



August 21, 2015

**Via Electronic Filing**

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

**Subject: Peabody Trout Creek Reservoir Project (FERC Project No. P-14446)  
Interim Study Plan Progress Report**

Dear Secretary Bose:

Pursuant to 18 Code of Federal Regulations Section 5.15(b) and as outlined in the May 17, 2013 Revised Study Plan, Peabody Trout Creek Reservoir LLC (PTCR) herein files with the Federal Energy Regulatory Commission (Commission) the fifth Integrated Licensing Process Interim Study Plan Progress Report for the Peabody Trout Creek Reservoir Project (Project).

The studies listed below have been or are being conducted in accordance with the proposed methodologies listed in the May 17, 2013 Revised Study Plan, which was approved (as filed) by the Commission's Study Plan Determination, issued June 11, 2013. This Interim Study Plan Progress Report describes the activities performed following receipt of the Commission's Study Plan Determination in support of licensing the Project.

To recap, a summary of the studies and reports completed to date is provided below, along with a summary of the progress on the remaining studies since the February 27, 2015 Interim Study Plan Progress Report for this Project was filed.

**Completed Studies**

The following resource studies have concluded and the associated study reports have been finalized.

**Geotechnical Investigation Study (Section 3.1 of the Revised Study Plan)**

The Geotechnical Investigation Study Report was completed in February 2014. This report was included as Appendix A in the June 11, 2014 filing of the PTCR Initial Study Report.

**Review and Analysis of the Results from Ground Water Monitoring Wells (Section 3.4 of the Revised Study Plan)**

The 2014 Review and Analysis of the Results from Ground Water Monitoring Wells Study Report was included as Appendix B in the June 11, 2014 filing of the PTCR Initial Study Report.



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This study continued for another year and the associated study report was completed in May 2015 and included as Appendix A of the June 11, 2015 filing of the PTCR Second Study Report.

Note: The duration of additional monitoring to determine if supportive hydrology for wetlands within the study area would remain after irrigation has been removed from the Project site is being evaluated annually.

### **Ongoing Temperature and Dissolved Oxygen Monitoring of Trout Creek (Section 3.7 of the Revised Study Plan)**

The Ongoing Temperature and Dissolved Oxygen Monitoring of Trout Creek Study Report was completed in June 2015 and included as Appendix B in the June 11, 2015 filing of the PTCR Second Study Report.

### **Recreation Use Study (Section 3.18 of the Revised Study Plan)**

The Recreation Use Study Report was initially completed in November 2013. This report was subsequently updated to include the 2014 Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP) data. The final report was included as Appendix C in the June 11, 2014 filing of the PTCR Initial Study Report.

### **Class III Intensive Pedestrian Cultural Resources Survey Study (Section 3.19 of the Revised Study Plan)**

The Class III Intensive Pedestrian Cultural Resources Survey Study Report was finalized in July 2014. Due to the privileged and confidential information contained in that report, it was electronically filed with the Commission on July 9, 2014, for placement in the Commission's non-public file, and distributed only to the limited Cultural Resources Working Group for the Project.

In follow-up to this study, URS Corporation (now AECOM) coordinated with the landowner of record at the time of the artifact and specimen collections related to the study, Twentymile Coal Company, LLC. As the authorized representative from Twentymile Coal Company, LLC, I exercised my company's rights to hold free and clear title to the artifacts and specimens and to retain possession of those artifacts and specimens (as listed in a confidential Attachment to a Memorandum of Agreement executed between Twentymile Coal Company, LLC and AECOM) that were collected from archaeological sites 5RT3247 and 5RT3248. In compliance with AECOM's Bureau of Land Management (BLM)-Colorado Cultural Resource Use Permit No. C-62878, the artifacts listed in the confidential Attachment to the Memorandum of Agreement had to be submitted for curation at the Museum of Western Colorado in Grand Junction or be returned to the lawful owner of the artifacts, Twentymile Coal Company, LLC. Based on my exercise of Twentymile Coal Company, LLC's right to hold free and clear title to the artifacts and specimens and to retain possession of those, AECOM disclosed its return of the



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artifacts and specimens to Twentymile Coal Company, LLC, and completed its commitments under BLM-Colorado Cultural Resource Use Permit No. C-62878, as communicated to Dan Haas, State Archaeologist, BLM-Colorado, in an e-mail from Gordon C. Tucker Jr., Cultural Resources Team Lead, AECOM, on March 26, 2015.

### **Remaining Studies**

Following is an overview of the studies that remain to be conducted and reported on for the Project.

