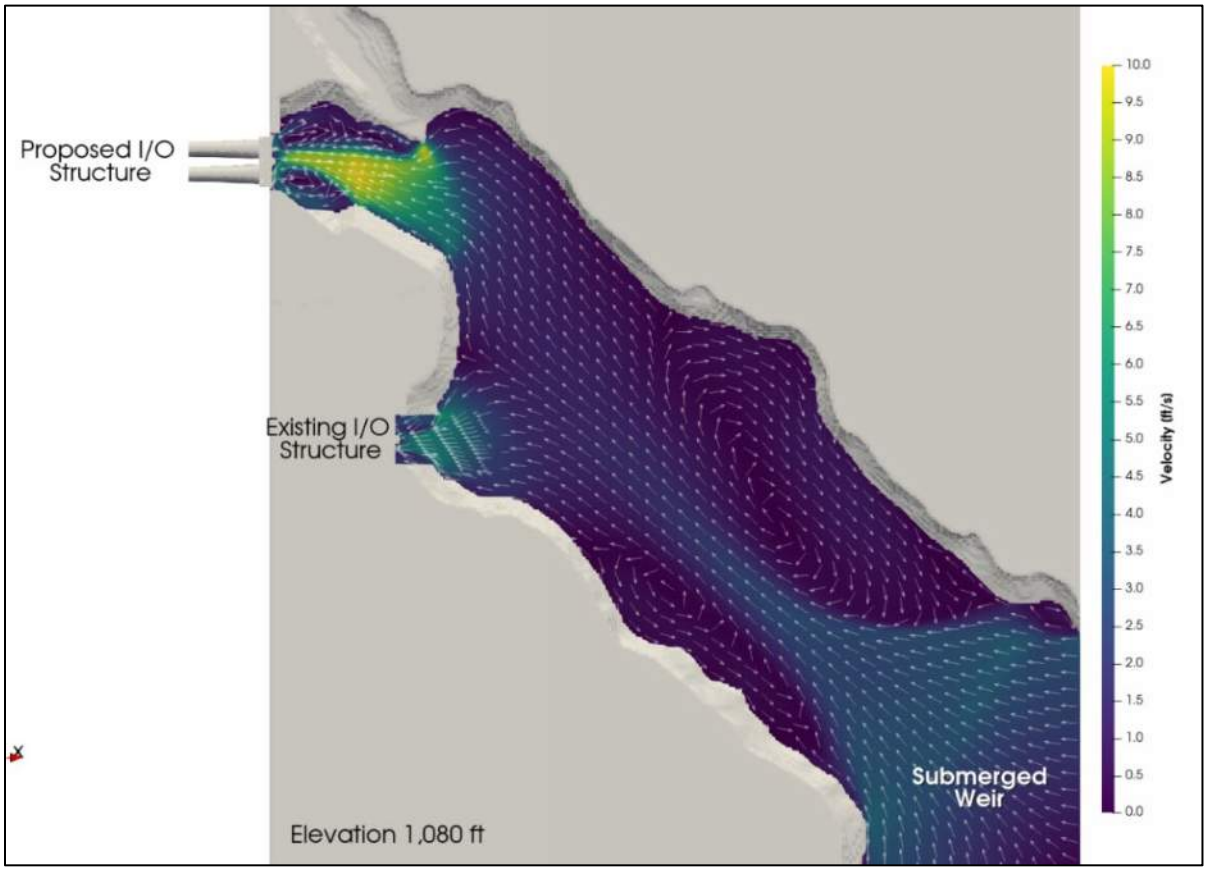

Figure 4.8 Proposed Bad Creek II I/O Pumping Plan View at Minimum Pond

4.2.2 Surface Velocities during Generation

Existing maximum generation from the Bad Creek station under full pond and minimum pond levels result in maximum velocities of 2.5 fps and 4.0 fps immediately downstream of the I/O structure in localized areas (Figure 4.9 and Figure 4.10) and less than or equal to 2.0 fps across the top of the weir.

Under proposed (Bad Creek II) generation conditions, flow velocities at full pond are similar downstream of the existing I/O and reach a maximum velocity of 2.5 fps downstream of the proposed I/O near the opposite bank.[8] Even though velocities are similar between existing and proposed conditions, flow patterns are notably different as the water exiting Bad Creek II Complex joins flows from the existing I/O in the center of the channel and flows southward across the submerged (proposed expanded) weir (Figure

[8] The feasibility study considered erosion on the opposite (east) bank across from the I/O structures and concluded that the potential for erosion was not a primary concern as velocities were similar to existing velocities and the shoreline is predominantly bedrock.

4.9 and Figure 4.11). However, velocities still do not exceed 2.0 fps across the weir, similar to existing conditions.

At minimum pond, velocities under maximum generation from the existing project reached a maximum of 4.0 fps at the existing I/O structure and 2.0 fps across the weir (Figure 4.10). With the addition of the proposed I/O structure maximum flow downstream of the proposed I/O structure increases to 6.5 fps and reach a maximum of 4.0 fps across the proposed expanded weir (Figure 4.12).

A notable difference between proposed generation under full pond vs. minimum pond is the downstream extent of increased water velocities (maximum 2.0 fps downstream of the expanded submerged weir), which extend to the confluence of the WWRC with the main lake (Figure 4.11 and Figure 4.12).

