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Electronic file

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

RE: Big Run Pump Storage Hydro Project (FERC no. P-14889); Application for Preliminary Permit

Dear Secretary Bose:

Thank you for allowing the West Virginia Division of Natural Resources, Wildlife Resources Section (WRS) the opportunity to provide comments with regards to the referenced Application for a Preliminary Permit for the proposed Big Run Pump Storage Hydroelectric Project (Project), FERC No. 14889. Freedomworks, LLC (applicant) filed its application on October 15, 2018 and has based its application on a conceptual design of the project. As proposed, the project will be located in Tucker County, WV at Big Run with a large portion of the project to be located within the Monongahela National Forest. The project will utilize a closed-loop pump storage system to generate approximately 1,000 MWH. The upper reservoir, as proposed, will be constructed on Big Run, while the lower reservoir will be constructed on Mill Run, a tributary to the Cheat River. The applicant has chosen to use the Traditional Licensing Process for these proceedings. The comments below are being provided pursuant to 18 C.F.R §4.38(b)(5).

The WRS has grave concerns about the Big Run Pump Storage Project as presented in this preliminary permit application. The WRS further rejects the belief by the applicant that this Project will not result in significant impacts to waters of the US, upland habitat, and both warm water and cold-water fisheries within the surrounding area.

The Project will be a Closed-Loop Pump Storage Facility. The initial charge for the reservoirs will be from the Cheat River. It is further presumed that the Cheat River will act as a supplemental charge to correct low water levels in the reservoirs in the event of loss via evaporation or subsurface flow. The amount of water needed to charge the reservoirs far exceeds the 300,000 gallon per month threshold that designates large quantity users. By the application provided, the minimum amount of water necessary for the project would be over 113,000-acre feet, or well over 36 billion gallons of water. Such a large withdrawal of water would threaten the stability of an already stressed watershed and would have the potential to temporarily dewater Cheat River and significantly impact this important warmwater fishery. It is worth mentioning that the Cheat River has a robust population of walleye (*Sander vitreus*), as well as smallmouth bass (*Micropterus dolomieu*). These are popular gamefish species to the Cheat River. The withdrawals from the Cheat River would have the potential to negatively affect the spawning and recruitment of these species, among other species, by potentially dewatering eggs, altering the flow to drought-like conditions, and creating stagnant and low dissolved oxygen conditions as a result of reduced flow. Of further concern is the potential for the withdrawals to negatively affect the watershed's ability to correct poor quality water entering the system through tributaries laden with acid mine drainage by altering the amount of clean water available for dilution. Therefore, the WRS requests that an instream flow study be conducted on the Cheat River in addition to physical habitat monitoring and general water quality assessments. These studies should be conducted over the course of at least two years to better assess the flow conditions of the Cheat River and may be extended to additional years. Through the instream flow and physical habitat studies, the WRS, in coordination with the West Virginia Department of Environmental Protection, will be able to establish minimum flow requirements to be adhered to at all times by the applicant in the event that withdrawals associated with the initial charge and supplemental charges are to occur. In addition, a suitable flow withdrawal rate to further shield the watershed from potential deleterious impacts would be established through these studies. The fisheries and wildlife within are the WRS' main concern and conditions must be maintained that support those species.

The reservoirs, as designed and presented within this application, do not include any evident depiction of bypass flow or mechanisms whereby flow from the reservoir into the tributaries being impounded will be maintained. Herein lies a particular concern by the WRS. As a closed-loop pump storage facility, the assumption is that the water will be circulated between the two reservoirs without any surface flow connections to the tributaries being impounded. This design effectively dewateres what would amount to over two miles of quality streams in Mill Run, Big Run, and Tub Run. This number does not include the miles of stream lost by the conversion of streams into reservoirs. The WRS cannot condone the loss of these resources. Therefore, the WRS would request that flow studies and physical habitat modeling be conducted on each impacted stream. The WRS further requests that minimum flow requirements be implemented utilizing a suitable flow whereby the fisheries are not stressed to the point of critical impairment.

