

December 4, 2012

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, DC 20426


RE: Peabody Trout Creek Reservoir Hydroelectric Project No. 14446

Secretary Bose:

American Rivers appreciates the opportunity to provide comments on the "Pre-Application Document (PAD) and Scoping Document 1 (SD1)" dated August 12, 2012 and October 5, 2012 for the Peabody Trout Creek Reservoir Hydroelectric Project. Our comments fall into 3 categories: (1) comments on the PAD, (2) comments on the SD1 (3) additional recommended studies.

American Rivers has been involved with the Trout Creek Project from the initial phases of the proceeding. We participated in the Commission's Scoping meeting on Thursday, October 25, 2012 and have had conversations with the Peabody Trout Creek Reservoir LLC (applicant) consultants. Please call if you have any questions or need additional information. I can be reached at 303-454-3395.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Matt Rice", with a long horizontal line extending to the right.

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Peabody Trout Creek Reservoir Project)	P-14446-000
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COMMENTS ON PRELIMINARY APPLICATION DOCUMENT, STUDY
REQUESTS, AND COMMENTS ON SCOPING DOCUMENT 1
BY AMERICAN RIVERS

Introduction

American Rivers is a national, non-profit, 501(c)(3) conservation organization with an office in Denver, Colorado, offices nationwide and headquarters in Washington, DC. American Rivers serves more than 100,000 members and supporters nationwide and over 3,000 members in Colorado. American Rivers is dedicated to protecting and restoring America's river systems and to fostering a river stewardship ethic. Additionally, American Rivers promotes public awareness about the importance of healthy rivers and the threats that face them. American Rivers' programs address flood control and hydropower policy reform, endangered aquatic and riparian species protection, instream flow, clean water, and urban rivers. One of its principal programs is the protection of rivers from unwise hydroelectric development that fails to take into account the needs of fish and other aquatic organisms, water quality, and the other natural, recreational, and cultural values of North American rivers. Our members have a direct interest in ensuring the protection of the natural and recreational values of the Yampa River Basin.

American Rivers is actively supporting the development of responsible small hydropower development in Colorado and throughout the country. We were actively engaged in the development and implementation of Colorado/FERC Memorandum of Understanding to streamline low impact hydropower and we recently supported the Hydropower Regulatory Efficiency Act before the House Energy and Commerce Committee which would exempt non-controversial conduit projects from federal licensing. Our support was reliant on the inclusion of an amendment that requires developers to submit their projects to the Commission to determine if the project does in fact qualify for exemption from licensing and provides an additional 45 day review period for the public and interested stakeholders to support or oppose the Commission's determination. While the Trout Creek Project is small in terms of hydropower generation, it will have a large environmental footprint requiring the construction of a new dam that will alter Trout Creek's natural flow regime, inundate over 2 miles of free-flowing river, impact water quality, and fish and wildlife habitat.

American Rivers questions the appropriateness of the Commission taking the lead under the National Environmental Policy Act because the applicant's proposal appears to prioritize water supply and residential development over hydropower generation but we remain committed to protecting the public's interest in the proceeding, protecting the health of Trout Creek and the Yampa River, and working with all stakeholders including the applicant to ensure adequate study plan development, meaningful consideration of alternatives and avoidance, mitigation, and enhancement measures.

Section One: Comments on the Preliminary Application Document (PAD)

American Rivers appreciates the efforts the applicant made to keep interested stakeholders informed on the development of the PAD. Several months prior to the filing of the Notice of Intent (NOI) and the PAD, the applicant's consultants called American Rivers to discuss the project and timeline for filing. The applicant's consultants called American Rivers again following the filing of the NOI and PAD and expressed interest in our engagement in the proceeding.

The following sections correspond to sections in the PAD

2.3.1 Proposed Reservoir Operations, Floods and Flushing Flows

The proposed Trout Creek Project may affect ecologically important river functions such as sediment transportation, bedload transportation, and sediment supply in Trout Creek and the Yampa River.

Recommendation: Develop a study plan that will analyze the projects effects on hydrology and sedimentation. A proposed study plan is provided in section 3.

