

**Pumped Hydro Storage LLC**



6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
602-696-3608

May 14, 2019

Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

**Re: Application for Preliminary Permit  
San Francisco River (SFR) Pumped Storage Project (PSP)**

Dear Secretary Bose:

Pursuant to 18 CFR §§ 4.32 and 4.81 of the Federal Energy Regulatory Commission's (FERC) regulations, please find enclosed Pumped Hydro Storage LLC's "Application for Preliminary Permit" for the proposed San Francisco River (SFR) Pumped Storage Project (PSP). The proposed Project is a 1,250 MW PSP located 1/4 mile west of the Arizona / New Mexico Border on the San Francisco River. The Project will be in Greenlee County in Arizona and Catron County in New Mexico. Because this project uses flowing water from the San Francisco River, this project is an open-loop pumped storage project.

The Project will involve the construction of new water storage, water conveyance, power generation facilities, a tunnel access road, and primary transmission lines. The project will alleviate the stress being placed on the Southwest electrical generating system due to renewable energy and will provide other benefits stated in our application.

Please call the undersigned if you have any questions or need additional information for the application.

With Regards,

Steve W. Irwin  
*Manager, Pump Hydro Storage LLC*

cc: Arizona State Office  
US Dept of the Interior  
Bureau of Land Management  
One North Central Ave., 8th Flr  
Phoenix, AZ 85004

New Mexico State Office  
US Dept of the Interior  
Bureau of Land Management  
301 Dinosaur Trail  
Santa Fe, NM 87508

## VERIFICATION STATEMENT

This application for preliminary permit is executed in -

State of: Arizona  
County of: Maricopa  
By: Steve Irwin  
Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)

Being duly sworn, deposes and says that the contents of this Preliminary Permit Application are true to the best of his knowledge or belief. The undersigned Applicant has signed the application on this 14 day of May 2019.

Applicant -

PUMPED HYDRO STORAGE LLC

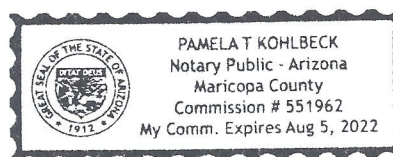
By:

  
Steve Irwin, Manager

Subscribed and sworn to before me, a Notary Public of the State of Arizona this 14 day of May 2019.

Notary:





**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**  
**APPLICATION FOR PRELIMINARY PERMIT**

San Francisco River (SFR)  
Pumped Storage Project (PSP)  
Project No. \_\_\_\_\_

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608

May 14, 2019

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## INITIAL STATEMENT

*Pursuant to 18 CFR §4.81, each application for a preliminary permit must include the following initial statement and numbered exhibits containing the information and documents specified:*

*(a) Initial statement:*

### BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

#### *Application for Preliminary Permit*

(1) Pumped Hydro Storage LLC (Applicant) applies to the Federal Energy Regulatory Commission (FERC or Commission) for a preliminary permit for the proposed San Francisco River (SFR) Pumped Storage Project (the “Project”), as described in the attached exhibits. This application is made in order that the applicant may secure and maintain priority of application for a license for the Project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the project and to support an application for a license.

(2) *The location of the proposed project is:*

<i>State or territory:</i>	Arizona and New Mexico
<i>County:</i>	Greenlee in Arizona and Catron in New Mexico
<i>Township or nearby town:</i>	Mule Creek, New Mexico
<i>Stream or body of water:</i>	San Francisco River

(3) *The exact name, business address, and telephone number of the applicant are:*

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608

*The exact name and business address of each person authorized to act as agent for the applicant in this application are:*

Steve Irwin  
Manager  
Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)

Justin Rundle, PE, CEM, CCM  
Member  
Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 300-7242  
[Justin\\_Rundle@yahoo.com](mailto:Justin_Rundle@yahoo.com)

- (4) Pumped Hydro Storage LLC is a limited liability company organized and existing under the law of the State of Arizona and is not claiming preference under Section 7(a) of the Federal Power Act.
- (5) The proposed term of the requested permit is 36 months.
- (6) *If there is any existing dam or other project facility, the applicant must provide the name and address of the owner of the dam and facility. If the dam is federally owned or operated, provide the name of the agency.*

There are no existing dams or other Project facilities that will be used for the proposed Project.

**INFORMATION REQUIRED BY 18 CFR §4.32(a)**

- (1) *For a preliminary permit or license, identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:*

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041

- (2) *For a preliminary permit or a license, identify (providing names and mailing addresses):*

- (i) *Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located:*

Greenlee County  
County Government Bldg  
253 5th St  
Clifton, AZ 85534

Catron County  
Catron County Clerk  
100 Main Street  
Reserve, NM 87830

- (ii) *Every city, town, or similar local political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

None.

- (B) *That has a population of 5,000 or more people and is located within 15 miles of the project dam:*

None.

- (iii) *Every irrigation district, drainage district, or similar special purpose political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

None.

- (B) *That owns, operates, maintains, or uses any project facilities or any Federal facilities that would be used by the project:*

None

- (iv) *Every other political subdivision in the general area of the project that there is a reason to believe would likely be interested in, or affected by, the application:*

USDA Forest Service  
Gila National Forest  
Supervisor's Office  
3005 E. Camino del Bosque  
Silver City, NM 88061

USDA Forest Service  
Apache-Sitgreaves National Forest  
Supervisor's Office  
30 S. Chiricahua Dr.  
Springerville, AZ 85938

Arizona Corporation Commission  
Utilities Division  
1200 W Washington Street  
Phoenix, AZ 85007

Tucson Electric Power  
88 E Broadway Blvd.  
Tucson, AZ 85701

Salt River Project (SRP)  
1521 N Project Drive  
Tempe, AZ 85281

Gila River Indian Community (GRIC)  
525 West Gu U Ki  
Sacaton, AZ 85147

San Carlos Irrigation and Drainage District  
120 S 3<sup>rd</sup> Street  
P.O. Box 218  
Coolidge, AZ 85128

Gila Valley Irrigation District  
2586 Highway 70  
Thatcher, AZ 85552

Gila Water Commissioner  
207 W 5th Street  
Safford, AZ 85546

New Mexico Interstate Stream Commission  
Office of the State Engineer  
130 South Capitol Street  
Concha Ortiz y Pino Building  
P.O. Box 25102  
Santa Fe, NM 87504-5102

New Mexico Department of Game and Fish  
One Wildlife Way  
Santa Fe, NM 87507

Arizona Department of Game and Fish  
5000 W Carefree Highway  
Phoenix, AZ 85086

- (v) *All Indian tribes that may be affected by the project.*

Gila River Indian Community (GRIC)  
525 West Gu U Ki  
Sacaton, AZ 85147

San Carlos Apache  
Chamber of Commerce  
Apache Gem Road, Marker 2  
San Carlos, AZ 85550

## EXHIBIT 1 - DESCRIPTION OF THE PROPOSED PROJECT

*18 CFR §4.81(b) Exhibit 1 must contain a description of the proposed project, specifying and including, to the extent possible:*

- (1) *The number, physical composition, dimensions, general configuration and, where applicable, age and condition, of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, that would be part of the project:*

The Project will be located on public lands near the San Francisco River, with the lower dam 1/4 mile west of the Arizona / New Mexico border, as shown in Exhibit 3-1. Project lands are entirely in National Forests - the Apache-Sitgreaves National Forest in Arizona and in the Gila National Forest in New Mexico.

The lower dam will span the San Francisco River, where the approximate median river flow is 35 cfs and flood flows are up to 29,000 cfs. The lower dam will be oversized to allow for irrigation water storage and flood control. The river slopes at about 40 feet every 2 river miles, so a reservoir elevation of 190 feet will create a pool about 10 river miles long. However, the typical reservoir operating elevation will be between 140 and 170 feet (to allow for flood control) and the normal operating pool will be about 6 to 8 miles long. Because of water flowing thru the lower dam, this is an open loop system.

The project conceptual layout is shown in Exhibit 3-1 is summarized below -

Line	Description	Value
1	Lower Dam - Physical composition	Concrete arch
2	Lower Dam - Dimensions	650 ft x 200 ft high
3	Lower Dam Spillway - Composition	Rock tunnel by-pass
4	Lower Dam Spillway - Dimension	3,000 ft x 30' dia.
5	Upper Dam - Physical composition	Rockfill
6	Upper Dam - Dimensions	3,000 ft x 180 ft high
7	Upper Dam Spillway	None
8	Penstocks - Number	2
9	Penstocks - Physical composition	Reinforced concrete
10	Penstocks - Dimensions	12,000 ft x 32 ft dia.
11	Powerhouses - Number	1
12	Powerhouses - Physical composition	Reinforced concrete
13	Powerhouses - Dimensions	1,000' L x 140' W x 140' H
14	Tailraces - Number	1
15	Tailraces - Physical Composition	Reinforced concrete
16	Tailraces - Dimension	1,000' L x 60' W x 40' H
17	Roadway Access Tunnel - Composition	Natural Rock / Concrete
18	Roadway Access Tunnel - Dimensions	7,000 ft x 36 ft dia.

- (2) *The estimated number, surface area, storage capacity, and normal maximum surface elevation (mean sea level) of any reservoirs, whether existing or proposed, that would be part of the project:*

The Project will consist of new lower and upper reservoirs with characteristics shown below and in Exhibit 3-1-

Line	Description	Value	Units
1	Lower Reservoir		
2	Number	1	
3	Surface Area	900	acres
4	Storage Capacity	60,000	ac-ft
5	Max Surface Elev.	4,400	ft amsl
6	Upper Reservoir		
7	Number	1	
8	Surface Area	200	acres
9	Storage Capacity	14,000	ac-ft
10	Max Surface Elev.	5,580	ft amsl

- (3) *The estimated number, length, voltage, interconnections, and, where applicable, age and condition, of any primary transmission lines whether existing or proposed, that would be part of the project:*

As shown in Exhibit 3-1, the project will require 345 KV electric transmission lines from the new switchyard near the powerhouse to the new switchyard near the existing powerlines. The length of the proposed transmission lines is about a mile.

- (4) *The total estimated average annual energy production and installed capacity (provide only one energy and capacity value), the hydraulic head for estimating capacity and energy output, and the estimated number, rated capacity, and, where applicable, the age and condition, of any turbines and generators, whether existing or proposed, that would be part of the project works:*

The turbine-generator and energy production information are -

Line	Description	Value	Units
1	Est. annual energy	3,400	GWhr
2	Installed capacity	1,250	Kw
3	Hydraulic head	1,170	feet
4	Energy output	1,250	Kw
5	Energy storage	14,000	MWhr
6	Turbine-Generators		
7	Number	5	
8	Rated capacity	250	kW

- (5) *All lands of the United States that are enclosed within the proposed project boundary described under paragraph (d)(3)(i) of this section, identified and tabulated on a separate sheet by legal subdivisions of a public land survey of the affected area, if available. If the project boundary includes lands of the United States, such lands must be identified on a completed land description form (FERC Form 587), provided by the Commission. The project location must identify any Federal reservation, Federal tracts, and townships of the public land surveys ... . A copy of the form must also be sent to the Bureau of Land Management state office where the project is located:*

The project boundary for the reservoirs, penstock, and powerhouse are all located in the Apache-Sitgreaves National Forest. The project boundary for the lower reservoir is located in both the Apache-Sitgreaves National Forest and the Gila National Forest. The proposed Federal land locations are shown Exhibit 3-2 and in the attached Forms 587. The two BLM state offices are receiving a copy of this permit application.

- (6) *Any other information demonstrating in what manner the proposed project would develop, conserve, and utilize in the public interest the water resources of the region:*

The proposed project will develop, conserve, and utilize water resources to benefit the public by –

- Reducing the “duck curve” that is developing for energy demand due to renewable energy sources
- Promoting green, renewable power by providing a means to store energy
- Reducing our carbon footprint by providing a means to store excess energy or energy produced by nuclear power
- Providing approximately \$2.5 B in investment to create jobs and stimulate the Arizona and New Mexico economies
- Increasing electrical distribution system reliability and resiliency
- Adding peaking capacity available in 15 minutes for emergencies
- Reducing thermal generation reserve requirements
- Reducing electrical pricing volatility by balancing energy consumption
- Providing an oversized dam for water storage for irrigation districts
- Providing an oversized dam for flood control
- Providing a large lower reservoir for recreation and wild life
- Providing an access tunnel to the San Francisco River for recreation
- The project location is remote and cannot be seen by the public from any roads



## EXHIBIT 2 - DESCRIPTION OF PROPOSED STUDIES

*18 CFR §4.81(c) Exhibit 2 is a description of studies conducted or to be conducted with respect to the proposed project, including field studies. Exhibit 2 must supply the following information:*

- (1) *General requirement. For any proposed project, a study plan containing a description of:*
- (i) *Any studies, investigations, tests, or surveys that are proposed to be carried out, and any that have already taken place, for the purposes of determining the technical, economic, and financial feasibility of the proposed project, taking into consideration its environmental impacts, and of preparing an application for a license for the project:*

Studies the Applicant proposed to initiate include –

- 1) Engineering feasibility and economic studies – to confirm the feasibility of the project.
- 2) Water supply studies – to confirm water is available to fill the reservoir and to maintain the water lost thru evaporation.
- 3) Geotechnical studies – to confirm the geology and sub-surface conditions at the upper reservoir, lower reservoir, and powerhouse.
- 4) Environmental studies – to identify if any rare, endangered, or threatened species are affected by the project implementation.
- 5) Cultural and tribal studies – to confirm if the project would impact cultural or tribal resources.

- (ii) *The approximate locations and nature of any new roads that would be built for the purpose of conducting the studies:*

No new roads will be built to conduct any of the proposed studies - access to the lower reservoir for studies will be by helicopter.

- (2) *Work plan for new dam construction. For any development within the project that would entail new dam construction, a work plan and schedule containing:*

- (i) *A description, including the approximate location, of any field study, test, or other activity that may alter or disturb lands or waters in the vicinity of the proposed project, including floodplains and wetlands; measures that would be taken to restore the altered or disturbed areas:*

Geotechnical studies at the dams, reservoirs, and tunnel locations will be conducted by borehole drilling samples and test pits. Measures will be taken to avoid or minimize disturbance at the drilling locations, and test pits will be backfilled to return the site as much as possible to natural.

- (ii) *A proposed schedule (a chart or graph may be used), the total duration of which does not exceed the proposed term of the permit, showing the intervals at which the studies, investigations, tests, and surveys, identified under this paragraph are proposed to be completed.*

The Applicant will require three years (36 months) to conduct studies and submit the final pre-application document (PAD) and notice of intent (NOI). The proposed schedule for the project –

	Start Month	End Month
Task 1 – Continue with engineering feasibility study	0	36
Task 2 – Determine project development financing	0	12
Task 3 – Environmental, cultural, and tribal studies	12	34
Task 4 – Geotechnical and water supply studies	12	34
Task 5 – Engineering design with economic studies	24	36
Task 6 – Organize PAD / NOI	34	36
Task 7 – Submit PAD / NOI application	36	36

- (3) *Waiver. The Commission may waive the requirements of paragraph (c)(2) pursuant to 18 CFR §385.207 of this chapter, upon a showing by the applicant that the field studies, tests, and other activities to be conducted under the permit would not adversely affect cultural resources or endangered species and would cause only minor alterations or disturbances of lands and waters and that any land altered or disturbed would be adequately restored.*

The Applicant does not intend to apply for a waiver for the requirements of 18 CFR §4.81(c)(2) pursuant to 18 CFR §385.207.

- (4) *Exhibit 2 must contain a statement of costs and financing, specifying and including, to the extent possible:*

- (i) *The estimated costs of carrying out or preparing the studies, investigations, tests, surveys, maps, plans or specifications identified under paragraph (c) of this section:*

The Applicant anticipates that the costs to develop the project and perform the studies, investigations, tests, surveys, maps, plans or specifications will be approximately \$3,000,000 to \$6,000,000.

- (ii) *The expected sources and extent of financing available to the applicant to carry out or prepare the studies, investigations, tests, surveys, maps, plans, or specifications identified under paragraph (c) of this section.*

The expected sources to prepare the studies, plans, and specifications will be from Project partners that have yet to be identified. The plan for full Project financing will be developed during the course of the feasibility studies planned during the term of the preliminary permit.

### EXHIBIT 3 - PROJECT MAP

*18 CFR §4.81(d) Exhibit 3 must include a map or series of maps, to be prepared on graphic quadrangle sheets or similar topographic maps of a State agency, if available. The maps must show.*

- (1) The location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby town or any permanent monuments or objects that can be noted on the maps and recognized in the field:*
- (2) The relative locations and physical interrelationships of the principal project features identified under paragraph (b) of this section:*
- (3) A proposed boundary for the project, enclosing:*
  - (i) All principal project features identified under paragraph (b) of this section, including but not limited to any dam, reservoir, water conveyance facilities, powerplant, transmission lines, and other appurtenances; if the project is located at an existing Federal dam, the Federal dam and impoundment must be shown, but may not be included within the project boundary;*

*Any non-Federal lands and any public lands or reservations of the United States necessary for the purposes of the project. To the extent that those public lands or reservations area covered by a public land survey, the project boundary must enclose each of an only the smallest legal subdivisions (quarter-quarter section, lots or other subdivisions, identified on the map by subdivision) that may be occupied in whole or in part by the project.*

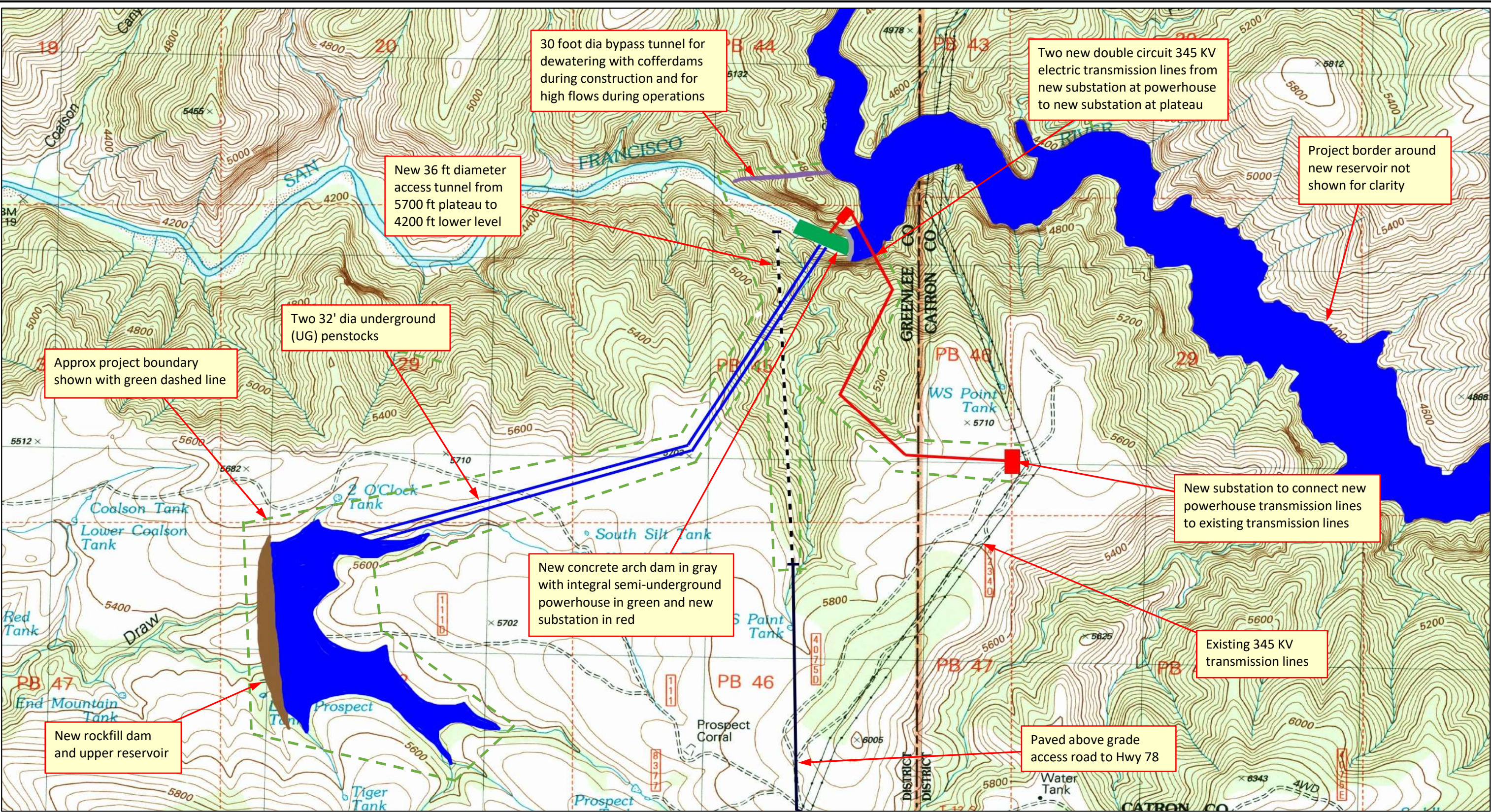
Exhibit 3-1 presents the project boundary near the dams. We searched for another map that shows nearby towns or markers, but all larger scale maps are older and do not show existing highways or the nearest existing town (Mule Creek). Because no up-to-date map exist, Exhibit 3-1 shows the approximate project boundary near the two dams, but the exhibit does not show the boundary for the lower reservoir that extends about 10 river miles upstream from the lower reservoir dam.

- (4) Areas within or in the vicinity of the proposed project boundary which are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System:*

None.
- (5) Areas within the project boundary that, under the provisions of the Wilderness Act, have been:*
  - (i) Designated as wilderness area;*
  - (ii) Recommended for designation as wilderness area; or*
  - (iii) Designated as wilderness study area.*

None.

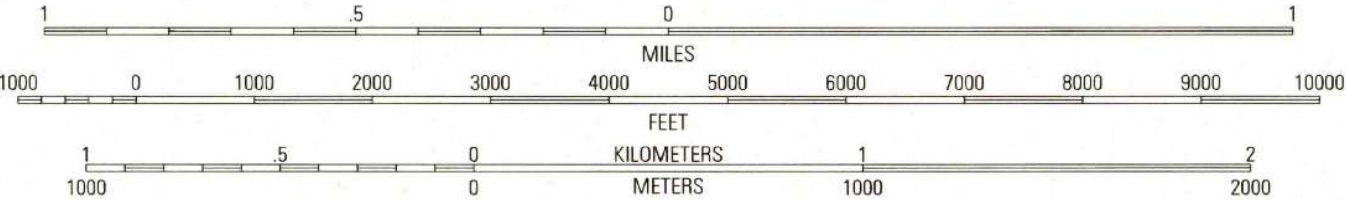




**Exhibit 3-1 - San Francisco River Pumped Storage Project Conceptual Design Map**



Scale:





**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: ***New Mexico***2. FERC PROJECT NO.: ***Not applicable***3. TOWNSHIP: ***T12S***4. RANGE: ***R21W***5. MERIDIAN: ***New Mexico  
Principal***

6. Check one:

Check one:

☐ License  
☒ Preliminary Permit☒ Pending  
☐ IssuedIf preliminary permit is issued, give expiration date: ***Not applicable*****5. EXHIBIT SHEET NUMBERS OR LETTERS—**

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 (PB 43) Exhibit 3-1	20 Exhibit 3-1	21	22	23	24
30 (PB 46) Exhibit 3-1	29 Exhibit 3-1	28 Exhibit 3-1	27 Exhibit 3-1	26	25
31	32	33 (PB 49) Exhibit 3-1	34 (PB 50) Exhibit 3-1	35 (PB 51) Exhibit 3-1	36 (PB 52) Exhibit 3-1

6. Contact: Steve Irwin  
Pumped Hydro Storage LLC  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)  
Submitted on 14 May 19

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **Arizona**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T2S**4. RANGE: **R32E**5. MERIDIAN: **Gila and Salt  
River**

6. Check one:

☐ License  
☒ Preliminary Permit

Check one:

☒ Pending  
☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****7. EXHIBIT SHEET NUMBERS OR LETTERS**

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8. Contact: Steve Irwin  
Pumped Hydro Storage LLC  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)  
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Document Content(s)

SFR PSP Application for Prelim Permit 190514.PDF.....1-19



**Pumped Hydro Storage LLC**



6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
602-696-3608

July 31, 2019

Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

**Re: Application for Preliminary Permit  
San Francisco River (SFR) Pumped Storage Project (PSP)  
FERC Project No. 14995-000**

Dear Secretary Bose:

Please find attached our revised preliminary permit application for the above referenced project incorporating FERC comments shown in a letter dated June 19, 2019.

Please call the undersigned if you have any questions or need additional information for the application.

