

August 17, 2021

Honorable Senator Steve Danies  
104 4<sup>th</sup> St. North, Ste 302  
Great Falls, MT 59401

SENT VIA EMAIL & REG MAIL

RE: Request to Amend Authorization for the Sun River Project, Central Montana

Dear Senator Daines,

The Greenfield Irrigation District (GID) is seeking to obtain an amendment to the original project authorization for the Sun River Project to include hydropower generation. The Project Authorization should have been amended in 1926 when Gibson Dam and Reservoir was being designed and constructed. This letter presents a justification for that request as well as why that request is critical to GID. Please let me know if additional information is warranted.

### **BACKGROUND**

The following presents the pertinent background facts as it relates to the Sun River and this amendment request.

- 1) The Sun River Project is located in central Montana in the Counties of Teton, Cascade and Lewis & Clark.
- 2) On February 26<sup>th</sup>, 1906, Under the tenants of the 1902 Reclamation Act, the Secretary of the Interior, Ethan Hitchcock, authorized construction of the Sun River Project and that this initial authorization consisted solely for irrigation.
- 3) The Greenfields Division, +83,000 acres, is a part of the Sun River Project.
- 4) On May 29<sup>th</sup>, 1925, Greenfields Irrigation District (GID), +132,750 acres, was formed to provide local governance in order to facilitate the day-to-day management of the Greenfields Division of the Sun River Project.
- 5) On February 16<sup>th</sup>, 1926, GID entered into an agreement with the Bureau of Reclamation that provided for repayment of the construction costs of all project infrastructure built prior to 1926 and for those future infrastructure projects scheduled to be built including Gibson Dam and Reservoir finished in 1929.
- 6) Gibson Dam was designed and built with hydropower penstocks protruding through the concrete dam to facilitate future hydropower generation and that these power penstocks were incorporated based on recommendations provided by the Montana Power Company for GID.
- 7) GID paid for the design and construction of Gibson Dam including the hydropower penstocks and the study that provided for their recommendation as part of the original \$9,500,000 repayment obligation as delineated in the 1926 Reclamation Agreement.
- 8) On July 8<sup>th</sup>, 1993, GID made the final reimbursement payment to Reclamation for the original \$9,500,000 repayment obligation as delineated in the 1926 agreement.

- 9) In August 1981, the US Bureau of Reclamation completed an Appraisal Level Study to develop hydropower generation on both Gibson Dam and Diversion Dam (also part of the Sun River Project) for GID and determined that such development was feasible and thus further recommended a Feasibility Level evaluation.
- 10) In 1983, GID partnered with a private developer to develop hydropower on Gibson Dam, but the resulting FERC license was surrendered in 1993 due to an inability to sell or wheel the power.
- 11) In 2004, GID again partnered with a private developer (FERC License 12478) to develop hydropower on Gibson Dam, but construction has yet to begin due to the inability to cost-effectively construct electrical transmission as mandated by the National Forest Service even though the land being crossed by the transmission route was withdrawn by Reclamation for the needs of the Sun River Project under their 1902 Authority.

### **JUSTIFICATION FOR AMENDING PROJECT AUTHORIZATION**

The Project Authorization in 1906 only listed irrigation as a project purpose. Twenty years later, in 1926, the construction of Gibson Dam began and was under the administration of the Bureau of Reclamation. As part of the design, the Montana Power Company had prepared recommendations to incorporate features into the construction of Gibson Dam that would facilitate future hydropower production. Under the 1926 repayment obligation agreement with Reclamation, GID was responsible for reimbursing all the costs necessary for studies, engineering, and construction for Gibson Dam as well as all previous construction. These costs also included acquiring (buying) private land within the National Forest Service boundaries that would be impacted by either the dam or the resulting reservoir. GID was 100% responsible for the related costs because Gibson Dam and Reservoir only benefited GID. The Fort Shaw Irrigation District (FSID, the other member of the Sun River Project) does not have any storage rights associated with Gibson Reservoir. Therefore, the FSID had no monetary obligation towards initial construction nor the subsequent and on-going O&M.