3.2.1 Project Impacts

3.2.1.1 Water Quantity and Drainage Area

Due to lack of real time flow data on Trout Creek, the applicant used the Colorado Decision Support System (CDSS) and Yampa River Basin Water Resources Planning Model (Yampa Model) to estimate flows on Trout Creek. The period of record from 1950-2005 was determined to be the most accurate time period that captures the current administration of the creek. While this is an adequate time period to establish base flow conditions on Trout Creek, the model is based on an estimation; Trout Creek flows equal approximately 30.7% of base flows in the Elk River as measured at the Elk River gauge at Clark, CO USGS gaging station (09241000). These flow estimations were recently revised by TZA Water Engineers. TZA estimated that base flows in Trout Creek above the confluence with Fish Creek are approximately 10.5% Elk River gauged base flows. This section does not provide detail into Fish Creek's flow contribution to Trout Creek.

Recommendation: Install a water monitoring gauge or gauges in appropriate locations on Trout Creek that can be used to determine real time base flow conditions. This data can be correlated with CDSS and Yampa Model data.

3.2.2.1 Water Quantity

The applicant states that average monthly decreases in flows below the reservoir would decrease from .6cfs in March to 15.7cfs in May with a monthly maximum of 66cfs after drought. Similar to Trout Creek, decreases in Yampa River flows due to operations would be greatest from April through July ranging up to a reduction of 23.8cfs in May and a monthly maximum of 74cfs after a drought. Spring peak flows are vitally important to maintaining a healthy river ecosystem and it will be critically important to understand what percentage flows will be reduced during peak run off and if the flow reductions will have an adverse impact on river function on both Trout Creek and the Yampa River.

Recommendation: The applicant provides simulated inflows, simulated outflows, and simulated change in stream flows on Trout Creek and the Yampa River through the period of record (1950-2005). The applicant should also provide simulated percentage in flow reduction through the period of record presented in a similar spreadsheet to the flow related spreadsheets in the PAD.

3.2.2.2 Water Quality

The applicant acknowledges that water quality data on Trout Creek is limited and that the only documented Water Quality exceedences occurred during hot summer months for high temperature. The applicant also suggests temperature exceedences would be unlikely due to cold water flow augmentation with the project online. This could result in Dissolved Oxygen (DO) problems during the summer months due to stratification in Trout Creek Reservoir.

Recommendation: Collect additional water quality data (temperature and DO) that will support future modeling of reservoir releases to determine how the applicant can protect downstream aquatic species and potentially create a tailwater trout fishery below the dam.

3.2.3 Protection, Mitigation, Enhancement Measures

The applicant states that it will work with Colorado Parks and Wildlife to assess what habitat improvements could be made to Trout Creek below the reservoir to develop a trout fishery. A tailwater trout fishery could be a significant benefit of the Trout Creek Project. However, a viable trout fishery will require that the applicant provide adequate water quality (DO and temperature) and water quantity protections.

Recommendation: Demonstrate how the multi-level outlet works within the reservoir will assist in maintaining and enhancing temperature and DO downstream on Trout Creek and in the reservoir.

3.7 Recreation and Land Use

The Trout Creek Project may potentially enhance recreational opportunities downstream of the proposed dam, in the proposed reservoir, and in waters upstream of the proposed reservoir. The applicant has not yet proposed a recreation plan for the reservoir, downstream below the dam, or upstream, above the dam.

Recommendation: Develop a recreation plan for the proposed reservoir and for Trout Creek based recreation above and below the proposed reservoir. The plans should include details regarding improved and proposed public access and facilities, water quality and water quantity protections to support reservoir and creek recreation, and a plan to protect native cutthroat trout upstream of the proposed reservoir.

Section Two: Comments on the Commission's SD1

Given the size and scope of the Trout Creek Project, we recommend that FERC prepare an Environmental Impact Statement (EIS). The Applicant proposes to construct a new 1,900 foot long, 75 feet high, compacted earth-fill dam. The proposed dam would form a new 392-acre reservoir and impound 11,720 acre-feet of water. The scope and significant impact of this project necessitates that the Commission prepare an EIS. If, however, the Commission deems that an EA is sufficient, we request that the Commission publish a draft EA and allow adequate time for public review and comment, consistent with 40 C.F.R. § 1501.4(e). Opportunity for public comment on both the draft and final EA documents is consistent with the Council on Environmental Quality's regulations, which provide "public scrutiny [is] essential to implementing NEPA." 40 C.F.R. 1500.1(b).

