Hydropower at Jackson Lake Dam, Grand Teton National Park:

Probabilities and Implications

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Description of the Jackson Lake Dam

The Jackson Lake Dam is a concrete and earth-fill dam at the outlet of Jackson Lake in Grand Teton National Park (GTNP). The Snake River emerges from the dam and flows about 800 miles (1,287 km) through Wyoming, Idaho, Oregon, and Washington to its mouth on the Columbia River in eastern Washington. The chief purpose of the dam is to provide water storage for irrigation in the Snake River basin in the state of Idaho as part of the Minidoka Project. Jackson Lake is a natural lake but the Bureau of Reclamation (BOR) constructed a dam at the lake in 1907 to provide water storage causing the lake to increase its depth. The dam is operated by the BOR under a Memorandum of Understanding dated November 29, 1956, between the BOR and the National Park Service (NPS). The lands on which the dam and associated operational areas are located were withdrawn for reclamation purposes long before the establishment of the park, but were included within, and are considered to be part of the park. The original purpose of the dam was to provide water for downstream irrigation purposes in Idaho and the dam has never been used to generate hydroelectric power.

Brief history

Shortly after the passage of the Reclamation Act of 1902, the Reclamation Service (now known as Bureau of Reclamation) constructed a log dam at the outlet of Jackson Lake in 1906-1907 under the authority of that 1902 statute. After the original dam failed in 1910, the Reclamation Service built a concrete dam and earthen dike, completing the project in 1916. That further construction raised the dam 17 feet to a structural height of 65.5 feet, with a total storage capacity of 847,000 acre-feet (active 847,000 acre-feet). At that time, Grand Teton National Park (GTNP) did not yet exist. The work at Jackson Lake was part of a larger Reclamation project in the Snake River basin known as the Minidoka Project, "a large scale water reclamation program designed to irrigate arid lands in Idaho.[1]

On February 26, 1929, the original GTNP was established by act of Congress (45 Stat.1314). However, Jackson Lake was not within the original park boundaries.[2] On March 15, 1943, President Franklin D. Roosevelt executed a proclamation establishing Jackson Hole National Monument.[3] The "supervision, management, and control of the monument" was assigned to the Director of the NPS. Jackson Lake was included within the boundaries of the monument; however, the proclamation expressly provided that "the administration of the monument shall be subject to the reclamation withdrawal heretofore made under the authority of the act of June 17, 1902, 32 Stat. 388 [the Reclamation Act]."[4]

On September 14, 1950, Congress enacted 16 U.S.C. § 406d-l, 64 Stat. 849, a statute “for the purpose of including in one national park, for public benefit and enjoyment, the lands within the present GTNP and a portion of the lands within the Jackson Hole National Monument" and "established a new 'Grand Teton National Park'." The establishment of the park was expressly "subject to valid existing" rights. The statute also specifically acknowledged the prior

1 Daugherty, *A Place Called Jackson Hole (1999)*, at 171
2 Righter, *Crucible for Conservation* (1982), at 41-42
3 Proclamation No. 2578, 57 Stat. 731.
4 *Id.* at 734.

reclamation withdrawal purposes, which the 1902 Act explained as irrigation purposes. As provided for by this statute, the Secretary of the Interior issued an order prescribing the enlarged GTNP's boundaries, which included Jackson Lake.[5]

Safety concerns were identified at the dam in the mid-1970s, and from 1977 to 1989 the level of Jackson Lake was maintained at a lower than normal level because of concerns for possible dam failure during an earthquake. The dam foundation was completely replaced using a technique called dynamic compaction, and a grout curtain was installed below the foundation. The combination water release structure/bridge was also replaced. This work was completed in 1989 under authority of Reclamation's Safety of Dams Act making the full capacity available again.

Prior proposals to add a hydropower feature at Jackson Lake Dam

On April 9, 2001, Symbiotics, LLC filed an application for preliminary permit from the Federal Energy Regulatory Authority (FERC) under Sections 4(f) and 5 of the Federal Power Act (FPA) to study the feasibility of constructing a hydroelectric project at Jackson Lake Dam. Symbiotics proposed to construct a powerhouse containing a four-megawatt generating unit, a 200-foot-long penstock, a tailrace, a switchyard, and a one-mile-long transmission line.

In response to Symbiotics' application, the Department of Interior (DOI) contended that the proposed project is located within GTNP, and that the FPA prohibits FERC from licensing projects within national parks. Subsequently, FERC staff dismissed Symbiotics' preliminary permit application, on the grounds that the proposed project would occupy lands of the GTNP, and that FERC's jurisdiction does not extend to hydropower projects to be located in a national park.

On November 13, 2001, Symbiotics filed a request for rehearing, stating that the project will be located entirely on land that, although within the exterior boundaries of GTNP, is under the BOR jurisdiction, such that the FERC has jurisdiction to license the project. In response to Symbiotics' request, the DOI responded as follows: "First, Interior contended that the proposed project is located within Grand Teton National Park, and that the FPA prohibits the Commission from licensing projects within national parks. Second, Interior asserted that Section 2406 of the Energy Policy Act of 1992 gives Reclamation the authority to construct, operate, and maintain hydroelectric facilities at its projects in the Pacific Northwest, and that therefore the Commission lacks jurisdiction to license projects there. Third, Interior stated that the project's transmission line and other, unspecified, facilities would be located on National Park lands, and listed the resources, including aesthetics, water, quality, and endangered species that would be adversely affected by the project."[6] The request for rehearing filed by Symbiotics was denied on February 14, 2002 when, again, FERC declared that it had no jurisdiction.

