WATER STRATEGY AND HYDRO LICENSING

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October 19, 2022 ***Electronically Filed***

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Subject: **Bad Creek Pumped Storage Project (P-2740)**
Proposed Study Plan Meeting Summary

Dear Secretary Bose:

Duke Energy Carolinas, LLC (Duke Energy or Licensee) is the Licensee, owner, and operator of the 1,400-megawatt (MW) Bad Creek Pumped Storage Project (FERC No. 2740) (Project), located in Oconee County, South Carolina. The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission), and the current operating license for the Project expires on July 31, 2027. Accordingly, Duke Energy is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

On August 5, 2022, Duke Energy filed the Proposed Study Plan (PSP) with FERC. In accordance with 18 CFR §5.11(e), on September 7, 2022, Duke Energy held a PSP meeting at the Duke Energy Operations Center in Greenville, SC to present the studies proposed by Duke Energy and to address stakeholder comments on the Pre-Application Document. Duke Energy is hereby submitting a courtesy copy of the meeting summary and presentation to the Commission. This transmittal will also be posted on the Project's public relicensing website.[1] The parties listed on the attached distribution list are being directly notified of this filing.

If there are any questions regarding this filing, please contact Alan Stuart, Senior Project Manager, Water Strategy & Hydro Licensing at Alan.Stuart@duke-energy.com or via phone at 980-373-2079.

Sincerely,

Jeffrey G. Lineberger, PE
Water Strategy & Hydro Licensing
Duke Energy Carolinas, LLC

Enclosure
CC: Distribution List
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Garry Rice, Duke Energy

[1] www.badcreekpumpedstorage.com

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Meeting Summary

Project:	Bad Creek Pumped Storage Project Relicensing
Subject:	Proposed Study Plan Meeting
Date:	Wednesday, September 07, 2022
Location:	Duke Energy Wenwood Operations Center in Greenville, SC

In-Person Attendees:

Alan Stuart (Duke Energy)
Christy Churchill (Duke Energy)
Ed Bruce (Duke Energy)
Garry Rice (Duke Energy)
Jeff Lineberger (Duke Energy)
John Crutchfield (Duke Energy)
Lynne Dunn (Duke Energy)
Maverick Raber (Duke Energy)
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Maggie Salazar (HDR)
Sarah Kulpa (HDR)
Alison Jakupca (KA)
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Hailey Goyette (SCDNR)
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Chris Starker (Upstate Forever)
Erika Hollis (Upstate Forever)
Andy Douglas (SCWF)
Dale Wilde (Friends of Lake Keowee Society)
David Bereskin (Greenville Water)
Phillip Mitchell (Fisher Knob HOA)
Rowdy Harris (SCPRT)
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Melissa Murphy (Duke Energy)
Danielle Peoples (Duke Energy)
Ben Williamson (Duke Energy)
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Kenneth Gish (K&L Gates)
Melanie Olds (USFWS)
Scott Willett (Anderson Regional Joint Water System)
Wes Cooler (Naturaland Trust)

Introductions

Alan Stuart opened the Proposed Study Plan (PSP) meeting and welcomed participants. He reviewed the agenda, objectives, and logistics for the meeting, provided a safety moment (basic disaster supply kit/hurricane season preparedness), and introduced Duke Energy and Federal Energy Regulatory Commission (FERC) meeting attendees (in person attendees and attendees via Microsoft Teams).

A. Stuart provided an overview of the existing Bad Creek Pumped Storage Project (Project) and the FERC project boundary and also introduced the proposed Bad Creek II Power Complex (Bad Creek II Complex) and the conceptual layout for the new facilities. The Bad Creek II Complex is a potential relicensing alternative for the new license application; it may or may not be included in the final license application. A. Stuart explained that the upper reservoir operating band will not change (160 vertical feet of fluctuation) with the construction of the Bad Creek II Complex. The new powerhouse complex would add an additional 1,400 megawatts (MW) of capacity to the existing Project.

Dale Wilde asked about the tunnel diameter of the proposed Bad Creek II Complex. A. Stuart noted that the diameter of the two-tunnels would be close in size to the existing Project's single tunnel but is dependent on the design of the pump-turbine units selected, which is still under study. The proposed tunnels are also slightly longer due to the distance between the existing upper reservoir and Lake Jocassee.

Andy Douglas asked about the schematic shown (Whitewater River cove) regarding boating / velocity impacts. Duke Energy acknowledged these components will be addressed in the Recreation Study and Computational Fluid Dynamics (CFD) modelling.

John Crutchfield provided an overview of the development of the PSP and the contents of the document that were filed with FERC on August 5, 2022. The PSP included six formal study plans. J. Crutchfield explained that the PSP did not include a Wildlife and Botanical Resources study plan, nor was one requested from FERC or stakeholders, because preliminary field assessments were performed and reported in the Pre-Application Document (PAD). Duke Energy expects that targeted field surveys may be required prior to construction, if the Bad Creek II Complex is included in the final license application.

J. Crutchfield reviewed the milestones completed to date and future scheduling. He reminded stakeholders that comments on the PSP are due by November 5, 2022 and that Duke Energy will file the Revised Study Plan (RSP) by December 5, 2022. The first field season for data collection will commence in the spring of 2023.

Sarah Salazar asked whether the stakeholders had a chance to visit the Project and J. Crutchfield confirmed that Duke Energy held a site visit on August 16, 2022, which was open to the relicensing stakeholder group. A. Stuart added that another site visit opportunity would be provided to coincide with the Initial Study Report meeting or second study season.

The PowerPoint presentation shown during this meeting is included in Attachment 1.

Water Resources Proposed Study Plan Meeting Presentation

Maverick Raber provided an overview of the Water Resources Study Plan and the general study area boundary. As part of relevant background and existing information, M. Raber described the monitoring data that had been collected prior to and following construction of the existing Project. Since impacts of existing Project operations are well documented, the focus of this study is on incremental impacts of construction and operation of the Bad Creek II Complex. M. Raber described each task proposed for this study and highlighted key components for the Water Quality Monitoring Plan that would be developed if the Bad Creek II Complex is proposed

in the final license. M. Raber also presented the proposed schedule for the study activities. Water quality monitoring is presently proposed for both the 2023 and 2024 field seasons (June – September).

Questions and Comments:

- David Bereskin (Greenville Water) asked how the proposed Bad Creek II Complex would impact Keowee lake levels. M. Raber does not anticipate impacts to Lake Keowee levels, but the CHEOPS model study will help to inform any downstream impacts. D. Bereskin requested that Lake Keowee impacts are studied and quantified or specified under a specific task in the Water Resources Study. D. Bereskin would like the study to look at potential effects on Lake Keowee from the operation of the Bad Creek II Complex. Jeff Lineberger noted that this requested assessment could fit under Task 4 since that is the task that includes efforts for modeling using the CHEOPS model. Chris Starker asked whether this question would be addressed in the Operations resource committee as well and Sarah Kulpa confirmed it would but noted it would also be captured as a task under the Water Resources study. A. Stuart clarified that water levels on Lake Keowee are maintained under the Keowee-Toxaway (KT) license. Action item: Duke Energy to evaluate if potential effects and discharges into Lake Keowee from the operation of the Bad Creek II Complex should be a new task or a subtask for Task 4.
- Erika Hollis asked about shoreline erosion (Lake Jocassee) and whether it would be assessed for the entire lake or just in certain areas. M. Raber noted that the focus for erosion is on the Whitewater River Cove since that will be the area affected by increased discharge from the addition of a new inlet/outlet structure but noted that the CFD model will determine the spatial extent of Bad Creek II Complex operation impacts relative to surface velocities and will determine whether there is a need for shoreline erosion studies outside of (downstream of) the Whitewater River Cove.
- C. Starker asked about Clean Water Act (CWA) 404/401 permitting and the potential placement of fill (i.e., spoil from excavation) at the existing weir. M. Raber confirmed that the 404/401 process would be applicable also for any impacts to streams or wetlands on land. A. Stuart noted that intent is to place rock spoils at the downstream end of the underwater weir; loose fill (fines) would be placed in upland areas. A sediment and erosion plan would also be required in addition to 404/401 permitting efforts. A. Stuart has confirmed with the U.S. Army Corps of Engineers (USACE) that a 404 permit would be required. C. Starker noted that Upstate Forever would be willing to help Duke Energy identify mitigation areas or opportunities in Region IV, if needed.
- Dan Rankin noted that the original weir was constructed to push water up hydraulically and inquired if the expansion of the weir would be similar and how the model would analyze this. M. Raber noted that the elevation of the weir and the upstream side (closest to the Whitewater River) are not expected to change, however the downstream side would be expanded. M. Raber noted the weir should function the same as under current conditions; with additional discharge from a second powerhouse, the weir should dissipate warm water and inhibit vertical mixing as much as possible (i.e., keep warmer water in the upper water column to prevent vertical mixing). A. Stuart noted the goal is to not raise the elevation of the weir, but Duke Energy could run scenarios to evaluate height increase during CFD model runs. M. Raber confirmed historical monitoring under

the KT license will continue and not be impacted. D. Rankin asked if Duke Energy would be interested in partnering with S.C. Department of Natural Resources (SCDNR) to place rock to create habitat for fish, which may also alleviate some permitting. A. Stuart noted that while that is not presently proposed, Duke Energy intends to continue to consult with SCDNR about recommended protection, mitigation, and enhancement (PM&E) measures.

- Elizabeth Miller asked about streams impacted by potential spoil placement and what sort of monitoring or modeling would support decision-making for spoil placement. M. Raber indicated that this would primarily be addressed through the 404/401 permitting process.
- Stephen Bowler noted that FERC must consider wetland impacts as part of FERC's National Environmental Policy Act (NEPA) analysis and that wetland impacts studied through the licensing could be used to support the 404 permit. A. Stuart noted that there are eight potential sites identified for spoils, but not all will be utilized. Avoidance of impacts would be a key criterion for final site selection.
- E. Hollis asked whether the stakeholder group will be involved in the Water Quality Monitoring Plan. M. Raber confirmed. A. Stuart clarified that the future Water Quality Monitoring Plan will be developed in 2024 so that a settlement agreement can be filed with the Draft License Application (DLA), if possible.
- S. Bowler reminded the group that the Integrated Licensing Process (ILP) does not preclude incorporation of consultation or data collection outside of the formal study plan process. J. Crutchfield noted that Duke Energy has created Resource Committees to support communication between Duke Energy and the stakeholders throughout the process. FERC offered to participate in these meetings as needed.
- S. Salazar asked about a potential excavation materials study report referenced in the PSP and whether a study of off-site material disposal would be done by Duke Energy. S. Kulpa noted while there is no official report, preliminary information regarding spoil sites was included as Appendix E of the PAD and that study of off-site disposal is not proposed due to the large volume of anticipated materials and the lack of cost-effective or practical options to move that much material offsite. Kerry McCarney-Castle sent a chat message to S. Salazar pointing to the table of estimated spoil amounts and spoil type provided in Section 5 of the PSP.

Aquatic Resources Proposed Study Plan Meeting Presentation

Mike Abney introduced the Aquatic Resources Study Plan and noted that he was also engaged in aquatic studies for the Keowee-Toxaway relicensing. M. Abney presented relevant background and existing information, including an overview of the Memorandum of Understanding (MOU) executed by Duke Energy and SCDNR, and the 10-Year Work Plans that have resulted from the MOU. M. Abney described the general study area which includes the Whitewater River Cove. M. Abney noted that because impacts of the existing Project are well documented, the focus of the study is on incremental impacts of construction and operation of the Bad Creek II Complex. M. Abney reminded the group that a desktop entrainment study for the proposed powerhouse had already been conducted and was reported in the PAD. M. Abney reviewed the major objectives, tasks, and schedule for the proposed study.

