



July 30, 2022

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, D.C. 20426

Via online submission to: <http://www.ferc.gov>

Subject: Comments of Trout Unlimited on the Pre-Application Document (PAD) and Scoping Document 1 (SD1) as well as Study Requests for Cat Creek Energy (CCE) & Water Storage Renewable Power Station Project (The Project) (FERC P-14655-002).

Trout Unlimited (TU) is a national conservation organization which brings together diverse interests to care for and recover rivers and streams, so our children and all future generations can experience the joy of wild and native trout and salmon. Trout Unlimited believes in an inclusive, collaborative approach to cold-water conservation that integrates the needs and expertise of all stakeholders.

TU volunteers and staff have worked in the South Fork Boise River Watershed since 1992 including activities such as placing fence lines, scientific data collection such as a genetic study, and outreach. In 2007 and 2008, Boise National Forest officials and TU volunteers assessed spawning habitat in the area¹. In 2011, TU and the Boise National Forest completed the Pierce Creek Reconnection Project to improve fish passage and connectivity by replacing a non-functioning culvert with a bridge. In 2011 and 2013, TU worked with our partners at Idaho Fish and Game and Bureau of Reclamation to understand fish stranding during downramping of flows at Anderson Ranch Dam, complete further studies regarding flow release and sedimentation impacts of flushing flows, and to better understand how wildfires have played a role in changing the watershed. In 2013 and 2015, TU volunteers hosted riparian planting efforts within the watershed to restore areas along the river damaged by fires and heavy recreation use.

The river corridor just downstream of Anderson Ranch Dam (ARD) is a designated state protected river and qualifies as a candidate for Federal Wild & Scenic River designation. As our populations continue to rise, and our recreational use increases from locals and visitors alike, it

¹ <https://www.southforkboise.org/sfb-library>

is vital that we collaborate on effective management of our waterways and fisheries in the region to ensure sustainability and longevity.

TU's primary goal within the proposed CCE project area is to protect the South Fork of the Boise River stream flows and temperatures to support a healthy wild trout fishery. The South Fork of the Boise River is a highly prized tailwater fishery, lying below the proposed CCE point of diversion and has an entirely self-sustaining wild trout population. It contains rainbow trout and Endangered Species Act (ESA)-listed bull trout, as well as whitefish. As a controlled river, it often lacks adequate flushing flows during the spring freshet (as in the spring of 2022) to move sediment, causing among other things a lack of stream structure and inability to flush silt. The Anderson Ranch Reservoir (ARR) and ARD directly impact the lower South Fork of the Boise River (SFBR) located below ARR/ARD. Accordingly, CCE's PAD, FERC's SD1, and proposed studies directly affect the interests of TU, and our participation is in the interest of the public and our 300,000+ members and supporters nationwide.

We offer the following comments and study requests to Cat Creek Energy, LLC (CCE or Applicant), and, via this correspondence, to the Federal Energy Regulatory Commission (FERC or Commission).

COMMENTS:

PAD:

The SFBR is critical habitat for Bull trout, which were listed (1999) as Threatened under the Endangered Species Act. Page 78 of the PAD outlines the following: "When reservoir storage becomes very low (<62,000 ac-ft) water quality can become significantly impaired resulting in adverse effects to reservoir resident bull trout." Study requests below outline TU's concerns with this statement and the effects of water quality on limited bull trout populations. Project operations will cause water-level fluctuations that, in turn, affect nearshore habitat within ARR through erosion, sediment deposition, and the inundation and dewatering of riparian and wetland communities. The Project could have significant detrimental impacts on flow releases to the SFBR. Historically, the Bureau of Reclamation has provided seasonal target flow releases of 1700cfs during the summer irrigation period, 300cfs for the fall/winter minimum flows, and 600cfs during the spring to provide for wild trout spawning. CCE has not detailed how these Project operations would impact seasonal flows, and since these seasonal targets are not protected by law, they are at risk of being lowered by "consumptive type" water users.