In March 2006 the Lower Valley Energy Co. (LVE) approached the Superintendent of GTNP to discuss a proposal for a hydroelectric generation project at the Jackson Lake Dam within park boundaries. After discussing the matter within the NPS, the Superintendent informed LVE that

5 *Id.*
6 Symbiotics, L.L.C. Project No. 11944-00, FERC's Order Denying Rehearing (Issued February 14, 2002).

the NPS did not wish to pursue a hydroelectric generation project at the Jackson Lake Dam. The 2006 LVE proposal was, at the time, the latest in a series of similar proposals that have periodically been raised over the last several decades. The NPS and the DOI have consistently opposed such efforts, and have asserted that under the FPA, the FERC has no authority to license hydroelectric projects within national parks.

More recently, in May of 2007, representatives of LVE met with several officials within the DOI, once again proposing a hydroelectric project for Jackson Lake Dam. NPS continued to maintain that the FPA prohibits FERC from licensing such a project within GTNP.

Federal laws and policies which currently prevent hydropower from being added to Jackson Lake Dam, and other dams within the National Park System

Much of the following was excerpted from National Parks Conservation Association White Paper, Proposed Hydroelectric Power Generation Facility at Jackson Lake Dam in Grand Teton National Park, *A legal overview presented by National Parks Conservation Association,* March 15, 2017

16 U.S.C. § 797a In 1921, Congress amended the Federal Water Power Act as follows:

> "On and after March 3, 1921, no permit, license, lease or authorization for dams, conduits, reservoirs, power houses, transmission lines, or other work for storage or carriage of water, or for the development, transmission, or utilization of power, within the limits as constituted March 3, 1921, of any national park or national monument shall be granted or made without specific authority of Congress."

16 U.S.C. § 797(c) Prohibits the FERC from issuing an original license for any project located within any unit of the NPS system that would have a direct adverse effect on Federal lands.

> "After October 24, 1992, the Federal Energy Regulatory Commission may not issue an original license under Part I of the Federal Power Act [16 U.S.C.791a et seq.] (nor an exemption from such Part) for any new hydroelectric power project located within the boundaries of any unit of the National Park System that would have a direct adverse effect on Federal lands within any such unit. Nothing in this section shall be construed as repealing any existing provision of law (or affecting any treaty) explicitly authorizing a hydroelectric power project." (Public Law. 102–486, title XXIV, § 2402, Oct. 24, 1992, 106 Stat. 3097.)

In 1935, Congress reinforced the 1921 prohibition by amending the FPA to expressly exclude national parks and monuments from the definition of "reservation" subject to FERC's licensing authority.

> "reservations" means national forests, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws; also lands and interests in lands acquired and held for any public purposes; but shall not include national monuments or national parks"

16 U.S.C. § 797(e). This licensing authority extends to projects on "public lands and reservations of the United States (including the Territories), or for the purpose of utilizing the surplus water or water power from any Government dam."

> However, a license may be issued for a project on a federal reservation "only after a finding by the Commission that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired," and the license "shall be subject to and contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation."

Energy Policy Act. In the 1992, Congress amended the parameters of the FERC's jurisdiction in national parks, as follows:

> After the date of enactment of this Act, the Federal Energy Regulatory Commission may not issue an original license under Part I of the Federal Power Act (nor an exemption from such Part) for any new hydroelectric power project located within the boundaries of any unit of the National Park System that would have a direct adverse effect on Federal lands within any such unit. Nothing in this section shall be construed as repealing any existing provision of law (or affecting any treaty) explicitly authorizing a hydroelectric power project.

Federal Power Act, § 3(2), as amended through P.L. 114-94, Enacted December 4, 2015. Definition of reservations

> "Reservation" means national forest, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws; also lands and interests in lands acquired and held for any public purposes; but shall not include national monuments or national parks.

Federal Power Act, § 4(e), as amended through P.L. 114-94, Enacted December 4, 2015

> The Commission is hereby authorized and empowered—To issue licenses to citizens of the United States, or to any association of such citizens, or to any corporation organized under the laws of the United States or any State

> thereof, or to any State or municipality for the purpose of constructing, operating, and maintaining dams, water conduits, reservoirs, power houses, transmission lines, or other project works necessary or convenient for the development and improvement of navigation and for the development, transmission, and utilization of power across, along, from or in any of the streams or other bodies of water over which Congress has jurisdiction . . . . or upon any part of the public lands and reservations of the United States (including the Territories), or for the purpose of utilizing the surplus water or water power from any Government dam, except as herein provided: Provided, That licenses shall be issued within any reservation only after a finding by the Commission that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired, and shall be subject to and contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation.

36 CFR, § 5.7, Construction of buildings or other facilities**.** This statute states that:

> Constructing or attempting to construct a building, or other structure, boat dock, road, trail, path, or other way, telephone line, telegraph line, power line, or any other private or public utility, upon, across, over, through, or under any park areas, except in accordance with the provisions of a valid permit, contract, or other written agreement with the United States, is prohibited.

Regulatory Overview

The FPA prohibits FERC from issuing preliminary permits or licenses within national parks and monuments. This prohibition has been supported by amendments to the FPA in 1921, 1935, and 1992. The 1921 amendment expressly prohibits FERC-licensed projects in national parks or monuments unless so ordered by Congress. In 1935, Congress reinforced this prohibition by expressly excluding national parks and monuments from the definition of "reservations" subject to FERC's licensing authority. Congress did so with the intent of removing an inference that national parks and monuments were open to hydroelectric development. The 1992 amendment, however, appears to ambiguously and implicitly alter Congress' 70-year course of action. Assuming that the 1992 FPA amendment contemplated licensing a new project within units of the National Park system, but not national parks or monuments, the FPA requires a preliminary determination that the proposed project would not have a direct adverse effect of Federal lands within any park unit.[7]

The term "direct adverse effect" is equally ambiguous, as is the criteria by which that effect could be determined. These ambiguities do not agree with Congress' legislative intent, which

7 Department of Interior motion to intervene in Symbiotics, LLC's application for a preliminary permit for the O'Shanessey hydroelectric project, July 17, 2001.

has always indicated the unsuitability for hydro dams within national parks and monuments. For example, in DOI's response to Symbiotics' request for rehearing in the 2006 preliminary permit case, DOI asserted that the transmission line for the proposed project will cross national park lands, and that it would have adverse impacts there. From a policy standpoint, the DOI's view of the FPA prohibiting hydropower dams within parks and monuments remains intact.