With Regards,

Steve W. Irwin  
*Manager, Pump Hydro Storage LLC*

cc: Arizona State Office  
US Dept of the Interior  
Bureau of Land Management  
One North Central Ave., 8th Flr  
Phoenix, AZ 85004

New Mexico State Office  
US Dept of the Interior  
Bureau of Land Management  
301 Dinosaur Trail  
Santa Fe, NM 87508

## VERIFICATION STATEMENT

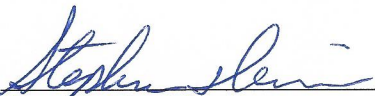
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6514 S 41<sup>st</sup> Lane  
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[Sirwin7@gmail.com](mailto:Sirwin7@gmail.com)

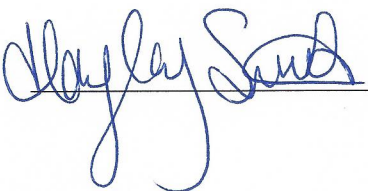
Being duly sworn, deposes and says that the contents of this Preliminary Permit Application are true to the best of his knowledge or belief. The undersigned Applicant has signed the application on this 29 day of July 2019.

Applicant -

PUMPED HYDRO STORAGE LLC

By:   
Steve Irwin, Manager

Subscribed and sworn to before me, a Notary Public of the State of ~~Arizona~~<sup>Colorado</sup> this 29 day of July 2019.

Notary: 

HAYLEY SMITH  
NOTARY PUBLIC - STATE OF COLORADO  
NOTARY ID 20194022903  
MY COMMISSION EXPIRES JUN 17, 2023

FERC Project Number P-14995

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**  
**APPLICATION FOR PRELIMINARY PERMIT**

San Francisco River (SFR)  
Pumped Storage Project (PSP)  
Project No. 14995-000

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608

July 31, 2019

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(2) *The location of the proposed project is:*

<i>State or territory:</i>	Arizona and New Mexico
<i>County:</i>	Greenlee in Arizona and Catron in New Mexico
<i>Township or nearby town:</i>	Mule Creek, New Mexico
<i>Stream or body of water:</i>	San Francisco River

(3) *The exact name, business address, and telephone number of the applicant are:*

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 696-3608

*The exact name and business address of each person authorized to act as agent for the applicant in this application are:*

Steve Irwin  
Manager  
Pumped Hydro Storage LLC  
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[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)

Justin Rundle, PE, CEM, CCM  
Member  
Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041  
(602) 300-7242  
[Justin\\_Rundle@yahoo.com](mailto:Justin_Rundle@yahoo.com)

- (4) Pumped Hydro Storage LLC is a limited liability company organized and existing under the law of the State of Arizona and is not claiming preference under Section 7(a) of the Federal Power Act.
- (5) The proposed term of the requested permit is 36 months.
- (6) *If there is any existing dam or other project facility, the applicant must provide the name and address of the owner of the dam and facility. If the dam is federally owned or operated, provide the name of the agency.*

There are no existing dams or other Project facilities that will be used for the proposed Project.

**INFORMATION REQUIRED BY 18 CFR §4.32(a)**

- (1) *For a preliminary permit or license, identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:*

Pumped Hydro Storage LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041

- (2) *For a preliminary permit or a license, identify (providing names and mailing addresses):*

- (i) *Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located:*

Greenlee County  
County Government Bldg  
253 5th St  
Clifton, AZ 85534

Catron County  
Catron County Clerk  
100 Main Street  
Reserve, NM 87830

- (ii) *Every city, town, or similar local political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

None.

- (B) *That has a population of 5,000 or more people and is located within 15 miles of the project dam:*

None.

- (iii) *Every irrigation district, drainage district, or similar special purpose political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

None.

- (B) *That owns, operates, maintains, or uses any project facilities or any Federal facilities that would be used by the project:*

None

- (iv) *Every other political subdivision in the general area of the project that there is a reason to believe would likely be interested in, or affected by, the application:*

USDA Forest Service  
Gila National Forest  
Supervisor's Office  
3005 E. Camino del Bosque  
Silver City, NM 88061

USDA Forest Service  
Apache-Sitgreaves National Forest  
Supervisor's Office  
30 S. Chiricahua Dr.  
Springerville, AZ 85938

Arizona Corporation Commission  
Utilities Division  
1200 W Washington Street  
Phoenix, AZ 85007

Tucson Electric Power  
88 E Broadway Blvd.  
Tucson, AZ 85701

Salt River Project (SRP)  
1521 N Project Drive  
Tempe, AZ 85281

Gila River Indian Community (GRIC)  
525 West Gu U Ki  
Sacaton, AZ 85147

San Carlos Irrigation and Drainage District  
120 S 3<sup>rd</sup> Street  
P.O. Box 218  
Coolidge, AZ 85128

Gila Valley Irrigation District  
2586 Highway 70  
Thatcher, AZ 85552

Gila Water Commissioner  
207 W 5th Street  
Safford, AZ 85546



New Mexico Interstate Stream Commission  
Office of the State Engineer  
130 South Capitol Street  
Concha Ortiz y Pino Building  
P.O. Box 25102  
Santa Fe, NM 87504-5102

New Mexico Department of Game and Fish  
One Wildlife Way  
Santa Fe, NM 87507

Arizona Department of Game and Fish  
5000 W Carefree Highway  
Phoenix, AZ 85086

- (v) *All Indian tribes that may be affected by the project.*

Gila River Indian Community (GRIC)  
525 West Gu U Ki  
Sacaton, AZ 85147

San Carlos Apache  
Chamber of Commerce  
Apache Gem Road, Marker 2  
San Carlos, AZ 85550

## EXHIBIT 1 - DESCRIPTION OF THE PROPOSED PROJECT

*18 CFR §4.81(b) Exhibit 1 must contain a description of the proposed project, specifying and including, to the extent possible:*

- (1) *The number, physical composition, dimensions, general configuration and, where applicable, age and condition, of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, that would be part of the project:*

The Project will be located on public lands near the San Francisco River, with the lower dam 1/4 mile west of the Arizona / New Mexico border, as shown in Exhibit 3-1. Project lands are entirely in National Forests - the Apache-Sitgreaves National Forest in Arizona and in the Gila National Forest in New Mexico.

The lower dam will span the San Francisco River, where the approximate median river flow is 35 cfs and flood flows are up to 29,000 cfs. The lower dam will be oversized to allow for irrigation water storage and flood control. The river slopes at about 40 feet every 2 river miles, so a reservoir elevation of 190 feet will create a pool about 10 river miles long. However, the typical reservoir operating elevation will be between 140 and 170 feet (to allow for flood control) and the normal operating pool will be about 6 to 8 miles long. Because of water flowing thru the lower dam, this is an open loop system.

The project conceptual layout is shown in Exhibit 3-1 is summarized below -

Line	Description	Value
1	Lower Dam - Physical composition	Concrete arch
2	Lower Dam - Dimensions	650 ft x 200 ft high
3	Lower Dam Spillway - Composition	Rock tunnel by-pass
4	Lower Dam Spillway - Dimension	3,000 ft x 30' dia.
5	Upper Dam - Physical composition	Rockfill
6	Upper Dam - Dimensions	3,000 ft x 180 ft high
7	Upper Dam Spillway	None
8	Penstocks - Number	2
9	Penstocks - Physical composition	Reinforced concrete
10	Penstocks - Dimensions	12,000 ft x 32 ft dia.
11	Powerhouses - Number	1
12	Powerhouses - Physical composition	Reinforced concrete
13	Powerhouses - Dimensions	1,000' L x 140' W x 140' H
14	Tailraces - Number	1
15	Tailraces - Physical Composition	Reinforced concrete
16	Tailraces - Dimension	1,000' L x 60' W x 40' H
17	Roadway Access Tunnel - Composition	Natural Rock / Concrete
18	Roadway Access Tunnel - Dimensions	7,000 ft x 36 ft dia.

- (2) *The estimated number, surface area, storage capacity, and normal maximum surface elevation (mean sea level) of any reservoirs, whether existing or proposed, that would be part of the project:*

The Project will consist of new lower and upper reservoirs with characteristics shown below and in Exhibits 3-1 and 3-2 -

Line	Description	Value	Units
1	Lower Reservoir		
2	Number	1	
3	Surface Area	900	acres
4	Storage Capacity	60,000	ac-ft
5	Max Surface Elev.	4,400	ft amsl
6	Upper Reservoir		
7	Number	1	
8	Surface Area	200	acres
9	Storage Capacity	14,000	ac-ft
10	Max Surface Elev.	5,580	ft amsl

- (3) *The estimated number, length, voltage, interconnections, and, where applicable, age and condition, of any primary transmission lines whether existing or proposed, that would be part of the project:*

As shown in Exhibit 3-1, the project will require 345 KV electric transmission lines from the new switchyard near the powerhouse to the new switchyard near the existing powerlines. The length of the proposed transmission lines is about a mile.

- (4) *The total estimated average annual energy production and installed capacity (provide only one energy and capacity value), the hydraulic head for estimating capacity and energy output, and the estimated number, rated capacity, and, where applicable, the age and condition, of any turbines and generators, whether existing or proposed, that would be part of the project works:*

The turbine-generator and energy production information are -

Line	Description	Value	Units
1	Est. annual energy	3,400	GWhr
2	Installed capacity	1,250	MW
3	Hydraulic head	1,170	feet
4	Energy output	1,250	MW
5	Energy storage	14,000	MWhr
6	Turbine-Generators		
7	Number	5	
8	Rated capacity	250	MW

- (5) *All lands of the United States that are enclosed within the proposed project boundary described under paragraph (d)(3)(i) of this section, identified and tabulated on a separate sheet by legal subdivisions of a public land survey of the affected area, if available. If the project boundary includes lands of the United States, such lands must be identified on a completed land description form (FERC Form 587), provided by the Commission. The project location must identify any Federal reservation, Federal tracts, and townships of the public land surveys ... . A copy of the form must also be sent to the Bureau of Land Management state office where the project is located:*

The project boundary for the reservoirs, penstock, and powerhouse are all located in the Apache-Sitgreaves National Forest. The project boundary for the lower reservoir is located in both the Apache-Sitgreaves National Forest and the Gila National Forest. The proposed Federal land locations are shown Exhibit 3-2 and in the attached Forms 587. The two BLM state offices are receiving a copy of this permit application.

- (6) *Any other information demonstrating in what manner the proposed project would develop, conserve, and utilize in the public interest the water resources of the region:*

The proposed project will develop, conserve, and utilize water resources to benefit the public by –

- Reducing the “duck curve” that is developing for energy demand due to renewable energy sources
- Promoting green, renewable power by providing a means to store energy
- Reducing our carbon footprint by providing a means to store excess energy or energy produced by nuclear power
- Providing approximately \$2.5 B in investment to create jobs and stimulate the Arizona and New Mexico economies
- Increasing electrical distribution system reliability and resiliency
- Adding peaking capacity available in 15 minutes for emergencies
- Reducing thermal generation reserve requirements
- Reducing electrical pricing volatility by balancing energy consumption
- Providing an oversized dam for water storage for irrigation districts
- Providing an oversized dam for flood control
- Providing a large lower reservoir for recreation and wild life
- Providing an access tunnel to the San Francisco River for recreation
- The project location is remote and cannot be seen by the public from any roads

## EXHIBIT 2 - DESCRIPTION OF PROPOSED STUDIES

*18 CFR §4.81(c) Exhibit 2 is a description of studies conducted or to be conducted with respect to the proposed project, including field studies. Exhibit 2 must supply the following information:*

- (1) *General requirement. For any proposed project, a study plan containing a description of:*
- (i) *Any studies, investigations, tests, or surveys that are proposed to be carried out, and any that have already taken place, for the purposes of determining the technical, economic, and financial feasibility of the proposed project, taking into consideration its environmental impacts, and of preparing an application for a license for the project:*

Studies the Applicant proposed to initiate include –

- 1) Engineering feasibility and economic studies – to confirm the feasibility of the project.
- 2) Water supply studies – to confirm water is available to fill the reservoir and to maintain the water lost thru evaporation.
- 3) Geotechnical studies – to confirm the geology and sub-surface conditions at the upper reservoir, lower reservoir, and powerhouse.
- 4) Environmental studies – to identify if any rare, endangered, or threatened species are affected by the project implementation.
- 5) Cultural and tribal studies – to confirm if the project would impact cultural or tribal resources.

- (ii) *The approximate locations and nature of any new roads that would be built for the purpose of conducting the studies:*

No new roads will be built to conduct any of the proposed studies - access to the lower reservoir for studies will be by helicopter.

- (2) *Work plan for new dam construction. For any development within the project that would entail new dam construction, a work plan and schedule containing:*

- (i) *A description, including the approximate location, of any field study, test, or other activity that may alter or disturb lands or waters in the vicinity of the proposed project, including floodplains and wetlands; measures that would be taken to restore the altered or disturbed areas:*

Geotechnical studies at the dams, reservoirs, and tunnel locations will be conducted by borehole drilling samples and test pits. Measures will be taken to avoid or minimize disturbance at the drilling locations, and test pits will be backfilled to return the site as much as possible to natural.

- (ii) *A proposed schedule (a chart or graph may be used), the total duration of which does not exceed the proposed term of the permit, showing the intervals at which the studies, investigations, tests, and surveys, identified under this paragraph are proposed to be completed.*

The Applicant will require three years (36 months) to conduct studies and submit the final pre-application document (PAD) and notice of intent (NOI). The proposed schedule for the project –

	Start Month	End Month
Task 1 – Continue with engineering feasibility study	0	36
Task 2 – Determine project development financing	0	12
Task 3 – Environmental, cultural, and tribal studies	12	34
Task 4 – Geotechnical and water supply studies	12	34
Task 5 – Engineering design with economic studies	24	36
Task 6 – Organize PAD / NOI	34	36
Task 7 – Submit PAD / NOI application	36	36

- (3) *Waiver. The Commission may waive the requirements of paragraph (c)(2) pursuant to 18 CFR §385.207 of this chapter, upon a showing by the applicant that the field studies, tests, and other activities to be conducted under the permit would not adversely affect cultural resources or endangered species and would cause only minor alterations or disturbances of lands and waters and that any land altered or disturbed would be adequately restored.*

The Applicant does not intend to apply for a waiver for the requirements of 18 CFR §4.81(c)(2) pursuant to 18 CFR §385.207.

- (4) *Exhibit 2 must contain a statement of costs and financing, specifying and including, to the extent possible:*

- (i) *The estimated costs of carrying out or preparing the studies, investigations, tests, surveys, maps, plans or specifications identified under paragraph (c) of this section:*

The Applicant anticipates that the costs to develop the project and perform the studies, investigations, tests, surveys, maps, plans or specifications will be approximately \$3,000,000 to \$6,000,000.

- (ii) *The expected sources and extent of financing available to the applicant to carry out or prepare the studies, investigations, tests, surveys, maps, plans, or specifications identified under paragraph (c) of this section.*

The expected sources to prepare the studies, plans, and specifications will be from Project partners that have yet to be identified. The plan for full Project financing will be developed during the course of the feasibility studies planned during the term of the preliminary permit.

### EXHIBIT 3 - PROJECT MAP

*18 CFR §4.81(d) Exhibit 3 must include a map or series of maps, to be prepared on graphic quadrangle sheets or similar topographic maps of a State agency, if available. The maps must show.*

- (1) The location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby body of water and, if possible, to a nearby town or any permanent monuments or objects that can be noted on the maps and recognized in the field:*
- (2) The relative locations and physical interrelationships of the principal project features identified under paragraph (b) of this section:*
- (3) A proposed boundary for the project, enclosing:*
  - (i) All principal project features identified under paragraph (b) of this section, including but not limited to any dam, reservoir, water conveyance facilities, powerplant, transmission lines, and other appurtenances; if the project is located at an existing Federal dam, the Federal dam and impoundment must be shown, but may not be included within the project boundary;*

*Any non-Federal lands and any public lands or reservations of the United States necessary for the purposes of the project. To the extent that those public lands or reservations area covered by a public land survey, the project boundary must enclose each of an only the smallest legal subdivisions (quarter-quarter section, lots or other subdivisions, identified on the map by subdivision) that may be occupied in whole or in part by the project.*

Exhibit 3-1 presents the project boundary near the dams. Exhibit 3-2 shows the proposed new lower reservoir that when at full capacity, extends about 10 river miles upstream from the lower reservoir dam.

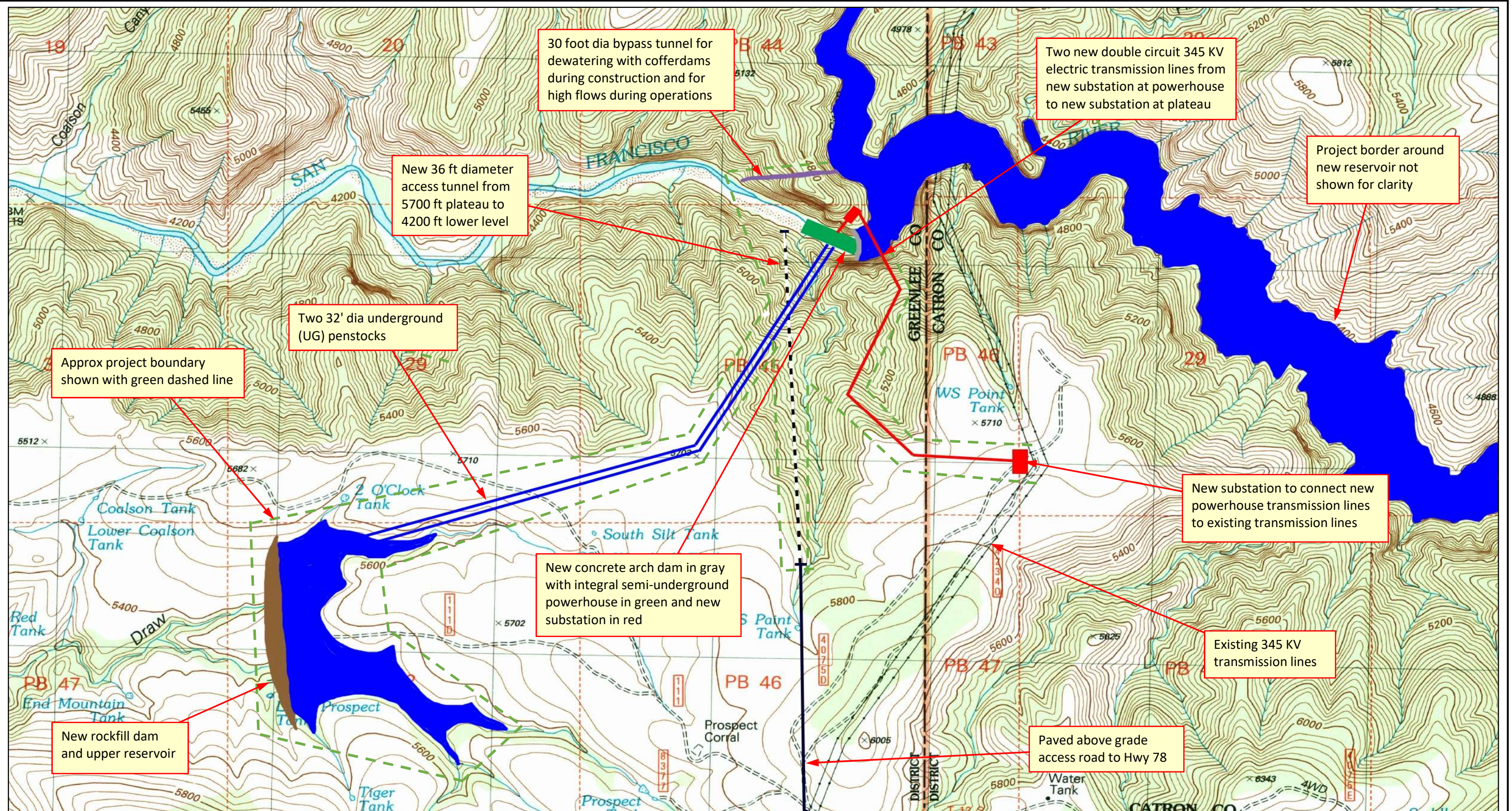
- (4) Areas within or in the vicinity of the proposed project boundary which are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System:*

None.

- (5) Areas within the project boundary that, under the provisions of the Wilderness Act, have been:*
  - (i) Designated as wilderness area;*
  - (ii) Recommended for designation as wilderness area; or*
  - (iii) Designated as wilderness study area.*

None.

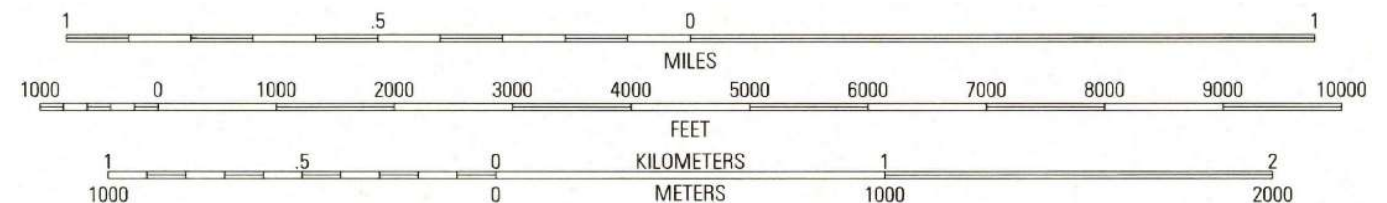




**Exhibit 3-1 - San Francisco River Pumped Storage Project Conceptual Design Map**



Scale:









**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: ***New Mexico***2. FERC PROJECT NO.: ***Not applicable***3. TOWNSHIP: ***T12S***4. RANGE: ***R21W***5. MERIDIAN: ***New Mexico  
Principal***

6. Check one:

Check one:

☐ License  
☒ Preliminary Permit☒ Pending  
☐ IssuedIf preliminary permit is issued, give expiration date: ***Not applicable*****5. EXHIBIT SHEET NUMBERS OR LETTERS—**

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 (PB 43) Exhibit 3-1	20 Exhibit 3-1	21	22	23	24
30 (PB 46) Exhibit 3-1	29 Exhibit 3-1	28 Exhibit 3-1	27 Exhibit 3-1	26	25
31	32	33 (PB 49) Exhibit 3-1	34 (PB 50) Exhibit 3-1	35 (PB 51) Exhibit 3-1	36 (PB 52) Exhibit 3-1

6. Contact: Steve Irwin  
Pumped Hydro Storage LLC  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)  
Submitted on 14 May 19

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **Arizona**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T2S**4. RANGE: **R32E**5. MERIDIAN: **Gila and Salt  
River**

6. Check one:

☐ License  
☒ Preliminary Permit

Check one:

☒ Pending  
☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****7. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 (PB 44) Exhibit 3-1	22	23	24
30	29 Exhibit 3-1	28 (PB 45) Exhibit 3-1	27	26	25
31 Exhibit 3-1	32 Exhibit 3-1	33	34	35	36

8. Contact: Steve Irwin  
Pumped Hydro Storage LLC  
(602) 696-3608  
[Swirwin7@gmail.com](mailto:Swirwin7@gmail.com)  
Submitted on 14 May 19

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act

Document Content(s)

SFR PSP App for Prelim Permit - 190731 - P-14995.PDF.....1-20

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Pumped Hydro Storage, LLC

Project No. 14995-000

NOTICE OF PRELIMINARY PERMIT APPLICATION ACCEPTED FOR FILING  
AND SOLICITING COMMENTS, MOTIONS TO INTERVENE, AND COMPETING  
APPLICATIONS

(December 23, 2019)

On May 14, 2019, Pumped Hydro Storage, LLC, filed an application for a preliminary permit, pursuant to section 4(f) of the Federal Power Act, proposing to study the feasibility of the San Francisco River Pumped Storage Project to be located on the San Francisco River in Greenlee County, Arizona and Catron County, New Mexico. The sole purpose of a preliminary permit, if issued, is to grant the permit holder priority to file a license application during the permit term. A preliminary permit does not authorize the permit holder to perform any land-disturbing activities or otherwise enter upon lands or waters owned by others without the owners' express permission.

The proposed project would consist of the following: (1) a new 180-foot-high, 3,000-foot-long upper dam impounding a 200-acre reservoir; (2) a new 200-foot-high, 650-foot-long lower dam impounding a 900-acre reservoir; (3) two new 12,000-foot-long, 32-foot-diameter penstocks; (4) a new reinforced concrete powerhouse containing five 250-megawatt turbine-generator units, for a total installed capacity of 1,250 megawatts; (5) a new 1-mile-long, 345 kilovolt transmission line; and (6) appurtenant facilities. The proposed project would have an average annual generation of 3,400 gigawatt-hours.

Applicant Contact: Steve Irwin, Pumped Hydro Storage, LLC, 6514 S 41<sup>st</sup> Lane, Phoenix, AZ 85041; phone: (602) 696-3608.