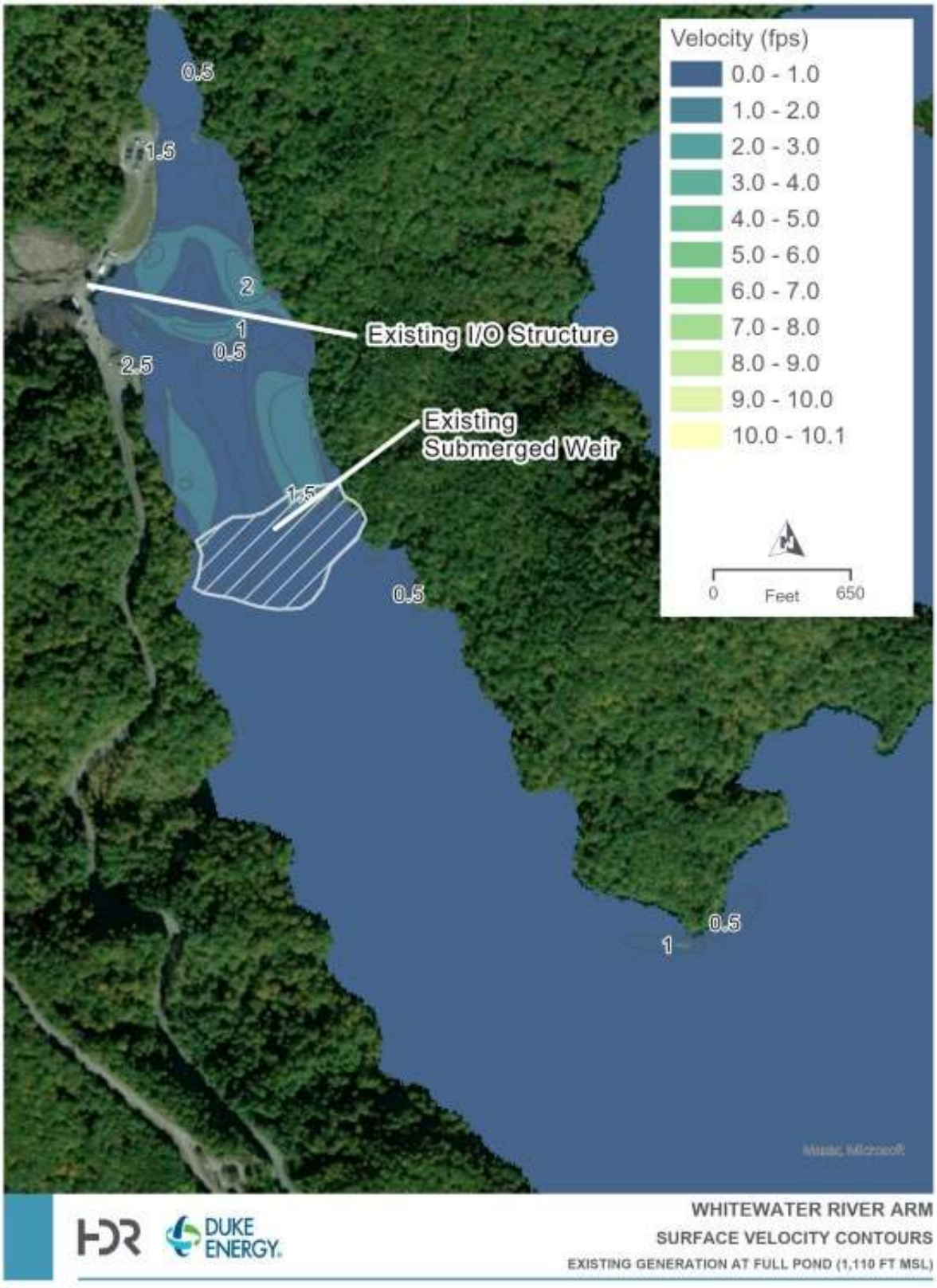

Figure 4.9 Existing Generation at Full Pond

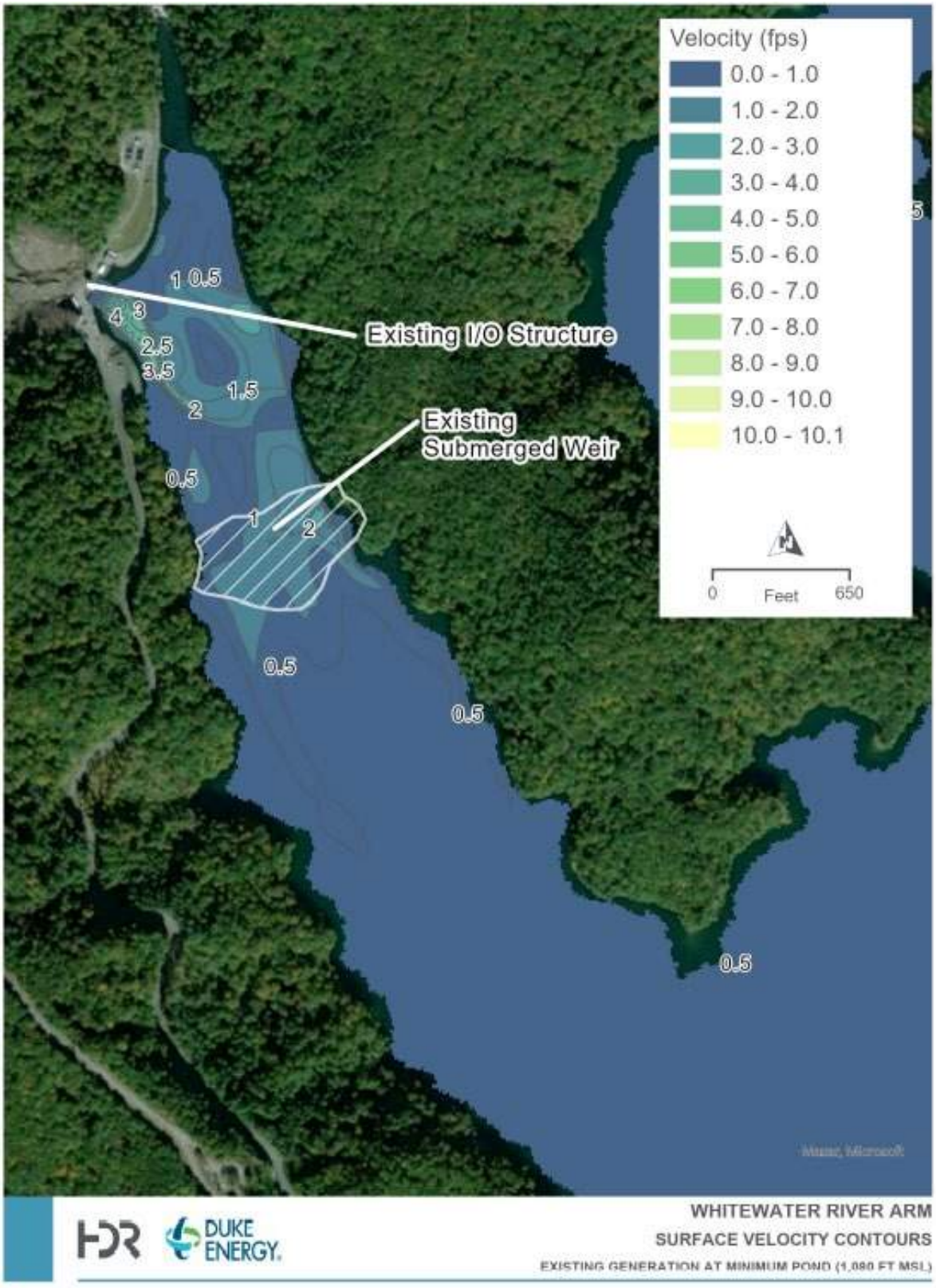

Figure 4.10 Existing Generation at Minimum Pond

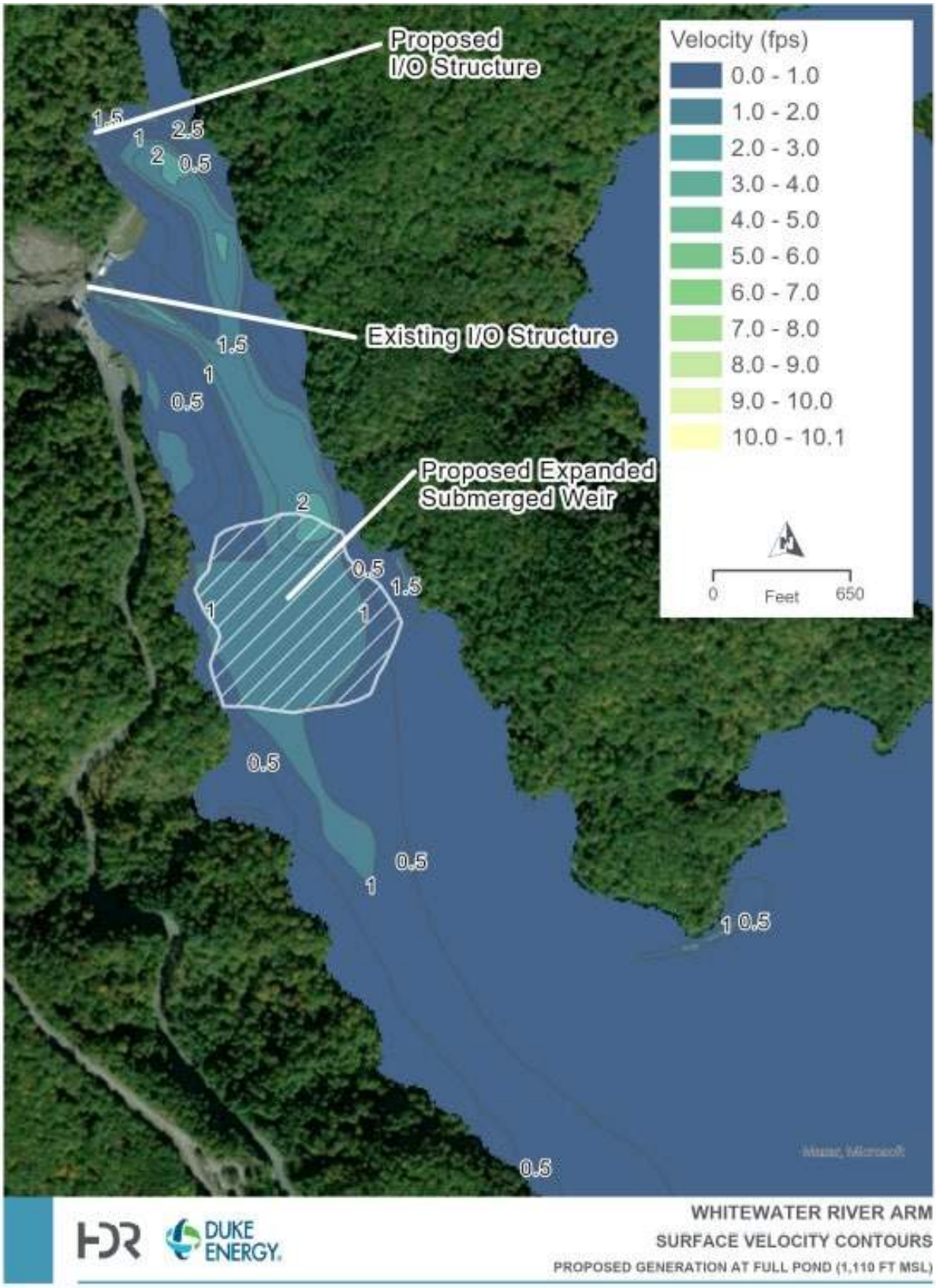

Figure 4.11 Proposed Generation at Full Pond

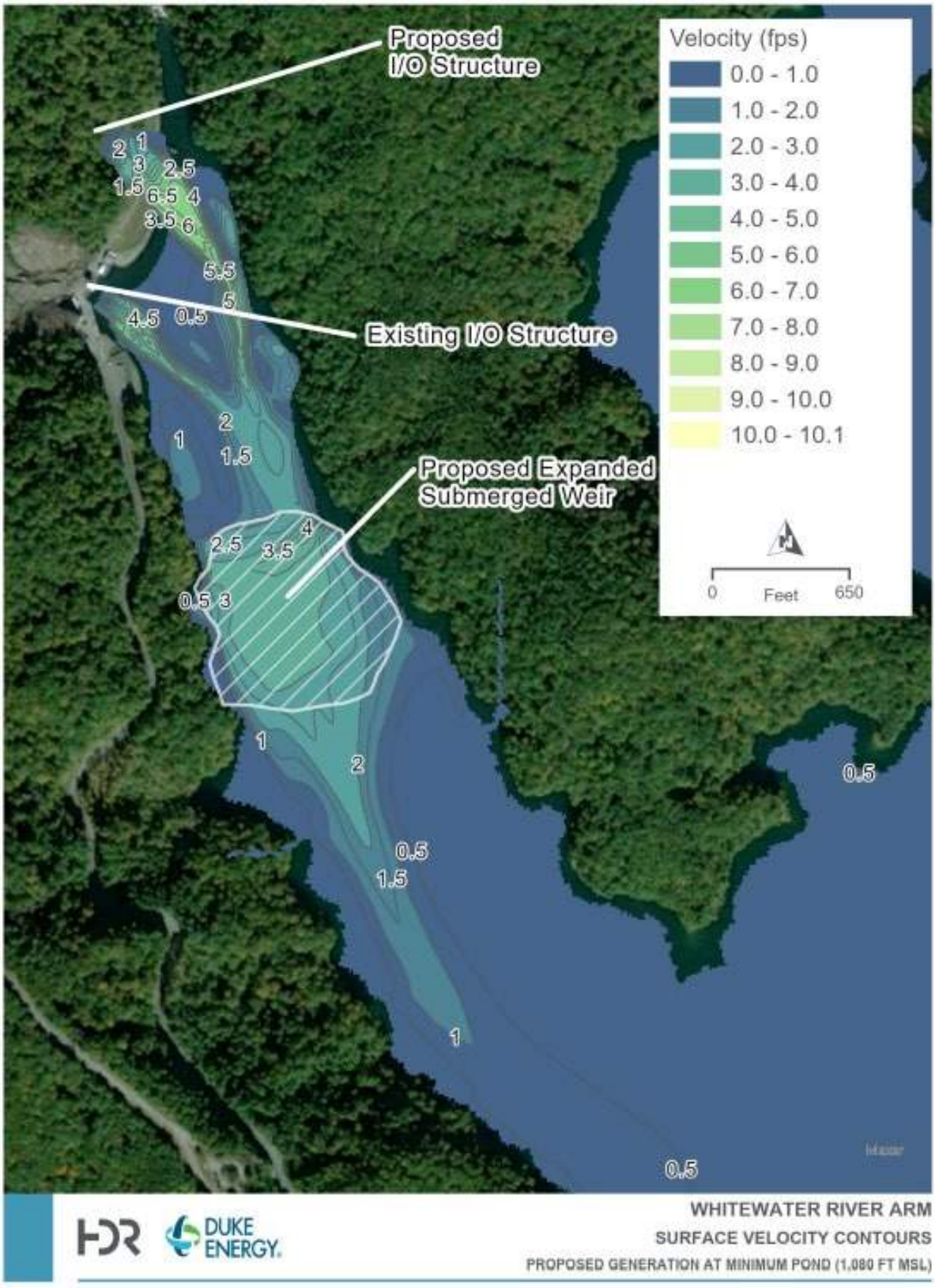

Figure 4.12 Proposed Generation at Minimum Pond

5.0 WHITEWATER RIVER COVE RECREATIONAL PUBLIC SAFETY EVALUATION

5.1 Methods

To evaluate recreational public safety in the WWRC following Bad Creek II Complex construction and during Bad Creek II Complex operations, boater information gathered during the Whitewater River Cove Existing Recreational Use Evaluation was applied to expected conditions in the cove during periods of pumping and generation, as determined by the CFD model. Potential boating safety concerns associated with water surface velocities in the cove during minimum pond and full pond were identified and recommendations for public safety measures are provided.

5.2 Results and Proposed Public Safety Measures

5.2.1 Boater Use in Whitewater River Cove during Bad Creek II Construction

Boaters will be completely restricted from accessing the WWRC during Bad Creek II Complex construction due to public safety concerns. Displaced boaters will be able to access the remainder of Lake Jocassee during construction, which includes a multitude of other coves and waterfall viewing opportunities. Duke Energy will work with the South Carolina Department of Parks, Recreation, and Tourism to post information at Devils Fork State Park kiosks regarding the cove closure and where to access similar recreation opportunities around Lake Jocassee. Information will also be posted to the Duke Energy website[9] regarding the cove closure and other Lake Jocassee boating destinations for fishing and waterfall viewing.

5.2.2 Boater Use in Whitewater River Cove following Bad Creek II Construction

Following completion of Bad Creek II Complex construction, Duke Energy plans to reopen the WWRC for public recreational use. However, the proposed additional and modified Project structures (including the additional I/O structure and expanded submerged weir) may impact localized surface velocities in the WWRC, potentially impacting boater recreation within the cove under certain operational scenarios.

Table 5.1 summarizes how water surface velocities are anticipated to change between the existing Project configuration and with the proposed addition of the Bad Creek II Complex

[9] https://www.duke-energy.com/community/lakes/recreation-information

during pumping and generating operations at various pond elevations. As indicated above, changes in water surface velocities are localized and do not affect the entire cove; please refer to contour velocity maps in Section 4.2 for locations and changes in surface velocities under different operations and pond levels.

Table 5.1 Existing and Proposed Project Impacts on Maximum Water Surface Velocities at Project Structures

	Maximum Water Surface Velocities (feet per second) at Project Structures			
Pond Elevations	**Existing I/O Configuration (without Bad Creek II)**	**Proposed I/O Configuration (with Bad Creek II)**	**Existing Submerged Weir**	**Proposed Expanded Submerged Weir**
Pumping Operations				
Full Pond	<1.0-2.0 fps	1.5 fps	1.0 fps	1.0 fps
Minimum Pond	5.0 fps	10.0 fps	3.5 fps	3.5 fps
Generating Conditions				
Full Pond	2.5 fps	2.5 fps	2.0 fps	2.0 fps
Minimum Pond	4.0 fps	6.5 fps	2.0 fps	4.0 fps

Source: Duke Energy 2023b; Duke Energy 2024

The following conclusions can be made based on the information summarized in Table 5.1.