The following sections correspond with sections in the Commission's SD1

4.1.2 Geographic Scope

We agree with the Commission that the Geographic Scope of the analysis defines the physical limits or boundaries of the proposed action's effect on the resources and that the proposed action would affect the resources differently. We appreciate the Commission's willingness to consider recommendations on the Geographic Scope of the project. Flows on the Yampa River will be depleted due to project operations and evaporation. In order to evaluate the projects potential impact on Yampa River flows and habitat for the four Endangered Species Act (ESA) listed native fish species; Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub, we recommend that at a minimum, the geographic scope of the analysis extend to the confluence with the Yampa and Green Rivers.

4.2 Resource Issues

Generally we agree the Commission's preliminary list of Environmental Issues as outlined in section 4.2 of SD1. We would however, like to highlight a number of issues that will require a

greater level of analysis than has been proposed by the applicant. For a number of these issues, we have proposed potential study plans in section 3.

4.2.1 Geologic and Soil Resources

- *Effects of construction and operation of the project on sediment dynamics and movement in the proposed reservoir, downstream to Trout Creek and sediment supply to the Yampa River*

4.2.2 Water Quality

- *Effects of project operation on water quality, including water temperature and dissolved oxygen concentrations in Trout Creek*
- *Effects of project construction on wetlands and wetland functions*
- *Effects of project operations on stream flow and aquatic habitat in Trout Creek*

4.2.3 Fishery Resources

- *Effects of the project on the loss of riverine habitat in Trout Creek*
- *Effects of dam construction and operation on fish migration, rearing, spawning, and associated physical and flow habitat*
- *Effects of project construction and operation on alteration of water quantity in Trout Creek on downstream aquatic habitats and organisms in Trout Creek and the Yampa River*
- *Effects of project-related flow depletions and evaporative losses on native fishes in the Yampa River Basin*

4.2.4 Terrestrial Resources

- *Effects of inundation of riverine, riparian, wetlands, and upland habitats on wildlife*

4.2.6 Recreation and Land Use

- *Adequacy of proposed public access and recreational facilities within the project area to meet future recreational demand*
- *Effects of projects operations on the quality and availability of flow-dependent river recreation opportunities, such as fishing*

Section Three: Additional Study Requests

Hydrology and Sedimentation

The Proposed Trout Creek Project will reduce native flows in Trout Creek and the Yampa River during peak flow season which may have short and long term impacts on habitat availability, sediment supply, bedload transport, channel morphology stream health potentially affecting stream health.

Goals and Objectives: This study will document the short term and long term effects to stream characteristics including quantification of various hydrologic metrics including bankfull, wetted perimeter, residential pool depth, pool riffle, and spacing. This study will help the applicant and interested stakeholders understand what hyporheic changes will be expected to occur in Trout Creek and a reduced hydrograph and what short and long term impacts on habitat availability, sediment supply, bedload transport, and channel morphology may have on the health of Trout Creek and the Yampa River.

Relevant Public Interest: To the degree that proposed project operations change the hydrology of Trout Creek and the Yampa River, water quality characteristics and aquatic species maybe impacted negatively. Any such impact would affect citizens of the Yampa River Valley and others interested in the diversity of riparian and aquatic diversity in the creeks.

Existing information: Existing information includes but is not limited estimated flow data from CDSS and the Yampa Model from 1950 to 2005.

Nexus to project operations and effects: Proposed project operations will significantly alter flows in Trout Creek and possibly downstream in the Yampa River. Reduced flows may have short and long term effects to stream characteristics, habitat availability, sediment supply, bedload transport, channel morphology and disrupt hyporheic processes.