#### **Existing Channel Conditions and Sediment Supply Study (Section 3.2 of the Revised Study Plan)**

The assessment of existing channel conditions and basin sediment supply was initiated in September 2013, and a literature review of background sediment loading in Trout Creek was completed. A soil analysis was conducted on the Trout Creek watershed, including all tributaries, using the Web Soil Survey Program developed by the United States (U.S.) Department of Agriculture's Natural Resources Conservation Service. Stream and basin characteristics were defined and classified based on aerial mapping for the full length of Trout Creek using Google Earth. The Rosgen stream classification system was selected for this initial assessment. It is a widely used framework that defines eight Level I stream types on the basis of geomorphic characteristics including single thread or multiple channel condition, channel slope, sinuosity, width/depth ratio, and entrenchment ratio.

Stream typing for this study was completed as a desktop study using available aerial imagery. A true Level I classification requires defining a stream's entrenchment ratio and its width/depth ratio, which cannot be accurately determined from aerial images. Given the limitations of defining stream types purely from aerial imagery, the parameters that were considered for this assessment were stream sinuosity, slope, and single versus multiple thread streams. For this reason, the stream types that are being defined for this study should be considered indicators of the stream type only and may not meet all criteria for assigned stream type. More detailed information on stream types will be derived as part of the scope of work for the separate Channel Morphology Study (3.3).

In 2013, land use trends were reviewed and analyzed and channel bankfull widths were also estimated for five reaches of the stream to provide an indication of current stream conditions. Each reach evaluated consisted of a one-mile stretch of Trout Creek with 10 cross-sections spaced at approximately 500-foot intervals along the length of the reach.

This study effort considers the amount of both suspended and bedload sediment believed to be in Trout Creek as part of the process of estimating potential impacts caused by the proposed dam. The issue of sediment-transport capacity versus sediment supply as it relates to the proposed dam



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and its potential impact on the stream is considered as part of the separate Channel Morphology Study (3.3).

Also in 2013, available studies from the U.S. Geological Survey were reviewed to assess the amount of suspended sediment expected in Trout Creek. Given that detailed information on sediment supply is not available from within the Trout Creek watershed, the relationship between suspended sediment and flow taken from Foidel Creek was used to estimate existing suspended-sediment levels throughout Trout Creek. In order to estimate bedload in the stream, measured bedload and suspended-sediment load values from other drainages tributary to the Yampa River were observed.

Although the majority of the Existing Channel Conditions and Sediment Supply Study Report is drafted, it cannot be completed until flow estimates for Trout Creek are available. Sediment load is related to stream flow. Flow estimates at locations along Trout Creek can therefore be used as the basis for estimating suspended and bedload sediment at various locations along Trout Creek, both with and without the proposed dam. Flow estimates, annual sediment volume estimates, sediment inflow to the reservoir, and sediment downstream of the proposed dam still require analysis and reporting. Modeling and reporting work are still required for this study.

### **Channel Morphology (Section 3.3 of the Revised Study Plan)**

The Channel Morphology Study was initiated in September 2013. Detailed measurements of water depth and velocity of representative cross-sections to describe current channel morphology and assist in predictions of the system's response to the proposed dam were collected. Gradations of channel substrate material was determined as part of the field assessment effort. A sampling frame and gravelometer were utilized to develop typical gradations at five representative stream locations downstream of the proposed dam. Channel armoring was assessed and bulk sampling of surface and subsurface channel material was performed.

In 2014, both suspended and bedload sediment samples were collected at various flow rates. Collected samples were sent to geotechnical laboratories and the results were used to define suspended-sediment concentrations and bedload rates and gradations observed at specific flow rates. This work completed the field work for this study. Results of the sediment sampling activities will be compared to published data and help inform the evaluation of anticipated sediment loads both with and without the proposed dam.

Various other portions of the sediment transport analysis were completed in 2013. The U.S. Army Corps of Engineers (Corps) Hydrologic Engineering Center River Analysis System (HEC-RAS) model was set up using geometric and channel roughness values determined as the result of field data collection. The model was then calibrated based on flow rates measured during the field program. The U.S. Forest Service's Bedload Assessment in Gravel-bedded Streams (BAGS) model (which is used to define Phase 2 sediment) was also set up using data



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collected on site. However, no real model runs were performed as actual flow data are required and are not yet available.

Once actual flow data are available, bedload transport will be modeled based on pre-Project hydrology and hydrology with the proposed dam. Detailed physical characteristics of the stream obtained as part of the 2013 field investigations and 2014 sediment loads, as well as expected daily flow conditions with and without the proposed dam will be utilized for detailed bedload modeling. Modeling will be completed for representative stream locations downstream of the proposed dam. Annual transport capacity, effective discharge, and flows required to initiate Phase 2 sediment transport will be estimated for pre- and post-Project conditions.

