

**Pushmataha County Pumped Storage Project**

**FERC No. P-14890**

**Proposed Study Plan**

*Prepared by*

**Southeast Oklahoma Power Corporation**

*March 2025*

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## 1. Introduction

On May 7, 2024, Southeast Oklahoma Power Corporation (SEOPC) filed a Notice of Intent (NOI) to file an application for an original license for the Pushmataha Pumped Storage Project No. 14890 (Pushmataha Project, or project) and a Pre-Application Document (PAD) with the Commission.

The proposed project would be located along the Kiamichi River in Pushmataha County, Oklahoma, approximately 5 miles south of Talihina, Oklahoma, and would include a 99.96-mile-long, 345-kilovolt (kV) transmission line extending through Pushmataha and McCurtain Counties, Oklahoma, and Red River and Lamar Counties, Texas, to its proposed point of interconnection in Paris, Texas (figure 1). The project would entail the construction of an 886-foot-long upper dam, with a 599.55-acre upper reservoir; a 13,615-foot-long lower dam, with an 887.37-acre lower reservoir; a 40-acre re-regulating reservoir; a concrete pump station/powerhouse containing four 300-MW turbines, with a total installed capacity of 1,200 MW; and the transmission line (figure 2). Initial fill water and make-up water would be provided via a concrete intake channel on the Kiamichi River (figure 2).

This document is SEOPC's Proposed Study Plan for conducting studies as part of the licensing process. The enclosed Proposed Study Plan contains the following information:

- Stakeholders' comments and additional information requested
- SEOPC's responses to comments and additional information requested
- Appendix A: 13 individual Study Plans
- Appendix B: SEOPC's responses to individual Study Plan requests

Project No. 14890-005

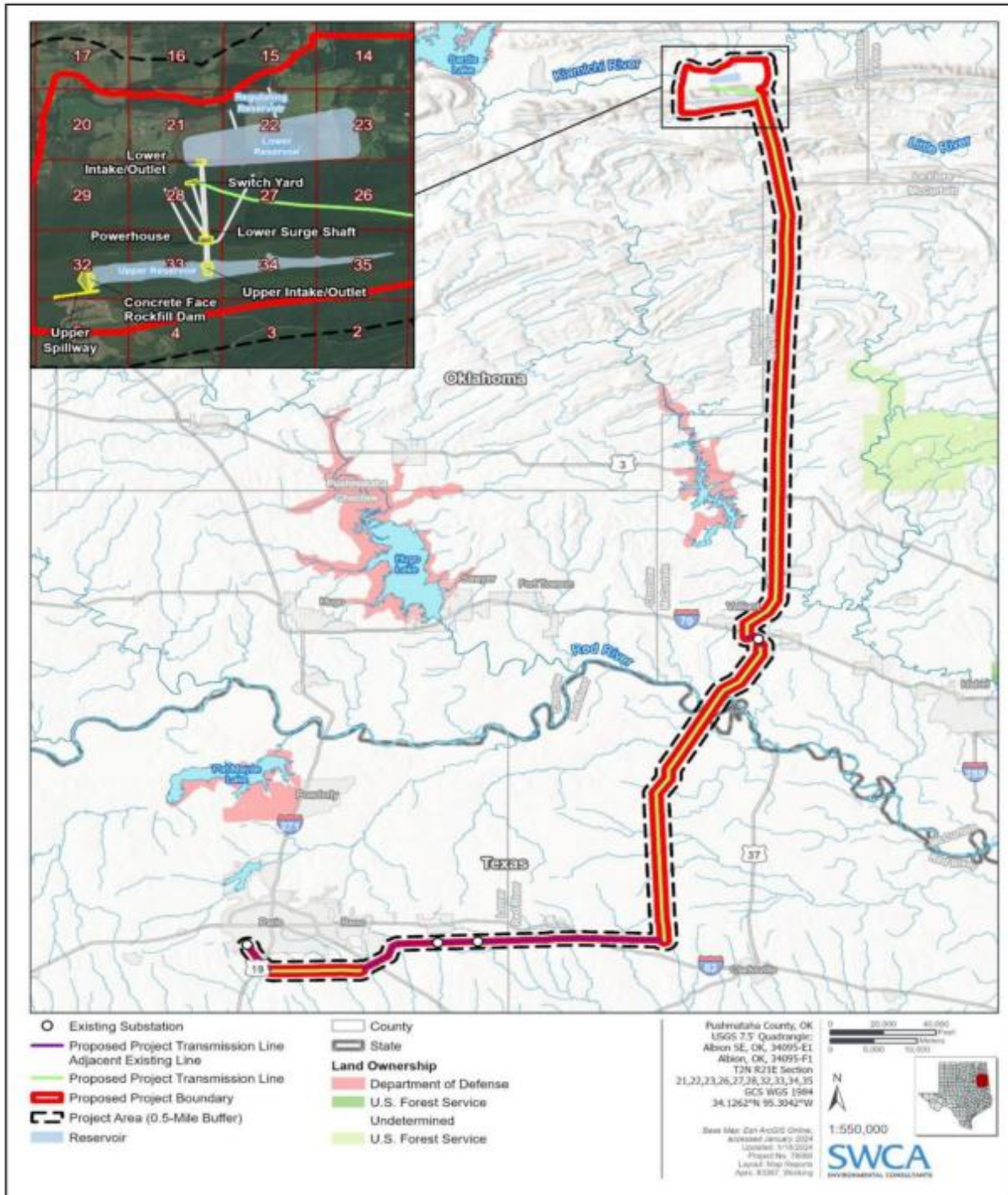


Figure 1. Location of the proposed Pushmataha County Pumped Storage Project (Source: Pre-Application Document (PAD), May 7, 2024).



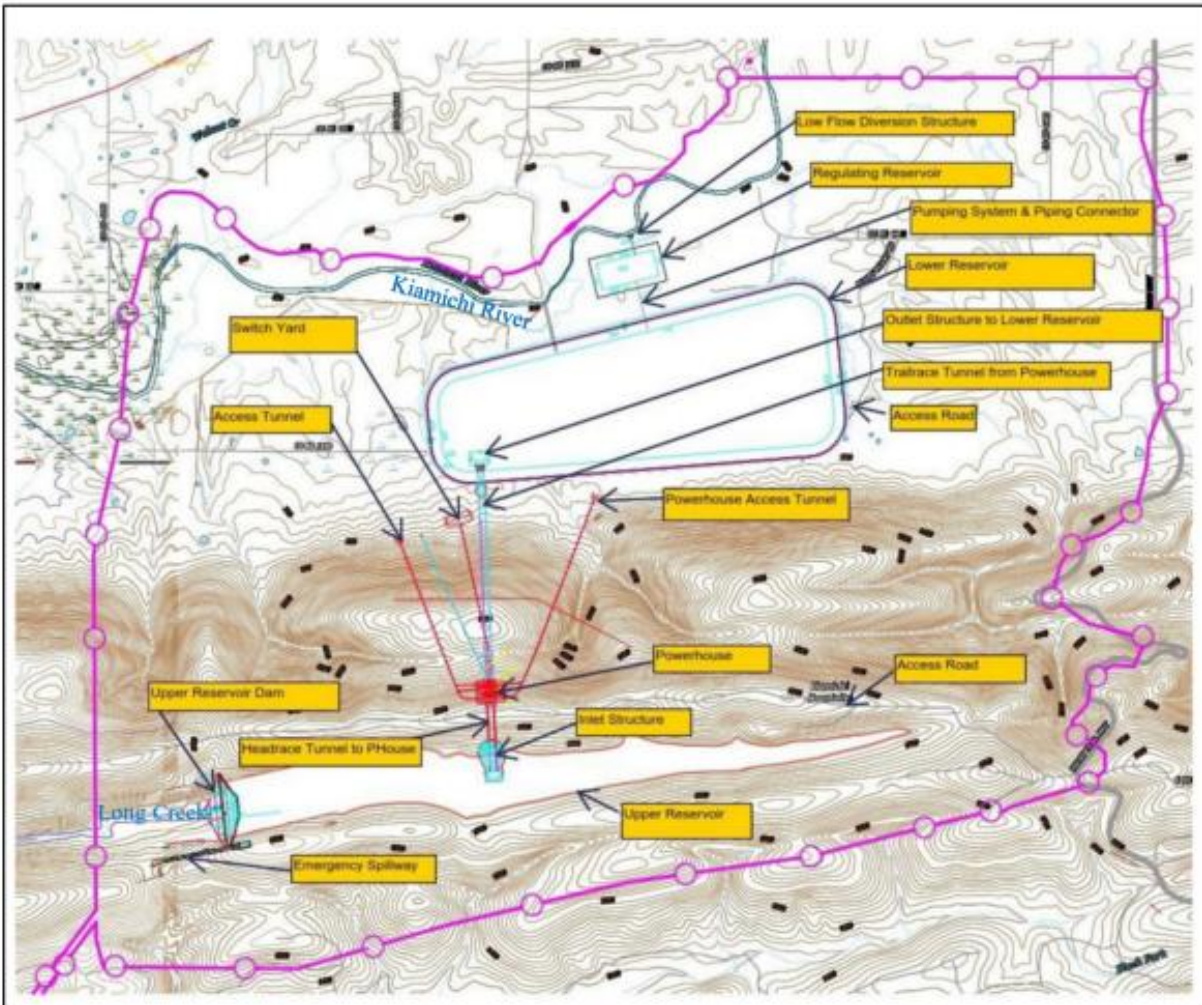


Figure 2. Project facilities for the proposed Pushmataha County Pumped Storage Project (Source: Pre-Application Document (PAD), May 7, 2024, as modified by staff).

## 2. Proposed Study Plan Meeting

As required by the ILP (18 C.F.R. § 5.12), SEOPC will host a virtual PSP Meeting to discuss the PSP for the Project. This meeting is generally a technical meeting that will discuss the specific methodologies proposed for each study, the rationale for studies requested and proposed with modifications, the rationale for studies requested but not adopted, as well as other relevant information from this PSP. Meeting attendees will have the opportunity to ask clarifying questions and/or provide comments specific to the studies being discussed.

The SEOPC stakeholder meeting will be on April 16 - 18, 2023. The agenda for the meeting is provided in Table 2.1. Times shown on the agenda are approximate. Depending on the

progress of the meeting, the exact times for various meeting segments may be earlier or later than shown.

Stakeholders that are interested in participating in the virtual meeting should notify [info@greenvaultenergy.net](mailto:info@greenvaultenergy.net) via email no later than April 11, 2025. Once notified, a meeting invitation will be provided as well as details on how to access the meeting.

## 2.1. Study Plan Meeting

The purpose of the Study Plan Meeting is to clarify the intent and contents of SEOPC's proposed study plan and identify any outstanding issues or information needed with respect to the proposed studies. In accordance with 18 C.F.R. § 5.11, SEOPC is to hold the Study Plan Meeting required by the ILP within 30 days after the deadline for filing the proposed study plan on April 16 - 18, 2025. The background, concepts, and studies described in this proposed study plan will be presented during the Study Plan Meetings. The meeting agendas will be filed with FERC and will be available through SEOPC's public relicensing website at <http://www.greenvaultenergy.net>. To assist with meeting planning and logistics, SEOPC requests that all relicensing participants who plan to attend the proposed study plan meeting RSVP by sending an email: [info@greenvaultenergy.net](mailto:info@greenvaultenergy.net) by April 11, 2025. Meeting RSVPs or questions about the meeting may be directed by email to:

Southeast Oklahoma Power Corporation  
[info@greenvaultenergy.net](mailto:info@greenvaultenergy.net)

## 2.2. Proposed Study Plan Meeting Agenda, April 16 - 18, 2024

Table 2.1: Proposed Study Plan Meeting Agenda, Central Time

Approx. Time (Central)	Meeting Topic
<b>Wednesday April 16</b>	
9:15 - 9:45	Introductions & Meeting Logistics
9:45 - 10:00	Project Update & Overview
10:00 - 10:30	Licensing Process To-date
10:30- 10:45	Break
10:45 - 12:00	Geologic and Soil
12:00 - 1:00	Lunch

1:00 - 2:15	Water Resources
2:15 - 3:30	Aquatic Resources
3:30 – 3:45	Break
3:45 - 5:00	Terrestrial Resources
<b>Thursday, April 17</b>	
9:15 -10:30	Threatened and Endangered Species
10:30 – 10:45	Break
10:45 - 12:00	Recreational Resources
12:00 - 1:00	Lunch
1:00 - 2:00	Land Use and Aesthetic Resources
2:00 - 3:15	Cultural Resources
3:15 - 3:30	Break
3:30 – 4:15	Environmental Justice
4:15- 5:30	Socioeconomics
<b>Friday, April 18</b>	
9:15 – 10:30	Noise, Air Quality, and Traffic
10:30 – 10:45	Break
10:45 – 12:00	Development Resources
12:00 – 12:30	Next Steps & Wrap Up

### 3. Study Reporting and Meetings

SEOPC intends to start all studies during the 2025 summer field season. The majority of the proposed studies will be completed during the first study year; however, several studies are currently proposed to span both study years and/or have proposed second year tasks that will only be necessary depending on the results of the operations and hydraulic modeling.



The estimated start and completion dates for the field efforts associated with the proposed studies are provided in Table 3.1. Study progress reports will be filed with the Commission halfway through each study season.

In accordance with the Commission’s regulations, SEOPC will file its Initial Study Report (ISR) no later than one year following the issuance of FERC’s Study Plan Determination (SPD). Based on the schedule provided in SD2, this is anticipated to be August 19, 2025 with the ISR due on August 19, 2026, and ISR Meeting occurring September 3, 2026. SEOPC will file an Updated Study Report (USR) for those year one studies that were not completed at the time of the ISR and/or year two studies no later than August 19, 2027 as detailed in FERC’s Project Process Plan and Schedule published in SD2.

### **3.1. Responses to Comments and Additional Information Requested**

SEOPC received comments and/or study requests from over 1000 stakeholders including federal and state resource agencies, tribes, political or municipal entities, non-governmental organizations, and the general public (see Section 3.1.1 General Comments, Section 3.1.2 Alternatives to the Proposed Action, Section 3.1.3 Geology and Soil Resources, Section 3.1.4 Water Resources, Section 3.1.5 Aquatic Resources, Section 3.1.6 Terrestrial Resources, Section 3.1.7 Rare, Threatened and Endangered Species, Section 3.1.8 Recreation, Aesthetics and Land Use, Section 3.1.9 Cultural Resources, Section 3.1.10 Environmental Justice, Section 3.1.11 Socioeconomic Resources, Section 3.1.12 Air Quality). The vast majority of the letters received were from the general public. Such letters identified numerous concerns and potential environmental impacts associated with the construction and operation of the Project and raised many questions that the stakeholders requested be answered during the licensing process. SEOPC appreciates the time and effort taken to provide such comments.

SEOPC has closely reviewed all comments received and has incorporated the concerns and questions raised by the stakeholders into the design of the individual study plans detailed in Appendix A. The results of the proposed studies will answer the questions raised by the stakeholders that have a nexus to the Project, will inform the development of the license application, and will inform FERC’s National Environmental Policy Act (NEPA) analysis. In addition, SEOPC has provided responses below to specific additional information requests (AIR) received.

#### **3.1.1. General Comments**

Comment: Many stakeholders, including the Choctaw Nation of Oklahoma and the Chickasaw Nation (Nations), commented that SEOPC’s Pre-Application Document (PAD) is incomplete and does not comply with the minimum content requirements under the Commission’s regulations, under 18 C.F.R. § 5.6(d) or provide an adequate basis to initiate the scoping process under the National Environmental Policy Act (NEPA).

Additionally, the Nations stated that PAD is missing important information that is relevant to the project and could have been obtained by SEOPC with the exercise of due diligence.

The Nations objected to Commission staff's acceptance of the Notice of Intent and PAD filed by Southeastern Oklahoma Power Corporation (SEOPC) on May 7, 2024. Specifically, the Nations stated that the PAD does not address staff's direction to summarize how any responses from Tribes and landowners were incorporated into the PAD pursuant to section 5.6(b)(5) of the Commission's regulations. Additionally, the Nations indicated that that PAD does not adequately address the existing and proposed uses of project waters (i.e., irrigation, domestic water supply, industrial, etc.) or any upstream or downstream requirements or constraints to accommodate those purposes, as required by 18 C.F.R. § 5.6(d)(3)(iii)(D), nor does it provide information on existing water rights and water rights applications potentially affecting or affected by the project (18 C.F.R. § 5.6(d)(3)(iii)(E)).

Board members of the Kiamichi River Legacy Alliance (KRLA) questioned why FERC did not reject SEOPC's May 7, 2024 PAD. Shawnda Duncan noted that FERC's April 19, 2024 rejection letter did not specify that if SEOPC intended to re-file it must correct the deficiencies listed in Schedule A, as stated in FERC's first rejection letter, and asked why SEOPC was allowed to submit another NOI and PAD. She also asked if SEOPC fulfilled all of FERC's concerns, between SEOPC's April 19 and the May 7, 2024 NOI and PAD filings, identified in FERC's April 19, 2024 rejection letter and, if so, where FERC stated this in writing. Bobby McSpadden commented that following the review of the two NOI/PADs produced by SEOPC, FERC found at least 40 deficiencies. He questioned whether SEOPC's May 7, 2024 PAD contained enough information for FERC to certify that adequate due diligence has been performed.

Response: Commission staff reviewed the PAD for conformance with section 5.6 of the Commission's regulations, based upon that review, Commission staff determined that the PAD contained sufficient information to commence the ILP and did so pursuant to section 5.8 of the Commission's regulations on July 8, 2024.

Comment: Several stakeholders, including the Oklahoma Sierra Club, requested that Commission staff consider that the Pushmataha Project may be ill-suited for the proposed location, because it would harm local ecosystems, Indigenous communities, and landowners, while providing no tangible benefits to Oklahoma residents.

Response: SEOPC has included these issues in the Resource Issue section.

Comment: Texas Parks and Wildlife Department (Texas PWD) reviewed the federal and state comprehensive plans in the SD1 that may be relevant to the proposed project and identified 5 plans that need to be updated.

Response: Comprehensive Plans and updated comprehensive plans can be filed by the authoring agencies, along with a cover letter indicating that the document be considered

as a comprehensive plan under section 10(a)(2)(A) of the FPA. State and federal comprehensive plans can be e-filed through the ferc.gov e-filing portal at: <http://www.ferc.gov/docs-filing/efiling.asp>. Comprehensive plans should be filed in the docket ZZ09-5-000. More detailed filing information and a list of accepted comprehensive plans can be found at this link: Comprehensive Plans | Federal Energy Regulatory Commission (or at <http://www.ferc.gov/comprehensive-plans>). FERC staff will review any additional or updated comprehensive plans added to the list that could be relevant to the project at such appropriate time.

Comment: The Sierra Club, as well as many individuals, commented that the energy produced by this project would serve the Texas grid, and would be built at the expense of Oklahoma's ecosystems and communities, while the communities in Oklahoma would see no financial benefit or energy security from the project.

Response: The Development Resources benefits and costs associated with the proposed project will be addressed in any NEPA document issued for the project proposal.

Comment: There was one comment on the impacts on property and timber due to an inability to do any long-term planning to plant for timber harvests until a decision is made on the project.

Response: The NEPA document will describe the existing environment of potentially affected resources in the project area and where appropriate include supporting information, and an analysis of the effects of the proposed project and alternatives, including reasonably foreseeable effects, on potentially affected environmental resources.

Comment: Several people commented on a lack of specifics in the applicant's proposal and an understatement of environmental effects. Stakeholders also indicated that there have not been enough studies performed by the applicant to assess the damage to natural resources from the proposed project development.

Response: As noted in Appendix A, there is a study planning process for the proposed project. The next step in the process is for SEOPC's to file a proposed study plan by February 7, 2025, and hold a study plan meeting by March 7, 2025. Stakeholders may attend the meeting and file comments on the proposed study plan. Commission staff' study plan determination is currently scheduled for mid-July 2025.

Comment: The Nations note that according to SD1 Section 1, Commission staff will determine whether to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment under NEPA based, in part, on scoping comments. The Nations state that the Commission's regulations establish a presumption that an EIS will be prepared for licenses issued under the FPA Part I "for construction of any unconstructed waterpower projects." 18 C.F.R. § 380.6(a). The Commission can overcome this presumption, but only if it "believes that a proposed action ... may not be a major Federal

action significantly affecting the quality of the human environment ...” 18 C.F.R. § 380.6(b). The Nations continue that given the scope and significance of the project’s impacts, there is no rational basis for such a belief. Accordingly, the Commission should prepare an EIS for the proposed Project.

Response: Commission staff sees no conflict between its statement in SD1 and the Commission’s regulations. Once the Commission has received a complete license application and FERC staff has determined that the project record is ready for environmental analysis, FERC staff will decide whether to prepare an Environmental Assessment or Environmental Impact Statement.

Comment: Many landowners report that the possibility of the proposed Pushmataha Project is currently having negative impacts on their property values. The Nations requested that the Commission also include effects of project construction and operation on local property values, as well as insurance costs in our NEPA analysis.

Response: The list of Resource Issues in this SD2, includes the effects of the project proposal on socioeconomic resources, which could include, from a broad public interest perspective, project effects on property values and land use.

Comment: A few individuals commented that the notice for the scoping meetings in the local newspapers was published after the meetings.

Response: Due to FERC administrative error by Commission staff, the newspaper notices were delayed beyond the dates of the meetings. The meetings took place between August 7 and August 15 of 2024 and the newspaper advertisements did not run until August 17, 2024 (McCurtain Gazette) and August 22, 2024 (The Paris News and Antlers American).

On July 8, 2024, FERC project staff mailed the SD1 to 908 addresses of people and organizations who might be affected by, or interested in, the proposed project. In the period between July 8 and August 7, 2024, the Commission’s Office of Public Participation (OPP) conducted ‘enhanced notice’ of the meetings, through community outreach, social media campaigns, and public education materials that included an additional 597 individuals and organizations. Between these efforts and information distribution by local organizations and individuals, the meetings were well attended, and 306 oral comments were provided.

On September 4, 2024, the Commission extended the comment date by 60 days from September 6, 2024 to November 5, 2024. One benefit of this extension was that those who received notice of SD1 via one of the newspaper notices had more than 60 days to provide written comments, which receive the same consideration as oral comments provided at the meetings. About 1,200 written comments were filed to the public record for the proposed Pushmataha Project.

Comment: The Nations requested that the Commission include effects (temporary and long-term) of project construction and operation on local employment opportunities in the NEPA document. The Central South Carpenters Regional Council stated that a project of this magnitude, along with any associated construction, would create hundreds of jobs for highly paid union workers and would ensure decades of maintenance work. Others questioned how many of those jobs would be permanent and locally sourced.

Response: The effect of the proposed project on employment opportunities (now specified to include consideration of both temporary and permanent jobs) was listed in section 4.2.10, Socioeconomics, of the SD1, as an issue for analysis. SEOPC will study the effects of project construction and operation activities on local roads (including traffic), housing, businesses, employment opportunities (both temporary and permanent), and government services.

### **3.1.2. Alternatives to the Proposed Action**

Comment: Some stakeholders recommended that FERC analyze alternative sites, alternative energy storage technologies, alternative project design and operations, and alternatives that “mitigate the known adverse impacts that will result from the project” as part of its environmental analysis. Other individuals recommend the use of Battery Energy Storage Systems (BESS) as an alternative.

The Center for Biological Diversity (Center), Kiamichi River Legacy Alliance, and Seth Willyard stated that there has been insufficient consultation with local stakeholders about alternatives that might meet renewable energy needs without compromising the local environment and community interests and implores FERC and SEOPC to consider newer, more environmentally friendly, energy storage solutions such as compressed air, molten salt, lithium-ion batteries, hydrogen, and flywheel gravity based electric storage, which would present fewer risks and disruptions to the ecosystem and the local community.

There was one comment that nuclear energy should be used, rather than hydropower.

Response: The Commission may issue licenses under the FPA for the construction, operation, and maintenance of non-federal hydropower projects. The Commission does not have the authority to authorize other types of energy storage technologies, such as battery storage which has been identified by several stakeholders. Therefore, these alternative technologies are not reasonable alternatives to the proposed action and therefore we do not intend to analyze these alternatives.

Comment: Many stakeholders indicated that the Commission’s restriction of the project area as defined in SD1 is too limited based on associated impacts to Long Creek as indicated by the FWS.

The Center and KRLA also commented that the geographic scope of the project area, as defined in section 4.1.2 of SD1, is too restricted to capture the relevant project impacts that must be examined during the Commission's NEPA analysis, and regulations at 40 C.F.R. §§ 1502.15-.16 direct the Commission to define the project area expansively enough to capture all environmental impacts of the proposed action.

The Town of Albion, Oklahoma commented that the geographic scope should be expanded to include the Little River Basin, the location of Long Creek, which will be dammed to create the upper reservoir.

Response: SEOPC has revised the extent of the geographic study plan scope to include Long Creek, located in the Upper Little River sub-basin. The project nexus to Long Creek is clear since SEOPC proposes to impound Long Creek as part of creating the upper reservoir. SEOPC have tentatively identified the geographic scope for our cumulative effects analysis for water quantity, water quality, fisheries, and rare, threatened, and endangered species (RTE species) to include the Kiamichi River Basin, from the intake of the reregulating reservoir, to the mainstem of the Red River, located about 90 River miles downstream of the proposed Pushmataha Project. Additionally, SEOPC include Long Creek, up to its connection with the Black River, that will be dammed to create the Upper Reservoir.

Comment: The Nations supported the proposed inclusion of the resources identified in SD1, as having the potential to be cumulatively affected by the proposed construction, operation, and maintenance of the project. However, the Nations requested that the proposed project's cumulative effects on the following resources be evaluated in our NEPA document: (1) geologic and soil resources; (2) hydrogeologic resources; (3) aquatic resources (including non-listed mussels and host fish); (4) terrestrial resources; (5) recreation resources; (6) land use and aesthetic resources; (7) cultural and historic resources, (8) environmental justice; (9) socioeconomics; (10) noise; (11) air quality and traffic, and (12) developmental resources.

Response: Cumulative effects need to be estimated and evaluated based on existing information to the extent that they are reasonably foreseeable. SEOPC has define the project area broad enough to cover these concerns.

### **3.1.3. Geology and Soil Resources**

Comment: The Center and KRLA indicated that the Kiamichi River Basin has many fault lines, and that the proposed construction in the project area has the potential to disrupt these fault lines and cause seismic activity in the region. Additionally, a few individuals raised the concern that the proposed project could be vulnerable to seismic activity in the region.



Response: SEOPC has included in the Geology Study Plan to include an analysis of seismic activity in the project vicinity on soil and geologic resources.

Comment: The Board of Directors of Rural Water District #3 (Pushmataha RWD #3), the City of Antlers, Oklahoma, the Town of Albion, Oklahoma, and the Talihina Board of Trustees (Talihina Board), as well as many individuals, raised concerns about erosion and sedimentation from project construction and runoff events into the Kiamichi River, potentially affecting fish and wildlife, their associated habitat, turbidity, and domestic and other uses of water, including by individuals and large industrial consumers.

Response: SEOPC has made modifications to the descriptions of the area to study in the Geology Study Plan, the Water Resources Study Plan, and Aquatic Resources Study Plan for analysis.

Comment: The Center, KRLA, Pushmataha RWD #3, the City of Antlers, the Town of Albion, and the Pushmataha County Board of Commissioners (Pushmataha Board) indicated that the geological materials (including sandstone and shale) that would be excavated for the project potentially contain lead, manganese, magnesium, iron, mercury, cadmium, cinnabar, and/or cadmium sulfide, and that disturbing these materials for project construction may release these pollutants, into the Kiamichi River.

Response: SEOPC has include in the Water Resources Study Plan to study the effects of disturbing local geology on water quality in the Kiamichi River.

### **3.1.4. Water Resources**

Comment: The Bureau of Indian Affairs (BIA) of the Department of the Interior and other stakeholders indicated that the Water Settlement Agreement (WSA) entered into by both Nations and state and local stakeholders, which was approved by Congress, and which covers the Kiamichi and Little River sub-basins, is not mentioned in SD1. The BIA noted that the WSA includes provisions to divert water to Oklahoma City from the Kiamichi Basin.

The Manager of the City of Hugo, Oklahoma stated that the Oklahoma WRB issued two permits to the City of Hugo for the lower Kiamichi River Basin; one permitting 28,800 AF of water to the City for municipal and industrial use, tourism, fish and wildlife, and commercial sale uses. The allocation of water from the Kiamichi River for the project would be a violation of the City's permits and a detriment to the City.

Multiple stakeholders requested that the NEPA document analyze the effects of project construction and operation on existing water rights. Some landowners raised concerns about the potential effects of the proposed project on riparian rights.

Response: Should a license be issued for the project, Standard Article 5, which is included in all licenses, requires licensees to acquire all rights necessary for operation and

maintenance of a project within five years of the license issuance. This requirement includes necessary water rights. However, section 27 of the FPA states that nothing in Part I of the FPA “shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective States relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.”

The Commission’s regulations require that a license application include information on existing water uses in the project area, including information on water rights and water rights applications potentially affecting or affected by the project.

SEOPC has included project effects on ground water, surface water, and water uses in the basin in the Water Resources Study Plan. SEOPC will show that it has access to adequate water to operate the project, taking into account all restrictions on potential water sources.

SEOPC has added the following into the Water Resources study plan: Study the effects of competing uses of the Kiamichi River water and anticipated impoundment evaporation and leakage on project operations; as well as the effects of proposed project operation on competing water uses (both upstream and downstream of the project).

Comment: BIA indicated that the effects on groundwater from project construction and operation should be considered. Specifically, BIA was concerned with the effects of: (a) project operation on dewatering the existing groundwater resources in the affected project area, and (b) any hydraulic and hydrologic connectivity between the surface water and groundwater affected by the construction or operation of the project.

Many people, including the Talihina Board, expressed their concerns about the potential impact of the project on ground water (e.g., effects on wells and drinking water sources in the project area). They also expressed concerns about the proposed blasting during project construction and how project construction and operation may affect water quantity in the existing wells used for drinking water, watering livestock, and agricultural uses. The Town of Albion, Oklahoma was concerned that its residents could lose use of their wells as a result of the proposed project.

The Sierra Club as well as many individuals commented that landowners in the area already face significant challenges with water access, with some reporting that their wells have run dry due to declining river levels, and that the proposed project would exacerbate existing water shortages in the Kiamichi River, creating further hardships for those living in the region.

Response: SEOPC has included in the Water Resources study plan to specifically include the potential effects of the proposed project construction, operation, and maintenance on groundwater, including any connectivity between groundwater and project surface waters and any effects of dewatering the affected groundwater aquifers as issue for analysis.

Comment: Pushmataha County Rural Water District #2 (Pushmataha RWD #2) indicated that the proposed project appears to be located in their customer base, which may result in a loss of metered customers. Pushmataha RWD #2 stated that the poor quality of the mapping resolution in Figure 3-1 of the PAD makes it difficult to understand or evaluate the location of the project in relation to its customer base making forecasting their potential loss a challenge. Further, the Pushmataha RWD #2 stated that this loss would place an unfair financial burden on the remaining metered customers through higher rates. Pushmataha RWD #2 is concerned that future population and industrial growth in the area could be compromised, as the existing capacity of the Kiamichi River, the secondary water source for the district, would be used by the project.

Response: SEOPC has revised the Socioeconomics Study Plan to include the effects of the proposed project, as a broad public interest matter, on water supply, and also included in Terrestrial Resources Study Plan too.

Comment: The Nations and many individuals expressed concern that the projected water loss from evaporation and leakage at the proposed project may be underestimated and that make-up water withdrawals from the Kiamichi River could be greater than estimated. The Nations indicated that the water loss may require a diversion of 20,000 AF a year from the Kiamichi River.

Many stakeholders, who are residents of southeast Oklahoma, expressed concerned that there is insufficient water in the Kiamichi River to support the proposed project in addition to the existing uses. Many also expressed their concern about the proposed project's effects on downstream flows, particularly on the potential project's effects on recreation and drinking water supply downstream at Lake Hugo as well as concern about the existing water rights. Many raised the idea that withdrawals from Kiamichi River to initially fill and annually refill the proposed project would affect the drinking water supply downstream of the proposed project.

Response: SEOPC has revised the Water Resources study plan to specifically include the effects of Kiamichi River water withdrawals for initial fill and refill water, in the context of existing and historic flows, anticipated impoundment evaporation and leakage, and dedicated water uses; on proposed project operations and water availability for current and reasonably anticipated uses in the Kiamichi River basin (both downstream and upstream).

Comment: Many stakeholders commented that changes in hydrology could lead to more extreme conditions, including more drought.

Response: SEOPC will consider recent hydrologic changes in stream flows in the Kiamichi River to determine if there are any trends in water availability that should be factored into the analysis of project operation. As part of SEOPC analysis, SEOPC will assess reasonably

foreseeable effects that changes in hydrology could potentially have on the project and environmental resources in the project area to the extent that information is available. SEOPC will conduct our analysis using, among other things, conventional hydrologic studies and monitoring techniques.

Comment: Some individuals commented on the vulnerability of the re-regulating and lower impoundments to flooding from the Kiamichi River.

Response: SEOPC has added to study the effects of flooding on the re-regulating and lower impoundment in the Water Resources study plan.

Comment: Some individuals noted that in the Water Settlement agreement with Oklahoma City, there is a provision for the environmental well-being of the Kiamichi River, including an enforceable measure to ensure the river maintains at least a 50 cubic feet per second flow.

Response: SEOPC has added that it would study the effects the project would have on any minimum flows, from the project in the Kiamichi River in the Water Resources study plan to be analyzed.

Comment: A few commenters expressed concern about the characterization of discharges in the upper reservoir being considered in basin or out of basin discharges from the Kiamichi River Basin to the Little River Basin.

Response: SEOPC has added to the Water Resources study plan to include the effects of any potential transfer of water between the Kiamichi River sub-basin and Little Creek sub-basin during spills over the emergency spillway.

Comment: Pushmataha RWD #3, the City of Antlers, Oklahoma, and the Town of Albion, Oklahoma indicated that the construction of the project may increase the turbidity levels and other water quality parameters, including temperature in the Kiamichi River. They were also concerned that removing 10-15% of the water from the Kiamichi River, as proposed, could impact the river's ability to dilute increased sediment and heavy metals that may enter the river during construction. Further, they are concerned that a decrease in flows in the Kiamichi River from the initial fill and refills may cause high concentrations of algae combined with the existing high biological oxygen demand (organic load) from the local lumber industry and other factors.

The Choctaw County Board of County Commissioners and Oklahoma State Representative Justin JJ Humphrey-District 19 stated that they are opposed to any hydropower facility on the Kiamichi River stating that it would reduce the quantity and quality of the water in the river, negatively affecting the local environment and economy.

Response: SEOPC has added to the Water Resources study plan to specifically identify potential effects of project construction and operation on turbidity, seasonal algae growth, and increase in temperatures attributable to low flows on water quality.

Comment: Many commenters were concerned about the use of hazardous materials during construction (e.g., lubricants, fuel, and hazardous materials) and operations affecting the Kiamichi River.

Response: SEOPC has added this topic to the Water Resources study plan to be analyzed.

Comment: Mr. Redman of the KRLA and several other individuals were concerned that chemical additives in the project's reservoirs would be part of project maintenance to mitigate or eliminate erosion, corrosion, and biological activity and that those contaminants could potentially be introduced into the Kiamichi River and Little River watersheds.

Response: SEOPC has stated that no such additives will be used; therefore, we have not included this specific issue in the Water Resource Study Plan. Nonetheless, the issue of project construction, operation, and maintenance on water quality is included in the Water Resource Study Plan.

### **3.1.5. Aquatic Resources**

Comment: FWS indicated that the potential effects of construction-related impacts on aquatic resources (e.g., modifications of riverine habitat due to installation of proposed project components such as an in-river intake structure and a tunnel linking the lower reservoir to the Kiamichi River) should be included in any NEPA document for the project. Similarly, the effects of sediment movement, surface runoff, and decomposition of deposited organic material from project construction on aquatic species should be addressed in the NEPA document.

Response: SEOPC has now added to study and analyze the impacts from sediment movement, surface runoff, and decomposition of deposited material on aquatic species in the Aquatic Resources Study Plan.

Comment: FWS recommended that the effects of project impingement, entrainment, and turbine mortality on fish populations be expanded to include mussel and aquatic turtle populations as well as species isolation that may occur during the initial fill and supplemental refills.

Response: SEOPC has now added to study and analyze impingement and entrainment on mussel and aquatic turtle populations as well as species isolation during the initial fill and supplemental refills in the Aquatic Resource Study Plan.

Comment: FWS, the Town of Albion, Oklahoma, and Dr. Caryn C. Vaughn recommended that the NEPA document include the effects of removing 10-15% of the Kiamichi River during the initial fill, as proposed, on downstream freshwater mussel habitat in the Kiamichi River. They were concerned about the effects of desiccation, predation, and increased water temperature on downstream mussel populations. Additionally, they stated that the effects of construction on nearby and downstream mussel populations should be included in the NEPA analysis, including sedimentation and possible mussel bed smothering that could interfere with feeding and food availability, respiration, and reproduction.

Response: SEOPC has now added to study and analyze the effects on freshwater mussels of proposed project water withdrawals from the Kiamichi River in the Aquatic Resource Study Plan.

### **3.1.6. Terrestrial Resources**

Comment: Texas PWD indicated that the Nature Conservancy's Lennox Woods Preserve, located within Red River County, northwest of Clarksville, contains a population of population of Arkansas meadow rue (*Thalictrum arkansanum*), a species of greatest conservation need, and exhibits high quality woodlands along Pecan Bayou. Texas PWD was unable to verify whether the proposed transmission line would be in the vicinity of the preserve, an area that is accessible to the public that may be affected by the project. Additionally, Seth Willyard indicated that the proposed project's transmission line would potentially impact thousands of acres in the Three Rivers Wildlife Management Area (WMA), including impacts to numerous special status species that inhabit the WMA.

Response: SEOPC will study the effects of project construction, operation, and maintenance activities on the availability and continuity of upland and wetland habitat, including for special status plants and wildlife as listed in the Terrestrial Resources Study Plan. SEOPC will study the effects of project construction, operations, and maintenance activities on the potential impacts to preserves and wildlife management areas are now included in the Land Use and Aesthetic Resources study plan.

Comment: FWS indicated that project construction would potentially affect species and their habitats present in the project boundary, or in adjacent areas, in the Kiamichi River and Little River watersheds. Oklahoma Department of Wildlife Conservation (Oklahoma DWC) stated its concern regarding the potential impact of the project on the Kiamichi River and its riparian flora and fauna due to the alteration of terrestrial and riparian habitat.

Response: SEOPC has listed these topics to be studied and analyzed in the Terrestrial Resources study plan.

Comment: The Nations requested that the effects of project construction, operation, and



maintenance activities, including maintenance for roads and transmission facilities on native and/or sensitive-plant communities (in wetlands and uplands), including: (1) plant species tracked by the Oklahoma Natural Heritage Inventory, (2) ESA listed endangered and threatened, and species proposed for listing, and (3) plant species that are culturally significant to Tribal Nations. The Nations also expressed concern about the spread and control of non-native invasive plants and the disruption of wildlife migration corridors, potentially resulting from the creation of edge habitat.

Response: SEOPC has listed these topics in the Terrestrial Resources study plan and the Threatened and Endangered Species study plan and SEOPC will study and analyzed the impacts to plant species tracked by the Oklahoma Natural Heritage Inventory and that are culturally significant to Tribal Nations.

Comment: The Center and KRLA stated that, in addition to Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protect Act (BGEPA), Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds provides for the protection of both migratory birds and migratory bird habitat, and obligates all federal agencies that engage in or authorize activities that might affect migratory birds to minimize those effects and encourage conservation measures that will improve bird populations.

FWS indicated that clearing of trees and other vegetation on thousands of acres for construction and maintenance of the proposed project has potential to adversely impact birds protected under the MBTA.

Response: SEOPC has included these topics into the Terrestrial Resources study plan to be studied and analyzed.

### **3.1.7. Rare, Threatened and Endangered Species**

Comment: FWS indicated that the proposed project has the potential to adversely affect several federally listed, proposed or candidate species, requiring formal consultation through Section 7 of the Endangered Species Act (ESA), and requested that earth fruit (*Geocarpon minimum*), a federally listed plant known to occur in Oklahoma, be added to the list of species to the list of species potentially affected by the project. Additionally, FWS stated that the rare and imperiled peppered shiner (*Notropis perpallidus*), which is currently undergoing review for possible listing under the ESA, could be affected by the project.

Response: SEOPC has now specified Earth fruit in the list of species in Threatened and Endangered Species study plan. SEOPC has now included peppered shiner in the Aquatic Resources study plan as an issue to be analyzed since it is under review for listing.

Comment: FWS indicated that clearing of trees and other vegetation on thousands of acres for construction and maintenance of the proposed project has potential to adversely

impact species like the American burying beetle, federally listed and proposed bats, and the monarch butterfly.

Response: SEOPC has listed these topics as issues in the Terrestrial Resources study plan and in the Threatened and Endangered Species study plan to be studied and analyzed.

Comment: The Center and KRLA commented that the NEPA document should include the proposed project's effects on several species listed for protection under the ESA. Specifically, the organizations noted the project may impact the critical habitat for the leopard darter (*Percina pantherina*), a listed species, and could affect the endangered Ouachita rock pocketbook (*Arkansia wheelrim*) and its habitat.

Response: SEOPC has included these issues in Aquatic Resources study plan and the Terrestrial Resources study plan, and the Threatened and Endangered Species study plan to be studied and analyzed.

Comment: The Sierra Club commented that the Kiamichi River has already experienced significant ecological stress from drought and water diversion and the proposed project threatens to further reduce water levels in the Kiamichi River, which could impact federally listed mussel species, as well as the endangered Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and American burying beetle (*Nicrophorus americanus*). Oklahoma DWC, and the KRLA expressed concerns regarding the effects of the project on the Kiamichi River's diverse species, including federally listed mussel species.

Response: SEOPC has listed these topics as issues in the Aquatic Resources study plan and the Terrestrial Resources study plan, and the Threatened and Endangered Species study plan to be studied and analyzed.

### **3.1.8. Recreation, Aesthetics, and Land Use**

Comment: Many stakeholders raised concerns about negative effects of the proposed project on aesthetics and recreation in the area.

Response: SEOPC will study these issues in the Land Use and Aesthetic Resources Study plan and the Recreation Resources study plan.

Comment: The Nations requested that the Commission assess the effects of project construction, operation, and maintenance on light pollution in our environmental analysis (section 4.2.7, Land Use and Aesthetic Resources). One commenter raised the question of whether the proposed project could negatively affect the particularly dark sky in the area.

Response: SEOPC has added these topics to Land Use and Aesthetic Resources Study Plan and in the Terrestrial Resources study plan to be studied and analyzed.

Comment: The Talihina Board commented that hunting and fishing are a way of life for many of the residents in the area, and that the Kiamichi River provides both sport and food for residents as well as many who come to the area for recreation (e.g., hunting, camping, hiking, kayaking, rafting, and fishing).

Response: SEOPC has included these topics in the Land Use and Aesthetic Resources study plan and the Recreation Resources study plan to be studied and analysis.

Comment: The Nations requested that the Commission's assessment of the effects of project construction, operation and maintenance on recreational use include access, and resources in the 20-mile radius of the project-affected area in our environmental analysis.

The Nations indicated that dispersed recreation is more common in the region than elsewhere and occurs on private lands, not just public access areas. Further, the Nations stated that SEOPC provided no basis for its claim that project impacts on recreational uses will be limited to within 0.5-miles of the project boundary. The Nations also requested that the Commission include the impacts of the project on camping, hiking, fishing, gathering and other cultural and recreational activities provided by the Ouachita National Forest Ranger District and federal lands administered by the Bureau of Land Management in the Commission's environmental review.

Response: SEOPC has included the recreation uses above in the Recreation Resources study plan to be studied and analysis.

Comment: The Nations requested that the Commission include the effects of project construction and operation on the number and duration of recreational visits in the project area, including private and public (e.g., Ouachita National Forest) lands in the environmental review.

Response: SEOPC has added the effects on recreational visits to Recreation Resources study plan. SEOPC has added a similar issue, regarding effects on tourism that appears in the Socioeconomics study plan to be studied and analysis.

Comment: The Nations indicated that a natural gas pipeline (i.e., belonging to ONEOK Gas Transportation, LLC) is located in the project footprint and would underly the upper reservoir presenting public safety and engineering issues.

Response: SEOPC has added that existing infrastructure and rights-of-way is now included in Land Use and Aesthetic Resources study plan to be studied analyzed as a public safety and engineering issue.

### 3.1.9. Cultural Resources

Comment: Several individuals raised concerns about the effects of project construction and operation on historic and archaeological resources. The BIA indicated that the construction and operation of the proposed project may affect Tribal historic properties, as well as other Tribal resources identified through archival research, oral interviews, field inspections, and appropriate Tribal consultation. The Sierra Club also commented that the proposed project threatens several cultural and archaeological sites, including 36 identified historical Choctaw Nation sites, among them 14 burial grounds.

Response: SEOPC has included these topics in the Cultural Resources study plan to be studied and be analyzed.

Comment: BIA indicated that the Area of Potential Effect (APE) should be appropriately delineated in consultation with interested Indian Tribes and may not be the same as the area of effect defined under the National Environmental Policy Act (NEPA). The Tribes are concerned that SEOPC cannot comply with National Historic Preservation Requirement because there is too much ambiguity with the APE.

Response: In defining the Area of potential effect, the Commission staff will consider all potential project related Adverse effects to the historic resources. The area of potential effect will be defined in consultation with, among others, interested Tribes.