Questions and Comments:

- A. Douglas asked M. Abney to define entrainment. M. Abney explained impingement (stuck upon the trash rack or intake screen) and entrainment (going through the system). In the existing license model, the assumption was to assume 100% mortality to assume a worst-case scenario in the model. Duke Energy will consider mortality rates through this study. A. Douglas asked what sizes of fish are excluded from entrainment by protective measures such as trashracks at the intake (which are primarily designed to keep debris out of the intake). M. Abney explained there are standards for screens, primarily used to inhibit large fish, and entrainment is more a concern for smaller (forage) fish. A. Stuart noted that the trash racks for the proposed Bad Creek II Complex are proposed as 6-inch (spacing) vertical racks. D. Rankin noted that in past models, Duke Energy could identify the best way to operate units for reducing potential entrainment. D. Rankin asked whether a desktop study will be able to predict the best operational methods. D. Rankin noted that entrainment was higher in the winter because fish don't swim as fast in colder temperatures.
- E. Miller asked if and when the entrainment desktop study would be updated for variable speed pump/turbine technology. A. Stuart noted that the speed of the unit does not vary for purposes of entrainment (assume full load), so there is presently no plan to re-run the entrainment study.
- D. Wilde asked about the potential for construction of a second underwater weir. Duke Energy clarified there will be no second weir, just expansion of the downstream footprint of the existing weir.
- William Wood asked about the entrainment model and noted that the model assumed a 1.0-foot-long Threadfin Shad and requested Duke Energy re-run the model for a reduced/more representative size of forage fish. W. Wood suggested modeling a 3-inch fish instead of 12-inch fish. Action Item: Duke Energy acknowledges that reduction of Threadfin Shad size to 3 inches would theoretically make these fish more vulnerable to entrainment. While the entrainment model did assume a 1-foot-long Threadfin Shad, report results were based on hydroacoustic returns, therefore reducing the fish size would not impact results. An update to the entrainment report results will be provided with the RSP to address this comment.
- D. Rankin mentioned lighting effects and their ability in attracting fish and recommended avoiding or minimizing lighting around the intake structure.
- S. Salazar noted that FERC had commented on the PAD regarding the use of herbicide use around the Project. Duke Energy had replied that it does not apply any herbicides near or adjacent to streams or wetland areas. S. Salazar asked if the rate of reservoir fluctuation would change and would Duke Energy evaluate the herbicide application to account for altered drainage patterns, from reservoir operations or grading or placement of fill at spoil areas. Scott Fletcher noted that Duke Energy's vegetation management teams consider site specific conditions including terrain, slope, drainage, and in general, near aquatic habitat there is a buffer when applying herbicides. S. Salazar noted FERC may need additional information or these guidelines to support FERC's future NEPA evaluation.

- D. Rankin asked if Duke Energy is going to assess streams (Howard Creek) that were impacted by the existing Project and M. Abney clarified that the only streams Duke Energy is proposing to study are the ones that may be impacted by spoil placement and will not be considering any historic impacts. D. Rankin noted that the SCDNR has abundant historical data for Howard Creek that may be relevant to this study. Note: Dan later acknowledged during the meeting that Howard Creek was not an area potentially impacted by spoil placement. Action Item: Duke Energy and SCDNR coordinate to share this referenced information.

Recreation & Visual Resources Proposed Study Plan Meeting Presentation

Jennifer Bennett introduced the Recreation and Visual Resources study plans. For the Visual Resources Study, J. Bennett described which existing and proposed Project structures are/will be visible from access areas around the Project. J. Bennett described the study area, nexus between expanded Project operation and construction and resource impacts, and objectives for the Visual Resources Study. J. Bennett provided an overview of the tasks proposed in the PSP. J. Bennett noted that applicable land use plans and regulations include those of U.S. Forest Service (USFS) and Oconee County.

J. Bennett provided an overview of the Recreation Study Plan. She reviewed the proposed tasks, and described the proposed study area, which is different from the other studies due to the location of the (linear) Foothills Trail Corridor outside of the FERC Project Boundary.

J. Bennett provided an overview of the access areas that will be assessed as part of the Foothills Trail Corridor Recreational Use and Needs (RUN study) and noted that data collection methods for different access areas vary based on expected uses (vehicle vs. foot traffic) and site constraints. J. Bennett noted that Musterground Road was added following consultation with SCDNR because that road is used to access the Wildlife Management Area (WMA) for hunting. Musterground Road is only open to the public during specific hunting seasons, including September 15-January 15, and again from March 20-May 10. To capture data for the full bear and deer hunting season, a traffic counter was recently installed at Musterground Road. Data collection at other sites will commence in March 2023. J. Bennett also described how a UAS (drone) will be used to collect data for 10 days of the boating season (Memorial Day through Labor Day) in the Whitewater River Cove area. This data will inform temporary construction impacts (i.e., closure of this area for periods of construction).

Questions and Comments:

- A. Douglas asked about the Visual Resources study, and whether the interested stakeholders would be involved in evaluation of the study. J. Bennett noted that there will be stakeholders involved through the resource committees and their input will be taken into consideration, for example, when identifying key viewpoints. S. Kulpa added that the resource committee will be involved in choosing areas of interest.
- A. Douglas requested that the field visit portion of the study occur during leaf-off conditions so viewpoints will be visible. Action Item: Duke Energy to revise the Visual Resources Study to consider leaf-off conditions during the field visit.

- A. Douglas asked about light pollution. C. Starker asked about light pollution in terms of dark sky perspective. Action Item: Duke Energy will review PSP and consider revisions to the RSP to discuss light pollution in the appropriate study plan.
- E. Miller asked that since Labor Day just occurred, if Musterground Road would be surveyed next year over the Labor Day holiday. Kelly Kirven responded that the survey at Musterground Road will occur when the gate is open to the public, which is during bear and turkey season, or September 15-January 15 and March 20-May 10.
- E. Miller also asked how the 10 drone survey days would be selected. J. Bennett noted the methodology would be similar to that used to select survey days for the RUN study, including a mix of weekdays, weekends, and holiday use.
- D. Wilde asked if weather events would impact the days the drone would take photos and K. Kirven confirmed. D. Wilde noted that ten days of survey was not very many. D. Wilde asked about the methodology of the surveys. K. Kirven noted they typically use a combination of QR codes and staff in person for the recreation survey. Recreation surveys (part of the RUN study) will be collected over 30 days.
- C. Starker noted that spring break is a popular time to visit the Foothills Trail and wondered if there was intent to capture these dates specifically. K. Kirven noted that in the PSP there is a general schedule and presently some survey days are planned for March and April, but more surveying is planned for the summer and early fall seasons. Allocation of survey dates can be adjusted in consultation with the recreation resource committee.
- C. Starker asked about including rock climbing into the survey. K. Kirven noted that there is an “other” option to capture additional recreational uses on the survey form.
- Action Items: C. Starker noted that the uses identified in the survey could be revised to remove boating and add kayaking/canoeing. He also suggested adding fishing.
- A. Gleason asked about the condition assessment of the entire trail and noted that Duke Energy excluded engineered bridges as they are inspected every five years. A. Gleason wondered when the last bridge inspection was performed, and J. Bennett confirmed the last inspection was completed in 2021 by a contractor to Duke Energy. A. Gleason requested the inspection reports and J. Bennett confirmed these could be included in the study report. Action Item: Add additional details or listing of engineered bridges in the RSP. A. Gleason asked how Duke Energy defines engineered bridges and J. Bennett noted that the bridges have design plans and an inspection report with specific items evaluated. A. Gleason noted that since original construction of the trail, smaller bridges have been built, which he feels may be overlooked during the study. J. Bennett noted the inspector has a list of bridges, and in addition there is a trail inspector that is on-site often.
- Glenn Hilliard asked about the visual study and if there was consideration of impacts at the end of the next license term, and what would be the impacts if Duke Energy no longer maintained the license. Jeff Lineberger noted that the at the end of the next license term, there would be a similar relicensing process or if for some reason Duke Energy decided to no longer operate the Bad Creek Project, there is a decommission/surrender process that is very similar to relicensing. G. Hilliard noted that in the original license Duke Energy is allowed to close or re-route the trail and agreed to the corridor width. G. Hilliard agreed evaluating usage is important, but he

recommended Duke Energy evaluate/consider current usage vs. original usage, parking and appurtenant facilities, sanitation, and capacity. J. Bennett responded that the goal of the study is to document use of the trail and where and how often capacity is reached.

- A. Stuart noted that Duke Energy is evaluating recreation use today and projecting it out to account for population growth for Oconee County. K. Kirven confirmed that the escalation rate of population is applied to the data gathered through this study to account for population growth.
- In response to E. Miller asking about users traveling from other areas, K. Kirven noted that the survey requests information about where the individual lives (city, state, zip code) and population growth from other areas will be considered.
- A. Gleason noted that the recreation access points can be lake level dependent (specifically Toxaway River) and suggested flexibility in the field.
- G. Hillard proposed trail expansion up to Toxaway River access so one would have a way to get to the trail in low water and access and connect to other trails.
- Action Items: S. Salazar requested that the Wildlife Management Area near Musterground Road be identified on future maps. E. Miller noted that it would be helpful to also depict USFS lands in this figure as well.
- S. Salazar referred to the Task 2 Visual Study which she noted omits the existing Project transmission line corridor. Duke Energy confirmed that the existing transmission line would not be included in the analysis, however the proposed transmission line could be. A. Stuart confirmed that the future transmission line route has not been determined at this point. S. Kulpa clarified that if a new transmission corridor is determined, the study plans may be modified or supplemented to address the change. E. Miller asked about the timeline for the transmission routing study. A. Stuart said not until the end of 2023 at the earliest. S. Bowler confirmed Duke Energy would want to process and submit that information as soon as possible and that it is not uncommon for studies to drag into the post-application process when there is reason.
- S. Salazar noted that while the transmission line will be subject to S.C. Utility Commission environmental review, the lines are presently considered primary transmission lines and will have to be authorized by the FERC license and addressed in FERC's NEPA review. If the transmission line siting study timeframe extends through or past 2024, this may delay the new license issuance.
- S. Salazar requested that the Visual Resources Study occur during leaf-off conditions to capture visual effects. S. Kulpa asked the group if the primary concern from a visual resource perspective is the final proposed project or the construction impacts. Action Item: Duke Energy will add clarification in the study report that the field visit will occur during leaf-off conditions and discuss further with the resource committee.
- S. Salazar requested that GIS data and georeferenced photos from the field be included with the study report.
- S. Salazar stated FERC preference is that PM&E measures including but not limited to the Recreation Management Plan be presented in the Preliminary Licensing Proposal to allow for stakeholder feedback.
- S. Salazar asked for additional information about the spur trails. J. Bennett noted that the spur trails serve a variety of purposes. The term spur refers to a portion of trail that is not the mainstem of the Foothills Trail but connects to the mainstem of the Foothills

Trail. The spur trails identified in the PSP are maintained by Duke Energy. Action Item: Update Figure 3-3 in the Recreation Study to make sure it incorporates Project Boundary.