In addition to the bedload assessment, a sediment transport model will also be completed for the reach downstream of the proposed dam. The detailed downstream model will evaluate likely bed downcutting and bank erosion resulting from the proposed dam's impact on sediment supply. This model will first be validated by using existing condition flows and then be used as a tool to estimate channel response using proposed flows and limited sediment influx.

### **Hydrology and Stream Flow Assessment (Section 3.5 of the Revised Study Plan)**

The goal of the first phase of this study was to compare measured stream flow data collected at the Trout Creek gauge with stream flows predicted using the Colorado Decision Support System (CDSS) Yampa River Basin Water Resources Planning Model (Yampa Model) to verify the reasonableness of the proposed methodology used to estimate natural flows in Trout Creek. As part of the review of measured stream flow data at the Trout Creek gauge, PTCR coordinated with Casey Clapsaddle, Rivers Unlimited, in the fall of 2014 to evaluate the accuracy of the rating curve for the Trout Creek gauging station at higher flow rates. PTCR also coordinated with Mr. Clapsaddle in the spring of 2015 to discuss flow measurements taken during runoff. PTCR also contacted Brian Romig, the Water Commissioner on Trout Creek, on December 9, 2014, to obtain diversion data for several ditches on Trout Creek, which were required for the first phase of this study. Diversion data were provided by Mr. Romig via email on January 5, 2015.

PTCR's comparison of monthly measured and estimated flows at the Trout Creek gauge indicates that the methodology used to estimate natural flows in Trout Creek results in a good estimate of stream flows in Trout Creek with the exception of April and May. In April, the measured flow at the Trout Creek gauge was considerably higher than the estimated flow. The difference between measured and estimated flows in April may be due in part to the fact the mean elevation of the watershed above the Elk River at Clark gauge, which is used to estimate natural flows in Trout Creek, is higher than the watershed above the Trout Creek gauge. As a result, runoff could be expected to start sooner in the Trout Creek Basin due to warmer temperatures. To address this issue, the methodology used to estimate natural flows was revised slightly to shift 14 percent of the estimated flow in May to April. A shift of 14 percent was





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selected based on review of the flow estimates to minimize the differences between measured and estimated flows in April and May.

The next phase of this study requires modifications to the Yampa Model to: 1) convert the Yampa Model from a monthly to daily model, 2) shift a portion of the natural flow in May to April, and 3) incorporate the operations of the proposed Project. PTCR reviewed the version of the Yampa Model received from CDM Inc. (CDM) on April 22, 2014, which was finalized for the 2014 Projects and Methods Study (which is the most recent study conducted by the Yampa/White/Green Basin and the primary study used to inform that Basin Implementation Plan), to determine what additional changes to the Yampa Model would be needed prior to its use for the second phase of this study. An internal team meeting was held on September 22, 2014, with staff from Ecological Resource Consultants, Inc. (ERC), PTCR, and AECOM to discuss the status of the Yampa Model. PTCR contacted Mark McCluskey with CDM on September 16, 2014, via email to obtain additional data and documentation for the Yampa Model data set that were finalized for the 2014 Projects and Methods Study. PTCR also contacted Kevin McBride with the Upper Yampa River Water Conservancy District (UYWCD) on July 8, 2014, to discuss the UYWCD's plans to use the Yampa Model that was revised by CDM. Mr. McBride explained that the UYWCD hired Joe Messina to make some additional changes to the model to evaluate some of its proposed projects. PTCR emailed Mr. Messina on July 22, 2014, and September 22, 2014, and spoke with Mr. Messina on July 28, 2014, to discuss the potential changes he was making to the Yampa Model. Mr. Messina explained that he would likely use the Yampa Model to evaluate future projects for the UYWCD.

PTCR communicated with Shaden Musleh, previously with AMEC, via email on October 21, 2014, and April 30, 2015, regarding changes he was making to CDM's version of the Yampa Model for the Yampa River Basin Roundtable. PTCR also coordinated extensively with staff at Wilson Water Group (WWG) in April 2015 since WWG is currently under contract to update and modify the Yampa Model. WWG is modifying the version of the Yampa Model that was completed by CDM for the 2014 Project and Methods Study and then subsequently modified by AMEC for work completed for the Yampa River Basin Roundtable. PTCR met with WWG on April 30, 2015, to discuss changes being made to the Yampa Model and the schedule for completion of that work since that is the version of the model PTCR is using for the second phase of this study. WWG anticipates completing revisions to the Yampa Model in mid to late 2015, at which point it will be available to PTCR for use in the second phase of this study.