The PAD lacks specificity in how CCE operations will impact rainbow trout and bull trout habitat in the reservoir or below ARD and how fish entrainment and mortality will be minimized. There has been no explanation for how CCE operations could improve or alter winter flows and reduce fish stranding on the SFBR, yet they mention this several times in the PAD. As there is no known feasible technology to screen penstock intakes for the proposed magnitude of pumping capability (10,000cfs), CCE needs to present evidence to justify these claims. CCE has not

proposed inspections and/or repairs of screens over time and does not propose any other measures to reduce the entrainment or fish mortality. The PAD lacks meaningful information on fish entrainment structures, including alternatives, to prevent what could be significant fish losses with CCE pumping operations. More so, there are no proposed methods of mitigation or emergency action plans if the proposed fish screens and fish diversions were to fail. CCE and proponents of their proposed project need to collect recreational use data (as requested below) for the SFBR below ARD as well as ARR itself. There is growing public use on the 24 river miles between ARD and Neal Bridge. The Commission must document this high level of public use in their Environmental Impact Statement to prevent any adverse impacts on fishing and other forms of recreational use. The Federal Power Act requires by sections 4(e) and 10(a) that the Commission 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.

CCE anticipates they will be able to borrow or rent water if some is spilled for other users. If it is necessary to spill water, it seems very unlikely that ARR will have water to spare. Furthermore, clarification and evidence are needed for where the power to refill the reservoir is coming from. CCE claims they will use wind and solar power but fail to detail the availability of wind. When will wind be available? How long will it be available for? At what speed will wind be available? Will it be available during the hours needed? How the project operates under emergency conditions, such as a power outage at the powerhouse or units tripping offline is not described within the PAD. Please describe automatic and manual operation capabilities and procedures for maintaining pool level and downstream flows during unexpected outages or other emergency operating conditions.

In the PAD, CCE claims that there has been no seismic activity near ARR in its nearly 75-year history. However, a quick google search shows that, in 2020, there was a 6.5 magnitude earthquake with an epicenter only 70 miles away from ARD.

What plans does CCE have if the Project fails either financially or structurally?

How will the Project's potential environmental impacts change as temperature and precipitation patterns intensify in the west?

SCOPING DOCUMENT 1:

TU recommends the geographic scope of the Commission's environmental analysis (pertaining to impacts to cumulatively affected fishery, water quantity, and water quality resources) in section 4.1.2 extend from the Project reach and through the entirety of Arrowrock Reservoir as this represents the extent of resident fish migration in the area. Bull trout migrate between ARD/ARR and Arrowrock Reservoir along the SFBR (as detailed on page 76 of the PAD) annually and should not be excluded from the Project's reach. In the Boise River Basin, Reclamation and the U.S. Army Corps of Engineers operate Anderson Ranch, Arrowrock Reservoir, and Lucky Peak Reservoir as a system to provide multiple benefits, including those for fish, and effects to

the system from the proposed Project should be evaluated throughout. (Reference 5, page 10 of SD1)

The Commission requests and encourages alternatives to the proposed Project via section 3.3 of SD1. CCE states that a major purpose of its proposed Project is to meet anticipated increases in demand for water supply in the Treasure Valley due to population growth. However, it is important to note that a wide array of alternatives exist to meet such demand. For example, water efficiency and conservation projects and programs can achieve the same result often at a much lower cost on a per acre foot basis as compared to building new storage. Moreover, water and energy are inextricably linked. As Acting Bureau of Reclamation Commissioner David Palumbo recently stated when announcing WaterSMART Water and Energy Efficiency Grant awards, "Conserving water is saving energy and helping Western communities become more resilient to drought."

The Department of the Interior's WaterSMART Progress Report, released in December 2016, states that WaterSMART grants resulted in projects that are "anticipated to save 10.8 million kilowatt-hours annually-enough energy to power nearly 1,000 households." Furthermore, the report notes that projects funded from 2010 to 2015 "are expected to result in 1,144,822 acre-feet of water savings per year."

The Principles, Requirements and Guidelines (PR&Gs) for Water and Land Resources Implementation Studies govern how Federal agencies evaluate proposed water resource development projects. The PR&Gs state "Alternative actions or plans, where applicable, should first consider opportunities to improve water efficiency with respect to existing water infrastructure and supplies. When efficiency alone will not suffice, the reuse and reclamation of water should be promoted."

Efficiency measures that could extend Treasure Valley water supplies include:

- Water diversion automation
- SCADA water delivery operations
- Domestic appliance and fixture efficiency
- Canal lining and piping
- Precision domestic/municipal and agricultural irrigation
- Wastewater/gray water reuse
- Low water demand cropping and landscaping
- Conversion of domestic/suburban irrigation to pressurized systems
- Metering and graduated pricing

One great advantage of these measures is that they extend available water supplies every year and are not dependent upon an increasingly fickle snowpack.