The lower reservoir will be constructed on Mill Run. This is a designated high-quality brook trout (*Salvelinus fontinalis*) stream and a stream of significant importance to the state. Constructing a reservoir on this stream will result in the degradation and loss of this important fishery. The nature of the project mandates that water which would naturally flow down Mill Run be contained thus reducing the flow within Mill Run to a point where a viable trout fishery cannot exist. Further, any discharges from the reservoirs that may occur during the project's operation have a strong likelihood to be of a temperature unsuitable for trout survival. Additionally, the loss of connectivity through the construction of a reservoir disrupts the natural functions of nutrient cycling that help to sustain the existing trout populations. It is critical for the continued success of the fishery that proper flow and connectivity and a sufficient forest canopy corridor be maintained throughout this watershed. Therefore, the WRS requests that extensive measures be taken to avoid the deleterious impacts by this project that this fishery would incur. These measure would include maintaining cold water flow throughout the year and ensuring an adequate forested canopy cover throughout the upstream reaches of the watershed. Consideration should also be afforded to the location of the reservoirs, the construction and placement of which should avoid designated trout streams. As a further note, the adjacent tributaries of Wolf Run and Dry Run, both of which are listed as native brook trout streams, have the potential to be negatively impacted by this project through the loss of forested, riparian habitat resulting from the Project's construction. Loss of upstream canopy cover increases stream water temperature resulting in undue stress to trout and other coldwater species. This would be dependent on the final footprint of the proposed project.

The upper reservoir is being proposed on a rare and sensitive wetland area of the state, the Big Run Bog National Natural Landmark. This area is a large wetland complex of great importance that would be irrevocably destroyed should the upper reservoir be allowed to be constructed on it. A number of sensitive and endemic plant species are known to occur within this large complex or within the surrounding area contained within the project's footprint. These include, but are not limited to: lance-leaf grape fern (*Botrychium lanceolatum* var. *angustisegmentum* – S1), pussy willow (*Salix discolor* – S2), kidneyleaf grass-of-parnassus (*Parnassia asarifolia* – S2), roundleaf sundew (*Drosera rotundifolia* var. *rotundifolia* – S3), blackgirdle bulrush (*Scirpus atrocinctus* – S3), small cranberry (*Vaccinium oxycoccos* – S3), large cranberry (*Vaccinium macrocarpon* – S3), bristly black currant (*Ribes lacustre* – S2), rose pogonia (*Pogonia ophioglossoides* – S2), large-leaf white violet (*Viola blanda* var. *palustriformis* – S1), hoary sedge (*Carex canescens* – S3), buckbean (*Menyanthes trifoliata* – S1), bog rosemary (*Andromeda polifolia* var. *glaucophylla* – S1), northern bog clubmoss (*Lycopodiella inundata* – S2), foxtail clubmoss (*Lycopodiella alopecuroides* – S1), creeping snowberry (*Gaultheria hispidula* – S3), and kidneyleaf twayblade (*Listera smallii* – S2). In addition, several rare habitat communities are located within the area. These include: woolgrass wet meadow (S3), silvery sedge fen (S2), blueberry-bracken fern shrub swamp (S3), red spruce-hemlock/rhododendron swamp (S2), cottongrass fen (S1), red spruce/heath peat woodland (S2), rice cutgrass marsh (S3), threeway sedge fen (S1), chokeberry-wild raisin peatland (S3), cranberry-beakrush peatland (S1), and Allegheny Mountains hemlock-hardwood forest (S3). All of these habitats are rare sensitive areas that merit further protection.