Ramifications of congressional action, amending the FPA or creating new legislation

As noted, several attempts have been made to add a hydropower component to Jackson Lake Dam. In each incident, GTNP management and the DOI have cited existing federal laws which explicitly prohibit the creation of new hydropower project within NPS parks or monuments. In the case of Symbiotics, LLC's application for a preliminary permit in 2001, FERC reaffirmed that they were prohibited from licensing such a project in their denial of a rehearing. Other hydropower proponents were deterred simply by receiving a negative response from the GTNP Superintendent.

One interpretation of the primary Federal law (16 U.S.C. § 797(c)) implies that "specific approval of Congress", presumably on an ad hoc (project-specific) basis, could permit FERC to license a new project within national park boundaries. Again, the ambiguity of 16 U.S.C. § 797(c) cannot be reconciled with that of earlier sections (797a and 796(2) of the FPA. .

Should Congress pass legislation allowing hydropower to be added at Jackson Lake Dam, what precedents could it set for the rest of the NPS System?

Theoretically, new laws could be formulated and passed. Similarly, the current law could be amended to remove specific prohibitions on developing hydropower dams within National Park system parks and monuments, reversing an almost century-old policy. But such specific action by Congress would be unprecedented, and would likely open the door for future actions. Opening up national parks and monuments (such as GTNP), and potentially throughout the country, for such development could result in a multitude of proposals for similar projects.

It should be noted that Congress permitted, and FERC licensed, a hydropower project within a park unit in Alaska, the Falls Creek Project (FERC P-11659). But this project, which was also in designated wilderness area, required a federal/state land swap to take the project area out of the NPS and give it lands of equivalent value and it required that the Secretary of Interior find that there would be no adverse effect on the remaining park lands, before FERC was allowed to issue the license. It is not accurate to say that allowing hydro in a national park was a precedent in this case, because it happened pursuant to a legislative act, not a FERC or court decision.

NPS/DOI policy currently favors the removal of dams currently in place and restoration of productive watersheds. The model for this was the removal of the Elwha and Glines Canyon dams on the Elwha River in Olympic National Park which began in 2011. As existing hydropower dams become less productive and less cost-effective relative to other power sources (renewable and otherwise), a strong argument can be made for removal as their FERC licenses expire. But this policy and inclination could be reversed, given legislative action which removes prohibitions and/or if were administrative direction were to shift. The capital investment of

hydropower projects, especially on rivers which are already regulated, is minimal relative to other energy sources. And the administrative burden and costs of applying for an exploratory, preliminary permit from FERC for a proposed project is nominal. Projects that didn't make sense before suddenly make sense to hydropower proponents.

Another threat to existing policy would be the possibility that the threshold for "direct adverse effect" be raised or eliminated. As explained earlier, this term and its qualitative criteria are inherently ambiguous. With a less rigorous environmental analysis, ill-conceived, marginal-output projects could be more subjectively considered. And, again, in such a climate, traditional DOI/NPS policy positions could be administratively reversed, if the FPA were changed removing current legal prohibitions.

Existing hydropower dams in the National Park system that could potentially be affected by new legislation.

According to an inventory conducted by the NPS in 2009, there were 67 hydro dams, inside 22 parks, located in 14 states. See Appendix A. The vast majority of these dams were developed before the parks were officially designated as national parks. Two of these historic dams (Elwha and Glines Canyon) have since been removed.

The NPS inventory also identified 427 non-powered dams, greater than 10 feet in height, located inside 83 different parks, in 40 states. In theory were there new, congressional legislation or specific approval, hydropower facilities could be installed at these dams.

Operational rules and constraints that currently exist at Jackson Lake Dam

The 1956 Memorandum of Understanding (MOU) between the BOR and NPS specifies how flows are to be released from Jackson Lake Dam in order to provide for BOR's water demands, while protecting park resources. Again, the original, and current, purpose of the dam is to provide water for irrigating Idaho agricultural lands. The MOU contains the principles for administration and development of recreation resources and facilities of all lands acquired or withdrawn as right-of-way for the storage of water of Jackson Lake reservoir.[8]

> 3. The BOR's jurisdiction is for the purpose of insuring proper operation and protection of the reservoir, but shall not preclude park development within the operation zone. The operation zone is defined as "lands below the maximum operation pool elevation of Jackson Lake Reservoir. All public utilization of the operation zone of the Bureau for recreation, fishing, boating, and other park purposes shall be under the administration and control of the Service, including the control of wildlife. "
>
> 4. "The occupancy or utilization of the resources and facilities of federal lands, other than in the operation zone, shall be authorized only by the Service", except for access for operation by the Bureau.

8 Memorandum of Understanding between the National Park Service, U.S. Department of Interior and the Bureau of Reclamation, U.S. Department of Interior, November 29, 195

6. "The Bureau shall retain complete and exclusive control of the flow and utilization of the waters of Jackson Lake Reservoir for reclamation purposes, including the right to raise and lower the reservoir at will, as well as all reclamation facilities constructed, or to be constructed, for carrying out these purposes, and shall retain the right of free and unhampered action to perform all necessary or proper operations around the Lake Jackson Reservoir and to patrol the shoreline. The Bureau will give full consideration to maintaining a constant level of the operating pool, with little or no fluctuation during the recreation season – June – September for the purpose of providing the greatest recreation use of the lake."[9]

How would the Memorandum of Understanding (MOU) be affected by new legislation authorizing hydropower at Jackson Lake Dam?