SD1 fails to fully outline the impact of invasive species/weeds in relation to water quality. The spread of noxious weeds and non-indigenous plants is a threat to biodiversity. Many noxious weeds can outcompete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem. Early recognition and control are essential to stopping the spread

of infestation and avoiding future widespread use of herbicides, which would have more adverse impacts on biodiversity and water quality. The Commission should consider if issuing a new license would lead to future maintenance activities that could introduce invasive species. The Applicant and the Commission should also prepare and include a list of known invasive species in the area and detail a plan for prevention, early detection of invasion, and control procedures for each species.

Listed below are three comprehensive plans missing from the SD1:

1. ***Boise National Forest Land and Resource Management Plan (Forest Plan) - Management Area 1 (written 2003 & revised 2010)***
2. ***Idaho Nonpoint Source Management plan 2020-2025 (2020)*** by the Idaho Department of Environmental Quality
3. ***Recovery Plan for the Coterminous United States Population of Bull Trout (2015)*** by the U.S. Fish and Wildlife Service

The most effective way to prevent fish entrainment is the use of physical screening barriers. However, fish screening has never occurred on a project of this size and scale. FERC's Environmental Impact Statement must include a concrete plan for the prevention of fish entrainment to minimize what could be significant fish losses. Hatchery stocking to mitigate fish loss is not a viable solution for a number of reasons, including that bull trout are not readily produced in a hatchery setting.

The Project would have significant detrimental impacts on flow releases to the SFBR. CCE has not identified how these diversions would impact seasonal flows, and since these seasonal targets are not protected by law, they are at risk of being lowered by "consumptive type" water users. Springtime releases must continue into the SFBR. Spring releases are valuable to restore bottom substrate, flush fine sediments and reinvigorate the river's aquatic ecosystem. The proposed reduction of releases to the SFBR are projected to remove 139,000 acre-feet of water from the river.

CCE's proposed system is supposedly capable of five days storage of power. Once this storage has been depleted, it will take five additional days to recharge. There are concerns over this Large Volume Long Duration (LVLD) system as it requires more power to operate than it generates. Clarification and evidence are needed regarding where the power to refill the reservoir will come from. CCE claims they will use wind and solar power but fail to detail the availability of wind. When will wind be available? How long will it be available for? At what speed will wind be available? Will wind be available when CCE needs it, and will it be available throughout the year?

CCE anticipates they will be able to borrow or rent water if some is spilled for other users. If it is necessary to spill water, it is very unlikely that ARR will have water to spare. What are the outcomes if CCE and water rights holders cannot agree to terms for leasing water? How will the reservoir be filled before each season if no contractual agreement can be reached?

CCE has claimed that their project is not anticipated to contribute to the cumulative impacts to water rights associated with ARD. As the draft Environmental Impact Statement for the raising of ARD has not yet been finalized, CCE cannot base their analysis or models on this document. CCE has proposed borrowing 10,000cfs, or 100,000 acre-feet, of water in a 12-hour period from ARR. This would cause a 2–5-inch fluctuation per hour and a 2’-5’ fluctuation in a 12-hour period. This comes close to Idaho Fish and Game concerns of 2’ or more daily fluctuations. Additionally, CCE proposes a minimum pool of 20,000 acre-feet on the upper reservoir. Does this mean 20,000 acre-feet can be run through the turbines in a 12-hour or 24-hour period, causing a 10’ drop in water levels followed by a corresponding 10’ increase? How will these fluctuations affect shoreline erosion? Will these fluctuations cause an increase in sediment buildup behind ARD?

CCE must determine if Project operations could lead to the methylation of mercury, a small chemical reaction that alters the way proteins and nucleic acids act when they are introduced into the body. This could have severe impacts on fish health.

Power plant operations and the presence of floatovoltaics on the reservoir have the potential to deposit harmful materials into the water. CCE must determine the potential risk and likelihood for this to occur and whether a National Pollutant Discharge Elimination System (NPDES) will be needed to operate.