- When pumping at full pond elevation, the addition of the Bad Creek II Complex is not anticipated to cause a significant change in maximum water surface velocities in the WWRC.
- When pumping at minimum pond elevation, the addition of the Bad Creek II Complex is anticipated to cause maximum water surface velocities to double in the area immediately adjacent to the proposed I/O structure when compared to current conditions. However, the proposed expansion of the submerged weir is not anticipated to impact water surface velocities.
- When generating at full pond elevation, the addition of the Bad Creek II Complex and the proposed expansion of the submerged weir are not anticipated to impact maximum water surface velocities in the WWRC; however, slightly modified flow patterns are anticipated near the I/O structures (Duke Energy 2023b).
- When generating at minimum pond elevation, the addition of the Bad Creek II Complex is anticipated to cause maximum water surface velocities to increase by

approximately 60 percent (from 4.0 to 6.5 fps) at the I/O structures when compared to current conditions.

- When generating at minimum pond elevation, the proposed expansion of the submerged weir is anticipated to cause maximum water surface velocities to double (from 2.0 to 4.0 fps) in the immediate vicinity of the weir, with increased velocities continuing to the cove's confluence with the main body of Lake Jocassee.
- Most changes (i.e., increases) in maximum surface velocities due to operational and pond level scenarios would likely go unnoticed for operators of motorboats with the exception of increased (up to 10.0 fps) velocities adjacent to the proposed I/O structure in the recessed intake alcove (Figure 4.2) during pumping operations at minimum pond.

In general, no significant impacts to water surface flows are anticipated when Lake Jocassee is at full (and intermediate) pond elevations that would impact boating safety in the WWRC; however, impacts to boating safety could occur if the Project operates at minimum pond elevation. Some localized areas of increased water velocities could result in hazardous boating conditions, particularly for non-motorized boats and inexperienced boaters.

The Whitewater River Cove Existing Recreational Use Evaluation found that over 90 percent of boats in the cove were motorized boats, including personal watercraft, while the remaining boats were non-motorized. Most motorized boats and personal watercraft should not have trouble navigating currents in the cove following Bad Creek II Complex construction when the reservoir is at minimum pond. A 12-foot jon boat with a load of 330 lbs. and a 3-horsepower electric outboard motor could reach a maximum speed of 5.6 miles per hour, or 8.0 fps (ePropulsion 2020). This scenario of a motorized boat represents the low-powered end of the motorized boat spectrum, in which case the boat would still be able to power through most maximum water surface velocities—likely at a reduced speed—at minimum pond identified by the CFD model.

Non-motorized boaters, such as flatwater paddlers, have paddling speeds and abilities dependent on many factors including paddling technique, paddler strength and endurance, weather conditions, hull design, and load (Dowd 1983; Hutchinson 2002). An average kayaker of moderate experience and moderate strength, paddling in calm conditions, in a standard flatwater kayak (approximately 15 ft in length) with light gear (e.g., water bottle, sunscreen, life jacket) can sustain a speed of approximately 5.0 fps for long stretches of time. Beginner kayakers average slightly slower speeds of approximately

3.4 to 4.2 fps (Dowd 1983; Hutchinson 2002). It is possible that surface currents and resulting eddies in WWRC could match, or exceed, the ability of a paddler if the conditions were sustained over a long distance. However, as determined by the CFD model, the location and extent of increased surface velocities in the cove would occur in a small or localized area; therefore, it is likely even beginner paddlers could increase their speed to overcome surface currents and/or change course to avoid the higher current.

It is likely from a recreational boater safety perspective that boats would be able to navigate in WWRC during operations by keeping to the east side of the cove along the shore opposite the proposed I/O structure since it would be situated approximately 200 ft back from the existing shoreline in a recessed alcove (Figure 4.2). Closer to the Project and proposed Bad Creek II I/O structure, surface velocities have the potential to increase during pumping and generation to unsafe levels for flatwater paddlers. For this reason, access to all boaters should be restricted (further described in Section 5.2.3).

As evidenced by the exceedance curve in Figure 5.1, the Bad Creek Project has operated between full pond and intermediate pond nearly 100 percent of the time since the Project's creation and has never operated at minimum pond. The graph also includes a line that represents current (2016–2020) operations since the Keowee-Toxaway license issuance, indicating the reservoir has been maintained between maximum and intermediate pond levels nearly 100 percent of the time. Therefore, maximum drawdown scenarios under pumping and generation evaluated by the CFD model provide the most conservative hypothetical conditions and are unlikely to occur.

It is important to note that under minimum pond levels, the northernmost portion of the WWRC near the Bad Creek II inlet/outlet structure would be dewatered and therefore inaccessible for boating, regardless of Bad Creek II Complex operations.

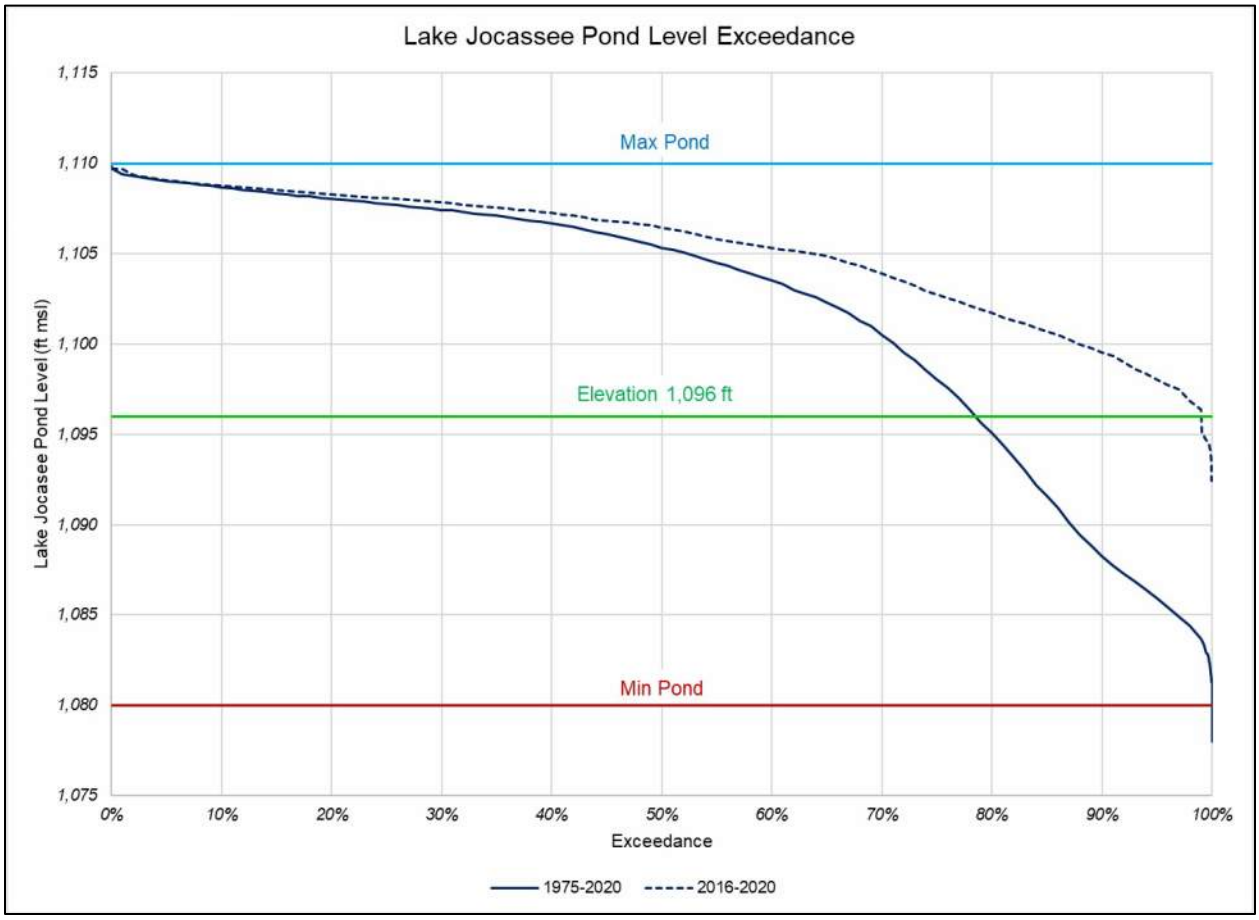

Figure 5.1 Lake Jocassee Pond Level Exceedance Graph

5.2.3 Proposed Public Safety Measures

Although any public safety concerns related to recreational boating in the WWRC are unlikely to be realized under typical operations, Duke Energy is proposing to implement some public safety measures primarily to educate the public about potential hazards and to restrict public access in the immediate vicinity of the I/O structures.

Duke Energy is proposing to restrict public boating access near the I/O portals by installing two separate floating boat barriers with a radius of approximately 200 ft extending from each I/O structure. Signage will be posted that reads "Warning: Restricted Area, No Trespassing." In addition, signage will be posted on each bank at the confluence of the WWRC with the main body of Lake Jocassee. Signs that include information on the Bad Creek Project and associated website and that encourage boaters to check Project operation schedules prior to boating in the WWRC will be posted at the information kiosks at Devils Fork State Park.

Implemented public safety measures at the Project will be incorporated into the Bad Creek Public Safety Plan which will be updated and submitted to FERC for approval.

6.0 VARIANCES FROM FERC-APPROVED STUDY PLAN

There were no variances from the FERC-approved RSP.

7.0 GERMANE CORRESPONDENCE AND CONSULTATION

Duke Energy will develop more specific schedules and plans for closures in consultation with stakeholders and as construction plans for the Bad Creek II Complex advance.

Germane correspondence and consultation documentation will be included with the Updated Study Report.

8.0 REFERENCES

Dowd, J. 1983. Sea Kayaking: A Manual for Long-Distance Touring Douglas & McIntyre Publishing, Vancouver.

Duke Energy Carolinas, LLC (Duke Energy). 2023a. Whitewater River Cove Existing Recreational Use Evaluation. Bad Creek Pumped Storage Project, FERC No. 2741. Prepared by Kleinschmidt Associates. December 2023.

Duke Energy Carolinas, LLC (Duke Energy). 2023b. Velocity Effects and Vertical Mixing in Lake Jocassee Due to a Second Powerhouse. Water Resources Study. Bad Creek Pumped Storage Project, FERC No. 2740. October 2023.

Duke Energy Carolinas, LLC (Duke Energy). 2024. Bad Creek CFD Model Updated Pumping Rates Addendum Report. Water Resources Study. Bad Creek Pumped Storage Project, FERC No. 2740. Draft Report.

HDR Engineering, Inc. (HDR). 2022. Bad Creek II Power Complex Feasibility Study Report - Lower Reservoir CFD Flow Modeling Report. Prepared for Duke Energy, Carolinas, LLC. September 1, 2022.

Hutchinson, D.C. 2002. Complete Book Sea Kayaking, 4th ed., London: A & C Black.

ePropulsion. 2020. 3 HP Outboard Motors: Best Solutions for the Price, Speed & Weight. Published November 13, 202. Available online: 3 HP Outboard Motors: Best Solutions for the Price, Speed & Weight | ePropulsion. Accessed August 23, 2024.

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Attachment 5

Consultation Documentation

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From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Rowdy Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; epicrides
Cc:	Lineberger, Jeff; Kulpa, Sarah; McCarney-Castle, Kerry; Settevendemio, Erin
Subject:	Bad Creek Relicensing Recreation & Visual Resources Committee Meeting - Study Tasks Review
Start:	Thursday, February 29, 2024 9:00:00 AM
End:	Thursday, February 29, 2024 3:00:00 PM
Location:	Duke Energy Wenwood Facility, 425 Fairforest Way, Greenville, SC 29607 (Conference Room 100)
Importance:	High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Duke Energy would like to convene the Recreation & Visual Resources Committee to discuss several items relative to the recreation resource study tasks reviewed during the recent ISR meeting (see bulleted items noted below).

* RUN Study

 * Clarification from ISR Meeting (User Surveys)
 * Musterground Road – closure during construction
 * Timeline for draft report

* Trail Conditions Assessment

 * Review comments on draft report
 * Discuss potential bat habitat considerations
 * Discuss additional trail items provided by FTC

* Whitewater River Cove Public Safety Evaluation

 * Discuss study and report timeline

This will be a face-to-face meeting to be more productive in discussion and resolution of outstanding study task items.

Lunch will be provided.

A meeting agenda will be sent out to Resource Committee members prior to the meeting.