- S. Salazar requested a copy of relevant off-license memoranda of agreement between SCDNR and Duke Energy pertaining to management of recreation facilities or access areas. Action Item: Duke Energy and SCDNR to locate and review agreement(s) and determine if can be filed publicly with FERC and if so, append to the RSP or ISR.
- S. Salazar requested that additional details about the methods for the trail assessment be included in the RSP (Action Item). S. Salazar requested that the trail assessment also include existing or needed erosion and sediment controls. S. Salazar requested that additional information about vegetation maintenance and waste management (including who is responsible) at each site be captured in the Recreation Site Inventory forms (Action Item).
- A. Gleason noted that the only allowed use on the Foothills Trail is hiking. A. Stuart noted that documentation of "other" uses through the Recreation Use and Needs study task does not imply permission by Duke Energy for the use. J. Bennett noted the trail does run through other publicly managed lands where other uses are permitted off the trail.
- Dustin Wilson asked that a map showing what other uses are permitted at other sites in the vicinity of the Project be included in the RSP. D. Wilson asked if Duke Energy had considered adding the Lower Whitewater Falls Overlook to the survey sites. K. Kirven noted that the parking area for the overlook (located at the Bad Creek Hydro Access Area) would be evaluated with a traffic counter and in-person surveys and the trail to the overlook would be evaluated with a trail counter, capturing visitors to the overlook (unless visitors are through-hikers). K. Kirven suggested a QR code sign at the overlook may be appropriate to capture additional user surveys (Action Item).
- D. Wilson suggested Duke Energy include boater input (i.e., from Lake Jocassee) into the Visual Resources study. S. Bowler suggested using boaters to survey or create an event to take boaters out to survey them.
- D. Wilson asked the goal for number of surveys. K. Kirven noted that there are a lot of factors that influence the number surveys that will be completed, so it is common not to propose a set target for a study like this. Efforts will be made to collect as many surveys as possible.
- A. Gleason confirmed that the Foothills Trail Conservancy currently has survey QR codes available for to collect recreation data. E. Miller noted that the study's QR codes (for the relicensing) should not be confused with Foothills Trail Conservancy QR codes. A. Gleason indicated that he could remove Foothills Trail Conservancy QR code signs prior to the start of the RUN study at any sites where Duke Energy QR code signs will be installed.
- In response to D. Wilde asking about the Foothills Trail inclusion as a Recreation facility in the new license, Duke Energy intends for the trail to be maintained through the new license term, but it may or may not be a requirement of the license (i.e., could instead be covered by an off-license agreement). S. Bowler noted that FERC will evaluate independently whether the facility is needed for the Project.

- C. Starker commented on the Recreation Survey, noting that it would be helpful to include a “no comment” response option. He noted that first-time visitors tend to provide favorable responses. K. Kirven responded that based on her experience, respondents do provide input, both positive and negative, in response to open-ended questions. Surveys are written and administered so as not to lead the respondent toward a specific answer.

Cultural Resources Proposed Study Plan Meeting Presentation

Christy Churchill provided an overview of the Cultural Resources Study Plan and relevant background and existing information. The study area is the Area of Potential Effect (APE), and this will be defined in consultation with State / Tribal Historic Preservation Officer (SHPO and THPO). C. Churchill reviewed the major tasks of and schedule for the proposed study plan.

Questions and Comments:

- D. Wilson asked whether Duke Energy will include additional surveying work if artifacts are found. C. Churchill confirmed additional surveys would be performed as required.
- D. Wilde asked if the Cultural Resources surveys are completed only above the water line. C. Churchill confirmed the proposed surveys are above the water line. Underwater areas for the upper reservoir and Lake Jocassee would have been surveyed in association with original project construction. If historic resources or artifacts are located underwater, they are generally accepted as preserved. The only time Duke Energy would survey underwater is during a large, extended reservoir drawdown that may impact sensitive areas.
- E. Miller asked about whether there are any sensitive sites near the spoil areas. A. Stuart noted there is one known site close to the proposed new tunnels, so that area will be surveyed. The other two are not in proximity sites and Duke Energy presently does not believe there would be any spoil impacts.
- C. Churchill noted that the findings of the surveys will be treated as non-public (Privileged) by FERC and only provided to the SHPO and Tribes and will not be publicly mapped. Authorized cultural resources professionals have access to location information through subscription to a database maintained by the SC Department of Archives and History.

Environmental Justice Proposed Study Planning Meeting Presentation

Alison Jakupca provided an overview of the Environmental Justice (EJ) study, noting that this is a relatively newer study requirement for FERC relicensings. A. Jakupca provided definitions for terms used in these analyses (e.g., environmental justice, fair treatment, disproportionate effects, and sensitive receptor locations). She also described how the PAD provided a preliminary assessment and identification of EJ communities. FERC’s study request encompassed a broader geographic range. A. Jakupca reviewed the study goals and objectives as well as the proposed study area. The study area includes a 1-mile buffer around the Project Boundary (effects of continued operation of Bad Creek Project) and a 5-mile buffer around the center of the proposed Bad Creek II Complex (analysis of effects on EJ communities from the proposed project expansion).

A. Jakupca described the reporting and map that would be developed from the data collected and analyzed during this study. If EJ communities are determined to be present, public outreach is a necessary task for study completion. Stakeholder outreach would inform the selection of PM&E measures for the Project if project expansion is proposed in the Final License Application.

EJ study updates will be provided to the Operations Resource Committee on a quarterly basis leading up the final study report, presently planned as part of the Initial Study Report.

Questions and Comments:

- S. Salazar asked about the EJ boundary and stated a 5-mile radius from the transmission line may be appropriate. Action Item: Duke Energy to review PSP and propose expanded buffer to encompass transmission line corridor in the RSP.
- E. Miller asked if there is a non-English option on the recreational use survey. Action Item: Duke Energy will consider non-English option.
- D. Wilson asked about public outreach methods other than public meetings. A. Jakupca noted that it depends on the communities present, and that Duke Energy will formulate an approach based on the best way to reach them. Operations Resource Committee will discuss proposed methods. Duke Energy is also internally creating an initiative to develop EJ principles to conducting outreach, which are coming out this year and will be applied to this relicensing.
- D. Wilson suggested evaluating the total minority population percentage, not just the individual race categories.
- Joshua Dub noted that during the initial construction of the existing weir there was some turbidity observed. If spoils are to be added to existing weir, this may impact water quality (downstream effects) regarding the geographic scope of impacts.
- Latest census data will be used and is presently from 2019.

Additional Questions:

- S. Salazar had questions about the Wildlife and Botanical Resource Committee. Duke Energy clarified that the resource committee will continue to meet and if there are any botanical/terrestrial issues or concerns, these will be documented in meeting summaries and incorporated into the appropriate study or section of the license application. S. Salazar confirmed she would appreciate seeing a copy of the Resource Committee meeting summaries and requested a consultation section to the initial study reports to capture this additional resource-related consultation.
- S. Salazar asked whether the U.S. Fish and Wildlife Service (USFWS) is interested in participating in the resource committees. A. Stuart confirmed Melanie Olds is involved in a few of the resource committees.
- C. Starker asked for clarification and how sensitive botanical and wildlife issues like the fern species and migratory birds would be included in the studies. S. Fletcher noted that Duke Energy has standard environmental procedures, and when there is impact to a specific resource, Duke Energy would carry out an assessment for that species and account for mitigation (relevant to migratory birds, breeding birds, and listed species). S.

Fletcher noted that a study of loons on Lake Jocassee was conducted for the KT relicensing, and this information may inform the Bad Creek license application. Reptiles/herpetofauna are also included in the standard Duke Energy protection measures. The Wildlife and Botanical Resource Committee can review through these procedures to make sure they appropriately identify and mitigate impacts.

- S. Bowler described the triggers and study criteria for determining if a resource study should be conducted to inform a licensing. He noted that FERC staff are available to answer procedural questions from all participants.

Attachment 1

Attachment 1 – Meeting Presentation

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Bad Creek Pumped Storage Project No. 2740

Proposed Study Plan Meeting

DUKE ENERGY®

BUILDING A SMARTER ENERGY FUTURE®

SEPTEMBER 7, 2022

Proposed Study Plan Meeting Agenda

- Welcome - Meeting Purpose & Expectations
- Safety Moment
- Introductions
- Bad Creek Project Site Orientation
- Proposed Study Plan Review Schedule and Overview
  - Water Resources
  - Aquatic Resources
  - Recreation & Visual Resources
  - Cultural Resources
  - Environmental Justice
- Meeting Wrap-Up and Questions
- Action Items
- Adjourn

Safety Moment

Basic Disaster Supply Kit

- Water – One gallon per person per day for several days (for drinking and sanitation)
- Food – At least a several-day supply of non-perishable food (and can opener)
- Battery-powered or hand crank radio for NOAA weather reports
- Flashlight(s) and batteries
- First aid kit/ medications
- Whistle (to signal for help)
- Dust mask (to help filter contaminated air)
- Plastic sheeting and duct tape (to shelter in place)
- Garbage bags, plastic ties, baby wipes
- Wrench/pliers (to turn off utilities)
- Local maps
- Cell phone, chargers, and back up battery