FERC Contact: Tim Konnert; phone: (202) 502-6359.

Deadline for filing comments, motions to intervene, competing applications (without notices of intent), or notices of intent to file competing applications: 60 days from the issuance of this notice. Competing applications and notices of intent must meet the requirements of 18 CFR 4.36.

The Commission strongly encourages electronic filing. Please file comments, motions to intervene, notices of intent, and competing applications using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief comments up to 6,000 characters, without prior

Project No. 14995-000

- 2 -

registration, using the eComment system at <http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov), (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426. The first page of any filing should include docket number P-14995-000.

More information about this project, including a copy of the application, can be viewed or printed on the "eLibrary" link of Commission's website at <http://www.ferc.gov/docs-filing/elibrary.asp>. Enter the docket number (P-14995) in the docket number field to access the document. For assistance, contact FERC Online Support.

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

Document Content(s)

P-14995-000 Permit acceptance notice.DOCX.....1-2



FEDERAL ENERGY REGULATORY COMMISSION

Washington, D.C. 20426

December 23, 2019

OFFICE OF ENERGY PROJECTS

Project No. 14995-000 – Arizona  
/New Mexico  
San Francisco River Pumped  
Storage Project  
Pumped Hydro Storage, LLC

VIA FERC Service

Mr. Steve Irwin, Manager  
Pumped Hydro Storage, LLC  
6514 S 41<sup>st</sup> Lane  
Phoenix, AZ 85041

Subject: Acceptance Letter for Preliminary Permit Application

Dear Mr. Irwin:

Your preliminary permit application for the San Francisco River Pumped Storage Project has been accepted by the Commission for filing as of May 14, 2019. Federal, state, and local agencies will be informed in the Commission's public notice that a copy of the complete application can be viewed or printed on the "eLibrary" link of the Commission's website.

Within 5 days after you receive this letter, please send one copy of the application to the Bureau of Land Management and Forest Service. A list of their addresses is enclosed.

If you have any questions, please contact me at (202) 502-6359.

Sincerely,

Timothy Konnert, Chief  
West Branch  
Division of Hydropower Licensing

Enclosure: List of Addresses

## LIST OF ADDRESSES

Branch of Adjudication and Records (CA-943.5)  
Bureau of Land Management  
2800 Cottage Way, Suite W1623  
Sacramento, CA 95825-1886

USDA Forest Service  
Gila National Forest  
Supervisor's Office  
3005 E. Camino del Bosque  
Silver City, NM 88061

USDA Forest Service  
Apache-Sitgreaves National Forest  
Supervisor's Office  
30 S. Chiricahua Drive  
Springerville, AZ 85938

Document Content(s)

P-14995-000 Permit Acceptance Letter (1).PDF.....1-2



United States  
Department of  
Agriculture

Forest  
Service

Southwestern Region  
Regional Office

333 Broadway SE  
Albuquerque, NM 87102  
505-842-3292  
Fax: 505-842-3800

File Code: 2770

Date: FEB 21 2020

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

**Re: NOTICE OF INTERVENTION, Application for Preliminary Permit – San Francisco River Pumped Storage Project, FERC No. P-14995-000, filed by Pumped Hydro Storage, LLC**

Dear Ms. Bose:

Please find enclosed the Forest Service's Notice of Intervention in the above proceeding. This Intervention is in response to the Commission's NOTICE OF PRELIMINARY PERMIT APPLICATION ACCEPTED FOR FILING AND SOLICITING COMMENTS, MOTIONS TO INTERVENE, AND COMPETING APPLICATIONS dated December 23, 2019.

Copies of this Notice of Intervention have been sent to the official Service List compiled by the Secretary in this proceeding.

Please contact M'Leah Woodard, Inter-regional Hydropower Team Lead, at 801-625-5809 or by e-mail at [Mleah.Woodard@usda.gov](mailto:Mleah.Woodard@usda.gov) if you have any questions concerning this submittal.

Sincerely,

A handwritten signature in cursive script that reads "Elaine Kohrman".

ELAINE KOHRMAN  
Acting Regional Forester

Enclosure (1)

Cc: FERC Service List



**BEFORE THE  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

-----)		
Pumped Hydro Storage, LLC	)	Project No. P-14995-000
	)	
San Francisco River Pumped Storage Project	)	
-----)		

**NOTICE OF INTERVENTION  
BY THE  
UNITED STATES DEPARTMENT OF AGRICULTURE**

Pursuant to 18 C.F.R. § 385.214(a)(2), the United States Department of Agriculture Forest Service (“Forest Service”), hereby gives notice that it is intervening in the San Francisco River Pumped Storage Project proceedings for FERC Project No. P-14995-000. Pumped Hydro Storage, LLC, has submitted a preliminary permit application to the Federal Energy Regulatory Commission for a proposed project that would include construction of a hydroelectric generating facility and transmission lines located on land that is part of the Apache-Sitgreaves National Forest in Arizona, and the Gila National Forest in New Mexico. The proposed project will potentially impact National Forest System (NFS) land and resources.

**FOREST SERVICE CONTACT INFORMATION**

All correspondence and communications concerning this proceeding should be sent to:

Mark F. Rosebrough, Attorney  
United States Department of Agriculture  
Office of the General Counsel  
Mountain Region  
P.O. Box 586  
Albuquerque, NM 87103-0586  
[mark.rosebrough@usda.gov](mailto:mark.rosebrough@usda.gov)

Patrick Redmond, Attorney  
Natural Resources and Environment Division  
United States Department of Agriculture  
Office of the General Counsel  
1400 Independence Ave S.W. Room 3350B  
Washington, DC 20250  
[patrick.redmond@usda.gov](mailto:patrick.redmond@usda.gov)

M'Leah Woodard, Interregional Hydropower Team Lead  
USDA Forest Service  
Intermountain Regional Office, Lands  
324 25th St., Room 4016  
Ogden, UT 84401  
[MLeah.Woodard@usda.gov](mailto:MLeah.Woodard@usda.gov)

Heather Snow, Lands Special Uses Program Manager  
USDA Forest Service  
Southwestern Regional Office  
333 Broadway Blvd. SE  
Albuquerque, NM 87102  
[heather.snow@usda.gov](mailto:heather.snow@usda.gov)

Respectfully submitted this 21<sup>st</sup> day of February, 2020.

/s/ Mark F. Rosebrough  
Mark F. Rosebrough, Attorney  
United States Department of Agriculture  
Office of the General Counsel  
P.O. Box 586  
Albuquerque, NM 87103-0586  
P: (505) 248-6002  
[mark.rosebrough@usda.gov](mailto:mark.rosebrough@usda.gov)

## **CERTIFICATE OF SERVICE**

I, Makary A. Hutson, Natural Resource Specialist, Interregional Hydropower Team for the Forest Service, hereby certify that on this 21<sup>st</sup> day of February 2020, I have served a copy of the foregoing documents electronically per Commission direction or by First Class U.S. Mail, postage prepaid, upon each person designated on the official service lists compiled by the Secretary of the Commission, and that the same document was electronically filed with the Commission this same day.

/s/ Makary A. Hutson  
Makary A. Hutson

Document Content(s)

USFS-Intervention\_P-14995\_2-21-2020.PDF.....1-4





United States  
Department of  
Agriculture

Forest  
Service

Southwestern Region  
Regional Office

333 Broadway SE  
Albuquerque, NM 87102  
505-842-3292  
Fax: 505-842-3800

File Code: 2770

Date:

FEB 21 2020

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

**Comments on the Application for Preliminary Permit, San Francisco River Pumped Storage Project, FERC No. P-14995-000, filed by Pumped Hydro Storage, LLC**

Dear Ms. Bose:

The Forest Service, including the Southwestern Region, Apache-Sitgreaves National Forest, and Gila National Forest, have reviewed the preliminary permit application of Pumped Hydro Storage, LLC (Applicant) for the San Francisco River Pumped Storage Project (P-14995-000). Detailed comments on the preliminary permit application and proposed project are provided in the attached enclosure.

The Applicant may plan to conduct preliminary studies, including geological studies. These studies are likely to include subsurface investigation by core drilling, test pits, or other ground disturbing activities. Please note that any ground disturbing activities on National Forest System (NFS) lands, even if considered minor by the Applicant, would require a special use authorization, issued by either the Apache-Sitgreaves National Forest, Clifton Ranger District, or Gila National Forest, Glenwood Ranger District. Appropriate environmental analysis must be completed prior to issuance of special use authorizations. Issuance of a preliminary permit by the Federal Energy Regulatory Commission does not grant the Applicant authority to proceed with any feasibility studies or ground disturbing activities on NFS land.

Although the Forest Service does not object to issuance of a preliminary permit, the project proposal and any preliminary studies must be evaluated for compliance with both the Apache-Sitgreaves and Gila National Forest Land and Resource Management Plans (Forest Plans). If this evaluation determines that the proposal or preliminary studies are not in compliance, the Forest Plans would need to be analyzed for possible amendment before studies could be done or the project could be constructed.

If you have questions, please contact M'Leah Woodard, Inter-regional Hydropower Team Lead, at 801-625-5809, or by e-mail at [Mleah.Woodard@usda.gov](mailto:Mleah.Woodard@usda.gov).

Sincerely,

ELAINE KOHRMAN  
Acting Regional Forester

Enclosure (1)

Cc: FERC service list



**USDA FOREST SERVICE, SOUTHWESTERN REGION**  
**COMMENTS ON PRELIMINARY PERMIT APPLICATION,**  
**SAN FRANCISCO RIVER PUMPED STORAGE PROJECT**  
**FERC NO. P-14995-000**

FEBRUARY 2020

Pumped Hydro Storage, LLC filed an application with the Federal Energy Regulatory Commission for a preliminary permit proposing to study the feasibility of the San Francisco River Pumped Storage Project (Project) to be located on the San Francisco River in Greenlee County, Arizona and Catron County, New Mexico. The proposed Project would be located on National Forests System (NFS) lands administered by the Apache-Sitgreaves National Forests (ASNF) and Gila National Forest (GNF). If constructed, the Project would include the construction of new water storage dams and reservoirs, penstocks, power generation facilities, a tunnel access road, and primary transmission lines. ASNF and GNF resource specialists have reviewed the preliminary permit application and provide the comments enumerated below, including applicable Project considerations from the ASNF and GNF Land and Resources Management Plans (Forest Plans).

Comment on the Preliminary Permit Application, re: Failure to identify existing Wild and Scenic River and wilderness study areas

**The Forest Service would like to immediately call attention to critical information not included in the Preliminary Permit Application regarding a wilderness study area and Wild and Scenic River study area.** On page 13 of the preliminary permit application under the heading ‘EXHIBIT 3 – PROJECT MAP’ the FERC template requires certain features to be depicted on the map including “(4) Areas within or in the vicinity of the proposed project boundary which are included in or have been designated for inclusion in the National Wild and Scenic Rivers System” and “(5) Areas within the project boundary that, under provisions of the Wilderness Act, have been: (i) Designated as wilderness area; (ii) Recommended for designation as wilderness areas; or (iii) Designated as wilderness study area.” In both instances, the proponent responded that ‘None’ were present, which is incorrect.

As a result, these important features are not included on the Project Map and not addressed in the preliminary permit application. See Sections 2 and 3 below for specific information on Forest Service designated eligible and proposed eligible<sup>1</sup> rivers for inclusion in the National Wild and Scenic Rivers System (NWSRS) and designated wilderness study area<sup>2</sup>. Additional information is also noted in other comments throughout, including under the Forest Plans and Recreation sections, as applicable.

## **Section 1. Forest Plans**

The National Forest Management Act (NFMA) requires that the Forest Service develop land management plans for units of the National Forest System, and thereafter all instruments for the

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<sup>1</sup> As part of forest plan revision, the Gila NF is in the process of identifying and determining the eligibility of potential additions to the NWSRS.

<sup>2</sup> The Lower San Francisco Wilderness Study Area in New Mexico was designated by Congress in 1980.

use and occupancy of NFS land are required to be consistent with the land management plans. 16 U.S.C. §1604(g), (i). The land management plans for the ASNF and GNF include standards and guidelines, which set forth both Forest-wide requirements and specific Management Area requirements that must be followed.

There are numerous Forest Plan (FP) standards and guidelines related to fisheries, water quality/quantity, heritage resources, and wildlife management that would apply to this proposal. Standards (ST) impose **mandatory requirements** which are established to achieve or maintain desired conditions, to avoid or mitigate undesirable effects, or to meet legal requirements. No deviation from a standard is allowed without a Plan amendment. Guidelines (GL) are also constraints on project and activity decision-making and are established for the same reasons as standards. However, a guideline allows for departure from its terms, so long as the objective of the guideline is met. Decision documents must identify deviations from guidelines and provide supporting rationale. When deviation from the GL does not meet the objective of the GL, a plan amendment is required.

### **A. ASNF Forest Plan Standards and Guidelines**

The Apache-Sitgreaves National Forest Revised Forest Plan was completed in 2015. The following ST and GL are included in the ANSF Forest Plan.

#### **Wildlife (pages 62-63):**

- Management and activities should not contribute to a trend toward the Federal listing of a species (GL).
- Activities occurring within federally listed species habitat should apply habitat management objectives and species protection measures from recovery plans (GL).
- Modifications, mitigations, or other measures should be incorporated to reduce negative impacts to plants, animals, and their habitats and to help provide for species needs, consistent with project or activity objectives (GL).
- Cool and/or dense vegetation cover should be provided for species needing these habitat components (e.g., Goodding's onion, black bear, White Mountains chipmunk, western yellow-billed cuckoo) GL.
- Any action likely to cause a disturbance and take to bald and golden eagles in nesting and young rearing areas should be avoided per the Bald and Golden Eagle Protection Act (GL).
- Rare and unique features (e.g., talus slopes, cliffs, canyon slopes, caves, fens, bogs, sinkholes) should be protected from damage or loss in order to retain their distinctive ecological functions and maintain viability of associated species (GL).

#### **Water Resources and Water Rights (FP pages 23 and 24):**

- Projects with ground-disturbing activities should be designed to minimize long and short-term impacts to water resources. Where disturbance cannot be avoided, project specific soil and water conservation practices and best management practices (BMPs) should be developed (GL).
- Aquatic management zones should be in place between streams and disturbed areas and/or road locations to maintain water quality and suitable stream temperatures for aquatic species (GL).

- As State of Arizona water rights permits (e.g., water impoundments, diversions) are issued, the base level of instream flow should be retained by the Apache-Sitgreaves NFs (GL).
- Constraints (e.g., maximum limit to which water level can be drawn down or minimum distance from a connected river, stream, wetland, or groundwater-dependent ecosystem) should be established for new groundwater pumping sites permitted on NFS lands in order to protect the character and function of water resources (GL).

### **Aquatic Habitat and Species (FP page 26):**

- When drafting (withdrawing) water from streams or other water bodies, measures will be taken to prevent entrapment of fish and aquatic organisms and the spread of parasites or disease (e.g., Asian tapeworm, chytrid fungus, whirling disease) (ST).
- Management and activities should not contribute to a trend toward the Federal listing of a species (GL).
- Activities occurring within federally listed species habitat should apply habitat management direction and species protection measures from recovery plans (GL).
- To prevent degradation of native species habitat and the incidental or accidental introduction of diseases or nonnative species, aquatic species should not be transferred through management activities from one 6th level HUC watershed to another (GL).
- Sufficient water should be left in streams to provide for aquatic species and riparian vegetation (GL).
- Projects and activities should avoid damming or impounding free-flowing waters to provide streamflows needed for aquatic and riparian-dependent species (GL).
- The needs of rare and unique species associated with wetlands, fens, bogs, and springs should be given priority consideration when developing these areas for waterfowl habitat and other uses (GL).
- When new water diversions are created or existing water diversions are reanalyzed, measures should be taken to prevent entrapment of fish and aquatic organisms (GL).

### **Minerals (FP pages 99 and 100):**

- Streambed and floodplain alteration or removal of material should not occur if it prevents attainment of riparian, channel morphology, or streambank desired conditions (GL).
- Mineral material resource sites should be located where economical and the scenic integrity objectives can be met. Adverse visual impacts should be minimized (GL).

### **Soil (FP page 21):**

- Projects with ground-disturbing activities should be designed to minimize long and short-term impacts to soil resources. Where disturbance cannot be avoided, project specific soil and water conservation practices should be developed (GL).

**Riparian:** (FP pages 35 and 36)

- Ground-disturbing projects (including prescribed fire) which may degrade long term riparian conditions should be avoided (GL).
- Wet meadows, springs, seeps and cienegas should not be used for concentrated activities (e.g., equipment storage, forest product or mineral stockpiling, livestock handling facilities, special uses) that cause damage to soil and vegetation (GL).

**Landscape Scale Disturbance Events:** (FP page 68)

- Projects and activities should include both short- and long- term provisions for scenic integrity, especially in sensitive foreground areas (high and very high scenic integrity) (GL).

**Recreation:** (FP page 70)

- Recreation related project level decisions and implementation activities should be consistent with mapped classes and setting descriptions in the recreation opportunity spectrum (ROS) (GL).

**Scenic Resources:** (page 85)

- Constructed features and landscape alterations should be designed to complement the natural setting (GL).
- Projects or activities in primitive and semiprimitive recreation opportunity spectrum (ROS) classes should be designed to maintain a predominately natural appearing environment (GL).

**Eligible and Suitable Wild and Scenic Rivers** (FP page 84):

- Each eligible river's free-flowing condition, outstandingly remarkable values, and classification shall be sustained until further study is conducted (ST).
- Each suitable river's free-flowing condition, outstandingly remarkable values, and classification shall be maintained until congressional action is completed (ST).

**Special Uses** (FP pages 101 and 102):

- Water use associated with special use authorizations should be in accordance with Arizona State Statutes and should have a decreed water right or a valid claim (GL)
- New communications sites, energy developments, and energy corridors should be located to minimize impacts to scenery, special areas, and species (GL).
- The number of communications sites, energy developments, and energy corridors should be minimized to limit encumbrances of NFS land (GL).
- New communications sites or energy developments shall not be authorized on traditional cultural properties (GL).

**Motorized Opportunities (FP page 76):**

- New roads, motorized trails, or designated motorized areas should be located to avoid meadows, wetlands, seeps, springs, riparian areas, stream bottoms, sacred sites, and areas with high concentrations of significant archaeological sites. The number of stream crossings should be minimized or mitigated to reduce impacts to aquatic species (GL)
- New roads or motorized trails should be located to avoid Mexican spotted owl protected activity centers, northern goshawk post-fledging family areas, and other wildlife areas as identified; seasonal restrictions may be an option (GL).

**Natural Landscape Management Area (FP page 121):**

- New mineral material pits shall not be authorized (ST).
- Limited cross-country motorized vehicle use may be authorized for administrative purposes (GL).
- Temporary road construction and motorized equipment may be used in order to achieve ecological desired conditions (GL).

**American Indian Rights and Interests (FP page 93):**

- Significant TCPs and sacred sites, that are known to be utilized by tribes for traditional use and religious ceremonies, should be managed to preserve the character and use of the site (GL).
- Activities and uses should be administered in a manner that is sensitive to traditional American Indian beliefs and cultural practices (GL).

**Cultural Resources: (FP page 91)**

- Contracts, permits, or leases that have the potential to affect cultural resources shall include appropriate clauses specifying site protection responsibilities and liabilities for damage (ST).
- Activities that have the potential to adversely affect cultural resources should be discouraged in areas with a high concentration of significant archaeological sites or in areas of cultural or religious significance to American Indians (GL).
- Avoidance or protection measures should be the preferred method to prevent or minimize adverse effects to cultural resources listed in, nominated to, eligible for, or unevaluated for the NRHP (GL).

**B. GNF Forest Plan Standards and Guidelines**

The 1986 Gila National Forest Plan, as amended, is currently being revised. The GNF recently released the Draft Plan and Draft EIS for formal public review and comment, and it is expected to be completed in early 2021. The goals, standards and guidelines below are from the 2019 GNF Draft Revised Forest Plan Standards and Guidelines (pending final in 2021). Goals, standards and guidelines from the 1986 Forest Plan are also included at the end of this section, under a separate heading for identification.

**Soils** (DRFP page 78)

- Planned activities impacting vegetative canopy cover, groundcover, and soil stability (such as fire activities and vegetation treatments) will avoid soils with severe erosion hazard or high mass wasting hazard ratings unless site-specific analysis determines wildfire behavior poses a greater risk to soil functions and the long-term productivity of the land (ST).
- Best management practices (BMPs) will be followed to mitigate negative impacts to water quality and the long-term productivity of the land (ST)
- New activities that encourage concentrated use (for example, recreation sites, landings, construction, stock tanks, mineral supplements, and corrals) on poorly drained or saturated, unsatisfactory soils, or those with severe erosion hazard or high mass wasting hazards, should be avoided (GL).
- All projects and activities should provide for the maintenance of satisfactory soil condition (or equivalent condition class) and include actions to improve those soils not in satisfactory condition, within the capacity of the project (GL).

**Watersheds** (DRFP page 86)

- Project-specific best management practices (BMPs) will be developed and followed as part of the interdisciplinary process and as a principal mechanism for controlling nonpoint source pollutants to protect beneficial uses and riparian and aquatic ecosystem values (ST).

**Riparian and Aquatic Ecosystems** (DRFP page 92-93)

- Preferential consideration will be given to riparian and aquatic resources, with preferential consideration being determined by a condition class of properly functioning (or equivalent condition class) or a trend toward it. Resource uses and activities will occur to the extent that they support or do not adversely affect achievement or maintenance of desired conditions. Site-and circumstance-specific adaptive management actions will be used to ensure this does not preclude the exercise of private property rights recognized by Federal or State law (ST).
- Activities in and around surface waters will follow decontamination procedures that prevent the spread of non-desirable fungus, disease, non-native or invasive organisms (ST).
- When new groundwater wells or improvements to existing groundwater wells are proposed, either in the Gila NF or on lands of other jurisdictions, potential adverse impacts to riparian and aquatic ecosystems in the Gila NF will be evaluated. If it is determined that adverse impacts (a downward trend or movement away from desired conditions) would occur as a result of proposed activities in the Gila NF, special use permits will not be issued. If it is determined that adverse impacts would occur as a result of activities on lands under other jurisdictions, the staff will communicate concerns to the State Engineer (ST).
- When new surface water diversions or changes in point of diversion are proposed either in the Gila NF or on lands of other jurisdictions, potential adverse impacts to riparian and aquatic ecosystems in the Gila NF will be evaluated. If it is determined that adverse impacts (a downward trend or movement away from desired conditions) would occur as a result of proposed activities in the Gila NF, special use permits will not be issued. If it is determined that adverse impacts would occur as a result of activities on lands under other jurisdictions, the staff will communicate concerns to the State Engineer (ST).
- New construction or realignment of roads and motorized routes, recreation sites or other infrastructure should not be located within the 100-year floodplain or within 300 feet of

an RMZ. Exceptions for stream crossings are made where determined necessary by site-specific analysis to reduce potential long-term investments in maintenance or adverse impacts (a downward trend or movement away from desired conditions) to floodplains and water resource features (GL).

### **Wildlife, Fish, and Plants (DRFP page 105)**

- Management activities occurring within federally listed species occupied, designated or proposed critical habitat should implement the most recent approved USFWS recovery plan and integrate habitat management objectives and species recovery, conservation and protection measures identified in the plan (GL).
- Except where artificial barriers are beneficial and necessary to achieve conservation goals for aquatic species, fragmentation of aquatic habitats and isolation of aquatic species should be avoided and passage for aquatic organisms should be maintained (GL).
- Projects and management activities should be designed or managed to maintain or improve habitat for native species and to prevent or reduce the likelihood of introduction or spread of disease (GL).

### **Non-native Invasive Species (DRFP page 112)**

- Forest projects, authorized activities and special uses permits must include appropriate decontamination procedures to prevent the spread of invasive species, non-desirable fungi, and disease (ST).
- Ground-disturbing activities should be assessed for risk of noxious weed invasion or establishment (for example, latent seed in the seed bank) and incorporate measures that reduce the potential for the spread of noxious and invasive species (GL).
- Measures should be incorporated into authorized activities, project planning, and implementation to prevent, control, contain, or eradicate priority infestations or populations of invasive species to ensure the integrity of native species populations and their habitats are maintained (GL).

### **Tribal Importance and Use (DRFP page 125)**

- Management activities and uses should be planned and administered in a manner that prevents or minimizes impacts to the physical and scenic integrity of places that the tribes regard as sacred sites, traditional cultural properties, or as part of an important cultural landscape (GL).