STUDY REQUESTS:

The study requests proposed by Trout Unlimited identify information needed to understand the Project related impacts to natural resources in relation to the reservoirs (the proposed Cat Creek Reservoir & Anderson Ranch Reservoir) and surroundings, including the SFBR below ARD, in order to guide resource protection, mitigation, and enhancement decisions. These study requests serve to ensure that all interested parties’ concerns are adequately considered. Some of these requests stand alone, while others are intended to enhance and supplement existing proposed study plans put forth by CCE. While CCE’s proposed 3D modeling can account for some impacts, we do not feel that it can accurately or feasibly cover the areas outlined in our additional study requests below. Accounting for the scope of our interests, we support the study plan requests, as described in more detail below, in the following areas:

- Recreational use
- Fish passage/entrainment
- Climate change
- Water quality
- Water quantity

Study Request 1: Recreation Use Survey

Goals + Objectives

§5.9(b)(1)

Describe the goals and objectives of each study proposal and the information to be obtained.

Recreational use of the watershed is increasing rapidly as population growth increases in both the Treasure & Magic Valleys. Based on discussions with agency officials from the Bureau of Reclamation (BOR) and other stakeholders in the area, it is clear the need is great for accurate and up-to-date information about people's interactions with the lands and waters within and surrounding the ARR/ARD area. Therefore, we request a recreational use survey on ARR and SFBR below ARD that will provide critical information needed to assess recreational behavior as the area continues to see increased use. We propose the study be completed both within the ARR and below the dam along the lower SFBR.

In the absence of recreational use data, we cannot determine whether the existing information (see below) is sufficient to assess the adequacy of existing recreation to meet current and future demand. So that we may fully understand and evaluate the effects of continued project operation and maintenance on recreation use at each project, we propose the recreation use survey be administered to users to gain user opinions with regard to the existing recreation facilities and opportunities. The survey should record the number of people in a party, their primary reason (recreational activity) for visiting the reservoir and river below ARD, their perception of level of use, and their opinions with regard to the amount and types of recreation opportunities offered within the project boundary.

Relevant Resource Management Goals + Public Interest Considerations

§5.9(b)(2)

If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not Applicable.

Public Interest

§5.9(b)(3)

If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

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 determine what conditions should be placed on any license that may be issued. In making its license decision, the Commission must equally consider the environmental, recreational, fish and wildlife, aesthetics, and other non-developmental values of the project, as well as power and developmental values. Any license issued shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. Recreation has been identified as legitimate project purposes by the Commission. The SFBR, including reservoirs and riverine reaches below or within the proposed project area, have the potential to offer recreational opportunities unique to the region, provided that sufficient flow and access are provided.

Existing Information + Need for Additional Information

§5.9(b)(4)

Describe existing information concerning the subject of the study proposal, and the need for additional information.

The last known recreational use survey was completed in 2001 by Idaho Fish & Game and only surveyed the SFBR creel fishing use. The population of both the Treasure Valley and Magic

Valley were roughly 503,904 & 162,399 respectively during the 2000 census. In the 2020 census, that has increased to 838,109 & 210,983 respectively and is continuing to increase to-date. There is a need for an all-encompassing, updated recreational use survey.

Project Nexus

§5.9(b)(5)

Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

CCE's proposed Project will directly impact recreational use during and after construction. The study results will inform decision makers of the impact that this Project could have on recreationalists.

The Project includes multiple reservoirs and riverine reaches within and below the Project boundaries, which are inherently attractive recreation features. An analysis of existing recreation uses and access at and near the Project would help form the basis for determining the proposed Project's impacts upon, and ability to enhance, public recreation access opportunities. Water flows through the dams directly impacts both recreation use, agriculture, and aesthetics. Also, an assessment of the current level of recreation use would provide information necessary to develop a Recreation Management Plan (if deemed necessary) for efficient management of the recreational components of the proposed Project area over the term of a new license.

Proposed Methodology

§5.9(b)(6)

Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

Trout Unlimited believes the recreation use survey (the survey) should seek to be as accessible and inclusive as possible. The survey should be available digitally to capture the largest possible audience of user contributed data. Not only for those visitors who do not wish to interrupt their recreating in order to take a survey, or who may not wish to be engaged by a stranger in a social interaction due to the continued uncertainty during the COVID-19 pandemic or for personal reasons. The ability to provide input on the users' schedule increases response rates and the quality of responses. (e.g., a QR code or website link provided as a separate handout, social media post, etc.). Additionally, a digital survey is not only more accessible in general but may increase participation by being made available in more languages for minimal expense. This digital survey should be in conjunction with traditional data collection for comparison and accuracy.