Comment: The Nations indicated that the proposed project schedule for completion of SEOPC's studies is inordinately short and would not provide adequate opportunity to study and document baseline conditions or potential project impacts. They stated that it also does not give enough time to complete Commission review of the initial study report, or enough time to obtain Commission approval for "new information gathering" which SEOPC apparently contemplates.

Response: The Commission's ILP regulations establish the pre-filing process and associated schedule. Study timing for specific studies is a matter for discussion in the study determination process.

Comment: Some stakeholders were concerned about the maintenance of Tribal access to lands on which Tribal members exercise traditional treaty rights, including root and plant gathering.

Response: The effects of proposed project operation and maintenance on properties of traditional religious and cultural importance to Indian Tribe(s) was included in the list of issues to be analyzed in section 4.2.8, Cultural Resources of the SD1.

Comment: There were two comments on the need to obtain Archaeological Resource

Protection Act (ARPA) permits, and several comments related to the impacts to archaeological sites and protection of artifacts.

Response: In FERC's Section 4.2.8, Cultural Resources, of their SD1 notes stated that the effects of continued project operation and maintenance on historic and archaeological resources will be addressed in the NEPA document.

Comment: There were several stakeholders concerned with the protection of Tribal lands, and some commenters expressed their concern about a lack of Tribal Consultation.

Response: Commission staff coordinates and consults with potentially affected Tribes regarding a proposed project's effects. These efforts begin during pre-filing by sending letters and making follow-up communications to invite the Tribes to participate in the licensing process. The Tribes will have multiple opportunities during the pre-filing and post-filing process to share their concerns and knowledge. Commission staff's NEPA analysis will consider all comments and specific recommendations made by the Tribes.

Comment: The Nations requested that the Commission's analysis of the effects on visual resources of project construction, operation, and maintenance (including the presence of project facilities) address culturally or historically significant landscapes whether within or outside of the project boundary in addition to the Kiamichi Mountains.

Response: SEOPC has included Visual effects of the proposed project on culturally important landscapes has in the Land Use Study Plan and the Aesthetic Resources Plan, Recreation Study Plan and Cultural resources study plan.

Comment: The Chickasaw Nation Department of Culture and Humanities (DCH) indicated that the proposed project area is significant to the Chickasaw people as it was the trail used during their forced removal from their homeland to what is now Oklahoma. Stakeholders also commented on the need to address the effects of project construction, operation, and maintenance on historic trails, including the Kiamichi Trail (K-Trail), the Wildhorse Trail, Uphilly Bowers Trail, the Nolia Trail, and the Stevens Trail.

Response: SEOPC has included the Chickasaw and Choctaw trail(s) of removal from homelands into Oklahoma and other historic trails in the Cultural Resources study plan to be studied and analyzed.

Comment: The Town of Albion, Oklahoma commented that the effects of the proposed project on Albion Cemetery, where numerous Veterans and Choctaw Tribal members are buried, would need to be evaluated. A few individuals expressed their concern about the protection of local cemeteries.

Response: SEOPC has now included cemeteries to the Cultural Resources study plan.

### 3.1.10. Environmental Justice

Comment: The Nations requested that the Commission include the effects of project construction, operation, and maintenance, within the Choctaw Nation of Oklahoma Reservation, on the Choctaw Nation, including impacts to Tribal policing, infrastructure construction and maintenance, the providing of services to Tribal members, economic development, cultural resource cataloging and protection, protecting and fostering cultural and traditional practices, Tribal education, tourism, and recreational programs in the environmental review.

Response: Commission staff has listed, socioeconomics, cultural and historic resources, tourism, and recreation as issues for NEPA analysis. FERC staff will evaluate those issues under Environmental Justice. Cumulative effects on Tribal policing and education may be analyzed as well, using existing information, should those effects be reasonably foreseeable.

Comment: The Nations requested that the Commission include the effects of project's consumptive withdrawal of water resources on the Choctaw and Chickasaw Nations' Reservations in our environmental review. The Nations anticipated negative effects of project water withdrawals associated with (a) initially filling the lower reservoir; and (b) supplemental withdrawals from the Kiamichi River during high flow periods on the sustenance of minority and low-income populations.

Response: SEOPC has included effects of project water withdrawals associated with (a) initially filling the lower reservoir; and (b) supplemental withdrawals from the Kiamichi River during high flow periods on the sustenance of minority and low-income populations; to the Water Resources study plan.

Comment: The Nations commented on the effects of project construction, operation and maintenance on minority and low-income communities in the project-affected area.

Response: SEOPC included the effects of project construction, operation and maintenance on minority and low-income communities in the project-affected area in the Environmental Justice study plan. SEOPC intends to use Census data and GIS to conduct a block-level analysis to identify environmental justice communities in the vicinity of the project.

Comment: The Nations commented on the effects of the project on human health and environmental effects currently present in the project-affected area. The Nations commented on the effects that could be disproportionate, adverse, and significant on minority and low-income populations.

Response: Analyzing effects on the health of the human environment is a purpose of the NEPA analysis which FERC staff will carry out an Environmental Justice review also.



### 3.1.11. Socioeconomic Resources

Comment: Many stakeholders commented that, if approved, the project would adversely affect their property and livelihood, and could result in the displacement of their families, and loss of land through eminent domain.

Response: These topics were listed as issues in sections 4.2.10, Socioeconomics, and 4.2.9, Environmental Justice, of the SD1 and will be analyzed.

Comment: Many commenters raised the concern that local tax revenue and utility fees could be reduced by the displacement of people and businesses if the project were constructed. The Center and KRLA commented the prospective applicant grossly understated the number of impacted landowners in its project maps, as some parcels have been subdivided into over 50 tracts or lots as part of various recreational developments, contributing significantly to property taxes within the area and benefiting the local schools.

Response: SEOPC has added studying the effects of the proposed construction and operation of the project, as a broad public interest matter, on tax revenues and utilities, such as municipal water, sewage, gas, and electric; to the Socioeconomics Study Plan.

Comment: The City of Hugo, Oklahoma, and several other stakeholders indicated that they were concerned about the potential impacts of the project on tourism, and loss of revenue that tourism generates. The Center and KRLA commented that the primary economic driver for southeastern Oklahoma is the recreational tourism industry.

Response: SEOPC has added to study and analyze the potential project effects on tourism for recreation to the Socioeconomics study plan.

Comment: Two individuals ask that the potential for groundwater depletion on agriculture and forestry in the proposed project area be considered.

Response: SEOPC has added to study the potential for groundwater depletion on agriculture and forestry in the proposed project area; this is now included in the Water Resources study plan, the Socioeconomics study plan.

Comment: The Nations requested that the NEPA analysis include effects of project construction, maintenance, and operation on local infrastructure and government and other emergency, educational, and health services.

Response: SEOPC has included the tax base and water quality and infrastructure issues in SEOPC proposed study plans.

Comment: The Nations requested that the NEPA analysis include project construction effects on vehicular traffic and noise levels.

Response: SEOPC has included blasting on noise levels in the Noise, Air Quality and Traffic study plan to be studied and analyzed along with the effects of project construction on traffic, and road networks.

Comment: The Nations requested that the Commission include effects of permanent conversion of rural farmland, grasslands, and forested lands to developed lands in the environmental document.

Response: The effect of land conversion is relevant to several issues found in most of the Study Plans proposed for study and analysis.

### **3.1.12. Air Quality**

Comment: The Pushmataha Board expressed concern with project effects on air quality, including whether the proposed hydropower facility would generate methane similar to feed lots and further pollute the atmosphere. One comment was made regarding air quality from evaporation or aspiration.

Response: SEOPC has included to study the proposed project effect on air quality in the Noise, Air Quality and Traffic study plan.

Comment: Two commenters raised concerns about the electric transmission line increasing their children's risk of getting leukemia.

Response: SEOPC has added this topic as one to be analyzed under Socioeconomics Study Plan.

Comment: There were several comments on how the transmission lines could have harmful effects on livestock.

**Table of Requested Study Plans by Category and Responses by SEOPC**

	<b>Requested Study - GENERAL COMMENTS</b>	<b>Proposed for Study</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	<p>Many stakeholders, including the Choctaw Nation of Oklahoma and the Chickasaw Nation (Nations), commented that SEOPC’s Pre-Application Document (PAD) is incomplete and does not comply with the minimum content requirements under the Commission’s regulations, under 18 C.F.R. § 5.6(d) or provide an adequate basis to initiate the scoping process under the National Environmental Policy Act (NEPA).</p> <p>Additionally, the Nations stated that PAD is missing important information that is relevant to the project and could have been obtained by SEOPC with the exercise of due diligence.</p> <p>The Nations objected to Commission staff’s acceptance of the Notice of Intent and PAD filed by Southeastern Oklahoma Power Corporation (SEOPC) on May 7, 2024. Specifically, the Nations stated that the PAD does not address staff’s direction to summarize how any responses from Tribes and landowners were incorporated into the PAD pursuant to section 5.6(b)(5) of the Commission’s regulations. Additionally, the Nations</p>		<p>Commission staff reviewed the PAD for conformance with section 5.6 of the Commission’s regulations, based upon that review, Commission staff determined that the PAD contained sufficient information to commence the ILP and did so pursuant to section 5.8 of the Commission’s regulations on July 8, 2024.</p>	

<p>indicated that that PAD does not adequately address the existing and proposed uses of project waters (i.e., irrigation, domestic water supply, industrial, etc.) or any upstream or downstream requirements or constraints to accommodate those purposes, as required by 18 C.F.R. § 5.6(d)(3)(iii)(D), nor does it provide information on existing water rights and water rights applications potentially affecting or affected by the project (18 C.F.R. § 5.6(d)(3)(iii)(E)).</p> <p>Board members of the Kiamichi River Legacy Alliance (KRLA) questioned why FERC did not reject SEOPC’s May 7, 2024 PAD. Shawnda Duncan noted that FERC’s April 19, 2024 rejection letter did not specify that if SEOPC intended to re-file it must correct the deficiencies listed in Schedule A, as stated in FERC’s first rejection letter, and asked why SEOPC was allowed to submit another NOI and PAD. She also asked if SEOPC fulfilled all of FERC’s concerns, between SEOPC’s April 19 and the May 7, 2024 NOI and PAD filings, identified in FERC’s April 19, 2024 rejection letter and, if so, where FERC stated this in writing. Bobby McSpadden commented that following the review of the two NOI/PADs produced by</p>			
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	SEOPC, FERC found at least 40 deficiencies. He questioned whether SEOPC’s May 7, 2024 PAD contained enough information for FERC to certify that adequate due diligence has been performed.			
2	Several stakeholders, including the Oklahoma Sierra Club, requested that Commission staff consider that the Pushmataha Project may be ill-suited for the proposed location, because it would harm local ecosystems, Indigenous communities, and landowners, while providing no tangible benefits to Oklahoma residents.	√		SEOPC Proposes Study Plans will address the question if the project is ill-suited for the proposed location include: Geologic and Soil Resources, Terrestrial Resources, Cultural and Tribal Resources, Development Resources, Aquatic Resources, Threatened and Endangered Species, Land Use and Aesthetic Resources, Recreation Resources, Water Resources, Environmental Justice, Socioeconomics Resources, and Noise, Air Quality and Traffic Resources, and Transmission Line Vegetation & Wildlife Mapping
3	Texas Parks and Wildlife Department (Texas PWD) reviewed the federal and state comprehensive plans in the SD1 that may be relevant to the proposed project and identified 5 plans that need to be updated.		√	Comprehensive Plans and updated comprehensive plans can be filed by the authoring agencies, along with a cover letter indicating that the document be considered as a comprehensive plan under section 10(a)(2)(A) of the FPA. State and federal comprehensive plans can be e-filed through the ferc.gov e-filing portal at: <a href="http://www.ferc.gov/docs-filing/efiling.asp">http://www.ferc.gov/docs-filing/efiling.asp</a> . Comprehensive plans should be filed in the docket ZZ09-5-000. More detailed filing information and a list of accepted comprehensive

				plans can be found at this link: Comprehensive Plans   Federal Energy Regulatory Commission (or at <a href="http://www.ferc.gov/comprehensive-plans">http://www.ferc.gov/comprehensive-plans</a> ). FERC staff will review any additional or updated comprehensive plans added to the list that could be relevant to the project at such an appropriate time.
4	The Sierra Club, as well as many individuals, commented that the energy produced by this project would serve the Texas grid, and would be built at the expense of Oklahoma’s ecosystems and communities, while the communities in Oklahoma would see no financial benefit or energy security from the project.		√	The Development Resources benefits and costs associated with the proposed project will be addressed in any NEPA document issued for the project proposal.
5	There was one comment on the impacts on property and timber due to an inability to do any long-term planning to plant for timber harvests until a decision is made on the project.		√	The NEPA document will describe the existing environment of potentially affected resources in the project area and where appropriate include supporting information, and an analysis of the effects of the proposed project and alternatives, including reasonably foreseeable effects, on potentially affected environmental resources.
6	Several people commented on a lack of specifics in the applicant’s proposal and an understatement of environmental effects. Stakeholders also indicated that there have not been enough studies performed by the applicant to access		√	There is a study planning process for the proposed project. The next step in the process is for SEOPC’s to file a proposed study plan, and hold a study plan meeting. Stakeholders may attend the meeting and file comments on the proposed study plan.

	the damage to natural resources from the proposed project development.			Commission staff' study plan determination is currently scheduled for mid-July 2025.
7	The Nations note that according to SD1 Section 1, Commission staff will determine whether to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment under NEPA based, in part, on scoping comments. The Nations state that the Commission's regulations establish a presumption that an EIS will be prepared for licenses issued under the FPA Part I "for construction of any unconstructed waterpower projects." 18 C.F.R. § 380.6(a). The Commission can overcome this presumption, but only if it "believes that a proposed action ... may not be a major Federal action significantly affecting the quality of the human environment ...." 18 C.F.R. § 380.6(b). The Nations continue that given the scope and significance of the project's impacts, there is no rational basis for such a belief. Accordingly, the Commission should prepare an EIS for the proposed Project.		√	Commission staff sees no conflict between its statement in SD1 and the Commission's regulations. Once the Commission has received a complete license application and FERC staff has determined that the project record is ready for environmental analysis, FERC staff will decide whether to prepare an Environmental Assessment or Environmental Impact Statement.
8	Many landowners report that the possibility of the proposed Pushmataha Project is currently having negative impacts on their property values. The Nations requested that the	√		The list of Resource Issues in this SD2, includes the effects of the project proposal on socioeconomic resources, which could include, from a broad public interest perspective, project effects

	Commission also include effects of project construction and operation on local property values, as well as insurance costs in our NEPA analysis.			on property values and land use. SEOPC has Proposed Study Plans: Geologic and Soil Resources, Terrestrial Resources, Cultural and Tribal Resources, Development Resources, Aquatic Resources, Threatened and Endangered Species, Land Use and Aesthetic Resources, Recreation Resources, Water Resources, Environmental Justice, Socioeconomics Resources, and Noise, Air Quality and Traffic Resources, and Transmission Line Vegetation & Wildlife Mapping to address the issues raised
9	The Nations requested that the Commission include effects (temporary and long-term) of project construction and operation on local employment opportunities in the NEPA document. The Central South Carpenters Regional Council stated that a project of this magnitude, along with any associated construction, would create hundreds of jobs for highly paid union workers and would ensure decades of maintenance work. Others questioned how many of those jobs would be permanent and locally sourced.	√		Proposed Study Plan Socioeconomics Resources, Section 7.5
	<b>Requested Study - ALTERNATIVES TO THE PROPOSED ACTION</b>			
1	Some stakeholders recommended that FERC analyze alternative sites, alternative energy storage		√	The Commission does not have the authority to authorize other types of energy storage technologies,



	<p>technologies, alternative project design and operations, and alternatives that “mitigate the known adverse impacts that will result from the project” as part of its environmental analysis. Other individuals recommend the use of Battery Energy Storage Systems (BESS) as an alternative.</p> <p>The Center for Biological Diversity (Center), Kiamichi River Legacy Alliance, and Seth Willyard stated that there has been insufficient consultation with local stakeholders about alternatives that might meet renewable energy needs without compromising the local environment and community interests and implores FERC and SEOPC to consider newer, more environmentally friendly, energy storage solutions such as compressed air, molten salt, lithium-ion batteries, hydrogen, and flywheel gravity based electric storage, which would present fewer risks and disruptions to the ecosystem and the local community.</p> <p>There was one comment that nuclear energy should be used, rather than hydropower.</p>			<p>such as battery storage which has been identified by several stakeholders. Therefore, these alternative technologies are not reasonable alternatives to the proposed action and therefore we do not intend to analyze these alternatives.</p>
2	<p>Many stakeholders indicated that the Commission’s restriction of</p>	√		<p>SEOPC has revised the extent of the geographic study plan scope to include Long Creek,</p>

	<p>the project area as defined in SD1 is too limited based on associated impacts to Long Creek as indicated by the FWS.</p> <p>The Center and KRLA also commented that the geographic scope of the project area, as defined in section 4.1.2 of SD1, is too restricted to capture the relevant project impacts that must be examined during the Commission’s NEPA analysis, and regulations at 40 C.F.R. §§ 1502.15-.16 direct the Commission to define the project area expansively enough to capture all environmental impacts of the proposed action.</p> <p>The Town of Albion, Oklahoma commented that the geographic scope should be expanded to include the Little River Basin, the location of Long Creek, which will be dammed to create the upper reservoir.</p>			<p>located in the Upper Little River sub-basin. The project nexus to Long Creek is clear since SEOPC proposes to impound Long Creek as part of creating the upper reservoir. SEOPC have tentatively identified the geographic scope for our cumulative effects analysis for water quantity, water quality, fisheries, and rare, threatened, and endangered species (RTE species) to include the Kiamichi River Basin, from the intake of the reregulating reservoir, to the mainstem of the Red River, located about 90 miles downstream of the proposed Pushmataha Project. Additionally, SEOPC include Long Creek, up to its connection with the Black River, that will be dammed to create the Upper Reservoir. SEOPC has proposed the following study plans to cover the area of concerns: Geologic and Soil Resources, Terrestrial Resources, Cultural and Tribal Resources, Development Resources, Aquatic Resources, Threatened and Endangered Species, Land Use and Aesthetic Resources, Recreation Resources, Water Resources, Environmental Justice, Socioeconomics Resources, and Noise, Air Quality and Traffic Resources, and Transmission Line Vegetation &amp; Wildlife Mapping</p>
3	<p>The Nations requested that the proposed project’s cumulative effects on the following resources be</p>	√		<p>Cumulative effects need to be estimated and evaluated based on existing information to the extent that they are</p>

	evaluated in our NEPA document: (1) geologic and soil resources; (2) hydrogeologic resources; (3) aquatic resources (including non-listed mussels and host fish); (4) terrestrial resources; (5) recreation resources; (6) land use and aesthetic resources; (7) cultural and historic resources, (8) environmental justice; (9) socioeconomics; (10) noise; (11) air quality and traffic, and (12) developmental resources.			reasonably foreseeable. SEOPC has define the project area broad enough to cover these concerns. Which are covered in the proposed study plans: Geologic and Soil Resources, Terrestrial Resources, Cultural and Tribal Resources, Development Resources, Aquatic Resources, Threatened and Endangered Species, Land Use and Aesthetic Resources, Recreation Resources, Water Resources, Environmental Justice, Socioeconomics Resources, and Noise, Air Quality and Traffic Resources, and Transmission Line Vegetation & Wildlife Mapping
	<b>Requested Study - Geology and Soil Resources</b>			
1	The Center and KRLA indicated that the Kiamichi River Basin has many fault lines, and that the proposed construction in the project area has the potential to disrupt these fault lines and cause seismic activity in the region. Additionally, a few individuals raised the concern that the proposed project could be vulnerable to seismic activity in the region.	√		Proposed Study Plan Geological and Soil Resources, Section 7.9
2	The Board of Directors of Rural Water District #3 (Pushmataha RWD #3), the City of Antlers, Oklahoma, the Town of Albion, Oklahoma, and the Talihina Board of Trustees (Talihina Board), as well as many individuals, raised concerns about erosion	√		Proposed Study Plan Water Resources, Section 7 Proposed Study Plan Aquatic Resources, Section 7 Proposed Study Plan Terrestrial Resources, Section 7 Proposed Study Plan Development Resources, Section 7

	and sedimentation from project construction and runoff events into the Kiamichi River, potentially affecting fish and wildlife, their associated habitat, turbidity, and domestic and other uses of water, including by individuals and large industrial consumers.			Proposed Study Plan Threatened and Endangered Species, Section 7
3	The Center, KRLA, Pushmataha RWD #3, the City of Antlers, the Town of Albion, and the Pushmataha County Board of Commissioners (Pushmataha Board) indicated that the geological materials (including sandstone and shale) that would be excavated for the project potentially contain lead, manganese, magnesium, iron, mercury, cadmium, cinnabar, and/or cadmium sulfide, and that disturbing these materials for project construction may release these pollutants, into the Kiamichi River.	√		Proposed Study Plan Geologic and Soil Resources, Section 7 Proposed Study Plan Water Resources, Section 7 Proposed Study Plan Aquatic Resources, Section 7 Proposed Study Plan Terrestrial Resources, Section 7 Proposed Study Plan Development Resources, Section 7 Proposed Study Plan Threatened and Endangered Species, Section 7
4	The Bureau of Indian Affairs (BIA) of the Department of the Interior and other stakeholders indicated that the Water Settlement Agreement (WSA) entered into by both Nations and state and local stakeholders, which was approved by Congress, and which covers the Kiamichi and Little River sub-basins, is not mentioned in SD1. The BIA noted that the WSA includes provisions to divert water to Oklahoma		√	Should a license be issued for the project, Standard Article 5, which is included in all licenses, requires licensees to acquire all rights necessary for operation and maintenance of a project within five years of the license issuance. This requirement includes necessary water rights. However, section 27 of the FPA states that nothing in Part I of the FPA “shall be construed as affecting or intending to affect or in any way to interfere with the laws

	<p>City from the Kiamichi Basin.</p> <p>The Manager of the City of Hugo, Oklahoma stated that the Oklahoma WRB issued two permits to the City of Hugo for the lower Kiamichi River Basin; one permitting 28,800 AF of water to the City for municipal and industrial use, tourism, fish and wildlife, and commercial sale uses. The allocation of water from the Kiamichi River for the project would be a violation of the City’s permits and a detriment to the City.</p> <p>Multiple stakeholders requested that the NEPA document analyze the effects of project construction and operation on existing water rights. Some landowners raised concerns about the potential effects of the proposed project on riparian rights.</p>			<p>of the respective States relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.”</p> <p>The Commission’s regulations require that a license application include information on existing water uses in the project area, including information on water rights and water rights applications potentially affecting or affected by the project.</p> <p>SEOPC has proposed the following study plans to show existing conditions: Geologic and Soil Resources, Terrestrial Resources, Cultural and Tribal Resources, Development Resources, Aquatic Resources, Threatened and Endangered Species, Land Use and Aesthetic Resources, Recreation Resources, Water Resources, Environmental Justice, Socioeconomics Resources, and Noise, Air Quality and Traffic Resources, and Transmission Line Vegetation &amp; Wildlife Mapping</p>
5	<p>BIA indicated that the effects on groundwater from project construction and operation should be considered. Specifically, BIA was concerned with the effects of: (a) project operation on dewatering the existing groundwater resources in the affected project area, and (b) any</p>	√		<p>Proposed Study Plan Water Resources, Section 7.1 – 7.14</p>

	<p>hydraulic and hydrologic connectivity between the surface water and groundwater affected by the construction or operation of the project.</p> <p>Many people, including the Talihina Board, expressed their concerns about the potential impact of the project on ground water (e.g., effects on wells and drinking water sources in the project area). They also expressed concerns about the proposed blasting during project construction and how project construction and operation may affect water quantity in the existing wells used for drinking water, watering livestock, and agricultural uses. The Town of Albion, Oklahoma was concerned that its residents could lose use of their wells as a result of the proposed project.</p> <p>The Sierra Club as well as many individuals commented that landowners in the area already face significant challenges with water access, with some reporting that their wells have run dry due to declining river levels, and that the proposed project would exacerbate existing water shortages in the Kiamichi River, creating further hardships for those living in the region.</p>			
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7	<p>Pushmataha County Rural Water District #2 (Pushmataha RWD #2) indicated that the proposed project appears to be located in their customer base, which may result in a loss of metered customers. Pushmataha RWD #2 stated that the poor quality of the mapping resolution in Figure 3-1 of the PAD makes it difficult to understand or evaluate the location of the project in relation to its customer base making forecasting their potential loss a challenge. Further, the Pushmataha RWD #2 stated that this loss would place an unfair financial burden on the remaining metered customers through higher rates. Pushmataha RWD #2 is concerned that future population and industrial growth in the area could be compromised, as the existing capacity of the Kiamichi River, the secondary water source for the district, would be used by the project.</p>	√		<p>Proposed Study Plan Water Resources  Proposed Study Plan Socioeconomic Resources  Proposed Study Plan Land Use and Aesthetic Resources</p>
8	<p>The Nations and many individuals expressed concern that the projected water loss from evaporation and leakage at the proposed project may be underestimated and that make-up water withdrawals from the Kiamichi River could be greater than estimated. The Nations indicated that the water loss may require a diversion of 20,000 AF a year from the Kiamichi River.</p>	√		<p>Proposed Study Plan Water Resources, Section 7  Proposed Study Plan Recreation Resources, Section 7</p>

	<p>Many stakeholders, who are residents of southeast Oklahoma, expressed concern that there is insufficient water in the Kiamichi River to support the proposed project in addition to the existing uses. Many also expressed their concern about the proposed project’s effects on downstream flows, particularly on the potential project’s effects on recreation and drinking water supply downstream at Lake Hugo as well as concern about the existing water rights. Many raised the idea that withdrawals from Kiamichi River to initially fill and annually refill the proposed project would affect the drinking water supply downstream of the proposed project.</p>			
9	<p>Many stakeholders commented that changes in hydrology could lead to more extreme conditions, including more drought.</p>	√		Proposed Study Plan Water Resources, Section 7.6
10	<p>Some individuals commented on the vulnerability of the re-regulating and lower impoundments to flooding from the Kiamichi River.</p>	√		Proposed Study Plan Water Resources, Section 7.1 – 7.14
11	<p>Some individuals noted that in the Water Settlement agreement with Oklahoma City, there is a provision for the environmental well-being of the Kiamichi River, including an enforceable measure to ensure the river maintains at least a 50 cubic feet per second flow.</p>	√		Proposed Study Plan Water Resources, Section 7.9 – 7.14



12	<p>A few commenters expressed concern about the characterization of discharges in the upper reservoir being considered in basin or out of basin discharges from the Kiamichi River Basin to the Little River Basin.</p>		√	<p>The upper reservoir does not plan to discharge into either drainage basin</p>
13	<p>Pushmataha RWD #3, the City of Antlers, Oklahoma, and the Town of Albion, Oklahoma indicated that the construction of the project may increase the turbidity levels and other water quality parameters, including temperature in the Kiamichi River. They were also concerned that removing 10-15% of the water from the Kiamichi River, as proposed, could impact the river’s ability to dilute increased sediment and heavy metals that may enter the river during construction. Further, they are concerned that a decrease in flows in the Kiamichi River from the initial fill and refills may cause high concentrations of algae combined with the existing high biological oxygen demand (organic load) from the local lumber industry and other factors.</p> <p>The Choctaw County Board of County Commissioners and Oklahoma State Representative Justin JJ Humphrey-District 19 stated that they are opposed to any hydropower facility on the Kiamichi River stating that it would</p>	√		<p>Proposed Study Plan Water Resources, Section 7.7.5 - 7.14  Proposed Study Plan Aquatic Resources  Proposed Study Plan Development Resources  Proposed Study Plan Land Use and Aesthetic Resources  Proposed Study Plan Socioeconomic Resources</p>

	reduce the quantity and quality of the water in the river, negatively affecting the local environment and economy.			
14	Many commenters were concerned about the use of hazardous materials during construction (e.g., lubricants, fuel, and hazardous materials) and operations affecting the Kiamichi River.	√		Proposed Study Plan Water Resources, Section 7.10 – 7.14
15	Mr. Redman of the KRLA and several other individuals were concerned that chemical additives in the project’s reservoirs would be part of project maintenance to mitigate or eliminate erosion, corrosion, and biological activity and that those contaminants could potentially be introduced into the Kiamichi River and Little River watersheds.	√		Proposed Study Plan Water Resources, Section 7.10
	<b>Requested Study - Aquatic Resources</b>			
1	FWS indicated that the potential effects of construction-related impacts on aquatic resources (e.g., modifications of riverine habitat due to installation of proposed project components such as an in-river intake structure and a tunnel linking the lower reservoir to the Kiamichi River) should be included in any NEPA document for the project. Similarly, the effects of sediment movement, surface runoff, and decomposition of deposited organic material	√		Proposed Study Plan Aquatic Resources, Section 7.1 - 7.5

	from project construction on aquatic species should be addressed in the NEPA document.			
2	FWS recommended that the effects of project impingement, entrainment, and turbine mortality on fish populations be expanded to include mussel and aquatic turtle populations as well as species isolation that may occur during the initial fill and supplemental refills.	√		Proposes Study Plan Aquatic Resources, Section 7.2 - 7.5
3	FWS, the Town of Albion, Oklahoma, and Dr. Caryn C. Vaughn recommended that the NEPA document include the effects of removing 10-15% of the Kiamichi River during the initial fill, as proposed, on downstream freshwater mussel habitat in the Kiamichi River. They were concerned about the effects of desiccation, predation, and increased water temperature on downstream mussel populations. Additionally, they stated that the effects of construction on nearby and downstream mussel populations should be included in the NEPA analysis, including sedimentation and possible mussel bed smothering that could interfere with feeding and food availability, respiration, and reproduction.	√		Proposed Study Aquatic Resources, Section 7.1 – 7.4
	<b>Requested Study - Terrestrial Resources</b>			

1	<p>Texas PWD indicated that the Nature Conservancy's Lennox Woods Preserve, located within Red River County, northwest of Clarksville, contains a population of population of Arkansas meadow rue (<i>Thalictrum arkansanum</i>), a species of greatest conservation need, and exhibits high quality woodlands along Pecan Bayou. Texas PWD was unable to verify whether the proposed transmission line would be in the vicinity of the preserve, an area that is accessible to the public that may be affected by the project. Additionally, Seth Willyard indicated that the proposed project's transmission line would potentially impact thousands of acres in the Three Rivers Wildlife Management Area (WMA), including impacts to numerous special status species that inhabit the WMA.</p>	√		Proposed Mapping Transmission Line Vegetation and Wildlife Habitat Mapping
2	<p>FWS indicated that project construction would potentially affect species and their habitats present in the project boundary, or in adjacent areas, in the Kiamichi River and Little River watersheds. Oklahoma Department of Wildlife Conservation (Oklahoma DWC) stated its concern regarding the potential impact of the project on the Kiamichi River and its</p>	√		Proposed Terrestrial Resources, Section 7.1 – 7.7

	riparian flora and fauna due to the alteration of terrestrial and riparian habitat.			
3	The Nations requested that the effects of project construction, operation, and maintenance activities, including maintenance for roads and transmission facilities on native and/or sensitive-plant communities (in wetlands and uplands), including: (1) plant species tracked by the Oklahoma Natural Heritage Inventory, (2) ESA listed endangered and threatened, and species proposed for listing, and (3) plant species that are culturally significant to Tribal Nations. The Nations also expressed concern about the spread and control of non-native invasive plants and the disruption of wildlife migration corridors, potentially resulting from the creation of edge habitat.	√		Proposed Study Plan Terrestrial Resources, Section 7.1 – 7.5 Proposed Study Plan Threatened and Endangered Species, Section 7 Proposed Study Plan Cultural and Tribal Resources, Section 10
4	The Center and KRLA stated that, in addition to Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protect Act (BGEPA), Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds provides for the protection of both migratory birds and migratory bird habitat, and obligates all federal agencies that engage in or authorize activities that	√		Proposed Mapping Transmission Line Vegetation and Wildlife Habitat Mapping Proposed Threatened and Endangered Species, Section 7.2 – 7.3

	<p>might affect migratory birds to minimize those effects and encourage conservation measures that will improve bird populations.</p> <p>FWS indicated that clearing of trees and other vegetation on thousands of acres for construction and maintenance of the proposed project has potential to adversely impact birds protected under the MBTA.</p>			
	<p><b>Requested Study - Rare, Threatened and Endangered Species Resources</b></p>			
1	<p>FWS indicated that the proposed project has the potential to adversely affect several federally listed, proposed or candidate species, requiring formal consultation through Section 7 of the Endangered Species Act (ESA), and requested that earth fruit (<i>Geocarpon minimum</i>), a federally listed plant known to occur in Oklahoma, be added to the list of species to the list of species potentially affected by the project. Additionally, FWS stated that the rare and imperiled peppered shiner (<i>Notropis perpallidus</i>), which is currently undergoing review for possible listing under the ESA, could be affected by the project.</p>	√		<p>Proposed Study Plan Threatened and Endangered Species, Section 4 and Section 7.1 - 7.5</p>
2	<p>FWS indicated that clearing of trees and other vegetation on thousands of</p>	√		<p>Proposed Mapping Transmission Line Vegetation and Wildlife Habitat mapping</p>

	<p>acres for construction and maintenance of the proposed project has potential to adversely impact species like the American burying beetle, federally listed and proposed bats, and the monarch butterfly.</p>			<p>Proposed Study Plan Terrestrial Resources, Section 71., 7.4 and 7.5</p>
3	<p>The Center and KRLA commented that the NEPA document should include the proposed project’s effects on several species listed for protection under the ESA. Specifically, the organizations noted the project may impact the critical habitat for the leopard darter (<i>Percina pantherina</i>), a listed species, and could affect the endangered Ouachita rock pocketbook (<i>Arkansia wheelrim</i>) and its habitat.</p>	√		<p>Proposed Study Plan Threatened and Endangered Species, Section 7.2 and 7.3</p>
4	<p>The Sierra Club commented that the Kiamichi River has already experienced significant ecological stress from drought and water diversion and the proposed project threatens to further reduce water levels in the Kiamichi River, which could impact federally listed mussel species, as well as the endangered Indiana bat (<i>Myotis sodalis</i>), Northern long-eared bat (<i>Myotis septentrionalis</i>), and American burying beetle (<i>Nicrophorus americanus</i>). Oklahoma DWC, and the KRLA expressed concerns regarding the effects of the project on the Kiamichi River’s diverse species,</p>	√		<p>Proposed Study Plan Threatened and Endangered Species, Section 7.2 – 7.5</p>

	including federally listed mussel species.			
	<b>Requested Study – Recreation, Aesthetics and Land Use</b>			
1	Many stakeholders raised concerns about negative effects of the proposed project on aesthetics and recreation in the area.	√		Proposed Study Plan Noise, Air Quality and Traffic Resources Proposed Study Plan Recreation Resources
2	The Nations requested that the Commission assess the effects of project construction, operation, and maintenance on light pollution in our environmental analysis (section 4.2.7, Land Use and Aesthetic Resources). One commenter raised the question of whether the proposed project could negatively affect the particularly dark sky in the area.	√		Proposed Study Plan Noise, Air Quality and Traffic Resources, Section 7
3	The Talihina Board commented that hunting and fishing are a way of life for many of the residents in the area, and that the Kiamichi River provides both sport and food for residents as well as many who come to the area for recreation (e.g., hunting, camping, hiking, kayaking, rafting, and fishing).	√		Proposed Study Plan Land Use and Aesthetic Resources, Section 7.1 Proposed Study Plan Socioeconomic Resources, Section 7.1 Proposed Study Plan Recreation Resources, Section 7
4	The Nations requested that the Commission’s assessment of the effects of project construction, operation and maintenance on recreational use include access, and resources in the 20-mile radius of the project-affected area in our	√		Proposed Study Plan Land Use and Aesthetic Resources, Section 7.1 Proposed Study Plan Socioeconomic Resources, Section 7.1 Proposed Study Plan Recreation Resources, Section 7



	<p>environmental analysis. The Nations indicated that dispersed recreation is more common in the region than elsewhere and occurs on private lands, not just public access areas. Further, the Nations stated that SEOPC provided no basis for its claim that project impacts on recreational uses will be limited to within 0.5-miles of the project boundary. The Nations also requested that the Commission include the impacts of the project on camping, hiking, fishing, gathering and other cultural and recreational activities provided by the Ouachita National Forest Ranger District and federal lands administered by the Bureau of Land Management in the Commission's environmental review.</p>			
5	<p>The Nations requested that the Commission include the effects of project construction and operation on the number and duration of recreational visits in the project area, including private and public (e.g., Ouachita National Forest) lands in the environmental review.</p>	√		<p>Proposed Study Plan Land Use and Aesthetic Resources, Section 7.1  Proposed Study Plan Socioeconomic Resources, Section 7.1  Proposed Study Plan Recreation Resources, Section 7</p>
6	<p>The Nations indicated that a natural gas pipeline (i.e., belonging to ONEOK Gas Transportation, LLC) is located in the project footprint and would underly the upper reservoir presenting public safety and engineering issues.</p>	√		<p>Proposed Study Plan Socioeconomic Resource, Section 7.1</p>

	<b>Requested Study – Cultural Resources</b>			
1	Several individuals raised concerns about the effects of project construction and operation on historic and archaeological resources. The BIA indicted that the construction and operation of the proposed project may affect Tribal historic properties, as well as other Tribal resources identified through archival research, oral interviews, field inspections, and appropriate Tribal consultation. The Sierra Club also commented that the proposed project threatens several cultural and archaeological sites, including 36 identified historical Choctaw Nation sites, among them 14 burial grounds.	√		Proposed Study Plan Cultural Resources, Section 7.1
2	BIA indicated that the Area of Potential Effect (APE) should be appropriately delineated in consultation with interested Indian Tribes and may not be the same as the area of effect defined under the National Environmental Policy Act (NEPA). The Tribes are concerned that SEOPC cannot comply with National Historic Preservation Requirement because there is too much ambiguity with the APE.	√		Proposed Study Plan Cultural Resources, Section 7.1 and Section 9
3	The Nations indicated that the proposed project schedule for completion of SEOPC’s studies is inordinately short and would not provide adequate	√		Proposed Study Plan Cultural Resources, Section 9

	<p>opportunity to study and document baseline conditions or potential project impacts. They stated that it also does not give enough time to complete Commission review of the initial study report, or enough time to obtain Commission approval for “new information gathering” which SEOPC apparently contemplates.</p>			
4	<p>Some stakeholders were concerned about the maintenance of Tribal access to lands on which Tribal members exercise traditional treaty rights, including root and plant gathering.</p>	√		Proposed Study Plan Cultural Resources, Section 9
5	<p>There were two comments on the need to obtain Archaeological Resource Protection Act (ARPA) permits, and several comments related to the impacts to archaeological sites and protection of artifacts.</p>	√		Proposed Study Plan Cultural Resources, Section 7.2
6	<p>There were several stakeholders concerned with the protection of Tribal lands, and some commenters expressed their concern about a lack of Tribal Consultation.</p>	√		Proposed Study Plan Cultural Resources, Section 9
7	<p>The Nations requested that the Commission’s analysis of the effects on visual resources of project construction, operation, and maintenance (including the presence of project facilities) address culturally or historically significant landscapes whether within</p>	√		Proposed Study Plan Land Use and Aesthetic Resources, Section 7.2

	or outside of the project boundary in addition to the Kiamichi Mountains.			
8	The Chickasaw Nation Department of Culture and Humanities (DCH) indicated that the proposed project area is significant to the Chickasaw people as it was the trail used during their forced removal from their homeland to what is now Oklahoma. Stakeholders also commented on the need to address the effects of project construction, operation, and maintenance on historic trails, including the Kiamichi Trail (K-Trail), the Wildhorse Trail, Uphilly Bowers Trail, the Nolia Trail, and the Stevens Trail.	√		Proposed Study Plan Noise, Air Quality and Traffic Resources, Section 7.3
9	The Town of Albion, Oklahoma commented that the effects of the proposed project on Albion Cemetery, where numerous Veterans and Choctaw Tribal members are buried, would need to be evaluated. A few individuals expressed their concern about the protection of local cemeteries.	√		Proposed Study Plan Cultural and Tribal Resources, Section 8
	<b>Requested Study – Environmental Justice</b>			
1	The Nations requested that the Commission include the effects of project construction, operation, and maintenance, within the Choctaw Nation of Oklahoma Reservation, on the Choctaw Nation, including impacts to Tribal policing, infrastructure	√		Proposed Study Plan Environmental Justice, Section 7.1 & 7.2

	<p>construction and maintenance, the providing of services to Tribal members, economic development, cultural resource cataloging and protection, protecting and fostering cultural and traditional practices, Tribal education, tourism, and recreational programs in the environmental review.</p>			
2	<p>The Nations requested that the Commission include the effects of project’s consumptive withdrawal of water resources on the Choctaw and Chickasaw Nations’ Reservations in our environmental review. The Nations anticipated negative effects of project water withdrawals associated with (a) initially filling the lower reservoir; and (b) supplemental withdrawals from the Kiamichi River during high flow periods on the sustenance of minority and low-income populations.</p>	√		<p>Proposed Study Plan Socioeconomic Resources, Section 7.1 – 7.5 Proposed Study Plan Environmental Justice, Section 7.1 &amp; 7.2</p>
3	<p>The Nations commented on the effects of project construction, operation and maintenance on minority and low-income communities in the project-affected area.</p>	√		<p>Proposed Study Plan Environmental Justice, Section 7.1</p>
4	<p>The Nations commented on the effects of the project on human health and environmental effects currently present in the project-affected area. The Nations commented on the effects that could be</p>	√		<p>Proposed Study Plan Environmental Justice, Section 7.2</p>

	disproportionate, adverse, and significant on minority and low-income populations.			
	<b>Requested Study – Socioeconomic Resources</b>			
1	Many stakeholders commented that, if approved, the project would adversely affect their property and livelihood, and could result in the displacement of their families, and loss of land through eminent domain.	√		Proposed Study Plan Environmental Justice, Section 7.1 Proposed Study Plan Socioeconomic Resources, Section 7.2
2	Many commenters raised the concern that local tax revenue and utility fees could be reduced by the displacement of people and businesses if the project were constructed. The Center and KRLA commented the prospective applicant grossly understated the number of impacted landowners in its project maps, as some parcels have been subdivided into over 50 tracts or lots as part of various recreational developments, contributing significantly to property taxes within the area and benefiting the local schools.	√		Proposed Study Plan Environmental Justice, Section 7.1 Proposed Study Plan Socioeconomic Resources, Section 7.2
3	The City of Hugo, Oklahoma, and several other stakeholders indicated that they were concerned about the potential impacts of the project on tourism, and loss of revenue that tourism generates. The Center and KRLA commented that the	√		Proposed Study Plan Environmental Justice, Section 7.1 Proposed Study Plan Socioeconomic Resources, Section 7.1 – 7.5

	primary economic driver for southeastern Oklahoma is the recreational tourism industry.			
4	Two individuals ask that the potential for groundwater depletion on agriculture and forestry in the proposed project area be considered.	√		Proposed Study Plan Socioeconomic Resources, Section 7.6
5	The Nations requested that the NEPA analysis include effects of project construction, maintenance, and operation on local infrastructure and government and other emergency, educational, and health services.	√		Proposed Study Plan Socioeconomic Resources, Section 7.1, 7.4, 7.5
6	The Nations requested that the NEPA analysis include project construction effects on vehicular traffic and noise levels.	√		Proposed Study Plan Noise, Air Quality, and Traffic Resources, Section 7.3
7	The Nations requested that the Commission include effects of permanent conversion of rural farmland, grasslands, and forested lands to developed lands in the environmental document.	√		Proposed Study Plan Socioeconomic Resources, Section 7.6
	<b>Requested Study - Air Quality</b>			
1	The Pushmataha Board expressed concern with project effects on air quality, including whether the proposed hydropower facility would generate methane similar to feed lots and further pollute the atmosphere. One comment was made regarding air quality from evaporation or aspiration.	√		Proposed Study Plan Noise, Air Quality, and Traffic Resources, Section 7.2

2	Two commenters raised concerns about the electric transmission line increasing their children’s risk of getting leukemia.	√		Proposed Study Plan Socioeconomic Resources, Section 7.2
3	There were several comments on how the transmission lines could have harmful effects on livestock.	√		Proposed Mapping Transmission Line Vegetation and Wildlife Habitat Mapping Proposed Study Plan Socioeconomics Resources, Section 7.6

## 4. Applicant’s Proposal

### 4.1. Proposed Project Facilities

#### 4.1.1. Intake

SEOPC proposes to withdraw water from the Kiamichi River via a 40-foot-long, 40-foot-wide funnel-shaped intake structure located 1.5 feet above the bottom of the Kiamichi River at approximately 593 feet above mean sea level (msl) to initially fill the re-regulating and lower project reservoirs and provide refill water for losses once the project starts operating. Water from the intake would enter two 20-inch-diameter, 525-foot-long pipes using two 110-kilowatt pumps, and pass to a 10-foot-wide, 10-foot-deep water supply channel leading to the re-regulating reservoir.

#### 4.1.2. Re-regulating Reservoir

SEOPC proposes to construct a 40-acre re-regulating reservoir with a storage capacity of 1,216 acre-feet and a normal maximum elevation of 672.57 feet msl. This reservoir would be created using an embankment composed of earth and concrete. Water from the re-regulating reservoir would pass to the lower reservoir via two 20-inch-diameter, 1,085-foot-long pipes using the 110-kw pumps.