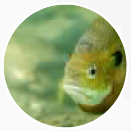
Resource Committees

Lead Technical Manager

- John Crutchfield

Project Manager

- Alan Stuart



Aquatic Resources

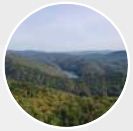
- Mike Abney
- Nick Wahl

Cultural Resources

- Christy Churchill

Water Resources

- Maverick Raber

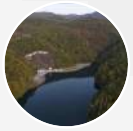


Recreation & Aesthetics

- Jennifer Bennett

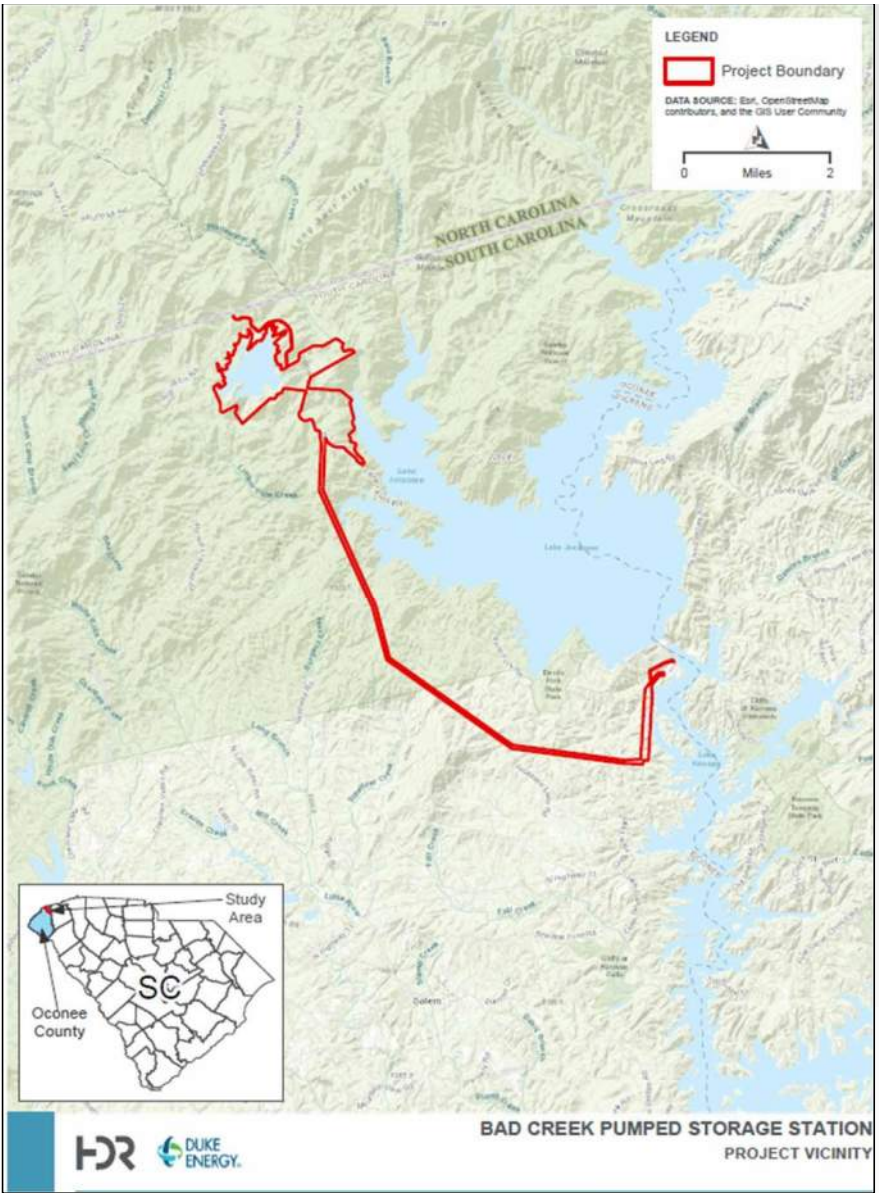
Wildlife & Botanical Resources

- Mike Abney
- Scott Fletcher



Operations

- Lynne Dunn
- Ed Bruce



Bad Creek Pumped Storage Project Location and FERC Project Boundary

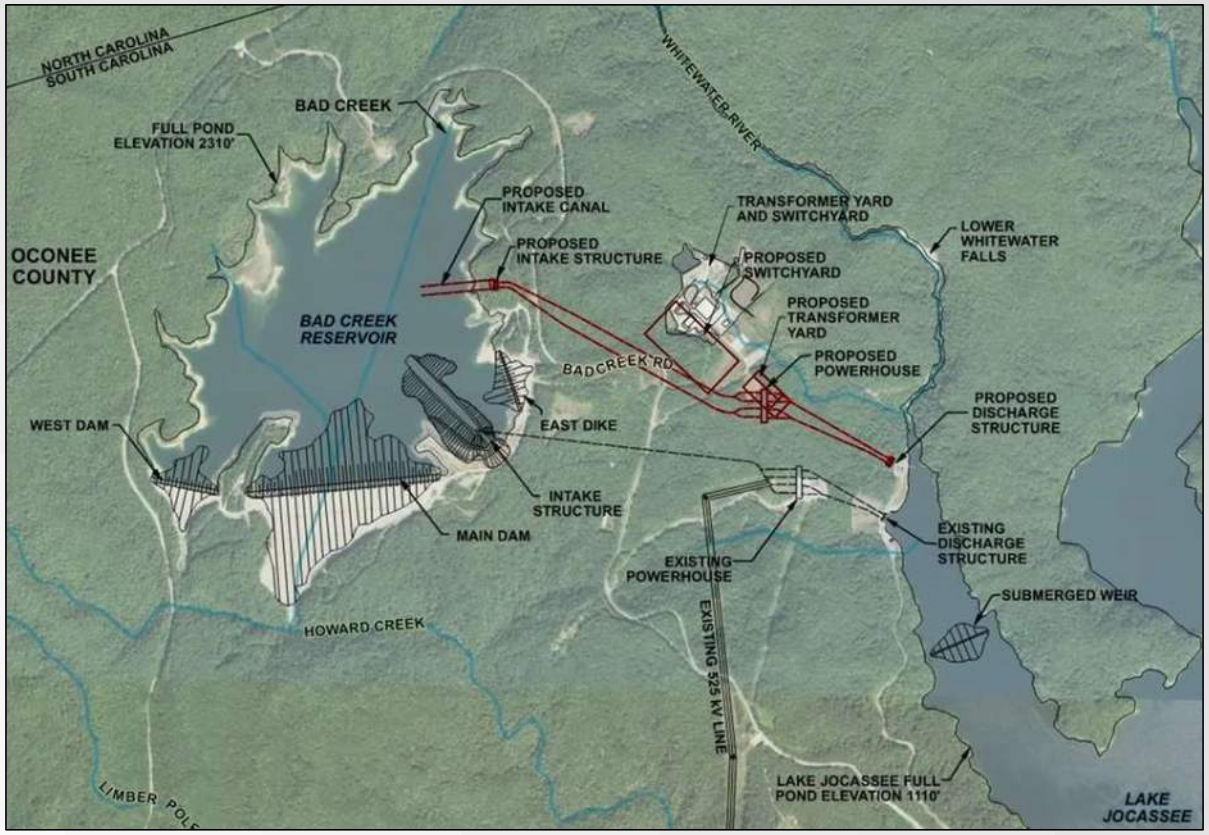
Bad Creek II Project Overview

Existing Bad Creek Powerhouse

- Four units used for peak load generation
- 1,400 MW capacity; 23 hours of storage
- Generates using water from Bad Creek Reservoir
- Pumps back water from Lake Jocassee using excess night/weekend energy

Proposed Bad Creek Powerhouse Addition

- Would essentially double existing Bad Creek capacity
- Utilize existing Bad Creek Reservoir
- Two new underground tunnels and powerhouse (4 Units)
- Additional 1,400 MW capacity; Total site ~3,360 MWs with 11 hours of storage



Privileged & Confidential/Attorney-Client Communication; Attorney Work Product

Study Plan Development

- **February 2022**: Five proposed studies were included in the Pre-Application Document (PAD) [Submitted to FERC February 23]
- **July 2022**: Six draft study plans were presented to Resource Committees during informal resource meetings (July 18-22)
- **August 2022**: Proposed Study Plan (PSP) was submitted to FERC August 5th, which also addressed stakeholder comments on PAD
- Scoping & Study Requests
  - Study requests – not PM&E measures
  - Existing data
  - FERC Study Criteria
  - FERC practice & precedence

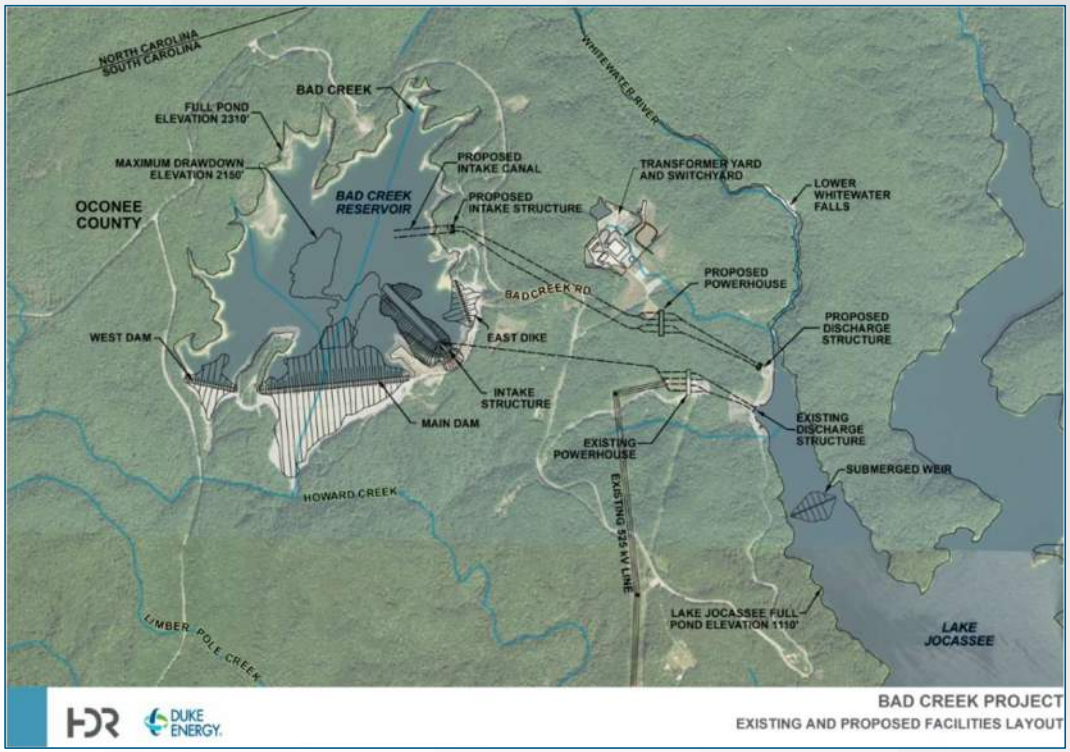
FERC ILP Schedule

Activity	Responsible Parties	Timeframe	Estimated Filing Date or Deadline
File Notice of Intent (NOI) and Pre-application Document (PAD) (18 CFR §5.5(d))	Licensee	Within 5 years to 5.5 years prior to license expiration	Feb 23, 2022
Initial Tribal Consultation Meeting (18 CFR §5.7)	FERC	No later than 30 days following filing of NOI/PAD	Mar 25, 2022
Issue Notice of NOI/PAD and Scoping Document 1 (SD1) (18 CFR §5.8(a))	FERC	Within 60 days following filing of NOI/PAD	Apr 24, 2022
Conduct Scoping Meetings and site visit (18 CFR §5.8(b)(viii))	FERC	Within 30 days following Notice of NOI/PAD and SD1	May 16-17, 2022
Comments on PAD, SD1, and Study Requests (18 CFR §5.9(a))	Licensee Stakeholders	Within 60 days following Notice of NOI/PAD and SD1	June 23, 2022
Issue Scoping Document 2 (SD2) (18 CFR §5.10)	FERC	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
File Proposed Study Plan (PSP) (18 CFR §5.11)	Licensee	Within 45 days following deadline for filing comments on PAD/SD1	Aug 7, 2022
PSP Meeting (18 CFR §5.11(e))	Licensee	Within 30 days following filing of PSP	Sept 7, 2022
Comments on PSP (18 CFR §5.12)	Stakeholders	Within 90 days following filing of PSP	Nov 5, 2022
File Revised Study Plan (RSP) (18 CFR §5.13(a))	Licensee	Within 30 days following deadline for comments on PSP	Dec 5, 2022
Comments on RSP (18 CFR §5.13(b))	Stakeholders	Within 15 days following filing of RSP	Dec 20, 2022
Issue Study Plan Determination (18 CFR §5.13(c))	FERC	Within 30 days following filing of RSP	Jan 4, 2023
Conduct First Season of Studies (18 CFR §5.15)	Licensee	-	Spring-Fall 2023
File Study Progress Reports (18 CFR §5.15(b))	Licensee	Quarterly	Spring 2023 -Fall 2024
File Initial Study Report (ISR) (18 CFR §5.15(c))	Licensee	Pursuant to the Commission-approved study plan or no later than 1 year after Commission approval of the study plan, whichever comes first	Jan 4, 2024

Water Resources Study

Water Resources Proposed Study Plan (PSP)

- No formal study requests related to water resources were submitted during the scoping process
- Several comments from agencies and stakeholder groups were received and considered in the development of the PSP

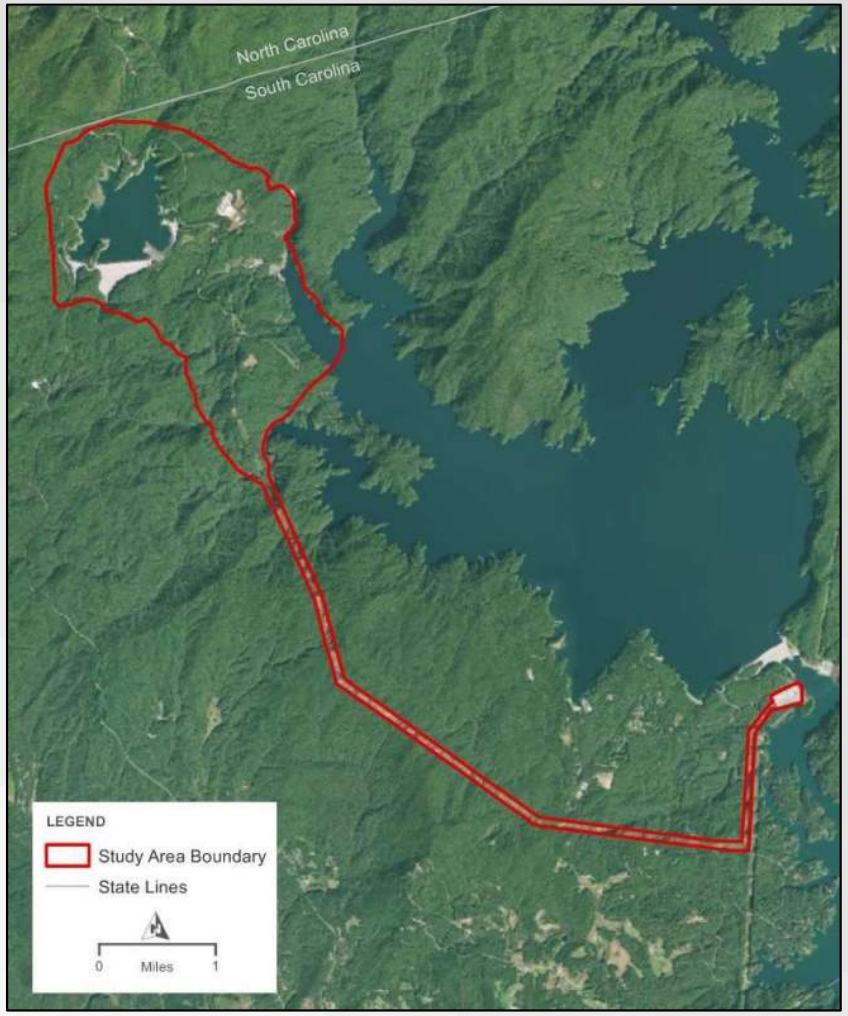


Background and Existing Information

- Bad Creek Reservoir is used only for Project operations and is inaccessible to the public; it is not designated for any other uses and has no known state or federal water quality standards.
- Lake Jocassee and tributaries in the study area are subject to state and federal water quality standards.
- Monitoring data (e.g. hydrology, water quality) collected as early as 1973.
  - Impacts on Bad Creek I construction and operation.
  - Comparison to applicable water quality standards.
  - Pelagic trout habitat (Aquatic Resources).