The "Final Report on Design and Construction, Gibson Dam" prepared by Reclamation in 1930 references the power outlets as "To provide for future power development in connection with reservoir operation...." The power estimates and preliminary designs for a power plant along the south side of the river had been prepared by the Montana Power Company.

Based on a review of the historical records, it appears that the existing outlet works at the base of Gibson Dam were sized for normal discharges required for District operations, i.e., for the discharge of irrigation water. The capturing of the potential hydropower was always intended at a later date by GID and was to be achieved by simply tapping onto the outlet pipes downstream of the existing valves. The referenced auxiliary power penstocks were designed and installed at an elevation 4650, approximately 90 feet above the bottom outlet works to capture and generate power from flows greater than 3,000 cfs that would be lost down the emergency spillway.

Again, the auxiliary power penstocks allowed for additional releases of water and additional power generation above the capacity of the bottom outlet works which permitted use of excess

inflows rather than being wasted down the emergency spillway. Not only does this maximize power generation but use of the auxiliary penstocks also enables dam operations to increase discharges thus creating the ability to implement flood control measures. This would be a tremendous benefit to the downstream landowners. This flood control opportunity was investigated and studied jointly by the U.S. Army Corps of Engineers and Reclamation and Reclamation produced an engineering report in December 1962 which demonstrated its feasibility.

Normal reservoir releases and power generation was to be accomplished by the lower outlet works when the reservoir was being drawn down and especially when reservoir levels dropped below 4650. Strategic placement of power outlets at an elevation of 4650 kept the design hydrostatic pressures below 30 psi at the level of the penstock power outlet penetrations. The power penstocks installed during the construction of Gibson Dam are shown below.