### **Special Uses (Lands) (DRFP page 162)**

- New buildings and structures should be co-located with existing ones (GL).
- Special uses should be consolidated whenever possible (roads, linear utilities, communications sites, etc.), to minimize impacts to natural and visual resources. This includes uses being located together and many linear uses being routed parallel to each other. Where possible, uses should be combined on the same infrastructure (same tower or pole locations) and/or within the same area (GL).
- The color of buildings and towers at communication sites should blend into the landscape where possible. Reflective materials should not be used (GL).
- Project effects of electronic interference to the National Radio Astronomy Observatory should be kept within acceptable limits (GL).



**Facilities** (DRFP page 175)

- Construction of new facilities in floodplains, wetlands, and other environmentally sensitive areas should be avoided. When a practical alternative does not exist, the footprint area of disturbance should be as small as possible (GL).

**Sustainable Recreation** (DRFP page 179)

- Management activities for all resources should be consistent with desired recreation opportunity spectrum settings (GL).
- Project-level decisions and management activities should be consistent with mapped classes and setting descriptions in the recreation opportunity spectrum to sustain recreation settings and opportunities in the Gila NF (GL).

**Scenic Character** (DRFP page 188)

- The Scenery Management System shall be used to identify management actions that may result in degradation of the quality of scenic character from the desired scenic quality objectives when conducting all planning projects across all Gila program areas (ST).
- Projects should include mitigation measures to address impacts to scenic resources (GL).

**Wilderness Study Areas – Lower San Francisco Wilderness Study Area** (DRFP page 207-208)

- Subject to any valid existing rights, designated wilderness study areas shall be administered so as to maintain their wilderness character and potential to be included in the National Wilderness Preservation System that existed at the time they were designated by Congress until such time as Congress either designates the area as wilderness or releases the areas to other management (ST).

**Inventoried Roadless Areas** (DRFP page 210-211)

- All management activities conducted within inventoried roadless areas shall maintain or improve roadless characteristics (ST).
- Inventoried roadless areas should be managed for primitive, semi-primitive non-motorized, and semi-primitive motorized recreation opportunity settings (GL).
- Management activities conducted within inventoried roadless areas should be consistent with the scenic integrity objective of high (GL).

**Utilities Management Area** (DRFP page 243)

- Each utility corridor should be developed and used to its greatest potential to reduce the need to develop additional corridors. Where possible, existing corridors should be expanded as needed, rather than creating additional corridors (GL).
- Proper erosion controls should be in place and maintained during repair and maintenance, to minimize soil loss (GL).
- Any non-native, invasive plant species within these corridors for vegetation should be controlled (GL).

1986 GNF Forest Plan Standards and Guidelines: The following goals, standards, and guidelines are from the current 1986 GNF Forest Plan, as amended, which is currently in the process of being revised.

### **Cultural Resources** (FP page 22)

- The Forest will comply with the National Historic Preservation Act (NHPA) and with Executive Order (EO) 11593, and will undertake active management which recognizes cultural resources as equal in importance to other multiple uses. Cultural resources will be managed in coordination with the State Historic Preservation Plan and planning activities of the State Archaeologist.

### **Wildlife Management** (FP page 27-01)

- Manage for indigenous species. Exotic species capable of reproducing in native habitat will not be introduced or allowed to invade National Forest System lands.

### **Threatened & Endangered Wildlife – General** (FP page 28):

- Manage threatened and endangered animal, fish and plant habitat to achieve delisting in a manner consistent with the goals established with the U.S. Fish and Wildlife Service and the New Mexico Department of Game and Fish in compliance with approved recovery plans.

### **Water** (FP page 36):

- Provide for the management of sensitive soils in all surface disturbing activities to minimize or control erosion. Recognizing increased cost associated with the management of sensitive soils.
- Maintain or improve watershed conditions to a satisfactory condition on 70-90 percent of the unsatisfactory watershed by the end of the fifth decade. This should be accomplished through a combination of resource management and watershed structures.
- Update water rights inventory, maintain and protect existing water rights. Acquire additional water rights when the opportunity exists, or before new appropriate waters are developed.

### **Lands** (FP page 37-38):

- New electric transmission lines should be located in existing transmission line corridors where this is environmentally desirable and visually acceptable. If not, utility corridors may be authorized after an EIS and/or Plan revision (first) on unclassified areas and (second) on avoidance areas.
- Require Rural Electrification Administration (REA) specifications for raptor protection on permitted power line during construction and reconstruction.
- Archaeological clearance and engineering needs for ground disturbance permits is the responsibility of the applicant.

**Soils** (FP page 38)

- Through the use of best management practices, the adverse effect of planned activities will be mitigated and site productivity maintained. Soil loss due to management will not exceed soil loss tolerance.

**Facilities** (FP page 38-39)

- Road construction will be avoided in riparian areas.

**Habitat Management** (FP page 30) - *Riparian:*

- Management riparian areas to protect the productivity and diversity of riparian-dependent resources by requiring actions within or affecting riparian areas to protect and where applicable, improve dependent resources. Emphasize protection of soil, water, vegetation and wildlife and fish resources prior to implementing projects.
- Give preferential consideration to resources dependent on riparian areas over other resources. Other resources uses and activities may occur to the extent that they support or do not adversely affect riparian-dependent resources.
- Improve riparian ecosystems in unsatisfactory condition to satisfactory condition.
- Maintain riparian ecosystems currently in satisfactory condition.

**Management Area**

The proposed project is located along the boundary of Management Areas 4B and 4C. These management areas are located on the Glenwood Ranger District. The area is rich in cultural resources (MA 4C).

***Management Area 4B and 4C specific standard and guidelines*****Wildlife** (FP page 128-129; 136-137)

- Species richness and species populations associated with riparian habitats should increase as the composition, density, vigor, stand structure, stream bank stability and available wildlife forage/cover enhanced are to meet Regional riparian objectives.
- Continue threatened and endangered species habitat improvements as identified through approved recovery plans. Objectives are to maintain T&E habitats and address recovery needs on a case by case basis.
- Key habitat areas (4B) include the San Francisco River and important side drainages, ..., Little Dry Creek, ...
- Key habitat areas (4C) include the San Francisco River, Mule Creek, Pot Holes Country.

**Facilities** (FP page 132)

- Require user maintenance on local roads that serve non-Forest Service facilities and property.

## **Section 2. Wild and Scenic Rivers**

In 1968, Congress passed the Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287) (WSRA) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. To be designated by Congress, rivers or sections of rivers must be free-flowing and possess at least one "outstandingly remarkable" value, such as scenic, recreational, geologic, fish, wildlife, historic, cultural, or other features identified under the act. Federal agencies are required to give consideration to potential wild scenic, and recreational river areas. 16 U.S.C. 1276(d). To that end, the Forest Service engages in a two-step process to evaluate rivers for potential inclusion in the system. The Forest Service first conducts an inventory of eligible rivers that have attributes that may make them suitable for inclusion in the system. The Forest Service then evaluates which of those eligible rivers may be suitable for inclusion in the system, which it reports to Congress. None of the eligible streams or rivers in the Apache-Sitgreaves NF or Gila NF are currently designated as Wild and Scenic Rivers. The Forest Service has completed the eligibility assessment for several rivers, but has not yet made a final suitability determination or reported to Congress.

Direction for administration of eligible wild and scenic rivers is provided in Forest Service Handbook (FSH) 1909.12, Chapter 80. In summary, the agency is to protect river values (free-flowing character, ORVs) and classification, to the extent of its authorities, pending a suitability study. Current and revised Gila National Forest land and resource management plan direction is to manage eligible wild and scenic rivers in alignment with laws, regulations, and Forest Service policy.

FSH direction includes a definition of a free-flowing river from the WSRA and guidance for actions on NFS lands in FSH 1909.12, 82.71:

The act defines free-flowing as existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence of low dams, diversion works, or other minor structures at the time any river is proposed for inclusion in the National System does not automatically disqualify it for designation, but future construction of such structures is not allowed.

FSH direction regarding "Interim Management of Eligible or Suitable Rivers" is provided in FSH 1909.12, 82.5:

During interim management of eligible or suitable rivers, the following management guidelines are to be used when carrying out projects and activities for the National Forest System (NFS) for each of the river classifications in this section.

Legislatively mandated study rivers as defined in section 5(a) of the Wild and Scenic Rivers Act of October 2, 1968 (act) are afforded statutory protection under the act, including section 7(b), water resources projects; section 8(b), land disposition; section 9(b), mining and mineral leasing; and section 12(a), management policies. Protection of Forest Service identified study rivers (sec. 5(d)(1) of the Act) derives from other existing authorities (such as the Clean Water Act, the Endangered Species Act, and the Archeological Resources Protection Act).

To the extent the Forest Service is authorized by statute, a Responsible Official may authorize site-specific projects and activities on NFS lands within river corridors eligible or suitable only where the project and activities are consistent with all of the following:

1. The free-flowing character of the identified river is not adversely modified by the construction or development of stream impoundments, diversions, or other water resources projects.
2. Outstandingly remarkable values of the identified river area are protected.
3. For all Forest Service identified study rivers, classification must be maintained as inventoried unless a suitability study is completed that recommends management at a less restrictive classification (such as from wild to scenic or scenic to recreational).

FSH 1909.12, 84.2.

### **A. ASNF Wild and Scenic Rivers**

Policies relating to eligible and suitable Wild and Scenic Rivers are delineated above. Prior to completion of the revised Land Management Plan the ASNF completed the “Eligibility Report for the National Wild and Scenic River System” (May 2009) which determined eligibility for twenty-three streams on the ASNF. The entire length of the San Francisco River on the ASNF was determined to be an eligible Wild and Scenic River. Two segments were designated; a nine-mile segment with Wild classification, and a fifteen-mile segment with Recreational classification. The reach of the San Francisco River located within the proposed project area is a free-flowing river under the definitions provided by the WSRA has a Remarkably Outstanding Value (ORV) for Wild. This reach would be directly impacted (project impoundments and associated infrastructure), whereas the lower fifteen-mile recreational segment would be indirectly impacted. A classification for ORV of Wild is defined as “Those rivers or segments of rivers free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive, and waters unpolluted. These represent vestiges of primitive America” (FP page 170). The potential Outstanding Remarkable Values (ORV’s) for the affect segment of river are Recreation, Fish, Wildlife, and Vegetation. The ASNF Land Management Plan requires that eligible rivers are managed to retain their status until a suitability determination has been made whether to recommend their inclusion in the National Wild and Scenic Rivers System.

### **B. GNF Wild and Scenic Rivers**

As part of the current Forest Plan revision, the Gila undertook a process for identifying and determining the eligibility of potential additions to the National Wild and Scenic Rivers System on National Forest System lands. Rivers required to be studied for eligibility include all rivers named on a standard U. S. Geological Survey 7.5 minute USGS quadrangle map, but could also include rivers identified in the Nationwide Rivers Inventory and by other sources.

The proposed project would create an impoundment of waters within part or all of a 17.02 mile segment of the San Francisco River that will be designated eligible for Wild and Scenic River

(WSR) status under the revised Forest Plan. The segments of the San Francisco River located within the proposed project area is a free-flowing river under the definitions provided by the WSR Act (WSRA). The segments are classified as Wild (14.59 miles) and Scenic (2.43 miles), and the associated Outstandingly Remarkable Values (ORVs) for these river segments and the adjacent river corridor include Scenic, Recreation, and Wildlife.

The Project applicant should note that, in addition to the imminent eligible designation for WSR for this section of the River under the revised Forest Plan, the GNF has been made aware that legislation including designation of the Lower San Francisco River as a WSR is being drafted and is intended to be introduced to Congress at some point in the near future.

The proposed project would impound waters of the Lower San Francisco Eligible Wild and Scenic River; analysis for the project would need to address the following question:

- *What effects would the project structures and impoundments of water have to the existing free flowing nature and outstandingly remarkable values of the Lower San Francisco Eligible Wild and Scenic River that are legally required to be protected until either a suitability study determination or legislative action by congress?*

### **Section 3. Congressionally Designated Wilderness Study Area**

#### **A. ASNF Wilderness Study Area**

The Apache-Sitgreaves NFs have no Wilderness Study Areas within or immediately adjacent to the proposed project area.

#### **B. GNF Wilderness Study Area**

The 8,800-acre Lower San Francisco Wilderness Study Area (WSA) was designated by congress with the New Mexico Wilderness Act of 1980 (Public Law 96-550—December 19, 1980; 94 Stat 3221). The WSA is located west of Highway 180 and the town of Glenwood, New Mexico and extends along the San Francisco River corridor from near the confluence with Big Dry Creek to the Arizona-New Mexico state boundary. Until Congress takes action to either designate this area as wilderness or to release it for other management purposes, the New Mexico Wilderness Act requires that these lands continue to be managed to maintain existing wilderness character.

The proposed project is located adjacent to and partially within the Lower San Francisco Wilderness Study Area; analysis for the project would need to address the following question:

- *What effects would the project structures and impoundments of water have to the existing wilderness character of the Lower San Francisco Wilderness Study Area that is legally required to be protected in the condition of which it existed at the time of designation?*

## **Section 4. Inventoried Roadless and Natural Landscape Management Areas**

Inventoried roadless areas (IRAs) were established under the 2001 Roadless Area Conservation Rule (36 C.F.R. Part 294). IRAs are managed to protect and conserve their roadless character and are managed to retain their natural appearing character. The Roadless Area Conservation Final Rule (Roadless Rule) prohibits road construction, reconstruction, and timber harvest, except under certain circumstances, in inventoried roadless areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate long-term loss of roadless area values. Some existing roads may be present within inventoried roadless areas. The Roadless Rule does not prohibit motorized travel on existing roads or motorized trails.

### **A. ASNF Inventoried Roadless and Natural Landscape Areas**

The proposed project area is located entirely within a Natural Landscape management area and partially within the Lower San Francisco Inventoried Roadless Area (IRA) on the ASNF which is 59,126 in total area.

Natural Landscape areas are generally undeveloped, natural appearing, and provide primitive and semiprimitive recreation opportunities. Management activities are allowed but primarily focused on ecosystem restoration. This management area includes most of the inventoried roadless areas (IRAs) that were identified in the 2001 Roadless Area Conservation Rule (FP page 121).

Forest Plan desired conditions<sup>3</sup> for Natural Landscape state that these areas contribute to ecosystem and species diversity and sustainability. Human structures can be present but should be uncommon on the landscape, and that landscapes should vary from natural appearing where human activities do not stand out or attract attention, to natural, where only ecological changes occur. These are places for people to seek natural scenery and solitude.

The proposed project would entail a new concrete arch dam, a semi-underground powerhouse, a new substation, a 36 ft diameter access tunnel, two new double circuit 345 KV electric transmission lines, a 3,000 ft x 180 ft height rock fill dam and associated reservoir, as well as the impoundment of water along the San Francisco River and adjacent drainages which are all within the boundaries of the Natural Landscape. Management emphasis for these areas is to retain the natural character of the area and management activities occur within the areas mostly for ecological restoration (FP pages 121-122).

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<sup>3</sup> Desired Conditions set forth the desired social, economic, and ecological attributes of the Forest. They attempt to paint a picture of what we (the public and Forest Service) desire the forests look like or the goods and services we desire them to provide.

## **B. GNF Inventoried Roadless and Natural Landscape Areas**

The proposed project is located adjacent to and partially within the 26,459-acre Lower San Francisco Inventoried Roadless Area on Gila National Forest; analysis for the project would need to address the following question:

*What effects would road improvements and new road construction within the project area have to the existing roadless character of the Lower San Francisco Wilderness Inventoried Roadless Area that are legally required to be protected in the condition of which they existed at the time of enactment of the Roadless Rule?*

## **Section 5. National Forest System Roads (Travel Management)**

The Travel Management Rule (36 C.F.R. Part 212), requires each national forest and grassland “provide for a system of National Forest System (NFS) roads, NFS trails, and areas on the NFS lands that are designated for motor vehicle use. After these roads, trails and areas are designated, motor vehicle use, including the class of vehicle and time of year, not in accordance with these designations, is prohibited subject to enumerated exceptions. Motor vehicle use off designated roads and trails and outside designated areas is prohibited by 36 CFR 261.13.” 36 CFR 212.50(a), subject to enumerated exceptions.

### **A. ASNF Travel Management**

The Apache-Sitgreaves National Forest is currently working on the Draft EIS, and the Final DEIS is expected to be completed later this year (2020).

On the ASNF, there is no access road available to the proposed dam, substation, the 345 kV electric transmission line, most of the length of the penstocks and bypass tunnel on the San Francisco River. The only access to the area is via the Gila NF (Forest Road 111 an ML2 road) and a short segment of the Texas El Paso (TEP) powerline but these do not go to the San Francisco River because it is within the Natural Landscape management area and the San Francisco is also an eligible scenic river within the Area of Potential Effect. Access to the underground penstocks, upper dam and reservoir is limited by two high clearance roads that come from the Gila NF and TEP line. There is no existing road system from the proposed above grade access road from Highway 78 north to the proposed dam on the river because of extremely steep topographical relief and because it would go through the Natural Area and potentially impact the scenic river corridor. There is no access to the 30 ft. bypass tunnel and substation on the north side of the San Francisco River. Analysis for the project would need to address the following question:

*How will these areas be accessed and where will the spoils from construction go?*

It is therefore probable that, besides the proposed road, other new roads will be needed and that FR 111 and the other existing roads may need to be reconstructed to accommodate the type of heavy traffic that is expected for this undertaking. Access roads will be needed to maintain both dams and the other infrastructure on the ASNFs. This may require new road construction or



reconstruction, clearing/construction of staging and spoil pile locations, etc., outside the Area of Potential Effect shown on Exhibit 3-1, the conceptual design map.

## **B. GNF Travel Management**

The Gila National Forest made their Travel Management decision in 2013 and has been implementing the designated motorized system with publication of the MVUM.

There is no access available to the proposed dam near the stateline from the National Forest lands due to the terrain and the presence of the Lower San Francisco Inventoried Roadless Area.

The proposed substation location linking to the existing Tucson Electric Powerline does have road access. But the proposed line carrying power to the substation on the forest has no road access. If the proposal moves forward, the route would need to be surveyed for all resource concerns (e.g. soils, wildlife, cultural), engineered, and constructed to specified standards and Best Management Practices.

## **Section 6. Recreation (including safety, security and access)**

### **A. ASNF Recreation**

The Apache-Sitgreaves NF stands out among the semi-arid southwest and contains over 30 lakes and reservoirs plus more than 1,000 miles of rivers and perennial streams. This is more than any other national forest in Arizona. The forests contain the headwaters of several major Arizona river systems, including the Little Colorado, Black, Blue, and San Francisco (FP page 11).

The Apache-Sitgreaves NF receives approximately 2 million visitors per year and contributes significantly to the economic well-being of the surrounding areas. Primary recreation activities on the Clifton Ranger District within the proposed project area and adjacent lands consist of hiking, fishing, camping, hunting, natural features and wildlife viewing, and picnicking. During high water season, the area is known to have tubing, rafting and kayaking recreationists on the San Francisco River within the proposed project area (FP page 69).

**Overall Recreation (FP pages 70-71)-** The majority of the Apache-Sitgreaves NFs Natural Landscape is located on the Clifton Ranger District. The district is composed of thousands of acres of landscape that is roadless and holds high to very high scenic integrity. Desired conditions for overall recreation opportunities on the Apache-Sitgreaves NFs include being able to offer a spectrum of recreation settings and opportunities varying from primitive to rural and dispersed to developed, with an emphasis on the natural appearing character of the forests.

The Recreation Opportunity Spectrum (ROS) is a framework for defining classes of outdoor recreation activities, environments, and experience opportunities which the public may encounter on the forest. The activities, environments, and experiences have been divided into 6 classes arranged along a spectrum. The proposed project area is situated within two of these classes and is immediately adjacent to a third. The proposed project would encompass land within the Semiprimitive Nonmotorized (SPNM) class and Semiprimitive Motorized (SPM) class.

**Semiprimitive Nonmotorized (SPNM)** – Characterized by a predominantly natural or natural appearing environment. They are managed to achieve a sense of remoteness, although semi-primitive non-motorized areas can be as small as 2,500 acres and generally are only a half-mile or greater from any open road. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present but are subtle. Motorized use is generally not permitted. High probability of experiencing solitude, closeness to nature, tranquility, self-reliance, and risk.

**Semiprimitive Motorized (SPM)** – Characterized by a predominantly natural or natural appearing environment. Semi-primitive motorized areas generally either buffer semiprimitive non-motorized areas or stand alone as tracts of 1,500 acres or larger with a lower road density (less than 1.5 miles of road per 1,000 acres). Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present but are subtle. Motorized use is generally permitted. Moderate probability of experiencing solitude, closeness to nature, tranquility, self-reliance, and risk (FP page 162).

## **B. GNF Recreation**

Popular recreation activities within the general area of the proposed development include accessing the San Francisco River by Trails #250 at Big Dry Creek to hike, bathe in hot springs, picnic, fish, and hunt. During spring runoff, when water levels are high enough, rafting and kayaking is known to occur on this stretch of the river. Boaters typically put in above the San Francisco Hot Springs south of Glenwood and take out at Martinez Ranch in the Apache Sitgreaves NFs in Arizona.

As part of the current Forest Plan revision process, a new ROS inventory process was completed (USDA FS Gila NF 2016d). The forest will continue to develop, implement, and update as needed a recreation opportunity spectrum desired conditions GIS layer, making use of the data developed during the plan revision process, but also accounting for all areas that may fall within distance thresholds for one opportunity classification, but is managed for a different opportunity.

The areas of the Gila National Forest that are likely to be most directly affected by the impoundment of this segment of the San Francisco River are within the Lower San Francisco Wilderness Study Area, classified as primitive (1,907 acres), Semi-Primitive Non-Motorized (5,047 acres), and Semi-Primitive Motorized (188 acres). See ASNF section above for definitions of Semi-Primitive Non-Motorized and Semi-Primitive Motorized classes.

**Primitive** ROS settings are characterized by essentially unmodified natural environment of fairly large size (generally, 5,000 acres in size or larger) and usually located at least 3 miles from any open road. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use and mechanized equipment within the area are not permitted.

The proposal includes structures that create safety and access issues for recreation use in the area, as well as impoundment of a number of miles of the San Francisco River within the Lower San Francisco Wilderness Study Area that is imminently to be designated as an eligible wild and

scenic river. A number of questions would need to be addressed in the analysis for this project, including:

- *What measures would be proposed to prevent people from falling from structures or being drawn into or trapped by water pressure from water diversions, outflows, and intakes?*
- *What impact would the proposal have to the existing ROS classifications for recreation settings of the areas affected by impoundment of this segment of the San Francisco River?*
- *What impact would the proposal have on public access to the San Francisco River for recreational purposes in the vicinity of dams, diversions, intakes, outflows, and other proposed structures?*
- *What impact would impoundment of this section of the San Francisco River have to existing recreation activities such as whitewater rafting, kayaking, hiking, and bathing within hot springs that would be submerged within the impoundment?*
- *What impact would impoundment of this section of the San Francisco River have to recreation activities within the river corridor associated with Wilderness Study Area associated recreation values, including solitude and primitive and unconfined recreation, and Eligible Wild and Scenic River outstandingly remarkable values for river-related recreation activities?*

## **Section 7. Aesthetics (visual and auditory)**

### **A. ASNF Scenic Resources**

Scenic Resources (FP pages 84-85). The Apache-Sitgreaves NFs contain some of the most scenic landscapes in the State of Arizona ranging from rugged canyons to rolling hills and grasslands to alpine forests. A favorite activity of forest visitors is viewing natural features and wildlife. The Clifton Ranger District ranges in elevation from approximately 3,500 to 9,000 feet and is situated just below the Mogollon Rim. The 2015 Forest Plan Scenic Resources section lists desired conditions. Some of these conditions include Apache-Sitgreaves NFs land to appear predominantly natural where human activities do not dominate the landscape, and for natural and cultural features of the landscape that provide a “sense of place” are intact (FP page 84).

In 1995 the Forest Service began using the Scenery Management System (SMS) for the inventory and analysis of the aesthetic values on National Forest System lands. The SMS is used to incorporate scenery management principles into the planning, design, and implementation of projects and activities (FP page 85). The proposed project area is situated within two of the SMS areas. The proposed project area is situated within areas of “Very High” and “High” scenic integrity.

The proposed project area would be situated approximately 4 miles from the Frisco Camp picnic/day use area. Further analysis would need to be completed to determine the audio effects from the proposed project on this recreation site.

## **B. GNF Scenic Resources**

The 2012 Planning Rule defines scenic character as “A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. Scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.” 36 CFR 219.19.

When the current Gila National Forest Plan was developed and approved in 1986, the Visual Management System provided the framework for inventorying the visual resource and providing measurable standards for managing it. The Forest Service replaced the Visual Management System in 1995, with the Scenery Management System for the inventory and analysis of the aesthetic values of National Forest System lands. The Gila NF is in the process of updating the scenery inventory using the Scenery Management System as part of the current Forest Plan revision.