In support of the the modeling for the Project, PTCR reviewed several water court decrees that pertain to Peabody's water rights for Trout Creek Reservoir and the Twentymile Mine augmentation plan in the fall of 2014. PTCR discussed these water rights with Bill Caile, Holland and Hart, to determine how those rights operate in conjunction with the augmentation plan for the Twentymile Mine and the proposed Trout Creek Reservoir. Based on that



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review/discussion, it was determined that additional changes to the Yampa Model to reflect the augmentation plan and the water rights associated with it were not warranted.

On April 15, 2015, a Preliminary Draft Hydrology and Stream Flow Assessment Study Report was released to the PTCR stakeholder list for a 30-day review and comment period on the first phase of this study. The purpose of the first phase of the study is to use measured stream flow data collected at the proposed Project site over the last year to verify the reasonableness of the proposed methodology used to estimate natural flows in Trout Creek and to adjust that methodology and the Yampa Model, if necessary. The 30-day comment period closed on May 15, 2015. No comments or requests for study modifications were received. The Hydrology and Stream Flow Assessment Study is being carried out as originally proposed and will be revised to include the results of subsequent phases of this study after modeling of the proposed Project is complete. Hydrologic output from the Yampa Model will be provided in a daily format for the study period from 1950 to 2005 at the locations requested by the resource specialists.

#### **Hydrologic Effects Analysis of the Proposed Trout Creek Reservoir and Related Diversions on Flows in the Yampa River (Section 3.6 of the Revised Study Plan)**

The Hydrologic Effects Analysis of the Proposed Trout Creek Reservoir and Related Diversions on Flows in the Yampa River Study was deferred due to a delay in the collection of 2013 and 2014 stream hydrology data. This study can be executed after the second phase of the Hydrology and Stream Flow Assessment Study (3.5) is completed.

#### **Stream and Reservoir Water Quality Modeling (Section 3.8 of the Revised Study Plan)**

The start of the Stream and Reservoir Water Quality Modeling Study was deferred to 2014 due to a delay in the 2013 stream hydrology data collection program, but data compilation and analysis with available data, model selection and set up, and preliminary simulations are now completed. The two-dimensional water quality and hydrodynamic model (CE-QUAL-W2) was set up for the proposed reservoir and used for three preliminary simulations. Input data sets consist of meteorological data from the Steamboat Springs station (USAF 724678); bathymetric data for the inundated area; the selected dam location and design, including the configuration of outlet works; the storage-area-elevation curve; and available historic stream flow and water quality data from Site 69 Trout Creek, Site 301 Trout Creek, and Site 29 Middle Creek. Based on data availability and quality, the period from January 2012 to December 2014 was selected for evaluation of in-reservoir and downstream reservoir water quality analysis.

Preliminary in-reservoir water quality and hydrodynamic simulations were run with CE-QUAL-W2 using the proposed reservoir operation scheme and outlet levels (consisting of three structures and two spillways). The maximum generation discharge of 30 cubic feet per second (cfs) was used for the months of May and June, while the minimum discharge of 15 cfs



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was used from July to April. Simulation results present temporal and spatial stratification of the proposed reservoir.

In-reservoir trophic modeling of the proposed reservoir was also conducted for two main scenarios, normal pool and minimum pool. Results are presented as Trophic Status Index (TSI) for total phosphorous concentration, chlorophyll-*a* concentration, and Secchi Depth values.

The majority of the data compilation and analysis, model selection and application, preliminary testing of the model for management simulations, and preliminary nutrient modeling were completed by May 2015. The need for additional in-reservoir simulations with CE-QUAL-W2 and BATHTUB will be assessed following stakeholder review and comment on the results that will be presented in the report for this study. Evaluation of the downstream water temperature and dissolved oxygen concentration changes from the location of the dam to the confluence between Trout Creek and the Yampa River, and preparation of the Stream and Reservoir Water Quality Modeling Study Report are progressing.

### **Flow/Habitat Effects Evaluation on Existing Fishery Resources in Trout Creek and the Yampa River (Section 3.9 of the Revised Study Plan)**

Field activities for 2013 for the Flow/Habitat Effects Evaluation on Existing Fishery Resources in Trout Creek and the Yampa River Study included benthic macroinvertebrate sampling at three sites in lower Trout Creek in the fall. The data from the analysis of those samples indicated the presence of very abundant and diverse communities of invertebrates, similar to data collected in 2011 at sites upstream near the proposed reservoir location. Colorado Macroinvertebrate Multimetric Index (MMI) scores for the data from the 2013 sites indicated some were attaining the aquatic life use threshold and some were not. Other field activities scheduled for 2013 were not conducted as access to the lower sections of Trout Creek was not obtained until late in the field season, at which time weather conditions did not support survey work.