The MOU would need to be rewritten or amended to expand the purpose of the dam to include the generation of hydropower for export. Provisions for the construction and subsequent operation of ancillary facilities (power house, switch yard, transmission lines etc.) would have to be included in the new MOU. Assuming that the operation of the hydropower feature was to be base-load (non-peaking), it is speculative as to how reservoir level and instream flow rates below the dam would be affected.

How proposed Jackson Lake Dam hydro projects are different from the micro-hydro facility in Yellowstone NP that came on line in December 2013.

The micro-hydro feature in Yellowstone NP was built in 2012 and became operational in 2013. It is a 175 Kw plant that uses an existing, diverted water conveyance (water line) that provides domestic and consumptive water to town of Mammoth. The power generated from the plant serves the park and is <u>not</u> exported outside of the park.

The latest project that is being currently floated by a Jackson, Wy. proponent is constructing a generator on the dam and they are attempting to enlist Energy Conservation Works, a Jackson-based nonprofit, in the cause. The proposal contends that a generator could likely be installed and operated with very few impacts to park resources. "The dam already exists, it's located on Bureau of Reclamation land, and the hydroelectric plant itself would only require a few extra transmission lines and a small outbuilding." At an estimated cost of $12 million, proponents estimate the power from a 3.8 megawatt generator would only cost about 5 cents per kilowatt-hour.[10]

9 *Id.*
10 Jackson Hole News and Guide, Opinion section, Paul Hansen, June 8, 2017

Direct adverse effects that could result from adding hydropower at Jackson Lake Dam

Activities which negatively affect park values, alter river flows, or affect hydrology of the river or its natural or riparian resources should be considered adverse. It should be noted that the dam has been in place for over a century and, at least since 1956, operated under the NPS/BOR MOU conditions. The former, or prospective, proposals for adding a hydropower component to the dam involve base-load operations. This may have limited affect to the reservoir, but may have consequences downstream in terms of flow-rate, water temperature, water quality, and effects on the riparian environs. The following discussion is based on analyzed effects contained in the companion environmental assessment for the Comprehensive River Management Plan which are monitored within the scenic segment of the designated Snake River Headwaters Wild and Scenic River. This 26.6 mile segment begins one mile below the dam and extends to GTNP's southern boundary.

Environmental Effects of the Dam - Since the Jackson Lake Dam was created on the Snake River in what later became GTNP, the geomorphic, hydrologic and vegetation adjustments downstream of the dam have yet to be documented. After a larger reservoir was completed further downstream in 1957, the reservoir release schedule from Jackson Lake Dam was changed in a manner that lowered the magnitude and frequency of floods. The stability of the Snake River exhibited a complex response to the change in flow regime. Close to major tributaries, the Snake River increased in total sinuosity and rates of lateral channel migration. Away from the influence of tributaries, the river experienced fewer avulsions and a decrease in sinuosity. Vegetation maps were constructed from 1945 and 1989 aerial photography and field surveys. Using these data, we determined how vegetation is directly related to the number of years since each portion of the floodplain was last occupied by the channel. The vegetation has changed from a flood-pulse dominated mosaic to a more terrestrial-like pattern of succession. Changes in the Snake River and its floodplain have direct implications on bald eagle habitat, moose habitat, fish habitat, safety of rafting and canoeing, and biodiversity at the community and species levels.[11]

Natural fluctuations of year-round flow are a primary contributor toward a properly functioning riparian ecosystem. These variable flow rates not only support in-stream aquatic species, but also the vegetation throughout the riparian corridor, providing indirect foraging material for many associated ungulate species. According to the Snake River Headwaters Comprehensive River Management Plan/ Environmental Assessment, National Park Service/U.S. Fish & Wildlife Service, U.S. Department of the Interior, May 2013, "rare, sensitive, and keystone plants that are water dependent, such as cottonwoods and willows, depend on the natural flow regime for their health and propagation. Fauna such as moose, grizzly bears, amphibians, eagles, ospreys, elk, beavers, otters, and waterfowl depend on riparian vegetation for habitat and foraging, which is in turn reliant on the natural fluctuations of river flows. These facts are true for all segments of the river, whether designated as having an outstandingly remarkable values (ORV) present or not.

In the wild and scenic segments of the Snake River, as well as the Gros Ventre segment, swans are reliant on water currents that keep sections of the river from freezing, providing open water

11 Impacts to flows in the Snake River Effects of Jackson Lake Dam on the Snake River and its floodplain, Grand Teton National Park, Wyoming, USA Richard A. Marstona,T, John D. Millsb, David R. Wrazienc, Beau Bassettd, Dale K. Splintere, page 96

habitat in the winter months. Similarly, beaver in the wild and scenic Snake River segments are dependent on a minimum winter flow in order to dam up or use deeper sections to cache food supplies. These sections also support various communities of thermal microbes within the riverbed that depend on certain in-stream flow rates. In years of drought, the wild segment of the Snake River requires a high enough flow volume to support the myriad species that would migrate from other nearby low-flow tributaries."[12]

Hydropower Dams and Designated National Wild and Scenic Rivers

In 2009 Congress enacted the Snake River Headwaters Legacy Act of 2009 (PL 111-11, Sec. 5002) which added the Snake River Headwaters, Wyoming to the National Wild and Scenic River System. This included a river segment extending from one mile downstream of Jackson Lake Dam to one mile downstream of the Teton Park Road Bridge at Moose, Wyoming. It is administered by NPS (GTNP).