Effects to scenic resources by the proposal would need to be considered:

- *How will the proposal affect the Visual Quality Objectives (VQOs) identified under the current Forest Plan, and depending upon timing of the actual project initiation, the Scenic Quality Objectives (SQOs) identified under the draft revised Forest Plan for areas adjacent to and within the project area?*
- *What measures would be taken to mitigate effects to VQOs/SQOs within and surrounding the project area?*
- *Visual and auditory effects will need to be consulted on with tribal members due to culturally significant landscape of the Project area.*

## **Section 8. Fisheries and Aquatic Resources**

### **A. ASNF Fisheries and Aquatic Resources**

Detailed impacts to fisheries and aquatic resources on the ASNF would be similar to those discussed and disclosed below for the GNF. Designated critical habitat for the loach minnow and spinedace, and proposed critical habitat for the narrow-headed gartersnake would be directly and indirectly impacted by the proposed action.

### **B. GNF Fisheries and Aquatic Resources**

The primary issue of concern includes the potential for alteration and degradation of critical habitats for threatened and endangered species within the Project area. These include the potential for changes to natural flow regimes, riparian areas, channel morphology, fish habitat, fish passage, and changes in the rate of delivery, mobility, and distribution of sediment and woody debris to the stream channel. The formation of the inundation zone will encourage the establishment and proliferation of non-native fish and other aquatic species which are primary

threats to listed fish, amphibians, and reptile species. Inundation of the San Francisco River and Mule Creek would modify and eliminate critical habitats for aquatic snake species.

The following aquatic listed species are found within the Project footprint:

- Spikedace (*Endangered*) - designated critical habitat in San Francisco River within inundation zone
- Loach minnow (*Endangered*) – designated critical habitat in San Francisco River within inundation zone
- Gila chub (*Endangered*) – occupied habitat in Mule Creek within inundation zone
- Narrow headed gartersnake (*Threatened*) – proposed critical habitat in San Francisco River within inundation zone.
- Northern Mexican gartersnake (*Threatened*) – proposed critical habitat in Mule Creek within inundation zone.

#### Affected Environment:

The San Francisco River originates in Arizona near the town of Alpine, AZ and enters New Mexico near the town of Luna, NM. The River then flows east and south through Reserve, NM and Glenwood, NM until turning west and exiting the state back into Arizona near Mule Creek, NM. The San Francisco River is 159 miles long and is the largest tributary to the Gila River and drains 3,590 square miles.

The San Francisco River within the proposed Project area is situated within a deep canyon that is largely inaccessible by vehicle or foot. Due to the geology and steepness of the canyon, large reaches will be inundated by several hundred feet wide and several miles in length. This section of the San Francisco River provides suitable and critical habitat for a suite of listed native aquatic species. This includes spikedace, loach minnow, Gila chub, narrow headed gartersnake and Northern Mexican gartersnake. Many of these species are endemic to the San Francisco River and are only found in southwest New Mexico and southeast Arizona.

The San Francisco River also supports a community of other native fish including desert and Sonora suckers and longfin and speckled dace, as well as wild populations of non-native catfish, small mouth bass, green sunfish, and others which may expand their distribution and abundance with this Project, further impacting listed native fish communities.

#### Environmental Consequences:

Potential effects to fisheries as a result of the Project may include: 1) direct mortality of fish, developing embryos, or macro invertebrates could result from inundation; 2) alteration of aquatic habitat could result in habitats being unsuitable and dramatic loss of populations in this reach and reduction of distribution of the species.

The following is a list of potential fisheries/aquatics issues in relation to operation of the proposed pumped storage facilities. Issues and mitigation related to construction could include miles of riparian and streambank disturbance.

- Disruption of natural flow regime in several miles of critical habitats and could result in impacts to fish movement and genetic connectivity.
- Changes to channel morphology in relation to the dam structures including: 1) sediment and large woody debris transport and distribution, 2) alteration of pool and riffle

configuration and frequency immediately up and downstream of the structures, and 3) inundation of riparian areas upstream of the dams during high flows.

- Restricting and redirecting flows: At high flow discharges water could “stack” behind the dam and flows that previously accessed the full stream channel and flood plain width would be further spread behind the structures, while confining downstream discharge to the intake area. This redirected discharge could dramatically alter downstream channel morphology. Modified flows and bedload movement would alter existing fish habitat up and downstream of the structure.
- Fish passage: 1) Upstream populations would be disconnected from downstream populations, restricting exchange of genetics and could result in significant loss of diversity.
- Rapid flow fluctuations downstream of the powerhouses depending on hydropower operations could alter: 1) fish habitat connectivity, and 2) velocities, dissolved oxygen, water depth, water temperature, and spawning habitat.

## **Section 9. Wildlife Resources**

### **A. ASNF Wildlife Resources**

Blue and San Francisco Rivers Complex Important Bird Area (IBA). The proposed Project is within the boundaries of the Blue and San Francisco Rivers Complex Important Bird Area (IBA). Direction for management of migratory birds is contained within the 1918 Migratory Bird Treaty Act, the 2001 Executive Order 13186, and the 2008 memorandum of understanding (MOU) between USDA Forest Service (FS) and USDI Fish and Wildlife Service (FWS). The Act was the first to provide for protection of migratory birds including those species covered by international conventions with Mexico, Great Britain, Japan, and Russia.

In 2001, President Clinton signed Executive Order (EO) 13186 that recognized the importance of migratory birds and further identified measures to protect them. The order lists several responsibilities of federal agencies, among them:

- (1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

Additional direction comes from the 2008 MOU that was developed pursuant to EO 13186. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between these two agencies, in coordination with state, tribal and local governments. The MOU identifies specific FS responsibilities for bird conservation including:

Strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent the further loss or degradation of remaining habitats on National Forest System (NFS) lands. This includes: a) Identifying management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on NFS lands, and developing management objectives or recommendations that avoid or minimize these impacts.

Important birding areas or IBAs are a designation by the individual state's Audubon science committee, in conjunction with the National Audubon Society, as part of their local and global effort to identify and conserve areas that are vital to birds and other biodiversity especially with changing climate conditions.

IBAs are sites that provide essential habitat for one or more species of birds. IBAs range widely in size but include sites for breeding, wintering, and/or migrating birds. IBAs may include public or private lands, or both; however, there are no laws or regulations pertaining to IBAs and they confer no legal obligations on the land owner (federal or otherwise).

#### Threatened, Endangered and Sensitive Wildlife

- 2015 LMP: Activities occurring within federally listed species habitat should apply habitat management objectives and special protection measures from recovery plans. Protection measures may include, but are not limited to timing restrictions, spatial buffers and closures.

#### ***Mexican Spotted Owl***

The proposed Project is within designated critical habitat for Mexican spotted owls. Species surveys and habitat assessments would be required prior to any disturbance. Consultation with the U.S. Fish and Wildlife Service would be required prior to any project implementation.

#### ***Southwestern willow flycatcher***

The proposed project is with designated critical habitat for Southwestern willow flycatcher. Species surveys and habitat assessments would be required prior to any disturbance. Consultation with the U.S. Fish and Wildlife Service would be required prior to any project implementation.

#### ***Mexican grey wolf***

On January 12, 1998, the U. S. Fish and Wildlife Service published an Endangered Species Act section 10(j) rule for the Mexican Gray Wolf that provided for the designation of specific populations of listed species in the United States as "experimental populations". These wolves have been designated as a non-essential experimental population, pursuant to section 10(j) of the Endangered Species Act as amended.

The proposed Project is within a designated recovery unit for Mexican grey wolf.

#### ***Yellow-billed cuckoo***

The proposed Project is within potentially suitable habitat for yellow-billed cuckoo. Species surveys and habitat assessments would be required prior to any disturbance. Consultation with the U.S. Fish and Wildlife Service would be required prior to any project implementation.

#### ***Bald and Golden Eagles***

The proposed project is within potentially suitable habitat for bald eagles.

The Bald and Golden Eagle Protection Act (16 U.S.C. § 668 (a-d)) (the "Eagle Act") protects eagles from actions and management that would disturb the species to the point of causing nest failure or reduce productivity. It prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" eagles, including their parts, nests or eggs, and provides criminal penalties for violation. The Eagle Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

"Disturb" is defined by 50 CFR §22.3. It means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate disturbance impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site even during a time when eagles are not present. Hence, disturbance has occurred if, upon an eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, or causes injury, death or nest abandonment.

The most recent, 2009, change to the Eagle Act addresses "take" of eagles. The Final Rule for Take (Federal Register, 2009) makes it possible to obtain a permit for *limited, non-purposeful* take of bald eagles and golden eagles. Such a permit can authorize government agencies and others to disturb or otherwise take eagles in the course of conducting lawful activities. This may include instances where it is necessary to ensure public health and safety. Under the new Eagle Act take permitting rule, the Forest Service is responsible for obtaining permits for take that would result from its actions, including contractor and permittee work done through actions on behalf of or authorized by the agency. The Final Rule essentially sets up a consultation process when a project could result in take of eagles. Forest Service direction is found in the Washington office letter dated November 9, 2009 (Forest Service, 2009).

The National Bald Eagle Management Guidelines were developed by the US Fish and Wildlife Service (FWS) to provide landowners and agencies guidelines for following the provision of the Eagle Act (FWS, 2007).

The FS is a signatory to a Memorandum of Understanding (AZGFD 2006) along with Arizona Game and Fish Department and multiple land management agencies for the conservation of the bald eagle in Arizona (AZGFD 2006). This document includes a conservation assessment and strategy developed as a means to ensure the bald eagle remains delisted in Arizona. It describes the ongoing threats to eagles in the state and identifies management necessary to maintain their distribution and abundance post-ESA listing. As part of this MOU, the Forest Service continues participation in the 1) Southwestern Bald Eagle Management Committee, 2) bald eagle winter counts, 3) state eagle nestwatch program, 4) public education, and 5) other ongoing conservation activities and monitoring. The Forest Service also agrees to continue existing seasonal eagle nesting closures and implement others as necessary.



## B. GNF Wildlife Resources

The primary issue of concern includes the potential for alteration and degradation of critical habitats for threatened and endangered species within the Project area. These include the potential for changes to riparian areas, channel morphology, and changes in the rate of delivery, mobility, and distribution of sediment and woody debris to the stream channel and floodplain. The formation of the inundation zone will affect suitable and critical habitats for riparian obligate species that occur in the Project area. Inundation of the San Francisco River and Mule Creek would modify and eliminate critical habitats for riparian dependent species.

The following listed species are found within the Project footprint:

- Southwestern willow flycatcher (*Endangered*): designated critical habitat in San Francisco River within inundation zone.
- Yellow billed cuckoo (*Threatened*) – proposed critical habitat in San Francisco River within inundation zone
- Mexican spotted owl (*Threatened*) – critical habitat within Project area and Primary Activity Centers (PACs) located adjacent to Project area.

Forest Service sensitive species that are or may be found within or adjacent to the Project area include:

- Northern goshawk
- Common black hawk
- Peregrine falcon
- Bald eagle
- Gila woodpecker
- Grey vireo
- Desert sucker
- Sonora sucker
- Roundtail chub
- Hooded skunk

Management Indicator Species that are or may be found within or adjacent to the Project area include

- Mule deer
- Northern goshawk
- Common black hawk
- Plain juniper titmouse
- Mearns' quail
- Longtailed vole
- Beaver

Overhead power lines can cause injury and/or mortality to raptors and other birds through electrocutions and collisions. Avian electrocutions typically occur on powerlines with voltages less than 60Kv (Avian Power Line Interaction Committee 2006).

Construction of a two new  $\approx$  2-mile 345Kv powerlines and a substation, if located above ground, would potentially create an electrocution/collision hazard in the San Francisco River drainage. An existing above-ground powerline is currently located on the south side of the San Francisco River on both sides of the state line. Installation of the new powerline would increase the area of

avian vulnerability in the drainage. Species potentially at risk include bald eagles, common black hawks, goshawks, and peregrine falcons (both Forest Service sensitive species), and other species.

## **Section 10. Rare and Sensitive Plant Resources, Invasive plant species**

### **A. ASNF Rare and Sensitive Plant Resources**

There is potentially suitable habitat for rare and sensitive plants within the Project areas. Thorough surveys during appropriate surveys season would be required for any area proposed for activities in order to determine the effects to rare plants. Potential impacts to sensitive plant species within the project area from construction and future water storage can only be assessed after surveys and specific locations of disturbance are known.

### **B. GNF Rare and Sensitive Plant Resources**

All equipment utilized in drilling or other Project work should be pressure washed and inspected to ensure that it is free of dirt or vegetative material containing noxious weed seed. A Project-specific vegetation management and noxious weed monitoring and treatment plan should be developed.

There are no known noxious weed populations within and adjacent to the Project area. However, surveys would need to be conducted to determine presence/absence status.

Known aspects of rare plants in and adjacent to the Project area:

- No known sensitive plant populations within the proposed Project area. However, surveys would need to be conducted to determine presence/absence status.

Avoiding riparian areas and old growth/talus slopes will reduce potential conflicts with areas where suitable sensitive plant species habitat might occur. It is unknown, at this point, how the proposed Project might affect these potential suitable habitats since the proponents proposed Project area creates an entirely new footprint for an overhead transmission line.

## **Section 11. Cultural Resources**

### **A. ASNF Cultural Resources**

Exhibit 3-1, the San Francisco River pumped storage project conceptual design map, provided to the ASNFs does not show the full Area of Potential Effect (APE). The reservoir in the Citizen Canyon drainage is cut off on the map. *What and where will the maximum reservoir pool level be?* Location and placement of spoils from dams, staging areas, helispots and other infrastructure construction is not identified. The “paved above grade access to Hwy 78” is cut off a little over seven miles north of the highway. The topography between Hwy 78 and the proposed dam is very steep. *How and where will this road be constructed? Will it actually be a straight north-south route?*

The San Francisco River drainage including tributaries and the canyon rim have been found to be important prehistoric and historic occupation areas and travel corridors. It is expected that there is a high site density within the proposed Project area that will require extensive compliance with

the National Historic Preservation Act and Native American Graves Protection and Repatriation Act. There are likely to be additional Tribes interested in the Project in addition to the Tribes listed in the Application for Preliminary Permit. The San Francisco River valley is an area with significant cultural value and Tribal involvement should be considered as early as possible.

Culturally sensitive sites such as rock shelters/caves, pueblos, villages, and lithic procurement sites have been recorded along this drainage corridor and near the canyon rim. Other culturally sensitive sites such as rock art, cliff dwellings, traditional plant collecting areas, sacred landscapes, and trails may be present. Paleoindian to Puebloan and Apache artifact scatters, agricultural sites, Apache habitation sites and agave roasting pits and others are likely to be found along the river and the confluences of other drainages such as Citizen Creek. Consultation with affiliated tribes will be required. Historic sites may include abandoned mines, trails, home sites, ranches and historic-era range improvements.

A cultural resource inventory is required to provide the decision maker the necessary information from which to make a decision. Review of the cultural resource records indicate very little or unacceptable survey has been conducted along the San Francisco River drainage, adjacent tributaries, and along the canyon rim. Only a small strip of land north of Highway 78 was surveyed in the general location of the proposed paved above-grade access road. Due to the likelihood and potential for sites, studies for this Project are likely to require a 100% pedestrian survey of the area of potential effect, with a 30 to 100 meter buffer to accommodate changes in design or need for additional ground disturbance. Pedestrian surveys and tribal consultation would also be required for any exploratory work that may potentially affect cultural resources or tribal heritage resources. In addition to pedestrian survey, it is recommended that a cultural and historic context and ethnographic overview of the entire Project area be undertaken. If the Project development moves forward, it is likely that a tribal monitoring program would be required during construction phases. Furthermore, there would be a high likelihood the need of a Project-specific Memorandum of Agreement or Programmatic Agreement negotiated prior to commencement of construction of the Project to outline mitigation measures for all National Register-eligible or unevaluated sites.

## **B. GNF Cultural Resources**

The San Francisco River drainage and adjacent tributaries have been found to be important prehistoric and historic occupation areas and travel corridors. It is expected that there is a high site density within the proposed Project area that may require extensive compliance with the National Historic Preservation Act and Native American Graves Protection and Repatriation Act.

Several tribes in the Southwest consider the San Francisco River valley to be part of a sacred landscape with cultural significance. Tribal involvement should be considered as early as possible to avoid greater conflicts.

Culturally sensitive sites such as rock art, cliff dwellings, rock shelters/caves, traditional plant collecting areas, and lithic procurement sites have been recorded along this drainage corridor. Consultation with affiliated tribes will be required.

A cultural resource inventory is required to provide the decision maker the necessary information from which to make a decision. Review of the cultural resource records indicate very little or unacceptable survey has been conducted along the San Francisco River drainage and adjacent tributaries. For this Project, because of the likelihood and potential for sites, a 100% pedestrian survey of the area of potential effect, with a 30 to 100 meter buffer to accommodate changes in design or need for additional ground disturbance. In addition to pedestrian survey, it is recommended that a cultural and historic context of the entire Project area be undertaken. A

tribal monitoring program should be put in place during construction phases. A Project-specific Memorandum of Agreement or Programmatic Agreement would need to be negotiated prior to commencement of Project to outline mitigation measures for all eligible sites.

## **Section 12. Soils and Geology**

The proposed future reservoir location on the San Francisco River is located in an Upper middle Tertiary basaltic andesites geologic unit. This includes Bearwallow Mountain Andesite and basaltic andesite of Mangas Mountain. This is a fairly stable geologic type. The geology of headwaters of the San Francisco basin is highly variable. The foothills of the Mogollon Mountains are composed of Gila conglomerate which is unstable and highly erosive. It consists of basin-filling sedimentary rocks which include volcanoclastic conglomerate, sandstone, siltstone, as well as interlayered basaltic to dacitic lava flows and associated intrusions. In the vicinity of the project area, the soils in the project area are Lithic Haplustalfs and Typic Ustifluvents characterized as being highly erosive with an 'impaired' soil condition rating. 'Impaired' indicates a reduction in soil function. Ten to twelve miles upstream from proposed project site, the soils in the river drainage are Oxyaquic Haplustolls (alluvium) with side slopes comprised primarily of Typic Haplustalfs and Pachic Argiustolls. This soil type is derived from basalt parent material and has a relatively high clay content. These soils have low erosion potential and are relatively stable.

Several questions arise in relation to core boring including:

- *How will they access some sites for boring if they have to cross wetlands or floodplains? What are the impacts to wetlands and floodplains from the preliminary investigations?*
- *Is any equipment required in the stream channel to extract the cores?*
- *Is any geotechnical exploration required for other locations and facilities; substations, transmission lines?*

The geotechnical portion of the feasibility study should evaluate potential for debris flows and sediment deposition that would potentially create loss of storage in the proposed reservoir on the mainstem San Francisco River. Recent history on the Glenwood Ranger District on the Gila NF has demonstrated that soil and lithology in the Mogollon Mountains are prone to such events when intense localized storms follow a fire. The 2012 Whitewater-Baldy Complex burned 87,249 acres in the San Francisco sub-Basin that drains into the proposed reservoir. The highly erosive nature of the surrounding soils found in the watersheds that drain into this reservoir lead to large amount of soil movement. It may be necessary for sediment traps/cleanout features to be designed into the Project to prevent accumulation of sediment in the reservoir which would be very difficult to clean out in this deep, confined canyon.

The applicant needs to define the type of drill to be used (hand-held, rig mounted, etc.), drill hole size, depth, and locations. Concerns associated with the type of drill equipment include site access, drill cuttings storage and disposal, fuel transport and storage, and spill containment and reporting mitigation.

## **Section 13. Hydrology, Geomorphology, and Riparian Vegetation**

Construction of dams, especially with regards to that proposed on the San Francisco River would drastically alter the natural character and function of the river by alteration of the hydrologic and sediment regimes. Upstream of the dam in the large pool, suspended sediment would be deposited, whereas downstream, the water would have little sediment necessary for channel maintenance and would in fact result in excessive increases in channel bed and bank erosion from the expended excess energy associated with the sediment starved discharge. Changes in these processes often result in reduced meandering rates and changes in channel morphology. Regulated rivers throughout the West often result in shifts in population structure and ultimately decline of riparian woody vegetation (cottonwoods). Upstream riparian habitat is often completely removed when submerged by reservoirs (Lytle and Merritt, 2004)

### **A. ASNF Hydrology and Riparian areas**

Approximately 2 miles of river channel and associated wetland and riparian area on the San Francisco River and Citizen Canyon would be inundated by the proposed reservoir on the San Francisco River. In addition, approximately 2 miles of ephemeral river channel would be inundated from the upper reservoir.

#### **Relevant Executive Orders**

**EO 11988 Floodplain Management, 1977** - Requires each Federal agency to provide leadership and to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and *to restore and preserve the natural and beneficial values served by floodplains* in carrying out its responsibilities for acquiring, managing, and disposing of Federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

**EO 11990 Protection of Wetlands, 1977** - Requires each Federal agency to provide leadership and to take action to minimize the destruction, loss or degradation of wetlands, and *to preserve and enhance the natural and beneficial values of wetlands* in carrying out the agency's responsibilities for acquiring, managing, and disposing of Federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

### **B. GNF Hydrology and Riparian areas**

An estimated 10 miles of river channel, and associated wetland and riparian areas would be inundated by the proposed reservoir on the San Francisco River. This would back water up into Mule Creek and about its confluence with the San Francisco River almost to Little Dry Creek. These two major tributaries also contain wetland and riparian values that would be inundated. This is a highly-confined reach of the San Francisco River with steep canyon walls with very little access. The reservoir would reach toe-to-toe in the canyon bottom with all floodplain completely inundated. The free-flowing nature of the San Francisco River would be harmed as well as wildlife and aquatic species that depend on these rare ecosystems found in the southwest United States. Many of the upper watersheds of the San Francisco River basin have sparse vegetation with highly erodible soils. Operation and maintenance of a reservoir would be a major concern due to sediment loads from the upstream watersheds, in particular those that have

burned at high severity in the last decade. Stream flow and sediment load will be affected by the proposed Project. Rapid changes, especially drops in flow, or inundation of stream channels will affect fisheries.

- *What standards will be in place to minimize/eliminate rapid fluctuations in flow due to changes in power demands, i.e., changes in turbine operations?*
- *How would stream flow and sediment load in the San Francisco River be affected by presence of a diversion dam and the backup of water for 10 miles?*

## **Section 14. Watershed Condition**

The proposed project footprint would be located in sub-watersheds including: Harden Cienega, Coalson Creek-San Francisco River, Citizen Canyon, and Big Pine Canyon-San Francisco River. A watershed condition assessment was conducted for sub-watersheds as part of a Forest-level assessment of watershed conditions as part of the Watershed Condition Framework (WCF). As part of the WCF process, a Watershed Condition Class assessment was conducted for sub-watersheds on all the National Forests. This assessment involved evaluating 12 indicators of watershed health. The methodology for the assessment is described in the Watershed Condition Classification Technical Guide (USDA, 2011). Three indicators that will be most affected by the project proposal are described below. Changes in these indicators could ultimately reduce the overall condition rating of the affected watersheds.

**Water Quantity Indicator** - This indicator addresses changes to the natural flow regime with respect to the magnitude, duration, or timing of natural streamflow hydrographs. Dams and diversion facilities operation do not mimic natural hydrographs with regards to magnitude, duration, and/or timing of peak flows. The timing and the rate of change in flows often do not correlate with expected seasonal changes.

**Riparian/Wetland Vegetation Indicator**- This indicator addresses the function and condition of native riparian vegetation along streams, water bodies, and wetlands. As discussed in the proposed project would likely degrade conditions necessary for maintaining properly functioning riparian systems both upstream and downstream of the dam on the San Francisco River.

**Aquatic Habitat Condition Indicator**- This indicator addresses aquatic habitat condition with respect to habitat fragmentation, large woody debris, and channel shape and function. The dam proposed on the San Francisco River would result in changes in channel morphology from altered hydrologic and sediment regimes and physically fragment aquatic habitat conductivity.

## **Section 15. Water Rights**

### **A. ASNF Water Rights**

The Gila River System and Source (Gila Adjudication) in Arizona which began in 1974 is ongoing. The adjudication currently has 57,000 claims made by over 32,000 parties. Federal rights for national monuments and tribes, as well as water for mining companies, farmers, ranchers, cities and towns are also covered by the adjudication.

In 2010, the ASNF filed application # 33-96972 with the Arizona Department of Water Resources (hereafter ADWR) for a permit to appropriate water within two reaches of the natural channel of

the San Francisco River totaling approximately 23.7 miles in length. The instream-flow reaches begin at the Arizona / New Mexico State lines and continue downstream until the river flows off of National Forest lands. The appropriation would be non-consumptive and would help fulfill Forest Service goals of managing for the protection of riparian and aquatic habitats, the wildlife and fish species that depend on those habitats and recreational values that surface waters provide.