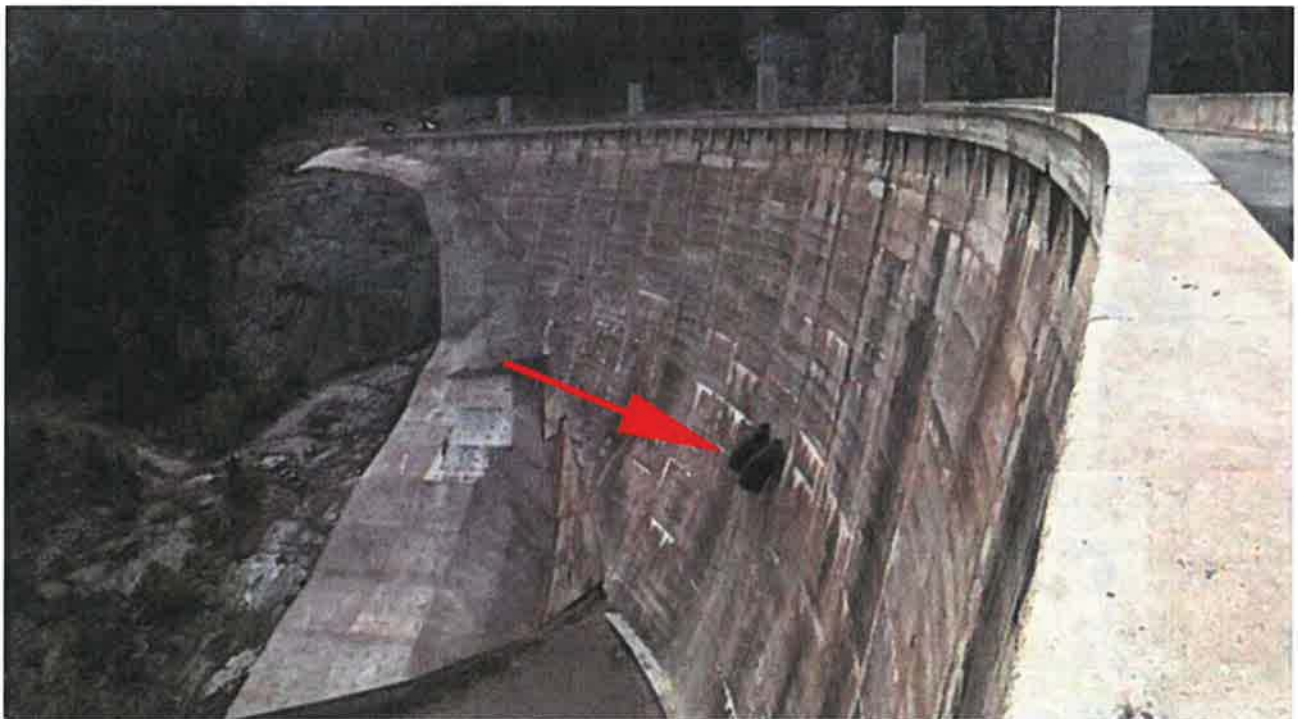


Photo showing two, 6-ft diameter, power penstocks constructed at elevation 4660 to facilitate future hydropower development. Note the top of the concrete wall on the dam crest has an elevation of 4729.

It is apparent that considerable thought and engineering was completed in the design and construction of Gibson Dam that would facilitate the future development of hydropower generation. To say power generation is not an authorized use may be technically correct but ignores the effort Reclamation employed to incorporate the potential for future hydropower generation into the construction of the dam. And since GID reimbursed Reclamation for the overall dam construction and to have the penstocks installed during construction, the District has a vested interest in the eventual hydropower development. In hindsight, Reclamation or GID should have initiated a request to amend the Project Authorization to include hydropower generation nearly 100 years ago once the engineering designs and construction were



completed. Amending the Project Authorization for the Sun River Project acknowledges the existing hydropower penstocks as well as GID's long-standing intent to develop hydropower on Gibson Dam, a major component of the Sun River Project.

## **REASONS FOR AMENDING PROJECT AUTHORIZATION**

Amending the Project Authorization for the Sun River Project will facilitate and expedite GID's long-standing desire and need to complete hydropower development on Gibson Dam. The hydraulic energy of water exiting the dam is incredible (see photo below). The electricity to be generated represents a reliable and dependable source of clean energy from a renewable resource as managed by the GID and that the power generation would be parasitic to current reservoir operations. This means there would be no detrimental impacts to GID's supply of irrigation water, nor would this development create any environmental impacts or alterations to reservoir operations and downstream flows in the Sun River.



Note the magnitude of hydraulic energy available to generate clean, reliable, dependable, renewable electricity on Gibson Dam. During higher flows, the existing power penstocks would allow additional energy production of water normally lost down the emergency spillway and provide for flood control opportunities.

The net revenue from the sale of electricity is critical to GID and would allow the District to fund its growing list of aging infrastructure replacement projects characteristic of a +100-year-old irrigation district before catastrophic failure occurs. The revenue would also allow GID to modernize its infrastructure as well as its current mode of water delivery which was designed and built over 100-years-ago to support flood-style of irrigation. This infrastructure replacement and modernization overhaul effort is expected to cost over \$75,000,000 in the next 50 years.

This cost cannot be borne on the backs of the GID producers and water users. Once on-line, hydropower production on Gibson Dam would gross well over \$2,000,000 per year. This revenue is critical to GID's future and will help ensure the viability and sustainability of irrigation for the Sun River Project.

The governing Board of the Greenfields Irrigation District, who represent over 750 landowners and water users, would appreciate your congressional assistance to amend Reclamation's Authorization for the Sun River Project to include hydropower development by GID as that is what was intended when Gibson Dam was designed and built.

The staff and management of GID is at your disposal to facilitate and expedite this effort. Please contact us if you required any supporting information or additional clarification.