"The portions of the Snake River consisting of the 47-mile segment from its source to Jackson Lake—designated as a wild river— and the 26.6 mile segment from 1 mile downstream of Jackson Lake Dam to 1 mile downstream of the Teton Park Road bridge at Moose, Wyoming" is designated as a scenic river".[13]

In-stream Flows The Omnibus Public Land Management Act, which designated waterways of the Snake River Headwaters as a wild and scenic river, sets the priority date (March 19, 2009) for quantification of wild and scenic river water rights. Valid, existing water rights in Idaho and Wyoming are unaffected by this act including storage, management, and release of water from Jackson Lake; all interstate water compacts in existence as of March 19, 2009 (including full development of any apportionment made in accordance with the compact), and water rights held by the United States. The Secretary of the Interior (or his designee) is required to apply for reserved water rights in each segment in accordance with the procedural requirements of the laws of the State of Wyoming.[14]

Identified River Values Pursuant to the Wild and Scenic Rivers Act, The NPS and the U.S. Fish & Wildlife Service, completed a Comprehensive River Management Plan in May 2013, "Snake River Headwaters Comprehensive River Management Plan / Environmental Assessment". According to the Plan, "The Snake River Headwaters is a high quality snowmelt-dominated watershed. The headwaters contain diverse, abundant native species and natural communities; extensive, intact, and interconnected habitats; high water quality; and natural unconfined channel morphology. The Snake River below Jackson Lake is influenced by Jackson Lake Dam operations. The BOR cooperatively works with the NPS to provide spring release flushing flows in May/June. Constant flows between 1,500–2,100 cubic feet per second (cfs) are released from

12 Snake River Headwaters Comprehensive River Management Plan / Environmental Assessment, National Park Service | U.S. Fish & Wildlife Service, U.S. Department of the Interior, May 2013, page 407

13 National Wild and Scenic Rivers website (www.rivers.gov), designated rivers, Snake River Headwaters Wild and Scenic River

14 Snake River Headwaters Comprehensive River Management Plan / Environmental Assessment, National Park Service | U.S. Fish & Wildlife Service, U.S. Department of the Interior, May 2013, page 407.

July to September. Recent studies show that tributaries below the dam mitigate the dam's effects related to hydrology and geomorphology on the Snake River."[15]

Outstandingly Remarkable Recreation Values The NPS and U.S. Fish and Wildlife Service concluded that the Snake River Headwaters contains the following set of outstandingly remarkable values: scenic, recreational, cultural, ecological/wildlife, fish, and geologic. "The Snake River below Jackson Lake Dam provides a number of exemplary and unique scenic features including braided river channels, diverse wildlife, and vegetation at Oxbow Bend, numerous side channels, and the river in the foreground of the Teton Range. This segment of the river contains the historically iconic view from the Snake River overlook, which was popularized by Ansel Adams, the renowned American photographer and environmentalist; distinct views recognized around the world at Oxbow Bend; Schwabacher Landing where beaver ponds reflect views of the Grand Teton framed by cottonwood stands; and views of historic Menor's Ferry with the Teton Range looming in the background. Fish constitute an ORV due to the presence of cutthroat trout and other native species, high species diversity, and natural reproduction of native species."[16]

Scenic ORV – According to the Comprehensive River Management Plan, the unparalleled scenery of the Snake River Headwaters has been identified as an ORV—an important characteristic that makes this river system worthy of protection under the Wild and Scenic Rivers Act. To ensure the protection of this iconic scenic landscape, the following set of scenery conservation measures would be implemented under all action alternatives:

- Continue the protection of scenic views within the river corridors by not placing structures and other intrusions within scenic view sheds.
- Evaluate the compatibility of existing and any newly proposed developments to protect scenic river values. Facilities would be designed, sited, and constructed to avoid or minimize visual intrusion.
- Use vegetation treatments to screen and blend structures with the natural landscape.
- Design and maintain developed and dispersed recreation sites to reduce visibility from designated rivers.
- Emphasize the use of natural materials (e.g., vegetation, rocks, and wood) for erosion control and riverbank stabilization efforts to maintain the natural appearance of the river corridor. Structures would be designed to minimize visual intrusions to the maximum extent possible, consistent with section 7 of the Wild and Scenic Rivers Act.

- Maintain historic vistas and other remarkable views to the extent possible (i.e., vegetation pruning) to allow visitors the opportunity to experience a variety of scenic settings without disrupting the integrity of the natural ecosystem. Where possible, allow these viewpoints to be dynamic and subject to change due to natural processes (i.e., geologic, hydrologic, and vegetation changes).

15 *Id.*
16 *Id. Pg 16.*

Scenic ORVs and In-stream Flows - The scenic stretch of the Snake River is defined by the sights and sounds of the natural scenery, which includes the peaceful flat river sections, the wild and braided channels, and the wildlife habitat such as beaver ponds and water-dependent cottonwood trees. The range of flows across the seasons contributes to the variation in the scenic landscape.[17]

Recreation ORV - According to the Comprehensive River Management Plan, a wide range of recreational activities and experiences was identified during scoping as important to visitors of the Snake River Headwaters area, including angling, boating, swimming, hiking, walking, backpacking, snowboarding, cross-country skiing; photography, wildlife viewing, climbing, camping, horseback riding, hunting wildlife, and edible plant gathering. The following recreation management strategies would be implemented under all action alternatives:[18]

- In general, provide a range of visitor experience opportunities.
- Improve launch and river access points (locations and specific improvements vary by alternative).
- Develop interpretive and educational messaging for the Snake River Headwaters overall related to the Wild and Scenic Rivers Act and the protection of river values in partnership with the U.S. Forest Service and U.S. Fish and Wildlife Service.
- Implement a visitor use management and monitoring program using indicators and standards of quality to effectively manage the kinds and amounts of visitor use specified in the alternatives.