Methodology: This study will include additional measurements of water depth and velocity at an adequate number of cross sections using PHABSIM methodology. The cross sections should be wide enough to include flood prone areas and adequate numbers of points to accurately portray channel bedform including thalweg, water surface, and bankfull elevations. This should be followed by a habitat availability study such as Instream Flow Incremental Methodology (IFIM) for selected native, game, and non-game fishes for various life stages. These studies should be used to evaluate impacts to instream flow from project operations and will inform flow needs for a potential future tailwater fishery below Trout Creek Dam.

Sediment

Accepted scientific methods to evaluate the proposed projects impacts on sediment supply, sediment transport and channel condition, bedload transport, channel morphology and bed surface texture include but are not limited to:

Sediment Supply

Sediment dynamics exert important controls on channel morphology and texture that affect habitat quantity and quality for aquatic and riparian species. Aquatic habitat attributes such as spawning gravel availability and the amount of fine sediment in the channel bed are determined by the size distribution and rate of sediment input and by the capacity of stream channels to store and transport sediment. Sediment transport and storage characteristics control the average time required for sediment of various sizes to be routed through the channel network, influencing the sensitivity of channels to disturbances

Sediment Transport and Channel Condition

A coarse-level analysis of channel morphology is commonly conducted for hydroelectric project relicensings to examine historical changes and identify locations for intensive study. Coarse-level analyses utilize historical aerial photographs, digital elevation models (DEM), digital orthophotography, and previous studies on channel geomorphology. A coarse-level analysis typically involves assessment of channel confinement, channel slope, channel sinuosity, sediment source area, presence of alluvial sediment (gravel bars), potential hillslope sediment source areas, and the distribution of side channels.

Characterization of Channel Morphology and Bed Surface Texture

Surveys at intensive study sites commonly involve measuring a longitudinal profile of the channel bed along the thalweg and water surface, sediment facies mapping, three or more cross-sections extending onto the floodplain and to the adjacent hillslope toes where feasible, pebble counts conducted at cross-sections to estimate channel roughness and calibrate facies mapping estimates, coarse particle embeddedness and estimation or measurement of armoring ratio, and bulk sampling of surface and subsurface material located in mobile sediment patches.

Bedload Transport

Bedload transport creates and modifies bedform topography, controls sediment storage, affects surface texture through selective transport and abrasion, influences channel migration, and directly influences aquatic habitat. The flux rate of coarse material is an important component of sediment mass balance within a regulated reach. Higher bedload transport capacity can lead to greater potential geomorphic impacts of reduced coarse sediment supply. Bedload transport is typically modeled and calibrated with field studies at intensive study sites to estimate surface-based dimensionless Shield stress, critical discharges to mobilize the channel bed, coarse (> 2 mm) bedload transport capacity, and bedload grain size distributions. Model input parameters commonly include channel cross-section data, water surface slope, grain size (channel roughness) data of either the channel surface substrate or the bedload supply, and annual flow duration curves of the current and reference flow regimes. Model output parameters commonly include Shields stress versus discharge rating curves, average

annual coarse bedload transport capacity, and grain size distributions of either the bedload supply or channel surface (depending on whether the input parameter was surface or bedload supply grain size). Long-term synthetic hydrologic flow records representing current and reference conditions may be used to generate flow duration curves for modeling bedload transport capacity.

Consideration of Costs and Alternatives: At this time American Rivers is unable to determine the degree this study will increase costs to the applicant. To our understanding the applicant has not yet proposed a study that will evaluate the Projects short and long term impacts on habitat availability, sediment supply, bedload transport, channel morphology stream health potentially affecting stream health.

Riparian, Wetlands, Littoral Habitat

The Proposed Trout Creek Reservoir may reduce flows in Trout Creek and downstream in the Yampa River which may negatively affect riparian and wetland health.

Goals and Objectives: To understand the existing conditions and potential project impacts on short and long term riparian and wetland health on Trout Creek.

Relevant Public Interest: The riparian zone including wetlands is highly valued by the public supporting diverse plant and animal species including the state endangered boreal toad. A reduction in flows during peak runoff season may negatively affect the riparian community. Any such impact would affect residents of the Yampa River Basin and others with an interest in diversity of life along Trout Creek.