## **B. GNF Water Rights**

Water rights in the Gila San Francisco River basin have been adjudicated. No new water rights are available in the basin. New uses would require acquisition of existing rights.

The 2004 Arizona Water Settlement Act allows the Secretary of Interior to permit consumptive use of an additional 14,000 acre-feet/year of water from the Gila and/or San Francisco Rivers, their tributaries and groundwater sources in New Mexico. Up to 4,000 acre-feet/year of water can be diverted from the San Francisco River by the State of New Mexico. To date, this water has not been developed.

The following questions regarding water rights must be answered during Project feasibility studies:

- *Who would own the water rights in the San Francisco River reservoir, and how much?*
- *Pumped Hydro Storage LLC will need to obtain water rights. Is it realistic for the company to get them? What other issues are there pertaining to water rights for this Project?*

## **Section 16. Project Construction and Facilities Operation**

Where practical, existing transmission line corridors should be used. A special use permit would be required for other construction sites including any associated staging areas, helispots, necessary blasting, etc.

Specificity is needed regarding construction:

- *What is the length of the construction period?*
- *What is the approximate number of personnel that would be involved in construction?*
- *During construction, would a camp be set up and where, or would personnel travel daily from other locations and from where?*
- *How will construction materials be transported, i.e., via the existing roads, or is any helicopter use proposed?*
- *Plans would need to be developed and approved for groundwater monitoring wells associated with proposed tunnel construction in order to protect both surface and ground water resources, springs and spring dependent species.*
- *Will facilities require construction of a maintenance road or periodic cross-country travel, what are the access needs for construction and long-term maintenance?*

**If the Preliminary Permit is issued by FERC, please provide detailed maps and aerial photos showing location of all proposed structures to the Forest Service.**



Given that most of the Project is located in a riparian area, equipment and fuel storage locations should be specified. Fuel storage measures and a spill reporting and containment plan need to be developed. No fuel should be stored within 200' of streams or wetlands.

The Project applicant will be required to identify the type and frequency of construction and operational traffic on roads during feasibility studies. Road maintenance commensurate with use and impacts will be the responsibility of the Project proponent. This could include dust abatement, snow plowing, grading, road drainage repair, etc.

## **Section 17. Project Reclamation**

Reclamation needs will be determined by the amount of disturbance. Better maps or GIS location data need to be provided so as to allow for evaluating effects of, and planning reclamation for, penstock, powerhouse, tunnel, transmission lines, substation construction, and other associated infrastructure. The maps provided in the proposal are at such a small scale that it is not possible to discern all details of the proposal.

All areas subject to ground disturbance should be fully reclaimed. Reclamation objectives should be to: 1) Reclaim the surface disturbed by operations by taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources. 2) Return areas disturbed by operations to a stable configuration that approximates the original condition to the extent possible.

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## **CERTIFICATE OF SERVICE**

I, Makary A. Hutson, Natural Resource Specialist, Interregional Hydropower Team for the Forest Service, hereby certify that on this 21<sup>st</sup> day of February 2020, I have served a copy of the foregoing documents electronically per Commission direction or by First Class U.S. Mail, postage prepaid, upon each person designated on the official service lists compiled by the Secretary of the Commission, and that the same document was electronically filed with the Commission this same day.

/s/ Makary A. Hutson  
Makary A. Hutson

Document Content(s)

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**BEFORE THE UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

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Pumped Hydro Storage LLC	)
San Francisco River (SFR)	)
Pumped Storage Project (PSP)	)

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Docket No. 14995-000

Center for Biological Diversity

**STATEMENT OF OPPOSITION TO APPLICATION FOR PRELIMINARY PERMIT**

For the following reasons, the application by Pumped Hydro Storage LLC (PHS) for a preliminary permit for its proposed pumped storage project (PSP) on the San Francisco River (Application) should be denied.

**A. The Commission Should Deny PHS's Preliminary Permit Application Because the Application is Incomplete and Misleading.**

***1. The Application is incomplete.***

The Application includes no mention of the proposal's potential impacts upon the Lower San Francisco Wilderness Study Area on the Gila National Forest (which would be inundated by reservoir), Inventoried Roadless Areas on the Gila and Apache/Sitgreaves National Forests, and on Wild and Scenic Eligibility Status (San Francisco River designated eligible on Apache/Sitgreaves, highly likely on Gila National Forest in new forest plan).

In addition, the Application fails to mention the impact the proposal would have on federally threatened and endangered species, including Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake.

***2. The Application's Discussion of Water Resources is Incomplete and Misleading.***

Water rights in the Gila/San Francisco watershed are highly contested – there are likely no water rights available for the proposed project. Issues omitted from the Application include the effect, if any, of the Arizona Water Settlements Act, ongoing controversies/conflict between Lower Gila agriculture

and tribes (Gila River Indian Community and San Carlos Apache Tribe), and Colorado River shortage sharing policies.

### ***3. The Applications' Claims of Public Interest are Misleading.***

The Revised Application states that the proposed PSP would benefit the public for a variety of reasons:

- Reducing the “duck curve” that is developing for energy demand due to renewable energy sources
- Promoting green, renewable power by providing a means to store energy
- Reducing our carbon footprint by providing a means to store excess energy or energy produced by nuclear power
- Providing approximately \$2.5 B in investment to create jobs and stimulate the Arizona and New Mexico economies
- Increasing electrical distribution system reliability and resiliency
- Adding peaking capacity available in 15 minutes for emergencies
- Reducing thermal generation reserve requirements
- Reducing electrical pricing volatility by balancing energy consumption
- Providing an oversized dam for water storage for irrigation districts
- Providing an oversized dam for flood control
- Providing a large lower reservoir for recreation and wild life
- Providing an access tunnel to the San Francisco River for recreation
- The project location is remote and cannot be seen by the public from any roads

Application at 9

In asserting that the proposed PHS Project could promote “green, renewable power” or reduce “our carbon footprint,” the Application does not explain that, as a pump storage energy facility, the proposed PHS Project would be a net user of electricity. Furthermore, the proposed PHS Project might increase greenhouse gas emissions overall because the energy for pumping could come from any energy source on the grid, including fossil fuel generation, as there would be no requirement that the pump storage project use only renewable energy while pumping.

The statement that the proposed PHS Project could provide a benefit by, “[r]educing the ‘duck curve’ that is developing for energy demand due to renewable energy sources” lacks specificity and

fails to explain or acknowledge the complexities of the grid balancing during the times when there may be excess renewable energy in the grid<sup>1</sup> or other types of projects and efforts underway that are also aimed at integrating renewable resources and balancing the supply and demand on an hourly, daily, weekly, seasonal and annual basis.<sup>2</sup> As such, the Application fails to provide any support for the assertions of the benefits that the proposed PHS Project could provide regarding promotion of renewable energy resources, or reduction of carbon footprints.

Moreover, in California, the California Independent System Operator (CAISO or ISO) has addressed similar claims and found that, even if additional energy storage is needed during the times when there is excess renewable energy on the grid, pump storage is not a cost effective solution.<sup>3</sup> Indeed, because pump storage projects would also utilize fossil fuel energy during low cost hours for

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<sup>1</sup> Renewable energy generation curtailment is highest mid-day in spring when solar generation is high and demand is relatively low. *See* CAISO Wind and Solar Curtailment November 13, 2019 (available at <http://www.caiso.com/PublishedDocuments/WindSolarCurtailmentReport.pdf#search=solar%20curtailment>). A majority of the curtailment is due to local congestion that “occurs when available, least-cost energy cannot be delivered to some loads because transmission facilities do not have sufficient capacity to deliver the energy.” *Id.* at 1 n. 3 (defining local economic curtailment), 3 (in 2019 to date, 508,744 MWH of curtailment out of 839,782 Mwh total). Large remote storage projects such as the proposed PSP would do nothing to mitigate the lack of local transmission facilities.

<sup>2</sup> *See* CAISO webpage “Managing Oversupply” (at <http://www.caiso.com/informed/Pages/ManagingOversupply.aspx>) listing solutions beyond storage including demand response, time-of-use rates, minimizing generation from other sources to make room for more renewable energy production, incorporating electric vehicle charging systems that are responsive to changing grid conditions, investing in modern, fast-responding resources that can follow sudden increases and decreases in demand as well as regional coordination and expansion of the western Energy Imbalance Market.

<sup>3</sup> In the 2018-2019 Transmission Plan (available at [http://www.caiso.com/Documents/ISO\\_BoardApproved-2018-2019\\_Transmission\\_Plan.pdf](http://www.caiso.com/Documents/ISO_BoardApproved-2018-2019_Transmission_Plan.pdf)), the CAISO found that providing additional transmission for existing pumped storage within the State that is underutilized due to lack of transmission capacity needed for pumping, would result in increased CO2 emissions and not be cost effective. *Id.* at 131 (“the economic benefit of the avoided curtailment is not enough to justify the Gates-Gregg 230 kV Line project and accordingly the recommendation is to cancel the project”).



pump-back they will result in a net generation of greenhouse gases.<sup>4</sup> Further, because pumped storage is *at best* about 80% efficient, it requires *at least* 1.25 Mwh of pumping energy for each Mwh it generates. To avoid net greenhouse gas emissions, the project would need to have access to pumping energy sources that have emission rates for greenhouse gases per Mwh that are 20% lower than the emissions rates of any generation it displaces. As a result, even if some excess renewable energy is available for pumping at some times, and no other storage opportunities would be available in closer proximity to generation and load, the proposed PHS Project would still result in a net increase in greenhouse gas emissions from operations.<sup>5</sup>

**B. The Commission Should Deny PHS's Preliminary Permit Application Because the Proposed Project Would Jeopardize the Federally Endangered Southwest Willow Flycatcher, Loach minnow, Spikedace, and Federally Threatened Narrow-headed Garter Snake and Northern Mexican Garter Snake in Violation of the Endangered Species Act.**

Construction and operation of the proposed project would destroy or adversely modify dozens of river miles and hundreds of acres of occupied, designated and proposed critical habitat for federally threatened and endangered species, including Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake. Construction and operation of the dam would bifurcate and isolate now contiguous populations of Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake in the San Francisco River. Because the project would destroy or adversely modify significant amounts of occupied habitat and critical habitat for each of those five species, and because this would in turn harm the survival and recovery of those

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<sup>4</sup> See CAISO 2016-2017 Transmission Planning Process, Supplemental Sensitivity Analysis, and others as well (footnote 5, *supra*).

<sup>5</sup> Additional greenhouse gas emissions from fabrication (e.g. steel for pumps, powerhouse, and transmission towers), construction (including loss of carbon sequestration from soil disturbance) and growth inducing impacts, such as drawing additional tourism and other development to the area, would also need to be considered and calculated and would likely result in a net increase of greenhouse gases attributable to this proposed PSP.

species' San Francisco River populations, the Commission cannot license the projects without jeopardizing those species and violating the Endangered Species Act. The Commission should avoid that outcome now and deny the preliminary permit application.

There are 27.6 contiguous miles of both Loach minnow and Spikedace critical habitat downstream of the proposed dam that would be impacted by altered river flows resulting from construction and operation of the dam. In addition, 0.26 contiguous river miles of critical habitat for the Southwest Willow Flycatcher and 10.9 miles of critical habitat for the Loach minnow and Spikedace would be flooded by the proposed new reservoir.

There are 43.7 contiguous miles of Narrow-headed Garter Snake proposed critical habitat downstream of the proposed dam that would be impacted by altered river flows resulting from construction and operation of the dam. In addition, 11 contiguous river miles of proposed critical habitat for the Narrow-headed Garter Snake and 0.8 miles of proposed critical habitat for the Northern Mexican Garter Snake would be flooded by the proposed new reservoir.

The proposed dam and reservoir would fragment and isolate upstream and downstream populations of Loach minnow, Spikedace, Narrow-headed Garter Snake and Mexican Garter Snake—species whose life histories restrict them largely or entirely to aquatic or aquatic and immediately adjacent and associated riparian vegetation.

The footprint of the proposed project's infrastructure would destroy or directly impact 823 acres of designated (and proposed) critical habitat (1,652 acres if a 100 meter buffer is added).

### **Spikedace**

Federally endangered Spikedace, a member of the minnow family Cyprinidae, is a small, slim fish less than 3 inches (in) (75 millimeters (mm)) in length. It is native to the Gila River basin, including the mainstem Gila River upstream of Phoenix, and the Verde, Agua Fria, Salt, San Pedro, and

San Francisco sub-basins, where it historically occupied shallow riffles with sand, gravel, and rubble substrates in moderate to large perennial streams. Habitat destruction and predation by non-native species has caused severe declines in Spikedace populations. Today the fish persists in only 10 to 15% of its historical range in five remnant populations. The San Francisco River population is one of two remnant populations in the San Francisco/Middle Gila Recovery Unit.

The Proposed Project, if built, would put in place most of the major threats to spikedace identified in its Recovery Plan, and would do so within designated critical habitat for the fish. According to the 1991 Recovery Plan, “major threats” to spikedace “include dams, water diversion, watershed deterioration, groundwater pumping, channelization, and introduction of non-native predatory and competitive fishes.” Recovery Plan at iv.

Construction and operation of the project would eliminate the natural flooding and river flows in occupied and critical habitat in the San Francisco downstream of the dam. Natural river flows are critical to the fish’s life history, its survival and recovery, and its maintenance of competitive advantage over predatory or competitive non-native fish. The Designation of Critical Habitat for the Spikedace (*Meda fulgida*) and the Loach minnow (*Tiaroga cobitis*); Final Rule (Federal Register / Vol. 72, No. 54 / Wednesday, March 21, 2007 / Rules and Regulations) explains:

Recurrent flooding and a natural hydrograph (physical conditions, boundaries, flow, and related characteristics of water) are very important in maintaining the habitat of spikedace and in helping the species maintain a competitive edge over invading nonnative aquatic species (Minckley and Meffe 1987, p. 103-104; Propst et al. 1986, pp. 3, 81, 85).

Final Critical Habitat Designation at F.R. 13356. The 1991 Recovery Plan for Spikedace further explains:

[P]opulations occupying tailwaters are subjected to impacts ranging from dewatering to altered chemical and thermal conditions. Stream channelization, bank stabilization, or other instream management for flood control or water diversion, have also directly destroyed spikedace habitats. Natural flooding of desert streams and rivers may play a significant role in life histories

of native fishes because they rejuvenate habitats (Propst et al 1986), but perhaps more importantly because desert fishes effectively withstand such disturbances while non-native forms apparently do not (Meffe and Minckley 1987, Minckley and Meffe 1987). Activities that alter natural flow regimes may thus have negative impacts on native fishes.

Recovery Plan at 6. For this reason, the Recovery Plan recommends the following:

Formal agreements that stream flows will not be modified by activities such as damming or diversion that substantially alter natural flow regimes should thus be an integral part of insuring perennial flows.

Recovery Plan at 13.

The 1991 Recovery Plan states: “Spikedace do not persist in reservoirs...” Recovery Plan at 6.

Because spikedace do not persist in reservoirs, construction and operation of the project would destroy and adversely modify 10.9 miles of critical habitat for the fish upstream of the dam, in river that would become reservoir. In addition to eliminating spikedace from 10.9 miles of river that would become reservoir, that reservoir would also create conditions conducive to populations of non-native fish that would compete with and/or prey on spikedace in remaining river reaches upstream of the new reservoir.

The Recovery Plan describes problems that non-native fish populations cause for spikedace:

Non-native fishes, introduced for sport, forage, bait, or accidentally, impact upon native fishes. Ictalurid catfishes, and centrarchids, including largemouth bass, smallmouth bass, and green sunfish (*Lepomis cyanellus*), prey upon native fishes. At higher elevations, introduced salmonids (brown trout, *salmo trutta*, and rainbow trout, *oncorhynchus mykiss*) may similarly influence spikedace populations. Red shiner may be particularly important as regards spikedace, because the two species where allopatric occupy essentially the same habitats, and where sympatric there is some evidence that there is displacement of the native to habitats which otherwise would scarcely be used (Marsh et al. 1989). Moreover, the concomitant reduction of spikedace and expansion of the shiner is powerful circumstantial evidence that red shiner may have displaced spikedace in suitable habitats throughout much of its former range.

Recovery Plan at 7.

Finally, the proposed dam would bifurcate spikedace populations, making each resultant population smaller, genetically and reproductively isolated, less capable of persisting, and less resilient to disturbances, including aforementioned harms relating to tailwater and reservoir conditions.

In these and other ways, the proposed project, if built, would destroy and adversely modify 27.6 contiguous miles critical habitat downstream of the proposed dam, and 10.9 miles upstream of the dam, where reservoir would replace river and displace spikedace. Further, propagation of non-native fish in the proposed reservoir, and escapement of those fish upstream would adversely modify additional miles of critical habitat. These changes would be catastrophic for one of only five remaining populations of the federally endangered spikedace and would undermine its survival and recovery.

### **Loach minnow**

The loach minnow (Frontispiece) is a small, stream-dwelling member of the minnow family (Cyprinidae). Loach Minnow Recovery Plan at 1. Like Spikedace, loach minnow is endemic to the Gila River basin of Arizona and New Mexico, USA, and Sonora, Mexico. Recovery Plan at 6. Its range today is limited reaches in the White River (Gila County), North and East forks of the White River (Navajo County), Aravaipa Creek (Graham and Pinal counties), San Francisco and Blue Rivers and Campbell Blue Creek (Greenlee County). *Id.* at 2. Like Spikedace, Loach minnow occupy riffles, but are restricted almost exclusively to a bottom-dwelling ravel and cobble habit, swimming in swift water only for brief moments as the fish darts from place to place. *Id.* at 4.

The proposed project, if built, would enact most of the major threats to spikedace identified in its Recovery Plan, and would do so within designated critical habitat for the fish. The Recovery Plan lists the threats, including dams, dewatering, and non-native fish, as driving the fish's decline:

Changes in distribution and abundance of loach minnow are directly or indirectly tied to man's uses of rivers, streams and landscapes, which have been variously modified by past and present activities (Hastings and Turner 1965, Hendrickson and Minckley 1985). Direct impacts have resulted from stream habitat alterations accompanying a suite of land and water use practices; most often cited are dewatering, impoundment, and livestock grazing. Certain introduced and established non-native fishes may interact negatively with native kinds, and independently or in concert with habitat alteration, result in their extirpation.

Recovery Plan at 6.

Construction and operation of the project would eliminate the natural flooding and river flows in occupied and critical habitat in the San Francisco downstream of the dam. Natural river flows are critical to the fish's life history, its survival and recovery. Loach Minnow have become extirpated in tailwaters downstream of dams on the Gila and Salt Rivers. The Recovery Plan states:

Downstream effects of dams may include dewatering (above), alteration in flow regime, amelioration of natural flood events, changes in thermal and chemical character of the stream, elimination of organic drift typical of flowing waters, and other impacts, which may have a variety of lethal and sublethal effects on fishes. Natural flooding of desert streams may play a significant role in life history of native fishes because it rejuvenates habitats (Propst et al 1988), but perhaps more importantly because desert fishes effectively withstand such disturbances while non-native forms apparently do not (Meffe and Minckley 1987, Minckley and Meffe 1987). Major reaches of the Gila and Salt rivers are influenced by dams and their reservoirs and tailwaters; loach minnow no longer occur in these affected waters (e.g., Minckley 1973, unpublished data).

Recovery Plan at 6, 7.

Construction and operation of the proposed dam would convert 10.9 miles of critical habitat from river to reservoir. The Recovery Plan states that, like spikedace, loach minnow will not persist in lentic habitats: "Impoundment results in creation of lentic habitat, which eliminates and excludes the swift-water loach minnow." Recovery Plan at 6.

Because loach minnow do not persist in reservoirs, construction and operation of the project would also destroy and adversely modify 10.9 miles of critical habitat for the fish upstream of the dam, in river that would become reservoir. And, as with spikedace, construction and operation of the dam and reservoir would create conditions conducive to populations of non-native fish that would compete with and/or prey on loach minnow in remaining river reaches upstream of the new reservoir. The Recovery Plan directs that loach minnow populations "should be isolated as much as practicable from non-native fishes, which might preclude or otherwise interfere with successful reestablishment of the native." Recovery Plan at 21.

Finally, the proposed dam would bifurcate loach minnow populations, making each resultant population smaller, genetically and reproductively isolated, less capable of persisting, and less resilient to disturbances, including aforementioned harms relating to tailwater and reservoir conditions.

In these and other ways, the proposed project, if built, would destroy and adversely modify 27.6 contiguous miles critical habitat downstream of the proposed dam, and 10.9 miles upstream of the dam, where reservoir would replace river and displace loach minnow. Further, propagation of non-native fish in the proposed reservoir, and escapement of those fish upstream would adversely modify additional miles of critical habitat. These changes would be catastrophic for remaining populations of the federally endangered loach minnow in the San Francisco River, and would undermine its survival and recovery.

Because the project would destroy or adversely modify significant amounts of designated critical habitat for five federally threatened or endangered species, and because this would in turn harm the survival and recovery of those species' San Francisco River populations, the Commission cannot license the projects without jeopardizing those species and violating the Endangered Species Act. The Commission should avoid that outcome now and deny the preliminary permit application.

**C. The Commission Should Deny the Application Because the Proposed Project, by Industrializing Wilderness Study Areas, Inventoried Roadless Areas, and River Reaches Eligible for Inclusion in the National Wild and Scenic River System, Would be Incompatible with National Forest Management Objectives.**

The Commission should deny the preliminary permit application because laws and policies governing national forest management preclude construction and operation of the project in Wilderness Study Areas, Inventoried Roadless Areas, and river reaches eligible for inclusion in the National Wild and Scenic River System.

The proposed project would directly impact 757 acres of the Lower San Francisco Wilderness Study Area (1,639 with a 100 meter buffer), 989 acres of Inventoried Roadless Area (2,139 acres with a



100 meter buffer) and 170 acres of National Forest Acreage not including the acreage of Wilderness Study Area and Inventoried Roadless Area (356 acres with a 100 meter buffer). The proposed project would also directly impact portions of the San Francisco River eligible for inclusion in the National Wild and Scenic River System.

Public Law 96-550 (New Mexico Wilderness Act 1980) designated the Lower San Francisco Wilderness Study Areas as having wilderness characteristics worthy of consideration by Congress for wilderness designation. Until such time that Congress acts on this recommendation, the Land and Resource Management Plan for the Gila National Forest requires that the Lower San Francisco Wilderness Study Area be managed to maintain existing wilderness character. Land and Resource Management Plan for the Gila National Forest at 6. The proposed project would be inconsistent with that character and is barred by the governing resource management plan.

Inventoried Roadless Areas (IRAs) were authorized by the 2001 Roadless Area Conservation Rule, 36 C.F.R. Part 294. The Roadless Area Conservation Final Rule prohibits road construction, reconstruction, and timber harvest, except under certain circumstances, in Inventoried Roadless Areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate long-term loss of roadless area values. The management emphasis for Inventoried Roadless Areas on the Apache-Sitgreaves National Forest “is to retain the natural appearing character of these areas.”

Management activities occur “for ecological restoration because of natural ecological events or previous management actions. Management activities may include restoration of ecological conditions or habitat components, soil stabilization, wildland fire, hazardous fuels reduction, and invasive species reduction.” Land and Resource Management Plan for the Apache-Sitgreaves National Forest at 122.

By industrializing inventoried roadless area, the proposed project would be inconsistent with the governing resource management plan and the 2001 Roadless Area Conservation Rule.

Eligible rivers are managed on the Apache-Sitgreaves and Gila National Forests “to retain their status until a suitability determination has been made whether to recommend their inclusion in the National Wild and Scenic Rivers System.” This means that “each eligible river’s free-flowing condition, outstandingly remarkable values, and classification shall be sustained until further study is conducted” and “until congressional action is completed.” Apache-Sitgreaves LRMP at 83, 84.

**D. The Commission Should Deny the Application Because the Project Would be Infeasible Considering the San Francisco’s High Sediment Load, Which Could Overwhelm the Capacity of San Francisco Reservoir.**

The San Francisco River is notable for the magnitude of its floods. These floods mobilize the stream bed and convey enormous amounts of sediment in suspension and as bed load. Climate change is projected to increase storm and runoff intensities, which will lead to a disproportionately large increase in erosion and in San Francisco River sediment transport and reservoir sedimentation volumes.