Recreational ORVs and In-stream Flows - In the scenic segment of the Snake River, most fishing is conducted from boats. Cutthroat trout fishing depends on tapering, steady flow (2,000–3,500 cfs) for consistent conditions and a longer season in this segment, with a pre-runoff season occurring from April to May, and a later summer season running from July 1 to October 15.[19]

Along the scenic segment of the Snake River, the experience is not considered to be whitewater, but is rather a focus on moderate, consistent flows that mimic the natural hydrograph. The timing of recreational use follows this peak run-off period. Vessels that utilize this reach include rafts, drift boats, canoes, kayaks, and paddle boards. Boat ramps become inaccessible in low-flow periods, and the commercial trips that run along this segment rely on continuous, moderate flow rates for economic viability (high flows become hazardous and low flows prevent safe navigation of the waters). The float season generally starts in April and runs to October, varying with the season. Peak use lies between June 15 and September 15.

Flows in the scenic segment of the Snake River contribute to aesthetic aspects such as scenery and the natural soundscape, which contribute to recreation experiences such as viewing scenery, photography, hiking, and picnicking, among others. This segment is largely dam controlled, and therefore, much of the hydrology is influenced by the reservoir. Temperatures in the river can rise to unnaturally high levels in the summer months due to low flows, yet high flows can be

17 *Id. Pg 410.*
18 *Id. Pg 74.*
19 *Id. Pg 408.*

problematic as well, as they shorten the duration of float trips and negatively affect the fishing environment. Therefore, constant flows are most desirable in the summertime to accommodate boaters and fishermen alike during peak use of the season.[20]

Fish and Wildlife ORV - Many designated river segments of the Snake River Headwaters are dependent on natural in-stream flow rates to sustain the populations of Yellowstone and Snake River cutthroat trout, to retain the high degree of native species diversity, and to provide habitat for natural reproduction. Fish in these reaches rely on a range of flows to provide the necessary habitat conditions for all life stages, including spawning, rearing, feeding, resting, and overwintering. High spring flows of sufficient magnitude and duration, occurring at the proper time in the season, are needed to cue cutthroat spawning, to maintain channel dimensions, and to support the health and regeneration of riparian vegetation as a necessary component for habitat. Low flows in the summer provide secure rearing habitat, but the flows must not become so low as to dry out such habitat or result in lethally high water temperatures. In turn, winter flows must remain sufficient to provide ice-free habitat with enough dissolved oxygen to last until waters become entirely ice-free in the spring melt-off. In the scenic segment of the Snake River, dam operations more directly affect the timing, duration, frequency, and magnitude of instream flows. Too
rapid a rate of change can be disruptive for spawning and for young fish in particular. A study of a hydrograph of the Snake River scenic segment should mimic that of the Pacific Creek and Buffalo Fork for continuity of habitat conditions for migrating fish. The fall decrease of in-stream flows should also drop at a steady rate, preventing possible stranding of fish in pockets of relatively deeper channels and pools.[21]

Wild and Scenic Rivers Act, Section 7 Applications - According to the Wild and Scenic Rivers Act, Section 7, the evaluation standard for new hydroelectric facilities licensed by the FERC is subject to the river-administering agency's (NPS) finding relating to developments located below, above, or on a stream tributary to the designated river. The downstream/upstream project may be constructed as long as the designated river is not invaded by the project, or the scenic, recreational, fish or wildlife values present at the date of designation are not unreasonably diminished. If, however, in the judgment of the river-administering agency the proposed project operations would invade the area or unreasonably diminish its scenery, recreation, fish or wildlife values, the river-administering agency may, but is not required to, make recommendations that would allow the FERC to license the project.[22]

The initial question to be addressed is whether or not the proposed project invades the designated river. The term invade is defined as encroachment or intrusion upon. According to the Interagency Wild & Scenic Rivers Council, if the project is determined to invade the designated river, the proponent would be advised to develop measures to eliminate this unacceptable effect. If the proposed project does not invade the designated river, the next question to be answered, relative to the standard in Section 7(a), is whether or not the proposed project will "unreasonably diminish" any of the specified values.

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20 *Id. Pg 410.*
21 Wild and Scenic Rivers Act, PL 90-541-0CT. I, 1968.
22 *Id.*

> Given that the standard implies that some diminution of values may be determined reasonable, there are two questions to consider. 1) Does the proposed project cause diminution of the scenic, recreational, and fish and wildlife values of the designated river as present at the date of designation? 2) If there is diminution, is it unreasonable? This would suggest an evaluation of the magnitude of the loss. Factors to be considered include:
>
> (1) Whether the value contributed to the designation of the river (i.e., outstandingly remarkable); and,
> (2) The current condition and trends of the resource. (If diminution is determined unreasonable, measures may be recommended to reduce adverse effects to within acceptable levels.)

Rationale for Diminution Determination: The Wild and Scenic Rivers Act requires the identification of the document that provides the basis for the evaluation. For hydroelectric proposals, the FERC license application, including Exhibit E, is the basis for the preliminary Section 7 determination, reserving the right for further evaluation based on the results of subsequent environmental analysis.[23]

Conclusion

From a legal and policy standpoint, the FPA and NPS/DOI's position are that no new hydropower features may be developed at Jackson Lake Dam within GTNP, or any other National Park system park or monument. The generation of power is nowhere to be found in NPS's organic mission or purpose, and any activity which negatively affects park values or natural resources is forbidden. These principles have stood the test of time, a century. In view of its unprecedented nature, proponents of new dam development within these NPS park units would have a number of tests and obstacles to overcome. First of all, it is assumed that any project proponent would insist on a cost-benefit estimate that made the project practical from a purely financial standpoint. The vast majority of existing hydropower dams within park units are dated and produce relatively little marketable power. Many of these dams are low to medium-head operations, incapable of producing significant power, so the capital cost of the project would have to be quite low. Secondly, the environmental barriers of ensuring that proposed projects don't result in direct adverse effects and don't negatively impact other park values (scenic, recreational, etc.) are considerable. Despite these obstacles, the inherent ambiguousness of certain legislation (specifically 16 U.S.C. § 797(c)) opens the door to congressional tweaking and administrative discretion on the part of DOI policymakers. Given that, one can only speculate on the fate of future hydropower proposals at Jackson Lake Dam, and elsewhere within the nation's park system.