Recreation above and below ARD does not look consistent across the year, but changes with the seasons. A digital survey, especially one augmented by an in-person option at various times throughout the year, would provide a more complete picture of users and their recreation pursuits than an in-person survey conducted during the narrow timeline of one summer season.

TU proposes that the study meets the following criteria :

- Assess visitor perceptions of the effects of Project operations and management on recreation and recreation opportunities at and near the Project (including fluctuating reservoir levels, BOR target flow releases, and anticipated changes) over the license term. Identify potential measures to alleviate any negative effects as well as to enhance existing recreation opportunities and access; and,
- Quantify and map the relationship between reservoir surface area and reservoir levels, and how those reservoir elevations relate to recreation; and,
- The use and needs assessment should include all recreation activity types known to occur or potentially occurring in the project area, on both Project and non-project lands and waters impacted by Project operations. Specific methods should include visitor observations; on-site visitor intercept surveys at formal and informal public recreation areas at the Project area reservoirs, tailraces, riverine areas, and formal and informal camping areas utilized by recreation users; and mail and/or digital surveys targeting unique stakeholder groups that may not be practically accessed through on-site surveys (e.g., adjacent residential landowners, residents of the counties in which the projects are located, hikers, canal companies, boaters, etc.); and,
- Identify any safety issues to recreational users from Project operations, how Project operations impact recreational users, and how the Project facilities of operations could be modified to improve recreational opportunities; and,
- A Recreation Management Plan for the Project should be included in the license application and should include, at a minimum:
 - (1) a description of any proposed protection, mitigation, and enhancement measures, including: associated capital, and operation and maintenance costs; and a timeline for implementation;
 - (2) a description of operation and management measures associated with Project-related recreation or recreation access;
 - (3) a description of measures for future monitoring of recreation demand and adequacy of Project-related facilities to meet this demand; and,
 - (4) the impact of climate change on future recreational use and periodic review and amendment to the Recreation Management Plan

The PAD provides no Project-specific information regarding visitor perceptions and identified needs at the Project and areas impacted by the Project. Information on current use and whether existing access to facilities in the area are meeting recreation demand would inform a decision on whether additional designated public access and facilities at and near the Project is necessary to meet existing and future recreation demand around the Project. Further, no information is provided in the PAD regarding the impact of Project operations on aesthetic values in the bypassed reaches, in each of the developments.

The traditional recreational use observations will represent a snapshot-in-time depicting specific user groups and their activities during randomly selected intervals.

Level of Effort + Cost

§5.9(b)(7)

Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The estimated cost of a recreational survey for the area equals approximately \$32,000. No other recent recreational surveys exist for the area; no updated recreational survey was proposed by CCE/FERC in the PAD or SD1. Due to existing technology, the level of effort and cost remains low for user-led responses.

Study Request 2: Entrainment + Loss**Goals + Objectives**

§5.9(b)(1)

Describe the goals and objectives of each study proposal and the information to be obtained.

An entrainment study is necessary to provide data for TU, fishery management agencies, and the public to quantify the impacts of Project operations on resident fish. There are several fish species present in ARR that would be affected by the ongoing presence and operation of the Project. The PAD and SD1 do not provide adequate information to develop appropriate measures to minimize or mitigate Project impacts on these fish resources. Addressing Project impacts to listed bull trout, and other fish species present in the waterways that are gamefish or forage fish, over the term of any new license is a priority due to the listed status of bull trout within the Project area.

The goal of this study is to determine entrainment rates from the ARR into the proposed Cat Creek Reservoir for all fish species present and all their respective life stages and sizes. The study should also assess Project operations effects to species-specific, cumulative impacts on fish populations. Objectives are to estimate numbers and species of entrained fish and determine the impact of chronic annual entrainment on the long-term abundance trends for each species. TU will use this information to make recommendations as to whether the yet-to-be proposed mitigation will result in a net loss to resident and ESA listed fish populations.

TU considers information on fish entrainment to be important for concluding whether the Applicant can construct the Project to meet the minimum or exceed standards for developing hydroelectric power in Idaho.

Relevant Resource Management Goals + Public Interest Considerations

§5.9(b)(2)

If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

TU's primary goal within the proposed CCE Project area is to protect the SFBR and ARR fisheries prized by our members and other recreational interests. The Project relies on diverting additional water to generate hydropower through penstocks and turbines. The Project would directly contribute to fish mortality. TU will use this information to determine fish screening and by-pass needs, and to develop and implement strategies for fish management. TU will require this information to assess the potential impacts of Project operations and to determine whether the Project can be constructed and operated consistent with state and federal law. TU

will also use this information to assess whether the yet-to-be proposed mitigation will result in a net loss to fish populations.