Field activities completed in 2014 included a spring site visit to establish Physical Habitat Simulation (PHABSIM) fish habitat modeling transects to better represent the habitat along lower Trout Creek that is somewhat different from the habitat at the existing PHABSIM transects near the proposed reservoir site. High-flow data were collected at the new transects in April 2014 and low flow data were collected in July 2014. High-flow data were also collected at the existing PHABSIM transects near the reservoir site to complete the data collection at those transects. Data were collected at the new PHABSIM transects in lower Trout Creek in the spring of 2015. PHABSIM habitat modeling was used to assess the impacts of the Project. The results of the habitat modeling and the results of the other aquatic and related studies (i.e., those pertaining to reservoir modeling, water quality, hydrology, etc.) will be used to develop and complete this study. Data analysis, coordination with other resource specialists and agencies, and impact evaluation of the field data collected and preparation of the Flow/Habitat Effects





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Evaluation on Existing Fishery Resources in Trout Creek and the Yampa River Study Report are pending.

### **Fish Species and Longitudinal Habitat Utilization Study (Section 3.10 of the Revised Study Plan)**

The Fish Species and Longitudinal Habitat Utilization Study was mostly deferred to 2014 as access to the lower sections of Trout Creek was not obtained until late in the 2013 field season. Only the fall seasonal qualitative sampling was accomplished in 2013. Fish sampling at four sites in the lower portion of Trout Creek was completed once in late October and once in mid-November to evaluate the use of Trout Creek by spawning fish. The results suggested that brown trout (*Salmo trutta*) and mountain whitefish (*Prosopium williamsoni*) may spawn in the fall in Trout Creek as suspected. The sampling also resulted in the collection of several other nonnative species in lower Trout Creek that had not previously been found at sites upstream. In both the fall of 2013 and spring of 2014, several potential barriers to upstream migration were examined at different flow levels. It appears that at moderate to high flows, there are no complete barriers to upstream migrating fish in lower Trout Creek. The diversion at the Saddleback Ranch may act as a barrier at low flows, but at higher flows, water flows around both sides of the diversion, allowing fish to swim upstream past the diversion.

In the early summer of 2014, seasonal qualitative sampling was conducted on lower Trout Creek. The species found were ones that had been previously collected, including the native mountain sucker (*Catostomus platyrhynchus*), mountain whitefish, speckled dace (*Rhinichthys osculus*), and roundtail chub (*Gila robusta*), and the nonnative brook stickleback (*Culea inconstans*), creek chub (*Semotilus atromaculatus*), fathead minnow (*Pimephales promelas*), Iowa darter (*Etheostoma exile*), redbreast shiner (*Richardsonius balteatus*), and white sucker (*Catostomus commersoni*). No new species were found.

In September 2014, quantitative sampling was conducted at sites TC-4, TC-5, and TC-6 on lower Trout Creek. High numbers of native minnows and nonnative minnows, suckers, and darters were found along with several other species. All of the species collected at the three sites had been collected in the past from Trout Creek. No trout were found at any of the three sites, which is likely because of the warm water temperatures. Both qualitative and quantitative fish population sampling at multiple sites in the lower portion of Trout Creek continued in 2014. No additional fish sampling is scheduled. Data analysis and impact evaluation of the field data collected and preparation of the Fish Species and Longitudinal Habitat Utilization Study Report are pending.



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### **Fish Entrainment Study (Section 3.11 of the Revised Study Plan)**

This study has been postponed to allow the other studies pertaining to hydrology, channel morphology, stream and reservoir water quality, and aquatic biological resources to progress; the results of those studies will be utilized in the execution of the fish entrainment assessment and subsequent report.

### **Whirling Disease Study (Section 3.12 of the Revised Study Plan)**

Task 1 of the Whirling Disease Study, Detecting Whirling Disease, as described above, was completed in 2013 and most of the Whirling Disease Study Report was prepared to report on those findings. This task targeted a sampling of trout, as well as tubifex worms (*Tubifex tubifex*), within the vicinity of the proposed reservoir and in reaches of Trout Creek upstream of the reservoir. Colorado Parks and Wildlife (CPW) was consulted regarding the collection protocol. Trout were rare throughout the sampling reaches, and none of the targeted species/sizes were found or available for analysis. Tubifex worms were common and collected worms from three sites were analyzed by a private laboratory utilizing techniques consistent with past analysis by CPW. Worms of the lineages that support whirling disease were present at all three sites; however, they were not infected. The lack of infection may be due to the limited number or absence of trout in this section of Trout Creek or due to high water temperatures.