Contact John Crutchfield or Alan Stuart if there are any questions regarding the meeting.

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Rowdy Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; epicrides
Cc:	Lineberger, Jeff; Kulpa, Sarah; McCarney-Castle, Kerry; Settevendemio, Erin
Subject:	RE: Bad Creek Relicensing Recreation & Visual Resources Committee Meeting - Study Tasks Review
Date:	Tuesday, February 20, 2024 1:35:56 PM
Attachments:	Bad Creek Recreation RC Meeting Agenda_02292024.pdf
Importance:	High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Please find attached the agenda for the upcoming Resource Committee meeting to be held at Duke Energy's Wenwood Facility on February 29th.

See you at the meeting.

Regards,
John Crutchfield

From: Crutchfield Jr., John U
Sent: Tuesday, February 13, 2024 6:15 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; epicrides@gmail.com
Cc: Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Sarah Kulpa <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Erin Settevendemio <Erin.Settevendemio@hdrinc.com>
Subject: RE: Bad Creek Relicensing Recreation & Visual Resources Committee Meeting - Study Tasks Review
Importance: High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Just a reminder, if you have not done so already, please respond and accept the Outlook meeting notice sent on February 1 (below) if you plan on attending the scheduled Committee meeting on February 29. I need to ensure an accurate headcount for the lunch order.

Thanks and see you on February 29.

Regards,
John

-----Original Appointment-----
From: Crutchfield Jr., John U
Sent: Thursday, February 1, 2024 6:23 AM
To: Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; Glenn Hilliard; Kelly Kirven; Ken Forrester; Lynn Quattro; Maggie Salazar; Morgan Amedee; Pat Cloninger; Ross Self; Rowdy Harris; Stuart, Alan Witten; Sue Williams; William Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; epicrides@gmail.com
Cc: Lineberger, Jeff; Sarah Kulpa; Kerry McCarney-Castle; Erin Settevendemio
Subject: Bad Creek Relicensing Recreation & Visual Resources Committee Meeting - Study Tasks Review
When: Thursday, February 29, 2024 9:00 AM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Duke Energy Wenwood Facility, 425 Fairforest Way, Greenville, SC 29607 (Conference Room 100)
Importance: High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Duke Energy would like to convene the Recreation & Visual Resources Committee to discuss several items relative to the recreation resource study tasks reviewed during the recent ISR meeting (see bulleted items noted below).

- RUN Study
    - Clarification from ISR Meeting (User Surveys)
    - Musterground Road – closure during construction
    - Timeline for draft report
- Trail Conditions Assessment
    - Review comments on draft report
    - Discuss potential bat habitat considerations
    - Discuss additional trail items provided by FTC
- Whitewater River Cove Public Safety Evaluation
    - Discuss study and report timeline

This will be a face-to-face meeting to be more productive in discussion and resolution of outstanding study task items.

Lunch will be provided.

A meeting agenda will be sent out to Resource Committee members prior to the meeting.

Contact John Crutchfield or Alan Stuart if there are any questions regarding the meeting.

AGENDA

BAD CREEK PUMPED STORAGE PROJECT
(FERC NO. 2740)
DUKE ENERGY CAROLINAS, LLC

RECREATION & VISUAL RESOURCES COMMITTEE MEETING
FEBRUARY 29, 2024
9:00 AM – 3:00 PM

MEETING PURPOSE: THE PURPOSE OF THE MEETING IS TO DISCUSS THE REMAINING TASKS OF THE RECREATION STUDY INCLUDING: 1) RECREATION USE AND NEEDS STUDY TASK; 2) FOOTHILLS TRAIL CORRIDOR CONDITIONS ASSESSMENT TASK; AND 3) WHITEWATER RIVER COVE RECREATIONAL PUBLIC SAFETY EVALUATION.

9:00 AM – 9:30 AM	ADMINISTRATIVE TASKS • WELCOME • AGENDA REVIEW • MEETING PURPOSE AND EXPECTATIONS • SAFETY MOMENT • ILP SCHEDULE UPDATE
9:30 AM – 10:30 AM	RECREATION USE AND NEEDS STUDY • ISR MEETING CLARIFICATION • CARRYING CAPACITY ANALYSIS REFRESHER • POTENTIAL MUSTERGROUND ROAD CLOSURE • DRAFT REPORT TIMELINE
10:30 AM – 10:45 AM	BREAK
10:45 AM – 12:00 PM	FOOTHILLS TRAIL CORRIDOR CONDITIONS ASSESSMENT • REPORT REVISIONS • SCDNR COMMENTS ON DRAFT REPORT • FTC COMMENTS ON DRAFT REPORT
12:00 PM – 1:00 PM	LUNCH
1:00 PM – 1:30 PM	FOOTHILLS TRAIL CORRIDOR CONDITIONS ASSESSMENT – CONT.
1:30 PM – 2:30 PM	WHITEWATER RIVER COVE RECREATIONAL PUBLIC SAFETY EVAL. • DRAFT REPORT TIMELINE
2:30 PM – 3:00 PM	REVIEW ACTION ITEMS

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Rowdy Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; epicrides
Cc:	Lineberger, Jeff; Kulpa, Sarah; McCarney-Castle, Kerry; Settevendemio, Erin
Subject:	Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review
Date:	Tuesday, March 19, 2024 6:42:40 AM
Importance:	High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Please find below the SharePoint link to access the meeting summary of the Recreation & Visual Resources Committee meeting held on February 29, 2024. The SharePoint link also includes the PowerPoint presentation and the recorded Teams meeting.

Bad Creek Relicensing Project – Resource Committees - 2024 02 29 Rec and Visual resources RC mtg - All Documents (sharepoint.com)

For those who attended the meeting, please review the meeting summary, and let me know if you have any comments or edits by Friday, April 19 (COB).

Please let Alan or me know if you have any questions about the meeting materials.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: Kelly Kirven; Kulpa, Sarah; Huff, Jen; McCarney-Castle, Kerry; Salazar, Maggie
Cc: Stuart, Alan Witten
Subject: FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review
Date: Friday, March 29, 2024 11:22:58 AM

From: Crutchfield Jr., John U
Sent: Friday, March 29, 2024 11:20 AM
To: Dale Wilde <dwilde@keoweefolks.org>
Cc: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>
Subject: RE: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review

Dale: Good morning!

Regarding the Recreation Use and Needs (RUN) study (Task 1) timeline, we expect to issue the draft report in early May to the Resource Committee for review. As with other relicensing reports, we will provide the SharePoint link and review instructions via email.

CFD is the acronym for Computational Fluid Dynamics which is the modeling approach we have used in the velocity study.

Please let me know if you have any other questions.

Enjoy the Easter weekend.

Regards,
John

From: Dale Wilde <dwilde@keoweefolks.org>
Sent: Thursday, March 28, 2024 9:24 PM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Cc: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review

I have reviewed the meeting minutes and I was wondering if the Task 1 survey results from the FHT survey will be available for the team to read. We were given the detailed report of the corridor conditions assessment, which was helpful to understand the area.

Also, on page 6, could you please remind me what CFD is? I found Computer Hydro-Electric Operations and Planning Software (CHEOPS).

Other than that, I have no other comments.

Thank you!

Ms. Dale Wilde
President, FOLKS
C: 207-604-6539
E: dwilde@keoweefolks.org

"Friends of Lake Keowee Society is dedicated to the preservation and enhancement of Lake Keowee and its watershed through advocacy, conservation, and education."

> On Mar 19, 2024, at 6:42 AM, Crutchfield Jr., John U <John.Crutchfield@duke-energy.com> wrote:
>
> Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:
>
> Please find below the SharePoint link to access the meeting summary of the Recreation & Visual Resources Committee meeting held on February 29, 2024. The SharePoint link also includes the PowerPoint presentation and the recorded Teams meeting.
>
> Bad Creek Relicensing Project – Resource Committees - 2024 02 29 Rec and Visual resources RC mtg - All Documents (sharepoint.com)
>
> For those who attended the meeting, please review the meeting summary, and let me know if you have any comments or edits by Friday, April 19 (COB).
>
> Please let Alan or me know if you have any questions about the meeting materials.
>
> Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Cc: Stuart, Alan Witten
Subject: FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review
Date: Monday, April 15, 2024 10:55:02 AM

From: Glenn Hilliard <glenn@hilliardgrp.com>
Sent: Monday, April 15, 2024 10:53 AM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review

John,

I was unable to attend the meeting on February 29th due to another commitment, therefore I have no comments.

Thank you for keeping me in the loop.

Glenn

On Mon, Apr 15, 2024 at 5:59 AM Crutchfield Jr., John U <John.Crutchfield@duke-energy.com> wrote:

> Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:
>
> Just a reminder that comments on the meeting summary of the Recreation & Visual Resources Committee meeting held on February 29, 2024, are due this Friday, April 19.
>
> Thanks,

John Crutchfield

From: Crutchfield Jr., John U
Sent: Tuesday, March 19, 2024 6:42 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; epicrides@gmail.com
Cc: Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Sarah Kulpa <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Erin Settevendemio <Erin.Settevendemio@hdrinc.com>
Subject: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review
Importance: High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Please find below the SharePoint link to access the meeting summary of the Recreation & Visual Resources Committee meeting held on February 29, 2024. The SharePoint link also includes the PowerPoint presentation and the recorded Teams meeting.

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For those who attended the meeting, please review the meeting summary, and let me know if you have any comments or edits by Friday, April 19 (COB).

Please let Alan or me know if you have any questions about the meeting materials.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

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Glenn Hilliard
Hilliard Group, LLC
1708-C Augusta Street, Box 2
Greenville, SC 29605
404-745-9770 (O)
678-938-6258 (M)
glenn@hilliardgrp.com

Assistant:
Shannon Parr
404-944-0120
shannon@hilliardgrp.com

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Cc: Stuart, Alan Witten
Subject: FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review
Date: Monday, April 15, 2024 10:55:42 AM

From: Charles (Rowdy) B Harris <charris@scprt.com>
Sent: Monday, April 15, 2024 10:54 AM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review

SCPRT has not comments or edits.

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Sent: Tuesday, March 19, 2024 6:42 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Charles (Rowdy) B Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; epicrides@gmail.com <epicrides@gmail.com>
Cc: Lineberger, Jeff <Jeff.Lineberger@duke-energy.com>; Sarah Kulpa <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Erin Settevendemio <Erin.Settevendemio@hdrinc.com>
Subject: Bad Creek Relicensing Recreation & Visual Resources Committee 2/29/2024 Meeting - Meeting Summary Available for Review

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For those who attended the meeting, please review the meeting summary, and let me know if you have any comments or edits by Friday, April 19 (COB).

Please let Alan or me know if you have any questions about the meeting materials.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; Churchill, Christy
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry; Settevendemio, Erin
Subject:	RE: Bad Creek Relicensing - Recreation & Visual Resources Committee Meeting (SAVE THE DATE)
Date:	Friday, April 19, 2024 10:25:55 AM
Importance:	High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Duke Energy would like to convene the Resource Committee to discuss to the Recreation Use and Needs (RUN) Study results and the Visual Resources Visualization Study results with addition of Bad Creek II.

This will be a virtual (Teams) meeting with PowerPoint presentations of these studies results.

The proposed Teams meeting date and time slot is Thursday, May 9, 9 am – 12 pm.

Please note there will be a meeting summary, copies of the PowerPoint presentations, and the recorded Teams meeting for your review if you cannot attend the meeting on that date.

A meeting notice will be sent out to you in the next few days, and a meeting agenda will be provided prior to the meeting.

Please let Alan or me know if you have any questions regarding the meeting.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

McCarney-Castle, Kerry

Subject: Bad Creek Relicensing - Recreation & Visual Resources Committee Meeting
Location: Microsoft Teams Meeting

Start: Thu 5/9/2024 9:00 AM
End: Thu 5/9/2024 12:00 PM
Show Time As: Tentative

Recurrence: (none)

Organizer: Crutchfield Jr., John U

Importance: High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Duke Energy would like to convene the Resource Committee to discuss to the Recreation Use and Needs (RUN) Study results and the Visual Resources Visualization Study results with addition of Bad Creek II.