Existing information: The applicant has provided maps from the National Wetland Inventory and aerial photography from the United States Fish and Wildlife Service in the PAD.

Nexus to Project Operations and Effects: Proposed Project Operation will alter the timing and duration of flows in Trout Creek which may negatively affect riparian habitat and wetlands . Flows will be reduced during peak runoff season in Trout Creek which may have short and long term impacts including permanent loss of wetlands as a result of project operations.

Methodology: Project operations that affect instream flow regimes can have various effects on riparian communities and on special-status and non-native invasive plants. In addition to completing a delineation of affected wetlands, the applicant should consider the following (but are not limited to) in a potential wetland study plan:

- impairment of natural riparian vegetation dynamics, including effects on natural recruitment and woody vegetation encroachment into the channel,

- drowning or desiccation of special-status plants, and
- introduction or spread of non-native invasive plant species.

To fully understand the long term changes to wetlands other riparian communities on Trout Creek and the Yampa River, focused survey efforts should focus on the following (but not limited to) indicators:

- species composition and age or size structure,
- longitudinal connectivity of the site,
- width of the corridor (which includes an assessment of the level of encroachment), and
- bank erosion.

Consideration of Costs and Alternatives: At this time American Rivers is unable to determine to what degree the recommended study would increase costs for the applicant. The applicant has proposed developing a delineation of existing wetlands but has not yet proposed a study that will address flow related impacts on wetlands and riparian habitat.

Recreation

Proposed operations may affect current recreational opportunities on Trout Creek and may provide an opportunity for the applicant to enhance recreational opportunities through the establishment of a tailwater fishery below the dam and the development adequate public access. FERC regulations require applicants to assess project effects on recreation and develop protection, mitigation, and enhancement (PM&E) measures that address identified impacts (18 CFR § 2.7 2004).

Goals and Objectives: To understand what recreational opportunities exist for fishing and recreational boating on Trout Creek, current use for boating and fishing, and to what degree proposed operations would affect the availability and quality of the recreational activities on Trout Creek. To understand what degree proposed operations and development of public access can enhance recreational boating and fishing on Trout Creek and proposed reservoir.

Relevant Public Interest: Potential loss of fishing and boating opportunities on Trout Creek due to project operations and the potential enhancement of fishing and boating opportunities on the creek and potential reservoir is of interest to residents of the Yampa River Valley and to thousands of boaters and anglers statewide.

Nexus to Project Operations: Proposed operations may negatively or positively affect recreational opportunities on Trout Creek.

Methodology: Scientifically accepted approaches for designing a recreation study may include but are not limited to the following methods:

Inventory studies

Inventory studies primarily provide descriptive information about recreation resources, use, and users in a project area. Although one type of study examines future recreation demand, these studies generally focus on existing recreation resources and use, while avoiding evaluative information that describes what “should” occur. The output from these studies are broadly equivalent to the recreation section of an “affected environment” chapter of an agency NEPA document such as an Environmental Assessment (EA) or Environmental Impact Statement (EIS). Specific types of inventory studies include:

1. facility inventories,
2. access inventories,
3. existing use inventories,
4. use trends and future demand,
5. trip and user characteristics, and
6. regional recreation context.

Impact/evaluation

These are the studies that assess how a hydroelectric project has affected (or could affect) recreation or how recreation may be affecting other resources. This has more evaluative information and comprises the alternatives/impacts analysis components of a typical NEPA document. Specific types of impact/evaluation studies common during relicensing include:

1. flows and recreation,
2. reservoir levels and recreation,
3. facility need assessments,
4. use conflicts,
5. recreation capacity assessments, and
6. recreation economic studies.

Integrating inventory and impact information

Integration of information from inventory and impacts studies forms the basis for developing and evaluating alternatives in a plan regarding management actions that might be taken to meet needs or address problems.

Ultimately, the objective is a list of potential management measures (actions) and a description of how they might change recreation opportunities and quality. These could include cost estimates, implementation constraints, effects of creating new opportunities, and discussion of trade-offs from taking actions that enhance one opportunity but may diminish another. These are typically organized along the lines of:

- facility improvement options,
- reservoir level/flow regime changes,
- education program options,

- regulation options, and
- use limit options.