General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
  - Main/primary Project site
  - Proposed Bad Creek II Complex
  - Upper reservoir
  - Lower reservoir (specifically, Whitewater River Cove)
  - Transmission line corridor



Project Nexus

- No anticipated additional potential adverse effects to existing water resources from the continued operation of Bad Creek I.
- The construction and operations of Bad Creek II Complex has the potential to impact water resources in Lake Jocassee.
- The construction of Bad Creek II Complex and spoil disposal in upland areas could result in impacts to upland water resources (tributary streams).

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Objective 3: Address stakeholder concerns

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 1: Evaluate the impact of current (baseline) operations of Bad Creek I

Task 1: Summary of Existing Water Quality Data and Standards

- Current and historical data
- Compare to applicable water quality standards
- Establish baseline conditions

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Task 2 – Water Quality Monitoring in the Whitewater River Arm
- Temperature and Dissolved Oxygen (DO) monitoring
- June – September, 2023 and 2024
- Continuous temperature and bi-weekly DO vertical profiles

Task 3 – Velocity Effects and Vertical Mixing in Lake Jocassee
- Hydraulic modeling to determine Computational Flow Dynamics (CFD) model boundary
- 3-D CFD modeling to determine flow patterns and velocities in Whitewater River arm associated with Bad Creek I and Bad Creek II operations under various Jocassee reservoir elevations and submerged weir configurations
- Determine potential for shoreline erosion in Whitewater River arm

Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels
- Computer Hydro-Electric Operations and Planning Software (CHEOPS) Model – water exchange rates, magnitude, duration
- Reservoir elevation effects

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 2: Evaluate potential impacts on water resources from the construction and operation of the proposed Bad Creek II Complex

Task 5 – Future Water Quality Monitoring Plan Development (WQMP) associated with the following Bad Creek II activities:

- Construction of inlet/outlet structure and submerged weir expansion
- Construction in upland areas
- Potential upland soil disposal

Key components:

- Consultation with Agencies on monitoring locations and parameters (in consideration of existing data and anticipated impacts)
- The WQMP will include pre-construction, construction, post-construction time periods
- Comparison of data to applicable water quality standards
- Water Resource Impacts in support of permitting activities including Clean Water Act 401/404

Goals and Objectives

The goal of the Water Resources Study is to evaluate potential impacts of Bad Creek I and II on water resources in the Study Area

Objective 3: Address stakeholder concerns

Next Step: Stakeholder comments on PSP (due first week of November)

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning and Existing Data Review	August – December 2022
Task 1 – Summary of Existing Water Quality Data and Standards	January 2023 – April 2023
Task 2 – Water Quality Monitoring in Whitewater River Arm	June 2023 – September 2023 June 2024 – September 2024
Task 3 – Velocity Effects and Vertical Mixing in lake Jocassee Due to a Second Powerhouse	April 2023 – October 2023
Task 4 – Water Exchange Rates and Lake Jocassee Reservoir Levels	April 2023 – October 2023
Task 5 – Future Water Quality Monitoring Plan Development	January 2024 – December 2024
Distribute Draft Study Report with the Initial Study Report	January 2024
Distribute Revised Study Report with the Updated Study Report	January 2025

Aquatic Resources Study

Aquatic Resources Study Plan

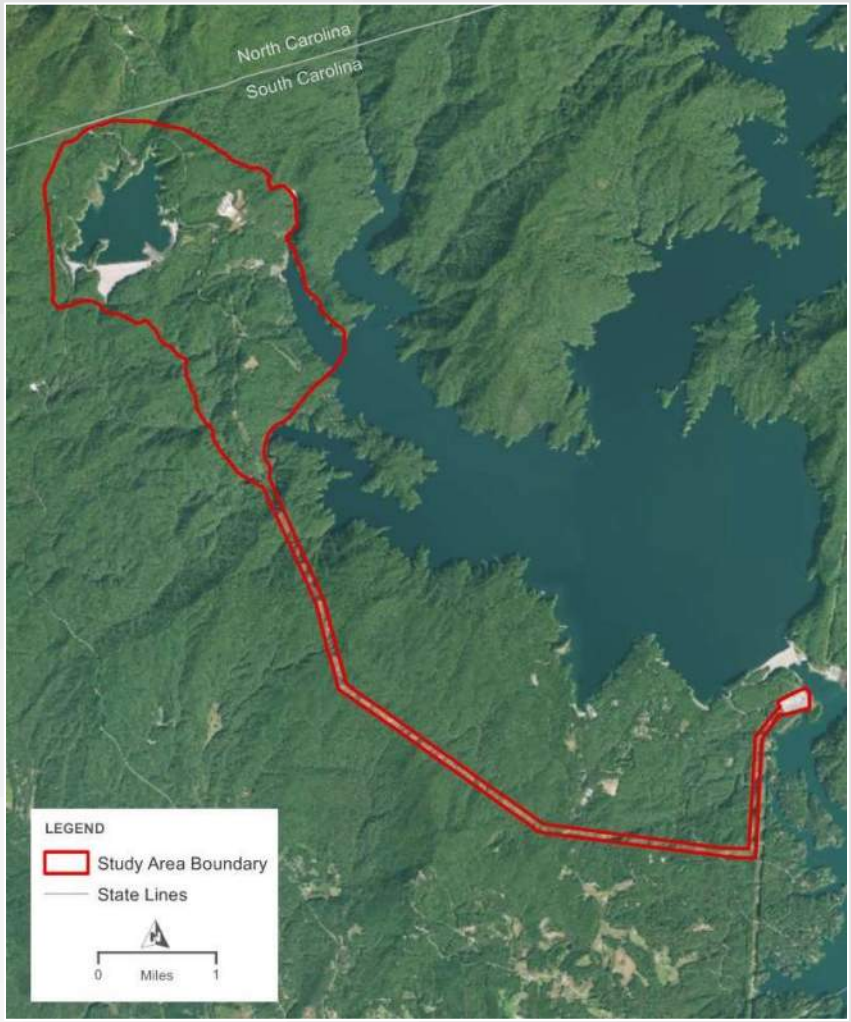
- No formal study requests related to aquatic resources were submitted during the scoping process
- Comments received from agencies and stakeholder groups considered in the development of the preliminary proposed study plan
- Responses to comments on the PAD were provided in Appendix A of the PSP filing

Background and Existing Information

- Bad Creek Reservoir is used only for Project operations; it is not designated for any other uses and therefore has no applicable state or federal water quality standards.
- In 1996, Duke Energy and SCDNR developed a Memorandum of Understanding to help maintain the high-quality fisheries of lakes Jocassee and Keowee. Implemented through 10-Year Work Plans (1996-2005, 2006-2016, 2017-2027).
  - Agreement on minimizing fish entrainment
  - Electrofishing of littoral fish populations
  - Hydroacoustic monitoring of pelagic forage fish populations
  - Cost sharing for trout stocking
  - Cost sharing for fisheries research and enhancements
  - Water quality monitoring for pelagic trout habitat (K-T license)

General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
  - Main/primary Project site
  - Upper reservoir
  - Lower reservoir (specifically, Whitewater River Cove)
  - Preliminary transmission line alignment



Project Nexus

- The construction and operations of Bad Creek II Complex has the potential to impact aquatic habitat and fish populations in Lake Jocassee.
- The construction of Bad Creek II Complex and expansion of the underwater weir may cause direct, permanent and temporary impacts to aquatic resources.

Goals and Objectives

The goal of the Aquatic Resources Study is to evaluate potential impacts to fish and aquatic life populations, communities, and habitats due to the construction and operation of the proposed Bad Creek II Complex.

Objective 1: Evaluate the potential for increased fish entrainment due to the addition of Bad Creek II Complex and consult with agencies and other Project stakeholders regarding results of the updated desktop Entrainment Study (Kleinschmidt 2021).

Objective 2: Assess changes to pelagic and littoral aquatic habitat in Lake Jocassee resulting from the additional discharge and expanded underwater weir using models developed for the Water Resources Study or related relicensings.

Objective 3: Evaluate potential direct impacts to aquatic habitats (including wetlands) related to Bad Creek II Complex construction activities by characterizing surface waters, including resource quality and presence of aquatic biota (e.g., mussels).

Methodology

Objective 1 – Consultation on Entrainment

- Meet with agencies and stakeholders to discuss the results of the updated Entrainment Study and minimization measures.

Objective 2 – Effects of Bad Creek II Complex and Expanded Weir on Aquatic Habitat

- Evaluation of potential effects to Lake Jocassee trout habitat
  - Expanded CFD model
- Evaluation of potential effects to littoral zone habitat
  - CHEOPS™ model

Objective 3 – Impacts to Surface Waters and Associated Aquatic Fauna

- Characterization of affected waters and estimation of potential impacts
  - All affected waters (upland spoil locations, construction of Bad Creek II Complex powerhouse, and expansion of underwater weir)
    - Quantitative estimate of impacts
  - Upland spoil locations
    - Stream habit quality surveys
    - Presence/absence mussel surveys

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Consultation on Entrainment	January – June 2023
Desktop Studies on Pelagic and Littoral Habitat Effects	Spring – Fall 2023
Mussel Surveys and Stream Habitat Quality Surveys	Summer 2023
Initial Study Report	January 2024

Recreation and Visual Resources Study

Visual Resources Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential visual resource issue:
  - Effects of project construction, operation (including the presence of project facilities), and maintenance activities on visual resources.

- In the PAD, Duke Energy proposed to conduct a Visual Resources Study in support of the proposed Bad Creek II Complex.

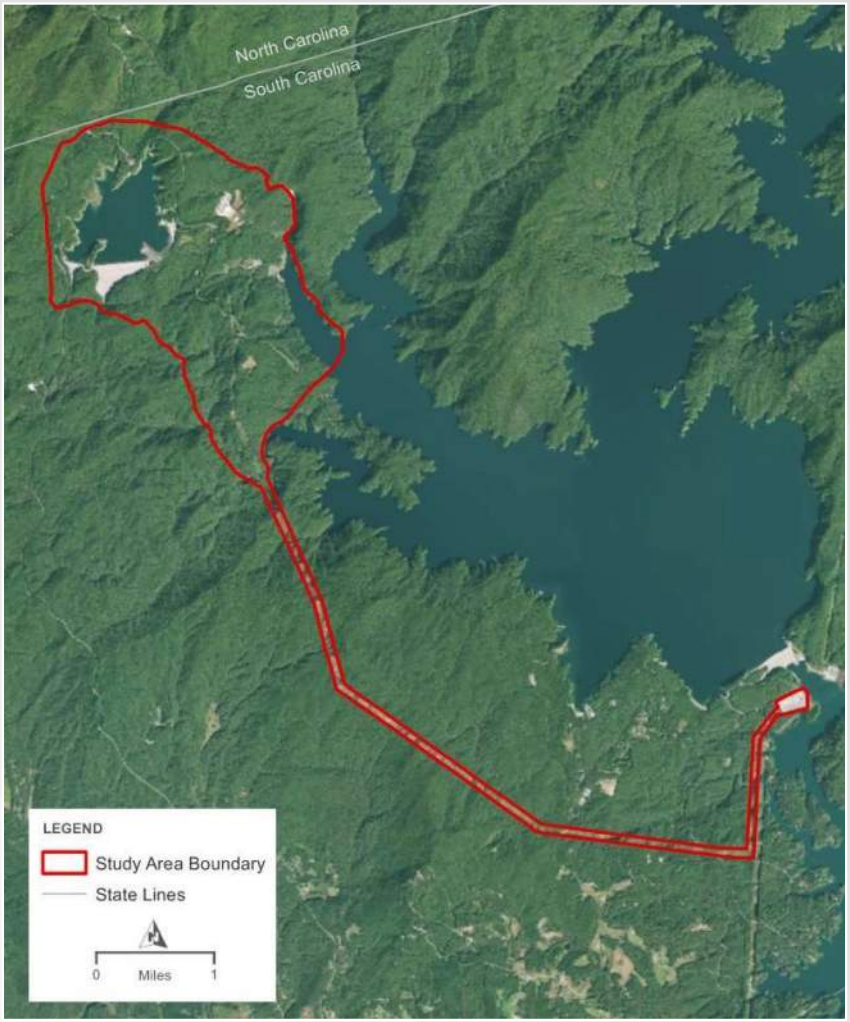
- No formal study requests or stakeholder comments related to aesthetic or visual resources were received; comments from the FERC in SD1 will be addressed in the Proposed Study Plan.