This will be a virtual (Teams) meeting with PowerPoint presentations of these studies results.

_____

Microsoft Teams Need help?

Join the meeting now

Meeting ID: 276 104 750 547

Passcode: zkFprC

Dial-in by phone

+1 704-659-4701,,371418620# United States, Charlotte

Find a local number

Phone conference ID: 371 418 620#

Join on a video conferencing device

Tenant key: duke-energy@m.webex.com

Video ID: 118 550 442 7

More info

For organizers: Meeting options | Reset dial-in PIN
Org help

From: Crutchfield Jr., John U
Sent: Friday, April 19, 2024 10:25 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>
Cc: Sarah Kulpa <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Erin Settevendemio <Erin.Settevendemio@hdrinc.com>
Subject: RE: Bad Creek Relicensing - Recreation & Visual Resources Committee Meeting (SAVE THE DATE)
Importance: High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Duke Energy would like to convene the Resource Committee to discuss to the Recreation Use and Needs (RUN) Study results and the Visual Resources Visualization Study results with addition of Bad Creek II.

This will be a virtual (Teams) meeting with PowerPoint presentations of these studies results.

The proposed Teams meeting date and time slot is Thursday, May 9, 9 am – 12 pm.

Please note there will be a meeting summary, copies of the PowerPoint presentations, and the recorded Teams meeting for your review if you cannot attend the meeting on that date.

A meeting notice will be sent out to you in the next few days, and a meeting agenda will be provided prior to the meeting.

Please let Alan or me know if you have any questions regarding the meeting.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; Churchill, Christy
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry; Settevendemio, Erin
Subject:	RE: Bad Creek Relicensing - Recreation & Visual Resources Committee Meeting Agenda (5/9/2024)
Date:	Monday, May 6, 2024 6:14:49 AM
Attachments:	Bad Creek Recreation_Visual RC Meeting Agenda_05092024.pdf
Importance:	High

Dear Bad Creek Relicensing Recreation & Visual Resources Committee Members:

Please find attached the agenda for the Resource Committee virtual Teams meeting to be held on Thursday, May 9, 9 am-12 pm.

Talk with you then.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

AGENDA

BAD CREEK PUMPED STORAGE PROJECT
(FERC NO. 2740)
DUKE ENERGY CAROLINAS, LLC

RECREATION & VISUAL RESOURCES COMMITTEE MEETING
MAY 9, 2024
9:00 AM – 12:00 PM

MEETING PURPOSE: THE PURPOSE OF THE MEETING IS TO DISCUSS THE RESULTS OF THE RECREATION USE AND NEEDS STUDY AND UPDATES ON THE VISUAL RESOURCES STUDY.

9:00 AM – 9:15 AM	WELCOME AND SAFETY MOMENT
9:15 AM – 11:00 AM	RECREATION USE AND NEEDS STUDY • METHODS REVIEW • RESULTS
11:00 AM – 12:00 PM	VISUAL RESOURCES STUDY • EXISTING AND PROPOSED VISUALIZATIONS • SITE LAYOUT

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; Churchill, Christy
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry
Subject:	RE: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)
Date:	Thursday, May 16, 2024 8:08:09 AM
Attachments:	image001.png image002.png
Importance:	High

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute the ***Recreation Use and Needs Draft Report*** for Resource Committee review. This draft report satisfies Task 1 of the Bad Creek Relicensing Recreational Resources Study. The deliverable is available on the Bad Creek Relicensing SharePoint site at the following folder link: Task 1 - RUN Study Draft Report. Please make all comments and edits in the Word version using tracked changes. The attachments for the report are provided as a PDF in the folder. Please note, as mentioned during the meeting on May 9th, the Trail Carrying Capacity draft report (Appendix F) will be provided separately at a later date.

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **June 16th**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

Important – Please Read!

- Duke Energy would like to make relicensing deliverables available on a shared platform (i.e., SharePoint) so all stakeholders can access, review, and comment; therefore, we request all comments be made in the SharePoint Word document using tracked changes. This will eliminate version control issues and result in a consolidated document for comment response.
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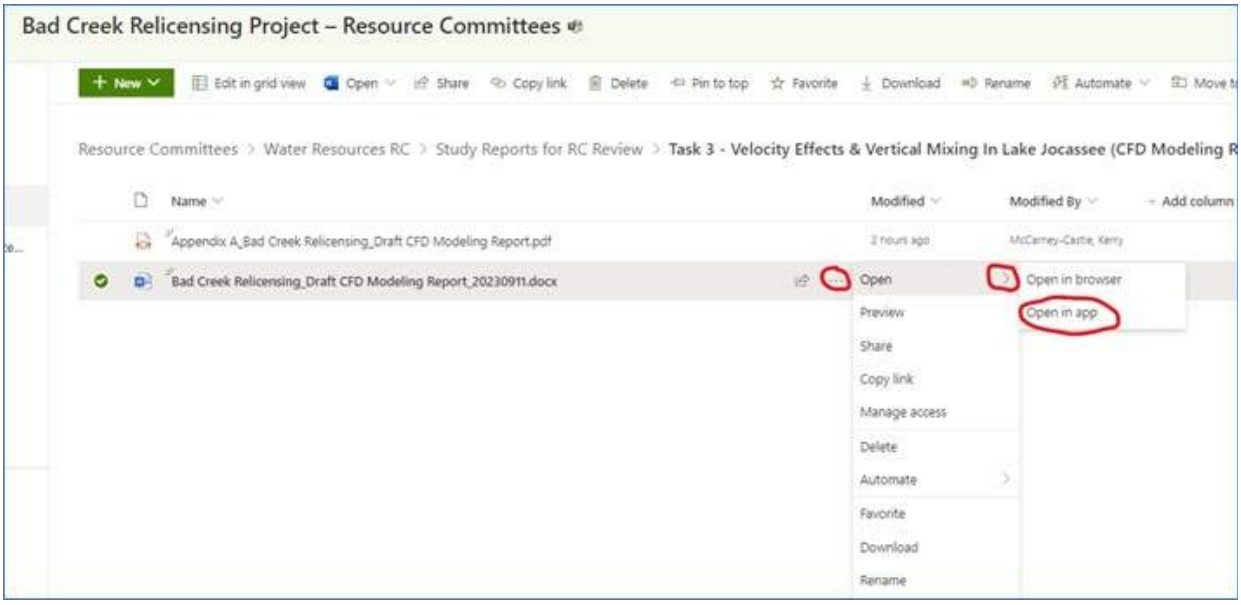
  (Note: If you are new to SharePoint, a very brief tutorial with screenshots is available on the home page of the Resource Committees tab called **"**Editing a Document in SharePoint". This is the same tutorial that was presented during the kick-off meeting. [*The tutorial provides an alternative way to open the document in Word – either technique works!])*



If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Subject: Fwd: [EXTERNAL] Re: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)
Date: Friday, May 17, 2024 2:18:48 PM

Get Outlook for iOS

From: Sue Williams <suewilliams130@gmail.com>
Sent: Friday, May 17, 2024 2:05 PM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)

I have read the draft report. I don't have any comments to add.

Sue Williams
Six Mile, SC

> On May 16, 2024, at 08:08, Crutchfield Jr., John U <John.Crutchfield@duke-energy.com> wrote:
>
> Dear Bad Creek Relicensing Recreation and Visual Resources Committee:
>
> Duke Energy is pleased to distribute the ***Recreation Use and Needs Draft Report*** for Resource Committee review. This draft report satisfies Task 1 of the Bad Creek Relicensing Recreational Resources Study. The deliverable is available on the Bad Creek Relicensing SharePoint site at the following folder link:
> <image001.png>
> Task 1 - RUN Study Draft Report. Please make all comments and edits in the Word version using tracked changes. The attachments for the report are provided as a PDF in the folder. Please note, as mentioned during the meeting on May 9th, the Trail Carrying Capacity draft report (Appendix F) will be provided separately at a later date.

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **June 16th**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

Important – Please Read!

- Duke Energy would like to make relicensing deliverables available on a shared platform (i.e., SharePoint) so all stakeholders can access, review, and comment; therefore, we request all comments be made in the SharePoint Word document using tracked changes. This will eliminate version control issues and result in a consolidated document for comment response.
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<image002.png>

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; SelfR; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; Churchill, Christy
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry
Subject:	RE: Bad Creek Relicensing - Recreation & Visual Resources Committee 5/9/2024 Meeting Summary and Presentation Materials
Date:	Monday, May 20, 2024 4:09:23 PM
Attachments:	image001.png

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

The meeting summary, PowerPoint presentation, and Team meeting recording from the May 9, 2024, Resource Committee meeting are available for your review and located at the SharePoint site link below:

2024 05 09 Rec and Visual Resources RC Meeting

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: phil.mitchell@gmail.com; Bill Ranson-Retired; PShirley
Cc: Stuart, Alan Witten; McCarney-Castle, Kerry; Kulpa, Sarah
Subject: FW: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)
Date: Wednesday, May 22, 2024 10:12:17 AM
Attachments: image001.png
image002.png
Importance: High

Phillip, Bill and Phil: I am sending this original email to you as I realized you were not on the 5/16/2024 distribution list.

My apologies.

Regards,
John

From: Crutchfield Jr., John U
Sent: Thursday, May 16, 2024 8:08 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>
Cc: Sarah Kulpa <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>
Subject: RE: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)
Importance: High

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute the ***Recreation Use and Needs Draft Report*** for Resource Committee review. This draft report satisfies Task 1 of the Bad Creek Relicensing Recreational Resources Study. The deliverable is available on the Bad Creek Relicensing SharePoint site at the following folder link: Task 1 - RUN Study Draft Report. Please make all comments and edits in the Word version using tracked changes. The attachments for the report are provided as a PDF in the folder. Please note, as mentioned during the meeting on May 9th, the Trail Carrying Capacity draft report (Appendix F) will be provided separately at a later date.

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **June 16th**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

-

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stakeholders can access, review, and comment; therefore, we request all comments be made in the SharePoint Word document using tracked changes. This will eliminate version control issues and result in a consolidated document for comment response.

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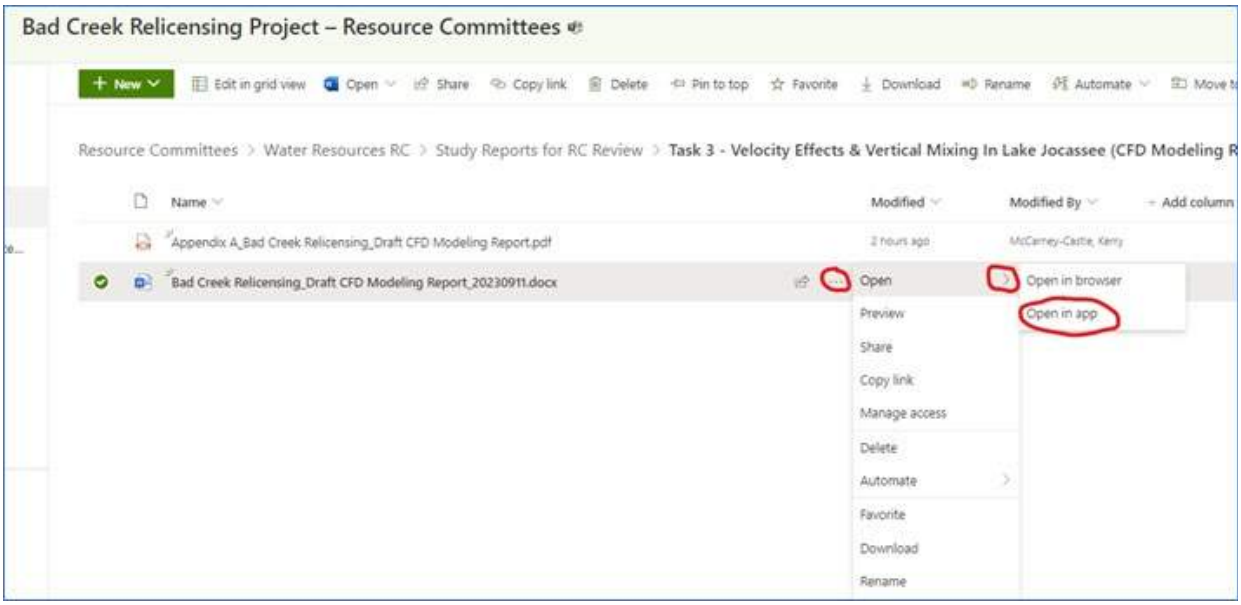

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	McCarney-Castle, Kerry
Subject:	FW: [EXTERNAL] Fw: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)
Date:	Wednesday, May 22, 2024 9:56:31 AM
Attachments:	image001.png image002.png

From: Andrew Gleason <andrewandwilla@hotmail.com>
Sent: Wednesday, May 22, 2024 9:48 AM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Cc: Stuart, Alan Witten <Alan.Stuart@duke-energy.com>
Subject: [EXTERNAL] Fw: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)

John, I have left my comments in the RUN study report. I highlighted the concerned text in the document and then clicked the "comment" button to leave my comments. Bill Ranson and Glenn Hilliard may leave their comments as well later. I have reminded them of the deadline.