Task 2 of the Whirling Disease Study, Probability of Infectivity, still needs to be executed. Task 2 includes assessing the probability of whirling disease infectivity arising from the Project relative to the sedimentation analysis. The evaluation for this task will take into account the level of the parasite in fish and worms, the lineages of worms present, and the present and proposed habitat suitability for supporting the worms in Trout Creek and the proposed reservoir. From there, the remainder of the Whirling Disease Study Report can be completed.

### **Noxious Weed Survey (Section 3.13 of the Revised Study Plan)**

The Noxious Weed Survey Study and preparation of the associated study report has been deferred due to availability of resource personnel within PTCR's Environmental Department.

### **Wildlife, Migratory Bird, and Raptor Surveys (Section 3.14 of the Revised Study Plan)**

The Wildlife, Migratory Bird, and Raptor Surveys Study was completely deferred to 2014 due to 2013 field access being delayed as a result of PTCR's land acquisitions in the Project area taking longer than expected, and the survey windows for the amphibian and birds closing prior to receipt of the 2013 Notice to Proceed. The data gathering and field work associated with the northern leopard frog (*Rana pipiens*) breeding survey, migratory bird survey, and migratory raptor survey were completed in 2014.



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Surveys for northern leopard frogs were conducted on May 6, 7, 27, and 28, and June 27 and 28, 2014. The presence of northern leopard frogs were also noted during wetland delineations conducted on August 4, 2014. During the May 6 and 7, 2014 surveys, no northern leopard frogs were heard or seen. The temperature ranged from 32 degrees Fahrenheit (°F) to 68°F, which may have contributed to northern leopard frogs being difficult to detect. Adult leopard frogs were observed in many wetlands including oxbows and side channels during the May 27 and 28, 2014 surveys. Tadpoles were observed in several of the wetlands during the June 27, 2014 survey. On August 4, 2014, adult northern leopard frogs were seen along Middle Creek and in wetlands along Trout Creek.

Migratory bird surveys consistent with the methods of the Colorado Bird Breeding Atlas II (COBBA II) were conducted in late spring (May 27 and 28, 2014), in early summer (June 27 and 28, 2014), and again in late July 2014. Fifty-five total bird species were observed in the study area. According to the COBBA II, 54 of these species are known to breed in the area and one species (Lapland longspur [*Calcarius lapponicus*]) is likely a migrant. Breeding behavior was noted for each individual bird observed. Breeding codes were recorded by species as indicators of breeding behavior progressed from species observed to possible breeding, probable breeding, and confirmed breeding. For example, a singing male is an indication of possible breeding; territorial behavior indicates probable breeding; and feeding young confirms breeding. Using this protocol, 27 confirmed breeding species, 8 probable breeders, and 19 possible breeders in or near the study area were identified. The second survey confirmed breeding in most species identified as probable breeders during the first survey. Several widely ranging species, including Swainson's hawk (*Buteo swainsoni*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), great blue heron (*Ardea herodias*), and sandhill crane (*Grus canadensis*) were observed in pairs or mixed flocks and probably breed in the general area but not in the study area. Other species, particularly several swallow species and hummingbirds, likely breed in the study area, but it is difficult to determine breeding status based on behavior.

A reconnaissance-level survey of trees and shrubs was conducted on May 27, 2014, to locate raptor nests prior to trees leafing out. A second survey was conducted on June 27 and 28, 2014, to determine nest activity of previously identified nests and to identify any newly constructed nests. Three species of raptors, red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*), were identified as nesting in the study area. All three species successfully fledged young.

Consultation with CPW was initiated to discuss Project effects and appropriate mitigation for northern leopard frogs and migratory birds, including raptors. In a November 24, 2014 letter, CPW provided migration recommendations for the northern leopard frog and migratory birds. CPW recommended determining the impacts on riparian scrub-shrub habitat and replacing affected habitat at a minimum 1:1 ratio. CPW also recommended three mitigation sites that are



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in close proximity to the proposed reservoir and that have been degraded in the past: Creek Ranch Whetstone Creek, the Fingers Property owned by Wayne Hays, and the Peabody Energy Section of Fish Creek. These sites would be suitable for enhancement or restoration of riparian and aquatic habitats by restoring incised stream reaches, planting native shrubs and trees, creating shallow wetland areas, and eliminating nonnative species and livestock grazing.