Background and Existing Information

- Upper reservoir Project structures as well as the inlet/outlet structure and powerhouse portal are visible from specific vantage points on Lake Jocassee and the surrounding area.
- During a 2013 RUN Study at the KT Project, one third of the people surveyed stated nothing detracts from the scenic quality of the Lake Jocassee.

General Study Area

- The general study area includes several distinct areas at or in the vicinity of the Project
  - Main/primary Project site
  - Proposed Bad Creek II Complex
  - Upper reservoir
  - Lower reservoir (specifically, Whitewater River Cove)
  - Transmission line corridor



Project Nexus

- A new inlet/outlet structure for a second powerhouse would be viewable from the same viewshed as the existing structures.
- With the construction of the proposed Project expansion, the visual landscape will be altered both during and after construction.

Goals and Objectives

The objective of the Visual Resources Study is to establish the baseline condition of scenery and visual resources near the existing Project and to provide additional information (e.g., including simulations of the expanded Project) to evaluate expected impacts of construction and operation of the Bad Creek II Complex on these resources and any PM&E measures.

Focus on impacts of the construction and operation of the Bad Creek II Complex.

No adverse additional effects to scenery and visual resources are expected to result from the continued operation of the existing Project over the new license term.

No practical or necessary PM&E measures have been identified or proposed for the existing Project structures.

Methodology

Task 1 – Existing Landscape Description

- Review existing information to characterize the scenic quality of the existing landscape and proposed expanded Project area.

Task 2 – Seen Area Analysis

- Identify areas within the existing landscape from which any part of the proposed Bad Creek II facilities would potentially be visible.

Task 3 – Field Investigation

- Field investigation of "visible" areas identified through Task 2.
- Will include photography and documentation of existing site attributes, and viewing/landscape conditions at potential Key View locations.

Task 4 – Key Views Selection

- Selection of representative photo points investigated during Task 3 and in consultation with stakeholder to identify Key Views that adequately cover potential scenic and visual impacts for the Project

Methodology continued

Task 5 – Existing Visual Quality Assessment

- Assess existing scenic and visual quality at each Key View identified in Task 4.

Task 6 – Visual Analysis

- Specific assessment and visual simulation of the expected visual impact at each Key View.

Task 7 – Visual Management Consistency Review

- Review consistency of the proposed Bad Creek II Complex with visual protection guidance established in applicable land use plans and regulations.

Task 8 – Mitigation Assessment

- Identify and assessment of mitigation measures that would address visual impacts of the proposed Bad Creek II Complex.

Task 9 – Conceptual Design of Bad Creek II Complex

- Assess aesthetic resource conditions relative to site layouts, conceptual designs, proposed construction processes, and lighting.
- Three-dimensional renderings will be produced.

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	August – December 2022
Tasks 1-2 (Existing Landscape Description and Seen Area Analysis)	January 2023 – March 2023
Tasks 3-7 (Field Investigation, Key Views Selection, Existing Visual Quality Assessment, Visual Analysis, Visual Consistency Review)	April 2023 – November 2023
Task 8 and 9 (Mitigation Assessment and Conceptual Design of Bad Creek II Complex)	Spring – Summer 2024
File Initial Study Report	January 2024
File Updated Study Report	January 2025

Recreation Study Plan

- The Commission's April 22, 2022, Scoping Document 1 identified the following as a potential resource issue:
  - Effects of proposed project construction, operation, and maintenance on recreational use in the project-affected area

- In the PAD, Duke Energy proposed to conduct a Recreation Resources Study in support of the proposed Bad Creek II Complex.

- Upstate Forever and the Foothills Trail Conservancy provided recreation related comments on the PAD.

Goals and Objectives

Four main study objectives of the Recreation Study Plan;

1. **Foothills Trail Corridor RUN Study:** assess current recreation use and identify future recreation needs, inform development of updated RMP.

2. **Foothills Trail Corridor Conditions Assessment:** evaluate the current condition of the foothills trail corridor and identify areas of potential improvements.

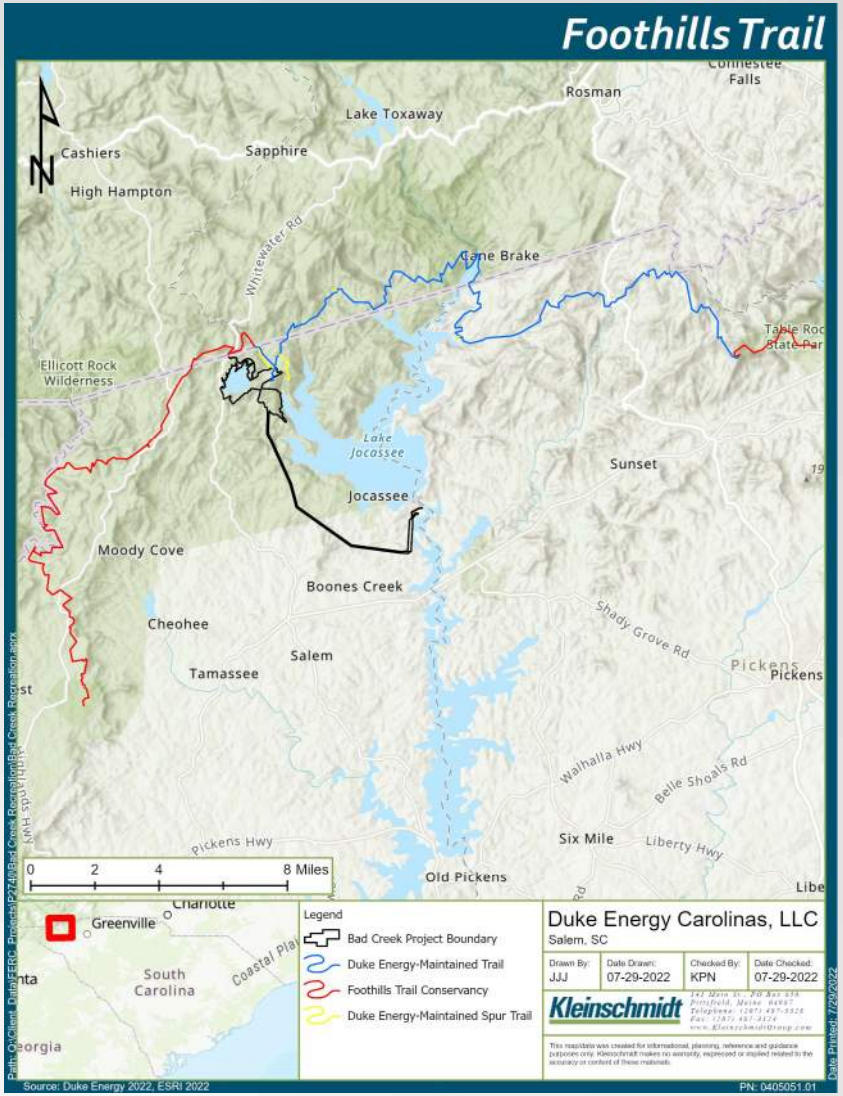
3. **Whitewater River Cove Existing Recreational Use Evaluation:** assess boating use of the Whitewater River Cove and inform Duke Energy on level of use disruption that may occur with Bad Creek II Complex construction.

4. **Whitewater River Cove Recreational Public Safety Evaluation:** evaluate public safety risks, including those associated with recreation at or near Whitewater River Cove that may be created or exacerbated by Bad Creek II Complex construction.