#### 4.1.3. Lower Reservoir

SEOPC proposes to construct a 13,615-foot-long, 68.9-foot-high, earthen lower dam with a 33-foot-wide, 13-foot-high reinforced concrete emergency spillway and tunnel discharging to the Kiamichi River. The discharging tunnel would be controlled by a metal gate and used for emergency overflow only. The lower dam would create a lower reservoir with a surface area of about 890 acres and a storage capacity of about 48,700 acre-feet. The elevation of the lower reservoir could range between elevation 633 feet msl to normal maximum elevation of 682 feet msl or fluctuate by about 49 feet. Water would be transported from the lower reservoir to an underground pump station/powerhouse via an 8,243-foot-long, 23- to 32.8-foot-diameter intake/outlet



structure.

#### **4.1.4. Underground Pumping Station/Powerhouse**

SEOPC proposes to construct a 550-foot-long, 93-foot-wide, 188.5-foot-high underground, reinforced concrete pump station/powerhouse containing four, 300-MW pump/generating units, with a total installed capacity of 1,200 MW. Two tunnels are proposed to provide access to the underground pump station/powerhouse response: SEOPC has now included this issue into Socioeconomics Study Plan.

#### **4.1.5. Upper Dam/Reservoir**

A dam would be constructed on Long Creek about 4.8 miles from its headwaters. SEOPC proposes to construct an 886-foot-long, 282-foot-high, concrete-faced, rockfill upper dam with a 196.85-foot-long, 17-foot-high emergency spillway with a channel discharging to Long Creek. The upper dam would create an upper reservoir with a surface area of about 600 acres and a storage capacity of about 68,270 acre-feet. The elevation of the upper reservoir could range between elevation 1,365 feet msl to normal maximum elevation of 1,670 feet msl (i.e., fluctuate by about 305 feet). Water would be transported to and from the upper reservoir via a 98.4-foot-long, 39.4-foot-high, concrete intake/outlet structure that would convey flow through a 7,030-foot-long, 32.8-foot-diameter steel and concrete headrace tunnel, and to the underground pump station/powerhouse.

#### **4.1.6. Initial Fill Water and Maintenance Water Conveyance System**

Pumps would convey water from the re-regulating reservoir to the lower reservoir. The initial fill of the reservoirs would be provided by diverting 10% to 15% of the Kiamichi River's stream flow, when the river surface elevation reaches a minimum of 1.5 feet above the river bottom. A 260-cfs pump would be used to fill the reservoirs. It is estimated that the initial fill would be conducted over a 24- to 30-month period based on the availability of flow in the Kiamichi River.

Once the upper and lower reservoirs are full, water in the re-regulating reservoir would be used to provide maintenance flows to replace water lost to evaporation and leakage. SEOPC estimates maintenance flows would be about 20,000 acre-feet per year. Using the design storage of 1,200 acre-feet for the re-regulating reservoir, the re-regulating reservoir would need to be refilled about 16 times a year to provide the estimated 20,000 acre-feet per year of maintenance flows. Refill of the re-regulating reservoir would occur throughout the year during high flow periods when the Kiamichi River surface elevation reaches a minimum of 1.5 feet above the river bottom.

#### 4.1.7. Access Roads and Construction Staging Areas

The project would take 3 to 4 years to construct. Two existing roads would provide access to the upper reservoir and powerhouse area. It is currently not known if the existing roads will need upgrades. No construction staging areas have been identified.

#### 4.1.8. Transmission Lines

The proposed 345-kV transmission line would terminate at an existing sub-station in southwest Paris, Texas. The route would be co-located with existing transmission lines for approximately 23.28 miles and constructed along a new path for the remaining 76.68 miles, for a total of 99.96 miles (see figure 1). A 150-foot right-of-way (ROW) would be secured for the portion of the transmission line co-located with existing transmission lines and a 1,320-foot ROW for the portion constructed along a new path.

The proposed project boundary encompasses 35,235.67 acres of entirely private lands within Pushmataha and McCurtain Counties, Oklahoma, and Red River and Lamar Counties, Texas, and generally encompasses the following proposed project features: (1) upper and lower dams and spillways; (2) upper, lower, and re-regulating reservoirs; (3) upper and lower concrete intake/outlet structures; (4) headrace and tailrace tunnels; (5) an underground pump station/powerhouse and access tunnels; (6) two pumping systems with associated piping; and (7) a 99.96-mile-long 345-kV transmission line and ROW. SEOPC's proposed project area as shown in figure 1, for purposes of analysis of project effects, extends about 0.5 miles beyond the proposed project boundary.

#### 4.1.9. Recreation

No recreation areas are proposed for the project.

### 4.2. Proposed Project Operation

The Pushmataha Project is proposed to operate as a closed-loop pump storage system, as defined by Part 7 of the Commission's regulations. Closed-loop operation would allow for initial fill and periodic recharge of water from the Kiamichi River, as needed for project operation. In general, a high flow diversion structure at the Kiamichi River would allow for both initial fill and periodic recharge of the re-regulating reservoir, as needed, when flows are high in the river. The Kiamichi River is located in the Kiamichi sub-basin. As discussed above, water in the re-regulating reservoir would subsequently be pumped into the lower reservoir. Water in the lower reservoir would then be pumped up to the upper reservoir via the pump station/powerhouse. To generate power, water would be released from the upper reservoir, pass through the underground pump station/powerhouse, then return to the lower reservoir. During emergency conditions, water could pass over an emergency spillway in the Upper Reservoir, and discharge to Long Creek, located in the Upper Little

sub-basin. Water from the lower reservoir could pass over an emergency spillway to the Kiamichi River during emergency conditions.

The proposed project would pump water from the lower reservoir to the upper reservoir during periods of low electrical demand (i.e., off-peak energy) and generate energy by passing the water from the upper to the lower reservoir through the generating units during periods of high electrical demand (i.e., peak energy). The low demand periods are expected to be during nights and throughout the weekends, and the high demand periods are expected to be in the daytime during weekdays. The proposed project would be operated to maximize benefits to the electrical grid while minimizing evaporation from both reservoirs.

Under normal operation, the project would have the capacity to generate energy during peak energy demand periods for 10 hours per day, producing about 4,368,000 megawatt-hours (MWh) annually. Pumped storage projects are net consumers of energy due to hydraulic and electrical losses incurred during the cycle of pumping from lower to upper reservoirs. However, pumped storage is a dispatchable source of energy that can be deployed quickly during times of peak energy demand, and then take excess energy off the grid by pumping water from the lower reservoir to the upper reservoir during times of low energy demand. Actual daily energy production and reservoir fluctuations would depend on system conditions and the resulting need for using the storage for energy production.

### **4.3. Proposed Environmental Measures**

SEOPC does not propose any environmental protection, mitigation, and enhancement (PM&E) measures at this time.

## **5. Scope of Cumulative Effects and Site-Specific Resource Issues**

### **5.1. Cumulative Effects**

According to the Council on Environmental Quality's regulations for implementing NEPA (50 C.F.R. 1508.1(i)(3)), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

## 5.2. Resources that Could Be Cumulatively Affected

SEOPC has identified soil erosion and sedimentation, water quantity (i.e., area hydrology), water quality (i.e., dissolved oxygen [DO] and water temperature), fisheries, and rare, threatened, and endangered (RTE) species, cultural resources as having the potential to be cumulatively affected by the proposed construction, operation, and maintenance of the project.

## 5.3. Geographic Scope

The geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effect on the resources; and (2) contributing effects from other hydropower and non-hydropower activities within the Kiamichi River Basin for the reservoirs and powerhouse, and for the project transmission line from the project site to the point of interconnection in Paris, Texas.

SEOPC has tentatively identified the geographic scope for our cumulative effects analysis for water quantity, water quality, fisheries, and rare, threatened, and endangered species (RTE species) to include the Kiamichi River Basin, from the intake of the reregulating reservoir, to the mainstem of the Red River, located about 90 river miles downstream of the proposed Pushmataha Project.

Additionally, SEOPC has included Long Creek, up to its connection with the Black River, that will be dammed to create the Upper Reservoir. We chose this geographic scope because the construction, operation, and maintenance of the project, in combination with other dams (e.g., U.S. Army Corps of Engineer's Sardis Lake and Hugo Lake), and other developmental and non-developmental uses in the basin (e.g., irrigation, municipal and industrial water supplies, etc.) may cumulatively affect water quantity, water quality, fisheries, and RTE species in the Kiamichi River and Long Creek.

SEOPC has included in the project's proposed 99.96-mile transmission line ROW in our analysis for cumulatively affected resources because it would cross several rivers and streams, and terrestrial habitat. SEOPC has chosen this geographic scope because the construction, operation, and maintenance of the project's proposed transmission line may cumulatively affect upland and wetland habitat, RTE species, and water quality at river and stream crossings.

## 6. Finalizing SEOPC Study Plan

### 6.1. Study Reporting and Meetings

SEOPC intends to start all studies during the 2025 field season. The estimated start and completion dates for the field efforts associated with the proposed studies are provided in Table 1.2-1.

Study progress reports will be filed with the Commission halfway through each study season. In accordance with the Commission's regulations, SEOPC will file its Initial Study Report (ISR) no later than one year after the issuance of FERC's Study Plan Determination (SPD). For detailed schedule, refer to Section 7.

## **6.2. Comprehensive Plans**

The following is a list of comprehensive plans currently on file with the Commission that may be relevant to the Pushmataha Project:

### **6.2.1. Oklahoma Plans**

Department of the Army, Corps of Engineers. Little Rock District and Tulsa District. 1991. Arkansas River Basin, Arkansas and Oklahoma, feasibility report. Little Rock, Arkansas, and Tulsa, Oklahoma. May 1991.

National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

Oklahoma Department of Wildlife Conservation. U.S. Fish and Wildlife Service. 1985. Bottomland hardwoods of eastern Oklahoma. Oklahoma City, Oklahoma. December 1985.

Oklahoma Department of Wildlife Conservation. U.S. Fish and Wildlife Service. 1989. Eastern Oklahoma wetlands plan: Lower Mississippi Valley joint venture - North American waterfowl management plan. Oklahoma City, Oklahoma. August 1989.

Oklahoma Historical Society. 2015. Tomorrow's Legacy: Oklahoma's Statewide Preservation Plan. Oklahoma City, Oklahoma. January 2015.

Oklahoma Water Resources Board. 1997. Update of the Oklahoma comprehensive water plan. Publication Number 139. Oklahoma City, Oklahoma. February 1997.

Oklahoma Water Resources Board. 2002. Oklahoma's water quality standards and implementation of Oklahoma's water quality standards. Oklahoma Administrative Code, Title 785, Chapters 45 and 46 effective July 1, 2002. Oklahoma City, Oklahoma.

Oklahoma Tourism & Recreation Department. 2001 Statewide Comprehensive Outdoor Recreation Plan (SCORP): The public recreation estate. Oklahoma City, Oklahoma.

U.S. Fish and Wildlife Service. 1979. Unique wildlife ecosystems of Oklahoma. Department of the Interior, Albuquerque, New Mexico. May 18, 1979.

U.S. Fish and Wildlife Service. 1985. Land protection plan for Texas/Oklahoma bottomland hardwoods and migratory waterfowl. Department of the Interior, Albuquerque, New Mexico. January 15, 1985.

U.S. Fish and Wildlife Service. 1986. Whooping Crane Recovery Plan. Department of the Interior, Albuquerque, New Mexico. December 23, 1986.

U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

### **6.2.2. Texas Plans**

National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 2022.

Texas Parks and Wildlife Department. 2012. Texas Outdoor Recreation Plan (TORP). Austin, Texas. September 12, 2015.

Texas Parks and Wildlife Department. 2015. Land and Water Resources Conservation and Recreation Plan. Austin, Texas. January 2015.

Texas Conservation Action Plan 2012-2016. Austin, Texas. September 2012.

Texas Parks and Wildlife Department. 2015. A Vision for Catfish in Texas: Texas Parks and Wildlife Department Catfish Management Plan. 2015.

Texas Water Development Board. 2012. Water for Texas: 2012 State Water Plan. Austin, Texas. January 5, 2012.

U.S. Fish and Wildlife Service. 1979. Unique wildlife ecosystems of Texas. Department of the Interior, Albuquerque, New Mexico. February 15, 1979.

U.S. Fish and Wildlife Service. 1985. Land protection plan for Texas/Oklahoma bottomland hardwoods and migratory waterfowl. Department of the Interior, Albuquerque, New Mexico. January 15, 1985.

U.S. Fish and Wildlife Service. 1986. Whooping Crane Recovery Plan. Department of the Interior, Albuquerque, New Mexico. December 23, 1986.

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

U.S. Fish and Wildlife Service. 1988. Great Lake and Northern Great Plains Piping Plover Recovery Plan. Department of the Interior, Twin Cities, Minnesota. May 12, 1988.

U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

## 7. Revised Pushmataha Pumped Storage Project Process Plan and Schedule

The process plan and schedule may be revised in the future.

<b>Responsible Party</b>	<b>Pre-Filing Milestone</b>	<b>Date</b>	<b>FERC Regulation</b>
SEOPC	File NOI/PAD with FERC	5/7/24	5.5, 5.6
FERC	Tribal Consultation	6/6/24	5.7
FERC	Issue Notice of Commencement of Proceeding; Issue Scoping Document 1	7/8/24	5.8
FERC	Scoping Meeting	8/7/24	5.8
All Stakeholders	PAD/SD1 Comments and Study Requests Due	11/5/24	5.9
FERC	Issue Scoping Document 2	12/20/24	5.10
SEOPC	File second updated Proposed Study Plan	3/22/25	5.11(a)
All Stakeholders	Proposed Study Plan Meeting	4/21/25	5.11(e)
All Stakeholders	Proposed Study Plan Comments Due	6/20/25	5.12
SEOPC	File Revised Study Plan	7/20/25	5.13(a)
All Stakeholders	Revised Study Plan Comments Due	8/4/25	5.13(b)
FERC	Director's Study Plan Determination	8/19/25	5.13(c)
Mandatory Conditioning Agencies	Any Study Disputes Due	7/27/25	5.14(a)
Dispute Panel	Third Dispute Resolution Panel Member Selected	8/11/25	5.14(d)(3)
Dispute Panel	Dispute Resolution Panel Convenes	8/16/25	5.14(d)



<b>Responsible Party</b>	<b>Pre-Filing Milestone</b>	<b>Date</b>	<b>FERC Regulation</b>
SEOPC	Applicant's Comments on Study Disputes Due	8/21/25	5.14(i)
Dispute Panel	Dispute Resolution Panel Technical Conference	8/26/25	5.14(j)
Dispute Panel	Dispute Resolution Panel Findings Issued	9/15/25	5.14(k)
FERC	Director's Study Dispute Determination	10/5/25	5.14(l)
SEOPC	First Study Season	Fall 2025- Summer 2026	5.15(a)
SEOPC	Initial Study Report	8/19/26	5.15(c)(1)
All Stakeholders	Initial Study Report Meeting	9/3/26	5.15(c)(2)
SEOPC	Initial Study Report Meeting Summary	9/18/26	5.15(c)(3)
All Stakeholders	Any Disagreements/Requests to Amend Study Plan Due	9/5/26	5.15(c)(4)
All Stakeholders	Responses to Disagreements/Amendment Requests Due	10/5/26	5.15(c)(5)
FERC	Director's Determination on Disagreements/Amendments	11/4/26	5.15(c)(6)
SEOPC	Second Study Season	Fall 2026- Summer 2027	5.15(a)
SEOPC	Updated Study Report Due	8/19/27	5.15(f)
All Stakeholders	Updated Study Report Meeting	9/3/27	5.15(f)
SEOPC	Updated Study Report Meeting Summary	9/18/27	5.15(f)
All Stakeholders	Any Disagreements/Requests to Amend Study Plan Due	9/5/27	5.15(f)
All Stakeholders	Responses to Disagreements/Amendment Requests Due	10/5/27	5.15(f)
FERC	Director's Determination on Disagreements/Amendments	11/4/27	5.15(f)

<b>Responsible Party</b>	<b>Pre-Filing Milestone</b>	<b>Date</b>	<b>FERC Regulation</b>
SEOPC	File Preliminary Licensing Proposal (or Draft License Application)	11/14/27	5.16(a)
All Stakeholders	Preliminary Licensing Proposal (or Draft License Application) Comments Due	2/12/28 <sup>a</sup>	5.16(e)
SEOPC	File Final License Application	4/12/28	5.17
SEOPC	Issue Public Notice of License Application Filing	4/26/28	5.17(d)(2)

<sup>a</sup> This ILP schedule assumes that studies begin when FERC issues its Study Determination and may continue for up to 2 years. Dates for SEOPC filing its Preliminary Licensing Proposal (or Draft License Application) and Final License Application are initial staff estimates and assume that two full study seasons are needed. If a second study season is not needed, SEOPC may file its Preliminary Licensing Proposal (or Draft License Application) sooner; however, the Preliminary Licensing Proposal (or Draft License Application) would need to be filed at least 150 days prior to filing the Final License Application.

## 8. Appendix A - 13 Proposed Study Plans

Recreation Resource  
Transmission Line Vegetation and Wildlife Mapping  
Threatened and Endangered Species  
Geologic and Soils Resources  
Environmental Justice  
Development Resources  
Cultural and Tribal Resources  
Aquatic Resources  
Water Resources  
Noise, Air Quality and Traffic Resources  
Socioeconomic Resources  
Land Use and Aesthetic Resources  
Terrestrial Resources

## 9. Appendix B

Responses to Individual Study Plan Requests by:

- 1<sup>st</sup> Study Requests by Tara Zurdo on behalf of The Center for Biological Diversity and The Kiamichi River Alliance, Inc.
- 2<sup>nd</sup> Study Requests by Tara Zurdo on behalf of The Center for Biological Diversity and The Kiamichi River Alliance, Inc.
- Local Stakeholders Study Plan Request
- Choctaw and Chickasaw Nations Study Plan Request
- City of Oklahoma Study Plan Request
- Dept of Interior Study Plan Request

**Pushmataha County Pumped Storage Project  
FERC No. P-14890**

**Proposed Study Plan**

**Recreation Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydroelectric licensing for the Pushmataha County Pumped Storage Project (P-14890). SEOPC does not anticipate the need to create new recreation opportunities at the Project or in the Project area. However, given the rural, private nature of proposed Project lands and both unknown and/or undocumented recreational activity along the Kiamichi River, there is potential for dispersed recreation activities to exist in the Project area that should be further evaluated. Therefore, a Recreation Resource Study is being proposed to assess recreation in the Project area, consisting generally of stakeholder interviews and an expanded evaluation of existing recreation use and demand in the Project area.

## 2 Study Goals and Objectives

The goals of this Recreation Resources Study are to conduct an assessment of the existing Recreation Resources for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this Study include describing:

- a) Effects of Project construction, operation, and maintenance on recreational use and resources, including, but not necessarily limited to, camping, hiking, fishing, and gathering and other cultural activities, in the Project affected area, including Kiamichi River, Long Creek, Little River, Red River Cedar Creek, and the Kiamichi Mountains.
- b) Effects of Project construction, operation, and maintenance on recreational flows of the Kiamichi River.
- c) Effects of Project construction and operation on number and duration of recreational visits to recreation facilities within the proposed Project's affected area.

## 3 Agency and Native American Tribe Resource Management Goals

The Recreation Resource Study results can also inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information

This section provides an overview of the background and existing information on Recreation Resources within the Project boundary and in the extended study area that includes the Kiamichi River, Long Creek, Little River, Red River Cedar Creek, and the Kiamichi Mountains. The PAD provides a more detailed description of existing information about recreation in the project vicinity.

The proposed pumped storage site is located entirely on privately owned lands, and, therefore, few recreation opportunities have been identified in the immediate area outside of general public access to the Kiamichi River. The proposed transmission line has been routed to avoid sensitive land use areas and prioritize undeveloped lands. Given the rural landscape along the route and avoidance of sensitive lands, no recreation opportunities have been identified within the Project area. Recreation site and facilities in the Project vicinity are shown on Figures 4-17 and 4-18 in the PAD.

Existing recreation sites and use areas in the Project vicinity are listed below.

**4.1 Federal Lands:**

- a) Ouachita National Forest – United States Department of Agriculture (USDA) Forest Service
- b) Sardis Lake – United States Army Corps of Engineers

**4.2 State Parks (Oklahoma State Parks):**

- a) Talimena State Park
- b) Clayton Lake State Park
- c) Pine Creek State Park

**4.3 State Management Areas (Oklahoma Department of Wildlife Conservation):**

- a) Three Rivers Wildlife Management Area
- b) Honobia Creek Wildlife Management Area
- c) Pushmataha Wildlife Management Area
- d) Ouachita Wildlife Management Area
- e) Yourman Wildlife Management Area
- f) Lake Nanih Waiya Public Fishing Area
- g) Pine Creek Wildlife Management Area
- h) Pat Mayse State Wildlife Management Area
- i) Gambill Wildlife Management Area

## **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to affect Recreation Resources at the Project site and in the Kiamichi River, the Little River, and Long Creek.

The Recreation Resources Study will be used to document recreation use and demand and will assist in identifying specific issues within the Project such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Recreation Resources Study will indicate any special

design, construction, and operational measures that need to be incorporated into the Project design based on the results of the Recreation Resources investigations.

## 6 Study Area

The proposed study area includes the land within the Project boundary, the transmission line right-of-way, the Kiamichi River, the Little River, and Long Creek.

## 7 Study Methodology

SEOPC proposes to conduct a single-season Recreation Resource Study to document existing data and to develop additional information to support a FERC license application for the proposed Project.

As noted in the PAD, there are no developed recreation sites or facilities in the proposed Project area, but there may be undocumented dispersed recreation on the Kiamichi River, the Little River, Long Creek, and/or on private lands in the vicinity of the proposed Project. To understand and more fully document potential dispersed recreational uses and activities in the Project area, as well as to document demand and recreation use trends in the Project vicinity, SEOPC will conduct a Recreation Resource Study. This study will focus primarily on the area around the proposed pump storage facilities (e.g., river intake, reservoirs, associated infrastructure) since their development has a greater potential to affect dispersed land- and water-based recreation compared to the generation tie/transmission lines. This will be accomplished through two primary activities:

- a) *Stakeholder Interviews* – SEOPC will identify a list of preliminary stakeholders with knowledge and experience with the types of dispersed recreation that are likely in the study area. These will include river-based (e.g., fishing, boating, etc.) and land-based (e.g., hunting, horseback riding, off highway vehicle use, etc.) recreation activities. To help broaden the information gathering process, SEOPC will use a snowball sampling technique that relies on the initial group of stakeholders to help identify additional participants who may have and be willing to share their knowledge and experience with recreation in the study area. Since recreation use in the Project study area is primarily dispersed in nature (i.e., not at a specifically designated park or other recreation area), a snowball sampling technique is appropriate to help identify stakeholders who may participate or have knowledge of recreation activities and participation in the Project study area. Up to 12 stakeholders with knowledge of recreational uses in the study area may be contacted and asked to participate in the Recreation Resource Study interviews. With both the initial stakeholders and any additional participants, SEOPC will use a standardized set of interview questions to gather information about types of recreation activities, sites and use areas, estimated use levels, seasonality of use, and other key factors about recreation in the study area. A preliminary set of questions is provided in Attachment A.
- b) *Recreation Demand Assessment* – In tandem with documenting existing recreational uses, SEOPC will also research and assess recreation demand in the



greater Project study area. The recreation demand assessment will look at recreation participation trends and other factors (e.g., demographic, economic, etc.) that affect recreation participation with a particular focus on those recreational activities with a potential project nexus (i.e., occur in or near the study area and would potentially be impacted by the proposed Project). To develop the recreation demand assessment, SEOPC will rely on existing sources of information that address recreation participation, as well as sources of information about other factors (e.g., lifestyle, demographic, economic, etc.) that influence or affect how people recreate in the area.

SEOPC will compile the results of these two activities into a Technical Memo that addresses and provides an estimate of current recreational use and also documents current recreation participation trends and estimated future growth in recreation activities in the Project study area (see Deliverables and Schedule below). SEOPC will also use the study results to inform the license application by focusing on those recreational activities that may potentially be affected by construction and/or operation of the proposed Project.

In addition, the Recreation Resource Study will be coordinated with several other resource studies to help inform the Technical Memo and corresponding license application, including:

- i. Aquatic Resources Study – to help inform potential effects on fishing.
- ii. Land Use and Aesthetic Resources Study – to address any potential effects on the recreation experience that may result from changes to the visual integrity of the landscape.
- iii. Noise, Air Quality and Traffic Resources Study – to help inform any potential effects on traffic.
- iv. Terrestrial Resources Study – to help inform potential effects on hunting.
- v. Water Resources Study – to provide an understanding of potential effects on boating and other river uses from any changes in flows levels/water availability.

As with the Recreation Resource Study results, the information in these studies will also be focused on those recreational opportunities that may potentially be affected by construction and/or operation of the proposed Project.

## **8 Consistency with Generally Accepted Scientific Practice**

The Recreation Resource Study is designed to align with generally accepted recreation research methods and best practices through the use of reliable tools and techniques (e.g., interviews with standardized questions) that are widely used in the social sciences and the recreation profession. These include:

- a) Snowball sampling technique to identify potential interview participants – see:
  - i. Qualitative Research and Evaluation Methods (Patton 2014)

- ii. Site Sampling and Snowball Sampling – Methodology for Accessing Hard-to-Reach Populations (TenHouten 2017)
  - iii. Sampling-Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research (Noy 2008)
  - iv. Respondent-Driven Sampling: A Sampling Method for Hard-to-Reach Populations and Beyond (Raifman et al. 2022)
- b) Standardized interview questions – the list of preliminary interview questions provided in Attachment A are based on other FERC licensing recreation studies and other available examples, including:
- v. 2023-2027 Oklahoma Statewide Comprehensive Outdoor Recreation Plan
  - vi. 2017 Virginia Outdoors Demand Survey (Virginia Department of Conservation and Recreation)
  - vii. 2020 Marion County Lake and Park Survey (Kansas State University)
- c) Published demand and trend data – see previous FERC licensing studies, as well as:
- viii. 2023-2027 Oklahoma Statewide Comprehensive Outdoor Recreation Plan
  - ix. 2023 Outdoor Participation Trends Report (Outdoor Foundation)
  - x. National Survey on Recreation and the Environment (USDA Forest Service)

## 9 Deliverables and Schedule

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC’s Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC’s Study Plan Determination. The ISR and USR will provide an update on SEOPC’s overall progress in implementing the Study Plans and schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Recreation Resource Study and that summarizes recreation information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Recreation Resource Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall 2025	Conduct stakeholder interviews Research and compile recreation demand data and information
May 2026	File ISR including Recreation Resource Technical Memo

June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (only if needed)
May 2027	File USR including updated Recreation Resource Technical Memo (only if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

**10 Periodic Progress Reporting**

While periodic progress reporting is not anticipated for the Recreation Resource Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

**11 Level of Effort and Cost**

The estimated cost (2025 dollars) for the Recreation Resource Study is \$45,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

**12 List of Acronyms**

- FERC            Federal Energy Regulatory Commission
- ISR             Inital Study Report
- PAD            Preliminary Application Document
- SEOPC        Southeastern Oklahoma Power Corporation
- USDA          United States Department of Agriculture
- USR            Updated Study Report

**13 References**

Patton, M.Q. 2014. Qualitative Research and Evaluation Methods, 4th Edition. SAGE Publications. Thousand Oaks, CA.

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## 14 Attachment A – Preliminary Stakeholder Interview Questions

Designing effective interview questions is crucial to develop a better understanding of recreational activities and use patterns in the Project study area. The list of interview questions below is preliminary and subject to refinement.

- a) What specific locations or areas in the Project study area do you currently use for recreational purposes? (have map available for interviewees to reference)
- b) How many years have you been using these areas for recreational purposes?
- c) How do you typically access these areas (e.g., personal vehicle, walking, horseback, off-highway vehicle)?
- d) What motivates you to choose these locations over others in the region for recreation?
- e) What activities do you typically do in the specific locations you mentioned previously (in response to Question 1)?
- f) How often did you visit these areas for recreation in the past year (12-months)?
- g) During which seasons or months did you visit these areas?
- h) Do you have preferred times of day, days of the week, or months when you typically visit these areas?
- i) Do you typically recreate alone or with others? If with others, who accompanies you and how many people typically join you?
- j) Does the presence of other people affect your recreational experience? If so, how?
- k) Have you noticed changes in the number of other people, their activities, and/or their visitation patterns over time?
- l) Are there any other locations or areas that you have used in the past for recreational purposes, but no longer use? Why?

**Pushmataha County Pumped Storage Project  
FERC No. P-14890**

**Proposed Mapping**

**Transmission Line Vegetation  
and Wildlife Habitat Mapping**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on 1 May 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The PAD stated that a transmission line would be constructed to connect the pump storage hydro facility to the Paris Texas substation.

## 2 Goals and Objectives

The goal of this mapping is to evaluate the effects of the construction, operation, and maintenance of the overland transmission lines, control buildings, substations, access roads, and any potential staging areas on the distribution and composition of vegetation and wildlife habitats, including wetlands, and the effects of those actions on wildlife inhabiting those habitats.

Specifically, the objectives of the mapping include:

- a) Identify, describe, classify, and map vegetation cover types in areas that would be affected by project construction, operation, and maintenance of the control buildings, substation, access roads, and any potential staging areas.
- b) Document the number, location, and extent of existing wetland areas, and analyze the impact of any project construction, maintenance, and operation on wetland areas.
- c) Identify project-related actions that may influence the distribution and composition of vegetation communities, including wetlands; quantify the acres of habitat that would be affected; and identify the measures that may be taken to protect or mitigate adverse effects on the vegetation communities and wetlands.
- d) Identify wildlife that may be associated with the affected habitats and determine the extent of potential effects on these species.

## 3 Agency and Native American Tribe Resource Management Goals

The Transmission Line Vegetation and Wildlife Habitat Mapping results can inform separate analyses to assess Project effects on resources such as Water, Soil, Aquatic, Terrestrial, Endangered Species, Recreation, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that Will be Used

Information on wildlife and botanical resources in the PAD includes:

- a) A general description of the vegetation types and wildlife species that may occur in the area.
- b) Large scale maps of general terrain from the project site to the substation.

The general information about the habitats and wildlife in the PAD is too broad to adequately describe the existing environment and evaluate potential impacts of the construction or operation of the project transmission lines, control buildings, substations, access roads, and any potential staging areas on the above resources. Apparently, no plant or wildlife surveys have been completed within the proposed transmission line corridors, or in the areas of the other project features. No staging areas were identified in the PAD, but we suspect that some would be necessary for staging construction of the transmission line.

The applicant proposes to map the area where the transmission line would cross over or by the Red River to see what wetland habitat is present and how it can be preserved or replaced if disturbed. However, the applicant does not propose any other studies on vegetation or wildlife.

## **5 Nexus between Project Operations and Effects on Resources**

Power will be transmitted from the pump storage site to the substation through overhead transmission lines. Power would be delivered via AC 345 kilovolts, via a new 99-mile-long transmission line.

Construction, operation, and maintenance of the overland transmission lines, control buildings, substations, access roads, and any potential staging areas, could adversely affect wetlands and other wildlife habitats and their associated wildlife through direct loss, disturbance, or habitat alterations. If potential effects on these resources are identified, environmental measures may be developed to reduce or eliminate these effects, including construction scheduling and avoidance of sensitive areas, or as suggested, creation of additional habitat. These potential measures would form the basis for any license articles that may be issued by the Commission.

## **6 Mapping Area**

Per the proposed transmission line corridor contained within the PAD.

## **7 Proposed Methodology**

Proposed methods include:

Using a qualified biologist knowledgeable in area vegetation and wildlife, identify, classify, and delineate on a map major vegetation cover types within transmission line corridor rights-of-way, and within the construction footprint of the control buildings, substations, access roads, and any potential construction staging areas. You may use existing aerial photography, on the ground surveys, or a combination of the two to identify and map the cover types. The survey area for the transmission line corridors shall include:

- Ground-truth any remote-sensing mapping efforts, record all wildlife observed (directly or indirectly) and any noxious weeds observed during survey efforts.



- Describe each cover type by species composition, successional stage, and aerial extent (acreage) within the survey area.
- Record and map the extent of all wetlands identified during survey efforts. Wetland classifications should distinguish the degree of inundation (seasonally flooded, permanently flooded).
- Based on existing literature and opportunistic observations during the vegetation surveys, identify wildlife species that may inhabit or use the identified habitats.
- Document the effects of any vegetation clearing associated with the new transmission lines at a landscape scale (e.g., within a 0.25-milewide corridor).
- Prepare a report that includes the above mapping effort, and identifies, describes, and assesses the extent to which project-related actions and activities may affect the identified habitats and wildlife species dependent on these habitats. The analysis should consider number and placement of poles and any access roads that would be needed to construct and maintain the transmission line. The analysis should consider the effects of fragmenting existing habitats. The report should contain any proposed measures to reduce or mitigate identified effects on these habitats and associated wildlife.

## 8 Consistency with Generally Accepted Scientific Practice

All scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regard to impacts caused by the proposed construction and operations and maintenance of the Project will be consistent with accepted scientific practice as well as currently accepted industry standards.

## 9 Deliverables and Schedule

SEOPC will prepare a report that includes mapping and identifying, describing, and assessing the extent to which the project-related actions and activities may affect the identified habitats and wildlife species dependent on these habitats.

Date	Activity
May 2025	Initiate mapping pending FERC Study Plan Determination
90 calendar days after initiation of study	Determination of existing information and additional data gaps.
Summer/Fall/Winter 2025	Conduct mapping first season
Spring/Summer/Fall 2026	Conduct mapping second season (if required)

## **10 Periodic Progress Reporting**

While periodic progress reporting is not anticipated for the transmission line vegetation and wildlife habitat mapping, SEOPC may prepare interim updates and/or summaries, if needed.

## **11 Level of Effort and Cost**

The estimated cost (2025 dollars) for the transmission line vegetation and wildlife habitat mapping is \$350,000 which includes mapping, consultation, field work, data compilation and analysis, and required reporting.

**Pushmataha County Pumped Storage Project  
FERC No. P-14890**

**Proposed Study Plan**

**Threatened and Endangered Species**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The Threatened and Endangered Species Study would be conducted to define the existing Threatened and Endangered Species conditions on the project site and transmission line right-of-way for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

The goals of this Threatened and Endangered Species Study are to conduct an assessment of the existing Threatened and Endangered Species for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this study include describing:

- a) Effects of Project construction, operation (including emergency spillway overflows into the Kiamichi River and Long Creek), and maintenance on the following identified federally listed threatened and endangered species in Oklahoma and Texas: Indiana bat, northern long-eared bat, piping plover, red-cockaded woodpecker, rufa red knot, American burying beetle, American alligator, leopard darter, Ouachita rock-pocketbook, rabbitsfoot, scaleshell mussel, winged mapleleaf, and earth fruit.
- b) Effects of Project construction, operation, and maintenance on the proposed endangered tricolored bat and proposed threatened alligator snapping turtle.
- c) Effects of Project construction, operation, and maintenance on designated critical habitat for the leopard darter.
- d) Effects of Project construction, operation, and maintenance on the proposed threatened monarch butterfly, a candidate species for listing under the Endangered Species Act.

## 3 Agency and Native American Tribe Resource Management Goals

The Threatened and Endangered Species Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Recreation, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that will be used

As noted in the PAD, biological surveys for special status and Threatened/Endangered wildlife, plants, and aquatic species have not been conducted for the proposed Project area. This section provides an overview of the background and existing information on Threatened and Endangered Species within the Project boundary and in the Kiamichi River, the Little River, and their drainage basins.

#### 4.1 Special Status Wildlife

Various special status wildlife species have the potential to occur given habitat availability.

#### 4.2 Federally Listed Wildlife

The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) list identified which federally listed species have the potential to occur within the proposed Project boundary based on known range and habitat requirements. The following species were identified as having the potential to occur within the proposed Project boundary (USFWS 2024, 2025). These include the following:

##### 4.2.1 Mammals

- Indiana Bat (*Myotis sodalist*), Northern Long-Eared Bat (*Myotis septentrionalis*), Tricolored Bat (*Perimyotis subflavus*).

##### 4.2.2 Birds

- Piping Plover (*Charadrius melodus*), Red-Cockaded Woodpecker (*Picoides borealis*), Rufa Red Knot (*Calidris canutus rufa*).

##### 4.2.3 Insects

- Monarch Butterfly (*Danaus Plexippus*), American burying beetle (*Nicrophorus americanus*).

#### 4.3 State Listed Wildlife

There is no Oklahoma State-Endangered or state-Threatened terrestrial wildlife species. The State of Texas list of wildlife species classified as Threatened or Endangered are listed in Table 4-18 in the PAD.

#### 4.4 Migratory Birds

USFWS categorizes migratory birds into Birds of Conservation Concern (BCCs) for specific regions. Seven BCCs have the potential to occur within the proposed Project boundary (Table 4-19 of the PAD). Five are classified as BCC throughout their range.

#### 4.5 Federally Listed Plant Species

There are two federally listed plant species in Oklahoma: the western prairie fringed orchid (*Platanthera praeclara*), which is listed as Threatened, and harperella (*Ptilimnium nodosum*), which is listed as Endangered (USFWS 2023a, 2023b) (Table 4-20 in the PAD). There are eight Threatened and 23 Endangered plant species in Texas. There is only one federally listed Candidate plant species and one recently Delisted species found in northeastern Texas (TPWD 2023).

#### 4.6 State Listed Plant Species

There is one state-listed Threatened or Endangered plant species in Oklahoma: harperella (USFWS 2023b). There are 15 Threatened and 24 Endangered plant species in Texas (TPWD 2023).

## 4.7 Federally Listed Aquatic Species

Threatened or Endangered species and critical habitat protected under the Endangered Species Act (ESA) have the potential to occur within the proposed Project boundary (USFWS 2024). Five ESA-listed species have the potential to occur within the proposed Project boundary, one of which has designated critical habitat designated within the proposed Project boundary (see Table 4-21 in the PAD).

### 4.7.1 Endangered

- Leopard Darter (*Percina pantherina*), Ouachita Rock Pocketbook (*Arcidens wheeleri*), Rabbitsfoot (*Quadrula cylindrica*), Scaleshell (*Leptodea leptodon*), Winged Mapleleaf (*Quadrula fragosa*), Alligator Snapping Turtle (*Macrochelys temminckii*).

## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential of Threatened and Endangered Species at the Project site and in the Kiamichi River, the Little River, and Long Creek.

This Threatened and Endangered Species Study will assist in identifying specific issues within the Project operational issues (i.e., water withdrawal, initial fill, and supplemental refills) where habitat exists such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Threatened and Endangered Species Study will indicate any special design and construction measures that need to be incorporated into the Project design based on the results of the Threatened and Endangered Species investigations.

## 6 Study Area

The proposed study area includes the land within the Project boundary, the transmission line right-of-way, the Kiamichi River, the Little River, and Long Creek.

## 7 Study Methodology

Per the PAD, a terrestrial resource study will further evaluate special status and ESA-listed wildlife, including associated habitat, and any invasive species within the proposed Project boundary. The study methodology includes any preferred data collection and analysis techniques or objectively quantified information. A schedule, including appropriate field season(s) and the duration, is provided in the Deliverables and Schedule section below.

The Threatened and Endangered Species Study supports licensing and preliminary design, which will include the following components:

### 7.1 Wetlands, Riparian, and Botanical Resources Component

The Wetlands, Riparian, and Botanical Resources component will focus on the following areas: a habitat assessment (including sensitive habitat); a special status and ESA-listed

plant survey; a special status and ESA-listed aquatic species survey; and an invasive plant and aquatic species survey.

Desktop review will include reviewing the most recent federal and state species lists available and review publicly available resources to determine if potential suitable habitat for those species may occur within the study area or in the surrounding vicinity. Resources include, but are not limited to, the USFWS IPaC report (USFWS 2025); Texas Parks and Wildlife Department's (TPWD) Rare, Threatened, and Endangered Species of Texas County list (TPWD 2025), TPWD's Ecological mapping system (TPWD 2014), and the Oklahoma Department of Wildlife Conservation's (ODWC) ecological mapping system (ODWC 2025).

Following the desktop review, pedestrian field surveys will be performed by qualified biologists and occur at appropriate times of the year within the study area. Prior to the start of field surveys, the habitat maps and species identified during the desktop review will be assessed by field biologists. The field survey will be used to ground-truth suitable habitat identified and document observed wildlife. Field surveys are anticipated to occur concurrently with the wetland delineation.

The qualified biologists will have accredited wetland training consistent with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual, and the 2010 Great Plains Regional Supplement (version 2.0), as well as USACE permitting requirements under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Wetland surveys will be conducted using the three-parameter approach to assess hydrophytic vegetation, hydric soils, and hydrology to determine potential wetland occurrences and boundaries. Survey equipment will include common survey tools such as binoculars, shovels, the Munsell Soil Color Chart, a Trimble R1 GPS unit (or similar) with sub-meter accuracy, electronic field data collection devices, plant indicator lists, and Threatened and Endangered Species lists and habitat descriptors.

Wetland scientists will also collect waterbody features that occur within the defined survey corridor by delineating the Mean High Tide Line or the Ordinary High-Water Mark according to the USACE Regulator Guidance Letter 05-05.

Biologists will walk the study area along transects and document wetlands, potentially suitable habitat, and any wildlife/aquatic fauna observations. All waters and wetlands will be mapped per the USACE regional guidance and wetland delineation manual. Biologists will map observations of non-native invasive aquatic species and note any observations of other key species of interest on data sheets. Should listed species suitable habitat be mapped and confirmed, or listed species identified and mapped during the assessment, those targeted areas or species may be subject to additional surveys.

If listed species habitat is mapped or listed species observed, correspondence should occur with the USFWS to determine if additional study is required. For example, if there is tricolored bat habitat and there are potential effects from the Project, USFWS may require bat surveys in the Project area. Bat surveys, or any other additional surveys required, will be conducted in accordance with USFWS guidelines. If protected species are identified in additional surveys, USFWS required best management practices, buffers, or other



avoidance requirements will be utilized. Therefore, correspondence with the agency is pertinent to minimize risk for Project timelines.

## **7.2 Effects on Certain Identified Federally Listed Threatened and Endangered Species**

SEOPC will study the effects of Project construction, operation (including emergency spillway overflows into the Kiamichi River and Long Creek), and maintenance on the following identified federally listed threatened and endangered species in Oklahoma and Texas: Indiana bat, northern long-eared bat, piping plover, red-cockaded woodpecker, rufa red knot, American burying beetle, American alligator, leopard darter, Ouachita rock-pocketbook, rabbitsfoot, scaleshell mussel, winged mapleleaf, and earth fruit.

Based on the results of the desktop review and field surveys, an effects analysis will be performed for all identified listed species with potential to occur in the Project area. The effects will be determined based on final construction and operation plans.

Effects to aquatic species may include direct and permanent filling of habitats, modification of habitat, water withdrawal, impingement, entrapment, or water quality. Water withdrawal modeling will be performed as described in the Water Resources Study Plan. Final engineering designs will be used to determine the likelihood of impingement or entrapment. Water quality monitoring will be studied as described in the Water Resources Study Plan. The impacts of these Project components on aquatic species with potential to occur in the Project area will be analyzed. Particular emphasis will be placed on the analysis of the leopard darter, which has critical habitat within the Project area.

Based on the desktop review and field investigations, qualified biologists will make effect determinations for federally and state-listed species. Determinations for federally listed species are defined as follows:

"No affect" means there will be no impacts to listed or proposed species. Generally, this means listed species will not be exposed to any activities and/or environmental consequences. Concurrence from the USFWS is not required.

"May affect, but not likely to adversely affect" means that all effects are beneficial, insignificant, or discountable. These determinations require written concurrence from the USFWS.

- a) Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat.
- b) Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated.
- c) Discountable effects are those extremely unlikely to occur.

"May affect and is likely to adversely affect" means that listed species are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure. These determinations result in formal consultation with the USFWS and require the applicable agency to develop a Biological Opinion.

Similarly, state law prohibits the take, possession, transportation, or sale of state-listed threatened or endangered animals, and the commerce of Texas state-listed plants or collection of these plants from public lands unless otherwise permitted.

Determinations for state-listed species are defined as follows:

- d) No impact; and
- e) May impact.
  - o “May impact” determinations made for state-listed species may require the implementation of species-specific best management practices. If surveys document the presence of state-listed species within the Project, additional steps may be required.

Consultation with the USFWS should be ongoing throughout this analysis. Should adverse effects be determined for any species, additional permitting through ESA Section 7 consultation may be required.

### **7.3 Effects on designated critical habitat for the leopard darter**

SEOPC will study the effects of Project construction, operation, and maintenance on designated critical habitat for the leopard darter.

Critical habitat for the leopard darter is within the Project area. During pedestrian surveys, biologists will review all streams within the critical habitat portion of the Project area for suitable leopard darter habitat. A biologist holding an appropriate Section 10(A) permit from the USFWS will participate in presence/absence surveys within suitable habitat areas identified within the critical habitat portion of the Project area.

A leopard darter presence/absence survey typically involves conducting visual surveys in known leopard darter habitats during the optimal spawning season (i.e., late spring and early summer), focusing on riffles and rocky areas within the stream, using experienced observers to identify the species, and recording detailed data on datasheets, with a particular emphasis on confirming any new observations with a qualified expert.

Results of the surveys will be analyzed and effects determined based on final construction and engineering plans. Any observation of the species will be documented and reported back to the regulatory agencies.

### **7.4 Effects on Proposed Endangered Tricolored Bat and Proposed Threatened Alligator Snapping Turtle**

SEOPC will study the effects of Project construction, operation, and maintenance on the proposed endangered tricolored bat and proposed threatened alligator snapping turtle.