23 Technical Report of the Interagency Wild & Scenic Rivers Coordinating Council , Section 1,B. Water Resources Projects Below, Above or on a Stream Tributary to the Wild and Scenic River Corridor

References

1. 16 U.S.C. § 797 a, Congressional authorization for permits, licenses, leases, or authorizations for dams, conduits, reservoirs, etc., within national parks or monuments

2. 16 U.S.C. § 797(c), Dams in National Park System units

3. 16 U.S.C. § 797(e), Issue of licenses for construction, etc., of dams, conduits, reservoirs, etc.

4. 16 U.S.C. § 796(2), Definitions, "reservations"

5. 36 CFR, § 5.7, Construction of buildings or other facilities

6. Federal Power Act, § 3 (2), As Amended Through P.L. 114-94, Enacted December 4, 2015.

7. Federal Power Act, § 4(e) , As Amended Through P.L. 114-94, Enacted December 4, 2015

8. Interagency Wild & Scenic Rivers Council Technical Paper, National Wild and Scenic Rivers Act, Section 7, 2004

9. National Parks Conservation Association White Paper, Proposed Hydroelectric Power Generation Facility at Jackson Lake Dam in Grand Teton National Park, *A legal overview presented by National Parks Conservation Association*, March 15, 2017

10. BOR website: Reclamation, Managing Water in the West, Projects and Facilities, Minidoka Project, www.usbr.gov/projects/index.php?id=361

11. Impacts to flows in the Snake River Effects of Jackson Lake Dam on the Snake River and its floodplain, Grand Teton National Park, Wyoming, USA, Richard A. Marstona,T, John D. Millsb, David R. Wrazienc, Beau Bassettd, Dale K. Splintere, 2005

12. Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, Wild & Scenic Rivers Act: Section 7, Appendix D: Evaluation Procedure Under "Invade the Area or Unreasonably Diminish"

13. Snake River Headwaters Comprehensive River Management Plan / Environmental Assessment, National Park Service | U.S. Fish & Wildlife Service, U.S. Department of the Interior, May 2013

14. Department of Interior Motion to Intervene in Symbiotics, LLC's application for a preliminary permit for the O'Shanessey hydroelectric project, July 17, 2001

15. Memorandum of Understanding between the National Park Service, U.S. Department of Interior and the Bureau of Reclamation, U.S. Department of Interior, November 29, 1956.

16. Symbiotics, L.L.C. Project No. 11944-00, FERC's Order Denying Rehearing (Issued February 14, 2002)

17. Wild and Scenic Rivers Act, PL 90-541,0ct. I, 1968

Appendix A
FERC Licensed Dams Within NPS Parks

PROJECT NAME	**St.**	**Expires**	**RIVER**	**Kw**	**COUNTY**	**OWNER NAME**	**Notes**
DERBY	CT	2026	HOUSATONIC RIVER	7,300	NEW HAVEN,FAIRFIELD	MC CALLUM ENTER LTD PNSP ET AL	
FALLS VILLAGE	CT	2001	HOUSATONIC RIVER	9,000	LITCHFIELD	Connecticut Light and Power Company	
HARRIS	CT	2001	KENNEBEC RIVER	76,400	SOMERSET & PISCATAQUIS	FPL ENERGY MAINE HYDRO LLC	
HOUSATONIC	ME	2001	HOUSATONIC RIVER	105,900	FAIRFIELD	Connecticut Light and Power Company	
YARDS CREEK	CT	2013	YARDS CREEK	364500		JERSEY CENTRAL POWER & LIGHT	Pumped storage
WYMAN	NJ	2036	KENNEBEC RIVER	72,000	SOMERSET	FPL ENERGY MAINE HYDRO LLC	
CUSHAW	ME	2008	JAMES RIVER	7,500	AMHERST	VIRGINIA ELEC & PWR CO	
MORGAN FALLS	VA	2009	CHATTAHOOCHEE RIVER	16,800	FULTON	GEORGIA POWER CO	
DAM NO 4	GA	2003	POTOMAC RIVER	1,900	BERKELY	ALLEGHENY ENERGY SUPPLY CO	
DAM NO 5	WV	2003	POTOMAC RIVER	1,210	BERKELY	ALLEGHENY ENERGY SUPPLY CO	
CATAWBA-WATEREE	WV	2008	CATAWBA RIVER	804,940	Alexander, Burke, Caldwell, Catawba, Gaston, Iredell,	DUKE POWER	

					Lincoln, McDowell and Mecklenburg, North Carolina, and in the counties of Chester, Fairfield, Kershaw, Lancaster and York, South Carolina.		
SALUDA	NC, SC	2007	SALUDA RIVER	207,300	NEWBERRY	SOUTH CAROLINA ELEC & GAS CO	35 miles upstream of park;floodplain issues
SUMMERSVILLE	SC	2042	GAULEY RIVER	80,000	NICHOLAS	SUMMERSVILLE CITY OF (WV)	Operations affect flow in WSR segment
FALLS CREEK	WV	2054	KAHTAHEENA RIVER	800	NA-- CITY OF GUSTAVUS	GUSTAVUS ELECTRIC COMPANY	Under Construction - land exchange to remove from Park boundary
LITTLE TALLASSEE	AK	2005	LITTLE TENNESSEE RIVER	326,500	MONROE/BLOUNT	TAPOCO INC	
MILLVILLE	TN	2017	SHENANDOAH RIVER	2,840	JEFFERSON	ALLEGHENY ENERGY SUPPLY CO	
MARTIN DAM	WV	2013	TALLAPOOSA RIVER	154,200	COOSA	ALABAMA POWER CO	park at upper end of headpond
RL HARRIS	AL	2023	TALLAPOOSA RIVER	135,000	RANDOLPH	ALABAMA POWER CO	