The potential impacts extend far beyond the above listed plant species. The project area also provides critically important habitat for avian, mammalian, herpetological, and invertebrate species. Of particular concern within the proposed project footprint are: black arches moth (*Melanchra assimilis* – S1) Morrison's sooty dart moth (*Pseudohermonassa tenuicula* – SH), two-spotted skipper (*Euphyes bimacula* – S1), Atlantis fritillary (*Speyeria atlantis* – S3), green comma (*Pologonia faunus* – S1), Baltimore checkerspot (*Euphydryas phaeton* – S2), silver-bordered fritillary (*Boloria selene* – S3), early hairstreak (*Erora laeta* – S2), Appalachian azure (*Celastrina neglectamajor* – S3), Harris' checkerspot (*Chlosyne harrisii* – S2), crimson-ringed whiteface (*Leucorrhinia glacialis* – S1), sedge sprite (*Nehalennia irene* – S3), northern bluet (*Enallagma annexum* – S3), southern rock vole (*Microtus chrotorrhinus carolinensis* – S2), American bittern (*Botaurus lentiginosus* – S1), American black duck (*Anas rubripes* – S2), black-billed cuckoo (*Coccyzus erythrophthalmus* – S2), blackburnian warbler (*Setophaga fusca* – S3), black-throated blue warbler (*Setophaga caerulescens* – S3), broad-winged hawk (*Buteo platypterus* – S3), brown creeper (*Certhia americana* – S3), Canada warbler (*Cardellina canadensis* – S3), cerulean warbler (*Setophaga cerulea* – S2), long-eared owl (*Asio otus* – S1), Louisiana waterthrush (*Parkesia motacilla* – S3), northern goshawk (*Accipiter gentilis* – S1), northern saw-whet owl (*Aegolius acadicus* – S2), northern waterthrush (*Parkesia noveboracensis* – S2), olive-sided flycatcher (*Contopus cooperi* – S1), wood thrush (*Hylocichla mustelina* – S3), worm-eating warbler (*Helmitheros vermivorum* – S3), and eastern box turtle (*Terrapene carolina carolina* – S5 but declining considerably across its range). It should be understood that the project's footprint will destroy or significantly degrade critically important wildlife habitat and the construction of the project as proposed within the application will undoubtedly threaten the stability of each of these species. Maintaining continuous tracts of intact habitat with varying degrees of complexity is vital to maintaining these wildlife populations and the further fragmentation of critical habitat must be avoided. The WRS cannot condone such destruction of critically important habitat and would therefore request that measures be taken to avoid the degradation of such. These measures should include relocating the project to a more suitable location, denying the permit application, or abandoning the project entirely.

The Project will be located within the ranges of two federally listed species of bats: Virginia big-eared bat (*Corynorhinus townsendii virginianus*) and Indiana bat (*Myotis sodalis*). Historically, there have been known occurrences of these two bats within the area and known bat hibernacula have been documented. The permanent clearing of upland habitat for the construction of the lower and upper reservoirs and any other clearings associated with the Project's construction may have the potential to remove critical roosting tree habitat for these species. The WRS would request then that bat surveys and roost tree surveys be conducted to include the Mill Run, Big Run, and Tubs Run watersheds. Should the presence of these species be established, or there is indication that there would be a strong likelihood of their establishment within these areas, appropriate actions shall be taken to avoid and reduce any incidental take and destruction of habitat.

In addition to the two federally listed species of bats, this project is also located within the range of known occurrences for both the Cheat Mountain salamander (*Plethodon netting*) and the WV northern flying squirrel (*Glaucomys sabrinus*). The former is a federally listed species while the latter has been delisted in recent years. While the northern flying squirrel has recently been

delisted, it still maintains protection within the Monongahela National Forest through the Monongahela National Forest Land and Resource Management Plan. As both of these species have protective status, the WRS would request that an extensive study be conducted to further confirm or deny presence and assess the current population densities. Should the presence of these species be established, then appropriate actions shall be taken to avoid and reduce any incidental take of the species and destruction of habitat. In addition, the project area is also within the likely range of a federal candidate species currently under listing review: yellow-banded bumblebee (*Bombus terricola* – SNR). Further care should be taken to avoid disruptions to its habitat or to its populations.

Section 2.2.2 of this application refers to geotechnical studies. The WRS supports the need to conduct geotechnical surveys. A portion of this project (the upper reservoir) will be constructed on historically mined land. The type of mining employed in this location left behind a series of tunnels that have since filled with acid mine drainage laden water. There is a significant concern surrounding the structural integrity of this area and its potential to support such a massive body of water. A failure of the supporting geology would result in the release of an unknown volume of toxic water. Such a release would threaten an already stressed watershed in the Cheat River and result in a rapid degradation of water quality and a significant loss of aquatic life. Therefore, the WRS would request a thorough and extensive study of the underlying geology's ability for the long-term support of a reservoir of this size. The WRS further requests that a plan be drafted and ready to implement in the event that a catastrophic failure should occur. The structural integrity of the underlying geology should also be monitored continuously to identify any areas of weakness and to proactively minimize the risk of and avoid such failure.