Bat surveys will be conducted in accordance with the USFWS 2024 Range-Wide Indiana Bat and Northern Long-eared Bat Survey Guidelines. A revision to these methods may be required if the level of effort changes with publication of 2025 Range-Wide Guidelines (expected in March of 2025). At this time, USFWS accepts the same level of effort to determine the presence of tricolored bat. If additional guidelines are published, it is

possible separate surveys or additional coordination may be required. Results of the surveys will be analyzed and effects determined based on final construction and engineering plans.

At this time, there are no survey or assessment protocols or guidelines regarding alligator snapping turtles. Potential presence/absence surveys will be conducted in consultation with USFWS, if required. Suitable habitat will be assessed during pedestrian surveys and recorded if identified. Species observations will also be recorded, if encountered. Results of the field survey will be analyzed and effects determined based on final construction and engineering plans.

### **7.5 Effects on Proposed Threatened Monarch Butterfly**

SEOPC will study the effects of Project construction, operation, and maintenance on the proposed threatened monarch butterfly, a candidate species for listing under the ESA.

At this time, there are no survey or assessment protocols or guidelines regarding the monarch butterfly. Suitable habitat (i.e., milkweed [*Asclepias sp.*] clusters or meadows) will be assessed in pedestrian surveys and recorded if identified. Species observations will be recorded. Results of the field survey will be analyzed and effects determined based on final construction and engineering plans.

## **8 Consistency with Generally Accepted Scientific Practice**

All scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regards to impacts caused by the proposed construction, operation, and maintenance of the Project will be consistent with accepted scientific practice, as well as currently accepted industry standards. These standards may be specifically legislated by regulatory agencies of the State of Oklahoma and/or the United States of America, or standards observed by the various disciplines involved in the Project. Methods and results will be accurately recorded and reported, detailed for replicability.

## **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plan and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Threatened and Endangered Species Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Threatened and Endangered Species Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer 2025	Conduct habitat assessments and presence/absence surveys for listed species
May 2026	File ISR including Threatened and Endangered Species Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (if needed; a second season of Threatened and Endangered Species field work is not anticipated at this time.)
May 2027	File USR including updated Threatened and Endangered Species Technical Memo (if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Threatened and Endangered Species Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Threatened and Endangered Species Study is \$1,450,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

Acronym	Description
BCCs	Birds of Conservative Concern
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
IPaC	Information for Planning and Consultation
ISR	Interim Study Report
ODWC	Oklahoma Department of Wildlife Conservation
SEOPC	Southeastern Oklahoma Power Corporation
TPWD	Texas Parks and Wildlife Department
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USR	Updated Study Report

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**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Geologic and Soil Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The PAD stated that a Geologic and Soil Study would be conducted to define the existing geological and soils conditions at the site for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

The goals of this study are to conduct an assessment to define the existing geological and soils conditions at the site for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this study include describing:

- a) The geologic and soils characteristics within the extent of the proposed Project boundary, as well as potential borrow areas.
- b) Site-specific geological and soils evaluation includes drilling and trenching to understand the characteristics and physical and chemical properties, including but not limited to wind and water erosion rates and salinity; one monitoring well will be drilled and installed near the upper reservoir embankment if the ground water level there is found during the site investigation to be within 100 feet of the surface.
- c) Effects of construction, operation, and maintenance of project structures, access roads, and transmission Stormwater Pollution Prevention Plan (SWPPP) facilities on soil erosion and sedimentation that will be documented in future and Spill Prevention, Control, and Countermeasure (SPCC) Plans.
- d) Effects of spoil disposal on soil erosion and sedimentation.
- e) Effects of construction, filling, and operation of the upper, lower, and re-regulating reservoirs on groundwater levels and wells in the surrounding area.
- f) Effects of Project construction, operation, and runoff events on riverbank and sediment conditions (i.e., stability, erosion and sedimentation, and sediment transport) in the Kiamichi River, Long Creek, and shorelines of the upper, lower, and re-regulating reservoirs.
- g) Effects of the proposed water intake on erosion and sedimentation in the Kiamichi River.
- h) Effects of seismic events on the proposed Project and surrounding areas.

SEOPC has prepared a separate Cultural Resources Study Plan to evaluate the Project's impacts on cultural and historic resources. The outcomes of this study will be used to

identify any sensitive sites that need to be avoided during the site investigations and during Project construction and operations.

SEOPC has also prepared separate Terrestrial and Threatened and Endangered Species Study Plans to evaluate the Project's impacts on plants and other species. The outcomes of these studies will also be used to identify any areas with sensitive species that need to be avoided during the site investigations and during Project construction and operation.

### **3 Agency and Native American Tribe Resource Management Goals**

The Geologic and Soil Resource Study results can inform separate analyses to assess Project effects on resources such as Water, Aquatic, Terrestrial, Endangered Species, Recreation, Land Use, Cultural, Environmental Justice, and Socioeconomics. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

### **4 Background and Existing Information that will be used**

This section provides an overview of background and existing information of the proposed Project's regional geologic conditions and Project area characteristics, including topography, geological history, and mineral resources within the states of Oklahoma and Texas (southeastern and northwestern, respectively). This includes a detailed discussion of topography, stratigraphy, soils, shorelines, faults, and seismic considerations, as well as potential erosion and sedimentation in association with proposed Project construction. The PAD provides a more detailed summary of existing geology and soil information about the Project area and vicinity.

#### **4.1 Regional Geologic Features**

The proposed Project spans two states and four counties. The pumped storage site would be located entirely on private land in southeastern Oklahoma, within Pushmataha County. The associated transmission line extends 99.96 miles through Pushmataha and McCurtain Counties, Oklahoma, and Red River and Lamar Counties, Texas. The following geological discussion includes the proposed Project and Project vicinity.

#### **4.2 Regional Topography**

Oklahoma significantly varies in elevation, ranging from its lowest point of 287 feet above mean sea level (AMSL), where the Little River originates in southeast Oklahoma and extends into Arkansas, to its highest point of 4,973 feet AMSL, where Black Mesa spans the western portion of the panhandle (i.e., where Oklahoma meets the states of New Mexico and Colorado). General topography consists of land sloping from west to southeast (Oklahoma Geological Survey [OGS] 2008). In central and eastern Oklahoma, the slope averages approximately 4 feet per mile, while the entire state maintains an average slope of approximately 9 feet per mile (OGS 2008).

In the state of Oklahoma, there are three primary areas with elevated earthquake frequencies: Canadian County; Garvin and nearby counties; and Love, Jefferson, and Carter Counties (OGS 2008). Southeastern Oklahoma, including Pushmataha County, is in

an area of low earthquake activity (OGS 2008). The average earthquake magnitude in the state of Oklahoma ranges from 1.8 to 2.5, with a shallow focal depth of less than 3 miles (OGS 2008).

In Texas, the lowest elevation point is the Gulf of Mexico Shoreline, situated at sea level, while the highest elevation point is the Guadalupe Mountains, towering at 8,749 feet AMSL in the far western portion near the Texas-New Mexico border (Texas Almanac 2022a). Significant elevation changes contribute to the delineation of four major physical regions in Texas: Gulf Coastal Plains, Interior Lowlands, Great Plains, and Basin and Range Province (Texas Almanac 2022b). The Project area is located within the Gulf Coastal Plains, which extends from the Atlantic Ocean to the Balcones Fault and Escarpment (Texas Almanac 2022b). The Balcones Fault line serves as the boundary between lowland Texas, characterized by coastal plains, and upland Texas, characterized by interior rolling plains (Texas Almanac 2022b).

### **4.3 Geologic History**

The following information is summarized from the Earth Science and Mineral Resources of Oklahoma (OGS 2008). Hundreds of millions of years ago, parts of Oklahoma and Texas underwent subsidence, leading to the formation of six sedimentary major basins: Arkoma, Anadarko, Ardmore, Marietta, Hollis, and Dalhart. Adjacent areas experienced folding and thrusting, resulting in the creation of six major uplifts: Ozark, Nemaha, Ouachita Mountain, Arbuckle, Wichita, and Cimarron.

### **4.4 Mineral Resources**

Oklahoma has abundant mineral resources due to its complex geology, including petroleum (oil and natural gas), metals, and industrial minerals. Historically, the production of metals like lead, zinc, and copper was an important part of the state's economy; however, mining for metals no longer occurs in Oklahoma (OGS 2008). Lead and zinc mines were operational from 1891 through 1970, and Oklahoma was the leader in zinc production in the United States from 1918 to 1945 (OGS 2008). Mining operations southwest of the town of Altus, in Jackson County, were involved in the extraction of copper ore from shale deposits between 1964 and 1975.

### **4.5 Project Topography**

The Project area is situated along the western edge of the Ouachita Mountain Range, characterized by east-west-trending ridges and valleys. These ridges are commonly known as the Ouachita Fold and Thrust Belt and are locally referred to as the Kiamichi Mountains. The Project area features an east-west-trending ridgeline with peak elevations of approximately 1,900 feet AMSL, accompanied by a flat-lying valley of the Kiamichi River floodplain north of the ridge at an approximate elevation of 590 feet AMSL.

### **4.6 Project Geology**

Southern Oklahoma includes all of Pushmataha County, the southeast corner of Pittsburg County, and portions of McCurtain, Latimer, Le Flore, Atoka, and Choctaw Counties

(Wilkins 2001). The proposed Project's pumped storage site would be situated entirely on private land in southeastern Oklahoma, within Pushmataha County. The associated transmission line traverses Pushmataha and McCurtain Counties in Oklahoma, and Red River and Lamar Counties in Texas. Geologic regions that display a distinct landscape or landform in Oklahoma and Texas are shown on Figure 4-8 in the PAD.

#### **4.7 Soil Types**

Natural Resources Conservation Service (NRCS) has identified two major land use areas in northeastern Pushmataha County based on soils, climate, and water resources (OGS 2008): the Ouachita Mountains and Arkansas Ridge and Valley (OGS 2008). The Ouachita Mountain soils are well drained, with moderate to strong acid soils on steep slopes (up to 30 percent) (OGS 2008). The area consists of oak-hickory-pine forests and is underlain by light colored, sandy, and loamy soils with clayey subsoils developed from sandstones and shales (OGS 2008). The soil orders are Alfisols, Ultisols, and Inceptisols (OGS 2008). The Arkansas Ridge and Valley soils are also well drained on moderately steep slopes or ridges (up to 9 percent) (OGS 2008). These soils are silty and loamy, and the soil order is Alfisol (OGS 2008).

#### **4.8 Reservoir Shorelines and Streambanks**

This proposed Project would not include a diversion structure; instead, it would have a 40-foot-long, 40-foot-wide funnel-shaped intake structure at the river's bank. This intake structure would be positioned approximately 1.5 feet above the bottom of the Kiamichi River and would taper to a 10-foot-long, 10-foot-wide section. During high flow events (rainy season), water would be conveyed from the river, through the new channel, and to the proposed regulating reservoir.

### **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to be affected by, and to affect, geology and soils in the Project area. This Geology and Soils Study will assist in identifying specific areas within the Project area where the condition or nature of the geology or soils are such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The proposed Project includes the construction of an upper reservoir of 68,270-acre-feet; a deep shaft; large-diameter tunnel; intake structures; and a powerhouse. All such facilities would require extensive geologic information to be obtained for the Project to advance through the design phase. The study will indicate any special design and construction measures that would need to be incorporated into the Project design based on the results of the geologic investigations.

### **6 Study Area**

The overall Geologic and Soil Study will encompass the project area south of Kiamichi River, including the Long Creek drainage basin.

## 7 Methodology

As noted in the PAD, SEOPC plans to undertake a geomorphic analysis and sampling study to gather additional information on the geology and soils in the Project area. This will include any necessary drilling and trenching to understand characteristics of Project area soil and rock physical and chemical properties, including wind and water erosion rates and salinity, among other key properties. The study of geology and soils for supporting licensing and preliminary design will include the following components (as noted under Study Goals and Objectives, SEOPC has also proposed separate cultural and terrestrial resources that will be coordinated with this study):

### 7.1 Review of Existing Literature (Geology, Water Resources, United States Army Corps of Engineers)

SEOPC will study the geologic and soil characteristics within the extent of the proposed Project boundary including the transmission corridor. Soil types (NRCS 2023) and surface geology (OGS 2008) will be compiled in ArcGIS. This will include a review of the groundwater levels at the Project based on existing well data that is compiled by the Oklahoma Water Resources Board. The groundwater level information will be used to help determine if the proposed monitoring well drilling and installation task will be required or not. If the groundwater elevation at the proposed upper reservoir embankment site is within 100 feet of the surface, then it will be recommended to install a nearby 4-inch-diameter monitoring well to collect long term (monthly) groundwater elevation and chemistry data.

In addition, United States Army Corp of Engineers documentation within the extent of the Project boundary will also be compiled and reviewed to help determine if there are any nearby designated wetlands to avoid during both the site investigations and during the Project construction and operations.

### 7.2 Field Geologic and Geotechnical Investigations at the Upper Reservoir, Lower Reservoir, Powerhouse, and Transmission Line Corridor

SEOPC will perform geologic and geotechnical investigations within the Project boundary to determine the characteristics of the subsurface soils and bedrock that will include drilling, trenching, and laboratory testing to understand the characteristics and physical and chemical properties, including but not limited to wind and water erosion rates and salinity.

The site investigations will use a rubber-tired, continuous flight rotary drill equipped with hollow-stem augers that is able to collect standard penetration data on the undisturbed subsurface soils and bedrock using the Standard Penetration Test – ASTM D 1586 method to help determine density and consistency of the materials. In addition, a 3-1/2-inch-outer diameter, split-spoon sampler using ASTM 3550 may be used to sample soils containing gravel or where approximate in-place densities of subsurface materials are required. The ASTM 3550 methods are similar to the Standard Penetration Test but also includes the use of 2-1/2-inch-diameter, 6-inch-long brass sampling tubes placed inside the split-spoon

sampler. In-place densities of surface soils will be determined at several locations and ground water levels will be measured where encountered. Polyvinyl chloride (PVC) standpipe piezometers will be installed to allow groundwater levels to be measured at the time of drilling and later after the static water level has reached equilibrium.

Trenching will also be conducted within the Project boundary to help characterize the subsurface soil and bedrock conditions; construct any drill pads and access roads for the proposed drilling; and help install best management practices. It is expected that the surface soils within the Project boundary are thin and shallow, which will allow the use of a rubber-tired backhoe. If soils are thicker than 9 to 10 feet, it may be more beneficial to use a track excavator to allow deeper trench excavations. In addition, if active faults identified by the OGS are found to cross the Project boundaries, it will be recommended to use a track excavator to excavate several trenches across them to help confirm their presence. If any active faults are found during the site investigation, SEOPC's geological engineer will explore and recommend offsets to allow long-term safe construction of the proposed Project's buildings and structures.

### **7.3 Long-term Groundwater Level Monitoring and Measurements**

After the PVC piezometer standpipes are installed during the auger drilling and trenching site investigation activities described above, SEOPC will collect monthly groundwater level readings for 12 months. If the groundwater elevation near the proposed upper reservoir embankment is found during the site investigation to be within 100 feet of the surface, SEOPC proposes to use a licensed drilling contractor to drill and install one nearby monitoring well.

### **7.4 Slope Stability Study**

SEOPC will perform slope stability analyses at the proposed embankment location for the upper reservoir. Both static and pseudo-static analyses will be performed using a numerical computer-based limit-equilibrium stability model/software. The software will be used to estimate factors of safety against slope failure within the embankment and in the underlying subgrade materials. The pseudo-static analyses will be used to model the effect of earthquake loading on stability. Material properties will be assumed based on the information obtained during the site exploration drilling investigation. The results of the stability analyses will recommend a maximum slope for the upper embankment during the design seismic event established from the proposed site seismic work described below.

### **7.5 Soil Erosion and Sedimentation (SWPPP and SPCC Plans)**

SEOPC will study the effects of construction, operation, and maintenance of project structures, access roads, and transmission facilities on soil erosion and sedimentation. This work will help inform the development of a SWPPP and SPCC Plan that will be required during drilling and trenching, as well as construction of the Project.

## **7.6 Soil Disposal – Erosion/Sedimentation and Groundwater (Laboratory Testwork)**

SEOPC will study the effects of excavated soil chemistry and spoil disposal on soil erosion and sedimentation. SEOPC will collect representative soil samples during the site investigations and submit a suite of representative samples from across the Project for chemical analysis. If sensitive soils are identified, they will be described and characterized in the final site investigation report. Best management practices will be used at the investigation sites where soils will be temporarily disturbed at the surface to contain and prevent any contamination releases.

In addition, SEOPC will study and report the effects of soil excavations and possible soil disposal to project construction, filling, and operation of the upper, lower, and regulating reservoirs on groundwater levels and wells in the surrounding area. This proposal excludes costs for contaminated soil disposal resulting from the site investigations.

## **7.7 River Bank – Sedimentation/Stability/Erosion/Sediment**

SEOPC will study the effects of the proposed Project construction, operation, and runoff events on riverbank and sediment conditions (i.e., stability, erosion and sedimentation, and sediment transport) in the Kiamichi River, Long Creek, and shorelines of the upper, lower, and re-regulating reservoirs. These studies will be conducted using industry standard best practices.

## **7.8 Water Intake**

SEOPC will study the effects of the proposed water intake on erosion and sedimentation in the Kiamichi River. Models will be run to predict any effects to the river. The results of the modeling will be included in the Technical Memo for Geologic and Soil Resources and in the license application.

## **7.9 Seismic**

SEOPC will study the effects of seismic events on the proposed Project and characterize the geoseismic settings for the different components of the proposed Project (e.g., transmission corridor, reservoir sites and embankments, and pump station / powerhouse). SEOPC proposes to determine the probabilistic ground motion values for the different proposed site locations based on publicly available information from the United States Geological Survey and the National Earthquake Hazards Reduction Program (NEHRP; 2020).

## **8 Consistency with Generally Accepted Scientific Practice**

The details of the proposed SEOPC field methods and studies have been previously described and correspond with generally accepted scientific practices including ASTM International (ASTM) testing and reporting methods and seismic characterization methods recommended by the NEHRP (2020).

## 9 Deliverables and Schedule

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC’s Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC’s Study Plan Determination. The ISR and USR will provide an update on SEOPC’s overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Geologic and Soil Resources Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Geologic and Soil Resources Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Late Spring 2025	Meeting to review Draft SWPPP and SPPC Plans for Study Drilling and Trenching
Early Summer 2025	Project Site Investigation Pre-meeting
Summer/Fall/Winter 2025	Field studies and data collection
Fall 2025	Post-Site Investigation Meeting
May 2026	File ISR including Geologic and Soil Resources Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (if needed; geologic and soil-related field work is not anticipated based on currently proposed methodology and schedule but additional analysis may occur during this time period)
May 2027	File USR including updated Geologic and Soil Resources Technical Memo (only if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

Periodic progress reporting is anticipated to inform FERC and Project stakeholders on the implementation status of the Geologic and Soil Resources Study. SEOPC will prepare interim updates and/or summaries, if needed, during the study year to apprise license



participants on study implementation progress and to support ongoing consultation with these participants.

This study currently includes the following proposed progress meetings (in addition to those required by the FERC licensing process identified above):

- a) Project site investigation pre-meeting
- b) Review draft SWPPP and SPCC Plans
- c) Post-site investigation meeting

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Geologic and Soil Resources Study is **\$450,000** which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

AMSL	Above Mean Sea Level (feet above mean sea level)
ASTM	American Society for Testing and Materials
FERC	Federal Energy Regulation Commission
ISR	Initial Study Report
NEHRP	National Earthquake Hazards Reduction Program
OGS	Oklahoma Geological Survey
NRCS	Natural Resources Conservation Service
PAD	Pre-Application Document
PVC	Polyvinyl chloride (pipe)
SEOPC	Southeast Oklahoma Power Corporation
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan

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**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Environmental Justice**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). Therefore, an Environmental Justice (EJ) Study Plan is being proposed to assess the Project's effects and assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

As noted in the PAD, it is possible that the proposed Project could have a disproportionate impact on EJ communities. The corresponding goals of this EJ Study are to conduct an assessment of EJ communities and resources in the Project area and vicinity and to assess the feasibility of the proposed Project features. There are five general objectives of the EJ study:

- a) To identify the presence of EJ communities that may be affected by the licensing of the Project and identify outreach strategies to engage the identified EJ communities
- b) To identify the presence of non-English speaking populations that may be affected by the Project and identify outreach strategies to reach and engage non-English speaking populations in the licensing process, if present
- c) To discuss the effects of licensing the Project on any identified EJ communities and identify any effects that are disproportionately high and adverse
- d) To identify mitigation measures to avoid or minimize Project effects on EJ communities
- e) To identify sensitive receptor locations within the Project area and identify potential effects and measures taken to avoid or minimize the effects to such locations, if they are present

The specific goals of this study include studying:

- i. the effects of Project construction, operation, and maintenance on minority and low-income communities in the Project-affected area.
- ii. the effects of the Project on human health and environmental effects currently present in the Project-affected area.
- iii. the effects that could be disproportionate, adverse, and significant on minority and low-income populations.
- iv. the effects of Project water withdrawals associated with (a) initially filling the lower reservoir and (b) supplemental withdraws from the Kiamichi River during high flow periods on the sustenance of minority and low-income populations.

The EJ Study will be coordinated with other resources (e.g., socioeconomics, hydrology) to help meet these study goals.

### **3 Agency and Native American Tribe Resource Management Goals**

The EJ Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

### **4 Background and Existing Information that will be used**

The PAD identified multiple EJ communities within a 5-mile radius of the proposed Project boundary (see section 4.15.1). Consistent with the Council on Environmental Quality's EJ guidance, the PAD used three criteria to identify EJ communities, including:

- a) A census block group's population self-identifying as something other than "White-alone not Hispanic" (referred to as minority) exceeds 50 percent, or the percentage is 10 percent greater than the same measure in the county.
- b) The percentage of a block group's residents self-identifying as American Indian or Alaska Native Alone exceeds the state average.
- c) The percentage of a block group's residents whose income is less than two times (200 percent) the poverty level exceeds the same measure in the county.

The PAD lists the preliminary EJ communities and specific census tracts that meet these criteria. The EJ Study will build off this preliminary list to compile background and existing information on these EJ communities and potential Project effects on them.

This section provides an overview of the background and existing information on EJ.

### **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to affect EJ resources at the Project site.

This EJ Study will assist in identifying specific issues within the Project such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The EJ Study will indicate any special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the EJ resources investigations.

### **6 Study Area**

The proposed study area includes the land within the Project boundary and the transmission line right-of-way. The study area will be extended to include EJ communities reasonably expected to be impacted and aligned with the Socioeconomic and Cultural Resources studies. The state, county, and applicable census block groups will be analyzed.

## 7 Study Methodology

The EJ Study methodology has been successfully employed on other projects in the licensing process and is consistent with guidance from the Environmental Protection Agency’s Promising Practices for Environmental Justice Methodologies in National Environmental Policy Act (NEPA) Reviews (2016), as well as aligning with FERC methodology on other types of energy projects. This methodology includes:

Preparation of a study report that provides the following:

- a) A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. The table should include the following information from the United States Census Bureau’s most recently available American Community Survey 5-Year Estimates for each state, county, and block group (wholly or partially) within the geographic scope of analysis:
  - i. total population (Census Table B03002)
  - ii. total population percentages of each racial and ethnic group (i.e., White Alone Not Hispanic, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, two or more races, Hispanic or Latino origin [of any race]) (count for each group) (Census Table B03002)
  - iii. minority population including individuals of Hispanic or Latino origin as a percentage of total population<sup>1</sup> (Census Table B03002)
  - iv. total population below poverty level as a percentage<sup>2</sup> (Census Table B17017)

The EJ Study will also support licensing and preliminary design, which will include the following components:

### 7.1 Minority and Low-income Communities

SEOPC will study and map the effects of Project construction, operation, and maintenance on minority and low-income communities in the Project-affected area.

The data should be collected from the most recent American Community Survey files available, using table #B03002 for race and ethnicity data and table #B17017 for low-income households.

- a) Identification of environmental justice populations by block group, using the data obtained in response to part (a) above, by applying the following methods included in the Environmental Protection Agency’s Promising Practices for Environmental Justice Methodologies in NEPA Reviews (2016):

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<sup>1</sup> To calculate the percentage of total minority population, subtract the percentage of “White Alone Not Hispanic” from 100 percent for any given area.

<sup>2</sup> To calculate the percentage of total population below poverty level, divide the total households below the poverty level by the total number of households and multiply by 100.

- i. To identify environmental justice communities based on the presence of minority populations, use the “50-percent” and the “meaningfully greater” analysis methods. To use the “50-percent” analysis method, determine whether the total percent minority population of any block group in the affected area exceeds 50 percent. To use the “meaningfully greater” analysis, determine whether any affected block group is 10 percent greater than the minority population percent in the county using the following process:
    1. Calculate the percent minority in the reference population (county).
    2. To calculate the reference population’s percent minority, add 10 percent (i.e., multiply the percent minority in the reference population by 1.1).
    3. This new percentage is the threshold that a block group’s percent minority would need to exceed to qualify as an environmental justice community under the meaningfully greater analysis method.
  - ii. To identify environmental justice communities based on the presence of low-income populations, use the “low-income threshold criteria” method. To use the “low-income threshold criteria,” 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).
- b) A map showing the Project boundary and location(s) of any proposed Project-related construction in relation to any identified environmental justice communities within the geographic scope. Denote on the map if the block group is identified as an environmental justice community based on the presence of minority population, low-income population, or both.
  - c) A discussion of anticipated Project-related effects on any environmental justice communities for all resources where there is a potential nexus between the effect and the environmental justice community. For any
  - d) identified effects, please also describe whether or not any of the effects would be disproportionately high and adverse.
  - e) If environmental justice communities are present, please provide a description of your public outreach efforts regarding your Project, including:
    - iii. a summary of any outreach to environmental justice communities conducted prior to filing the application (include the date, time, and location of any public meetings beyond those required by the regulations);
    - iv. a summary of comments received from members of environmental justice communities or organizations representing the communities;



- v. a description of information provided to environmental justice communities; and
  - vi. planned future outreach activities and methods specific to working with the identified communities.
- f) A description of any mitigation measures proposed to avoid and/or minimize Project effects on environmental justice communities.
  - g) Identification of any non-English speaking groups, within the geographic scope of analysis, that would be affected by the Project (regardless of whether the group is part of an identified environmental justice community). Please describe your previous or planned efforts to identify and communicate with these non-English speaking groups, and identify and describe any measures that you propose to avoid and minimize any Project-related effects to non-English speaking groups.
  - h) If new construction is proposed, identification of sensitive receptor locations (e.g., schools, day care centers, hospitals, etc.) within the geographic scope of analysis. Show these locations on the map generated in step (c). Provide a table that includes their distances from Project facilities and any Project-related effects on these locations, including measures taken to avoid or minimize Project-related effects.
  - i) This study should be conducted in consultation with other relicensing stakeholders who express interest. The final study report should include documentation of any consultation you conducted with entities that expressed interest in environmental justice, copies of their comments, and an explanation of how you have addressed their comments in your final response.

## **7.2 Human Health and Environmental**

SEOPC will study and report on the effects of the Project on human health and environmental effects currently present in the Project-affected area. Existing data from the Centers for Disease Control and Prevention will be used to establish a health baseline for the study area. Once established, results from the Aquatic Resources, Geologic and Soil Resources, and Air Quality Resources studies will determine any anticipated impacts on community health.

## **8 Disproportionate Effects on Minority and Low-income Communities**

SEOPC will conduct a study on the effects that could be disproportionate, adverse, and significant on minority and low-income populations caused by the Project. Determination of disproportionate effects will be determined using desktop research by the demographic results and the distribution of effects within the study area. A greater concentration of EJ communities will likely mean impacts will be felt by those communities the most, while a low concentration of EJ communities means impacts are less likely to negatively impact those communities.

## **9 Water Withdrawal Effects on Minority and Low-income Communities**

SEOPC will determine the effects of Project water withdrawals associated with (a) initially filling the lower reservoir; and (b) supplemental withdrawals from the Kiamichi River during high flow periods on the sustenance of minority and low-income populations. Desktop research will be conducted in conjunction with cultural studies to determine the presence of sustenance practices. If found to be present, water and aquatic studies will determine how the withdrawals may impact these practices. If SEOPC needs additional input directly from impacted community, an optional supplemental study can be conducted with field staff going to speak with community and agency leaders either in person or over the phone concerning water level impacts on sustenance practices.

## **10 Consistency with Generally Accepted Scientific Practice**

This study is intended to supplement existing information about EJ. The information obtained from this study will support SEOPC's analysis of the Project, if proposed, which may affect human health or the environment in EJ communities.

Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, as amended, requires federal agencies to consider if impacts on human health or the environment would be disproportionately high and adverse for minority and low-income populations (i.e., EJ communities) in the surrounding community resulting from the programs, policies, or activities of federal agencies. If EJ communities do exist near the Project, FERC Commission staff will need to assess potential effects from licensing the Project on those communities.

Further, Sections 4(e) and 10(a) of the Federal Power Act require the Commission to give equal consideration to all uses of the waterway on which a Project is located, and what conditions should be placed on any license that may be issued. In making its license decision, the FERC Commission must equally consider the environmental, recreational, fish and wildlife, and other non-developmental values of the Project, as well as power and developmental values.

Operation and maintenance of the Project has the potential to affect human health or the environment in EJ communities. Examples of resource impacts may include, but are not necessarily limited to, Project-related effects on erosion or sedimentation of private properties; groundwater or other drinking water sources; subsistence fishing, hunting, or plant gathering; access for recreation; housing or industries of importance to EJ communities; and operation-related effects on air quality, noise, and traffic.

## **11 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and Schedule, the status of the

data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the EJ Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the EJ Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Compile EJ data and information
May 2026	File ISR including EJ Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (a second study season for the EJ Study is not anticipated at this time)
May 2027	File USR including updated EJ Technical Memo (if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## **12 Periodic Progress Reporting**

While periodic progress reporting is not anticipated for the EJ Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## **13 Level of Effort and Cost**

The estimated cost (2025 dollars) for the EJ Study is \$50,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## **14 List of Acronyms**

EJ	Environmental Justice
FERC	Federal Energy Regulatory Commission
ISR	Interim Study Report
NEPA	National Environmental Policy Act
PAD	Preliminary Application Document
SEOPC	Southeast Oklahoma Power Corporation

USR Updated Study Report

## 15 References

U.S. Environmental Protection Agency. 2016. Environmental Protection Agency's Promising Practices for Environmental Justice Methodologies in National Environmental Policy Act. Available at: [Promising Practices for EJ Methodologies in NEPA Reviews](#)

**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Development Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydroelectric licensing for the Pushmataha County Pumped Storage Project (P-14890). The Development Resources Study Plan is being proposed to acknowledge the data and information needed to address the feasibility of the proposed Project features and their potential effects. While presented here as a standalone study, the Development Resources Study will not entail a discrete study and associated Technical Memo (see Deliverables and Schedule), but rather will draw upon the data and information from other resource studies to address the identified study needs. This information will be addressed in the other resource Technical Memos and the corresponding application for a new FERC license.

## 2 Study Goals and Objectives

SEOPC's objective is to gather, synthesize, and report on information necessary to qualitatively evaluate the environmental effects of the Project in the study area in the Development Resources Study. Specifically, it addresses the effects on generation, economic, adequacy of water and water quality, including:

- a) Effects of proposed or recommended environmental measures on Project generation and economics.
- b) Adequacy of proposed fill and refill water supply and the potential effects on generation during low flow or drought periods.
- c) Effects of Project-related water withdrawals on manganese, iron, nutrient, algae concentrations, and the associated effects on drinking water treatment at water supply facilities within the Project-affected area

## 3 Agency and Native American Tribe Resource Management Goals

The Development Resources Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Environmental Justice, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that will be Used

Both the PAD and FERC's Scoping Document provide an overview of the proposed Project. The proposed Project is a closed-loop pumped storage hydropower Project located on the Kiamichi River in Pushmataha County, Oklahoma, near the town of Talihina. The Project would include four turbines/generators, each with an estimated rated capacity of 300 megawatts (MW) for a total installed capacity of 1,200 MW. The Project will use a variable speed pumped hydro configuration that will have an overall cycle efficiency for pumping and generating of approximately 80 percent, and a power factor of 0.9.

## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential to affect Development Resources (e.g., water supply, water quality, and other resources) at the Project site. The information compiled during the Development Resources Study will assist in identifying specific Project issues that may require measures to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Development Resources Study Plan will help inform any special design, construction and operational measures that need to be incorporated into the Project design based on the results of the Development and related resource investigations. As noted previously, Development Resources will be addressed in related resource Technical Memos and the corresponding application for a new FERC license.

## 6 Study Area

The proposed Study Area includes the land within the Project boundary and the transmission line right-of-way.

## 7 Study Methodology

The Development Resources Study supports licensing and preliminary design. The Water Resources Study will be used to address the following Development-related effects:

- a) Adequacy of proposed fill and refill water supply and the potential effects on generation during low flow or drought periods (water supply).
- b) Effects of water withdrawals on manganese, iron, nutrient, algae concentrations, and the associated effects on drinking water treatment at water supply facilities within the Project-affected area (water quality).

These effects will be addressed in the corresponding Water Resources Technical Memo and application for a new license.

Additionally, the license application will also provide data and information to sufficiently assess the effects of any proposed or recommended environmental measures on Project generation and economics.

## 8 Consistency with Generally Accepted Scientific Practice

The Water Resources Study Plan addresses the consistency of water supply and water quality assessments with generally accepted scientific practices.

## 9 Deliverables and Schedule

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. As noted previously, the Development Resources Study will not result



in a standalone Technical Memo, but instead, the study goals and objectives will be addressed in other resource Technical Memos that will be appended to the ISR/USR. The information provided in the Technical Memos will be assessed and used for the Application for New License. The Technical Memos will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Development Resources Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	See related resource study plans for implementation schedules
May 2026	File ISR Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	See related resource study plans for implementation schedules
May 2027	File USR
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

Periodic progress reporting is not anticipated for the Development Resources Study.

## 11 Level of Effort and Cost

There is no cost for the Development Resources Study. Any potential costs associated with compiling Development Resources-related data and information is accounted for in other resource study plans.

## 12 List of Acronyms

FERC	Federal Energy Regulation Commission
ISR	Initial Study Report
MW	megawatt
PAD	Preliminary Application Document
SEOPC	Southeast Oklahoma Power Corporation
USR	Updated Study Report

**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Cultural and Tribal Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary-Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). As noted in the PAD, SEOPC proposes to conduct a Cultural and Tribal Study Plan to assess the Project area and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

This section discusses cultural resources within the proposed Project. In considering a license for a project, FERC serves as the lead federal agency with the responsibility for compliance with applicable federal laws, regulations, and policies pertaining to cultural resources (archaeological and historic properties). The National Historic Preservation Act (NHPA) established this regulatory obligation. This study plan describes the methods SEOPC will use to evaluate the effects of the Project on properties that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), and traditional cultural properties, with the Area of Potential Effects (APE); effects of the Project on cemeteries in the Project-affected area; effects of the Project operation and maintenance on properties of traditional religious and cultural importance to Native-American Tribe(s) within the APE; and effects of the proposed Project on the Chickasaw and Choctaw trail(s) of removal from homelands into Oklahoma and other historic trails.

The goals of this Cultural and Tribal Resources Study are to assess the existing Cultural and Tribal resources in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this study include:

- a) The efforts will include a thorough review of: (1) building and structure construction dates; (2) an intensive-level pedestrian survey of the entire proposed Project boundary to identify both archaeological and historic built environment resources to inform the development of a future Historic Property Management Plan (HPMP); (3) an archaeological survey of all known proposed Project disturbance areas; and (4) consulting with the Choctaw, Chickasaw, and Caddo Nations and other interested Tribes regarding inventory needs as well as appropriate measures for future protection and/or mitigation of identified cultural resources.
- b) The effects of Project construction, operation, and maintenance on properties that are included in, or eligible for inclusion in, the NRHP and traditional cultural properties within the area of potential effects.
- c) The effects of Project construction, operation, and maintenance on cemeteries in the Project-affected area.
- d) The effects of continued Project operation and maintenance on properties of traditional religious and cultural importance to Native-American Tribe(s) within the area of potential effects.

- e) The effects of the proposed Project on the Chickasaw and Choctaw trail(s) of removal from homelands into Oklahoma and other historic trails.

### **3 Agency and Native American Tribe Resource Management Goals**

The Cultural and Tribal Resources Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

### **4 Background and Existing Information**

This section provides an overview of the background and existing information on cultural and tribal resources. In November 2023 and January 2024, a review was completed for previously recorded cultural resources. The records search area included a 3-mile buffer around the pumped storage site and a 2.5-mile buffer around the transmission line to ensure that nearby cultural resources were assessed within the Project area that may intersect with the proposed Project boundary.

For archaeological resources, an archaeologist reviewed the Texas Historical Commission (THC) Atlas and Oklahoma Archeological Survey Information System (OASIS) to determine the presence of any known archaeological sites or resources within the proposed Project boundary. In addition to the OASIS records, Texas General Land Office (GLO) plat maps and other historical maps were reviewed to gain an understanding of precontact and historic-era period uses of the area and to identify potential historic sites that have not been previously recorded (GLO 2024). For historic resources, an architectural historian reviewed the Oklahoma Historical Society (OHS) NRHP database, Oklahoma Landmark Inventory database, THC Atlas, and Texas Department of Transportation (TxDOT) Aggregator for designated historic properties within the proposed Project boundary and records search area. The architectural historian also reviewed the Oklahoma Historic Marker Program database, the Oklahoma Centennial Farm and Ranch Program, the Texas Department of Agriculture's (TDA 2024) Texas Family Land Heritage Centennial Farms database, and the Texas Freedom Colonies Project Atlas for potential historic properties and cultural landscapes (OHS 2024; Oklahoma State University 2024; TDA 2024; Texas Freedom Colonies Project 2024). The review included examination of the mapped locations identified in the *Architectural and Historical Survey of Oklahoma's All Black Towns* (Stantec 2023).

There have been 15 previous archaeological resource investigations conducted within the proposed Project boundary of the pumped storage site (Table 4-28 in the PAD), while an additional seven surveys have occurred within the records search area (Table 4-29 in the PAD). A total of four historic resources surveys have occurred within the records search area (Table 4-30 in the PAD).

According to the PAD, since the first archaeological surveys were conducted in 1957, 59

cultural resources have been previously recorded within the proposed Project boundary (Table 4-31 in the PAD), 34 cultural resources are located within the records search area (but outside the proposed Project boundary) (Table 4-32 in the PAD), 43 are within the records search area of the Oklahoma portion of the transmission line, 64 archaeological sites have been previously documented in lands within the records search area (Table 4-33 in the PAD).

According to the PAD, since the first archaeological surveys were conducted in 1939, 64 archaeological sites have been previously documented in lands within the records search area (Table 4-33 in the PAD). Table-4-34 of the PAD indicates that there are 13 historic resources in the study area. PAD Table 4-35 of the PAD shows 11 cemeteries, all of which are in Texas, and there is one historic trail in Texas (Table 4-36 in the PAD). Additional details on these resources including cultural affiliation and NRHP status can be found in Sections 4.12.4.3 through 4.12.4.6 of the PAD.

## **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to affect cultural and tribal resources at the Project site. This Cultural and Tribal Resource Study will assist in identifying specific issues within the Project such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Cultural and Tribal Resources Study will indicate any special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the cultural and Tribal resources investigations.

## **6 Study Area**

The proposed study area includes the land within the Project boundary, and the transmission line right-of-way where ground disturbance is expected to take place. Furthermore, the Study Area will be extended to include those areas where changes as a result of the Project, such as vegetation removal, or new infrastructure that may visually impact a resource. These areas collectively make up the APE, which is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist” (36 Code of Federal Regulations [CFR] Part 800.16[d]).

The cultural resource studies will focus on the FERC Project Boundary, the proposed APE, and a larger study area. This study area is a guide for archival research, development of the historic context and background statements (Figure 5-1 in the PAD).

## **7 Study Methodology**

The Cultural and Tribal Resources Study supports licensing and preliminary design which will include multiple interrelated components, including background research and synthesis, field studies, reporting, Tribal consultation, and historic property management plans, and treatment plans as needed. These are described below in more detail.

Several terms used throughout this study plan warrant definition at the outset, including:

- a) Historic Property(ies), as defined in CFR, Title 36, Subpart 800.16(l)(1), are prehistoric or historic archaeological sites, buildings, structures, objects, or districts included in or eligible for inclusion in the NRHP. Historic properties are identified through a process of evaluation against specific NRHP criteria in 36 CFR § 60.4.
- b) A district is a geographic area containing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan and physical development. Examples of districts include (but are not limited to) prehistoric archaeological site complexes, hydroelectric projects, residential areas, commercial zones, mining complexes, transportation networks, rural villages, canal systems, irrigation systems, or large ranches (NPS 1997).
- c) Cultural resource(s), for the purpose of this document, is used to discuss any prehistoric or historic-period district, site, building, structure, object, landscape, Traditional Cultural Property (TCP), regardless of its National Register eligibility. There may be any number of cultural resources in the Project vicinity. Some of these resources may be eligible for the NRHP (i.e., historic properties).

## **7.1 Background Research**

Prior to fieldwork, background research will be augmented to determine if there are any updates since the previous review, and to more fully understand the types of resources that are expected to be found. Initial background research was conducted by SWCA Environmental Consultants (SWCA) and the information they obtained was valid as of January 2024. Research will be conducted using OASIS; Oklahoma State Historic Preservation Office (SHPO); OASIS; Oklahoma Landmarks Inventory; Texas Archeological Site's Atlas maintained by the Texas Archeological Research Laboratory; and Texas Historic Site's Atlas managed by the THC. Other resources will include, but not be limited to, the TxDOT (2024) Historic Resources Aggregator (Aggregator) and the Texas GLO plat maps. Information gained from Tribal consultation will also be gathered and analyzed prior to field studies.

The goal of research will be to identify previously recorded archaeological sites or historic resources within the Project area and review their eligibility for listing on the NRHP. The study area will encompass a 1-mile-wide buffer of the Project boundary. The review will also include research on previous cultural resources investigations conducted within the proposed Project area, an overview of the environment (past and existing), the regional prehistory and history, and known archaeological and architectural resources within the Project area.

## **7.2 Archaeology Survey**

Phase I cultural resource surveys are designed to re-locate previously recorded historic properties within the APE and to identify previously unrecorded historic properties that

might be affected by the Project. In Oklahoma, the methods will meet Oklahoma Archaeological Survey and federal guidelines, including those outlined in Fact Sheet #12: Evaluating Historic Period Archaeological Sites for The National Register Under Section 106 With Particular Reference to Sites Dating After 1890, the Fact Sheet #16: Guidelines for Developing Archaeological Survey Reports in Oklahoma and Report Components, and Architectural/Historic Survey: A Field Guide. In Texas, methods will meet the *Council of Texas Archeologists Standards and Guidelines Committee Intensive Terrestrial Survey Guidelines* (Council of Texas Archeologists 2020).

The archaeological survey will include an intensive-level pedestrian survey of the entire proposed Project boundary to identify archaeological sites to guide development of a future HPMP. If an area of the APE has previously been subject to survey, and that survey follows appropriate standards, and is acceptable to the THC, through consultation, then it could be excluded from survey. The APE for archaeological resources is the area of ground disturbance. Fieldwork will be directed by one or more professional archaeologists who meet the Secretary of the Interior's Professional Qualifications for Archaeology.

The future HPMP will consider direct and indirect effects of continued Project Operations and Maintenance on NRHP-listed or eligible archaeological and built-environment resources and will require avoidance and protection of specified resources, whenever possible. Processes and procedures will be developed for general and site-specific treatment measures, including minimization and mitigation measures to be taken, should license implementation create unavoidable adverse effects to historic properties.

### 7.2.1 Oklahoma

Subsurface testing in the form of shovel tests will be excavated according to state guidelines, generally spaced at no more than 30-meter intervals along transects spaced 30 meters apart. Severely disturbed areas (e.g., existing pipeline corridors and places that are saturated) will not be systematically shovel tested. Shovel tests will be excavated to: a) the bottom of Holocene deposits in depositional areas; b) subsoil in upland areas; or c) a minimum depth of 80 centimeters. Sediment will be screened through 0.25-inch (0.64-centimeter) mesh hardware cloth. When artifacts are recovered, additional shovel tests will be excavated at 10-meter intervals in the four cardinal directions until two consecutive shovel tests are excavated.

Archaeological sites are defined by the presence of two or more artifacts from a single shovel test or within a 30-meter by 30-meter area on the surface if they all represent one of the two prehistoric or historic periods. Two or more positive shovel tests that occur within a 30-meter by 30-meter area will also be defined as an archaeological site if they are from the same prehistoric or historic period. Isolated finds consist of one artifact from a shovel test surrounded by negative shovel tests or one surface artifact surrounded by negative shovel tests.

All sites and isolated finds will be recorded on standardized Historic Preservation Resource Identification Forms (HPRIF). Site revisit forms will be completed when previously recorded



sites are revisited. All subsurface artifacts will be collected except in cases where it is not permitted by the landowner. Dense artifact scatters on the surface will be quantified.

For prehistoric sites, all lithic and ceramic diagnostics will be collected as well as a representative sample of tools, debitage, and non-diagnostic ceramics. Notes on site characterization will be recorded. For dense historic site surface scatters, diagnostic ceramics and other artifact classes will be collected. All surface diagnostic artifacts, and a representative sample of non-diagnostic surface artifacts, will be photographed. Upon completing the Phase I cultural resources field investigations, Environmental Resources Management, Inc. will prepare a Phase I Technical Report that will be submitted to the FERC and OHS for review.