Public Interest

§5.9(b)(3)

If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The information will assist TU & interested parties in making decisions for native and non-native fish affected by the Project and assessing yet-to-be proposed mitigation measures proposed by the Applicant.

The most effective way to prevent fish entrainment is the use of physical screening barriers. However, fish screening has never occurred on a project of this size and scale. FERC's Environmental Impact Statement must include a concrete plan for the prevention of fish entrainment to minimize fish loss. Hatchery stocking to mitigate fish loss is not a viable solution as bull trout are not artificially produced.

Existing Information + Need for Additional Information

§5.9(b)(4)

Describe existing information concerning the subject of the study proposal, and the need for additional information.

Currently, no information exists on the level of potential entrainment of fish from ARR to Cat Creek Reservoir. ARR supports non-native kokanee and smallmouth bass fisheries, as well as bull trout, redband trout, and mountain whitefish fisheries (Reclamation 2020a). The SFBR below ARD is a well-known high-quality, wild trout stream. Recent fish survey data found in IDFG's Fisheries Management Annual Reports from 2012, 2015, and 2016 indicate that populations of kokanee, rainbow trout, smallmouth bass, yellow perch, and bull trout remain present in ARR, with kokanee being the largest population and most popular game species for anglers (IDFG 2016b, 2018, 2019e).

Existing data shows that screens do not adequately prevent fish from becoming entrained in the intakes and causing significant fish mortality in the turbines. TU seeks further information on entrainment as explained by CCE in the PAD.

Project Nexus

§5.9(b)(5)

Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

CCE may have the ability to predict injury and mortality through the turbines with current literature, but many projects have unique structures, with lengthy power tunnels, turbines, and penstocks. Utilities often construct power tunnels and penstocks with different materials, various angles, and pressure differentials from the intake to the turbine that can cause injury and mortality to an entrained fish. Water will not travel the same through every project's tunnel and penstocks. Water and entrained fish will travel a long way in a unique power tunnel that may cause fish to experience abrasions over rough surfaces, pressures, turbulence, and shear stress. Each power tunnel and penstock will need individual investigation with Project drawings with specifications and a range of flows during operation to understand the impacts to an entrained fish.

CCE should assess entrainment rate and mortality for all fish species present and all of their respective life stages and sizes documented to occur in the watershed and project area.

Proposed Methodology

§5.9(b)(6)

Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

A combination of methodologies could be employed to quantify entrainment of fish in ARR. CCE should include these objectives:

- 1) amount of mortality and injury,
- 2) numbers and sizes of fish entrained and impinged,
- 3) species of fish entrained and impinged,
- 4) what is the relationship between fish entrained and amount of water diverted

The study should first assess the velocities near the intake with all units operating. If this assessment indicates that conditions are not sufficient, then the methodology should include a collection of engineering specifications such as intake bar spacing, location, and new approach velocities. A plan should be developed to assure minimal impingement and entrainment of resident fish.

A fish entrainment and impingement study at each penstock will help us better understand how operation of the Project may affect fish populations in ARR, your study should:

- 1) describe the physical characteristics of each project that may influence fish impingement and entrainment rates, including intake location and dimensions, the velocity distribution in front of the intake structure, and the clear spacing between the trashrack bars;
- 2) analyze target species (i.e., individual species and guilds/groups) for factors that may influence their vulnerability to entrainment and mortality;
- 3) assess the potential for target fish species impingement;
- 4) estimate entrainment rates and numbers for target fish species;
- 5) estimate turbine passage survival rates and numbers for target fish species; and
- 6) describe how existing information and data collected in other studies would be used to estimate entrainment/impingement and survival rates.

CCE can use the method of rate of entrainment by Passive Integrated Transponder (PIT) tags. Tags should be inserted into a subsample of large juvenile and adult fish that are then released into the reservoir. Downstream passage should be monitored with a passive monitoring system installed below the dam. The entrainment study should be conducted in order to assess fish movement through ARD during two important time periods (1) movement of salmonids during natural migration periods when the Project is expected to be operating; (2) movement of salmonids throughout the irrigation release season. The entrainment study should also be conducted, at a minimum, (1) when the water elevation in the ARR is high (i.e., full pool) and (2) when the water elevation in the ARR is low (i.e. end of irrigation season).