Proposed Study Area

Duke Energy Foothills Trail Corridor

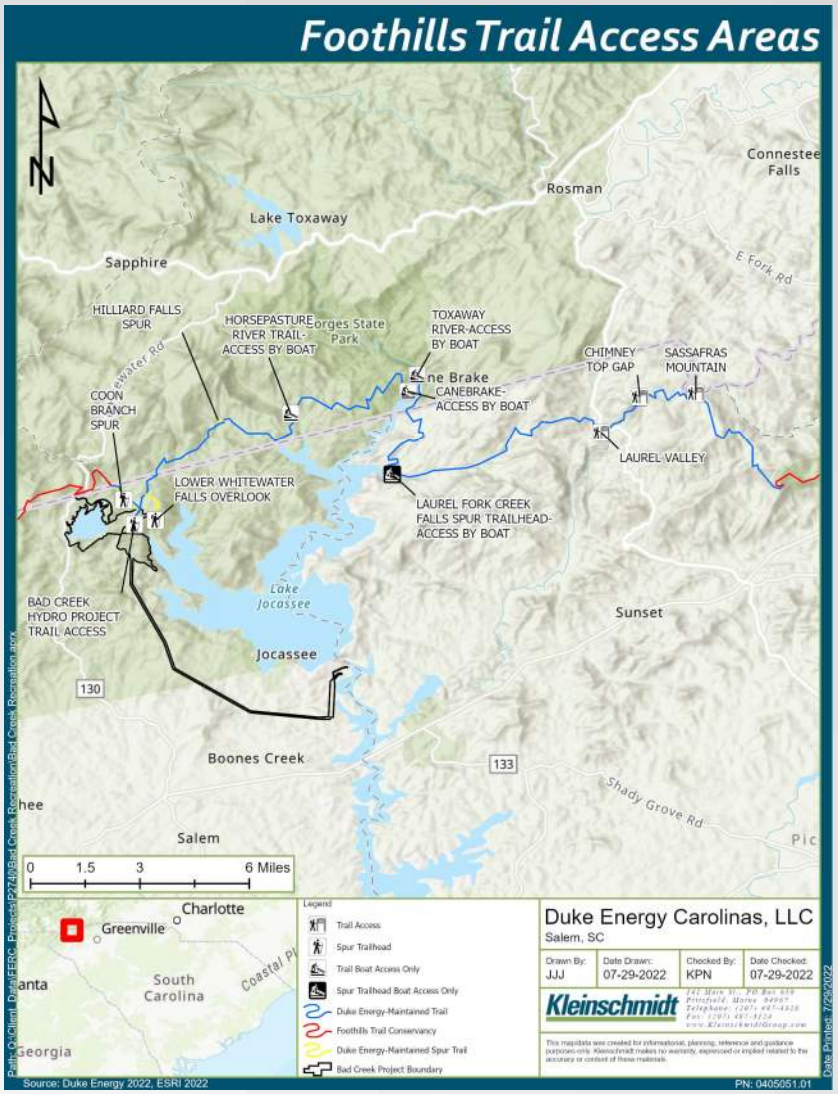
- Recreational Use
- Trail Condition



Proposed Study Area

Foothills Trail Access Points

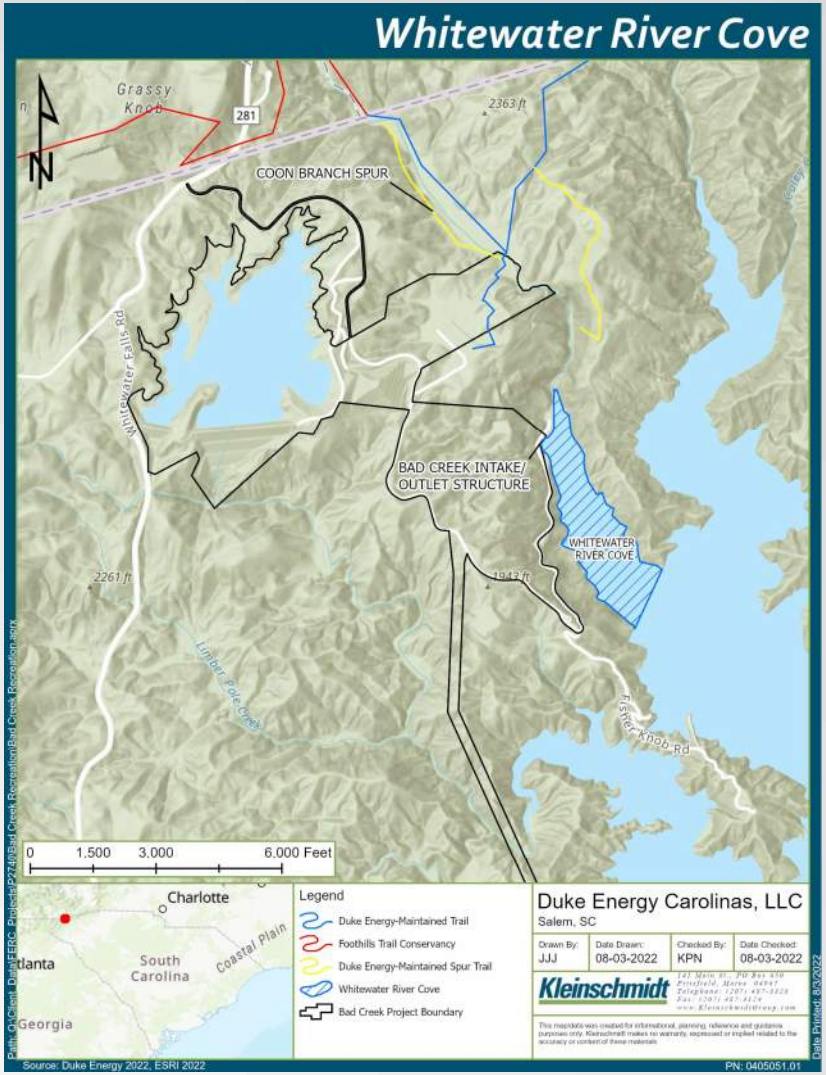
- Duke Energy maintained access points and points of interest.



Proposed Study Area

Whitewater River Cove

- Recreational Use
- Public Safety associated with potential Bad Creek II Complex construction



Project Nexus

- Although it is non-Project, the 43-mile segment of the Foothills Trail and 10 access areas are associated with the Project and are maintained by Duke Energy.
- Duke Energy plans to continue to maintain these facilities as non-Project.

Methodology

Task 1 – Foothills Trail Corridor RUN Study

- Facility Inventory
- Traffic and Trail Counters
  - March-November 2023
- User Surveys
  - March-November 2023
  - Mix of weekdays, weekends, holidays
- Analysis:
  - Trail Use
  - Parking Demand
  - Future Recreation Use
  - Recreation Needs

- Data will also inform if needed safety measures related to the Foothills Trail and facilities (if Bad Creek II project proceeds).

	Data Collection Methods			
Access Area	Inventory	Traffic Counter	Trail Counter	Surveys
Table Rock State Park *			*	
Sassafras Mountain Trail Access	*	*	*	
Chimney Top Gap Trail Access	*		*	
Laurel Valley Trail Access	*	*	*	*
Laurel Fork Creek Falls Spur Trail Access	*		*	
Toxaway River Trail Access	*		*	*
Canebrake Trail Access	*		*	
Horsepasture River Trail Access	*		*	
Lower Whitewater Falls Overlook	*		*	
Bad Creek Hydro Project Trail Access	*	*		*
Coon Branch Spur Trail Access	*	*		
Musterground Road		*		

Methodology

Task 2 – Foothills Trail Conditions Assessment

- Professional trail builder will assess conditions of the 43 miles of Foothills Trail and spur trails managed by Duke Energy.

- Analysis:
  - Trail surface and feature assessment
  - Corridor condition
  - Identification and prioritization of major maintenance needs

Methodology

Task 3 – Whitewater River Cove Existing Recreational Use

- Drone flights of the Whitewater River Cove area
  - 10 days between Memorial Day-Labor Day 2023
- Analysis:
  - Level of boating use
  - Type of watercraft
- Data will inform of potential impact of closures of the Whitewater River Cove area during construction if Bad Creek II project proceeds.

Task 4 – Whitewater Cove River Recreational Public Safety Evaluation

- A three-dimensional CFD model will be created as part of the Water Resources Study to evaluate potential water velocities
- Analysis:
  - Impact of water velocity on recreational use of the Whitewater River Cove

Study Logistics

Study Schedule

Task	Proposed Timeframe for Completion
Study Planning	**August – December 2022**
Study Tasks	**Winter 2022 – Winter 2023**
Foothills Trail RUN Study Data Collection	September 2022 – January 2023, March – November 2023
Foothills Trail Conditions Assessment	November 2022 – November 2023
Whitewater River Cove Existing Recreational Use	May – September 2023
Whitewater River Cove Recreational Public Safety Evaluation	Spring 2023 – Fall 2023
File Initial Study Report	**January 2024**

Cultural Resources Study

Cultural Resources Study Plan

- No formal study requests were received during the scoping process; however, Duke Energy will continue consultation with the Indian Tribes and other stakeholders during the preparation of the final study plan.

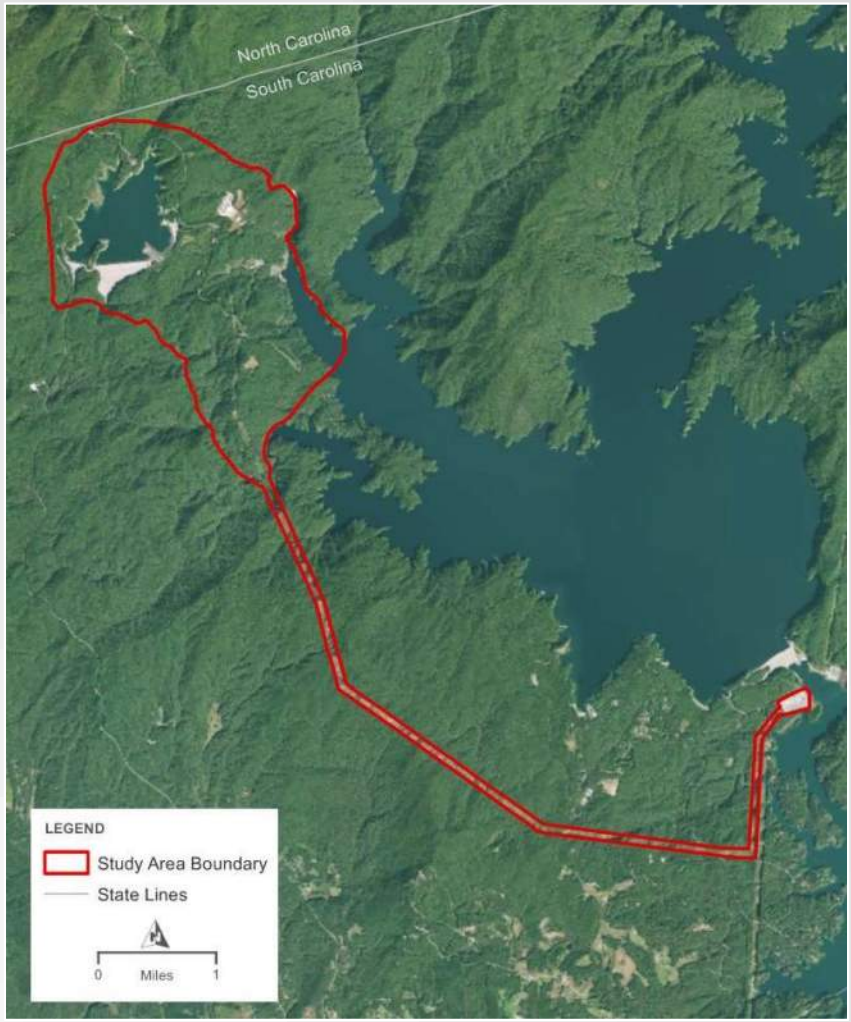
- In Section 7.1.8.3 of the PAD, Duke Energy proposed to conduct a Cultural Resources Study in support of the Bad Creek Project, including an archaeological study and an architectural survey of structures more than 40 years old.

Background and Existing Information

- Portions of the existing Project that underwent extensive land modification or that are currently under Lake Jocassee, are unlikely to contain significant archaeological resources or historical architectural resources other than the elements of the Project greater than 50 years of age.
- Portions of the Project were subject to prior cultural resource surveys.
- As obtained from the SCDAH/SCIAA ArchSite database, there are 12 known archaeological sites that are within or immediately adjacent to the Project. Three sites are potentially eligible and require additional evaluation. Nine sites were determined to be not eligible.
- The Jocassee Hydrostation is eligible.

General Study Area

- The study area for the Cultural Resources Study is the Area of Potential Effects (APE). The APE will be defined in consultation with the SHPO and THPO's.
  - Main/primary Project site
  - All lands within the Project boundary
  - Lands outside the Project boundary where cultural resources may be affected by Project-related activities
  - Upper reservoir
  - Lower reservoir (specifically, Whitewater River Cove)
  - Transmission line corridor



Project Nexus

- Presently, there is no evidence that archaeological or historic resources are being affected by the Project's existing operations. The proposed Bad Creek II Complex has the potential to effect historic properties that may be eligible for inclusion on the NRHP.

Goals and Objectives

The goal of the Cultural Resources Study is to evaluate potential impacts to historic and archaeological resources, and traditional cultural properties, due to the construction, operation and maintenance of the proposed Bad Creek II Complex.

Objective 1: Consult with the State Historic Preservation Office, Indian Tribes, and other agencies regarding the potential issues to cultural resources located within the area of potential effects for the Bad Creek II Complex.

Objective 2: Complete an architectural survey and National Register evaluation for the existing Bad Creek facilities.

Methodology

Task 1 – APE Determination

- The Project APE has tentatively been proposed. Section 106 Consultation with SHPO and Indian Tribes will finalize and document the final APE.

Task 2 – Cultural Resources Study of the APE

- A cultural resources survey of portions of the APE that will be impacted by the Project is anticipated. Shovel testing of all non-steep landforms, a pedestrian survey and/or drone survey of steeply sloped and rocky areas to look for rock shelters and petroglyphs, as well as an architectural survey of any structures on or near the Project APE that are 40+ years of age.
- Traditional Cultural Properties will be identified in consultation with Indian Tribes.
- Desktop Geomorphological assessment indicates there are six areas within the APE that have potential to contain archaeological resources that may require additional survey and deep testing if impacted by the Project..

Study Schedule

Task	Proposed Timeframe for Completion
Consultation with SHPO and other stakeholders	July-November 2022
Fieldwork, Analysis, and Reporting	Spring – Fall 2023
Initial Study Report	January 2024

Environmental Justice Study

Environmental Justice Study

- FERC has identified that an Environmental Justice review is pertinent to its NEPA analysis for the relicensing and proposed Complex development.
- Comments filed by Upstate Forever in support of an Environmental Justice Study.

What is Environmental Justice?