DEWEY LAKES	AL	2037	DEWEY, ICY, SNYDER, PULLEN & REID CREEKS	940	NA - CITY OF SKAGWAY	ALASKA POWER & TELEPHONE	Project is within Skagway and White Pass National Historic Landmark and in viewshed of KLGO's Skagway unit
LAKE CHELAN	AK	2004	CHELAN RIVER	48,000	CHELAN	CHELAN CO PUD 1	
CENTENNIAL ISL(WAMESIT)	WA	N/A	CONCORD R	640	MIDDLESEX	CENTENNIAL ISLAND HYFROELECTRIC CO	Within park boundary
LOWELL	MA	2023	PAWTUCKET DAM	24,823	MIDDLESEX	BOOTT HYDROPOWER INC ET AL	Pawtucket Dam is major contributing element to NHP
STUYVESANT FALLS	MA	N/A					
CROWN MILL	NY	2049	MISSISSIPPI RIVER	3,400	HENNEPIN	CROWN HYDRO CO	
MISSISSIPPI LOCK & DAM NO 2	MN	2033	MISSISSIPPI RIVER	4,000	DAKOTA	HASTINGS CITY OF (MN)	Amendment to add hydrokinetic unit in tailrace
ST ANTHONY FALLS	MN	2001	MISSISSIPPI RIVER	28,400	HENNEPIN	Northern Power Corporation	
TWIN CITIES - Ford Dam	MN	2003	MISSISSIPPI RIVER	17,920	RAMSEY	FORD MOTOR CO	

BAKER	MN	2006	BAKER RIVER	162,400	SKAGIT	PUGET SOUND PWR AND LT CO	
NEWHALEM CREEK	WA	2027	NEWHALEM CREEK	2,125	WHATCOM	SEATTLE CITY OF WA	
SKAGIT RIVER	WA	2025	SKAGIT R	650,250	SKAGIT	SEATTLE CITY OF WA	
CUSHMAN	WA	2038	NORTH FORK SKOKOMISH RIVER	131,000	MASON	TACOMA CITY OF (WA)	Land exchange - hydro no longer floods park land
CATAWBA-WATEREE	WA	2008	CATAWBA RIVER	804,940	Alexander, Burke, Caldwell, Catawba, Gaston, Iredell, Lincoln, McDowell and Mecklenburg, North Carolina, and in the counties of Chester, Fairfield, Kershaw, Lancaster and York, South Carolina.	DUKE POWER	
KLAMATH	NC, SC	2006	KLAMATH RIVER	151,000	SISKIYOU	PACIFICORP	
HAYWARD	CA	2025	NAMEKAGON R	168	SAWYER	WISCONSIN ELECTRIC POWER COMPANY	
TREGO	WI	2025	NAMEKAGON RIVER	1,200	WASHBURN	WISCONSIN ELECTRIC POWER COMPANY	
SCHUYLERVILLE	WI	N/A	FISH CR	1,550	SARATOGA	NIAGARA MOHAWK PWR CORP	Project is on Canal and directly

							opposite SARA's Schuyler Unit
VICTORY MILLS	NY	2024	FISH CREEK	1,656	SARATOGA	CONSOL HYDRO NY INC	Project is adjacent to SARA Victory Woods Unit and within ERCA corridor
KAWEAH	NY	2021	KAWEAH R.(EAST,MARBLE & MIDDLE FKS.	6,850	TULARE	SOUTHERN CALIF EDISON CO	Headwater reservoirs are within park - GMP removal option
INDIAN RIVER	CA	N/A	INDIAN RIVER	####	SITKA	SHELDON JACKSON COLLEGE	
UPPER AMERICAN FORK CREEK	AK	2001	AMERICAN FORK CREEK	950	UTAH	PACIFICORP	DAM and FLOW LINE REMOVED - 2007
MONGAUP FALLS	UT	2022	MONGAUP RIVER	4,000	SULLIVAN	Southern Energy NY-Gen,L.L.C.	Operations affect flow in WSR segment
RIO	NY	2022	MONGAUP RIVER	10,000	ORANGE COUNTY	Southern Energy NY-Gen,L.L.C.	Operations affect flow in WSR segment
SWINGING BRIDGE	NY	2022	MONGAUP RIVER	11,750	SULLIVAN COUNTY	Southern Energy NY-Gen,L.L.C.	Operations affect flow in WSR segment
WALLENPAUPACK	NY	2004	LACKAWAXEN RIVER	40,000	WAYNE	PPL Holtwood, LLC	Operations affect flow in WSR segment

WEST DELAWARE TUNNEL OUTLE	PA	N/A	DELAWARE R	7,500	SULLIVAN	WEST DELAWARE HYDRO ASSOSC	Diversion affects flows in WSR segment
INTERNATIONAL FALLS	NY	2027	RAINY RIVER	14,450	KOOCHICHING	INTERNATIONAL FALLS PWR CO	Project is upstream of park
WHISKEYTOWN	MN	2033	CLEAR CREEK	3,530	SHASTA	REDDING CITY OF CA	
WATERLOO & SENECA FALLS	CA	2037	SENECA CANAL	7,440	SENECA	SENECA FALLS POWER CORP	On canal
MOCCASIN	NY	N/A	L MOCCASIN CR	2,900	TUOLUMNE	CITY AND COUNTY OF SAN FRANCISO	water comes feom Hetch-Hetchy reservoir