### 7.2.2 Texas

Subsurface testing by shovel tests will be carried out according to state guidelines. Survey guidelines require shovel tests to be spaced at no more than 100-meter intervals along transects spaced 30 meters apart. All areas, unless they contain standing water, will be visually inspected, with subsurface testing carried out where appropriate. Severely disturbed areas (e.g., existing pipeline corridors and places that are saturated) will not be systematically shovel tested. In those cases, judgmental shovel tests will be excavated to confirm the degree of disturbance or saturation, as per the requirements laid out in Section 3 *Exceptions to Standard Shovel-Testing Guidelines published by the Council of Texas Archaeologists* in the March 2020 Intensive Terrestrial Survey Guidelines.

At least one shovel test will be excavated per disturbed area, and an attempt will be made to direct shovel tests to more appropriate areas nearby rather than reducing the number of shovel tests. Shovel tests will be excavated to: a) the bottom of Holocene deposits in depositional areas; b) subsoil in upland areas; or c) a minimum depth of 80 centimeters. Sediments will be screened through 0.25-inch (0.64-centimeter) mesh hardware cloth for the recovery of cultural materials. When artifacts are recovered, additional shovel tests will be excavated at 10-meter intervals in the four cardinal directions until two consecutive shovel tests are excavated.

An archaeological site will be defined by the presence of two or more artifacts from a single shovel test or within a 30-meter by 30-meter area on the surface if they all represent one of the two broad prehistoric or historic periods. Two or more positive shovel tests that occur within a 30-meter by 30-meter area regardless of the number of artifacts present in each shovel test will also be considered an archaeological site if they are from the same broad prehistoric or historic period. For example, two positive shovel tests that each contain one prehistoric artifact will be considered an archaeological site. Isolated finds will be defined as one artifact from an isolated shovel test surrounded by negative shovel tests, or one artifact discovered on the surface and surrounded by negative shovel tests. Note that site boundaries might not be fully defined if the evidence indicates artifacts could extend outside the APE. These situations will be noted on site forms and in the report.

Additional tests will be used to either delineate the boundaries of identified archaeological sites or establish that an artifact find spot is an isolated occurrence. To accomplish this, delineation tests surrounding artifact locations will be carried out until two negative shovel tests are recorded at 10-meter intervals in each of the four cardinal directions. Site delineations will not extend beyond limits of the Project survey corridor unless landowner permission has been established.

All sites and isolated finds will be recorded on a Site of Texas Archaeological Site Data Form. Site forms will be submitted for all newly identified archaeological sites and isolated finds. Site revisit forms are completed when previously recorded sites are revisited.

All subsurface artifacts will be collected except in cases where it is not permitted by the landowner. Dense artifact scatters on the surface will be quantified. For prehistoric sites, all observed lithic and ceramic diagnostics will be collected, as will examples of tools, debitage, and non-diagnostic ceramics. The overall nature of the artifact content and distribution will be noted. For dense historic site surface scatters, diagnostic ceramics and other artifact classes that can provide clues to the age and nature of the occupation will be collected. Other artifact classes will be sampled by a random collection. The overall nature of the artifact content and distribution will be noted. All surface diagnostic artifacts and a representative sample of non-diagnostic surface artifacts will be photographed.

Upon completing the Phase I cultural resources field investigations, a Phase I Technical Report that will be submitted to FERC and THC for review.

### **7.3 Geomorphological Investigations**

The objective of the geomorphological research is to sample sensitive segments of the survey corridor for buried cultural deposits at depths below 80 centimeters, which is the effective depth of near-surface investigation through shovel testing. Identifying preserved sites in buried contexts prior to construction is important because these sites tend to possess the integrity and research potential required for NRHP eligibility under Criterion D (36 CFR 60.4). The detection of buried archaeological sites early in the planning process increases the chance of developing avoidance measures that can minimize adverse effects to these important sites.

The Geoarchaeologist will conduct a desktop assessment to identify places that have the potential to contain deeply buried archaeological deposits. The results of that assessment will be submitted to the OHS and THC for review and comment. If the OHS and/or THC determines that deep testing is required, a scope of work for field investigations will be developed and implemented.

### **7.4 Historic Structures Survey**

Field inspection, documentation and subsequent NRHP evaluation of historic above-ground resources will be conducted by those meeting the Secretary of the Interior's Professional Qualifications for Architectural History (National Park Service [NPS] 2020).

#### 7.4.1 Oklahoma

Architectural Historians will follow guidelines outlined in the *Architectural/Historic Resource Survey: A Field Guide* (2013) by the OHS. The survey will consist of windshield survey and pedestrian inspection of potentially historic buildings and structures within the viewshed of the Project (i.e., areas where the Project may have a line of site from a historic property). The APE for architectural resources includes the Project footprint and a 0.5-mile buffer, assuming that no construction will exceed 100 feet in height. Historic resources (i.e., buildings and structures more than 50 years old) and resources less than 50 years old will be recorded using appropriate OHS HPRIF.

#### 7.4.2 Texas

Standards outlined in the THC *Historic Resources Survey Manual* published in February 2019 will guide historic structures field survey. The survey will consist of windshield survey and pedestrian inspection of potentially historic buildings and structures within the viewshed of the Project. The APE for architectural resources will be defined as the Project footprint and a 0.5-mile buffer, assuming that no construction will exceed 100 feet in height. Historic resources (i.e., buildings and structures more than 50 years old) and resources less than 50 years old will be recorded using appropriate THC Historic Resources Survey Form.

## 8 Cemeteries

### 8.1 Discovery and Treatment of Human Remains

Under Oklahoma’s Title 21 Chapter 47: Violation Sepulture and the Remains of the Dead, it is unlawful to “intentionally remove the dead body of a human being” or conduct “desecration of a human corpse” (Oklahoma Funeral Board 2023) Under the Texas Antiquities Code, human remains may not be “removed, altered, damaged, destroyed, salvaged, or excavated without a contract with or permit” (Antiquities Code of Texas Section 191.093) (Antiquities Code of Texas 1977). If human remains or unmarked graves are encountered, work will stop immediately, and law enforcement and the Oklahoma SHPO or THC will be contacted.

### 8.2 NRHP Evaluation

Following the definition provided in the NHPA, historic properties are cultural resources that have been listed in, or formally determined as eligible for listing in, the NRHP. Additional cultural resources not previously identified and/or studied may be identified in later stages of a project, resulting from ongoing research and field survey.

The NHPA marked the beginning of a multifaceted program, administered by the Secretary of the Interior of the United States Department of the Interior to encourage sound preservation policies for the nation's cultural resources at the federal, state, and local levels. The NHPA authorized the NRHP, established the position of the SHPO and State Historic Preservation Officer for each state and provided for the designation of State

Review Boards, created a mechanism to certify local governments to carry out the goals of the NHPA, assisted Native American Tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties and to afford the ACHP and other interested parties a reasonable opportunity to provide comments. The regulations implementing Section 106 (36 CFR 800) define the process for identifying historic properties, assessing potential effects, and seeking ways to resolve adverse effects on historic properties.

To assess the potential for adverse effects of a project on historic properties as part of the Section 106 process, an APE must be established. An APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character-defining features of a historic property, if any such properties exist (36 CFR 800.16[d]). Effects to historic properties may be considered direct, indirect, or cumulative depending on the proposed alteration(s), setting, and other factors. Since potential effects can include changes to visual, auditory, seismic, or other setting conditions, the APE for a project is anticipatory and extends beyond a project area to include areas where such effects may occur. The purpose of defining an APE and assessing potential effects under Section 106 is to avoid or mitigate any potential adverse effects to historic properties, which includes changes such as the physical destruction of or damage to all or part of a historic property; introduction of visual, atmospheric, audible, or other elements that diminish a property's significant historic features; and removal of the property from its historic location.

As the lead federal agency responsible for Section 106 compliance, FERC will define the APE in consultation with the Oklahoma SHPO in the OHS, THC, Indigenous Tribes with interests in the Project, and other consulting parties, as appropriate. To assess potential effects to historic properties, all historic era and archaeological cultural resources within the APE will be identified and previously completed relevant cultural resources studies will be reviewed. Cultural resources that have not been previously evaluated for eligibility for the NRHP will be documented and evaluated under the NRHP criteria and within applicable historical contexts that will be developed through archival and secondary research. Any previously identified historic properties not evaluated within the past 5 years will be reassessed to determine whether they remain eligible and may be affected by the proposed Project. The historical contexts may cover topics such as patterns of settlement, development of infrastructure, and architecture and engineering. Any cultural resources evaluated and recommended as eligible for the NRHP, which would be historic properties as defined by the NHPA, will then be included in future assessment of potential effects.

The NRHP was established by the NHPA as "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The NRHP recognizes properties that are

significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association to be eligible for the NRHP. A property or cultural resource is eligible for the NRHP if it is historically significant under one or more of the following criteria:

- a) **Criterion A:** It is associated with events that have made a significant contribution to the broad patterns of our history.
- b) **Criterion B:** It is associated with the lives of persons who are significant in our past.
- c) **Criterion C:** It embodies the distinctive characteristics of a type, period, or method of construction; or represents the work of a master; or possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.
- d) **Criterion D:** It has yielded, or may be likely to yield, information important in prehistory or history.

Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP, unless they satisfy certain unique conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

In addition to meeting these criteria, a property must retain historic integrity, which is defined in *National Register Bulletin 15* as the "ability of a property to convey its significance" (NPS 1997). To assess integrity, NPS recognizes seven aspects or qualities that, considered together, define the historic integrity of a property. To retain integrity, a property must possess several, if not all, of these seven qualities, which are defined in *National Register Bulletin 15*, as follows:

- i. **Location:** the place where the historic property was constructed or the place where the historic event occurred.
- ii. **Design:** the combination of elements that create the form, plan, space, structure, and style of a property.
- iii. **Setting:** the physical environment of a historic property.
- iv. **Materials:** the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- v. **Workmanship:** the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

- vi. **Feeling:** a property's expression of the aesthetic or historic sense of a particular period of time.
- vii. **Association:** the direct link between an important historic event or person and a historic property.

### 8.3 Unanticipated Discoveries Plan

An Unanticipated Discoveries Plan (UDP) outlines a procedure to protect archaeological properties of significance during the construction phase of the project. Because archaeological surveys cannot identify all below-ground cultural resources, the UDP provides specific procedures that would be followed in the event that archaeological materials or human remains are discovered during pipeline construction. It also includes applicable state laws and SHPO requirements. SEOPC will prepare a UDP for each state that will be submitted to the FERC, THC, and OHS for review and approval.

## 9 Consultation with Tribes

FERC has the lead responsibility for compliance with applicable federal laws, regulations, and policies pertaining to historic properties, including the NHPA. Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties and to afford the ACHP a reasonable opportunity to provide comment. The regulations implementing Section 106 (36 CFR 800) define the process for identifying historic properties, assessing effects, and seeking ways to resolve adverse effects on historic properties in consultation with the OHS and THC, federally recognized Native American Tribes, the public, and other appropriate parties.

Consulting with the Choctaw, Chickasaw, and Caddo Nations and other interested Tribes regarding inventory needs as well as appropriate measures for future protection and/or mitigation of identified cultural resources is ongoing. SWCA conducted tribal resources research in 2023 and 2024. Initial consultation letters were sent and 31 Native American Tribes were identified, including the Choctaw Nation of Oklahoma. In November 2023, SEOPC sent out letters inviting all Tribes to participate in voluntary engagement listening sessions, which were conducted on 11 and 12 December 2023. This outreach constituted early engagement (i.e., pre-formal consultation). In addition to this early engagement, throughout the licensing process SEOPC will consult with the Tribes listed below, and any other identified Tribes with interest.

This outreach constituted early engagement (i.e., pre-formal consultation). In addition to this early engagement, throughout the licensing process SEOPC will consult with the Tribes listed in Table 4-37 of the PAD, and any other identified Tribes with interest.

On behalf of FERC, SEOPC will follow up on the early engagement with Native American Tribes and continue to facilitate consultation between all agencies, Tribes, and other stakeholders. All Tribal groups will be contacted via telephone or email. As appropriate, meeting(s) with Tribal governments and/or Tribal members will be held to gain an

understanding of specific concerns, methods to use during fieldwork, and to identify any Project effects and reporting needs for the duration of service.

## **10 Traditional Religious/Cultural Importance**

To date no sacred lands or TCP were identified. However, studies on the effects of as yet unidentified resources will be considered by SEOPC, as will effects on resources due to the continued project operation and maintenance on properties of traditional religious and cultural importance to Native-American Tribe(s) within the area of potential effects is ongoing.

## **11 Trail of Removal from Homelands into Oklahoma**

SEOPC will study of the effects of the proposed project on the Chickasaw and Choctaw trail(s) of removal from homelands into Oklahoma and other historic trails. Two distinct phases of indigenous occupation divide the historic era of the Project vicinity. The first is the continued occupation of southeastern Oklahoma by Southern Plains Tribes, first identified in prehistoric records and discussed in the previous prehistory and ethnohistory sections. The second phase is the establishment of the Indian Territory, an area set aside by the United States government for the forcible relocation of indigenous Tribes of the eastern United States, and the events and agreements leading to establishment of the Indian Territory. The Indian Territory would later become part of the state of Oklahoma.

Studies could include, but not be limited to, in depth history of the removal from homelands in Oklahoma, including both primary and secondary resources, personal communications and interviews with Tribal members, and an analysis of impacts inclusive of mapping review of the Project and impacts to important components of the trail.

## **12 Consistency with Generally Accepted Scientific Practice**

The proposed study methods discussed in this document are consistent with the study methods followed in several recent relicensing projects as outlined by FERC and the Oklahoma SHPO and THC. Furthermore, SEOPC will consult with participating Tribes, agencies, and other interested parties associated with those projects to augment methods as needed. The methods presented in this study plan are consistent with ACHP guidelines for compliance with the requirements of Section 106 of the NHPA found in 36 CFR 800.

## **13 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Cultural and Tribal Resources Study and that summarizes cultural and tribal information and data collected as part of study

implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

The archaeological records and other sensitive information will be included in a confidential report withheld from public disclosure, in accordance with Section 304 (16 United States Code 4702-3) of the NHPA, and provided directly to relevant agencies and Tribes. Standard Geographic Information System shapefiles, including metadata, will be provided to relevant agencies and Tribes upon request. The information provided in the ISR/USR and confidential report will be summarized in, and appended to, the Application for New License.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Field studies
May 2026	File ISR including Cultural and Tribal Resources Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (only if needed)
May 2027	File USR including updated Cultural and Tribal Resources Technical Memo (only if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 14 Periodic Progress Reporting

As noted in the Study Methodology, SEOPC will prepare a UDP for each state that will be submitted to the FERC, THC, and OHS for review and approval at the outset of study implementation. While no other periodic progress reporting is anticipated for the Cultural and Tribal Resources Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants (inclusive of Tribes) on study implementation progress and to support ongoing consultation with these participants.

## 15 Level of Effort and Cost

The estimated cost (2025 dollars) for the Cultural and Tribal Resources Study is \$2,000,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.



## 16 List of Acronyms

<b>Acronym</b>	<b>Description</b>
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
Atlas	Historic Sites Atlas
CFR	Code of Federal Regulations
FERC	Federal Energy Regulatory Commission
GLO	Texas General Land Office
HPMP	Historic Property Management Plan
HPRIF	Historic Preservation Resource Identification Form
ISR	Initial Study Report
NHPA	National Historic Preservation Act of 1966
NPS	National Park Service
NRHP	National Register of Historic Places
OASIS	Oklahoma Archaeological Survey Information System
OHS	Oklahoma Historical Society
PAD	Pre-Application Document
SEOPC	Southeast Oklahoma Power Corporation
SHPO	State Historic Preservation Office
SWCA	SWCA Environmental Consultants
TCP	Traditional Cultural Property
TDA	Texas Department of Agriculture
THC	Texas Historical Commission
TxDOT	Texas Department of Transportation
UDP	Unanticipated Discoveries Plan
USR	Updated Study Report

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**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Aquatic Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The PAD stated that an Aquatic Study would be conducted to define the existing aquatic conditions in the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

The goals of this Aquatic Study are to conduct an assessment to define the existing aquatic conditions for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this study include describing:

- a) The effects of Project construction, operation, and maintenance on aquatic habitat and biota (i.e., fish and macroinvertebrates) in the Kiamichi River, Black Fork River, and Long Creek.
- b) The effects of proposed Project water withdrawals from the Kiamichi River during high-flow periods for: (a) initial fill of the lower and re-regulating reservoirs; and (b) supplemental refills for reservoir maintenance flows on aquatic habitat and biota, including mussels, in the Kiamichi River.
- c) The effects of Project impingement, entrainment, turbine mortality, and the potential for species isolation on fish (including the peppered shiner), mussel, and aquatic turtle populations in Kiamichi River and the upper and lower Project reservoirs during the Project's initial fill and refill from the Kiamichi River.
- d) The effects of sediment movement and deposition, surface runoff, and decomposition on water quality, including heavy metals, and aquatic species, including freshwater mussels.
- e) The effects of Project operation on fish species that are caught and consumed as part of any subsistence fishery in the Project area (e.g., sunfish, catfish, bluegill, etc.).

## 3 Agency and Native American Tribe Resource Management Goals

The Aquatic Resource Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

Concurrent with the filing of the PAD and Notice of Intent, SEOPC requested designation as the Commission's non-federal representative for carrying out informal consultation pursuant to Section 106. While SEOPC is authorized to consult in an informal capacity, the

Commission remains legally responsible for all agency findings and determinations under Section 106.

## 4 Background and Existing Information that will be Used

This section provides an overview of the background and existing information on Aquatic Resources in the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River. This includes describing aquatic resources in the sub-basins that intersect with the proposed Project's pumped storage site (the Kiamichi and Upper Little sub-basins in Oklahoma) and the construction of the pumped storage facilities (reservoirs, dam, powerhouse). The aquatic resources associated with the transmission line are also described below. The PAD provides addition detail and information on background and existing information about aquatic resources.

### 4.1 Resident Fish Communities

The Kiamichi River is home to a wide diversity of fish species, especially catfish, minnows, shiners, and sunfish (Porter and Patton 2015). Fish surveys conducted by the Oklahoma Department of Wildlife Conservation (ODWC) and researchers at Oklahoma State University in 2012 sampled 54 species along the longitudinal gradient of the Kiamichi River (Porter and Patton 2015). Fish species common to the reach of the Kiamichi River near the proposed Project boundary include longear sunfish (*Lepomis megalotis*), bluntnose minnow (*Pimephales notatus*), steelcolor shiner (*Cyprinella whipplei*), green sunfish (*Lepomis cyanellus*), and orangebelly darter (*Etheostoma radiosum*) (OWRB 2021a; Porter and Patton 2015). Fish sampled in the Kiamichi River within or near the proposed Project boundary are listed in Table 4-14 of the PAD.

The Little and Red Rivers are known for their diverse populations of catfish, bass, crappie, and sunfish. The Little River is a direct tributary of the Red River, flowing east from Oklahoma into Arkansas where it joins the Red River near Fulton, Arkansas. Surveys conducted by researchers at the University of Oklahoma and University of Arkansas in the Little River between 2014 and 2016 found 59 distinct fish species. The most common species included bigeye shiner (*Notropis boops*), redfin shiner (*Lythrurus umbratilis*), longear sunfish, striped shiner (*Luxilus chrysocephalus*), and Ouachita Mountain shiner (*Lythrurus snelsoni*) as well as largemouth bass (*Micropterus salmoides*) and brook silverside (*Labidesthes sicculus*) (Zbinden et al. 2022). In the Lower Red River, fish surveys conducted by ODWC in 2021 and 2022 found that the most abundant species were redfin shiner, followed by bullhead minnow (*Pimephales vigilax*), Mississippi silverside (*Menidia audeus*), and western mosquitofish (*Gambusia affinis*) (ODWC 2022).

### 4.2 Aquatic Invasive Species

Non-native invasive species, known as Aquatic Nuisance Species (ANS) in Oklahoma, or Invasive Aquatic Species in Texas, pose significant ecological and socioeconomic threats to aquatic ecosystems across the two-state region (Foster et al. 2009; ODWC 2022). Oklahoma's State Wildlife Action Plan identifies exotic and invasive species as one of five

priority issues that threaten the conservation of Oklahoma’s wildlife resources. Among other things, the State Wildlife Action Plan identifies water diversion projects as potential pathways for the spread of ANS. According to Oklahoma’s 2009 ANS Management Plan, ANS distributions are primarily concentrated in the northeastern portion of Oklahoma. However, the exotic water flea (*Daphnia lumholtzi*) and bighead carp (*Hypophthalmichthys nobilis*) have known distributions in the southeastern portion of Oklahoma and within the Kiamichi and Little Rivers (Foster et al. 2009). Several invasive carp, including bighead carp and silver carp (*Hypophthalmichthys molitrix*), have also been sampled in the lower Red River and its tributaries (ODWC 2022).

#### **4.3 Amphibians and Semi-Aquatic Reptiles**

Information on the amphibian and reptile communities that inhabit the Kiamichi River, Little River, and Red River is limited. The most recent data for amphibians in the Project vicinity is derived from Davies et al. (2019), wherein amphibian samples from 14 sites across seven counties in southeastern Oklahoma were collected (Atoka, Latimer, Le Flore, Love, Marshall, McCurtain, and Pushmataha Counties). Some semi-aquatic reptiles found in Pushmataha and McCurtain Counties include plainbelly watersnake (*Nerodia erythrogaster*), southern watersnake (*Nerodia fasciata*), common watersnake (*Nerodia sipedon*), razor-backed musk turtle (*Sternotherus carinatus*), spiny softshell (*Apalone spinifera*), Ouachita dusky salamander (*Desmognathus brimleyorum*), and southern red-backed salamander (*Plethadon serratus*).

#### **4.4 Aquatic Mollusks**

The Kiamichi and Little Rivers are inhabited by diverse freshwater mussel populations. Research conducted by several institutions between 1995 and 2005 indicated that the Kiamichi River is host to nearly 30 species of mussels (Spooner et al. 2005: Table 2). Surveys conducted by ODWC between 2003 and 2005 near the proposed Project boundary found that the three most abundant mussel species in the Kiamichi River are mucket (*Actinonaias ligamentina*), threeridge (*Amblema plicata*), and pimpleback (*Quadrula pustulosa*) mussels; whereas the most abundant species sampled in the Little River were pimpleback, threeridge, and bankclimber (*Plectomerus dombeyanus*) mussels (Galbraith et al. 2005). Mussel species found in the Kiamichi River near the proposed Project boundary between 2003 and 2005 are noted in Table 4-15 in the PAD.

#### **4.5 Aquatic Benthic Macroinvertebrates**

A 1976 study conducted by researchers at the Oklahoma State University found 30 species of benthic macroinvertebrates present in the Kiamichi River, the majority of which were lake flies (Wilhm et al. 1976). No other groups of macroinvertebrates were common in the Kiamichi River (Wilhm et al. 1976). Oklahoma’s survey of statewide waters conducted from 2013 to 2017 estimated that 35.5 percent of river miles and 17.9 percent of stream miles across the state were classified as being in poor condition for benthic macroinvertebrates (OWRB 2021b).



## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential to impact aquatic habitat, biota, and mussels in the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River.

This Aquatic Resource Study will assist in identifying specific issues within the Project operational issues (i.e., water withdrawal, initial fill, and supplemental refills) where the water condition or nature water flows are such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The proposed Project will use approximately 68,269 acre-feet, which will be pumped out of a regulating reservoir that could have an effect on aquatic habitat, biota, and mussels. The Aquatic Resource Study will indicate any special design and construction measures that need to be incorporated into the Project design based on the results of the Aquatic investigations.

## 6 Study Area

The proposed study area includes the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River.

The Aquatic Study area will also be defined as the United States Geological Survey HUC 10 watershed boundaries that intersect with the Project area. Wildlife that primarily use upland and riparian zones are covered in Section 4.5 and Section 4.8 of the PAD, respectively.

## 7 Study Methodology

The Aquatic Resource Study supports licensing and preliminary design and will include the following components:

### 7.1 Aquatic Habitat

SEOPC will conduct a desktop study and field surveys to evaluate aquatic resources and associated habitats in the Kiamichi River, Red River, Long Creek, and the Black Fork of the Little River and Model/Study. As noted in the PAD, additional study is warranted since there is limited existing information on aquatic habitat, fish diversity and abundance, mussels and other aquatic species, and invasive aquatic species in the Project area and vicinity. This additional data and information is needed to appropriately address Project construction, operation, and maintenance effects on aquatic habitat and species in the Kiamichi River, long Creek, and the Black Fork River of the Little River.

The desktop study will include review of available literature to determine potential available habitat and if additional wildlife species have the potential to occur within the study area or in the surrounding vicinity. Resources include the information provided above in the previous Background and Existing Information Section, as well as publicly available

resources such as the ODWC’s ecological mapping system (ODWC 2025) and the Oklahoma Natural Heritage Inventory’s (ONHI) biodiversity databases (OHNI 2025).

Pedestrian field surveys will be performed by qualified biologists and occur at appropriate times of the year within the study area. Biologists will assess and document potentially suitable habitat and any wildlife/aquatic fauna observations. Prior to the start of field surveys, the habitat maps and species identified during the desktop study will be assessed by field biologists.

A stream habitat assessment will be performed by a qualified biologist following the Standard Operating Procedure (SOP) as defined by the Oklahoma Water Resources Board (OWRB) (OWRB 2024a). The biologist will also use methods as described in the United States Army Corps of Engineers (USACE) Beta-Stream Duration Assessment Method and USACE Oklahoma Stream Mitigation Method to understand permeance, flow, ecological significance, and potential presence of aquatic fauna. Stream data collected will include an estimated flow rate, depth, width, turbidity, smell, presence of litter/modifications, substrate, and extent of riparian corridor.

Macroinvertebrate sampling procedure will be conducted in accordance with the OWRB’s macroinvertebrate collection SOP (OWRB 2016). Fish sampling will be conducted in accordance with the OWRB’s fish collection SOP (OWRB 2024b). Any modifications or addendums to the SOPs will be recorded prior to field surveys and/or on field forms during survey.

Data will be collected utilizing a GPS unit, camera, and dip nets. Observed wildlife will also be documented.

## **7.2 Water Withdrawal**

SEOPC will perform water withdrawal modeling as described in the Water Resources Study Plan. Results from the withdrawal modeling will be used in conjunction with the results from the aquatic habitat field surveys (described above) to determine effects on the Kiamichi River aquatic habitat, biota, and surrounding watershed. Should additional aquatic resources be identified in desktop review that may not be captured during field study, such as spawning areas, the effects of water withdrawal will also be analyzed for those resources with publicly available data.

## **7.3 Impingement**

SEOPC will use publicly available desktop resources and results of the Aquatic Habitat and threatened and endangered habitat field surveys to determine focal species in the Project area.

The life history of aquatic fauna, including seasonal migration or spawning fish, will be analyzed to determine if there is a potential for species isolation during the Project’s fill and refill of the Kiamichi River. Final engineering designs will be used to determine the likelihood for impingement or entrainment and the magnitude of impacts on focal species

by analyzing species size/mobility/life history and the force of withdrawal or screen mesh size.

#### **7.4 Sediment**

Water quality, including turbidity, will be studied as described in the Water Resources Study Plan and during the Aquatic Habitat Assessment. Additional desktop review of publicly available resources will be used to identify soil types and areas of potential contamination within or in the vicinity of the Project area, such as the National Resources Conservation Service's soil data, the United States Environmental Protection Agency (EPA) Brownfield mapper or Superfund site list. Impacts from anticipated changes in water quality will be analyzed in the Project area as determined by field survey and/or desktop review.

#### **7.5 Fish**

SEOPC will use publicly available desktop resources to determine commercial and/or recreational fish landings within the Project area vicinity. The review will occur upstream and downstream of the Project area. Spawning areas and seasonality of these species will also be analyzed. Existing water quality in the Project area will be noted during field surveys and reviewed using publicly available resources, such as the EPA Section 303(d) impaired waters list and water uses. Potential impacts on commercial/recreational fishes identified will be determined considering the life history, mobility, and other species-specific variables against timing and duration of the Project.

### **8 Consistency with Generally Accepted Scientific Practice**

All scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regards to impacts caused by the proposed construction, operation, and maintenance of the Project will be consistent with accepted scientific practice, as well as currently accepted industry standards. These standards may be specifically legislated by regulatory agencies of the State of Oklahoma and/or the United States of America, or standards observed by the various disciplines involved in the Project. Methods and results will be accurately recorded and reported, detailed for replicability.

### **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plan and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Aquatic Resource Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Aquatic Resource Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
March to November 2025	Conduct Aquatic Resource Surveys (i.e., during the growing season)
May 2026	File ISR including Aquatic Resource Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (if needed; a second field season is not anticipated at this time)
May 2027	File USR including updated Aquatic Resource Technical Memo (if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Aquatic Resource Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Aquatic Resource Study is \$300,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

<b>Acronym</b>	<b>Description</b>
ANS	Aquatic Nuisance Species
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
ISR	Interim Study Report
ODWC	Oklahoma Department of Wildlife Conservation
ONHI	Oklahoma Natural Heritage Inventory
ORWB	Oklahoma Water Resources Board

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PAD	Preliminary Application Document
SEOPC	Southeastern Oklahoma Power Corporation
SOP	Standard Operating Procedure
USACE	United States Army Corps of Engineers
USR	Updated Study Report

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**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Water Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on 1 May 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The PAD stated that a Water Study would be conducted to define the existing water conditions in the Kiamichi and Long Creek basins for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

The goals of this study are to conduct an assessment to define the existing water conditions for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features. The specific objectives of this study include describing:

- a) The effects of Project construction, operation, and maintenance on groundwater, including any connectivity between groundwater and Project surface waters as well as any effects of dewatering in the Latimer, Le Flore, upper Atoka, Pushmataha, and McCurtain Aquifers.
- b) The effects of competing uses of the Kiamichi River water and anticipated impoundment evaporation and leakage on Project operations, and dedicated water uses as well as the effects of proposed Project operation on competing water uses as well as the effects of proposed Project operations on competing water uses (both upstream and downstream of the Project).
- c) The effects of the Project on groundwater, including drinking water wells and other groundwater uses (e.g., agriculture and forestry).
- d) The effects of seepage on groundwater levels and groundwater quality and on reservoir refill requirements.
- e) The effects of Project water withdrawals (e.g., during initial fill of the lower reservoir and for filling the re-regulating reservoir during high flows to provide maintenance flows for the Project reservoirs) on water quantity in the Kiamichi River.
- f) The effects of Project construction, operation, and maintenance on the hydrology (e.g., changes in flow and water velocities) of the Kiamichi River, Long Creek, and the Pushmataha Project area.
- g) The effects of drought conditions and low flows on Project operation and other basin uses.
- h) The effect of flooding from the Kiamichi River on the proposed re-regulating reservoir and lower impoundments and operations.
- i) The effects of changing hydrology on Project operation.
- j) The effects of Project construction, operation, and maintenance on surface water quality and drainage patterns, including the potential transfer of water between the

Kiamichi sub-basin and Upper Little sub-basin during spills over the emergency spillway at the upper reservoir.

- k) The effects of Project construction, operation, and maintenance on long-term water quality in the reservoirs.
- l) The effects of potential contaminants (i.e., lubricants, hazardous materials), to the extent they are used, during the construction and operation of the proposed Project.
- m) The effects of Project construction, operation, and maintenance on water quality, including turbidity, temperature, and algae, in the Project area.
- n) The effect of disturbance of local sandstone and shale for proposed Project construction on water quality (presence of metals, etc.) in the impoundments and Kiamichi River.

### **3 Agency and Native American Tribe Resource Management Goals**

The Water Resource Study results can inform separate analyses to assess Project effects on resources such as Soil, Aquatic, Terrestrial, Endangered Species, Recreation, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

### **4 Background and Existing Information that Will be Used**

This section provides an overview of background and existing information of the proposed Project's regional surface water and ground water conditions and Project area characteristics within the state of Oklahoma. This includes a detailed discussion of Project hydrology, drainage areas, surface waters within the proposed Project boundaries, water quality, water quantity, beneficial water uses, water quality standards, and existing water rights. The PAD provides additional detail on the background and existing information about water resources in the Project area and vicinity (note: section, figure, and table citations below reference these materials as provided in the PAD).

#### **4.1 Drainage Area**

The proposed Project would be located within two United States Geologic Survey (USGS) Basins: the Red-Little Basin (HUC 111401), which drains an area of approximately 12,613 square miles across portions of Oklahoma, Arkansas, and Texas; and the Sulphur River Basin (HUC 111403) which drains an area of 3,558 square mile in northeastern Texas (USGS 2023). Within the Red-Little Basin, the proposed Project reservoirs would intersect two sub-basins: the Kiamichi sub-basin (HUC 11140105) to the north, draining an area of approximately 1,822 square miles; and the Upper Little sub-basin (HUC 11140107) to the south, draining an area of approximately 1,404 square miles (see Figure 4-9 in the PAD). The dividing line between these two sub-basins is the Kiamichi Mountains, on which the proposed upper reservoir would be located. The proposed Project's associated transmission line would traverse south through the Upper Little sub-basin, down through the Pecan-Waterhole (HUC 11140106) and Lower Sulphur (HUC 11140302) sub-basins, then west, terminating in the Sulphur Headwater sub-basin (HUC 11140301).

## 4.2 Project Hydrology

The proposed Project is a closed-loop pumped storage Project with an upper reservoir, lower reservoir, and regulating reservoir located entirely in Pushmataha County, Oklahoma, and a 99.96-miles long transmission line that extends through Pushmataha and McCurtain Counties, Oklahoma, and Red River and Lamar Counties, Texas, to its proposed point of interconnection in Paris, Texas, shown in Table 4-3 in the PAD. As discussed above, the lower reservoir, regulating reservoir, and powerhouse (underground) are in the USGS-delineated Kiamichi sub-basin. The upper spillway, dam, upper reservoir, and upper intake are in the USGS-delineated Upper Little sub-basin (see Figure 4-9 in the PAD).

## 4.3 Surface Water

Several surface waters intersect with the proposed Project boundary, most of which are intermittent streams and rivers in Oklahoma. The National Hydrologic Data indicates that the proposed Project boundary contains 128 miles of rivers and streams and 183 acres of lakes and ponds. All surface waters mapped within the proposed Project boundary are listed in Table 4-4. Three major rivers intersect with the proposed Project boundary: 4.7 miles of the Kiamichi River near the lower reservoir; the associated transmission line crosses the Little River twice in Oklahoma (at River Miles 22 and 84); and the Red River on the Oklahoma-Texas border at River Mile 497 (see Figure 4-9 in the PAD).

## 4.4 Groundwater

The use of groundwater is relatively minimal in Pushmataha County, Oklahoma. As of 2023, the county had only issued permits for 340 acre-feet per year of groundwater, primarily for domestic water supply. For comparison, in 2023, Pushmataha County issued permits for 126,176 acre-feet per year of surface waters (Oklahoma Water Resources Board 2023). Twenty-five groundwater wells are permitted within the proposed Project boundary throughout Oklahoma and Texas (Table 4-5 in the PAD). The proposed Project does not include extraction of groundwater resources. SEOPC has agreed to prepare a Groundwater Feasibility Study.

## 4.5 Water Monthly Flows

In 2018, SEOPC requested a study to evaluate extracting water from the Kiamichi River for the purpose of the initial fill of the reservoirs associated with the proposed Project. According to the Water Source and Fill Rate Study (HDR Consultants [HDR] 2018), two gages were used to evaluate Kiamichi River flows: the USGS gage on the Kiamichi River near Clayton, Oklahoma, located approximately 20 river miles downstream of the proposed diversion, and the United States Army Corps of Engineers gage located upstream at the Sardis Reservoir on Jack Fork Creek, a tributary of the Kiamichi River that feeds into the Kiamichi River approximately 12 miles downstream of the proposed Project (Figure 1-1 in the PAD). Daily mean flow data were collected from the two stream gages for the 22-year period between November 1995 and December 2017 to determine flows at the proposed point of diversion (Table 4-6 in the PAD). Flows in the Kiamichi River at the proposed diversion location were approximated by subtracting daily average discharges from the

Sardis Reservoir from the daily average flows measured at the USGS gage near Clayton, and then prorated with the resultant flow for the drainage area at the proposed diversion site (HDR 2018). Flow duration curves are a method of streamflow analysis that show the percent of time streamflow rates or discharge were equaled or exceeded over a given period. Monthly and annual flow duration curves are provided on Figure 4-10 in the PAD (HDR 2018: Appendix B).

#### **4.6 Water Quality**

SEOPC has agreed to propose a study plan so as to maintain the water quality per the Oklahoma Department of Environmental Quality (ODEQ).

### **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to be affected by, and to affect, the Kiamichi River and Long Creek drainage basin water resources. This Water Resource Study will assist in identifying specific areas within the Project area where the water condition or nature of the water flows are such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The proposed Project includes the construction of an upper reservoir of 68,270-acre-feet. The study will indicate any special design and construction measures that need to be incorporated into the Project design based on the results of the geologic investigations.

### **6 Study Area**

The overall Water Resource Study will encompass the Kiamichi River basin and the Long Creek drainage basin.

### **7 Study Methodology**

SEOPC has conducted preliminary water analyses on its proposed reservoir fill plan (as noted and described in the PAD), but intends to augment this information with additional water-related assessments. The Water Resource Study addresses the additional proposed assessments to support licensing and preliminary design, which will include the following components:

#### **7.1 Groundwater and Surface Water Effects Connectivity, Dewatering**

SEOPC will review groundwater and Project surface water connectivity effects, as well as construction operation and effects of dewatering in the Latimer, Le Flore Atoka, Pushmataha, and McCurtain aquifers. SEOPC will review publicly and readily available relevant data to determine a) the extent of the existing publicly and readily available relevant data; b) critical data gaps that will obstruct the Licensee's understanding of the geologic conditions within the Project area; and c) a plan to fill the identified data gaps. This plan may include collection of additional field data (borings, drilling, sampling, testing, etc.) as determined by qualified personnel. Once a complete data set is collected, the license applicant will use said data to determine what, if any, connectivity exists, or could

be reasonably anticipated, between activities on or near existing or planned surface waters and known/identified sources of groundwater. If connectivity is found or is anticipated, mitigation measures will be developed to minimize those connections which could have negative impacts on the known/existing ground water sources. This may include sampling of the known/existing groundwater sources to determine a baseline and/or existing contaminants/constituents. This may also include implementation of a sampling/testing program of the known/existing ground water sources if deemed necessary by the SEOPC's qualified personnel and/or regulators.

## **7.2 Modeling and Comparing Competing Water Usage**

SEOPC will model and compare the competing uses of the Kiamichi River water, along with Project evaporation, leakage, operations, on up and down stream usage. SEOPC has agreed to conduct a water usage study to determine the percentage of water to be taken from the Kiamichi River verses the flow rate in the Kiamichi River. Licensee will review publicly and readily available information with regards to existing and planned (at the time of the review and recognized by the State) withdrawals from the Kiamichi River. If additional information is required, the Licensee will develop a plan to acquire relevant information with regard to withdrawals from the Kiamichi River. SEOPC will also develop a list of scenarios under which to evaluate these identified withdrawals within various environmental scenarios. These scenarios may include the following historical precipitation regimes: 7Q10, wet years, normal years, dry years, very dry years, and consecutive dry years. The scenarios will evaluate the impacts of the anticipated withdrawals for the Project on the Kiamichi River itself, downstream interests, aquatic and riparian habitats within and near the Kiamichi River, groundwater impacts, and other impacts as deemed relevant by SEOPC's qualified personnel.

## **7.3 Effects on Water, Wells and Other Groundwater Usage**

SEOPC will study the effects of Project construction and operation on drinking water, wells and other groundwater usage. As part of this assessment, SEOPC will review publicly and readily available information on existing sources of subterranean water, wells, and other groundwater sources to determine the need for additional information. If data gaps are identified, SEOPC will develop a plan to obtain necessary and relevant information as determined by qualified personnel. This plan may include sampling of existing water sources for establishment of a baseline, field activities to include drilling of additional sampling/monitoring wells, and other activities as deemed necessary to obtain the necessary data to gain an understanding of the existing subterranean water and groundwater conditions that may be impacted by the Project. SEOPC will then develop a plan to mitigate those identified negative impacts to the subterranean water and ground water caused by the Project. This may include implementation of a monitoring/sampling plan.

#### **7.4 Effects from Project Seepage and Quality**

SEOPC will study groundwater effects from Project seepage and quality based on reservoir fill/refill. SEOPC will review publicly and readily available relevant data to determine a) the extent of the existing publicly and readily available relevant data; b) critical data gaps that will obstruct the Licensee's understanding of the geologic conditions within the Project area; and c) a plan to fill the identified data gaps. This plan may include collection of additional field data (borings, drilling, sampling, testing, etc.) as determined by SEOPC's qualified personnel. Once a complete data set is collected, the SEOPC will review the data to determine what, if any, negative impacts to water quality may occur as a result of seepage from the Project reservoirs. This may include investigation of the soils used to construct the reservoirs as well as the underlying soils (transmissivity, infiltration, water migration, etc.) as determined by SEOPC's qualified personnel. If negative impacts are anticipated, SEOPC will produce a mitigation plan to address the identified negative impacts. This may include selection of liner materials, monitoring, leakage/seepage collection systems, etc. as determined by SEOPC's qualified personnel.

#### **7.5 Modeling Water Withdrawal and Hydrology Studies**

SEOPC will model water withdrawal from Kiamichi River and Long Creek for all operational parameters, including construction, along with hydrology studies. Using industry accepted hydrology and hydraulic modeling, SEOPC will determine the impacts to flow within with the Kiamichi River under various flow regimes and anticipated withdrawal rates based on historical flow records of the Kiamichi River. Once downstream (below the Project withdrawal point), flow rates can be determined and negative impacts, if any, can be determined and examined. Possible negative impacts to the Kiamichi River itself, downstream interests, aquatic and riparian habitats within and near the Kiamichi River, groundwater impacts, and other impacts as deemed relevant by SEOPC's qualified personnel will be investigated. If negative impacts are found, the SEOPC will produce a plan to address those impacts. That plan may include design elements of the Project, operational/procedural elements governing timing and duration of withdrawals, and other elements to mitigate anticipated Project impacts.

#### **7.6 Modeling Drought/Low flows**

SEOPC will model drought conditions/low flows on Project operations and other basin uses. SEOPC will develop a list of scenarios under which to evaluate identified/planned withdrawals from the Kiamichi River within various environmental scenarios based on historical flows within the Kiamichi River. These scenarios may include the following precipitation regimes: 7Q10, wet years, normal years, dry years, very dry years, and consecutive dry years. The scenarios will evaluate the impacts of the anticipated withdrawals for the Project on the Kiamichi River itself, downstream interests, aquatic and riparian habitats within and near the Kiamichi River, groundwater impacts, and other impacts as deemed relevant by SEOPC's qualified personnel.

### **7.7 Modeling Surface Water Drainage Pattern**

SEOPC will model the surface water drainage patterns that will be affected between the basins. As this Project is situated such that it will have impacts on multiple drainage basins and may impact the watershed boundaries of those drainage basins, SEOPC, using industry accepted hydrology and hydraulic modeling, will determine what, if any, impacts to existing drainage patterns could be anticipated due to construction of the Project. Efforts will be focused on determining those areas where watershed boundaries may be altered such that drainage patterns could be altered to the extent that flows could be added or subtracted from existing watersheds. If such transfers of flow are identified, SEOPC will quantify the magnitude of those transfers and what, if any, negative impacts could be anticipated. If deemed significant, mitigation measures may be developed.

### **7.8 Modeling Sub-basins Transfers During Spills**

SEOPC will model Kiamichi sub-basin and Upper Little sub-basin transfers during spills over the emergency spillway at the upper reservoir. SEOPC will use industry accepted hydrologic and hydraulic modeling to determine the anticipated impacts of flows through the emergency spillway. This modeling will be used to determine the volume of flow and anticipated velocity of flow. This information can then be used to model and estimate the anticipated erosion below the emergency spillway, the direction and pathway of the flow to areas of lower elevation, including back to the Kiamichi River and Upper Little Creek, as well as anticipated volumes of sediment that would be displaced by a spill over the emergency spillway. If identified negative impacts are deemed significant, SEOPC will develop a mitigation plan to address those impacts.

### **7.9 Effects on Water Quality**

SEOPC will study potential effects on water quality from Project construction, operations, and maintenance. SEOPC will review the proposed construction and associated operations and maintenance anticipated with the Project and identify those elements which have a reasonable opportunity to negatively impact water quality. That review will be based on governing authorities, state/local policy, industry experience, and professional judgment developed by the SEOPC's qualified personnel. If negative impacts are identified, SEOPC will develop a plan to mitigate those impacts.

### **7.10 Effects of Potential Contaminants**

SEOPC will study the Project's effects of potential contaminants used during construction and operations. SEOPC will review the proposed construction and associated operations and maintenance anticipated with the Project and identify contaminants associated with those activities and the possible routes/pathways/scenarios by which those contaminants could be released and cause negative impacts. Determination of contaminants will be based on governing authorities, state/local policy, industry experience, and professional judgment developed by SEOPC's qualified personnel. If contaminants are identified that produce negative impacts, SEOPC will develop a plan to either eliminate those contaminants from the identified activities, minimize the usage of those contaminants to

safe levels, or mitigate the impacts of the contaminants in the event of an uncontrolled release.

### **7.11 Effects on Water Turbidity, Temperature and Algae**

SEOPC will study on the effects of Project construction, operations, and maintenance on water turbidity, temperature and algae in the Project area. SEOPC will review the proposed construction and associated operations and maintenance anticipated with the Project and identify those elements which have a reasonable opportunity to negatively impact water quality, specifically water turbidity, temperature, and algal growth. That review will be based on governing authorities, state/local policy, industry experience, and professional judgment developed by SEOPC and selected contractors. If negative impacts are identified, SEOPC will develop a plan to mitigate those impacts. That plan may include establishing a baseline of turbidity, temperature, and algal growth under existing conditions (to include seasonal variances); computer modeling based on the anticipated activities of the Project as determined by qualified personnel; developing additional standards based on existing Project conditions (before construction); establishing a monitoring plan over the life of the Project; and/or developing mitigation measures to address identified negative impacts.