On behalf of the Greenfields Irrigation District Board of Commissioners  
Respectfully,



Erling A. Juel, P.E.  
District Manager

C: GID Board  
Sen. Testor  
Rep. Rosendale

Attach: GID Board Resolution 2021-2



## **RESOLUTION 2021-2**

### **Greenfields Irrigation District – Board of Commissioners**

#### **RESOLUTION TO AMEND AUTHORIZATION FOR THE SUN RIVER PROJECT TO INCLUDE HYDROPOWER GENERATION**

**WHEREAS** under the tenants of the 1902 Reclamation Act, the Secretary of the Interior, Ethan Hitchcock, authorized construction of the Sun River Project on February 26<sup>th</sup>, 1906, and that this authorization consisted solely for the purpose of irrigation, and

**WHEREAS** the Greenfields Division, +83,000 acres, is a part of the Sun River Project, and

**WHEREAS** the Greenfields Irrigation District (GID), +132,750 acres, was formed on May 29<sup>th</sup>, 1925, to provide local governance in order to facilitate the day-to-day management of the Greenfields Division, and

**WHEREAS** the GID entered into an agreement with the Bureau of Reclamation on February 16<sup>th</sup>, 1926 that provided for repayment of the construction costs for all project infrastructure built prior to 1926 and for those future infrastructure projects scheduled to be built including Gibson Dam and Reservoir finished in 1929, and

**WHEREAS** Gibson Dam was designed and built with hydropower penstocks protruding through the dam to facilitate future hydropower generation and that these power penstocks were incorporated based on recommendations provided by the Montana Power Company for GID, and

**WHEREAS** the GID paid for the design and construction of Gibson Dam including the hydropower penstocks and the study that provided for their recommendation as part of the original \$9,500,000 repayment obligation as delineated in the 1926 Reclamation Agreement, and

**WHEREAS** the GID made the final reimbursement payment to Reclamation on July 8<sup>th</sup>, 1993, for the original \$9,500,000 repayment obligation as delineated in the 1926 agreement, and

**WHEREAS** in August 1981, the US Bureau of Reclamation completed an Appraisal Level Study to develop hydropower generation on both Gibson Dam and Diversion Dam (also part of the Sun River Project) for GID and determined that such development was feasible and thus further recommended a Feasibility Level evaluation, and

**WHEREAS** the GID partnered with a private developer in 1983 to develop hydropower on Gibson Dam but the resulting FERC license was surrendered in 1993 due to an inability to sell or wheel the power, and

**WHEREAS** the GID again partnered with a private developer in 2004 (FERC License 12478) to develop hydropower on Gibson Dam but construction has yet to begin due to the inability to cost-effectively construct electrical transmission as mandated by the National Forest Service even though

the land being crossed by the transmission route was withdrawn by Reclamation under their 1902 Authority for the needs of the Sun River Project, and

**WHEREAS** the electricity to be generated represents a reliable and dependable source of clean energy from a renewable resource as managed by the GID and that the power generation would be parasitic to irrigation operations and thus not creating any impacts to reservoir operations or downstream flows in the Sun River, and


**WHEREAS** the net revenue from the sale of electricity is critical to GID and would allow the District to fund its growing list of aging infrastructure replacement projects characteristic of a +100-year-old irrigation district before a mid-season, catastrophic failure occurs, and

**NOW, THEREFORE**, upon motion duly made and seconded, at a duly called, convened, and conducted meeting of the Board of Commissioners of the Greenfields Irrigation District, at Fairfield, Montana on August 17<sup>th</sup>, 2021, it was unanimous, and

**BE IT RESOLVED**, the Greenfields Irrigation District's Board of Commissioners formally requests Montana's Federal Congressional representation craft the necessary Federal Legislation to amend Project Authorization of Reclamation's Sun River Project to include hydropower generation; and also

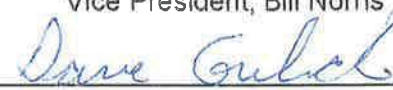
**BE IT FURTHER RESOLVED**, the GID Commissioners authorize its District Manager to act as its agent and Point of Contact to gather, summarize, and disseminate all necessary information to facilitate and expedite Montana's Federal Congressional staff to amend Project Authorization to include hydropower generation.


Dated this 17<sup>th</sup> day of August 2021.

  
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President, Tim Brunner

Attest:   
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Jenny Gulick, Board Secretary

  
\_\_\_\_\_  
Vice President, Bill Norris

  
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Commissioner, Dave Gulick

  
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Commissioner, Pat Brosten

  
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Commissioner, Chase Brady