The second proposed methodology is consistent with standard practices employed for hydroelectric projects. The Hydropower Reform Coalition identifies direct capture or trapping of fish as a method that can provide an indication of the rate and impact of entrainment (<http://www.hydroreform.org/hydroguide/science/436-direct-capture-or-trapping>). The Hydropower Reform Coalition also identifies tagging methodologies for determining entrainment rates and behavioral patterns (<http://www.hydroreform.org/hydroguide/science/433-individual-tagging>). TU will consider proposed alternative study methods if empirical data of similar quality and quantity can be collected and used for analysis.

Level of Effort + Cost

§5.9(b)(7)

Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The level of effort and cost will be determined by the area affected by project operations but is expected to be comparable to that of similar FERC projects of this size.

Study Request 3: Current & Future Water Quality

Goals + Objectives

§5.9(b)(1)

Describe the goals and objectives of each study proposal and the information to be obtained.

Operation of the Project will affect water quality. Therefore, the objective of this study is to characterize existing water quality conditions to serve as a baseline for comparison of future Project operations. The study should measure water quality parameters including temperature, dissolved oxygen (DO), total dissolved gas (TDG), pH and turbidity. Special emphasis will be placed on temperature and DO measurements during the May through October time frame. Baseline conditions should be established so comparison can be made throughout future Project operations. Also, a one-time assessment of heavy metals should be conducted. The study will employ standard methodologies that are consistent with the scope and level of effort of water quality monitoring conducted at hydropower projects in the region. The information collected by this study will be used to determine the Project's potential effects on water quality and provide water quality data sufficient to determine compliance with applicable water quality standards and designated uses.

Relevant Resource Management Goals + Public Interest Considerations

§5.9(b)(2)

If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

TU's conservation goals for threatened and endangered species are:

- Maintain or increase populations of threatened and endangered species in the area of interest.
- Maintain, restore, provide stewardship for, and conserve habitats and natural communities that support threatened and endangered species.

Public Interest

§5.9(b)(3)

If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

TU has determined that resident fish are or historically have been present in the Project area. Extensive surveys, both historical and recent, have shown that resident fish are found in ARR, as well as in the SFBR, and Arrowrock Reservoir, including, but not limited to:

- Rainbow trout
- Bull trout (ESA Listed)
- Mountain whitefish
- Kokanee
- Smallmouth bass
- Yellow perch

This study request is within the public interest of the Endangered Species Act of 1973. Bull trout were listed as a threatened species in 1999, for its entire region of Idaho, Montana, Washington and Oregon. Page 78 of the PAD outlines the following: When reservoir storage becomes very low (<62,000 AF) water quality can become significantly impaired resulting in adverse effects to reservoir resident bull trout.

Existing Information + Need for Additional Information

§5.9(b)(4)

Describe existing information concerning the subject of the study proposal, and the need for additional information.

Bull trout generally have the most specific habitat requirements², which are often referred to as “the four Cs”: Cold, Clean, Complex, and Connected habitat. This includes cold water temperatures (often less than 12 degrees Celsius [54 degrees Fahrenheit]), complex stream habitat including deep pools, overhanging banks and large woody debris, and connectivity between spawning and rearing (SR) areas and downstream foraging, migration, and overwintering (FMO) habitats.³

One study found during our research for existing information was completed in 2012: Bull Trout (*Salvelinus confluentus*) Movement in Relation to Water Temperature, Season, and Habitat Features in Arrowrock Reservoir, Idaho, 2012.⁴ During triennial electrofishing surveys conducted in mid-October for management of rainbow trout, IDFG incidentally captures and marks between 4 and 15 bull trout, but recapture rates are too low to estimate population size.⁵

² Rieman and McIntyre 1993

^{1.} ³ *Recovery Plan for the Coterminous United States Population of Bull Trout (2015)* by the U.S. Fish and Wildlife Service

⁴ Maret, T.R., and Schultz, J.E., 2013, Bull trout (*Salvelinus confluentus*) movement in relation to water temperature, season, and habitat features in Arrowrock Reservoir, Idaho, 2012: U.S. Geological Survey Scientific Investigations Report 2013–5158, 28 p., <http://pubs.usgs.gov/sir/2013/5158/>

⁵ Butts et al. 2013, p. 116, Cassinelli et al. 2018, p. 120.