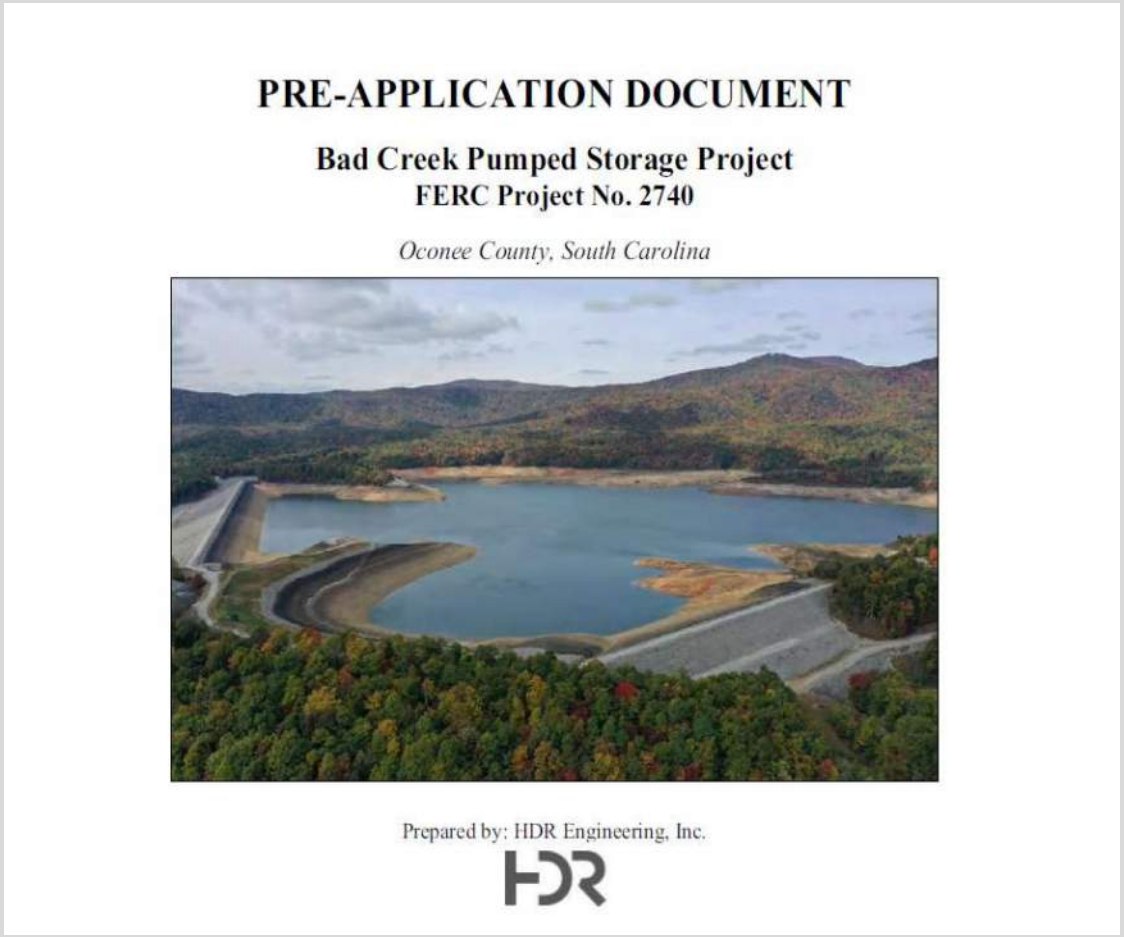
Environmental Justice (EJ) - The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies.

Additional Terms Included in the Analysis

Fair Treatment - The principle that **no group of people**, including a racial, ethnic or a socioeconomic group, **should bear a disproportionate share of the negative environmental consequences** from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies.

Disproportionate Effects - Term used in Executive Order 12898 to describe situations of concern **where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations or indigenous peoples**.

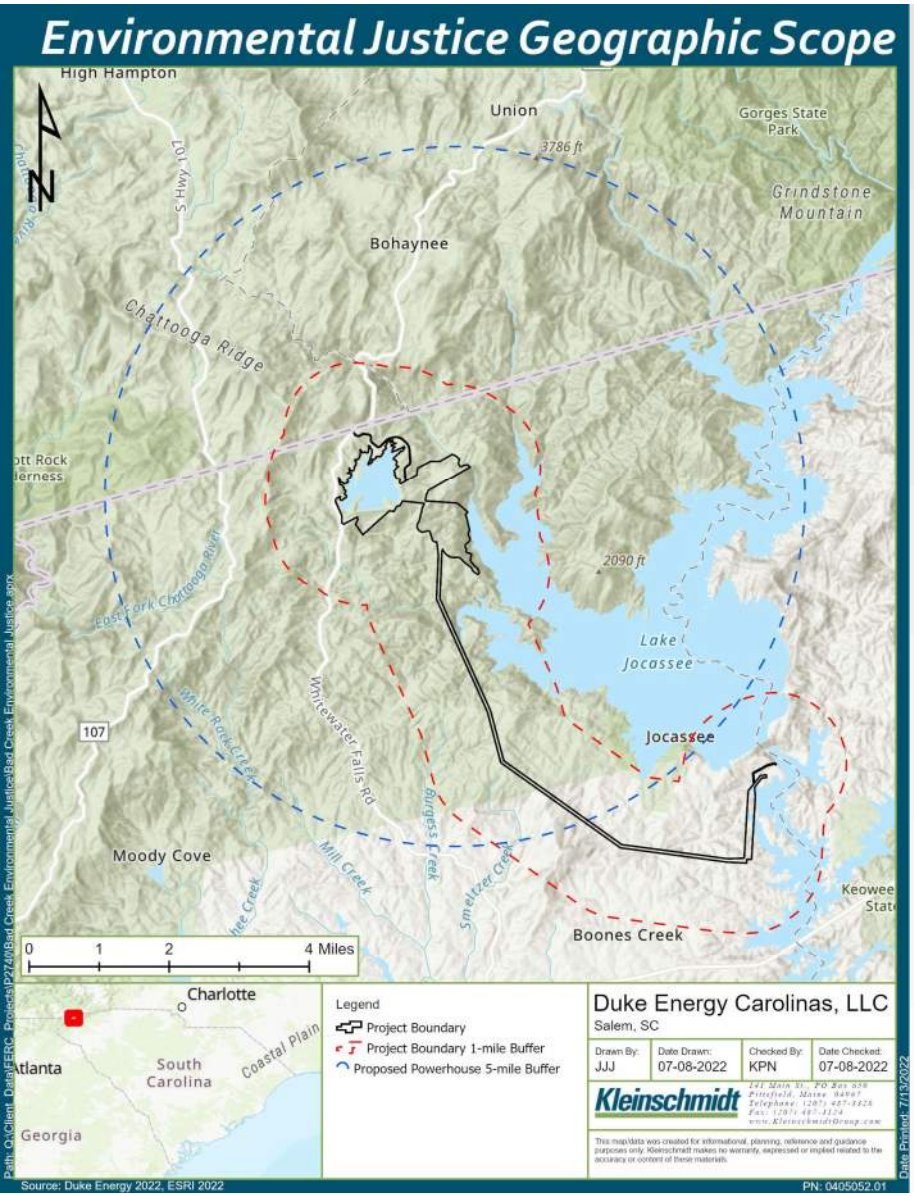
Sensitive Receptor Locations - Sensitive receptors include, but are not limited to, **hospitals, schools, daycare facilities, elderly housing and convalescent facilities**. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants.



Background and Existing Information

Study Goals and Objectives

1. **Identify presence of environmental justice communities** that may be affected by the relicensing and proposed project expansion.
2. **Identify the presence of non-English speaking populations** that may be affected by the project.
3. **Identify the presence of sensitive receptor locations** in the geographic scope.
4. **Discuss the effects of the relicensing** on any identified environmental justice communities and any affects that are disproportionately high and adverse and potential effects on non-English speaking communities and sensitive receptor locations.
5. **Identify mitigation measures** to avoid or minimize project effects on environmental-justice communities, non-English speaking communities and sensitive receptor locations, if present within the geographic scope



Proposed Study Area

Project Nexus

- Project construction, operation, and maintenance has the potential to affect human health or the environment in environmental justice communities.

- Examples of resource impacts may include, but are not necessarily limited to, project-related effects on:
  - subsistence fishing, hunting, or plant gathering;
  - access for recreation;
  - and construction-or operation-related air quality, noise, and traffic.

Methodology

Consistent with Environmental Protection Agency's *Promising Practices for EJ Methodologies in NEPA Reviews* (2016), the EJ Report will include the following:

Step 1: A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. (Source: U.S. Census Bureau Data).

	RACE AND ETHNICITY DATA										LOW-INCOME DATA
Geography	Total Population (count)	White Alone Not Hispanic (count)	African American (count)	Native American/ Alaska Native (count)	Asian (count)	Native Hawaiian & Other Pacific Islander (count)	Some Other Race (count)	Two or More Races (count)	Hispanic or Latino (count)	Total Minority (%)	Below Poverty Level (%)
State											
County or Parish											
Census Tract X, Block Group X											

Methodology (cont.)

Step 2: Utilizing data within Step 1 to identify environmental justice populations by block group by applying the following methods to minority populations:

- 50% Analysis Method
- Meaningfully Greater Analysis Method

Step 3: Utilizing data within Step 1 to use the "low-income threshold criteria" method to identify environmental justice communities based on the presence of low-income populations.

- the percent of the population below the poverty level in the identified block group must be equal to or greater than that of the reference population (county)

Methodology (cont.)

Step 4: Identify non-English speaking groups within the geographic scope of analysis **that would be affected by the project**.

Describe planned outreach efforts if these groups exist within the geographic scope.

Reporting: Map Development

Map Components

- FERC Project Boundary
- Project construction areas
- Identify block groups of EJ communities based on the presence of minority population, low-income population, or both
- Sensitive receptor locations (e.g., schools, daycare centers, hospitals, etc.)

Reporting: Sensitive Receptor Locations

A table of distances of sensitive receptor locations from project facilities and proposed facilities.

Discussion of project-related effects on these locations.

Discussions of PM&E measures to avoid or minimize potential effects.

Reporting: Potential Project Effects Discussion

A discussion of potential project-related effects on any environmental justice communities, non-English speaking groups and sensitive receptor locations for all resources where there is a potential nexus between effects and communities/locations.

For any identified effects, describe whether or not any of the effects would be disproportionately high and adverse on environmental justice communities.

Public Outreach

Protection Mitigation and Enhancement Measures

To avoid and/or minimize project effects on identified communities:

- Environmental justice communities
- Non-English speaking groups
- Sensitive receptor locations

Schedule

Quarterly Progress Reports

On or around July 2023

On or around October 2023

Public Outreach Meetings – October 2023

Final Environmental Justice Report – January 4, 2024

Resource Committee Members

Type	First Name	Last Name	Company Name
Duke Technical Leader	John	Crutchfield	Duke Energy
Duke Resource Lead	Lynne	Dunn	Duke Energy
Duke Resource Lead	Ed	Bruce	Duke Energy
HDR Support	Sarah	Kulpa	HDR
Environmental Justice -Kleinschmidt Support	Alison	Jakupca	Kleinschmidt Associates
Committee Member	Sarah	Chabaane	South Carolina Department of Natural Resources
Committee Member	Pat	Cloninger	South Carolina Department of Natural Resources
Committee Member	Tom	Daniel	South Carolina Department of Natural Resources
Committee Member	Elizabeth	Miller	South Carolina Department of Natural Resources
Committee Member	Greg	Mixon	South Carolina Department of Natural Resources
Committee Member	Alex	Pellett	South Carolina Department of Natural Resources
Committee Member	Alix	Pedraza	South Carolina Department of Natural Resources
Committee Member	Dan	Rankin	South Carolina Department of Natural Resources
Committee Member	John	Haines	Friends of Lake Keowee Society
Committee Member	Terry	Keene	Advocates for Quality Development (AQD)
Committee Member	Rowdy	Harris	SC Department of Parks, Recreation & Tourism
Committee Member	Morgan	Amedee	SC Depart. Health and Environmental Control
Committee Member	Melanie	Olds	U.S. Fish and Wildlife Service

Questions

Action Items