The Application fails to address the impact high sediment loads in the San Francisco River would have on the feasibility of the proposed project. By obstructing and slowing river flows, the proposed dam and reservoir would cause deposition of the San Francisco River’s suspended sediment at the upstream margin and within the reservoir. The volumes of sediment transported downstream are large compared to the proposed reservoir volume, which would be rapidly filled with sediment, leading to a short project operating lifetime. In fact, sediment deposition would eventually displace reservoir storage capacity and cause habitat inundation upstream of the reservoir. Removal of sediment by dredge would be difficult or infeasible, would pose high operating costs, and would further destroy or adversely modify occupied habitat and critical habitat for federally endangered species.

Although applicants’ failure to consider obvious sedimentation effects warrants FERC’s rejection of the Application, that failure also exemplifies the incompleteness that plagues the application generally.

**E. Alternatively, the Commission Should Require PHS To Conduct Additional Studies on the Proposed Project and Allow Stakeholders to Participate in Study Development.**

The scope of the proposed studies is inadequate to provide needed information for National Environmental Policy Act (NEPA) review of the proposed PHS Project or Endangered Species Act (ESA) compliance as well as for compliance with other laws; additional studies are needed. If the preliminary permit is granted, the Commenters request that they and all other parties and stakeholders be allowed to actively participate in the design and review of all studies.

***1. The scope of the proposed studies is inadequate.***

The studies the Applicant proposed to initiate include only:

- 1) Engineering feasibility and economic studies – to confirm the feasibility of the project.
- 2) Water supply studies – to confirm water is available to fill the reservoir and to maintain the water lost thru evaporation.
- 3) Geotechnical studies – to confirm the geology and sub-surface conditions at the upper reservoir, lower reservoir, and powerhouse.
- 4) Environmental studies – to identify if any rare, endangered, or threatened species are affected by the project implementation.
- 5) Cultural and tribal studies – to confirm if the project would impact cultural or tribal resources.

Application at 10.

These extremely general categories are inadequate to show that the studies will address all relevant issues. For example, regarding “engineering feasibility” the studies must also include the dam failure risk due to flooding on the San Francisco at various time frames. A flood like the one in 1983, at 90,000 CFS,<sup>6</sup> would quickly fill and overwhelm the instream proposed dam and reservoir without a bypass. Studies are needed to show how the proposed PHS Project design would react in similar, highly likely, flood conditions as well as in other flood conditions.

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<sup>6</sup> See <https://pubs.usgs.gov/wri/1985/4225b/report.pdf> .

The “water supply studies” need to do more than confirm that water is “available” to fill the reservoirs and replenish water lost to evaporation: the studies must also consider seepage losses from the upper and lower reservoirs, with resultant reductions in downstream flows. In addition, the water supply studies must consider all water rights holders’ interests as well as instream beneficial uses for fish and other aquatic resources, recreation, and other uses.

The “environmental studies” need to address “rare, endangered and threatened species” including flooding and dewatering impacts and changes to flows within the San Francisco River and impacts of all of the proposed PHS Project upland facilities on species and habitats as well. Further, the environmental studies must address impacts to other plant and wildlife communities, soils, air and water quality, cultural resources, human health and safety, economic impacts to local communities and other impacts.

The studies must consider upstream reservoir pool impacts from the proposed dam on the San Francisco River to the end of the lower reservoir. The studies must also consider any impacts upstream of the lower reservoirs due to siltation as the San Francisco enters the lower reservoirs. Similarly, studies must be done on the impacts of the reservoir pool from the upper reservoir dam.

As another example, because the proposed PHS Project would be a net user of energy and some of that energy would likely be generated by fossil fuels, the greenhouse gas generation attributable to the proposed PHS Project and impacts of those GHGs must be disclosed and addressed in the environmental review regarding air quality.

Each of the environmental studies also needs to include direct, indirect, and growth inducing impacts from increased access roads and other infrastructure that would occur and impact each of the environmental resources in the area.

The cultural studies will also have to be extensive. The area of the proposed project was used by many ancient cultures. As a result, current Indian tribes have a potential cultural connection to the site. The pueblos of Hopi, Zuni, and Acoma should be consulted to determine if they have cultural sites and/or other connections to the area. In addition, the following Apache tribes also need to be consulted: San Carlos, White Mountain, Ft. Sill, and Mescalero.

## ***2. Additional studies are needed.***

In addition to the studies identified in the Application, the following additional studies should be conducted:

### ***a. Sediment Transport Study.***

The Commission should require a sediment transport study for the proposed Project related to the bypass tunnel. The study should look at sediment passage under normal spring runoff and sediment passage under a variety of flood conditions. The study must address scenarios in which the bypass tunnel is free of sediment and debris and the effects if it were blocked partially or wholly by sediment and/or debris. The study must also address scour and erosion of the riverbed and banks at the end of bypass tunnel from normal runoff and under a variety of flood conditions.

### ***b. Dewatering Study.***

The proposal includes dewatering a portion of the San Francisco River below the dam during construction, which could last many years, and dewatering would apparently continue during dam operations as well.<sup>7</sup> A study must be conducted regarding impacts to the river habitat for federally threatened, endangered, candidate, and special status species, to the river bed itself, springs, and underground flows as well as to recreation and other resources of this area from the dewatering looking

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<sup>7</sup> Exhibit 3-1 includes the following caption: “30 foot dia[meter] bypass tunnel for dewatering with cofferdams during construction and for high flows during operations.”

at various time frames.

c. Helicopter Access for Studies May Have Impacts that Must Be Addressed and Limited to Protect Resources.

The Application states: “No new roads will be built to conduct any of the proposed studies - access to the lower reservoir for studies will be by helicopter.” Application at 10 Because helicopter access itself may impact many of the resources in this area including recreation, cultural, species and habitats due to noise, vibration, risk of spills and accidents, and surface disturbance at landing sites, such access should be studied by the Commission under NEPA before it is undertaken as part of the preliminary permit. Permits for access from the local jurisdiction may also be needed.

d. Geotechnical Studies May Have Impacts that Adversely Affect the Environment.

The Application states: “Geotechnical studies at the dams, reservoirs, and tunnel locations will be conducted by borehole drilling samples and test pits. Measures will be taken to avoid or minimize disturbance at the drilling locations, and test pits will be backfilled to return the site as much as possible to natural.” Application at 10. More information is needed regarding the size of the boreholes and test pits, the equipment needed to undertake these studies. The environmental impacts of the geotechnical studies themselves may be significant and require NEPA before they are undertaken.

e. Dispatch Impacts Study.

A dispatch impacts study would analyze the likely marginal sources of generation that would be used to provide pumping energy for the proposed PHS Project, and the likely marginal sources of generation that would be displaced when the project was generating electricity.

The purpose of this study would be to quantify the extent to which the proposed PHS Project would increase or decrease emissions of greenhouse gases and other pollutants. Although a potential environmental benefit of the proposed PHS Project could be displacement of emissions from natural

gas-fired generation that is the primary marginal source of generation for the Western U.S. grid during high-load hours, this potential benefit could be offset by the environmental cost of the projects including both construction impacts and emissions from the generation used to supply pumping energy. There would certainly be emissions increases in some locations, even if there are decreases in others. The net effect of these partially offsetting impacts is likely to be an increase in emissions, which needs to be studied and quantified for NEPA compliance.

Even if some of the marginal sources of pumping energy are similar in terms of emissions, the fact that more than one kwh of pumping energy is required for each kwh of project generation means that the emissions associated with pumping energy would be greater than any saved emissions from project generation. If the marginal sources of pumping energy include off-peak coal generation, but the marginal generation displaced by project generation is on-peak natural gas generation, then the net emissions could be strongly negative in quantity. In addition, it is likely that the sources of pumping energy and the generation displaced by project generation would be in geographically distinct locations, further increasing local project environmental impacts in the areas supplying the pumping energy.

The goal of the dispatch impacts study would be to quantify the amount and location of emissions changes due to operation of the proposed project, so that the Commission's NEPA analysis can properly account for the emissions impacts of the project.

This study should use a Western Electricity Coordinating Council (WECC)-wide hourly annual dispatch model, run with and without the proposed PHS Project included, to identify changes in the location and quantity of annual generation attributable to the project. The output of that model, showing generation changes in Mwh terms, would then be coupled to known power plant-specific emissions factors (from EPA data) to calculate the emissions changes for CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and particulates attributable to the proposed PSP.



The Bonneville Power Authority (BPA) modelled emission changes throughout the WECC as part of its NEPA analysis of changed electricity marketing as long ago as 1988.<sup>8</sup> NRDC modelled emission changes throughout the WECC as part of its analysis of potential closure of large hydroelectric generators on the BPA system.<sup>9</sup> More recently, Energy + Environmental Economics (E3) analyzed CO2 emissions impacts of integrating the PacifiCorp and CAISO systems, albeit without using dispatch modelling,<sup>10</sup> and the CAISO used dispatch modeling of the Western U.S. grid to analyze regional impacts include emissions from grid regionalization.<sup>11</sup> More generally, dispatch modeling of the WECC to quantify the locations and amounts of generation changes due to changes in the grid has been conducted extensively by both electric utilities and developers, as well as their regulators.

Such a study would benefit the public by determining the location and magnitude of the emissions impacts of the proposed PSP and documenting its net greenhouse gas and other emissions.

f. Economic Viability Study.

An economic viability study is needed to address whether and why any additional pump storage would be prudent or needed when existing pump storage projects are not currently fully utilized. For example, there are two pumped storage hydroelectric projects larger than 1,000 Mw, each operating in California that are in relative proximity to the high demand/load centers and renewable generation. These are PG&E's Helms Project in Fresno County in the Sierra Nevada and the Castaic power plant in

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<sup>8</sup> See BPA, 4/88, Intertie Development and Use FEIS, DOE/EIS-0125-F.

<sup>9</sup> NRDC, Going With the Flow: Replacing Energy from Four Snake River Dams, April 2000, by David Marcus and Karen Garrison. (Executive Summary available at <http://www.bluefish.org/goingwth.htm>)

<sup>10</sup> E3, October 2015, Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration, Technical Appendix, pp. 39-42.

<sup>11</sup> See <http://www.caiso.com/Documents/Presentation-SB350RatepayerImpactsAnalysis-BrattleGroup.pdf#search=SB350>, pp. 9-10. Note particularly the last bullet item on p. 9: "Simulations will also yield emissions (GHG, NOx, SOx) for environmental analysis."

northern Los Angeles County operated by the Los Angeles Department of Water and Power (LADWP) in cooperation with the California Department of Water Resources.

The Helms Project was specifically built as a pumped storage project and includes the 123,000 acre-foot Courtright Reservoir and the 129,000 acre-foot Wishon Reservoir, with an installed capacity of 1,212 MW.<sup>12</sup> With a nominal installed capacity of more than 1,500 MW, the Castaic project uses the State Water Project's Pyramid Reservoir and Castaic Reservoir to generate hydroelectricity via pumped storage, but the primary purpose of the reservoirs is to store water from the State Water Project for export to southern California cities.<sup>13</sup>

Both the Helms and Castaic projects were designed primarily to generate electricity during periods of high demand (summer afternoons in particular) and to pump water back into the upper reservoirs at night when electricity demand and costs were low. During California's energy crisis of 2000-2001, the Helms project was unable to operate because of the round-the-clock demand and high electricity costs caused by the crisis.<sup>14</sup>

The cost of construction of the Helms project ballooned from an initial estimate of \$200 million to \$600 million.<sup>15</sup> More recently, the increase in electric demand in Central California has consumed transmission capacity prompting PG&E to plan to construct a new 150 mile-long 500 kV transmission line to restore the flexibility of Helms operations.<sup>16</sup>

The CAISO has repeatedly studied the economics of adding new pumped storage capacity to serve California loads, and has repeatedly found negative economic impacts. For example, a 2017

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<sup>12</sup> [https://en.wikipedia.org/wiki/Helms\\_Pumped\\_Storage\\_Plant](https://en.wikipedia.org/wiki/Helms_Pumped_Storage_Plant) .

<sup>13</sup> [https://en.wikipedia.org/wiki/Castaic\\_Power\\_Plant](https://en.wikipedia.org/wiki/Castaic_Power_Plant) .

<sup>14</sup> <https://www.latimes.com/archives/la-xpm-2001-jan-24-mn-16302-story.html> .

<sup>15</sup> <http://large.stanford.edu/courses/2014/ph240/galvan-lopez2/> .

<sup>16</sup> [https://www.nwcouncil.org/sites/default/files/ManhoYeung\\_1.pdf](https://www.nwcouncil.org/sites/default/files/ManhoYeung_1.pdf) .

update to earlier studies found that a 1,400 Mw pumped storage project would have revenue requirements well in excess of its benefits under numerous different planning assumptions.<sup>17</sup>

To avoid waste of economic resources, the applicant needs to do an economic study analogous to that done for the CAISO, but with costs and benefits specific to the proposed PHS Project individually and together.

g. Interconnection Study.

Presumably the applicants believe there would be available capacity on the electrical grid to accommodate its generated power. However, recent information suggests that there is likely to be no capacity available.

According to the Southline Transmission Line Project FEIS, “[e]xisting transmission capacity in southern New Mexico and southern Arizona is presently almost fully utilized and congested.”<sup>18</sup> The FEIS elaborates: “The electrical grid across southern New Mexico, southeast Arizona, and west Texas faces challenges from severe demand spikes resulting from large temperature swings—especially during hot summer months. Because loads on power lines are constantly changing and utilities need to reserve capacity to meet required levels of reliability, the congested state of the electrical grid exacerbates the difficulties of local utilities to provide reliable service, even when increased electrical load can be

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<sup>17</sup> CAISO, Economic Planning-Production cost model development, 2017-2018, pages 51-116 (available at [http://www.caiso.com/Documents/Day2\\_ISO-Presentation\\_2017-2018TransmissionPlanningProcess\\_PreliminaryReliabilityResults.pdf#search=pumped%20storage,pdf](http://www.caiso.com/Documents/Day2_ISO-Presentation_2017-2018TransmissionPlanningProcess_PreliminaryReliabilityResults.pdf#search=pumped%20storage,pdf)). Those pages consist of a 66 page presentation entitled: Bulk Energy Storage Resource Case Study-Update to the 2016-2017 Transmission Plan Studies, *Shucheng Liu, Principal, Market Development, 2017-2018 Transmission Planning Process Stakeholder Meeting, September 21, 2017*. The charts on pp. 23, 38, 47, 56, and 65 each show, for different planning assumptions, that the revenue requirements for a new pumped storage plant (in green) would exceed the revenues and values that such a plant could produce.

<sup>18</sup> Southline Transmission Line Project Final Environmental Impact Statement, October 2015, Section 1.3.2, available at [https://eplanning.blm.gov/epl-front-office/projects/nepa/83613/112786/137921/SLT\\_Final\\_EIS\\_Volume\\_1.pdf](https://eplanning.blm.gov/epl-front-office/projects/nepa/83613/112786/137921/SLT_Final_EIS_Volume_1.pdf)

anticipated. The poor physical condition of certain components of the transmission grid, coupled with this current state of congestion, makes the entire system itself vulnerable to cascading outages and potential regional blackouts.” FEIS at Section 1.3.2.

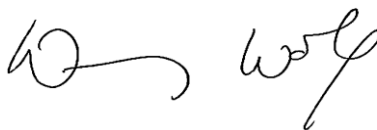
Thus, a study needs to be conducted to determine whether the electrical grid would have capacity for any power the propped project might generate.

## **VI. CONCLUSION**

WHEREFORE, the Commenters request that the Commission deny the application by Pumped Hydro Storage LLC for a preliminary permit for its proposed pumped storage project on the San Francisco River.

Dated: February 21, 2020

Respectfully submitted,



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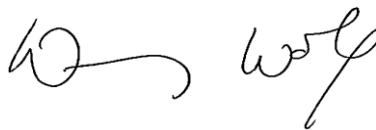
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### **CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing upon each person designated on the official service list in the proceedings Docket No. 14995-000 as compiled by the Secretary of the Federal Energy Regulatory Commission by electronic mail or by first-class mail if no e-mail address is provided.

Dated at Washington, DC this 21st day of February 2020.

A handwritten signature in black ink, appearing to read 'Douglas W. Wolf', written in a cursive style.

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Douglas W. Wolf

**BEFORE THE UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

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Pumped Hydro Storage LLC	)
San Francisco River (SFR)	)
Pumped Storage Project (PSP)	)

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Docket No. 14995-000  
Center for Biological Diversity  
Motion to Intervene

**CENTER FOR BIOLOGICAL DIVERSITY'S  
MOTION TO INTERVENE RE PROJECT NO. 14995-000**

**I. INTRODUCTION**

On December 23, 2019, the Federal Energy Regulatory Commission (FERC) issued a NOTICE OF PRELIMINARY PERMIT APPLICATION ACCEPTED FOR FILING AND SOLICITING COMMENTS, MOTIONS TO INTERVENE, AND COMPETING APPLICATIONS (Notice)<sup>1</sup> regarding an application from Pumped Hydro Storage, LLC (PHS) for a proposed project called the San Francisco River Pumped Storage Project (PSP).

In accordance with the Notice and Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214, the Center for Biological Diversity (the Center) hereby timely moves to intervene and become a party in the proceeding for the proposed PSP Project (P-14994).

**II. COMMUNICATIONS**

All correspondence, communications, pleadings and other documents relating to this proceeding should be served upon the following persons:

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(202) 510-5604

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<sup>1</sup> eLibrary, 20191223-3053 (12/23/2019)

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### **III. IDENTIFICATION OF AND INTERESTS OF PARTY**

The Center for Biological Diversity is a national, nonprofit conservation organization with more than 70,000 active members dedicated to the protection of endangered species and wild places. Among the species the Center works to protect are many that may be affected by the proposed PSP including the federally threatened and endangered Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake.

The Center supports the development of clean and renewable energy and needed energy storage to support such development, which is a critical component of efforts to reduce greenhouse gas emissions, avoid the worst consequences of climate change, and assist the nation in meeting critical emission reduction goals. However, like any energy project, proposed energy storage projects must be thoughtfully planned to minimize impacts to the environment and, in particular, avoid harming sensitive species and habitats. Although the Center strongly supports the rapid development of renewable energy production and needed energy storage to address the climate crisis, it does not support projects, such as this proposed PSP, which are poorly sited in remote areas with highly sensitive environmental resources.

Moreover, because pump storage projects are net energy users when they utilize fossil fuel generation to pump the water up-hill, the net effect can undermine efforts to reduce greenhouse gas emissions overall. Further, large pump storage projects are difficult to integrate into the grid due to



their high energy needs during pumping. In contrast, other alternatives such as smaller energy storage projects near high-demand centers and distributed storage options serve to minimize impacts to the environment, increase climate resilience, do not require the fossil-fuel combustion to operate, and provide significant flexibility and additional grid support services—all benefits that larger energy storage projects, such as the proposed PSP here, fail to provide. Only by maintaining the highest environmental standards regarding local impacts, effects on species and habitat, and eliminating fossil-fuel energy usage can renewable energy production or energy storage projects be truly sustainable.

The proposed PSP that is the subject of a revised application for a preliminary permit<sup>2</sup> would be situated on the San Francisco River near the Arizona/New Mexico border. The San Francisco River at this location provides a home for federally threatened and endangered Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake. If the proposed PSP is constructed and operated, it could decimate these populations.

The Center for Biological Diversity has been intimately involved in the preservation of species and habitats in this area for decades including the federally threatened and endangered Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake and their associated critical habitats in the San Francisco River. No other entity represents the Center's interests in these proceedings and the Center's participation would be in the public interest.

As detailed below, the Application does not provide enough meaningful information regarding the proposed site and facilities or energy use and generation to inform the public or the Commission for the purposes of considering a preliminary permit. Therefore, the preliminary application is incomplete and inaccurate and should be denied.

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<sup>2</sup> PSP Revised Application 20190801-5040 FERC elibrary (7/31/2019)

In addition to being concerned with the local environmental impacts of the construction and operation of the proposed PSP facilities, the Center is concerned that the proposed PSP is being presented as needed to support renewable energy generation but may instead undermine greenhouse gas emission reduction goals.

The Center for Biological Diversity has a long history of advocating for the protection of the species and habitats that may be affected by the proposed PSP and for reduction in fossil fuel generated energy to reduce greenhouse gas emissions; no other party represents the Center's interests in this matter.

#### **IV. STATEMENT OF POSITION**

##### **A. The Commission Should Deny PHS's Preliminary Permit Application Because the Application is Incomplete and Misleading.**

###### ***1. The Application is incomplete.***

The Application includes no mention of the proposal's potential impacts upon the Lower San Francisco Wilderness Study Area on the Gila National Forest (which would be inundated by reservoir), Inventoried Roadless Areas on the Gila and Apache/Sitgreaves National Forests, and on Wild and Scenic Eligibility Status (San Francisco River designated eligible on Apache/Sitgreaves, highly likely on Gila National Forest in new forest plan).

In addition, the Application fails to mention the impact the proposal would have on federally threatened and endangered species, including Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake.

###### ***2. The Application's Discussion of Water Resources is Incomplete and Misleading.***

Water rights in the Gila/San Francisco watershed are highly contested – there are likely no water rights available for the proposed project. Issues omitted from the Application include the effect, if any,

of the Arizona Water Settlements Act, ongoing controversies/conflict between Lower Gila agriculture and tribes (Gila River Indian Community and San Carlos Apache Tribe), and Colorado River shortage sharing policies.

### ***3. The Applications' Claims of Public Interest are Misleading.***

The Revised Application states that the proposed PSP would benefit the public for a variety of reasons:

- Reducing the “duck curve” that is developing for energy demand due to renewable energy sources
- Promoting green, renewable power by providing a means to store energy
- Reducing our carbon footprint by providing a means to store excess energy or energy produced by nuclear power
- Providing approximately \$2.5 B in investment to create jobs and stimulate the Arizona and New Mexico economies
- Increasing electrical distribution system reliability and resiliency
- Adding peaking capacity available in 15 minutes for emergencies
- Reducing thermal generation reserve requirements
- Reducing electrical pricing volatility by balancing energy consumption
- Providing an oversized dam for water storage for irrigation districts
- Providing an oversized dam for flood control
- Providing a large lower reservoir for recreation and wild life
- Providing an access tunnel to the San Francisco River for recreation
- The project location is remote and cannot be seen by the public from any roads

Application at 9

In asserting that the proposed PHS Project could promote “green, renewable power” or reduce “our carbon footprint,” the Application does not explain that, as a pump storage energy facility, the proposed PHS Project would be a net user of electricity. Furthermore, the proposed PHS Project might increase greenhouse gas emissions overall because the energy for pumping could come from any energy source on the grid, including fossil fuel generation, as there would be no requirement that the pump storage project use only renewable energy while pumping.

The statement that the proposed PHS Project could provide a benefit by, “[r]educing the ‘duck curve’ that is developing for energy demand due to renewable energy sources” lacks specificity and fails to explain or acknowledge the complexities of the grid balancing during the times when there may be excess renewable energy in the grid<sup>3</sup> or other types of projects and efforts underway that are also aimed at integrating renewable resources and balancing the supply and demand on an hourly, daily, weekly, seasonal and annual basis.<sup>4</sup> As such, the Application fails to provide any support for the assertions of the benefits that the proposed PHS Project could provide regarding promotion of renewable energy resources, or reduction of carbon footprints.

Moreover, in California, the California Independent System Operator (CAISO or ISO) has addressed similar claims and found that, even if additional energy storage is needed during the times when there is excess renewable energy on the grid, pump storage is not a cost effective solution.<sup>5</sup>

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<sup>3</sup> Renewable energy generation curtailment is highest mid-day in spring when solar generation is high and demand is relatively low. *See* CAISO Wind and Solar Curtailment November 13, 2019 (available at <http://www.caiso.com/PublishedDocuments/WindSolarCurtailmentReport.pdf#search=solar%20curtailment>). A majority of the curtailment is due to local congestion that “occurs when available, least-cost energy cannot be delivered to some loads because transmission facilities do not have sufficient capacity to deliver the energy.” *Id.* at 1 n. 3 (defining local economic curtailment), 3 (in 2019 to date, 508,744 MWh of curtailment out of 839,782 Mwh total). Large remote storage projects such as the proposed PSP would do nothing to mitigate the lack of local transmission facilities.

<sup>4</sup> *See* CAISO webpage “Managing Oversupply” (at <http://www.caiso.com/informed/Pages/ManagingOversupply.aspx>) listing solutions beyond storage including demand response, time-of-use rates, minimizing generation from other sources to make room for more renewable energy production, incorporating electric vehicle charging systems that are responsive to changing grid conditions, investing in modern, fast-responding resources that can follow sudden increases and decreases in demand as well as regional coordination and expansion of the western Energy Imbalance Market.