Evaluating use trends and future demands

Information about potential future recreation use (e.g., demand) is also relevant in relicensing. Future use is sometimes estimated by summarizing current use and applying national or regional recreation trend information (e.g., the National Survey on Recreation and the Environment; the Outdoor Industry Association survey on human-powered outdoor activities, state-by-state trend information usually developed in mandated Statewide Comprehensive Outdoor Recreation Plans or SCORPs).

However, this method may not be viable for river reaches that do not have current use (due to a lack of flows or access), or for predicting use of reaches or reservoirs whose characteristics will be modified by new hydropower development or operations. Efforts to estimate this demand generally require professional judgment and/or demand “experiments,” in addition to a review of trend information, but may also include analysis of survey responses to questions about future use (recognizing that intentions are not always good predictors of behavior).

Consideration of Cost and Alternatives: At this time American Rivers is unable to determine to what degree this study would increase costs to the applicant. However, basic recreation studies can be conducted with local volunteers at little cost to the applicant. It does not appear that the applicant has proposed a recreation study that will address impacts to or the enhancement of recreational opportunities on Trout Creek.

Evaluation of Flows on the Yampa River

Study Description and Objectives: Several issues have been identified concerning water quality, water quantity, and water withdrawals that relate to the Trout Creek Project. An objective of American Rivers is to learn about how the Trout Creek Project will affect flows downstream on the Yampa River and how the cumulative depletion of flows may impact aquatic habitat, specifically for the four federally listed endangered species. As a component of this study plan, the applicant should provide an updated assessment of current depletions in the Yampa River Basin.

Relevant Public Interest: Potential loss of flows and aquatic habitat for the four listed ESA species in the Yampa River Basin due to flow depletions is in the interest of all water users in Yampa and Green River Basins. Failing to consider flow loss due to project operations and evaporation may undermine ongoing collaborative efforts to recover the native ESA listed fish in the Yampa River Basin.

Nexus to Project Operations: Proposed operations, the establishment of a new year round diversion on the Yampa River, and evaporative water losses may impact aquatic habitat and the recovery of the four listed native ESA species.

Existing Information: Due to lack of real time flow data on Trout Creek, the applicant used the Colorado Decision Support System (CDSS) and Yampa River Basin Water Resources Planning Model (Yampa Model) to estimate flows on Trout Creek. The period of record from 1950-2005 was determined to be the most accurate time period that captures the current administration of the creek. The Yampa Model can be used to analyze the Trout Creek Project and updated flow depletions to determine the effect on Yampa flows and consistency with current ESA recovery programs.

Methodology: CDSS data used in the Yampa Model can be used to model flows in the Yampa River to determine whether proposed Trout Creek Project operations and existing cumulative flow depletions may threaten the recovery of the four native ESA listed species in the Yampa River. . We also recommend the applicant consider incorporating one or more peer reviewed methodologies for evaluating flows into the Yampa River downstream flow study plan. This is common practice in other FERC licensings. Several methodologies have been developed and widely used include, but are not limited to:

- Index of Biotic Integrity (IBI)
- Target Fish Community Assessment Method
- Biological Response to Flow Correlation Method
- Two-Dimensional Hydraulic Models
- Enhanced Stream Water Quality Model

Level of Cost and Alternatives: Proposed studies in the applicant's PAD do not specifically address potential flow depletions due to project operations and evaporative losses or how potential loss of flows in the Yampa River may affect habitat needs and the recovery of the four native ESA listed species. At this time American Rivers is unable to determine the level of cost and effort required of the applicant in determining the effect of project operations and evaporation and the associated flow losses on Yampa River habitat and the recovery of the four ESA listed species.

Conclusion

American Rivers appreciates the opportunity to provide comments on the PAD, the Commission's SD1, and to provide additional study plan requests. We look forward to collaborating with Commission staff, Peabody, and other interested stakeholders throughout the proceeding in order to develop a suitable set of study plans that will adequately inform the Commission's environmental document.

Respectfully submitted December 4, 2012,

A handwritten signature in black ink, appearing to read "Matt Rice", followed by a long horizontal line extending to the right.

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