Andrew Gleason
Foothills Trail Conservancy Chairman
864-546-1589
andrewandwilla@hotmail.com

Foothills Trail

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Sent: Thursday, May 16, 2024 8:07 AM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>;

Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>
Cc: Kulpa, Sarah -hdrinc <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>
Subject: RE: Bad Creek Relicensing - Recreation & Visual Resources Committee DRAFT RUN Study Report (READY for REVIEW)

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute the ***Recreation Use and Needs Draft Report*** for Resource Committee review. This draft report satisfies Task 1 of the Bad Creek Relicensing Recreational Resources Study. The deliverable is available on the Bad Creek Relicensing SharePoint site at the following folder link: Task 1 - RUN Study Draft Report. Please make all comments and edits in the Word version using tracked changes. The attachments for the report are provided as a PDF in the folder. Please note, as mentioned during the meeting on May 9th, the Trail Carrying Capacity draft report (Appendix F) will be provided separately at a later date.

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **June 16th**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

Important – Please Read!

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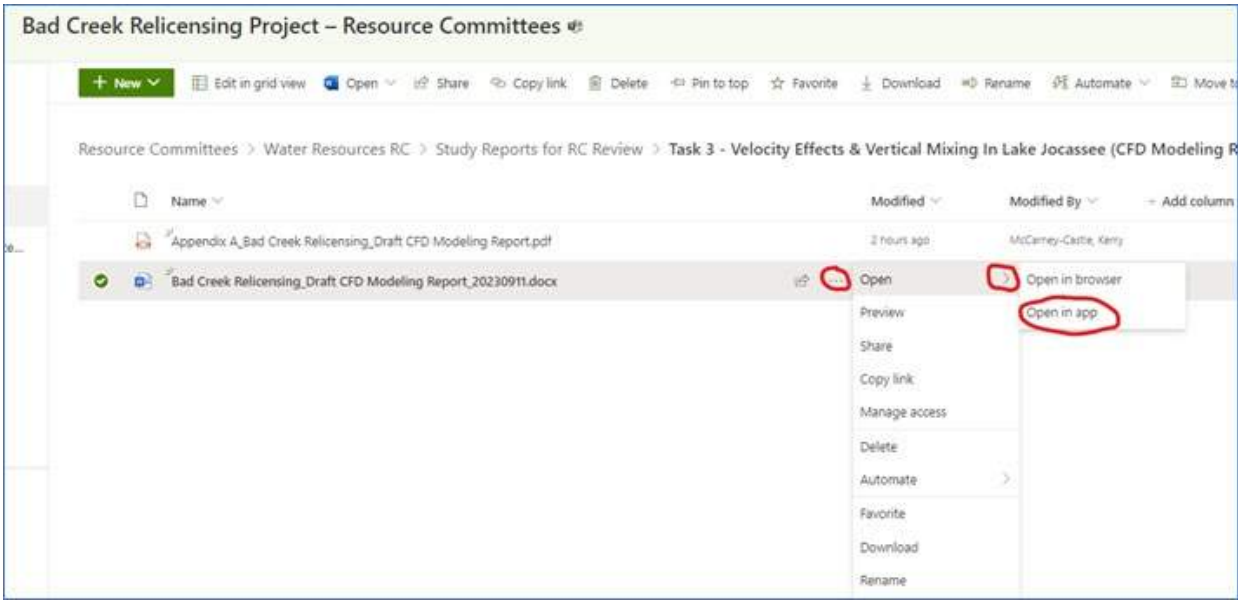

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pat Cloninger; Ross Self; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Huff, Jen; Pardue, Ethan; Churchill, Christy; PShirley; Bill Ranson-Retired; phil.mitchell@gmail.com
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry; Huff, Jen
Subject:	RE: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)
Date:	Wednesday, June 26, 2024 5:34:00 PM
Attachments:	image001.png image002.png
Importance:	High

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute two draft reports for Resource Committee review:

1. Task 1 – RUN Study Appendix F (Foothills Trail Carrying Capacity Analysis): Carrying Capacity Analysis
2. Task 2 – Trail Conditions Assessment Follow-up Memo: Trail Conditions Assessment Memo

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **July 26**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

Important – Please Read!

- As discussed in the kick-off meeting (July 2022), Duke Energy would like to make relicensing deliverables available on a shared platform (i.e., SharePoint) so all stakeholders can access, review, and comment; therefore, we request all comments be made in the SharePoint Word document using tracked changes. This will eliminate version control issues and result in a consolidated document for comment response.
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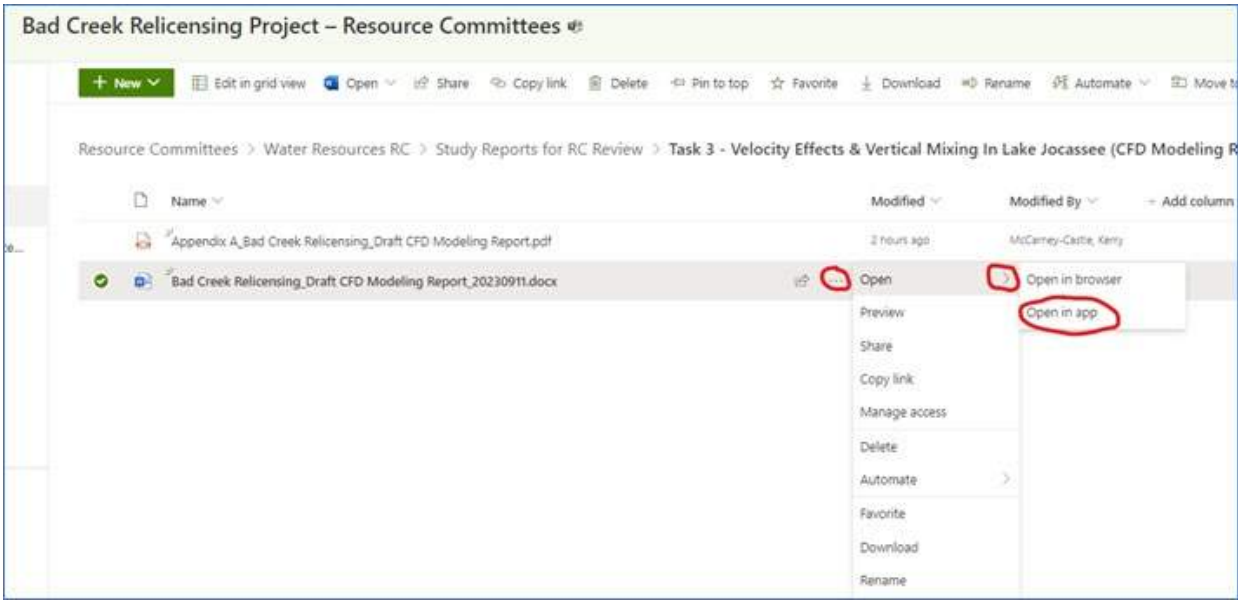

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Subject: FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)
Date: Thursday, June 27, 2024 4:29:11 PM
Attachments: image001.png
image002.png

From: Charles (Rowdy) B Harris <charris@scprt.com>
Sent: Thursday, June 27, 2024 4:26 PM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Cc: Adin T Fell <afell@scprt.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)

No comments from SCPRT.

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Sent: Wednesday, June 26, 2024 5:33 PM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Charles (Rowdy) B Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>; PShirley@oconeeco.com <PShirley@oconeeco.com>; Bill Ranson <bill.ranson@retiree.furman.edu>; phil.mitchell@gmail.com <phil.mitchell@gmail.com>
Cc: Kulpa, Sarah -hdrinc <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Jen Huff <jen.huff@hdrinc.com>
Subject: RE: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)

Dear Bad Creek Relicensing Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute two draft reports for Resource Committee review:

1. Task 1 – RUN Study Appendix F (Foothills Trail Carrying Capacity Analysis): Carrying Capacity Analysis
2. Task 2 – Trail Conditions Assessment Follow-up Memo: Trail Conditions Assessment Memo

Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **July 26**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

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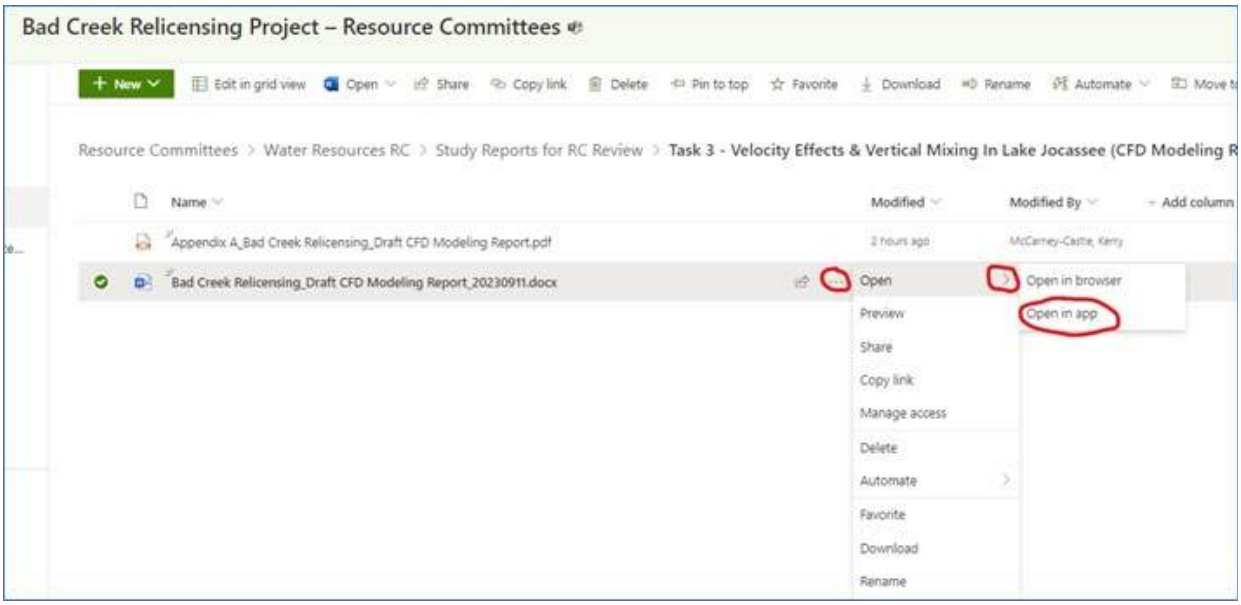

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Subject: FW: [EXTERNAL] Trails Assessment memo and Carrying Capacity Report
Date: Monday, July 8, 2024 5:29:46 PM

-----Original Message-----
From: Sue Williams <suewilliams130@gmail.com>
Sent: Monday, July 8, 2024 4:26 PM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Subject: [EXTERNAL] Trails Assessment memo and Carrying Capacity Report

Hi John,

I have reviewed these documents. I don't have any comments other than that the pictures are helpful.