### **7.12 Effects of Local Sandstone Disturbance on Water Quality**

SEOPC will study the effects of local sandstone disturbance on water quality caused by the impoundment of the Kiamichi River water. SEOPC will review publicly and readily available public information to determine areas within the Project footprint underlain by geologic/sedimentary sandstone. Once those areas are identified, SEOPC's qualified personnel will conduct an analysis using industry-accepted modeling and study methods (to be determined by SEOPC's qualified personnel) to determine what, if any, negative impacts to local water quality may be caused by disturbance of the geologic/sedimentary sandstone due to the anticipated construction of various elements of the Project. This analysis may include field operations (drilling, coring, sampling, testing, visual observations, etc.), computer modeling, and other study methods.

### **7.13 Water Usage Study**

SEOPC has agreed to conduct a water usage study to determine the percentage of water to be taken from the Kiamichi River versus the flow rate in the Kiamichi River. SEOPC will review publicly and readily available information with regard to existing and planned (at the time of the review and recognized by the State) withdrawals from the Kiamichi River. If additional information is required, SEOPC will develop a plan to acquire relevant information with regards to withdrawals from the Kiamichi River. SEOPC will also develop a list of scenarios under which to evaluate these identified withdrawals within various environmental scenarios. These scenarios may include the following precipitation regimes: 7Q10, wet years, normal years, dry years, very dry years, and consecutive dry years. The scenarios will evaluate the impacts of the anticipated withdrawals for the Project on the Kiamichi River itself, downstream interests, aquatic and riparian habitats within and near the Kiamichi River, groundwater impacts, and other impacts as deemed relevant by qualified personnel.



#### **7.14 Study Plan to Maintain Water Quality per ODEQ**

SEOPC will review the planned construction methods, as well as anticipated operation and maintenance plans to determine possible routes/pathways/scenarios where contaminants could be released and cause negative impacts. Once those routes/pathways/scenarios, if any, are determined, SEOPC will require implementation of national/state and industry standard best management practices by all entities involved in the construction and operations and maintenance activities associated with the Project to maintain the current water quality in the Kiamichi River. This may also include sampling/testing/analysis of the Kiamichi River prior to construction to establish a baseline condition, as well as ongoing monitoring during the construction of the Project and its continued operation. Any potential future best management practices will be coordinated with ODEQ to help maintain water quality in the Kiamichi River.

### **8 Consistency with Generally Accepted Scientific Practice**

All scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regard to impacts caused by the proposed construction and operations and maintenance of the Project will be consistent with accepted scientific practice as well as currently accepted industry standards. These standards may be specifically legislated by regulatory agencies of the State of Oklahoma and/or the United States of America, or standards observed by the various disciplines involved in the Project.

### **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Water Resources Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC's Scoping Document, SEOPC proposes to conduct the Water Resources Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
90 calendar days after initiation of study	Determination of existing information and additional data gaps (beyond PAD and as noted in the proposed Study Methodology above) and development of plans to fill required data gaps; determination of specific models/methods to be used.
Summer/Fall/Winter 2025	Conduct first study season
May 2026	File ISR including Water Resources Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (a second field season of water resource studies is anticipated at this time)
May 2027	File USR including updated Water Resources Technical Memo
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Water Resources Study except as noted below, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

SEOPC plans to inform FERC and Project stakeholders with an interim update on any additional data gaps, plans to fill these data gaps, and any additional methodologies that may be required for the Water Resources Study. This interim update will be available 90 days after initiation of the study.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Water Resources Study is \$520,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

FERC	Federal Energy Regulatory Commission
HDR	HDR Consultants
ISR	Interim Study Report
ODEQ	Oklahoma Department of Environmental Quality

PAD	Preliminary Application Document
SEOPC	Southeastern Oklahoma Power Corporation
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USR	Updated Study Report

### **13 References**

HDR Consultants [HDR]. 2018. Water Source and Fill Rate Study  
Oklahoma Water Resources Board. 2023.

**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Noise, Air Quality, and Traffic**  
**Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on 1 May 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). Therefore, a Noise, Air Quality, and Traffic Study Plan is being proposed to assess the Project's effects and assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

SEOPC's objective is to perform a Noise, Air Quality, and Traffic Study to gather, synthesize, and report on information necessary to qualitatively evaluate the environmental effects of the Project in the study area. The objective of these studies is to characterize the existing ambient sound environment in the vicinity of the Project and estimate the potential impact of associated with construction and operations.

The specific goals of this study include describing:

- a) Effects of Project construction and operation, including blasting, on noise levels in the Pushmataha Project area.
- b) Effects of Project construction activities (including windblown dust) on air quality.
- c) Effects of Project construction on traffic and road networks in the Pushmataha Project area during and after construction.
- d) Effects of Project construction, operation, and maintenance on the generation of greenhouse gases.
- e) Traffic function (i.e., congestion and delay)
- f) Road infrastructure condition and maintenance practices.
- g) Road transportation safety risks.

The study will also identify proposed measures to avoid, minimize, or mitigate potential impacts on these resources. Such measures could include special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the study.

## 3 Agency and Native American Tribe Resource Management Goals

The Noise, Air Quality, and Traffic Resources Study results can inform separate analyses to assess Project effects on resources such as Recreation, Cultural Resources, Environmental Justice, and Socioeconomics. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that will be used

The PAD did not specifically compile available background and existing information on noise, air quality, and traffic resources. The lack of existing data will require SEOPC to generate the data needed to meet the goals and objectives of this study.

## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential to affect noise, air quality, and traffic resources at the Project site. This Noise, Air Quality, and Traffic Resources Study will assist in identifying specific issues within the Project such that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Noise, Air Quality, and Traffic Resources Study Plan will indicate any special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the Noise, Air Quality, and Traffic investigations.

## 6 Study Area

The proposed study area includes the land within the Project boundary and the transmission line right-of-way and an extended area out to 0.5-mile from the Project boundaries. For traffic, the proposed study area also includes any public roads within the Project boundary (excluding the transmission line right-of-way), as well as major roads within Pushmataha County that provide access to the Project sites.

## 7 Study Methodology

The Noise, Air Quality, and Traffic Resources Study supports licensing and preliminary design and will include the following components:

### 7.1 Effects on Noise Levels

SEOPC will study the effects of Project construction and operation, including blasting, on noise levels in the Pushmataha Project area. The noise assessment for the Project will require an understanding of the existing noise environment in the area around the Project site, and noise modeling studies to determine expected noise levels that would be generated during construction and operation of the Project. The proposed methodology is based on FERC's noise guidance for licensing natural gas facilities.

#### 7.1.1 *Ambient Noise Measurement Program*

The study will require identifying the noise sensitive areas (NSAs) within one-half mile of where construction activity will occur, and the NSAs within 1-mile of where operational noise sources will be located. It is expected that an ambient noise measurement program will need to be conducted at NSA locations around the site to quantify the existing noise environment.

The ambient noise measurement program would be conducted using Type 1 sound level meters deployed at or near NSA locations. It is expected that at least three locations would be selected. The sound level meters would be programmed to measure noise levels on a continuous and simultaneous basis for a minimum 24-hour period so that the existing day/night average sound level (Ldn) levels can be measured. Measurements would be unattended.

### 7.1.2 Construction Noise Modeling

Noise associated with Project construction activities would be evaluated utilizing noise modeling software (i.e., CadnaA). Inputs would include the type and number of construction equipment expected to be used for each component of the Project (reservoirs, dams, tunnels, horizontal directional drilling, blasting, etc.). Noise emissions data and usage factors for each type of equipment for these types of studies would be obtained from the Federal Highway Administration's *Roadway Construction Noise Model*. Modeling would be conducted to determine expected noise levels at NSAs within one-half mile of any construction activity, as is usually required by the FERC.

### 7.1.3 Operational Noise Modeling

Operational noise sources associated with the Project are anticipated to be limited to the powerhouse and the pumping station. The powerhouse turbines/generators will be underground, but the exhausts and combustion air inlets will be above ground. The same CadnaA noise software used for construction noise modeling would be utilized to determine expected operational noise levels at NSA locations within 1 mile of any of the operational sources. This analysis will require obtaining the noise emission levels for the powerhouse turbine/generators exhausts and inlets, and the noise emission levels for the pumping station pumps. These data should be available from potential equipment vendors.

FERC typically limits operational noise levels to no greater than 55 A-weighted decibels as an Ldn at any NSAs. Mitigation modeling in the form of adding exhaust and inlet silencers may be needed depending on the initial modeled noise levels.

## 7.2 Effects on Air Quality and Greenhouse Gases

SEOPC will study the effects of Project construction activities (including windblown dust) on air quality.

The potential impacts to air quality in the region and global greenhouse gas (GHG) impacts will be studied by applying generally acceptable engineering estimates associated with mobile construction equipment and permanent operational equipment connected to the grid or firing on fossil fuels.

This study will include an assessment to categorize the attainment status of all areas the Project traverses. The attainment status summary will help to determine if General Conformity can potentially be triggered based on the potential magnitude of construction-related emissions in the different areas. Oftentimes, when evaluating potential risks for a new project associated with FERC, construction emissions in a non-attainment area should be carefully examined to determine if General Conformity can be triggered.

The study will evaluate the size, count, and schedules of construction equipment to apply industry estimates associated with hours of usage, area of disturbance, miles traveled, and other parameters to study. GHG impacts associated with operation of the pumped storage



will also be assessed, including energy usage to pump the water between reservoirs and fuel usage associated with emergency or ancillary equipment.

MOVES is the generally accepted methodology to estimate impacts from mobile sources. As part of the study, it may be possible to leverage existing Social Cost of Carbon frameworks to estimate the long term GHG impacts of the proposed Project. United States Environmental Protection Agency maintains and provides support to the proposed MOVES model, an emission modeling system that provides emission estimates specific to the county of the proposed Project.

The study will provide an assessment of the transient impacts to air quality during the construction phase of the Project and the operational impacts in terms of GHG footprint.

The deliverable is an assessment of the transient impacts to air quality during the construction phase of the Project and the operational impacts in terms of GHG footprint. For example, Air/Quality and Noise is RR9 for FERC permitting. The deliverable will be in the form of a Technical Memorandum (see Deliverables and Schedule), and appendix of calculations, data inputs, modeling outputs.

### **7.3 Effects on Traffic and Road Networks**

SEOPC will review existing transportation data and information to support the study, including:

- a) The PAD and previous road condition assessments for the Project;
- b) Published traffic volume data, crash or incident data, and other relevant information from the Oklahoma Department of Transportation (ODOT) and any local governments; and
- c) Field observations (conducted as part of studies of other resources relevant to the Project, such as natural resources) of road condition, road hazards, and travel behavior.

The study includes no new traffic data collection and no field visits specific to transportation. Additionally, the study evaluates only road (vehicle) transportation. All other modes of transportation (e.g., air, vessel, rail) are excluded from the study.

SEOPC will provide estimated Project-related trips during Project construction (average and peak activity) and operations and maintenance (routine activities only). This will include trips related to worker movements; delivery of Project equipment, modules, and construction materials (e.g., concrete); and delivery of consumable supplies.

The study assumes that Project traffic (all phases) will use existing public roads to access the Project site. No new public roads will be constructed. The study will include a primarily qualitative evaluation of impacts, as described below.

- i. Traffic Function: Identification of locations where Project traffic could result in substantial new congestion or delay, due to increased traffic volumes.

- ii. Road Infrastructure Condition: Identification of general and location-specific concerns about road and bridge conditions.
- iii. Road Transportation Safety: Identification of locations where Project traffic (and especially truck traffic) could result in substantially increased risk of crashes, property damage, and injury.
- iv. To the degree possible at this stage, the study will also evaluate the Project’s emergency access plans and traffic management strategies.

SEOPC will compile these analyses to document existing traffic and road transportation conditions, assesses potential impacts, and identify proposed avoidance, reduction, mitigation, and monitoring measures. This information will help inform the license application.

## 8 Consistency with Generally Accepted Scientific Practice

The study will document existing conditions and proposed Project impacts consistent with typical approaches used in Environmental Assessments pursuant to FERC’s rules for implementing the National Environmental Policy Act.

## 9 Deliverables and Schedule

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC’s Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC’s Study Plan Determination. The ISR and USR will provide an update on SEOPC’s overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Noise, Air Quality, and Traffic Resources Study and that summarizes noise, air quality and traffic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Noise, Air Quality, and Traffic Resources Study as outlined below.

Date	Activity
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Complete field work and modeling
May 2026	File ISR including Noise, Air Quality and Traffic Resource Technical Memo

June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (a second field season is not anticipated at this time)
May 2027	File USR including updated Noise, Air Quality and Traffic Resource Technical Memo (if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Noise, Air Quality, and Traffic Resources Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Noise, Air Quality, and Traffic Resources Study is \$125,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
ISR	Initial Study Report
Ldn	Day/night average sound
NSA	Noise Sensitive Area
ODOT	Oklahoma Department of Transportation
PAD	Preliminary Application Document
SEOPC	Southeastern Oklahoma Power Corporation
USR	Updated Study Report

**Pushmataha County Pumped Storage Project  
FERC No. P-14890**

**Proposed Study Plan**

**Socioeconomics Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). Therefore, a Socioeconomics Study Plan is being proposed to assess the Project's effects and assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

SEOPC's objective is to perform a Socioeconomics Study to gather, synthesize, and report on information necessary to qualitatively evaluate the socioeconomic effects of the Project in the study area. The objectives of the study are to describe baseline economic conditions in the Project area and to identify the socioeconomic contribution of the Project in the state and the region. The goals of this Socioeconomics Resources Study are to conduct an assessment of the existing socioeconomic resources in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

The specific goals of this study include describing:

- a) Study the effects of Project construction and operation activities on local roads (including traffic), housing, businesses, employment opportunities (both temporary and permanent), and government services.
- b) Study the effects of Project construction, operation, and maintenance activities on human health and the environment, including emergency medical services.
- c) Study the effects of the proposed Project on the cost of domestic water as a broad public interest matter.
- d) Study the effects of loss of residential property necessary for construction and operation of the Project on tax revenues, and utilities such as municipal water, sewage, gas, and electricity, as a broad public interest matter.
- e) Study the effects of construction and operation of the Project on tourism and tourism revenue.
- f) Study the effects of construction and operation of the Project on agriculture and forestry.

## 3 Agency and Native American Tribe Resource Management Goals

The Socioeconomics Resources Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Environmental Justice, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that will be used

The PAD provides an overview of background and existing socioeconomic information for the Project area and vicinity. The existing data includes population by age group, race, and

ethnicity; education; housing and household characteristics; rent; labor force; income; industry; and employment information. This existing data, along with additional information collected for the Socioeconomic Study, will be used to assess the feasibility of the proposed Project features.

## **5 Nexus between Project Operations and Effects on Resources**

Project construction, operation, and maintenance activities have the potential to affect socioeconomic resources at the Project site.

This Socioeconomics Resources Study will assist in identifying specific issues within the Project that measures would have to be proposed to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance. The Socioeconomics Resources Study will indicate any special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the Socioeconomics Resources investigations.

## **6 Study Area**

The proposed study area includes the land within the Project boundary and the transmission line right-of-way. The study area will be extended to include Socioeconomics Communities.

## **7 Study Methodology**

As noted in the PAD, further evaluation and study are needed to determine the extent of Project-related construction and operation on local economies and existing infrastructure. The Socioeconomics Resources Study will analyze the economics of the surrounding community related to current activities and recreation. The study will also supplement the socioeconomic analysis by characterizing the contribution of outdoor recreation in the greater surrounding area to the local economy. This will be accomplished through a desktop review of available recreation-based socioeconomic data and analysis utilizing the following sources as applicable:

- a) Information obtained from state and federal agencies on visitor volume and permitted activities including but not limited to the estimated number of visitors, type of activities participated in during their visit, and corresponding trip expenditures
- b) Informal interviews with commercial boating outfitters regarding the number of people served and prices monthly for the past several years
- c) Recreation and expenditure data from the local tourism board
- d) Literature studies and government reports on recreation activity and expenditures by type
- e) Socioeconomic resource information including general land use patterns, population patterns, and employment in the Project vicinity

- f) Census data
- g) Impact Analysis for Planning (IMPLAN) input-output modeling software

In addition, the Socioeconomics Resources Study supports licensing and preliminary design, which will also include the following components:

### **7.1 Project Construction's Effects on Local Infrastructure**

SEOPC will study the effects of Project construction and operation activities on local roads (including traffic), housing, businesses, employment opportunities (both temporary and permanent), and government services.

A baseline of local housing, business landscape, government services, and employment will be established using census data and existing local economic studies and employment data to determine potential impacts from Project construction and operation. Additionally, the traffic study results in the Noise, Air Quality and Traffic Study Plan will be cross referenced here.

### **7.2 Project Construction's Effects on Human Health and Environment**

SEOPC will study the effects of Project construction, operations, and maintenance activities on human health and the environment, including emergency medical services. SEOPC will review publicly and readily available relevant data, including Centers for Disease Control and Prevention data, and public health initiatives to determine existing human health and environmental factors on the population as a baseline for any expected construction, operations, and maintenance activities.

### **7.3 Cost of Domestic Water**

SEOPC will study the effects of the proposed Project on the cost of domestic water as a broad public interest matter. SEOPC will review the results of the Water Resources Study to determine if the Project would cause significant strain on Rural Water District #3: Pushmataha County resulting in a need to potentially raise rates to meet the use requirements of its constituents.

### **7.4 Tax Revenues, Utilities, Municipal Services**

SEOPC will study the effects of loss of residential property necessary for construction and operation of the Project on tax revenues, and utilities such as municipal water, sewage, gas, and electricity, as a broad public interest matter. SEOPC will review publicly and readily available relevant data to determine a) projected tax revenues to the county and other relevant authorities as a result of the Project, b) current revenues to the county and other relevant authorities due to the presence of current residential property, c) Any resulting differences in tax revenues to relevant authorities, d) The projected use of utilities such as municipal water, sewage, gas, and electricity from the construction and operation of the Project, and e) if the current capacity of utility services is sufficient to serve the Project and the public.



## **7.5 Employment, Economic Development, Tourism and Tax Revenues**

SEOPC will study the effects of construction and operation of the Project on employment, local economy, tourism, and tax revenues. IMPLAN software will be utilized to conduct an assessment. IMPLAN is a proprietary input-output modeling system that uses data from the United States Bureau of Economic Analysis, Bureau of Labor Statistics, United States Census Bureau, and other sources. Several sectors, including governmental agencies and academic institutions, regard IMPLAN as a highly credible economic modeling system. This assessment will include a summary of the local economic profile as well as economic and fiscal impact utilizing the regional economic impact model.

Study area tourism is largely recreational and will be covered by the studies in the Recreation Resources Study Plan. That study, combined with the data from the Environmental Justice findings, will be referenced within this report to compare the impacts on specific potentially vulnerable populations.

## **7.6 Effects on Agriculture and Forestry**

SEOPC will study the effects of construction and operation of the Project on agriculture and forestry. Agriculture and Forestry is covered in Land Use and Aesthetics Resources Study. Data from that study and state and federal resources for the economic impacts of those activities will be used as a baseline to predict any effects from construction and operation of the Project.

## **8 Consistency with Generally Accepted Scientific Practice**

The Socioeconomic Resources Study is designed to align with generally accepted socioeconomic research methods and best practices through the use of reliable tools and techniques (e.g., desktop data from reputable sites like the United States Census) that are widely used in the social sciences and in FERC studies. These include:

- a) Published demographic and economic data as in previous FERC licensing studies
- b) IMPLAN results

## **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Socioeconomics Resources Study and that summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Socioeconomics Resources Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Conduct study and compile socioeconomic information and data
May 2026	File ISR including Socioeconomics Resources Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (a second field season for the Socioeconomic Study is not anticipated at this time)
May 2027	File USR including updated Socioeconomics Resources Technical Memo (if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Socioeconomics Resources Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Socioeconomics Resources Study is \$50,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

FERC	Federal Regulatory Commission
IMPLAN	Impact Analysis for Planning
ISR	Interim Study Report
SEOPC	Southeastern Oklahoma Power Corporation
USR	Updated Study Report

**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Land Use and Aesthetic Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). SEOPC proposes to prepare a Land Use and Aesthetic Study (Study) to further document land uses and aesthetics in the Project area and to describe the Project's impacts on those resources.

## 2 Study Goals and Objectives

The goals of this Study are to document existing and designated future land uses and aesthetic conditions in the Project area as the basis for evaluating the proposed Project's impacts on these resources. The specific objectives of this Study include describing:

- a) The effects of Project construction, operation, and maintenance on existing land uses in the Project-affected area, including existing infrastructure rights-of-way and preserves and wildlife management areas (e.g., Lennox Woods Preserve and Three Rivers Wildlife Management Area).
- b) The effects of Project construction, operation, and maintenance (including the presence of Project facilities) on visual resources, including the Kiamichi Mountain and the dark sky of the area.
- c) The visual effects of the proposed Project on culturally important landscapes in the Project-affected area.

SEOPC has prepared a separate Traffic Study Plan to evaluate the Project's impacts on the public road system.

## 3 Agency and Native American Tribe Resource Management Goals

The Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

## 4 Background and Existing Information that Will be Used

The PAD provides a summary of existing land use and aesthetic information about the Project area and vicinity. Because the proposed Project boundary is entirely within private lands, the proposed Project would not directly impact any designated public scenic resources. However, multiple federal and state public lands and amenities are near the Project vicinity, primarily northeast of the proposed Project boundary, including the Indian Nations National Scenic and Wildlife Area, Talimena State Park, and the Ouachita National Recreational Trail. The closest of these scenic public amenities to the proposed Project boundary—Indian Nations National Scenic and Wildlife Area—is more than 7 miles northeast of the proposed Project boundary and approximately 14 miles northeast of the proposed Project pumped storage site.

## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential to directly or indirectly affect land use and/or aesthetic resources at the Project site and in the Kiamichi Mountains and River Valleys.

This Study will identify the impacts of Project construction, operation, and/or maintenance on land use and aesthetics as the basis for subsequent proposed measures to avoid, minimize, or mitigate potential those impacts. These measures could include special design, construction, and operational measures that need to be incorporated into the Project design based on the results of the Study.

## 6 Study Area

The proposed Study area includes the land within the Project boundary and the transmission line right-of-way. For aesthetics, the Study area will extend up to 10-miles from the Project and will include visually and/or culturally important viewing opportunities of the proposed Project. The land use study area will include the Project area as well as the aesthetic study area (10 miles from the Project), because visual impacts could affect the ability to use land—especially the scenic public amenities described above—as designated or intended.

## 7 Study Methodology

This Study will include land use and aesthetics components, as described below.

### 7.1 Land Use Component

The land use component will document the following information within 10 miles of the proposed Project boundary, based on desktop research including already compiled data and information from the PAD:

- a) Designated land uses, based on zoning or other land development regulations.
- b) Existing land use and land cover, based on the United States Geological Survey's (USGS) National Land Cover Database and/or similar digital datasets.
- c) Special-designation land uses, including the scenic public amenity areas described above, as well as other lands with special designations (especially those relevant to aesthetics), based on the USGS Protected Areas Database of the United States and/or similar digital datasets. Examples not listed above may include the Lennox Woods Preserve and Three Rivers Wildlife Management Area.
- d) Infrastructure rights-of-way, including (but not limited to) major roads, utilities (electrical, water, sewer, etc.), oil and gas pipelines, and other major aboveground and underground infrastructure.
- e) Planned land uses, as expressed in adopted local land use plans and/or similar planning documents.

SEOPC will document and map this information as the basis for evaluations of the impacts of Project construction, operation, and maintenance during the licensing process. The Study will identify direct impacts based on land uses within the Project boundary, as well as indirect impacts on land use that could occur due to other Project activities such as air emissions, noise, lighting, and other aesthetic changes (among others).

## **7.2 Aesthetics Component**

The Aesthetics Component will document the existing aesthetic conditions of the Project area (including a 10-mile buffer from the proposed Project boundary) as the basis for assessing the Project's impacts on aesthetic resources during the licensing process. This component will focus on visibility, changes in visual resource conditions, and viewer sensitivity to the new pump storage facilities as noted in the PAD. The aesthetics component will generally exclude the generation tie/transmission lines (see below). The aesthetics component will include the tasks described below.

- a) **Viewshed Analysis:** SEOPC will develop a viewshed model utilizing the highest resolution publicly available and Client-provided elevation data and readily available lidar, as well as the Project's proposed structures. This model will help illustrate and provide a general indication of the degree of visibility of Project facilities, structures, and activities from the surrounding landscape. The viewshed analysis will extend 10 miles from the Project area.
- b) **Key Observation Points:** Based on the viewshed analysis and a review of regionally important aesthetic resources, SEOPC will select up to eight key observation points (KOPs) from which to document existing visual resource conditions and potential nighttime lighting impacts and create photographic simulations of the proposed Project. KOPs will document existing and proposed conditions at their specific locations and will also be representative of characteristic or typical views of the landscape. KOPs may include locations whose vistas are likely to be considered iconic or unique within the community. For example, KOPs could include scenic overlooks, parks, culturally important sites or use areas, residential areas, churches, schools, and roads with views of the Project.
- c) **Existing Conditions and Photographic Simulations:** SEOPC will capture high-resolution digital images of existing views from the KOPs using a full-frame digital single-lens reflex camera, equipped with a 50-millimeter lens to capture the same approximate field of vision as the human eye. The panoramic photographs from each KOP will be used to both document existing visual conditions and to create simulations. The simulations will be compared to existing conditions to describe the anticipated level of visual change from the proposed Project on the landscape.
- d) **Lighting Assessment:** Based on Project designs and the Viewshed Analysis, SEOPC will determine whether any Project lights may be visible beyond the proposed Project boundary and will document the likely relative intensity (during typical viewing conditions) of any such lights at individual locations within the 10-mile

buffer. SEOPC will also provide a general discussion of other nighttime lighting impacts, such as sky glow.

SEOPC will compile these tasks to document existing conditions (e.g., inventory of existing landscape conditions, panoramic photographs, etc.), assesses potential visibility (e.g., viewshed analysis, lighting assessment), and identify the potential changes in aesthetic conditions due to the proposed Project (e.g., photographic simulations). This information will help inform the license application.

## **8 Consistency with Generally Accepted Scientific Practice**

The Study will document existing conditions and proposed Project impacts consistent with typical approaches used in Environmental Assessments pursuant to FERC's rules for implementing the National Environmental Policy Act. In addition, the visual component of the Land Use and Aesthetic Resource Study will draw on established techniques for describing existing landscape characteristics and identifying the potential changes or contrasts created by proposed surface-disturbing activities, including (but not limited to) the Bureau of Land Management Visual Resource Management system (1984), United States Forest Service Scenery Management System (1995), and Federal Highway Administration Visual Impact Assessment for Highway Projects (2015).

## **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plan and schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. SEOPC will prepare a Technical Memo (as an attachment to the ISR/USR) that provides an update on implementation of the Land Use and Aesthetic Resource Study and that summarizes information and data collected as part of Study implementation. The information provided in the Technical Memo will be assessed and used for the license application. The Technical Memo will also be appended to the license application.

Based on Appendix A of FERC's Scoping Document, SEOPC proposes to conduct the Land Use and Aesthetic Resource Study as outlined below.



<b>Date</b>	<b>Activity</b>
May 2025	Initiate Study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Conduct viewshed analysis, capture KOP photographs, and prepare visual simulations
May 2026	File ISR including Land Use and Aesthetics Resource Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second Study season (only if needed)
May 2027	File USR including updated Land Use and Aesthetics Resource Technical Memo (only if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Land Use and Aesthetics Resource Study, SEOPC may prepare interim updates and/or summaries, if needed, during the Study year to apprise license participants on Study implementation progress and to support ongoing consultation with these participants. For coordination purposes, SEOPC will share the list of KOPs with FERC and license participants prior to field photography and the corresponding preparation of visual simulations.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Land Use and Aesthetics Resource Study is \$90,000, which includes Study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

FERC	Federal Energy Regulatory Commission
ISR	Interim Study Report
KOP	Key observation point
	Preliminary Application Document
SEOPC	Southeastern Oklahoma Power Corporation
USGS	United States Geological Survey
USR	Updated Study Report

## 13 References

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**Pushmataha County Pumped Storage Project**  
**FERC No. P-14890**

**Proposed Study Plan**

**Terrestrial Resources**

*Prepared for*

**Southeast Oklahoma Power Corporation**

*Prepared by*

**ERM**

*February 2025*

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## 1 Introduction

Southeast Oklahoma Power Corporation (SEOPC) filed a Preliminary Application Document (PAD) with the Federal Energy Regulation Commission (FERC) on May 1, 2024 as part of the hydro licensing for the Pushmataha County Pumped Storage Project (P-14890). The PAD stated that a Terrestrial Study would be conducted to define the existing terrestrial conditions in the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features.

## 2 Study Goals and Objectives

The goals of this Terrestrial Resources Study are to conduct an assessment to define the existing terrestrial conditions for use in the environmental analysis of the Project and to assess the feasibility of the proposed Project features, and to identify and characterize the terrestrial habitat types found in the land areas of the proposed Project boundary.

The specific objectives of this study include describing:

- a) The effects of Project construction, operation, and maintenance activities, including maintenance for roads and transmission facilities on native and/or sensitive-plant communities (in wetlands and uplands), including plants tracked by the Oklahoma Natural Heritage Inventory and plants that are culturally significant to Tribal Nations, and the spread and control of non-native invasive plants.
- b) The effects of vegetation clearing, grubbing, and other construction activities on the availability and continuity of upland and wetland habitat, including for special status plants and wildlife, such as birds and bird habitat protected under the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protect Act (BGEPA), and Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, in the Kiamichi River and Little River watersheds.
- c) The effects of construction, operation, and maintenance of transmission line facilities on vegetation and wildlife, including electrocution and collision hazards for raptors and other birds including the bald eagle, protected under the BGEPA, and migratory birds and their habitat protected under the MBTA and Executive Order 13186.
- d) The effects of noise, lighting, vehicular traffic, and human presence during Project construction, operation, and maintenance activities on wildlife, especially during sensitive periods (e.g., migrating or breeding).
- e) The effects of Project construction, operation, and maintenance activities on subsistence farming and harvesting.

### **3 Agency and Native American Tribe Resource Management Goals**

The Terrestrial Resources Study results can inform separate analyses to assess Project effects on resources such as Soil, Water, Aquatic, Endangered Species, Recreation, Land Use, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations.

### **4 Background and Existing Information that will be used**

This section provides an overview of the background and existing information on terrestrial resources in the Kiamichi River, the Little River, and Long Creek basins. The PAD provides additional detail on background and existing information in these basins. The terrestrial resources associated with the transmission line include:

#### **4.1 Upland Habitat**

Aerial imagery analysis completed by the United States Geological Survey (USGS) LANDFIRE (Landscape Fire and Resource Management Planning Tools) program was used to identify broad habitat types within the proposed Project boundary (USGS 2019). In total, 41 habitat types were identified within the proposed Project boundary (USGS 2019) (see Table 4-16 in the PAD).

#### **4.2 General Wildlife and Occurrences**

Common wildlife occurrences include ground-nesting birds such as the greater prairie chicken (*Tympanuchus cupido*), ring-necked pheasant (*Phasianus colchicus*), northern bobwhite (*Colinus virginianus*), Rufous-crowned sparrow (*Aimophila ruficeps*), Cassin's sparrow (*Peucaea cassinii*), killdeer (*Charadrius vociferus*), dickcissel (*Spiza americana*), grasshopper sparrow (*Ammodramus savannarum*), lark sparrow (*Chondestes grammacus*), lark bunting (*Calamospiza melanocorys*), field sparrow (*Spizella pusilla*), western meadowlark (*Sturnella neglecta*), and eastern meadowlark (*Sturnella magna*). White-tailed deer (*Odocoileus virginianus*). Mule deer (*Odocoileus hemionus*) are also common (Green 2017).

#### **4.3 Invasive Wildlife Species**

Table 4-17 of the PAD lists invasive terrestrial wildlife and insects reported in the counties within and surrounding the proposed Project boundary (University of Georgia Center for Invasive Species and Ecosystem Health 2023).

#### **4.4 Migratory Birds**

The United States Fish and Wildlife Service (USFWS) categorizes migratory birds into Birds of Conservation Concern (BCCs) for specific regions. Seven BCCs have the potential to occur within the proposed Project boundary (see Table 4-19 of the PAD). Five are classified as BCC throughout their range.

## 5 Nexus between Project Operations and Effects on Resources

Project construction, operation, and maintenance activities have the potential on terrestrial habitat, biota, and mussels in the Kiamichi River, the Little River, and the Red River, including several smaller waters (Long Creek, the Jack Fork of the Little River, and Brooks Lake) and the Black Fork of the Little River.

The proposed Project will cover over 2,000 acres, which could have an effect on terrestrial habitat. The Terrestrial Resources Study will indicate any special design and construction measures that need to be incorporated into the Project design based on the results of the Terrestrial investigations. The study results and corresponding license application will identify specific issues within the Project area and help in the development of proposed actions to avoid, minimize, or mitigate potential effects from Project construction, operation, and/or maintenance on terrestrial resources.

## 6 Study Area

The proposed Terrestrial Resources Study area includes the land within the Project boundaries, the transmission line right-of-way, and the areas around the Kiamichi River and Little River upper tributaries.

## 7 Study Methodology

The Terrestrial Resource Study supports licensing and preliminary design and will include the following components:

### 7.1 Habitat Assessment

SEOPEC will model/study and conduct a habitat assessment within the proposed Project boundary, plus 0.5-mile buffer zone. This will include:

- a) Preparing ground-truthed maps of the habitat,
- b) Recording incidental wildlife sightings to provide a list of general wildlife and invasive species, and
- c) Evaluating special-status and federally listed wildlife/habitat (in coordination with the Threatened and Endangered Species Study).

A desktop review will include reviewing the most recent federal and state species lists available and review publicly available resources to determine if potential suitable habitat for those species may occur within the study area or in the surrounding vicinity. Resources include, but are not limited to, Texas Parks and Wildlife Department's (TPWD) Ecological mapping system (TPWD 2014) and the Oklahoma Department of Wildlife Conservation's (ODWC) ecological mapping system (ODWC 2025).

Following the desktop review, pedestrian field surveys will be performed by qualified biologists and occur at appropriate times of the year within the study area. Prior to the start of field surveys, the habitat maps and species identified during the desktop review will be

assessed by field biologists. The field survey will be used to ground-truth suitable habitat identified and document observed wildlife.

Biologists will walk the study area along transects and document wetlands, potentially suitable habitat, and any wildlife/aquatic fauna observations. All waters and wetlands will be mapped per the United States Army Corps of Engineers (USACE) regional guidance and wetland delineation manual. Biologists will map observations of non-native invasive aquatic species, note any observations of other key species of interest, and evidence of nests on data sheets. Additional details on listed species assessments may be found in the Threatened and Endangered Species Study Plan.

## **7.2 Botanical Species, Habitat, Invasive Species and Wetland Resources**

SEOPC will map, study, and catalogue the botanical species, habitat, invasive species, and wetland resources, which will include: habitat assessments, special status and federally listed plant species survey, an invasive species survey, and wildlife survey.

The field survey for habitat assessment is anticipated to occur concurrently with the wetland delineation. Qualified biologists will have accredited wetland training consistent with the 1987 USACE Wetlands Delineation Manual and the 2010 Great Plains Regional Supplement (version 2.0), as well as USACE permitting requirements under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Wetland surveys will be conducted using the three-parameter approach to assess hydrophytic vegetation, hydric soils, and hydrology to determine potential wetland occurrences and boundaries. Vegetation will be recorded at data plots along transects. Biologists will map observations of non-native invasive aquatic species and note any observations of other key species of interest on data sheets. Survey equipment will include common survey tools such as binoculars, shovels, the Munsell Soil Color Chart, a Trimble R1 GPS unit (or similar) with sub-meter accuracy, electronic field data collection devices, plant indicator lists, threatened and endangered species lists, and habitat descriptors.

Should listed species suitable habitat be mapped and confirmed, or listed species identified and mapped during the assessment, those targeted areas or species may be subject to additional surveys. Potential terrestrial-listed species that may require additional survey include the Indiana bat (*Myotis sodalists*), northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*). Additional details on threatened and endangered species may be found in the Threatened and Endangered Species Study Plan.

If listed species habitat is mapped or listed species observed, correspondence should occur with the USFWS to determine if additional study is required. For example, if there is tricolored bat habitat and there are potential effects from the Project, the USFWS may require bat surveys in the Project area. Bat surveys, or any other additional surveys required, will be conducted in accordance with USFWS guidelines. If protected species are identified in additional surveys, USFWS required best management practices, buffers, or other avoidance requirements will be utilized. Therefore, correspondence with the agency is pertinent to minimize risk for Project timelines.



### **7.3 Effects on Native and/or Sensitive-plant Communities**

SEOPC will study the effects of Project construction, operation, and maintenance activities, including maintenance for roads and transmission facilities on native and/or sensitive-plant communities (in wetlands and uplands), as well as plants tracked by the Oklahoma Natural Heritage Inventory and plants that are culturally significant to Tribal Nations and the spread and control of non-native invasive plants.

Review of desktop data will be performed as outlined in the sections above, with a focused approach on soils, slopes, and habitat. Results of the desktop review will be field verified using the methods in the above sections. Field surveys will focus on the native or sensitive plant communities identified during desktop review. As necessary, field work will be conducted during flowering periods to maximize plant identification. Observations of species and plant communities will be recorded. Significant areas of plant populations or communities will be delineated.

### **7.4 Effects on Availability and Continuity of Upland and Wetland Habitat**

SEOPC will model/study the effects of vegetation clearing, grubbing, and other construction activities on the availability and continuity of upland and wetland habitat, including for special-status plants and wildlife, such as birds and bird habitat protected under the MBTA, the BGEPA, and Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, in the Kiamichi River and Little River watersheds.

Upland and wetland habitat will be studied through desktop review and field verification as outlined in the sections above. Field surveys will be performed at appropriate times of the year, or during nesting season for migratory birds. Biologists will look for and record observations of active or abandoned raptor nests. Based on the results of the desktop review and field surveys, an impacts analysis will be performed for the habitat and habitat availability based on final construction and operation plans. If adverse impacts on special status wildlife or protected birds are anticipated, correspondence should occur with the appropriate agencies (e.g., USFWS and/or state agency) to identify any additional requirements for survey, best management practices, or mitigation.

### **7.5 Effects on Vegetation and Wildlife**

SEOPC will model/study the effects of construction, operation, and maintenance of transmission line facilities on vegetation and wildlife, including electrocution and collision hazards for raptors and other birds including the bald eagle, protected under the BGEPA, and migratory birds and their habitat protected under the MBTA and Executive Order 13186.

Desktop reviews and field surveys will be performed as outlined above and in the Threatened and Endangered Species Study Plan. If raptors and migratory bird habitat is observed and mapped, final construction and operation plans will be used to determine impacts to these species. Correspondence should occur with the USFWS to identify any additional requirements for survey, best management practices, or mitigation. Additional survey requirements may include eagle nest surveys following the USFWS survey protocol (USFWS 2020).

## **7.6 Effects of Noise, Lighting, Vehicular Traffic, and Human Presence on Wildlife**

SEOPC will model/study the effects of noise, lighting, vehicular traffic, and human presence during Project construction, operation, and maintenance activities on wildlife, especially during sensitive periods (e.g., migrating or breeding).

Desktop reviews and field surveys will be performed as outlined above and in the Threatened and Endangered Species Study Plan. Noise modeling will be performed as described in the Noise, Air Quality, and Traffic Study Plan. Results from the modeling will be used in conjunction with the results from the terrestrial resources threatened and endangered species assessments (as described herein and in the Threatened and Endangered Species Study Plan) to determine potential impacts. Final construction plans, including equipment lists, artificial lighting, traffic plans/workforce, timing, etc., will be cross-checked with sensitive species/habitats within the Project area. If adverse impacts on special status wildlife/plants or protected species are anticipated, correspondence should occur with the appropriate agencies (e.g., USFWS and/or state agency) to identify any additional requirements for survey, best management practices, or mitigation during construction or operation.

## **7.7 Effects on subsistence Farming and Harvesting**

SEOPC will study the effects of the Project construction, operation, and maintenance activities on subsistence farming and harvesting.

Land use will be studied as described in the Land Use and Aesthetic Resource Study Plan. Results from the desktop review will be verified during the field surveys described above and documented. Potential direct impacts to subsistence farming or harvesting based on the collected data will be determined.

## **8 Consistency with Generally Accepted Scientific Practice**

All scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regards to impacts caused by the proposed construction, operation, and maintenance of the Project will be consistent with accepted scientific practice, as well as currently accepted industry standards. These standards may be specifically legislated by regulatory agencies of the State of Oklahoma and/or the United States of America, or standards observed by the various disciplines involved in the Project. Methods and results will be accurately recorded and reported, detailed for replicability.

## **9 Deliverables and Schedule**

SEOPC will file an Initial Study Report (ISR) within 1 year following FERC's Study Plan Determination (estimated 19 May 2025) and an Updated Study Report (USR) no later than 2 years after FERC's Study Plan Determination. The ISR and USR will provide an update on SEOPC's overall progress in implementing the Study Plans and Schedule, the status of the data collection effort, and an explanation of any variances from the Study Plan and Schedule, if needed. A Technical Memo will be appended to the ISR/USR that specifically provides an update on implementation of the Terrestrial Resources Study and that

summarizes aquatic information and data collected as part of study implementation. The information provided in the Technical Memo will be assessed and used for the Application for New License. The Technical Memo will also be appended to the Application.

Based on Appendix A of FERC’s Scoping Document, SEOPC proposes to conduct the Terrestrial Resources Study as outlined below.

<b>Date</b>	<b>Activity</b>
May 2025	Initiate study pending FERC Study Plan Determination
Summer/Fall/Winter 2025	Terrestrial desktop research will be completed throughout this period while the majority of field work will be completed in summer
May 2026	File ISR including Terrestrial Resources Technical Memo
June 2026	Conduct ISR stakeholder meeting and file ISR meeting summary
Spring/Summer 2026	Conduct second study season (only if needed; a second field season of terrestrial resource work is not anticipated at this time)
May 2027	File USR including updated Terrestrial Resources Technical Memo (only if needed)
June 2027	Conduct USR stakeholder meeting and file USR meeting summary

## 10 Periodic Progress Reporting

While periodic progress reporting is not anticipated for the Terrestrial Resources Study, SEOPC may prepare interim updates and/or summaries, if needed, during the study year to apprise license participants on study implementation progress and to support ongoing consultation with these participants.

## 11 Level of Effort and Cost

The estimated cost (2025 dollars) for the Terrestrial Resources Study is \$400,000, which includes study-specific consultation, field work, data compilation and analysis, and required reporting.