Section 2.2.3 of this application refers to water quality studies. The WRS would recommend that any water quality studies conducted in relation to this project to also include an analysis of the bodies of water affected by the upper reservoir in addition to those affected by the lower reservoir. In addition, both Blackwater River and Cheat River could potentially be subjugated to unknown impacts. The impacts associated with both the upper and lower reservoirs may be particularly wide-reaching considering the nature and size of the project. Of particular concern, beyond the focus placed on acidity by the applicant, would be impacts to temperature, dissolved oxygen, pH, and possibly nutrients that may occur as a result of project construction and operation. Any impacts will need to be assessed fully and completely.

Section 2.2.4 of this application refers to recreation studies to be conducted to identify any areas in which the project's operation would interfere with recreational activities. The loss of a functioning and viable brook trout fishery in Mill Run presents a heavy loss to the recreational activities in the area. This would be in concert with a potential disruption of angling activity in the Cheat River. Additionally, the Monongahela National Forest offers a multitude of recreational opportunities that could potentially be impaired as a result of the project's operation, including the loss of the Big Run Bog National Natural Landmark which is a favorite spot by many outdoor enthusiasts. Therefore, the WRS would request that recreation studies include the potential impacts to recreation in Cheat River, Blackwater River, Mill Run, Big Run, and the surrounding Monongahela National Forest.

Section 2.2.6 of this application mentions that a review of the fisheries would not be included as part of the field investigation due, in part, to the fact that this project will be a closed-loop pump storage hydro project. Rather, it is because of this project's nature as a closed-loop pump storage hydropower facility that an exhaustive review of the fisheries is absolutely warranted. There are clear and evident impacts to the fisheries associated with such a project. As proposed, the project would effectively dewater several tributaries to the Blackwater and Cheat Rivers that would result from the construction and operation of said Project as presented within this application. Additionally, project construction would alter the watersheds upstream by converting them from a lotic system to a lentic system, thus fundamentally altering the downstream ecosystem. Negative impacts associated with headwater reservoirs include increases in downstream temperature and increases in sedimentation, all of which would have negative effects on the existing downstream fisheries and supporting ecology. Further, the intended priority use and nature of the proposed pump storage reservoirs negates any opportunities for recreational fishing within the reservoirs due to the frequent and periodic lowering and raising of reservoir levels which negatively affect the reservoirs' ability to recruit and sustain healthy populations of fish species. Therefore, the WRS requests that an extensive study of the fisheries be conducted to include those watersheds directly impacted by the project's construction and operation, as well as the larger watersheds of the Blackwater and Cheat Rivers. Studies should be conducted pre- and post- construction and during Project operation to more fully assess the impacts of the Project's operation. These studies should further include an entrainment analysis.

The WRS does not object to the development of hydropower within the state; however, the WRS cannot support such development as proposed by Freedomworks, LLC within their preliminary permit application and requests that FERC deny such permit. This project, as presented, will result in irrevocable damages to the state's native brook trout fisheries, in addition to having devastating consequences to the downstream Cheat River ecosystem, the sensitive wetland habitats within the Big Run area, upland habitat communities for migratory birds and bats, and rare/threatened species. The WRS urges FERC to take into consideration all of the fisheries and wildlife concerns when issuing an order with regards to this preliminary permit application. The WRS further requests that, should the preliminary permit be deemed adequate and subsequently granted to the applicant by FERC, the full and complete federal and state coordination processes (i.e. 404/401 permits) should be implemented in light of the potential negative impacts to waters of the US and the state.

The WRS once again appreciates the opportunity to provide comments with regards to the Big Run Pump Storage Hydroelectric Project Preliminary Permit Application. If you have any questions regarding this letter or wish to discuss this issue further, please contact me by telephone at (304)825-6787, or by email at Jacob.D.Harrell@wv.gov.

Sincerely Yours,



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Hydropower Coordination Biologist