Sue Williams
Six Mile, SC

From: Crutchfield Jr., John U
To: McCarney-Castle, Kerry
Subject: FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)
Date: Monday, July 8, 2024 8:45:43 AM
Attachments: image001.png
image002.png

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

From: Andrew Gleason <andrewandwilla@hotmail.com>
Sent: Monday, July 8, 2024 8:43 AM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Cc: Bill Ranson-Retired <bill.ranson@retiree.furman.edu>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)

***** CAUTION! EXTERNAL SENDER *** STOP. ASSESS. VERIFY!!** Were you expecting this email? Are grammar and spelling correct? Does the content make sense? Can you verify the sender? If suspicious report it, then do not click links, open attachments or enter your ID or password.

John, I have left my comments on the Carrying Capacity Analysis and the Trail Conditions Assessment Memo.

Andrew Gleason
Foothills Trail Conservancy Chairman
864-546-1589
andrewandwilla@hotmail.com

Foothills Trail

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Sent: Wednesday, June 26, 2024 5:33 PM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>; PShirley@oconeeco.com <PShirley@oconeeco.com>; Bill Ranson <bill.ranson@retiree.furman.edu>; phil.mitchell@gmail.com <phil.mitchell@gmail.com>

Cc: Kulpa, Sarah -hdrinc <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Jen Huff <jen.huff@hdrinc.com>
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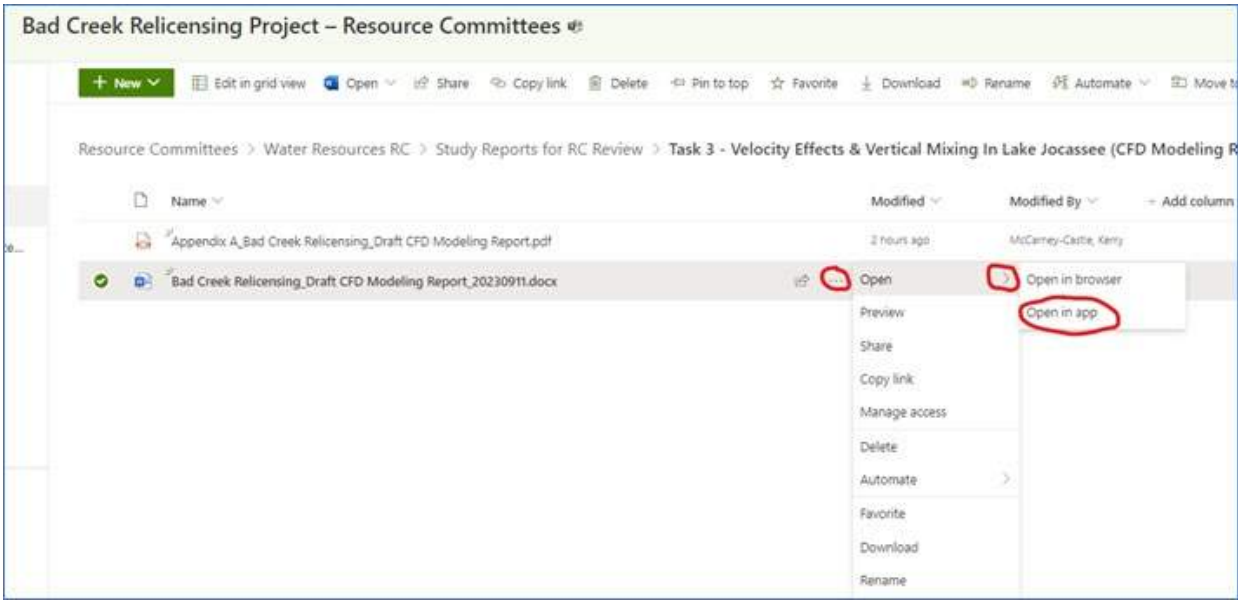

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield

Project Manager II

Water Strategy, Hydro Licensing & Lake Services

Regulated & Renewable Energy

Duke Energy

525 South Tryon Street, DEP-35B | Charlotte, NC 28202

Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	McCarney-Castle, Kerry
Subject:	FW: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)
Date:	Tuesday, July 9, 2024 6:51:43 AM
Attachments:	image001.png image002.png

From: Bill Ranson-Retired <bill.ranson@retiree.furman.edu>
Sent: Tuesday, July 9, 2024 6:48 AM
To: Andrew Gleason <andrewandwilla@hotmail.com>; Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Subject: [EXTERNAL] Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)

Hi John, I have reviewed the Carrying Capacity Analysis and the Trail Conditions Assessment Memo and agree with Andrew's comments and have no further comments.
Bill Ranson

From: Andrew Gleason <andrewandwilla@hotmail.com>
Date: Monday, July 8, 2024 at 8:43 AM
To: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Cc: Bill Ranson-Retired <bill.ranson@retiree.furman.edu>
Subject: Re: Bad Creek Relicensing Recreation & Visual Resources Committee - Foothills Trail Carrying Capacity Analysis Report and Trail Conditions Assessment Follow-up Memo (READY for REVIEW)

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Andrew Gleason
Foothills Trail Conservancy Chairman
864-546-1589
andrewandwilla@hotmail.com

Foothills Trail

From: Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>
Sent: Wednesday, June 26, 2024 5:33 PM
To: Amy Breedlove <BreedloveA@dnr.sc.gov>; Andrew Gleason <andrewandwilla@hotmail.com>; Andy Douglas <adoug41@att.net>; Chris Starker <cstarker@upstateforever.org>; Dale Wilde <dwilde@keoweefolks.org>; Dan Rankin <RankinD@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Glenn Hilliard <glenn@hilliardgrp.com>; Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>; Ken Forrester <forresterk@dnr.sc.gov>; Lynn Quattro <quattrol@dnr.sc.gov>; Maggie Salazar <maggie.salazar@hdrinc.com>; Morgan Amedee <amedeemd@dhec.sc.gov>; Pat Cloninger <cloningerp@dnr.sc.gov>; Ross Self <SelfR@dnr.sc.gov>; Rowdy Harris <charris@scprt.com>; Stuart, Alan Witten <Alan.Stuart@duke-energy.com>; Sue Williams <suewilliams130@gmail.com>; William Wood <woodw@dnr.sc.gov>; Willie Simmons <simmonsw@dnr.sc.gov>; Huff, Jen <Jen.Huff@hdrinc.com>; Pardue, Ethan <Ethan.Pardue@duke-energy.com>; Churchill, Christy <Christy.Churchill@duke-energy.com>; PShirley@oconeeco.com <PShirley@oconeeco.com>; Bill Ranson <bill.ranson@retiree.furman.edu>; phil.mitchell@gmail.com <phil.mitchell@gmail.com>
Cc: Kulpa, Sarah -hdrinc <Sarah.Kulpa@hdrinc.com>; Kerry McCarney-Castle <Kerry.McCarney-Castle@hdrinc.com>; Jen Huff <jen.huff@hdrinc.com>
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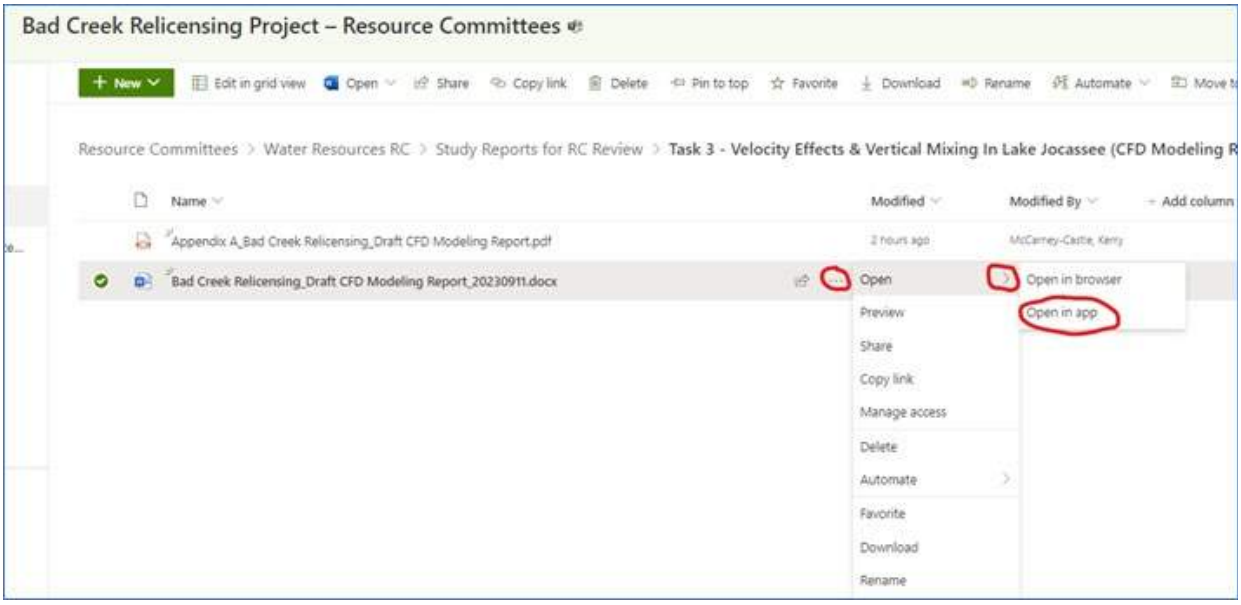

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield

Project Manager II

Water Strategy, Hydro Licensing & Lake Services

Regulated & Renewable Energy

Duke Energy

525 South Tryon Street, DEP-35B | Charlotte, NC 28202

Office 980-373-2288| Cell 919-757-1095

From: Kelly Kirven
To: McCarney-Castle, Kerry
Subject: FW: Foothills Trail Conditions Assessment Memo - Follow-up
Date: Wednesday, November 20, 2024 8:03:57 PM

From: Andrew Gleason <andrewandwilla@hotmail.com>
Sent: Wednesday, September 25, 2024 2:37 PM
To: Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>
Cc: Alan.Stuart@duke-energy.com; Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>; Todd Branham <epicrides@gmail.com>
Subject: Re: Foothills Trail Conditions Assessment Memo - Follow-up

We can do a group call to sort it out. Let me know when you want to do it

Andrew Gleason
Foothills Trail Conservancy Chairman
864-546-1589

From: Kelly Kirven <Kelly.Kirven@KleinschmidtGroup.com>
Sent: Wednesday, September 25, 2024 2:21:46 PM
To: andrewandwilla@hotmail.com <andrewandwilla@hotmail.com>
Cc: Alan.Stuart@duke-energy.com <alan.stuart@duke-energy.com>; Crutchfield Jr., John U <John.Crutchfield@duke-energy.com>; Todd Branham <epicrides@gmail.com>
Subject: Foothills Trail Conditions Assessment Memo - Follow-up

Hi Andrew!

I'm reaching out regarding your comments on the Foothills Trail Conditions Assessment – Additional Information Memo (attached for reference). It looks like we had a misunderstanding of where the FTC 21 site was located, and Todd potentially visited the wrong bridge.

To ensure we visit the correct location next time, would you be willing to: a) get on the phone with us (Todd, Alan, John, and/or me) to discuss, or b) visit the site with Todd so that you can look at the bridge together. Let me know what you prefer, and we can set something up.

Thanks, and hope you're doing well!

Kelly

Kelly Kirven
Section Manager – Terrestrial/Aquatics
Kleinschmidt
Office: 803.462.5633
Cell: 423.747.2660
www.KleinschmidtGroup.com

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Bill Ranson-Retired; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Huff, Jen; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pardue, Ethan; Pat Cloninger; Phil Mitchell; Phil Shirley; Ross Self; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry
Subject:	Bad Creek Relicensing--Whitewater River Cove Recreational Public Safety Evaluation Draft Report (READY FOR REVIEW)
Date:	Monday, October 7, 2024 9:25:08 AM
Attachments:	image001.png image002.png
Importance:	High

Dear Bad Creek Recreation and Visual Resources Committee:

Duke Energy is pleased to distribute the Whitewater River Cove (WWRC) Recreational Public Safety Evaluation draft report for Resource Committee review (Recreational Resources Study, Task 4). This draft has been developed in consultation with the Recreation and Visual Resources Committee to assess potential public safety risks that may be created or exacerbated by proposed operations of the Bad Creek II Complex (i.e., increased pumping and generation), specifically those associated with boater recreation activities in WWRC. The draft report is available on the Bad Creek Relicensing SharePoint site at the following link: Task 4 - Whitewater River Cove Recreational Public Safety Evaluation. Duke Energy is requesting a 30-day review period, therefore, please submit all comments by **November 5th**. A confirmation email is kindly requested upon review completion (email me at John.Crutchfield@duke-energy.com).