## 12 List of Acronyms

BCCs	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
FERC	Federal Energy Regulatory Commission
ISR	Interim Study Report

MTBA	Migratory Bird Treaty Act
ODWC	Oklahoma Department of Wildlife Conservation
PAD	Preliminary Application Document
SEOPC	Southeastern Oklahoma Power Corporation
TWPD	Texas Park and Wildlife Department
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USR	Updated Study Report

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**On 11/05/2024 Tara Zuardo filed Study Requests on behalf of Center for Biological Diversity and the Kiamichi River Legacy Alliance, Inc. which SEOPC has responded to the study request below:**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	Perform a current state assessment of the actual available flow of the Kiamichi River at the proposed project site. The current water availability study uses a location 20 miles downstream from the project area and right after the dam that releases water from Sardis Lake into the Kiamichi River. Any studies regarding water availability should be taken on the proposed diversion site to ensure water availability.	√		Proposed Water Resource Study Plan, Section 7
2	Any hydrology studies account for risks associated with climate change over the expected license life of 30-50 years. See United States Department of Interior Letter dated 9/04/2024, "Climate change effects on river flows and evaporative and seepage losses."		√	Not proposing to do hydrological climate change study with the proposed environmental study plans at this time
3	A survey of all groundwater wells within the Kiamichi River Basin and an evaluation of the proposed project's impact on the availability of groundwater sources and wells.	√		Proposed Water Resource Study Plan, Section 7.1
4	Evaluate the impact of damming Long Creek on the Little River Basin Watershed.	√		Proposed Water Resource Study Plan, Section 7.8
5	Evaluate the Kiamichi River's minimum flow against the project's operational requirements, which indicate evaporative losses of 20,000 acre-feet.	√		Proposed Water Resource Study Plan, Section 7.5

6	Evaluate the water quality and quantity of the upper and lower reservoirs and streams upstream and downstream from the project area.	√		Proposed Water Resource Study Plan, Section 7.2
7	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Conduct studies on water quality assessment and monitoring." See page 5.	√		Proposed Water Resource Study Plan, Section 7.2
8	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Needs for mitigation of Project effects on the Kiamichi River as a Water of the United States." See page 6.	√		See response to US Department of Interior in that study request
9	Conduct a study on the effects of diverting 10-15% of the water from the Kiamichi River on endangered mussel species.	√		Proposed Threatened and Endangered Species Study Plan, Section 7.2
10	Conduct a study on water temperature changes to account for the diversion of 10-15% of the water flow from the Kiamichi River related to mussel mortality.	√		Proposed Water Resource Study Plan, Section 7.2 and 7.11
11	Conduct fish community surveys in the Kiamichi River, Long Creek, Little River, and tributaries to the Kiamichi and Little Rivers.	√		Proposed Aquatic Resources Study Plan, Section 7.5
12	Conduct freshwater mussel surveys in the Kiamichi River, Little River, and Long Creek upstream and downstream from the proposed project site.	√		Proposed Aquatic Resource Study Plan, Section 7.2 and 7.3
13	Conduct field surveys to determine fish populations in the Kiamichi River, which will later be used in fish entrainment and impingement studies.	√		Proposed Aquatic Resource Study Plan, Section 7.5 and 7.3
14	Conduct a Fish Entrainment, Impingement, and Survival Study—conduct field studies to determine the impact of entrainment and mortality for fish species in the Kiamichi River.	√		Proposed Aquatic Resource Study Plan, Section 7.5 and 7.3
15	Conduct a study to determine the minimum flow of Long Creek past the dam location.	√		Proposed Aquatic Resource Study Plan, Section 7.5

16	Conduct a study on the Little River's mussel population to determine its current state. This will be critical in determining the project's impacts on Long Creek's damming.	√		Proposed Threatened and Endangered Species Study Plan, Section 7.1, 7.2 and 7.3
17	Conduct a study to determine the impact of reservoirs or impoundment ponds lined with a material to prevent seepage into or from the aquifer.		√	Not proposing to do liner study, as the liner material is not defined at this time.
18	Develop a management plan for hazardous materials during construction (e.g., fuel) to prevent contamination of water resources in the watershed.		√	Not proposing to do a management plan for hazardous material with the proposed environmental study plans, as no material have been defined yet.
19	Conduct quality monitoring, including salinity, to be established in the reservoirs after construction and on any discharges into the Kiamichi River and its watershed.		√	Can not conduct water monitor salinity until reservoirs are constructed.
20	Conduct a study to determine the impact of algaecides and biocides used in the reservoirs or pumping mechanisms.	√		Proposed Water Resource Study Plan, Section 7.10
21	Conduct a study to determine whether measures will be in place to prevent avian and aquatic interactions with both reservoirs and the impoundment pond.		√	No measures are anticipated to prevent avian interactions at reservoirs. Aquatic interactions will be defined in the hydro license application
22	Conduct a study to determine the impact of corrosion inhibitors, lubricants, or potentially carcinogenetic chemicals being added to the water at any time during the life of this project.	√		Proposed Water Resource Study Plan, Section 7.2 and 7.11
23	Create a management plan, including methodology and gages, for monitoring diversions during the initial fill and each year thereafter.		√	No management plan for water fills will be part of the proposed environmental study plans

24	Create a management plan for flooding events. Once initial fill is achieved, how will flooding events be addressed to prevent excess water consumption into the system?		√	No management plan for flooding events will be part of the proposed environmental study plans
25	Create a management plan for discharges in the upper reservoir and determine whether those discharges are considered in-basin or out-of-basin discharges from the Kiamichi River Basin to the Little River Basin.		√	No management plan for discharges will be part of the proposed environmental study plans
26	Study area be modified to include the Little River Basin. The proposed applicant intends to dam the headwaters of Long Creek, which flows into the Little River Basin. The impacts on the Little River and the Little River Basin should be studied as part of this project to determine the effects on aquatic life.	√		Proposed Water Resource Study Plan, Section 7.1 through 7.14
27	Study area be modified to include the entire Kiamichi River basin and its impacts on aquatic life and other species.		√	It is not proposed to study the entire Kiamichi River basin only the areas defined in each proposed study plan
28	The Kiamichi River flows into the Red River. Study area be modified to include the Red River Basin. The water flow from the Kiamichi River will decrease by 10-15% during construction (per the applicant) and, in the long term, will be reduced to accommodate evaporative losses.		√	It is not proposed to study the Red River Basin as it is beyond the scope of the project study area.
29	Study to determine the impacts on the Red River Basin and associated groundwater wells. This is especially true as the region has seen increased droughts and days over 100 degrees Fahrenheit, leading to higher evaporative losses.		√	It is not proposed to study the impacts on Red River Basin as it is beyond the scope of the project study area.
30	Studies on the effect of project construction and operation on the geomorphology of the	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 through 7.9



	Kiamichi River (see United States Department of Interior letter dated 9/04/2024).S			
31	Studies that address the effects on geologic and soil resources and define the baseline soil erosion and stream conditions in the Kiamichi River, Little River, and Long Creek.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 through 7.9
32	Perform geotechnical analysis to determine the composition of project area soil and rock layers to depths equal to or greater than those required to excavate the lower reservoir.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
33	Perform geotechnical analysis on mountains into which tunnels are expected to be bored to determine the effects of boring said tunnels and the composition of materials expected to be removed during the boring of said tunnels.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
34	Studies that address the effects on geologic and soil resources will be performed, and baseline soil erosion and stream conditions in the Kiamichi River, Little River, and Long Creek will be defined.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
35	Perform geotechnical analysis to determine the composition of project area soil and rock layers to depths equal to or greater than those required to excavate the lower reservoir.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
36	Perform geotechnical analysis on mountains into which tunnels are expected to be bored to determine the effects of boring said tunnels and the composition of materials expected to be removed during the boring of said tunnels.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
37	Create a management plan regarding subsurface seepage. If any impacts occur, how will they be mitigated to prevent unpermitted subsurface flow, surface water quality, and water quantity issues?		√	No proposed seepage management plan is part of the proposed environmental study plans
38	Conduct a study to determine how erosion from the edge of the Kiamichi River channel to the impoundment pond will be	√		Proposed Geologic and Soil Resource Study Plan, Section 7.4 through 7.8

	mitigated. Create a continuous monitoring plan that will be monitored during the project's life, 30, 40, or 50 years into the future.			
39	Conduct a study to determine where the spoil/debris will go from excavating the impoundment pond.		√	Not proposing to determine where soils will be place from excavation of reservoirs as part of the proposed environmental study plans
39	Determine the impact of water quality or surrounding terrestrial habitats. If so, how will that be avoided, minimized, or mitigated?	√		Proposed Terrestrial Resources Study Plan, Section 7, and Proposed Water Resources Study Plan, Section 7
40	Create a management plan for stormwater runoff during initial construction.		√	Not proposing a management plan for stormwater runoff until a later date or time of construction.
41	Study the mental health implications of this project on impacted landowners and the surrounding community.	√		Proposed Socioeconomics Resources Study Plan, Section 7.1 through 7.6, Proposed Environmental Justice Resources Study Plan, Sections 7.1, 7.2, 8, and 9.
42	Create a study plan to address the mental health concerns of the community and those within the project area.	√		Proposed Environmental Justice Study Plan, Section 7.1 & 7.2
43	Conduct studies to characterize terrestrial wildlife, botanical resources, and associated habitat.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7

44	Develop ground- maps of vegetation cover classes and land use in the study area, including assessments of habitat structure and conditions characterizing habitat types.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7
45	Observe and record biological inventory during the habitat assessment, including a running list of encountered wildlife, wildlife spores, and dominant vegetative species.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7
46	Create a management plan defining BMPs to minimize disturbances to the existing vegetation during construction and promptly revegetate the area to control erosion and protect terrestrial wildlife habitat.		√	Not proposing a management plan to address construction activities with the proposed environmental study plans at this time.
47	Create annual and seasonal management plans to protect and prevent the extermination of federal endangered species in the project area.		√	Not proposing an annual and seasonal management plan for endangered species with the proposed environmental study plans.
48	Conduct a preconstruction survey to identify specific locations of endangered species within the project area.	√		Proposed Threatened and Endangered Species Resource Study Plan, Sections 4.1 through 4.7 and Section 7.1 through 7.5
49	Conduct a study of migratory waterfowl that would utilize the waters in the project area. Create a management plan with steps to protect these avian populations during the operation.	√		Proposed Threatened and Endangered Species Resource Study Plan, Sections 4.4, and Section 7.1 through 7.2, and Proposed Terrestrial Resources Study Plan, Section 4.4
50	Create a management plan to protect terrestrial wildlife and people from accessing areas near the project area before, during, and after construction.		√	No access management plan is planned for the proposed environmental study plans

51	Create a management plan for monitoring access to the site.		√	No access management plan is planned for the proposed environmental study plans
52	Create a management plan regarding fencing and subsequent signage on the reservoirs, denoting their use and indicating that fishing, swimming, or other recreational activities are prohibited on the reservoirs and the site.		√	No fencing, signage or recreational activities management plan is planned for the proposed environmental study plans
53	Determine the impact of fencing on species.		√	No fencing management plan is planned for the proposed environmental study plans
54	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Acoustic surveys for bats in the project area."			See response to Dept of Interior requests
55	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "American burying beetle (ABB) surveys."	√		Proposed for Threatened and Endangered Species Study Plan, Section 4, 7.2
56	Delineate wetlands and streams and assess the nature and degree of the project's potential effects on areas subject to Section 404 of the Clean Water Act.	√		Proposed Mapping Transmission Line Vegetation and Wildlife Mapping Study Plan, Sections 7
57	With the advances in BESS (battery energy storage systems), a similar energy storage capacity could be achieved on 400 acres or less within 2-3 years, including approvals. Furthermore, pumped storage is only 70-80% efficient at storing electricity and will be a net drain on our power grid. BESS is over 90% efficient at storing electricity and can be co-located with existing wind and solar infrastructure. A prudent energy strategy would disperse energy storage across the grid, not place it over 120 miles from any metropolitan area. It would not require eminent		√	Not a request for the applicant. Not part of the proposed environmental study plans

	domain, as BESS can be located adjacent to existing transmission lines and closer to energy demands and generation. We understand evaluating alternatives is a necessary step in this process, and it will be performed before any license is issued. We request that the Commission conduct a thorough and complete review of alternatives.			
58	We request that the Commission review available abandoned mines to determine whether they may be used to construct a pumped storage facility. Scientists have located several mines near the Dallas Fort Worth ("DFW") metro area that could serve as locations for such facilities.		√	Not a request for the applicant. Not part of the proposed environmental study plans
59	We request that the Commission perform a no-action alternative given the significant impacts on threatened and endangered species within the project boundary.		√	Not a request for the applicant. Commission will address
60	Conduct an inventory and assessment of existing recreation facilities in the study area and analyze the potential effects of project operation on existing recreation facilities in the study area.	√		Proposed Recreation Resources Study Plan, Section 7
61	Evaluate land use, including reviewing existing land management plans and ordinances related to project construction and operation and evaluating land use effects associated with construction, operation, and maintenance.	√		Proposed Land Use and Aesthetic Resources Study Plan, Section 7.1 and 7.2
62	Conduct an aesthetics inventory, photograph key viewing locations, develop a photo simulation of proposed project facilities, and conduct a viewshed and visual resource assessment.	√		Proposed Land Use and Aesthetic Resources Study Plan, Section 7.1 and 7.2
63	Create an updated survey of all archeological sites within the project area. The current surveys are outdated, and thus a new	√		Proposed Cultural and Tribal Resources Study Plan, Section 7.1 through 8.3

	survey should be completed by the applicant as part of the licensing process.			
64	Conduct a study that includes (1) identifying the area of potential effects (APE) in consultation with the state historic preservation officer (SHPO) and the tribes and additional literature searches to identify historic structures and archaeological sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 7 through Section 11
65	Consult with the SHPO and appropriate tribes to perform field studies of impacted historical and tribal sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8, 9, 10, and 11.
66	Conduct a cultural resources inventory/study to determine the potential effects of project construction, operation, and maintenance on archeological resources and historic structures included in, or eligible for listing on, the National Register of Historic Places.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8.2
67	Conduct in-person and on-site archaeological assessment and coordination with the Choctaw Nation of Oklahoma before excavation and construction to identify culturally significant artifacts, plants, or historic sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8, 9, 10, and 11.
68	Conduct a socioeconomic study that examines the short-term and long-term economic effects on the project vicinity within 50 miles.	√		Proposed Socioeconomics Resources Study Plan, Section 7, and include socioeconomic aspects for the communities concerned
69	Conduct an environmental justice study to define the potential effects of project construction and operation on environmental justice communities that may be present in the study area.	√		Proposed Socioeconomics Resources Study Plan, Section 7

70	Conduct a study to determine how many local permanent employees will be retained at the facility after completion.	√		Proposed Socioeconomics Resources Study Plan, Section 7
71	Conduct a study to determine how impacted landowners will be compensated.		√	Not part of the proposed environmental study plans
72	Conduct a noise study to assess the effects of construction and operations on noise levels in the project area.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
73	Conduct an air quality study to assess the effects of construction activities, including construction-related dust, vehicle exhaust, and blasting and boring of holes and resources, on the air quality within 50 miles of the project site.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
74	Conduct a traffic study to assess the effects of construction traffic and road networks in the project area and determine whether machinery can make it to the location given Oklahoma's highway system. Consult with the Department of Transportation and county commissioners regarding this study.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3
75	Conduct a traffic study of post-construction traffic in the project vicinity.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3

**On 02/13/2025 Tara Zuardo filed a 2<sup>nd</sup> Study Request on behalf of the Center for Biological Diversity and the Kiamichi River Legacy Alliance, Inc. to which SEOPC has responded to the “Tara Zuardo’s” 2<sup>nd</sup> study request below:**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	Deficiencies in Hydrologic Modeling: SEOPC’s Pre-Application Document (PAD) and Proposed Study Plan (PSP) fail to meet the requirements outlined in 18 CFR 5.11, which mandates that applicants provide study proposals that comprehensively assess project impacts, are methodologically sound, and are sufficient to inform licensing decisions. The deficiencies include:	√		Proposed Water Resource Study Plan, Section 7
2	Hydrologic and Hydraulic (H&H) Modeling: SEOPC has not incorporated industry-standard hydrologic modeling methods such as RiverWare, CE-QUAL-W2, or HEC-RAS, used in comparable projects like Grand River Dam and Gregory County, South Dakota. This omission prevents a clear understanding of the project’s effects on downstream flows, sediment transport, and water quality.	√		Proposed Water Resource Study Plan, Section 7 and 8
3	Surface and Groundwater Connectivity: SEOPC fails to analyze groundwater- surface water interactions adequately.	√		Proposed Water Resource Study Plan, Section 7.3 – 7.4
4	Drought and Low-Flow Scenario Modeling: Unlike Gregory County’s study, which conducted detailed	√		Proposed Water Resource Study Plan, Section 7.6



	drought simulations, SEOPC has not provided any climate variability analysis necessary to assess long-term feasibility.			
5	<p>Failure to Account for Tribal and Municipal Water Rights:</p> <p>SEOPC’s proposed studies do not acknowledge the binding legal framework of the Choctaw and Chickasaw Nations’ Settlement Agreement and the Settlement Act, which govern water withdrawals in the Kiamichi River Basin. Key deficiencies include:</p> <ul style="list-style-type: none"> <li>• Ignoring Senior Water Rights: SEOPC’s plan does not account for Oklahoma City’s 300 cfs water right with a 50 cfs bypass flow requirement, which is a legally protected allocation under the Settlement Act.</li> <li>• Lack of Tribal Consultation: SEOPC has failed to engage with the Choctaw and Chickasaw Nations, despite the project’s location within their reservation. This violates FERC’s tribal consultation obligations and disregards sovereign interests in water resources.</li> <li>• The study plan does not recognize the Choctaw and Chickasaw Nations’ water rights under the Settlement Agreement and Settlement Act, which require consultation regarding potential water withdrawals.</li> </ul>		√	Not proposing to study tribal water rights as part of the environmental study plans
6	<p>Insufficient Study Methods Compared to Similar Hydropower Projects</p> <p>SEOPC’s study plan is markedly weaker than those required for Grand River Dam and Gregory County, particularly in the following areas:</p>	√		Proposed Water Resource Study Plan, Section 7, Proposed Geologic and Soil Resource Study Plan, Section 7, Proposed Aquatic Resource Study Plan, Section 7, Proposed Terrestrial

	<p>Sediment Transport and Water Quality: SEOPC does not propose any adaptive management strategy to address long-term changes in water availability or ecosystem impacts. Gregory County’s study developed an adaptive water quality management framework, using continuous monitoring and scenario-based contingency planning. SEOPC provides no equivalent mitigation or contingency measures, leaving long-term environmental and water supply risks unaddressed.</p>			Resource Study Plan, Section 7, and Proposed Study Plan Threatened and Endangered Species Resource Study Plan, Section 7
7	<p>The Grand River Dam study utilized the Soil and Water Assessment Tool (SWAT) and a Comprehensive Hydraulic Model (CHM) to analyze nutrient transport. SEOPC’s study plan lacks an equivalent sediment and contaminant transport analysis.</p>	√		Proposed Water Resource Study Plan, Section 7, Proposed Geologic and Soil Resource Study Plan, Section 7, Proposed Aquatic Resource Study Plan, Section 7, Proposed Terrestrial Resource Study Plan, Section 7, and Proposed Study Plan Threatened and Endangered Species Resource Study Plan, Section 7
8	<p>Impact on Aquatic Resources and Flow Variability: Gregory County’s study included biological and chemical impact assessments, including mussel habitat studies. SEOPC has not proposed any similar biological evaluations, despite the presence of federally endangered mussel species in the Kiamichi River. Flood and Drought Modeling:</p>	√		Proposed Water Resource Study Plan, Section 7, Proposed Geologic and Soil Resource Study Plan, Section 7, Proposed Aquatic Resource Study Plan, Section 7, Proposed Terrestrial Resource Study Plan, Section 7, and Proposed Study Plan Threatened and Endangered Species Resource Study Plan, Section 7

9	The Grand River Dam study conducted a flood risk assessment using floodplain mapping and hydrologic modeling, whereas SEOPC has no similar flood impact analysis, despite proposing significant water withdrawals from the Kiamichi River. Lack of an Adaptive Management Approach	√		Proposed Water Resource Study Plan, Section 7 and Proposed Geologic and Soil Resource Study Plan, Section 7
10	Noise Monitoring & Air Quality Impact: Grand River Dam: Implemented comprehensive seasonal noise monitoring to account for variability and mitigation strategies.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
11	Deficiencies in Noise Impact Study: SEOPC's noise study contains the following deficiencies: Failure to Consider Sensitive Receptors – The study does not include tribal lands, wildlife refuges, or recreational areas, which may experience significant noise impacts.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
12	Lack of Predictive Modeling – SEOPC does not propose noise modeling to forecast project noise during peak construction or operational periods.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
13	Limited Scope—The study encompasses only three monitoring locations, each providing a single 24-hour measurement. This approach fails to adequately account for the temporal variations related to construction and operational noise impacts.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
14	Gregory County: Required real-time traffic data collection, including peak-hour assessments and emergency response impact analysis. Both Projects: Conducted cumulative air quality impact assessments to analyze long-term pollutant	√		Proposed Noise, Air Quality, and Traffic Resources Study Plan, Section 7.3

	levels, integrating emissions inventories into federal and state regulatory compliance frameworks.			
15	Deficiencies in Air Quality & Greenhouse Gas (GHG) Study: FERC required an assessment of compliance with the Clean Air Act, General Conformity Rule, and National Ambient Air Quality Standards (NAAQS). However, SEOPC's study contains a number of deficiencies:	√		Proposed Study Plan Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
16	Lack of Emissions Inventory – SEOPC does not propose a detailed emissions inventory of construction equipment, vehicle emissions, and GHG contributions.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
17	Air Dispersion Modeling – SEOPC's study does not include American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) or California Puff Model (CALPUFF) to assess pollutant dispersion and impacts on air quality.		√	Not proposing to do air dispersion modeling, as not required at this time.
18	Failure to Address Regional Air Quality Compliance – SEOPC does not evaluate project compliance with Clean Air Act General Conformity Rules.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
19	The Choctaw Nation requested a full GHG emissions assessment, including cumulative effects on climate and air quality, which SEOPC does not include.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
20	SEOPC does not propose long-term air quality monitoring, as requested by the Choctaw Nation. In the Gregory County Study Plan Determination, FERC required a Greenhouse Gas (GHG) Emissions/Air Quality Study that met these		√	Not proposing long-term air quality monitoring with the proposed environmental study plans as long term studies are not part of a study plan.

	regulatory standards. Below is a breakdown of how Gregory County's study plan fulfilled these requirements			
21	SEOPC does not propose long-term air quality monitoring, as requested by the Choctaw Nation.		√	Not proposing long-term air quality monitoring with the proposed environmental study plans at this time
22	In the Gregory County Study Plan Determination, FERC required a Greenhouse Gas (GHG) Emissions/Air Quality Study that met these regulatory standards.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
23	FERC required Gregory County to model methane emissions from the upper reservoir, considering anaerobic conditions that could lead to greenhouse gas production.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
24	The Gregory County study modeled reservoir methane emissions, considering factors like water retention time, temperature changes, and organic material decomposition.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
25	FERC required Gregory County to benchmark project emissions against South Dakota and U.S. GHG inventories.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
26	The study included an emissions comparison with EPA's Greenhouse Gas Reporting Program (GHGRP) and South Dakota's state inventory.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
27	Required a detailed breakdown of emissions from excavation, transport, and material production.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2 and 7.3
28	Gregory County's study included EPA AP-42 Emission Factor analysis for heavy machinery, transport trucks, and construction operations.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2

29	Required an analysis of GHG reductions from displacing fossil fuel power generation.		√	Not proposing an analysis of GHG reduction from displacing fossil fuel power generation with the proposed environmental study plans at this time.
30	Gregory County's study compared emissions reductions for different energy generation scenarios (coal vs. natural gas replacement).		√	Not proposing studying emissions comparisons regarding reductions for different energy generation scenarios with the proposed environmental study plans
31	Gregory County's study confirmed regulatory compliance by analyzing projected emissions and comparing them to NAAQS thresholds. The Gregory County Pumped Storage Project's GHG Emissions Study serves as a model for meeting FERC's study plan determination requirements under 18 C.F.R. §	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
32	By comparison, SEOPC's study is incomplete, failing to model methane emissions, conduct a GHG displacement analysis, or provide detailed construction emissions data.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
33	Deficiencies of Slope Stability Study: The following analysis highlights key deficiencies using FERC dam safety regulations, as well as best practices from the Gregory County and Grand River Dam study plans. Failure to Provide Comprehensive Stability and Stress Analyses	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 – 7.9
34	FERC regulations Title 18 of the Code of Federal Regulations, Section 4.41(g)(3) require that applicants provide stability and stress analyses for		√	These items will be covered in the hydro application and not in the

	all major structures and critical abutment slopes under all probable loading conditions, including seismic and hydrostatic forces induced by water loads up to the Probable Maximum Flood (PMF).			proposed environmental study plans at this time.
35	Additionally, FERC Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 4: Embankment Dams, specify that stability analyses must consider steady-state seepage, rapid drawdown, seismic conditions, and post-earthquake conditions. The guidelines also require that minimum safety factors of 1.5 for static conditions and 1.1 for seismic conditions be maintained.		√	These items will be covered in the hydro application and not in the proposed environmental study plans at this time.
36	Deficiencies in SEOPC's Study: Lacks a site-specific evaluation of geological hazards, including slope instability and landslides.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 – 7.9 and Proposed Water Resource Study Plan Section 7
37	Does not analyze the response of soil and rock units to embankment and reservoir loading.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 – 7.9 and Proposed Water Resource Study Plan Section 7.1
38	Fails to consider seismic risks, including earthquake-induced deformations.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.9
39	Inadequate Geological and Hydrogeological Data: SEOPC's study lacks adequate geological and soil analysis to identify ground deformations at reservoir sites and their impact on feasibility, assess the potential for block-type translation or shallow slope failure under hydrostatic and seismic loading, and evaluate liquefaction potential, which is crucial for soil stability in case of an earthquake.	√		Proposed Geologic and Soil Resource Study Plan, Section 7 and Proposed Water Resource Study Plan, Section 7

40	For reference and in accordance with best practices, the Gregory County Pumped Storage Project uses LiDAR (Light Detection and Ranging) and InSAR satellite data to monitor ground deformation over time and relies on geotechnical borings and laboratory testing to characterize subsurface conditions, as required by FERC Engineering Guidelines,		√	Not proposing to measure ground deformation over time in the proposed environmental study plans at this time.
41	Chapter 2: Geotechnical Investigations. The Grand River Dam Study Plan incorporates historic flood data and sediment transport evaluations to assess the long-term erosion risks and their impact on slope stability.	√		Proposed Geologic and Soil Resource Study Plan, Section 7, and Proposed Water Resource Study Plan Section 7
42	Insufficient Analysis of Hydrological Impacts on Mussel Species	√		Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7 and Proposed Cultural and Tribal Resources Study Plan, Section 7.3
43	SEOPC's study plan does not include a hydrologic and hydraulic (H&H) analysis that adequately assesses how water withdrawals for reservoir filling and operational cycling will impact water depth, temperature, and flow regimes—critical factors for mussel survival. The study must include a quantitative assessment of river discharge changes caused by project operations and a baseline comparison of mussel habitat under existing conditions.	√		Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Cultural and Tribal Resources Study Plan, Section 7.3



	Failure to Address Entrainment and Impingement Risks			
44	The U.S. Fish and Wildlife Service (USFWS) has identified the Kiamichi River as a high-quality habitat supporting over 30 mussel species, including the Ouachita rock pocketbook ( <i>Arcidens wheeleri</i> ), Scaleshell mussel ( <i>Leptodea leptodon</i> ), and Winged mapleleaf mussel ( <i>Quadrula fragosa</i> ).	√		Proposed Threatened and Endangered Species Study Plan, Section 4.7 and Section 7.1 -7.3
45	Mussel larvae (glochidia) rely on host fish for reproduction, making them susceptible to entrainment and impingement at project intake structures.	√		Proposed Aquatic Resources Study Plan, Section 2.a and Section 7.1 - 7.5
46	The current study plan lacks an Entrainment and Impingement Risk Assessment to quantify the risk to mussels and host fish populations.	√		Proposed Aquatic Resources Study Plan, Section 2.a and Section 7.1 - 7.5
47	FERC requires SEOPC to include an impact assessment of turbine entrainment and intake structure design to evaluate risks to mussel reproduction. Inadequate Consideration of Sedimentation and Habitat Disruption	√		Proposed Aquatic Resources Study Plan, Section 2.a and Section 7.1 - 7.5
48	Project construction will significantly alter river geomorphology, potentially increasing sedimentation levels that can smother mussel beds.	√		Proposed Water Resources Study Plan, Section 7.11 & 7.12
49	The study plan does not propose a geomorphological assessment to analyze sediment transport, deposition, and potential habitat degradation.	√		Proposed Water Resources Study Plan, Section 7.11 & 7.12
50	SEOPC must incorporate sediment impact modeling and turbidity monitoring plans, as required.	√		Proposed Water Resources Study Plan, Section 7.11 & 7.12

51	Omission of Climate and Drought Resilience Considerations: The Center and KRLA study requests emphasize the need to protect endangered species comprehensively, conduct hydrological impact assessments, and consider environmental justice. Conversely, SEOPC's study plan provides broad evaluations but lacks specific methodologies or mitigation strategies. These discrepancies raise concerns regarding the project's ability to adhere to the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), and the Clean Water Act (CWA) regulations.	√		Proposed Threatened and Endangered Species Study Plan, Section 7, and Proposed Water Resources Study Plan, Section 7
52	The plan must include long-term climate impact projections and contingency measures to ensure sufficient flow and water quality maintenance under projected drought conditions.	√		Proposed Water Resources Study Plan, Section 7.11
53	The Kiamichi River has experienced multiple droughts in recent years, compounding stress on mussel populations.	√		Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Cultural and Tribal Resources Study Plan, Section 7.3
54	SEOPC's study plan does not evaluate the potential impacts of climate variability and extreme weather events on mussel populations.	√		Proposed Threatened and Endangered Species Study Plan, Section 7.1 -7.3
55	Lack of Consideration of Expert Research: Dr. Caryn C. Vaughn from the University of Oklahoma has provided extensive research on the Kiamichi River, demonstrating its unique and	√		Proposed Threatened and Endangered Species Study Plan, Section 7.2, 7.3

	<p>high biodiversity value for mussel species. Research indicates that mussel populations in the Kiamichi River are particularly sensitive to flow regime changes, habitat disruption, and sedimentation. The current study plan fails to integrate these findings, which provide essential baseline data necessary for impact assessments. SEOPC must incorporate Vaughn’s research on mussel distribution and health, particularly regarding the Ouachita rock pocketbook, one of the most imperiled mussel species in North America.</p>			
56	<p>Discrepancy Examples Between Department of Interior Study Requests and SEOPC Study Plan:  The Department of Interior (DOI)’s study requests emphasize detailed environmental impact assessments, long-term ecological monitoring, and climate change resilience. In contrast, SEOPC's study plan provides broad, less detailed studies with fewer long-term commitments. This discrepancy raises concerns regarding the project's potential impacts on critical environmental resources and regulatory compliance.</p> <p>SEOPC must expand its study proposals in key areas to ensure the study plan meets FERC requirements and addresses DOI concerns. Below are examples of areas of deficiency, where SEOPC failed to incorporate or comment on requested studies:</p>	√		Addressed in Department of Interior Study Plan Requests

57	Geomorphological Effects of Project Operations: Comprehensive study of potential channel widening, sediment transport, and headcutting risks in the Kiamichi River.	√		Proposed Water Resources Study Plan, Section 7, Proposed Geologic and Soil Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Threatened and Endangered Species Study Plan, Section 7.1 – 7.3
58	Examination of sediment deposition impacts on mussel habitats.	√		Proposed Water Resources Study Plan, Section 7, Proposed Geologic and Soil Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Threatened and Endangered Species Study Plan, Section 7.1 – 7.3
59	DOI states: "Destabilization could trigger undesirable changes downstream and upstream of the Project, including channel widening, increased sediment deposition, and headcutting. These changes can be expected to adversely affect mussel beds and other river habitats occupied by species of federal interest." Importance of Headcutting: Headcutting is a serious concern because it leads to progressive upstream erosion, which can destabilize riverbanks, increase sediment loads, and alter aquatic habitats. This process can accelerate sediment deposition downstream, affecting water quality and reducing suitable habitat for aquatic species such as mussels and fish. If unchecked, headcutting can compromise	√		Proposed Water Resources Study Plan, Section 7, Proposed Geologic and Soil Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Threatened and Endangered Species Study Plan, Section 7.1 – 7.3

	the structural integrity of riverbanks and reduce the effectiveness of any mitigation efforts implemented later in the project.			
60	Heavy Metal Contamination Assessment: Analysis of lead, silver, mercury, and cadmium mobilization from disturbed riverbed sediments.	√		Proposed Development Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Terrestrial Resources Study Plan, Section 7.2 – 7.5, and Proposed Geologic and Soils Resources Study Plan, Section 7
61	Evaluation of water quality risks for drinking water sources and aquatic species.	√		Proposed Water Resources Study Plan, Section 7.1 -7.14 and Proposed Aquatic Resources Study Plan, Section 7.1-7.5
62	DOI states: "Ambient trend monitoring by the State of Oklahoma has detected occasional exceedances of water quality standards in the segment of the Kiamichi River containing the Project site, specifically for lead and silver. Potential sources include roadway runoff, abandoned mines, and mine tailings, but unknown sources may also contribute. Given that ground disturbance can facilitate mobilization of these metals, further assessment is necessary."	√		Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, Proposed Cultural and Tribal Resources Study Plan, Section 7.3, and Proposed Development Resources Study Plan, Section 7
63	Importance of Heavy Metal Assessment: Heavy metals can have long-term toxic effects on aquatic ecosystems and human health. Elevated levels of metals such as mercury and cadmium can bioaccumulate in fish and other wildlife, posing significant risks to species higher in the food chain,	√		Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Cultural and Tribal Resources Study Plan, Section 7.3,

	including humans who consume fish from the river. Understanding baseline contamination levels and how project activities may exacerbate metal mobilization is critical to developing effective mitigation measures.			and Proposed Development Resources Study Plan, Section 7
64	Sedimentation and Erosion Control Study: Assessment of potential increases in erosion and sedimentation due to project construction and operation.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Development Resources Study Plan, Section 7, and Proposed Geologic and Soils Resources Study Plan, Section 7
65	Evaluation of turbidity impacts on aquatic species, particularly freshwater mussels and fish that rely on stable, clear water conditions.	√		Proposed Water Resources Study Plan, Section 7.11
66	DOI states: "Increased sedimentation can smother mussel beds and reduce the availability of clean, oxygenated substrate required for spawning and juvenile development. Effective erosion control measures must be developed and implemented to mitigate these impacts."		√	Not proposing erosion control measures with the proposed environmental study plans at this time.
67	Importance of Sedimentation Study: Excessive sedimentation can disrupt river ecosystems, decrease dissolved oxygen levels, and alter habitat suitability for sensitive species. Establishing effective erosion and sediment control measures is necessary to prevent long-term degradation of water quality and aquatic habitats.		√	Not proposing erosion and sediment control measures with the proposed environmental study plans at this time.

68	SEOPC's study plan includes Geology & Soil Study and acknowledges that excavated geological materials may contain lead, manganese, magnesium, iron, mercury, cadmium, cinnabar, and/or cadmium sulfide. Its Water Resources Study Plan states that it will assess the effects of disturbing local geology on water quality in the Kiamichi River.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, and Proposed Development Resources Study Plan, Section 7
69	However, SEOPC's plan lacks a comprehensive contaminant risk assessment that includes baseline sampling, mobilization risk analysis, and mitigation strategies.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Development Resources Study Plan, Section 7, and Proposed Geologic and Soils Resources Study Plan, Section 7
70	Heavy metal-specific monitoring to assess long-term water and sediment quality changes.		√	Not proposing long term monitoring with the proposed environmental study plans
71	A study of headcutting and its implications on long-term river stability.		√	Not proposing a long-term study of headcutting as part of the proposed environmental study plans.
72	A targeted erosion and sediment control plan with measurable mitigation strategies.		√	Not proposing an erosion control plan and mitigation strategies with the proposed environmental study plans.
73	Studies to evaluate the long-term geomorphic changes resulting from the project, including potential erosion and sediment displacement.		√	Not proposing a long-term geomorphic study regarding erosion and sediment as part of the proposed environmental study plans

74	SEOPC's plan lacks predictive geomorphological modeling, which limits its ability to foresee and address downstream impacts.		√	Not proposing a predictive model to foresee impacts with the proposed environmental study plans
75	Studies that analyze sediment transport and stability to assess potential changes in river morphology. SEOPC does not provide enough detail to evaluate whether its excavation and construction activities will contribute to increased sedimentation or destabilization of riverbanks.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, and Proposed Development Resources Study Plan, Section 7
76	Compliance with 18 CFR § 380.12 will require an analysis of pollution risks, including the potential mobilization of toxic heavy metals from disturbed sediments. While SEOPC acknowledges potential contaminants, it does not provide a dedicated study to assess their risks, quantify potential contaminant levels, or propose mitigation strategies. Without these assessments, the risk of metal contamination in the Kiamichi River remains uncertain.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, and Proposed Development Resources Study Plan, Section 7
77	Geology and Seismic Risk Assessment Center & KRLA Requested Studies: The project is located in a seismically active region, and dam failure or slope instability could lead to catastrophic consequences. These studies are essential because seismic activity can compromise dam integrity, leading to significant flooding, infrastructure failure, and environmental hazards. Federal regulations require comprehensive seismic hazard analyses for all large-scale hydroelectric projects. It is critical that they, at a minimum, assess the project's vulnerability to earthquakes	√		Proposed Geologic and Soil Resource Study Plan, Section 7.2 – 7.9



	and fault movement and include evaluations of potential landslide risks due to excavation and reservoir construction. This includes evaluations of soil stability testing to determine foundation integrity. Key examples include those provided for the Gregory County Pumped Storage project.			
78	While SEOPC includes a Geology and Soil Study, it fails to explicitly evaluate seismic risks or regional fault activity, lacks an assessment of potential landslide or slope instability hazards, and fails to include detailed soil stability analysis for reservoir foundations.	√		Proposed Geologic and Soils Resources Study Plan, Section 7.1 – 7.9
79	Wetlands and Riparian Habitat Assessment: Federal regulations mandate that hydropower projects minimize wetland destruction and maintain ecological functions. Wetlands and riparian habitats are crucial for erosion control, flood mitigation, and biodiversity conservation. The Center & KRLA requested wetland and riparian habitat studies which: Identify and map wetlands and riparian corridors affected by project construction.	√		Proposed Aquatic Resources Study Plan, Section 7, Proposed Geologic and Soils Resources Study Plan, Section 7, Proposed Threatened and Endangered Species Study Plan, Section 7, Proposed Terrestrial Resources Study Plan, Section 7, and Proposed Mapping Transmission Line Vegetation and Wildlife Habitat Mapping Study Plan, Section 7
80	Assess potential loss of ecosystem services, such as water filtration and habitat support.	√		Proposed Geologic and Soil Resources Study Plan, Section 7.1 - 7.8, Proposed Aquatic Resources Study Plan, Section 7, Proposed Water Resources Study Plan, Section 7, Proposed Development Resources Study Plan, Section 7, and Proposed Terrestrial Resources Study Plan, Section 7

81	Evaluate compensatory mitigation options.		√	Not proposing compensatory options with the proposed environmental study plans at this time
82	SEOPC acknowledges wetland areas, but fails to provide a detailed impact assessment, offers mitigation strategies to replace lost wetlands, and include long-term monitoring plans for wetland recovery.		√	Not proposing mitigation strategies with the proposed environmental study plans.
83	Conduct long-term monitoring to measure post-construction recovery		√	Not proposing long-term monitoring with the proposed environmental study plans
85	Socioeconomic and Environmental Justice Impacts The Choctaw and Chickasaw Nations stated that the lack of a socio-economic study in SEOPC's plan neglects the significant financial and employment consequences that would be borne by tribal and non-tribal communities in the region. They also pointed out that this project does not provide any direct benefits to tribal communities, yet it threatens to disrupt their way of life, economy, and environment.	√		Proposed Cultural and Tribal Resources Study Plan, Section 7, Proposed Socioeconomic Resources Study Plan, Section 7, Proposed Recreation Resources Study Plan, Section 7, and Proposed Environmental Justice Study Plan, Section 7
86	However, SEOPC's Study Plan fails to propose a dedicated socio-economic or environmental justice study and analyze regional economic displacement and infrastructure strains.	√		Proposed Socioeconomic Resources Study Plan, Section 7.1 – 7.6
87	Specifically, the Choctaw & Chickasaw requested a comprehensive Socioeconomic Impact Study which assesses how the project would affect local businesses, jobs, property values, and regional economies and evaluates the impacts on tribal economic stability and revenue sources, where	√		Proposed Socioeconomics Resources Study Plan, Section 7.1 – 7.6

	study effects include those public infrastructure, such as roads, emergency services, and utilities.			
88	Environmental justice studies must, at a minimum assess potential disproportionate environmental burdens on tribal and low-income communities, evaluate potential health risks from air quality and water pollution, and investigate whether local communities will receive project benefits or bear undue risks.	√		Proposed Environmental Justice Study Plan, Section 7.1, 8 and 9
89	Expand Monitoring Scope: Conduct noise baseline measurements at a minimum of ten locations, including residential areas, tribal lands, and recreational sites.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3
90	Implement Predictive Noise Modeling: For construction and operational phases, use the Federal Highway Administration Traffic Noise Model (FHWA TNM 2.5) or the ISO 9613-2 Propagation Model.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3
91	Include Long-Term Monitoring: Perform noise assessments during daytime and nighttime over a 7-day monitoring period per location.		√	Not proposing long-term monitoring study with the proposed environmental study plans at this time
92	Use hydrologic modeling methodologies consistent with industry best practices.	√		Proposed Water Resources Study Plan, Section 7
93	Evaluate surface and groundwater connectivity impacts as required under FERC.	√		Proposed Water Resources Study Plan, Section 7.1
94	Include sediment transport and contaminant analysis comparable to Grand River Dam's study.	√		Proposed Water Resources Study Plan, Section 7 and Proposed Aquatic Resources Study Plan, Section 7

95	Conduct biological impact assessments for endangered species in the Kiamichi River.	√		Proposed Threatened and Endangered Species Study Pan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed Terrestrial Resources Study Plan, Section 7
96	Implement an adaptive management framework to address drought scenarios and water variability.	√		Proposed Water Resources Study Plan, Section 7.6
97	To resolve water rights conflicts, perform stakeholder consultation with the Choctaw and Chickasaw Nations, Oklahoma City, and other affected parties.		√	Not proposing to study water rights with the proposed environmental study plans at this time.
98	Develop a Project-Specific Emissions Inventory: Quantify criteria pollutants (PM2.5, NOx, CO, SO2, VOCs) and GHG emissions (CO2, CH4, N2O) using Environmental Protection Agency (EPA) AP-42 methodology.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
99	Conduct Dispersion Modeling: Use AERMOD or CALPUFF to simulate air pollution transport and predict regional impacts.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
100	Evaluate Compliance with Federal & State Regulations: Perform a General Conformity Determination (40 C.F.R. § 93) and assess regional air quality compliance.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2
101	Expands study methodologies to include predictive noise modeling, real-time traffic data collection, and comprehensive air quality monitoring.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.1.3
102	Integrates tribal concerns and land use considerations as requested by the Choctaw Nation.	√		Proposed Cultural and Tribal Resources Study Plan, Section 9

103	Adopt best practices from Grand River Dam and Gregory County study plans to improve study methodology.	√		Where appropriate
104	Conduct heavy metal contamination studies, including baseline water and sediment sampling to assess current contamination levels.	√		Proposed Water Resources Study Plan, Section 7, Proposed Development Resources Study Plan, Section 7, and Proposed Aquatic Resources Study Plan, Section 7.4
105	Develop a predictive model to determine the likelihood of heavy metal mobilization due to excavation and construction activities.		√	Not preparing predictive models with the proposed environmental study plans at this time
106	Expand its Geology & Soil Study to evaluate long-term impacts on river stability, sedimentation patterns, and contaminant dispersion.		√	Not preparing long-term impact contamination studies with the proposed environmental study plans at this time.
107	Include detailed mitigation strategies to prevent contamination of the Kiamichi River and surrounding ecosystems.		√	Not preparing mitigation strategies as part of the proposed environmental study plans
108	Conduct a dedicated head cutting study to determine its potential to cause erosion, sediment transport, and habitat degradation.	√		Proposed Aquatic Resources Study Plan, Section 7.4, and Proposed Geological and Soils Resources Study Plan, Section 7.2 – 7.9
109	Develop and implement an erosion and sedimentation control plan with measurable benchmarks and adaptive management strategies.		√	Not implementing an erosion control plan with the proposed environmental study plans at this time.
110	Provide a cumulative effects analysis, as required, to assess how the proposed project, combined with existing environmental stressors, may exacerbate contamination risks and geomorphic instability.		√	Not proposing a cumulative effects analysis with the proposed environmental study plans at this time.