Analysis of the data gathered and fieldwork performed in the spring of 2014 and preparation of the Wildlife, Migratory Bird, and Raptor Surveys Study Report are pending.

### **Downstream Riparian, Wetland, and Littoral Habitat Study (Section 3.15 of the Revised Study Plan)**

The majority of the Downstream Riparian, Wetland, and Littoral Habitat Study was completed in 2013 and a large portion of the associated report was drafted. Wetlands and riparian vegetation along Trout Creek from the dam site to the confluence with the Yampa River were mapped using aerial photography interpretation. Once hydrologic modeling information is available for the downstream reach of Trout Creek, the potential indirect effects of the Project, considering the change in stream stage (feet) and frequency of flooding can be qualitatively assessed. The drafted report can then be updated to include the results of the assessment of hydrologic effects and the Downstream Riparian, Wetland, and Littoral Habitat Study Report can be prepared.

### **Wetland Delineation for Entire Project (Section 3.16 of the Revised Study Plan)**

Wetlands were previously delineated for the 2011 study area (as determined at that time). In 2013, the wetland study area was expanded to match the cultural resources area of potential effects (APE) for direct effects. The Wetland Delineation for Entire Project Study was completely deferred to 2014 due to 2013 field access being delayed as a result of PTCR's land acquisitions in the Project area taking longer than expected. From August 4 through 6, 2014, wetlands were delineated in the expanded study area and in areas where access issues prevented delineations during the 2011 field survey. A total of 13.8 acres of wetlands were delineated in just the 2014 expanded study area. A total of 83.7 acres of wetlands occurs within the entire study area. Functional assessments were conducted in 2014. The Wetland Delineation for Entire Project Study Report is pending. Additional field work and coordination with the Corps may be needed to receive a verification of the wetland boundaries and delineation.

### **Transportation System Assessment (Section 3.17 of the Revised Study Plan)**

The Transportation System Assessment Study was deferred following PTCR's 2015 financial resource prioritization. To date, PTCR had coordinated with Geovanny Romero, Routt County Engineering Department, Road and Bridge Field Coordinator, regarding eight traffic count locations and an associated map of those locations.



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### **Resource Management Plans**

As stated in the May 17, 2013 Revised Study Plan, various resource management plans must be filed with PTCR's Preliminary License Application. The resource study plan progress detailed above will aid in the development of the Construction Stormwater Management Plan, Fishery Management Plan, Reclamation Management Plan, Noxious Weed Management Plan, Conceptual Wetlands Mitigation Plan, Recreation Management Plan, and Shoreline Management Plan.

No progress has been made to date on the Construction Stormwater Management Plan, Fishery Management Plan, Reclamation Management Plan, Noxious Weed Management Plan, and Conceptual Wetlands Mitigation Plan, since the development of these plans will be based on the results from the studies described above (many of which are still in process). A Historic Properties Management Plan will not be required for this Project based on the results of the July 9, 2014 Class III Intensive Pedestrian Cultural Resources Survey Study.

### **Recreation Management Plan**

In support of the development of the Recreation Management Plan for the Project, a site visit was conducted and meetings/discussions with local recreation and hydrological operators took place. Additionally, various shoreline management zoning options have been identified and the use/development restrictions that could apply to those have been reviewed.

A description of areas within and in the vicinity of the proposed Project boundary that are included in, or have been designated for study for inclusion in the National Wild and Scenic Rivers Systems (16 United States Code [USC] 1271-1287), National Trails System (16 USC 1241-1251), and wilderness areas designated under the Wilderness Act (16 USC 1132-1136) has been prepared. A detailed description of existing recreational facilities within the Project vicinity and the recreational facilities available to the public has also been drafted.

Existing and future recreation use at the Project still needs to be estimated, and a description of the methodology to be used for those estimate calculations needs to be developed. Additionally, a development schedule and general cost estimates of the construction, operation, and maintenance of existing, initial, and future public recreation facilities, including a statement of the source and extent of financing for such facilities, needs to be prepared. A description of measures or facilities recommended by agencies for the purpose of creating, preserving, or enhancing recreational opportunities at the Project site, and ensuring the safety of the public in its use of Project lands and water is also pending.





Secretary Bose  
Federal Energy Regulatory Commission  
August 21, 2015  
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### **Shoreline Management Plan**

In support of the development of the Shoreline Management Plan for the Project, a map that displays the classifications of lands; Routt County, Colorado zoning; and approved uses of the lands above the Project boundary was developed. Additionally, progress has been made in determining specific shoreline use classifications to guide the overall allowable public and private use of the shoreline.