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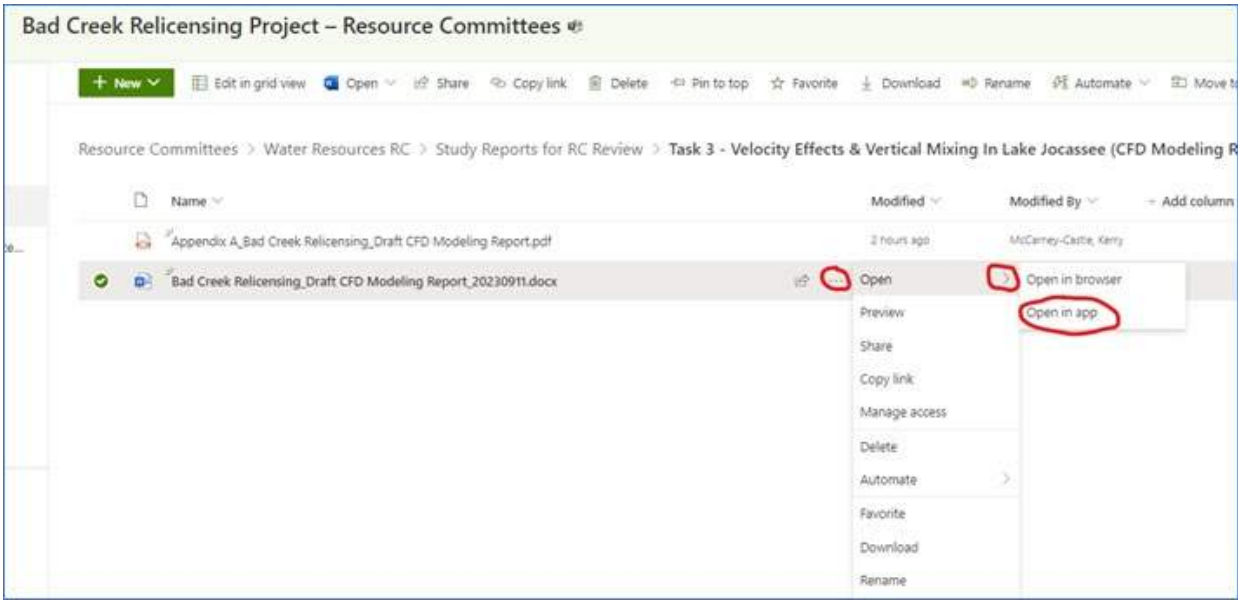

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
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Office 980-373-2288| Cell 919-757-1095

The draft Recreation Use and Needs (RUN) study report was distributed for stakeholder review on May 16, 2024, and comments were received from Foothills Trail Conservancy on May 22, 2024. The Foothills Trail Carrying Capacity Analysis (Appendix F of the RUN study report) was distributed for stakeholder review on June 26, 2024, and comments were received from Foothills Trail Conservancy on July 8, 2024. No other stakeholders provided comments and responses to comments are provided below.

Report	Section	Commenter	Comment	Duke Energy Response
RUN	3.1.1	Foothills Trail Conservancy	Cannot find maps of Duke Energy-maintained portion of Foothills Trail	Appendix B has been revised to include maps of the Duke Energy-maintained portion of the Foothills Trail with parcel boundaries, property owners, access locations, spur trails, structures and recreation facilities/amenities.
RUN	3.1.2	Foothills Trail Conservancy	What methods were used to validate each trail counter's accuracy? Were they each set up in a controlled environment and tested, especially for instances where a group of people may pass the counter in close proximity to each other?	Calibration counts were conducted at Bad Creek Hydro, Horsepasture River, Toxaway River, and Laurel Valley. These counts were used to determine correction factors that were applied trail counter data, accounting for any potential over or undercounting by the trail counter. Note that correction factors were still being developed when the initial draft report was provided for stakeholder review. Correction factors were applied to the use estimates provided in Table 5 after initial stakeholder review, which caused some of the use estimates to change from those in the initial report draft. The correction factor was most impactful to Bad Creek Hydro estimates. The Bad Creek Hydro use estimates provided in the final report are more reflective of actual use than those provided in the draft report. Information on calibration counts and correction factors has been included in Section 3.2.1.

Report	Section	Commenter	Comment	Duke Energy Response
RUN	4.1.1	Foothills Trail Conservancy	Although there is room for 90 vehicles at Bad Creek Hydro access, usually there is some type of equipment and/or trucks using some of the available parking. Note photo #1.	Comment noted
RUN	4.1.2	Foothills Trail Conservancy	When lake levels are low this (Horsepasture River Access) is very difficult to be accessed via boat. Note photo 27 on page B-18 of the appendix. Table 3 mentions access issues as well.	Comment noted; The report has been revised to indicate that recreationists can park their boat along the shoreline "*when lake levels are sufficient*" and fish or swim in the river.
RUN	4.1.4	Foothills Trail Conservancy	When lake levels are low this (Toxaway River Access) is very difficult to be accessed via boat. Note photo 20 on page B-13 of the appendix.	Comment noted; The report has been revised to include the following sentence: "*The trailhead provides hike-in or boat-in access only. Boaters on Lake Jocassee can travel north to Toxaway River near the trailhead, park their boat along the shoreline when lake levels are sufficient and fish or swim in the river.*"
RUN	4.1.4	Foothills Trail Conservancy	There are not any bear bag cables at the Toxaway campsites. I believe they counted lantern hooks as bear cables.	The report has been revised to indicate there are 11 lantern hooks at the Toxaway campsites, and removed reference to bear bag cables.
RUN	4.1.5	Foothills Trail Conservancy	There is an old kiosk (at Laural Fork Falls Access) located where the spur meets the main trail. I can provide a photo if requested.	Comment noted

Report	Section	Commenter	Comment	Duke Energy Response
RUN	4.1.6	Foothills Trail Conservancy	Some hikers drive past this access (Laurel Valley Access), continuing down the Horsepasture Rd. to other areas that access the Foothills Trail. One area is near Virginia Hawkins Fall and another at Dawkins Flat.	Comment noted
RUN	4.2	Foothills Trail Conservancy	The Foothills Trail also provides access to the Toxaway Gamelands of NC and remote parts of Gorges State Park in NC.	The report has been revised to note these additional recreation areas.
RUN	4.2.4	Foothills Trail Conservancy	Is overnight parking permitted here (Whitewater Falls day-use site or Upper Whitewater Falls Access)?	This comment is addressed in more detail in Section 5.3.2 of the report: *Although most visitors park for a few hours while they view the waterfall, it was observed that some visitors park for multiple days while backpacking on the Foothills Trail.*
RUN	4.2.4	Foothills Trail Conservancy	While Bad Creek Hydro Access trailhead is closed for construction, hikers that are displaced and use Whitewater Falls will have to pay, whereas parking at Bad Creek Hydro Access trailhead is free.	Comment noted
RUN	5.1.1	Foothills Trail Conservancy	This number should reflect the future impact of upwards of 25,000 (Table 31) visitors per year by 2035. Proposed construction closure will last through 2034, given everything is completed on schedule.	The paragraph has been revised to reflect updated use estimates for Bad Creek Hydro per Table 5 (2023 use estimates) and Table 31 (2035 use estimates).

Report	Section	Commenter	Comment	Duke Energy Response
RUN	5.4.1	Foothills Trail Conservancy	There are 9 tent pads at Toxaway.	The report has been revised to indicate there are 9 tent pads at the Toxaway campsites.
RUN	5.4.1	Foothills Trail Conservancy	Dawkins Flat does not have a metal fire ring.	The report has been revised to indicate there is no metal fire ring at Dawkins Flat.
RUN	6.3	Foothills Trail Conservancy	The closure of Bad Creek Hydro Access and the Bad Creek spur trail will make this "foot access" (to the Musterground Area) more difficult.	Comment noted
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Foothills Trail Conditions; p. 2	Foothills Trail Conservancy	Significant realignment of the Trail could change the mileage which would require updating many signs, maps and guidebooks.	Comment noted
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Foothills Trail Conditions; p. 2	Foothills Trail Conservancy	Half-bench construction needs to be defined in this document for the Stakeholders.	The report has been revised to include a footnote with the definition of half-bench construction.
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Foothills Trail Conditions; p. 2	Foothills Trail Conservancy	Full-bench construction needs to be defined in this document for the Stakeholders.	The report has been revised to include a footnote with the definition of full-bench construction.
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Foothills Trail Campsite Conditions; p.4	Foothills Trail Conservancy	Coley Creek has a cistern in the creek nearby.	The report has been revised to indicate there is a cistern at Coley Creek.

Report	Section	Commenter	Comment	Duke Energy Response
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Foothills Trail Campsite Conditions; p.5	Foothills Trail Conservancy	Dawkins Flat only has a primitive fire pit.	The report has been revised to indicate there is only a primitive firepit at Dawkins Flat.
Appendix F of RUN: Foothills Trail: Carrying Capacity Analysis	Site Visit Narrative; p. 27	Foothills Trail Conservancy	We have a metal fire ring to install there (Bear Gap Campsite).	Comment noted

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Bill Ranson-Retired; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Huff, Jen; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pardue, Ethan; Pat Cloninger; Phil Mitchell; Phil Shirley; Ross Self; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Morgan D. Amedee; Abney, Michael A
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry
Subject:	RE: Bad Creek Relicensing--Recreation Use and Needs Study (FINAL REPORT)
Date:	Friday, November 22, 2024 3:23:11 PM
Attachments:	image001.png
Importance:	High

Dear Bad Creek Recreation and Visual Resources Committee,

Duke Energy is pleased to distribute the final Bad Creek Recreation Use and Needs Study Report. This final report satisfies Task 1 of the Bad Creek Relicensing Recreational Resources Study and is accessible from the folder linked below. A stakeholder comment response matrix was developed and is also provided in the folder. As always, Duke Energy appreciates your participation in the Bad Creek Relicensing.

Final Report

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
Project Manager II
Water Strategy, Hydro Licensing & Lake Services
Regulated & Renewable Energy
Duke Energy
525 South Tryon Street, DEP-35B | Charlotte, NC 28202
Office 980-373-2288| Cell 919-757-1095

From:	Crutchfield Jr., John U
To:	Amy Breedlove; Andrew Gleason; Andy Douglas; Bill Ranson-Retired; Chris Starker; Dale Wilde; Dan Rankin; Elizabeth Miller; glenn@hilliardgrp.com; Huff, Jen; Kelly Kirven; Ken Forrester; quattrol; Salazar, Maggie; Amedee, Morgan D.; Pardue, Ethan; Pat Cloninger; Phil Mitchell; Phil Shirley; Ross Self; Charles (Rowdy) B Harris; Stuart, Alan Witten; suewilliams130@gmail.com; William T. Wood; Willie Simmons; Morgan D. Amedee; Abney, Michael A
Cc:	Kulpa, Sarah; McCarney-Castle, Kerry
Subject:	RE: Bad Creek Relicensing--Foothills Trail Conditions Assessment Report (FINAL)
Date:	Monday, December 9, 2024 9:53:46 AM
Attachments:	image001.png
Importance:	High

Dear Bad Creek Relicensing Recreational Resources Committee:

Duke Energy is pleased to distribute the ***Final Foothills Trail Corridor Conditions Assessment***. This final report satisfies Task 2 of the Recreational Resources Relicensing Study and will be filed with the Updated Study Report. The pdf is accessible from the folder linked below.

Final Report

As always, Duke Energy appreciates your participation in the Bad Creek Relicensing.

If you have any questions, please contact Alan Stuart or me.

Regards,

John Crutchfield
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