111	Incorporate senior water rights from Oklahoma City into its baseline assessments and environmental impact analysis. Includes a detailed hydrologic impact assessment with baseline data on flow, temperature, and depth changes.		√	Not proposing to study water rights with the current environmental studies at this time
112	Incorporate an Entrainment and Impingement Risk Assessment for mussel larvae and host fish.	√		Proposes Aquatic Resources Study Plan, Section 7, Proposed Threatened and Endangered Species Study Plan, Section 7.1 – 7.3, and Proposed Water Resources Study Plan, Section 7.5 -7.14
113	Provide a geomorphological sediment transport study to assess construction- related sedimentation impacts.	√		Proposed Water Resources Study Plan, Section 7.4 – 7.12, Proposed Terrestrial Resources Study Plan, Section 7, and Proposed Aquatic Resources Study Plan, Section 7
114	Evaluate climate change effects and propose mitigation measures for flow maintenance during droughts.		√	Not evaluating climate change with the proposed environmental study plans
115	Engage in formal Tribal consultation and updates the study plan to reflect input from the Choctaw and Chickasaw Nations.	√		Proposed Cultural and Tribal Resources Study Plan, Section 9
116	Integrate peer-reviewed research and data from the University of Oklahoma	√		Where appropriate

**Starting on 9/23/2025 and continuing until 11/26/2025**

**Duplicate copies of the same “Form Letter” were submitted by:**

Trevor Pierson, William Couch Jr., Lisa Austin, Janet Sanford, Jewel Camp, Sydney Neel, Juskwa Burnett, Ted Ganote, Maspee Wampanoag Tribe, John Settlemyre, Casy Camp, Julia Horinac, Summer Wilkie, Karen Duran, Jyrzie Alves, Grace Wilson, April Troop, Oakley Robbins, Isaiah Peters, Keeley Teafatiller, Ann Bendan, Tracey Craig, Roy Ridgeway, Jennifer Teefatiller, Kiamichi River Legacy Alliance, Jenene Hale, Grey R. Walters, Jina Robbins, Brandon Lewis, LaDonna Dunn, Richard Martin, Jeanene Scarberry, Debra McPeak, Jonathan Owens, Travis Rodenburgh, Starr Greg, Gary Gregg, William Simmons, Joyce Moler, Steven D. Moler, Kenneth Ray Blan II, Nancy Mendoza, Elaine Blan, Frank Hilton, Andrew Husky, Rebecca Stenner, Rocky Stenner, Eric M, Cheryl Snider, Rita Russell, Marizannna Underwood, Jacob Russell, Connor Moses, Harold Martin, Euly/John Reel, William Tays, Lisa Milton, Juanita Brown, Kelly M. Richardson, Lelia Harris, Robert Harris, Randolph Istre, Juswah Adams, Sulastri S. Perkins, Netty Beaupre, Jeremy Segura, Denny Istre, Jason B. Perkins, Adiba Kidds, Fangfei Xie, Rodney Willyard, David Dickerson, Paul W. NeSmith, Mark McDonald, Sharla Higgenbotham, Tim Underwood, Garrett Russell, Bodie T. Koye, Bobbie Duncan, Melissa Guyette, Janet Robertson, Mickell Spears, Maya Roberts, Darren Thomas, Bonnie Homer, Sherry Liedtke, Naomi Acuna, Launa McKaughan, Jimmie McKaughan, Rhunda Scott, Deon Butler, Robert Butler, Gen Garcia, Teresa Collins, Emilie R. Saab, Andrea Cole, Amy Dudleson, Amanda Cabler, Becky Scott, Anita Pryor, Tyler Fitzgerald, Julie Lickteig, Sandra Traywick, Joyce Smith, Edith Ratcliff, Paul Gray, Sylina Jernigen, Anita Gillispie, Amy A. Wright, Sephanie Dianne Schones, Lilian Acuna Pryor, Shana Akins, Susan Morgan. Emelia Fitzgerald, Rylic Saab, Ajaye Watson Patten, Angela Smith, Jenni White, Lora Baccy, Sandra Simmons, Shana Atkins, Tracy Drabek, Niki Cunningham, Leila Harris

**The “Form Letter” requested the following study requests which SEOPC has responded to the “Form Letter” study requests below:**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	Perform a current state assessment of the actual available flow of the Kiamichi River at the proposed project site. The current water availability study uses a location 20 miles downstream from the project area and right after the dam that releases water from Sardis Lake into the Kiamichi River. Any studies regarding water availability should be taken on the proposed diversion site to ensure water availability.	√		Proposed Water Resource Study Plan, Section 7
2	Any hydrology studies account for risks associated with climate change over the expected license life of 30-50 years. See United States Department of Interior Letter dated 9/04/2024, "Climate change effects on river flows and evaporative and seepage losses."		√	Not proposing to do hydrological climate change study with the proposed environmental study plans at this time
3	A survey of all groundwater wells within the Kiamichi River Basin and an evaluation of the proposed project's impact on the availability of groundwater sources and wells.	√		Proposed Water Resource Study Plan, Section 7.1
4	Evaluate the impact of damming Long Creek on the Little River Basin Watershed.	√		Proposed Water Resource Study Plan, Section 7.8
5	Evaluate the Kiamichi River's minimum flow against the project's operational requirements, which indicate evaporative losses of 20,000 acre-feet.	√		Proposed Water Resource Study Plan, Section 7.5
6	Evaluate the water quality and quantity of the upper and lower reservoirs and streams upstream and downstream from the project area.	√		Proposed Water Resource Study Plan, Section 7.2



7	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Conduct studies on water quality assessment and monitoring." See page 5.	√		Proposed Water Resource Study Plan, Section 7.2
8	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Needs for mitigation of Project effects on the Kiamichi River as a Water of the United States." See page 6.	√		See response to US Department of Interior regarding that study request
9	Conduct a study on the effects of diverting 10-15% of the water from the Kiamichi River on endangered mussel species.	√		Proposed Threatened and Endangered Species Study Plan, Section 7.2
10	Conduct a study on water temperature changes to account for the diversion of 10-15% of the water flow from the Kiamichi River related to mussel mortality.	√		Proposed Water Resource Study Plan, Section 7.2 and 7.11
11	Conduct fish community surveys in the Kiamichi River, Long Creek, Little River, and tributaries to the Kiamichi and Little Rivers.	√		Proposed Aquatic Resources Study Plan, Section 7.5
12	Conduct freshwater mussel surveys in the Kiamichi River, Little River, and Long Creek upstream and downstream from the proposed project site.	√		Proposed Aquatic Resource Study Plan, Section 7.2 and 7.3
13	Conduct field surveys to determine fish populations in the Kiamichi River, which will later be used in fish entrainment and impingement studies.	√		Proposed Aquatic Resource Study Plan, Section 7.5 and 7.3
14	Conduct a Fish Entrainment, Impingement, and Survival Study—conduct field studies to determine the impact of entrainment and mortality for fish species in the Kiamichi River.	√		Proposed Aquatic Resource Study Plan, Section 7.5 and 7.3
15	Conduct a study to determine the minimum flow of Long Creek past the dam location.	√		Proposed Aquatic Resource Study Plan, Section 7.5

16	Conduct a study on the Little River's mussel population to determine its current state. This will be critical in determining the project's impacts on Long Creek's damming.	√		Proposed Threatened and Endangered Species Study Plan, Section 7.1, 7.2 and 7.3
17	Conduct a study to determine the impact of reservoirs or impoundment ponds lined with a material to prevent seepage into or from the aquifer.		√	Not proposing to do liner study, as the liner material is not defined at this time.
18	Develop a management plan for hazardous materials during construction (e.g., fuel) to prevent contamination of water resources in the watershed.	√		Proposed Socioeconomic Resource Study Plan, Section 7.2 & Proposed Water Resource Study Plan Section 7.10
19	Conduct quality monitoring, including salinity, to be established in the reservoirs after construction and on any discharges into the Kiamichi River and its watershed.		√	Can not conduct water monitoring, with respect to salinity until reservoirs are constructed.
20	Conduct a study to determine the impact of algaecides and biocides used in the reservoirs or pumping mechanisms.	√		Proposed Water Resource Study Plan, Section 7.10
21	Conduct a study to determine whether measures will be in place to prevent avian and aquatic interactions with both reservoirs and the impoundment pond.		√	No measures are anticipated to prevent avian interactions at reservoirs. Aquatic interactions will be defined in the hydro license application
22	Conduct a study to determine the impact of corrosion inhibitors, lubricants, or potentially carcinogenetic chemicals being added to the water at any time during the life of this project.	√		Proposed Water Resource Study Plan, Section 7.2 and 7.11
23	Create a management plan, including methodology and gages, for monitoring diversions during the initial fill and each year thereafter.		√	No management plan for water fills will be part of the proposed environmental study plans

24	Create a management plan for flooding events. Once initial fill is achieved, how will flooding events be addressed to prevent excess water consumption into the system?		√	No management plan for flooding events will be part of the proposed environmental study plans
25	Create a management plan for discharges in the upper reservoir and determine whether those discharges are considered in-basin or out-of-basin discharges from the Kiamichi River Basin to the Little River Basin.		√	No management plan for discharges will be part of the current environmental studies
26	Study area be modified to include the Little River Basin. The proposed applicant intends to dam the headwaters of Long Creek, which flows into the Little River Basin. The impacts on the Little River and the Little River Basin should be studied as part of this project to determine the effects on aquatic life.	√		Proposed Water Resource Study Plan, Section 7.1 through 7.14
27	Study area be modified to include the entire Kiamichi River basin and its impacts on aquatic life and other species.		√	It is not proposed to study the entire Kiamichi River basin, but only the areas defined in each proposed study plan
28	The Kiamichi River flows into the Red River. Study area be modified to include the Red River Basin. The water flow from the Kiamichi River will decrease by 10-15% during construction (per the applicant) and, in the long term, will be reduced to accommodate evaporative losses.		√	It is not proposed to study the Red River Basin as it is beyond the scope of the project study area.
29	Study to determine the impacts on the Red River Basin and associated groundwater wells. This is especially true as the region has seen increased droughts and days over 100 degrees Fahrenheit, leading to higher evaporative losses.		√	It is not proposed to study the impacts on Red River Basin as it is beyond the scope of the project study area.

30	Studies on the effect of project construction and operation on the geomorphology of the Kiamichi River (see United States Department of Interior letter dated 9/04/2024).	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 through 7.9
31	Studies that address the effects on geologic and soil resources and define the baseline soil erosion and stream conditions in the Kiamichi River, Little River, and Long Creek.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 through 7.9
32	Perform geotechnical analysis to determine the composition of project area soil and rock layers to depths equal to or greater than those required to excavate the lower reservoir.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
33	Perform geotechnical analysis on mountains into which tunnels are expected to be bored to determine the effects of boring said tunnels and the composition of materials expected to be removed during the boring of said tunnels.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
34	Studies that address the effects on geologic and soil resources will be performed, and baseline soil erosion and stream conditions in the Kiamichi River, Little River, and Long Creek will be defined.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
35	Perform geotechnical analysis to determine the composition of project area soil and rock layers to depths equal to or greater than those required to excavate the lower reservoir.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2
36	Perform geotechnical analysis on mountains into which tunnels are expected to be bored to determine the effects of boring said tunnels and the composition of materials expected to be removed during the boring of said tunnels.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.1 and 7.2

37	Create a management plan regarding subsurface seepage. If any impacts occur, how will they be mitigated to prevent unpermitted subsurface flow, surface water quality, and water quantity issues?		√	No proposed seepage management plan as part of the proposed environmental study plans
38	Conduct a study to determine how erosion from the edge of the Kiamichi River channel to the impoundment pond will be mitigated. Create a continuous monitoring plan that will be monitored during the project's life, 30, 40, or 50 years into the future.	√		Proposed Geologic and Soil Resource Study Plan, Section 7.4 through 7.8
39	Conduct a study to determine where the spoil/debris will go from excavating the impoundment pond.		√	Not proposing to determine where soils will be placed from excavation of reservoirs as part of the proposed environmental study plans
39	Determine the impact of water quality on surrounding terrestrial habitats. If so, how will that be avoided, minimized, or mitigated?	√		Proposed Terrestrial Resources Study Plan, Section 7 and Proposed Water Resources Study Plan, Section 7
40	Create a management plan for stormwater runoff during initial construction.		√	Not proposing a management plan for stormwater runoff until a later date or time of construction.
41	Study the mental health implications of this project on impacted landowners and the surrounding community.	√		Proposed Socioeconomics Resources Study Plan, Section 7.1 through 7.6 Proposed Environmental Justice Resources Study Plan, Sections 7.1, 7.2, 8, and 9.
42	Create a study plan to address the mental health concerns of the community and those within the project area.	√		Proposed Environmental Justice Study Plan, Section 7.1 & 7.2

43	Conduct studies to characterize terrestrial wildlife, botanical resources, and associated habitat.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7
44	Develop ground- maps of vegetation cover classes and land use in the study area, including assessments of habitat structure and conditions characterizing habitat types.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7
45	Observe and record biological inventory during the habitat assessment, including a running list of encountered wildlife, wildlife spores, and dominant vegetative species.	√		Proposed Terrestrial Resource Study Plan, Section 7.1 through 7.7
46	Create a management plan defining BMPs to minimize disturbances to the existing vegetation during construction and promptly revegetate the area to control erosion and protect terrestrial wildlife habitat.		√	Not proposing a management plan to address construction activities with the proposed environmental study plans at this time.
47	Create annual and seasonal management plans to protect and prevent the extermination of federal endangered species in the project area.		√	Not proposing an annual and seasonal management plan for endangered species with the proposed environmental study plans.
48	Conduct a preconstruction survey to identify specific locations of endangered species within the project area.	√		Proposed Threatened and Endangered Species Resource Study Plan, Sections 4.1 through 4.7 and Section 7.1 through 7.5
49	Conduct a study of migratory waterfowl that would utilize the waters in the project area. Create a management plan with steps to protect these avian populations during the operation.	√		Proposed Threatened and Endangered Species Resource Study Plan, Sections 4.4, and Section 7.1 through 7.2 and Proposed Terrestrial Resources Study Plan, Section 4.4

50	Create a management plan to protect terrestrial wildlife and people from accessing areas near the project area before, during, and after construction.		√	No access management plan is planned for the proposed environmental study plans
51	Create a management plan for monitoring access to the site.		√	No access management plan is planned for the proposed environmental study plans
52	Create a management plan regarding fencing and subsequent signage on the reservoirs, denoting their use and indicating that fishing, swimming, or other recreational activities are prohibited on the reservoirs and the site.		√	No fencing, signage or recreational activities management plan is planned for the proposed environmental study plans
53	Determine the impact of fencing on species.		√	No fencing, management plan is planned for the proposed environmental study plans
54	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "Acoustic surveys for bats in the project area."	√		Proposed for Threatened and Endangered Species Study Plan, Section 7.4
55	Conduct studies consistent with the United States Department of Interior Letter dated 9/04/2024, "American burying beetle (ABB) surveys."	√		Proposed for Threatened and Endangered Species Study Plan, Section 4, 7.2
56	Delineate wetlands and streams and assess the nature and degree of the project's potential effects on areas subject to Section 404 of the Clean Water Act.	√		Proposed Mapping Transmission Line Vegetation and Wildlife Mapping Study Plan, Sections 7
57	With the advances in BESS (battery energy storage systems), a similar energy storage capacity could be achieved on 400 acres or less within 2-3 years, including approvals. Furthermore, pumped storage is only 70-80% efficient at storing electricity and will be a net drain on our power grid. BESS is over 90% efficient at storing electricity and can be co-located with existing wind and solar		√	Not a request to the applicant. Not part of the proposed environmental study plans

	infrastructure. A prudent energy strategy would disperse energy storage across the grid, not place it over 120 miles from any metropolitan area. It would not require eminent domain, as BESS can be located adjacent to existing transmission lines and closer to energy demands and generation. We understand evaluating alternatives is a necessary step in this process, and it will be performed before any license is issued. We request that the Commission conduct a thorough and complete review of alternatives.			
58	We request that the Commission review available abandoned mines to determine whether they may be used to construct a pumped storage facility. Scientists have located several mines near the Dallas Fort Worth ("DFW") metro area that could serve as locations for such facilities.		√	Not a request to the applicant. Not part of the proposed environmental study plans
59	We request that the Commission perform a no-action alternative given the significant impacts on threatened and endangered species within the project boundary.		√	Not a request to the applicant.
60	Conduct an inventory and assessment of existing recreation facilities in the study area and analyze the potential effects of project operation on existing recreation facilities in the study area.	√		Proposed Study Plan Recreation Resources, Section 7
61	Evaluate land use, including reviewing existing land management plans and ordinances related to project construction and operation and evaluating land use effects associated with construction, operation, and maintenance.	√		Proposed Study Plan Land Use and Aesthetic Resources, Section 7.1 and 7.2



62	Conduct an aesthetics inventory, photograph key viewing locations, develop a photo simulation of proposed project facilities, and conduct a viewshed and visual resource assessment.	√		Proposed Land Use and Aesthetic Resources Study Plan, Section 7.1 and 7.2
63	Create an updated survey of all archeological sites within the project area. The current surveys are outdated, and thus a new survey should be completed by the applicant as part of the licensing process.	√		Proposed Cultural and Tribal Resources Study Plan, Section 7.1 through 8.3
64	Conduct a study that includes (1) identifying the area of potential effects (APE) in consultation with the state historic preservation officer (SHPO) and the tribes and additional literature searches to identify historic structures and archaeological sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 7 through Section 11
65	Consult with the SHPO and appropriate tribes to perform field studies of impacted historical and tribal sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8, 9, 10, and 11.
66	Conduct a cultural resources inventory/study to determine the potential effects of project construction, operation, and maintenance on archeological resources and historic structures included in, or eligible for listing on, the National Register of Historic Places.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8.2
67	Conduct in-person and on-site archaeological assessment and coordination with the Choctaw Nation of Oklahoma before excavation and construction to identify culturally significant artifacts, plants, or historic sites.	√		Proposed Cultural and Tribal Resources Study Plan, Section 8, 9, 10, and 11.
68	Conduct a socioeconomic study that examines the short-term and long-term economic effects on the project vicinity within 50 miles.	√		Proposed Socioeconomics Resources Study Plan, Section 7 and

				include communities within the socioeconomics communities
69	Conduct an environmental justice study to define the potential effects of project construction and operation on environmental justice communities that may be present in the study area.	√		Proposed Socioeconomics Resources Study Plan, Section 7
70	Conduct a study to determine how many local permanent employees will be retained at the facility after completion.	√		Proposed Socioeconomics Resources Study Plan, Section 7
71	Conduct a study to determine how impacted landowners will be compensated.		√	Not part of the proposed environmental study plans
72	Conduct a noise study to assess the effects of construction and operations on noise levels in the project area.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
73	Conduct an air quality study to assess the effects of construction activities, including construction-related dust, vehicle exhaust, and blasting and boring of holes and resources, on the air quality within 50 miles of the project site.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7
74	Conduct a traffic study to assess the effects of construction traffic and road networks in the project area and determine whether machinery can make it to the location given Oklahoma's highway system. Consult with the Department of Transportation and county commissioners regarding this study.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3
75	Conduct a traffic study of post-construction traffic in the project vicinity.	√		Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3

**Summary of formal study requests by Choctaw and Chickasaw Nations dated 11/05/2025 and responded to by SEOPC**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	<p>Geological and Soils Study:                      The study plan should address how the following specific information would be gathered by SEOPC:</p> <p>a) A comprehensive review and preliminary analysis of existing geologic and soil resources using existing geologic and soil survey maps, available well logs/records, available records from proximate infrastructure development, aerial photography, etc.;</p> <p>b) An analysis of regional stratigraphy and geologic structure based on a review of existing literature;</p> <p>c) Field investigations to ground truth existing information and to determine the properties of rock and soil units, including their occurrence and distribution within the proposed Project area. Consideration should be given to studying:</p> <ol style="list-style-type: none"> <li>1. The fault mapped in the vicinity of the proposed powerhouse location;</li> <li>2. Determination of shear wave velocities in the soils and rock to support the seismic hazard study; and</li> </ol>	√		<p>(a.) Proposed Geological and Soil Resources Study Plan, Section 7.1</p> <p>(b.) Proposed Geological and Soil Resources Study Plan, Section 7.1</p> <p>(c.) Proposed Geological and Soil Resources Study Plan, Section 7.2</p> <p>(1) Proposed Geological and Soil Resources Study Plan, Section 7.9</p> <p>(2) Proposed Geological and Soil Resources Study Plan, Section 7.9</p> <p>(3) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.4, 7.5, 7.7, 7.9</p> <hr/> <p>(d) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.4, 7.5, 7.7, 7.9</p> <hr/> <p>Proposed Geological and Soil Resources Study Plan, Section 7</p>

	<p>3. The response of soil and rock units to stress changes, particularly in light of the relative softness and anisotropy of the mapped rock units;</p> <p>d) A preliminary analysis of the effect of the composition of soils in the Project area on the construction, operation, and maintenance of the proposed Project, including the potential for static liquefaction.</p> <p>In the initial study report, SEOPC should include the results of the surveys and field investigations and identify, describe, and assess the extent to which Project-related actions and activities may be affected by, or may affect, local geology and soils. SEOPC should describe all methods used; discuss regional geology and soils distribution; describe the lithologies, stratigraphy, and material types present in the construction zones; and include maps showing the areas investigated.</p>			
2	<p>Slope Stability Study</p> <p>The study plan should address how the following specific information would be evaluated by SEOPC:</p> <p>a) Permanent (e.g., embankment loading) and transient (e.g., seismic, reservoir cycling) ground deformations at the upper, lower, and regulating reservoir sites, their potential to cause or contribute to the impact of seismic seiches, and their potential effect on the feasibility of the proposed project configuration and potential reservoir lining types;</p>	√		<p>(a) Proposed Geological and Soil Resources Study Plan, Section 4 &amp; 7</p> <p>(b) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.4, 7.5, 7.6, 7.7, 7.9</p> <p>(c) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.4, 7.5, 7.6, 7.7, 7.9</p> <p>(d) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9</p>

<p>b) Potential for block-type translation and/or shallow slope failure along planes beneath the proposed upper, lower, and regulating reservoir embankments, particularly when subject to hydrostatic and potential earthquake loading;</p> <p>c) Depending on the findings of a Geological and Soils Study, the local susceptibility to liquefaction during an earthquake event; and</p> <p>d) The potential for any deep-seated failures that could directly affect the spillway tunnel or powerhouse in the vicinity of project infrastructure.</p> <p>To complete this study, SEOPC should:</p> <p>a) Use data obtained during the Geological and Soils Study;</p> <p>b) Use records available from local agencies documenting slope conditions and slope response to construction works;</p> <p>c) Visual observation of site conditions;</p> <p>d) Review publicly available LiDAR data to identify existing slide locations and, if warranted, acquire new data to assess changes in conditions; and</p>			<p>a) Proposed Geological and Soil Resources Study Plan, Section 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9</p> <p>b) Proposed Geological and Soil Resources Study Plan, Section 7.1</p> <p>c) Proposed Geological and Soil Resources Study Plan, Section 7</p> <p>d) Proposed Geological and Soil Resources Study Plan, Section 7.1</p> <p>e) Not proposing to use InSAR5 or satellite-based ground deformation monitoring approaches. Proposed Geological and Soil Study Plan, Section 7 will provide needed data.</p>
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	<p>e) If indication of large-scale instabilities or ground movements are found, use InSAR5 or similar satellite-based ground deformation monitoring approaches to understand the magnitude and distribution of the deformations and assess the potential effects on the project.</p> <p>These methods are consistent with standard practices and generally accepted methods used by applicants and relied upon by Commission staff in other hydroelectric licensing proceedings to assess slope stability and geological hazards.</p> <p>SEOPC's initial study report should include study results, data analysis, and a description of field investigation activities and methods.</p>			
3	<p>Site-Specific Seismic Hazard Study</p> <p>A. The ground motion parameters for the project should be defined and evaluated according to Chapter 13 of the FERC Engineering Guidelines for the Evaluation of Hydropower Projects and the latest available scientific information on the seismicity of this region.</p> <p>B. Visual and Aesthetic Resources - A systematic study should be conducted to characterize the existing visual and aesthetic resources in the vicinity of the proposed Project and estimate the potential effects from construction, operation, and maintenance of the proposed. The study should include the following steps:</p>			<p>A. Proposed Geological and Soil Resources Study Plan, Section 7.9</p> <p>B. Proposed Land Use and Aesthetic Resources Study Plan, Section 7.2</p> <p>a) Proposed Cultural and Tribal Resources Study Plan, Section 9</p> <p>b) Proposed Cultural and Tribal Resources Study Plan, Section 7.1</p> <p>c) Proposed Cultural and Tribal Resources Study Plan, Section 7</p> <p>d) Proposed Land Use and Aesthetic Resources Study Plan, Sections 7</p> <p>e) Proposed Land Use and Aesthetic Resources Study Plan, Sections 7</p> <p>f) Proposed Land Use and Aesthetic Resources Study Plan, Sections 7</p>

<p>a) Consult with the USFS, BLM, Nations, and other Native American Tribes to identify viewsheds and representative views (KOPs) and the characteristic and natural features on which they rely, for assessment of the influence of future Project operations, maintenance, or construction activities on those viewsheds and representative views and their use by the Nations and others.</p> <p>b) Inventory, map, and describe existing Project infrastructure, operation, maintenance and construction activities that may have the potential to affect visual resources of the Project Area.</p> <p>c) Document existing Protection, Mitigation, and Enhancement measures.</p> <p>d) Obtain, map (via geographic information system [GIS]) and characterize existing visual resource inventories and management objectives associated with the Project lands.</p> <p>e) Conduct a viewshed analysis (via GIS) and determine what portion and acreages of the Project lands and associated landscape are potentially visually affected by Project-related activities based on the inventory conducted under Task 2, and to determine the extent of the surrounding area that is so affected.</p>			<p>g) Proposed Land Use and Aesthetic Resources Study Plan, Sections 7</p>
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	<p>f) Map and assess the KOP locations to include documentation of the existing scenic character and potential use of the selected KOPs.</p> <p>g) Prepare a study report that documents the study findings and characterizes the existing visual conditions as they relate to Project facilities and Project-related activities.</p>			
4	<p>Phase I Cultural Resources and Tribal Resources Survey</p> <p>The cultural resources study must begin with a full desktop review. The desktop review report should include a thorough background section that describes the archaeological, historic, and cultural context of the region. It must include a search of the Oklahoma site files, of relevant historic maps, and of aerial photos. It must, at a minimum, include a list of all previously recorded archaeological sites within the APE, their latitudinal and longitudinal coordinates, dimensions, descriptions of the sites including recovered materials, potential for intact subsurface features, level of disturbance, and an indication of the sites National Register eligibility status. It must also list all historic structures and significant landscape features located within the APE on the historic maps and aeriels. These sites need to be shown on detailed maps in the desktop review report.</p> <p>Consider and/or address the following items:</p>	v		<p>a.) Proposed Cultural and Tribal Resources Study Plan, Section 7, 7.1, 7.2, 7.2.1 and 7.2.2</p> <p>b.) Proposed Cultural and Tribal Resources Study Plan, Section 7, 7.1, 7.2, 7.2.1 and 7.2.2, 7.3, 7.4, 7.4.1, 7.4.2</p> <p>c.) Not proposing to study maintenance as part of the proposed environmental study plans at this time.</p> <p>d.) Proposed Cultural and Tribal Resources Study Plan, Section 7 &amp; 8</p> <p>e.) Proposed Cultural and Tribal Resources Study Plan, Section 7.3</p> <p>f.) Proposed Cultural and Tribal Resources Study Plan, Section 7.3</p> <p>g.) Proposed Cultural and Tribal Resources Study Plan, Section 7, 7.1, 7.2, 7.2.1, 7.2.2, 7.3, 7.4, 7.4.1, 7.4.2</p> <p>h.) Proposed Cultural and Tribal Resources Study Plan, Section 8</p>



<p>a) Completion, if necessary, of identification of cultural and historic properties, within the project's APE;</p> <p>b) Continued use and maintenance of cultural and historic properties;</p> <p>c) Maintenance and operation of the hydroelectric project according to the Secretary of Interior's Standards for the Treatment of Historic Properties (36 C.F.R. Part 68) and applicable National Park Service Preservation Briefs;</p> <p>d) Treatment of cultural and historic properties threatened by project-induced shoreline erosion, other project-related ground-disturbing activities, and vandalism;</p> <p>e) Identification and evaluation of cultural and historic properties, determination of effects, and ways to avoid, minimize, or mitigate adverse effects;</p> <p>f) Consideration and implementation of appropriate treatment that would minimize or mitigate unavoidable adverse effects on cultural and historic properties;</p> <p>g) Identification and evaluation of adverse effects on cultural and historic properties that cannot be minimized or mitigated;</p>			<p>i.) Proposed Cultural and Tribal Resources Study Plan, Section 7, 7.1, 7.2, 7.2.1 and 7.2.2, 7.3, 7.4, 7.4.1, 7.4.2</p> <p>j.) Proposed Cultural and Tribal Resources Study Plan, Section 7, 7.1, 7.2, 7.2.1 and 7.2.2, 7.3, 7.4, 7.4.1, 7.4.2</p> <p>k.) Not proposing to list activities, including routine repair, maintenance, and replacement in kind at the project as not required for environmental study at this time</p> <p>l.) Not proposing study emergency responses, as part of the proposed environmental study plans at this time.</p> <p>m.) Proposed Cultural and Tribal Resources Study Plan, Section 8.2</p>
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<p>h) Treatment and disposition of any human remains that may be discovered, taking into account and in compliance with any applicable Nation, state, and federal laws (including but not limited to NAGPRA) and the Advisory Council on Historic Preservation's Policy Statement Regarding Treatment of Human Remains and Grave Goods" (September 27, 1988, Gallup, NM);</p> <p>i) Protocols for the discovery of previously unidentified cultural and historic properties during project operation;</p> <p>j) Public interpretation of the cultural, historic and archaeological values of the project, and the Nations interpretation of such values;</p> <p>k) List of activities, including routine repair, maintenance, and replacement in kind at the project not requiring consultation with the OK SHPO or THPOs; since these activities would have little or no potential to affect cultural and historic properties;</p> <p>l) Procedures to address effects during project emergencies; and</p> <p>m) Coordination with the OK SHPO and THPOs, and any other identified parties during implementation of the HPMP.</p>			
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5	<p>Road and Trail Access</p> <p>Criterion (1) Describe the goals and objectives of each study proposal and the information to be obtained.</p> <p>The goals of this study are to conduct an assessment to define which roads will need to be constructed or improved for construction, operation, and maintenance for the proposed Project and to assess the feasibility of the proposed Project features on current and future road and trail access.</p> <p>The specific objectives of this study include:</p> <p>a) Inventory and assess condition of Project access roads and trails, including all Project access roads and trails that are used for operation and/or maintenance of the Project.</p> <p>b) Characterize SEOPC s use of Project access roads and trails, including season of use and level of use.</p> <p>c) Characterize SEOPC s current maintenance practices and responsibilities.</p> <p>d) Identify existing agreements related to Project access roads and trails (e.g., maintenance</p>	√	and √	<p>a) Proposed Noise, Air Quality Study Plan, and Traffic Resources, Section 7.3</p> <p>b) Proposed Land Use and Aesthetic Resources Study Plan, Section 7.1</p> <p>c) Not proposing to study maintenance practices, as they are not part of the current environmental studies</p> <p>d) Not proposing to list contracts or agreements related to the project, not part of the environmental studies</p> <hr/> <p>a) Proposed Noise, Air Quality Study Plan, and Traffic Resources, Section 7.3</p> <p>b) Proposed Noise, Air Quality Study Plan, and Traffic Resources, Section 7.3</p> <p>c) Not proposing to prepare maintenance practices, as they are not part of the environmental studies</p> <p>d) Not proposing to list agreements and contracts, as they are not part of the environmental studies</p> <hr/> <p>a) Noise, Air Quality, and Traffic Resources Study Plan, Section 7.3 and Proposed Land Use and Aesthetic Resources Study Plan, Section 7.1</p>
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<p>agreements, easements, rights of way, special use permits).</p> <p>To complete this study, SEOPC should collect data on the following:</p> <ul style="list-style-type: none"> <li>a) Length, general width, and terrain characteristics of Project access roads and trails;</li> <li>b) Use, frequency, and speed of vehicles on Project access roads and trails, and their propensity for dust generation;</li> <li>c) Type and/or changes in surface treatment (e.g., paved, aggregate, native) and condition;</li> <li>d) Location, size, and condition of culverts and other drainage features;</li> <li>e) Location and condition of bridge crossings;</li> <li>f) Location and condition of erosion control features;</li> <li>g) Location and condition of safety, traffic control, and information signs and access control features such as gates and other closure methods;</li> <li>h) Identification of potential traffic safety concerns such as blind spots, poor sight distance, inadequate signage, and hazard trees;</li> </ul>			<ul style="list-style-type: none"> <li>b) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2 and 7.3</li> <li>c) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.2 and 7.3</li> <li>d) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>e) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>f) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>g) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>h) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>i) Not proposing pedestrian survey study as part of the environmental studies</li> <li>j) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> <li>k) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</li> </ul>
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	<p>i) Identification of potential natural resource issues that may occur along Project access roads and trails, such as stream crossings and riparian areas;</p> <p>j) Conduct pedestrian surveys looking for and recording features on or adjacent to the Project access roads and trails with a minimum of two individuals, and follow the other requirements of the Bureau of Land Management's H-9113-2 Road Inventory and Condition Assessment Guidance and Instructions (May 4, 2015);</p> <p>k) Assign feature codes to specific road features observed during the survey, consistent with the U.S. Forest Service protocol;</p> <p>l) Identify natural resources along Project access roads and trails, such as stream crossings, riparian areas, sensitive biological resources, and noxious weeds; and</p> <p>m) Conduct research and interviews with local governments, landowners, and Native American tribes to characterize use, maintenance, and agreements associated with Project access roads and trails.</p>			<p>l) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</p> <p>m) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.3</p>
6	<p>Noise</p> <p>The goal of this study is to characterize the existing ambient sound environment in the vicinity of the</p>	√	And √	<p>A.) Proposed Noise, Air Quality, and Traffic Resources Study Plan, Section 7.1, 7.1.1, 7.1.2, and 7.1.3</p>

<p>proposed Project and estimate the potential impacts associated with construction and operational activities. The specific objectives of the study and subsequent report are to:</p> <p>a) Define existing noise levels in identified sensitive wildlife habitat, recreation and cultural areas within the Choctaw reservation, Ouachita National Forest/Talimena State Park, Sardis Lake, fishing and hunting areas, and areas used for subsistence and other traditional cultural practices.</p> <p>b) Describe, through the use of sound models, the expected noise levels, including low decibel sound and vibration, in the identified sensitive areas during project construction and operation.</p> <p>c) Develop measures to avoid or lessen sound impacts during project construction and operation.</p> <p>A systematic sound study should be conducted to characterize the existing ambient sound environment in the vicinity of the proposed Project and estimate the potential noise effects from construction, operation, and maintenance of the proposed. The study should include the following steps:</p> <p>a) Review the most current project description, operating and construction equipment rosters, construction schedules, and construction methods to identify the types of excavation or blasting</p>			<p>B.) Proposed Noise, Air Quality, and Traffic Resources Study Plan, Section 7.1, 7.1.1, 7.1.2, and 7.1.3</p> <p>C.) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.1</p> <hr/> <p>a) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.1</p> <p>b) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.1</p> <p>c) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7.1</p> <hr/> <p>a) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7</p> <p>b) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7</p> <p>c) Proposed Noise, Air Quality, and Traffic Resources Study Plan, Section 7.1, 7.1.1, 7.1.2, and 7.1.3</p> <p>d) Proposed Noise, Air Quality, and Traffic Resources Study Plan, Section 7.1, and 7.1.1</p> <p>e) Proposed Noise, Air Quality and Traffic Resources Study Plan, Section 7</p>
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<p>expected to occur, its timing and frequency, volume, where project noise is likely to be heard by the public, and the requirements of applicable law with respect to excavation and blasting;</p> <p>b) Identify the type and expected frequency of maintenance activities that would generate noise in the project vicinity (e.g., helicopter or airplane use);</p> <p>c) Identify sensitive noise receptor areas (i.e., wildlife habitat, recreation and cultural areas) where sound data needs to be collected;</p> <p>d) Collect ambient sound level measurements at the identified noise receptor sites and document observations of perceived and identifiable sources of sound contributing to ambient sound levels at these sites;</p> <p>e) Use an acoustic model to predict sound levels during project construction, operation, and maintenance at the noise receptor sites, estimated in A-weighted decibels (dBA), and indicate the duration of these sound levels;</p> <p>f) Superimpose predicted sound level isopleths or sound contours on aerial photographs or maps of the project area and include specific sound level predictions at the selected measurement locations; and</p>			<p>f) Not proposing to study Superimpose predicted sound level isopleths studies as part of the proposed environmental study plans at this time.</p> <p>g) Not proposing to develop sound avoidance measures as part of the environmental study plans at this time.</p>
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	<p>g) Develop measures to avoid or lessen project-generated sound effects.</p> <p>The study should be developed in consultation with the Oklahoma Department of Wildlife Conservation, the Choctaw Nation Wildlife Conservation Department, the Chickasaw Nation Fish and Wildlife Service, local outfitters, and Native American tribes, including the Nations, that use the project area for subsistence or other traditional cultural practices. The initial Study Report should include study results, data analysis, a description of field investigation activities and methods, and documentation of consultation with the above-named stakeholders.</p>			
7	<p>Environmental Justice Study</p> <p>Collect environmental justice data for hydroelectric projects. This methodology has been employed previously and is consistent with guidance from the Environmental Protection Agency's Promising Practices for EJ Methodologies in NEPA Reviews (2016), which are also described in the context of the Project in the Mix Report (Attachment 5). The Nations request the Commission require an EJ Study Report that provides the following:</p> <p>(1) A table of racial, ethnic, and poverty statistics for each state, county, and census block group within the geographic scope of analysis. For the project, the geographic scope of analysis is the area</p>			<p>Proposed Environmental Justice Resource Study Plan, Section 6, 7, 8, and 9</p> <hr/> <p>(1) a. b. c. Proposed Environmental Justice Resource Study Plan, Section 7</p> <p>(2) Proposed Environmental Justice Resource Study Plan, Section 7</p> <p>(3) a. (1) (2) (3) (b) (4) (5) (a) (b) Proposed Environmental Justice Resource Study Plan, Section 7 and 7.1</p> <p>(c) Proposed Environmental Justice Resource Study Plan, Section 9</p> <p>(d) Proposed Environmental Justice Resource Study Plan, Section 9</p>



<p>encompassed within 5 miles of the project boundary. The table should include the following information from the U.S. Census Bureau's most recently available American Community Survey 5-Year Estimates for each state, county, and block group (wholly or partially) within the geographic scope of analysis:</p> <ul style="list-style-type: none"> <li>a. Total population;</li> <li>b. Total population of each racial and ethnic group (i.e., White Alone Not Hispanic, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, two or more races, Hispanic or Latino origin [of any race]) (count for each group);</li> <li>c. Minority population including individuals of Hispanic or Latino origin as a percentage of total population; and</li> <li>d. Total population below poverty level as a percentage.</li> </ul> <p>(2) The data should be collected from the most recent American Community Survey files available, using table #B03002 for race and ethnicity data and table #B17017 for low-income households.</p> <p>(3) Identification of environmental justice populations by block group, using the data obtained in response to part a above, by applying the following methods included in EPA's Promising</p>			<ul style="list-style-type: none"> <li>(e) Proposed Water Resource Study Plan, Section 7.9</li> <li>(f) not proposing to study cultural meeting place change due to changing land/water access and natural/built landscape changes. It is not part of the environmental study plan.</li> <li>(g) Proposed Environmental Justice Resource Study Plan, Section 7.1</li> <li>(6) (a) (b) (c) Proposed Environmental Justice Resource Study Plan, Section 7.1</li> <li>(8) not proposing to study mitigation measures to on environmental justice communities.</li> <li>(9) Proposed Environmental Justice Resource Study Plan, Section 7.1 and 7.2</li> <li>(10) Proposed Environmental Justice Resource Study Plan, Section 7.1 and 7.2</li> </ul>
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<p>Practices for EJ Methodologies in NEPA Reviews (2016).</p> <p>a. To identify environmental justice communities based on the presence of minority populations, use the 50-percent and the meaningfully greater analysis methods. To use the 50-percent analysis method, determine whether the total percent minority population of any block group in the affected area exceeds 50%. To use the meaningfully greater analysis, determine whether any affected block group affected is 10% greater than the minority population percent in the county using the following process:</p> <ol style="list-style-type: none"> <li>1. Calculate the percent minority in the reference population (county);</li> <li>2. To the reference population s percent minority, add 10% (i.e., multiply the percent minority in the reference population by 1.1); and</li> <li>3. This new percentage is the threshold that a block group’s percent minority would need to exceed to qualify as an environmental justice community under the meaningfully greater analysis method.</li> </ol> <p>b. To identify environmental justice communities based on the presence of low-income populations, use the low-income threshold criteria method. To use the low-income threshold criteria, the percent of the population below the poverty level in the identified block group must be equal to</p>			
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<p>or greater than that of the reference population (county).</p> <p>(4) A map showing the project boundary and location(s) of any proposed project-related construction in relation to any identified environmental justice communities within the geographic scope. Denote on the map if the block group is identified as an environmental justice community based on the presence of minority population, low-income population, or both.</p> <p>(5) A discussion of anticipated project-related effects on any environmental justice communities for all resources where there is a potential nexus between the effect and the environmental justice community. For any identified effects, please also describe whether or not any of the effects would be disproportionately high and adverse. Anticipated project-related effects here include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>a. Quantitative and qualitative research methodologies to address breadth and depth/nuance of Environmental Justice implications related to siting.</li> <li>b. Analysis of foraging/subsistence dimensions for local populations.</li> <li>c. Implications of water quality and quantity for local populations.</li> <li>d. Displacement and land implications for local populations.</li> </ul>			
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<p>e. Downstream impacts related to water quality/quantity and land use changes.</p> <p>f. Implications for cultural meaning of space and place due to changing land/water access and natural/built landscape changes.</p> <p>g. Consideration of Environmental Justice impacts broader than immediate site and transmission line right-of-way due to integrated socio-cultural and environmental dimensions (migration patterns, seasonal forage, place/space use and meaning, etc.).</p> <p>(6) A description of SEOPC s outreach efforts regarding the project, including: (7) A summary of any outreach to environmental justice communities conducted prior to filing the application (include the date, time, and location of any public meetings beyond those required by the regulations);</p> <p>a. a summary of comments received from members of environmental justice communities or organizations representing the communities;</p> <p>b. a description of information provided to environmental justice communities; and</p> <p>c. planned future outreach activities and methods specific to working with the identified communities.</p> <p>(8) A description of any mitigation measures proposed to avoid and / or minimize project effects on environmental justice communities.</p>			
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	<p>(9) Identification of any non-English speaking groups, within the geographic scope of analysis, that would be affected by the project (regardless of whether the group is part of an identified environmental justice community).</p> <p>(10) Identification of sensitive receptor locations within the Project area and geographic scope of NEPA analysis. Show these locations on the map generated in step (4). Provide a table that includes their distances from project facilities and any project-related effects on these locations, including measures taken to avoid or minimize project-related effects.</p> <p>SEOPC should engage with the Nations technical staff and consultants in further planning and implementation of this study. SEOPC s initial study report should include documentation of any outreach it conducted with the Nations and other stakeholders that expressed interest in environmental justice, copies of their comments, and an explanation of how SEOPC addressed their comments in the study report.</p>			
8	<p>Economic Feasibility Study</p> <p>SEOPC does not claim to now operate any power generating or transmitting facilities, and as a result any assessment SEOPC offers of the Project s feasibility, including its economic feasibility, is conjectural. Nevertheless, SEOPC says it will</p>		√	<p>Not proposing to study alternative energy storage devices, cost-benefit analysis, economic modeling as part of the proposed environmental study plans at this time.</p>

<p>continue to refine the Project design based on landowner input, economic and financial modeling, cost-benefit analysis, geologic, and environmental considerations (PAD, p. 3-3). However, it does not list these studies in Table 5-1. The Nations request that Commission staff direct SEOPC to include details in the PSP on the specific cost-benefit analysis methods that SEOPC proposes to use for this study, as well as consultation on the economic, financial, and environmental considerations.</p> <p>SEOPC s proposed economic and financial modeling and cost-benefit analysis should provide information regarding alternatives to the Project that could potentially meet ERCOT s power needs in light of predicted market and technological changes while avoiding significant, irreversible impacts on the Nations lands, natural resources, and communities.</p>			
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**Summary of formal study requests by The City of Oklahoma City dated 11/01/2024 and responded to by SEOPC**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	Study Request No. 1 – Effect of Settlement Agreement and Permit on Hydrology and Water Availability, and Resulting Interference from Proposed Project		√	Settlement Agreement is not part of the proposed environmental study plans
2	Identify the water rights authorized by the Settlement Agreement, including the water rights of Oklahoma City under the adjudicated City Permit, the Administrative Set-Aside, Sardis Lake levels, and the 50 cfs Bypass Flow.		√	Water Rights is not part of the proposed environmental study plans
3	Consult with Oklahoma City and the Nations on the water rights.		√	Water Rights is not part of the proposed environmental study plans
4	Determine using hydrologic modeling the effects of the water rights on hydrology and water availability in the Kiamichi River Basin upstream and downstream of the proposed Project. The analysis should be based on daily flows from United States Geological Survey (“USGS”) gage records and modeling; evaluate effects for daily, monthly, and seasonal periods, including a focus on dry years, dry periods, and droughts; and consider interannual variability.	√		Proposed Water Resources Study Plan, Section 7
5	Provide an analytical basis for the estimated volumetric fills and annual make-up amount.		√	Volumetric analysis is not proposed to be studied as part of the proposed environmental study plans

6	Define withdrawals quantitatively based on flows on a daily timestep, rather than the proposed method of diverting based on a minimum 1.5 feet above river bottom.		√	Quantitative analysis of withdrawals is not proposed to be studied as part of the proposed environmental study plans
7	Determine the Project's interference with the above-described federally mandated water rights.		√	Water Rights is not part of the proposed environmental study plans
8	Determine the operational feasibility of the Project based on the updated hydrologic analysis and water availability study.		√	Operational feasibility is not proposed to be studied as part of the proposed environmental study plans
9	Study Request No. 2 – Project Effects on Aquatic Resources Considering River Operations Under the Settlement Agreement and Permit (Instream Flow Study)	√		Proposed Aquatic Resources Study Plan, Section 7
10	The objectives of Study Request No. 1 designed to evaluate the effects of the Settlement Agreement and Permit on hydrology and water availability in the Kiamichi River Basin are applicable starting objectives to Study Request No. 2.		√	Settlement Agreement is not part of the proposed environmental study plans
11	Once the hydrology and water availability of the Kiamichi River in the context of the Settlement Agreement and Permit are understood, consult with USACE, United States Fish and Wildlife Service, Oklahoma Department of Wildlife Conservation, and other relevant agencies, to reach concurrence on inputs needed for an instream flow study including aquatic habitat modeling, such as site selection, habitat inundation, habitat suitability, and water temperature suitability analysis.	√		Proposed Water Resources Study Plan, Section 7, Proposed Terrestrial Resources Study Plan, Section 7, Proposed Geologic and Soil Resource Study Plan, Section 7, Proposed Cultural and Tribal Resources Study Plan, Section 7, Proposed Development Resources Study Plan, Section 7, Proposed Aquatic Resources Study Plan, Section 7, and Proposed



				Threatened and Endangered Species Study Plan, Section 7
12	Define predicted flows at points along the Kiamichi River.	√		Proposed Water Resources Study Plan, Section 7
13	Create an aquatic habitat model that examines inundation, habitat persistence, and habitat suitability.	√		Proposed Aquatic Resources Study Plan, Section 7
14	Create a water temperature model that examines maximum daily temperatures, average daily temperatures, duration and seasonal variation.	√		Proposed Water Resources Study Plan, Section 7.11
15	Determine the Project's effects on aquatic resources and associated habitat.	√		Proposed Aquatic Resources Study Plan, Section 7

**Summary of formal study requests by the Department of Interior dated 11/04/2024 and responded to by SEOPC**

	<b>Requested Study</b>	<b>Proposed for Study or Proposed for Study with Modifications</b>	<b>Not Proposed for Study</b>	<b>Correlation to SEOPC Study Plan</b>
1	Water Rights Study		√	Water Rights is not part of the proposed environmental study plans
2	Surface Water Study	√		Proposed Water Resources Study Plan
3	Cultural and Tribal Resource Study	√		Proposed Cultural and Tribal Resources Study Plan
4	Water Settlement Agreement		√	Water Settlement Agreement is not part of the proposed environmental study plans
5	Hydrologic and hydraulic Studies		√	Proposed Water Resources Study Plan