#### **Summary**

To date, there has been no significant study variances from the Revised Study Plan that was approved (as filed) by the Commission's Study Plan Determination issued June 11, 2013. However, there have been fieldwork schedule delays that impacted the study team's ability to access the field prior to September 2013, and the study team was not able to capture 2013 peak flow data. The fieldwork schedule delays were a result of land acquisition negotiations, which took longer than expected to complete. As a result, key access coordination with the private landowners in the Project area was delayed. However, the land acquisitions have since limited access coordination efforts for resource fieldwork and surveys. Additionally, it took longer than expected to install stream gauges and to begin capturing monitoring data. Stream gauging was discontinued on November 14, 2014, due to the stream being completely iced over, with no usable data obtained subsequent to that date. Gauging recommenced in late April 2015. PTCR is revisiting the placement of the temperature and dissolved oxygen probes to more accurately reflect the diurnal nature of these parameters.

Flow data continue to be recorded and analyzed. Last year proved to be an especially high runoff year, with some areas of the Colorado River and Yampa River basins seeing yields as high as 150 percent of average.

On August 6, 2015, under Section 5 of the Federal Power Act, PTCR requested a two-year extension for the Project (see Attachment A), extending the preliminary permit term by two years beyond the three years previously permitted, for a total term of five years. While PTCR intends to continue with this Project, the economics of the coal industry have impacted the ability of PTCR to continue with the significant capital investments needed to execute and complete the required resource studies this year to develop this Project. Additionally, PTCR needs a more intensive/longer hydrologic record to assess the viability of the hydropower component of this Project. During the two-year time extension, PTCR will continue to submit semi-annual progress reports to the Commission, and pursue good faith and reasonable diligence efforts towards the development of this hydropower Project.



Secretary Bose  
Federal Energy Regulatory Commission  
August 21, 2015  
Page 15

If you have questions regarding this Interim Study Plan Progress Report or if I can provide additional information, please contact me at (314)342-3484 or [byansen@peabodyenergy.com](mailto:byansen@peabodyenergy.com). Thank you.

Sincerely,

A handwritten signature in black ink that reads "Brian Yansen". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Brian Yansen  
Director, Real Estate Development  
Peabody Trout Creek Reservoir LLC

cc: Attached Distribution List

*Enclosure: Attachment A, Request for Two-Year Extension for the Peabody Trout Creek Reservoir Project*



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**Attachment A**  
**Request for Two-Year Extension for the**  
**Peabody Trout Creek Reservoir Project**







August 6, 2015

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

**SUBJECT: Peabody Trout Creek Reservoir, LLC Request for Two-Year Extension for the Peabody Trout Creek Reservoir Project (FERC Project No. P-14446)**

Dear Secretary Bose:

Under Section 5 of the Federal Power Act, Peabody Trout Creek Reservoir, LLC (PTCR) is hereby requesting a two-year extension for the Peabody Trout Creek Reservoir Project (Project). While PTCR intends to continue with this Project, the economics of the coal industry have impacted the ability of PTCR to continue with the significant capital investments needed to execute and complete the required resource studies this year to develop this Project. Additionally, PTCR needs a more intensive/longer hydrologic record to assess the viability of the hydropower component of this Project.

Accordingly, PTCR requests the date for filing a License Application be extended to February 28, 2018, extending the preliminary permit term by two years beyond the three years previously permitted, for a total term of five years. During the two-year time extension, PTCR will continue to submit semi-annual progress reports to the Federal Energy Regulatory Commission (Commission), and pursue good faith and reasonable diligence efforts towards the development of this hydropower Project. As recently reported at the June 25, 2015 Second Study Report Meeting for the Project, to date, PTCR has fully complied with the Integrated Licensing Process timeline, submitting required Project filings, interim progress reports, and study reports per the time requirements, and engaging stakeholders throughout the licensing efforts.

Should you have any questions about this time extension request, please contact me at 314-342-3484 or [byansen@peabodyenergy.com](mailto:byansen@peabodyenergy.com), or David Merritt, AECOM, PTCR's Environmental Consultant, at 970-309-7076 or [david.merritt@aecom.com](mailto:david.merritt@aecom.com). Thank you for your consideration of this time extension request.

Respectfully,

A handwritten signature in black ink that reads "Brian Yansen". The signature is written in a cursive style with a long horizontal flourish at the end.

Brian Yansen  
Director, Real Estate Development

cc: *Attached Distribution List*



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