Bull trout use the SFBR downstream from ARD year-round as foraging, migratory, and overwintering habitat.⁶ However, information described in the PAD does not accurately address current and future effects, threats, or recovery actions. The information used to describe populations and habitat is outdated and requires updating with the best available information for the purpose of moving forward. Bull trout abundance estimates were made over 20 years ago in ARR and estimates of bull trout in the SFBR have not been made. The total number of bull trout that use the SFBR is unknown to date.

Project Nexus

§5.9(b)(5)

Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Operations and infrastructure at Cat Creek Reservoir have the potential to negatively affect plants and animals, and their habitats, within and beyond the Project's immediate footprint. Specifically, water temperatures, water level fluctuations (maintenance and operational) cause periodic inundation and drying and can directly (i.e., mortality due to inundation or desiccation) or indirectly (i.e., by causing erosion) influence the types of plants and animals that can survive in the shoreline areas above the dam. Below the dam, peaking operations cause changes in discharge that may impact aquatic life in affected areas or affect the development of habitats required by terrestrial species (e.g. erosion).

The information gathered during this study will be used to characterize existing water quality conditions to serve as a baseline for comparison of future Project operations and for furthering resource goals. TU will use the information to develop recommendations, which it will file with the Commission, to protect, mitigate damages to, and enhance, fish and wildlife (including temperature and habitat of ESA listed Bull trout) affected by the operation and management of the Project.

Proposed Methodology

§5.9(b)(6)

Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field seasons(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The surveys should be conducted within all suitable habitat within the proposed Project boundary in areas where they could be impacted by management, maintenance and/or recreational activities.

TU believes the Applicant should develop a study proposal that includes methods that are consistent with generally accepted practice in the scientific community and standards accepted by the Idaho Department of Environmental Quality (IDEQ). DEQ recommends, and TU concurs, continuous year-round monitoring for temperature, TDG and flow at a minimum of two monitoring stations; one monitoring station should be located above the turbine and the

⁶ Salow and Hostettler 2004, p. 15, Stiefel 2007, entire, Maret and Schultz 2012, p. 12, Benjamin et al. 2020, entire

second station should be established at or near the output location of the proposed penstocks and spillway.

The information gathered during this study will be used to develop conservation, mitigation, and enhancement measures needed to maintain and restore ESA-listed bull trout within the proposed Project-affected areas.

More information is needed to describe existing conditions and how the operations of the Project may affect water quality. Therefore, using generally accepted practices in the scientific community, please include the following provisions in your study plan:

- 1) For each downstream and bypass reach sampling location, measurements of dissolved oxygen (DO) and temperature should be taken at the surface, middle, and bottom of the water column and include corresponding depth measurements.
- 2) Identify and record the habitat type at each downstream and bypass reach sampling location (i.e., pool, run, riffle, etc.).
- 3) Include pictures of each sampling location.
- 4) During each sampling event, record the reservoir surface elevation.
- 5) Record discharge (cubic feet per second) from a stream gage downstream of the project.

Level of Effort + Cost

§5.9(b)(7)

Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The level of effort and cost will be determined by the area affected by the proposed Project's operations but are expected to be comparable to that of similar FERC licensed projects of this size.

CONCLUSION:

TU appreciates the attempts made by CCE to include affected federal, state, and local resource agencies, tribal governments, non-governmental organizations (NGOs) and members of the public in this licensing process. Despite these efforts, deficiencies remain in the pre-application document and proposed study plans. If not corrected, mitigation and enhancement measures will be developed based on non-existent or incomplete information thus risking the long-term sustainability of Anderson Ranch Reservoir/Dam and surrounding and downstream fisheries. The aforementioned study requests supplement CCE's proposed studies plans in order to account for those deficiencies and to facilitate the development of measures that will sufficiently mitigate the impacts of Cat Creek Energy, LLC on our region's natural resources.

Thank you for your consideration of these comments and study requests.

Sincerely,

A handwritten signature in black ink that reads "Ashlynn Goody". The signature is written in a cursive, flowing style.

Ashlynn Goody, Policy and Outreach Associate
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A handwritten signature in black ink that reads "Darryl S. Kuhrt". The signature is written in a cursive, flowing style.

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A handwritten signature in blue ink that reads "Nick Miller". The signature is written in a cursive, flowing style.

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