<sup>5</sup> In the 2018-2019 Transmission Plan (available at [http://www.caiso.com/Documents/ISO\\_BoardApproved-2018-2019\\_Transmission\\_Plan.pdf](http://www.caiso.com/Documents/ISO_BoardApproved-2018-2019_Transmission_Plan.pdf)), the CAISO found that providing additional transmission for existing pumped storage within the State that is underutilized due to lack of transmission capacity needed for pumping, would result in increased CO2 emissions and not be cost effective. *Id.* at 131 (“the economic benefit of the avoided curtailment is not enough to justify the Gates-Gregg 230 kV Line project and accordingly the recommendation is to cancel the project”).

Indeed, because pump storage projects would also utilize fossil fuel energy during low cost hours for pump-back they will result in a net generation of greenhouse gases.<sup>6</sup> Further, because pumped storage is *at best* about 80% efficient, it requires *at least* 1.25 Mwh of pumping energy for each Mwh it generates. To avoid net greenhouse gas emissions, the project would need to have access to pumping energy sources that have emission rates for greenhouse gases per Mwh that are 20% lower than the emissions rates of any generation it displaces. As a result, even if some excess renewable energy is available for pumping at some times, and no other storage opportunities would be available in closer proximity to generation and load, the proposed PHS Project would still result in a net increase in greenhouse gas emissions from operations.<sup>7</sup>

**B. The Commission Should Deny PHS's Preliminary Permit Application Because the Proposed Project Would Jeopardize the Federally Endangered Southwest Willow Flycatcher, Loach minnow, Spikedace, and Federally Threatened Narrow-headed Garter Snake and Northern Mexican Garter Snake in Violation of the Endangered Species Act.**

Construction and operation of the proposed project would destroy or adversely modify dozens of river miles and hundreds of acres of occupied, designated and proposed critical habitat for federally threatened and endangered species, including Southwest Willow Flycatcher, Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake. Construction and operation of the dam would bifurcate and isolate now contiguous populations of Loach minnow, Spikedace, Narrow-headed Garter Snake and Northern Mexican Garter Snake in the San Francisco River. Because the project would destroy or adversely modify significant amounts of occupied habitat and critical habitat

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<sup>6</sup> See CAISO 2016-2017 Transmission Planning Process, Supplemental Sensitivity Analysis, and others as well (footnote 5, *supra*).

<sup>7</sup> Additional greenhouse gas emissions from fabrication (e.g. steel for pumps, powerhouse, and transmission towers), construction (including loss of carbon sequestration from soil disturbance) and growth inducing impacts, such as drawing additional tourism and other development to the area, would also need to be considered and calculated and would likely result in a net increase of greenhouse gases attributable to this proposed PSP.

for each of those five species, and because this would in turn harm the survival and recovery of those species' San Francisco River populations, the Commission cannot license the projects without jeopardizing those species and violating the Endangered Species Act. The Commission should avoid that outcome now and deny the preliminary permit application.

There are 27.6 contiguous miles of both Loach minnow and Spikedace critical habitat downstream of the proposed dam that would be impacted by altered river flows resulting from construction and operation of the dam. In addition, 0.26 contiguous river miles of critical habitat for the Southwest Willow Flycatcher and 10.9 miles of critical habitat for the Loach minnow and Spikedace would be flooded by the proposed new reservoir.

There are 43.7 contiguous miles of Narrow-headed Garter Snake proposed critical habitat downstream of the proposed dam that would be impacted by altered river flows resulting from construction and operation of the dam. In addition, 11 contiguous river miles of proposed critical habitat for the Narrow-headed Garter Snake and 0.8 miles of proposed critical habitat for the Northern Mexican Garter Snake would be flooded by the proposed new reservoir.

The proposed dam and reservoir would fragment and isolate upstream and downstream populations of Loach minnow, Spikedace, Narrow-headed Garter Snake and Mexican Garter Snake—species whose life histories restrict them largely or entirely to aquatic or aquatic and immediately adjacent and associated riparian vegetation.

The footprint of the proposed project's infrastructure would destroy or directly impact 823 acres of designated (and proposed) critical habitat (1,652 acres if a 100 meter buffer is added).

### **Spikedace**

Federally endangered Spikedace, a member of the minnow family Cyprinidae, is a small, slim fish less than 3 inches (in) (75 millimeters (mm)) in length. It is native to the Gila River basin,

including the mainstem Gila River upstream of Phoenix, and the Verde, Agua Fria, Salt, San Pedro, and San Francisco sub-basins, where it historically occupied shallow riffles with sand, gravel, and rubble substrates in moderate to large perennial streams. Habitat destruction and predation by non-native species has caused severe declines in Spikedace populations. Today the fish persists in only 10 to 15% of its historical range in five remnant populations. The San Francisco River population is one of two remnant populations in the San Francisco/Middle Gila Recovery Unit.

The Proposed Project, if built, would put in place most of the major threats to spikedace identified in its Recovery Plan, and would do so within designated critical habitat for the fish. According to the 1991 Recovery Plan, “major threats” to spikedace “include dams, water diversion, watershed deterioration, groundwater pumping, channelization, and introduction of non-native predatory and competitive fishes.” Recovery Plan at iv.

Construction and operation of the project would eliminate the natural flooding and river flows in occupied and critical habitat in the San Francisco downstream of the dam. Natural river flows are critical to the fish’s life history, its survival and recovery, and its maintenance of competitive advantage over predatory or competitive non-native fish. The Designation of Critical Habitat for the Spikedace (*Meda fulgida*) and the Loach minnow (*Tiaroga cobitis*); Final Rule (Federal Register / Vol. 72, No. 54 / Wednesday, March 21, 2007 / Rules and Regulations) explains:

Recurrent flooding and a natural hydrograph (physical conditions, boundaries, flow, and related characteristics of water) are very important in maintaining the habitat of spikedace and in helping the species maintain a competitive edge over invading nonnative aquatic species (Minckley and Meffe 1987, p. 103-104; Propst et al. 1986, pp. 3, 81, 85).

Final Critical Habitat Designation at F.R. 13356. The 1991 Recovery Plan for Spikedace further explains:

[P]opulations occupying tailwaters are subjected to impacts ranging from dewatering to altered chemical and thermal conditions. Stream channelization, bank stabilization, or other instream

management for flood control or water diversion, have also directly destroyed spokedace habitats. Natural flooding of desert streams and rivers may play a significant role in life histories of native fishes because they rejuvenate habitats (Propst et al 1986), but perhaps more importantly because desert fishes effectively withstand such disturbances while non-native forms apparently do not (Meffe and Minckley 1987, Minckley and Meffe 1987). Activities that alter natural flow regimes may thus have negative impacts on native fishes.

Recovery Plan at 6. For this reason, the Recovery Plan recommends the following:

Formal agreements that stream flows will not be modified by activities such as damming or diversion that substantially alter natural flow regimes should thus be an integral part of insuring perennial flows.

Recovery Plan at 13.

The 1991 Recovery Plan states: “Spokedace do not persist in reservoirs...” Recovery Plan at 6. Because spokedace do not persist in reservoirs, construction and operation of the project would destroy and adversely modify 10.9 miles of critical habitat for the fish upstream of the dam, in river that would become reservoir. In addition to eliminating spokedace from 10.9 miles of river that would become reservoir, that reservoir would also create conditions conducive to populations of non-native fish that would compete with and/or prey on spokedace in remaining river reaches upstream of the new reservoir. The Recovery Plan describes problems that non-native fish populations cause for spokedace:

Non-native fishes, introduced for sport, forage, bait, or accidentally, impact upon native fishes. Ictalurid catfishes, and centrarchids, including largemouth bass, smallmouth bass, and green sunfish (*Lepomis cyanellus*), prey upon native fishes. At higher elevations, introduced salmonids (brown trout, *salmo trutta*, and rainbow trout, *oncorhynchus mykiss*) may similarly influence spokedace populations. Red shiner may be particularly important as regards spokedace, because the two species where allopatric occupy essentially the same habitats, and where sympatric there is some evidence that there is displacement of the native to habitats which otherwise would scarcely be used (Marsh et al. 1989). Moreover, the concomitant reduction of spokedace and expansion of the shiner is powerful circumstantial evidence that red shiner may have displaced spokedace in suitable habitats throughout much of its former range.

Recovery Plan at 7.



Finally, the proposed dam would bifurcate spikedace populations, making each resultant population smaller, genetically and reproductively isolated, less capable of persisting, and less resilient to disturbances, including aforementioned harms relating to tailwater and reservoir conditions.

In these and other ways, the proposed project, if built, would destroy and adversely modify 27.6 contiguous miles critical habitat downstream of the proposed dam, and 10.9 miles upstream of the dam, where reservoir would replace river and displace spikedace. Further, propagation of non-native fish in the proposed reservoir, and escapement of those fish upstream would adversely modify additional miles of critical habitat. These changes would be catastrophic for one of only five remaining populations of the federally endangered spikedace and would undermine its survival and recovery.

### **Loach minnow**

The loach minnow (*Frontispiece*) is a small, stream-dwelling member of the minnow family (Cyprinidae). Loach Minnow Recovery Plan at 1. Like Spikedace, loach minnow is endemic to the Gila River basin of Arizona and New Mexico, USA, and Sonora, Mexico. Recovery Plan at 6. Its range today is limited reaches in the White River (Gila County), North and East forks of the White River (Navajo County), Aravaipa Creek (Graham and Pinal counties), San Francisco and Blue Rivers and Campbell Blue Creek (Greenlee County). *Id.* at 2. Like Spikedace, Loach minnow occupy riffles, but are restricted almost exclusively to a bottom-dwelling ravel and cobble habit, swimming in swift water only for brief moments as the fish darts from place to place. *Id.* at 4.

The proposed project, if built, would enact most of the major threats to spikedace identified in its Recovery Plan, and would do so within designated critical habitat for the fish. The Recovery Plan lists the threats, including dams, dewatering, and non-native fish, as driving the fish's decline:

Changes in distribution and abundance of loach minnow are directly or indirectly tied to man's uses of rivers, streams and landscapes, which have been variously modified by past and present activities (Hastings and Turner 1965, Hendrickson and Minckley 1985). Direct impacts have

resulted from stream habitat alterations accompanying a suite of land and water use practices; most often cited are dewatering, impoundment, and livestock grazing. Certain introduced and established non-native fishes may interact negatively with native kinds, and independently or in concert with habitat alteration, result in their extirpation.

Recovery Plan at 6.

Construction and operation of the project would eliminate the natural flooding and river flows in occupied and critical habitat in the San Francisco downstream of the dam. Natural river flows are critical to the fish's life history, its survival and recovery. Loach Minnow have become extirpated in tailwaters downstream of dams on the Gila and Salt Rivers. The Recovery Plan states:

Downstream effects of dams may include dewatering (above), alteration in flow regime, amelioration of natural flood events, changes in thermal and chemical character of the stream, elimination of organic drift typical of flowing waters, and other impacts, which may have a variety of lethal and sublethal effects on fishes. Natural flooding of desert streams may play a significant role in life history of native fishes because it rejuvenates habitats (Propst et al 1988), but perhaps more importantly because desert fishes effectively withstand such disturbances while non-native forms apparently do not (Meffe and Minckley 1987, Minckley and Meffe 1987). Major reaches of the Gila and Salt rivers are influenced by dams and their reservoirs and tailwaters; loach minnow no longer occur in these affected waters (e.g., Minckley 1973, unpublished data).

Recovery Plan at 6, 7.

Construction and operation of the proposed dam would convert 10.9 miles of critical habitat from river to reservoir. The Recovery Plan states that, like spikedace, loach minnow will not persist in lentic habitats: "Impoundment results in creation of lentic habitat, which eliminates and excludes the swift-water loach minnow." Recovery Plan at 6.

Because loach minnow do not persist in reservoirs, construction and operation of the project would also destroy and adversely modify 10.9 miles of critical habitat for the fish upstream of the dam, in river that would become reservoir. And, as with spikedace, construction and operation of the dam and reservoir would create conditions conducive to populations of non-native fish that would compete with and/or prey on loach minnow in remaining river reaches upstream of the new reservoir. The

Recovery Plan directs that loach minnow populations “should be isolated as much as practicable from non-native fishes, which might preclude or otherwise interfere with successful reestablishment of the native.” Recovery Plan at 21.

Finally, the proposed dam would bifurcate loach minnow populations, making each resultant population smaller, genetically and reproductively isolated, less capable of persisting, and less resilient to disturbances, including aforementioned harms relating to tailwater and reservoir conditions.

In these and other ways, the proposed project, if built, would destroy and adversely modify 27.6 contiguous miles critical habitat downstream of the proposed dam, and 10.9 miles upstream of the dam, where reservoir would replace river and displace loach minnow. Further, propagation of non-native fish in the proposed reservoir, and escapement of those fish upstream would adversely modify additional miles of critical habitat. These changes would be catastrophic for remaining populations of the federally endangered loach minnow in the San Francisco River, and would undermine its survival and recovery.

Because the project would destroy or adversely modify significant amounts of designated critical habitat for five federally threatened or endangered species, and because this would in turn harm the survival and recovery of those species’ San Francisco River populations, the Commission cannot license the projects without jeopardizing those species and violating the Endangered Species Act. The Commission should avoid that outcome now and deny the preliminary permit application.

**C. The Commission Should Deny the Application Because the Proposed Project, by Industrializing Wilderness Study Areas, Inventoried Roadless Areas, and River Reaches Eligible for Inclusion in the National Wild and Scenic River System, Would be Incompatible with National Forest Management Objectives.**

The Commission should deny the preliminary permit application because laws and policies governing national forest management preclude construction and operation of the project in Wilderness Study Areas, Inventoried Roadless Areas, and river reaches eligible for inclusion in the National Wild

and Scenic River System.

The proposed project would directly impact 757 acres of the Lower San Francisco Wilderness Study Area (1,639 with a 100 meter buffer), 989 acres of Inventoried Roadless Area (2,139 acres with a 100 meter buffer) and 170 acres of National Forest Acreage not including the acreage of Wilderness Study Area and Inventoried Roadless Area (356 acres with a 100 meter buffer). The proposed project would also directly impact portions of the San Francisco River eligible for inclusion in the National Wild and Scenic River System.

Public Law 96-550 (New Mexico Wilderness Act 1980) designated the Lower San Francisco Wilderness Study Areas as having wilderness characteristics worthy of consideration by Congress for wilderness designation. Until such time that Congress acts on this recommendation, the Land and Resource Management Plan for the Gila National Forest requires that the Lower San Francisco Wilderness Study Area be managed to maintain existing wilderness character. Land and Resource Management Plan for the Gila National Forest at 6. The proposed project would be inconsistent with that character and is barred by the governing resource management plan.

Inventoried Roadless Areas (IRAs) were authorized by the 2001 Roadless Area Conservation Rule, 36 C.F.R. Part 294. The Roadless Area Conservation Final Rule prohibits road construction, reconstruction, and timber harvest, except under certain circumstances, in Inventoried Roadless Areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate long-term loss of roadless area values. The management emphasis for Inventoried Roadless Areas on the Apache-Sitgreaves National Forest “is to retain the natural appearing character of these areas.”

Management activities occur “for ecological restoration because of natural ecological events or previous management actions. Management activities may include restoration of ecological conditions or habitat components, soil stabilization, wildland fire, hazardous fuels reduction, and invasive species

reduction.” Land and Resource Management Plan for the Apache-Sitgreaves National Forest at 122.

By industrializing inventoried roadless area, the proposed project would be inconsistent with the governing resource management plan and the 2001 Roadless Area Conservation Rule.

Eligible rivers are managed on the Apache-Sitgreaves and Gila National Forests “to retain their status until a suitability determination has been made whether to recommend their inclusion in the National Wild and Scenic Rivers System.” This means that “each eligible river’s free-flowing condition, outstandingly remarkable values, and classification shall be sustained until further study is conducted” and “until congressional action is completed.” Apache-Sitgreaves LRMP at 83, 84.

**D. The Commission Should Deny the Application Because the Project Would be Infeasible Considering the San Francisco’s High Sediment Load, Which Could Overwhelm the Capacity of San Francisco Reservoir.**

The San Francisco River is notable for the magnitude of its floods. These floods mobilize the stream bed and convey enormous amounts of sediment in suspension and as bed load. Climate change is projected to increase storm and runoff intensities, which will lead to a disproportionately large increase in erosion and in San Francisco River sediment transport and reservoir sedimentation volumes.

The Application fails to address the impact high sediment loads in the San Francisco River would have on the feasibility of the proposed project. By obstructing and slowing river flows, the proposed dam and reservoir would cause deposition of the San Francisco River’s suspended sediment at the upstream margin and within the reservoir. The volumes of sediment transported downstream are large compared to the proposed reservoir volume, which would be rapidly filled with sediment, leading to a short project operating lifetime. In fact, sediment deposition would eventually displace reservoir storage capacity and cause habitat inundation upstream of the reservoir. Removal of sediment by dredge would be difficult or infeasible, would pose high operating costs, and would further destroy or adversely modify occupied habitat and critical habitat for federally endangered species.

Although applicants' failure to consider obvious sedimentation effects warrants FERC's rejection of the Application, that failure also exemplifies the incompleteness that plagues the application generally.

**E. Alternatively, the Commission Should Require PHS To Conduct Additional Studies on the Proposed Project and Allow Stakeholders to Participate in Study Development.**

The scope of the proposed studies is inadequate to provide needed information for National Environmental Policy Act (NEPA) review of the proposed PHS Project or Endangered Species Act (ESA) compliance as well as for compliance with other laws; additional studies are needed. If the preliminary permit is granted, the Commenters request that they and all other parties and stakeholders be allowed to actively participate in the design and review of all studies.

***1. The scope of the proposed studies is inadequate.***

The studies the Applicant proposed to initiate include only:

- 1) Engineering feasibility and economic studies – to confirm the feasibility of the project.
- 2) Water supply studies – to confirm water is available to fill the reservoir and to maintain the water lost thru evaporation.
- 3) Geotechnical studies – to confirm the geology and sub-surface conditions at the upper reservoir, lower reservoir, and powerhouse.
- 4) Environmental studies – to identify if any rare, endangered, or threatened species are affected by the project implementation.
- 5) Cultural and tribal studies – to confirm if the project would impact cultural or tribal resources.

Application at 10.

These extremely general categories are inadequate to show that the studies will address all relevant issues. For example, regarding “engineering feasibility” the studies must also include the dam failure risk due to flooding on the San Francisco at various time frames. A flood like the one in 1983, at 90,000 CFS,<sup>8</sup> would quickly fill and overwhelm the instream proposed dam and reservoir without a

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<sup>8</sup> See <https://pubs.usgs.gov/wri/1985/4225b/report.pdf>.

bypass. Studies are needed to show how the proposed PHS Project design would react in similar, highly likely, flood conditions as well as in other flood conditions.

The “water supply studies” need to do more than confirm that water is “available” to fill the reservoirs and replenish water lost to evaporation: the studies must also consider seepage losses from the upper and lower reservoirs, with resultant reductions in downstream flows. In addition, the water supply studies must consider all water rights holders’ interests as well as instream beneficial uses for fish and other aquatic resources, recreation, and other uses.

The “environmental studies” need to address “rare, endangered and threatened species” including flooding and dewatering impacts and changes to flows within the San Francisco River and impacts of all of the proposed PHS Project upland facilities on species and habitats as well. Further, the environmental studies must address impacts to other plant and wildlife communities, soils, air and water quality, cultural resources, human health and safety, economic impacts to local communities and other impacts.

The studies must consider upstream reservoir pool impacts from the proposed dam on the San Francisco River to the end of the lower reservoir. The studies must also consider any impacts upstream of the lower reservoirs due to siltation as the San Francisco enters the lower reservoirs. Similarly, studies must be done on the impacts of the reservoir pool from the upper reservoir dam.

As another example, because the proposed PHS Project would be a net user of energy and some of that energy would likely be generated by fossil fuels, the greenhouse gas generation attributable to the proposed PHS Project and impacts of those GHGs must be disclosed and addressed in the environmental review regarding air quality.

Each of the environmental studies also needs to include direct, indirect, and growth inducing impacts from increased access roads and other infrastructure that would occur and impact each of the

environmental resources in the area.

The cultural studies will also have to be extensive. The area of the proposed project was used by many ancient cultures. As a result, current Indian tribes have a potential cultural connection to the site. The pueblos of Hopi, Zuni, and Acoma should be consulted to determine if they have cultural sites and/or other connections to the area. In addition, the following Apache tribes also need to be consulted: San Carlos, White Mountain, Ft. Sill, and Mescalero.

## 2. *Additional studies are needed.*

In addition to the studies identified in the Application, the following additional studies should be conducted:

### a. Sediment Transport Study.

The Commission should require a sediment transport study for the proposed Project related to the bypass tunnel. The study should look at sediment passage under normal spring runoff and sediment passage under a variety of flood conditions. The study must address scenarios in which the bypass tunnel is free of sediment and debris and the effects if it were blocked partially or wholly by sediment and/or debris. The study must also address scour and erosion of the riverbed and banks at the end of bypass tunnel from normal runoff and under a variety of flood conditions.

### b. Dewatering Study.

The proposal includes dewatering a portion of the San Francisco River below the dam during construction, which could last many years, and dewatering would apparently continue during dam operations as well.<sup>9</sup> A study must be conducted regarding impacts to the river habitat for federally threatened, endangered, candidate, and special status species, to the river bed itself, springs, and

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<sup>9</sup> Exhibit 3-1 includes the following caption: “30 foot dia[meter] bypass tunnel for dewatering with cofferdams during construction and for high flows during operations.”



underground flows as well as to recreation and other resources of this area from the dewatering looking at various time frames.

c. Helicopter Access for Studies May Have Impacts that Must Be Addressed and Limited to Protect Resources.

The Application states: “No new roads will be built to conduct any of the proposed studies - access to the lower reservoir for studies will be by helicopter.” Application at 10 Because helicopter access itself may impact many of the resources in this area including recreation, cultural, species and habitats due to noise, vibration, risk of spills and accidents, and surface disturbance at landing sites, such access should be studied by the Commission under NEPA before it is undertaken as part of the preliminary permit. Permits for access from the local jurisdiction may also be needed. █

d. Geotechnical Studies May Have Impacts that Adversely Affect the Environment.

The Application states: “Geotechnical studies at the dams, reservoirs, and tunnel locations will be conducted by borehole drilling samples and test pits. Measures will be taken to avoid or minimize disturbance at the drilling locations, and test pits will be backfilled to return the site as much as possible to natural.” Application at 10. More information is needed regarding the size of the boreholes and test pits, the equipment needed to undertake these studies. The environmental impacts of the geotechnical studies themselves may be significant and require NEPA before they are undertaken.

e. Dispatch Impacts Study.

A dispatch impacts study would analyze the likely marginal sources of generation that would be used to provide pumping energy for the proposed PHS Project, and the likely marginal sources of generation that would be displaced when the project was generating electricity.

The purpose of this study would be to quantify the extent to which the proposed PHS Project would increase or decrease emissions of greenhouse gases and other pollutants. Although a potential

environmental benefit of the proposed PHS Project could be displacement of emissions from natural gas-fired generation that is the primary marginal source of generation for the Western U.S. grid during high-load hours, this potential benefit could be offset by the environmental cost of the projects including both construction impacts and emissions from the generation used to supply pumping energy. There would certainly be emissions increases in some locations, even if there are decreases in others. The net effect of these partially offsetting impacts is likely to be an increase in emissions, which needs to be studied and quantified for NEPA compliance.

Even if some of the marginal sources of pumping energy are similar in terms of emissions, the fact that more than one kwh of pumping energy is required for each kwh of project generation means that the emissions associated with pumping energy would be greater than any saved emissions from project generation. If the marginal sources of pumping energy include off-peak coal generation, but the marginal generation displaced by project generation is on-peak natural gas generation, then the net emissions could be strongly negative in quantity. In addition, it is likely that the sources of pumping energy and the generation displaced by project generation would be in geographically distinct locations, further increasing local project environmental impacts in the areas supplying the pumping energy.

The goal of the dispatch impacts study would be to quantify the amount and location of emissions changes due to operation of the proposed project, so that the Commission's NEPA analysis can properly account for the emissions impacts of the project.

This study should use a Western Electricity Coordinating Council (WECC)-wide hourly annual dispatch model, run with and without the proposed PHS Project included, to identify changes in the location and quantity of annual generation attributable to the project. The output of that model, showing generation changes in Mwh terms, would then be coupled to known power plant-specific emissions factors (from EPA data) to calculate the emissions changes for CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and particulates

attributable to the proposed PSP.

The Bonneville Power Authority (BPA) modelled emission changes throughout the WECC as part of its NEPA analysis of changed electricity marketing as long ago as 1988.<sup>10</sup> NRDC modelled emission changes throughout the WECC as part of its analysis of potential closure of large hydroelectric generators on the BPA system.<sup>11</sup> More recently, Energy + Environmental Economics (E3) analyzed CO2 emissions impacts of integrating the PacifiCorp and CAISO systems, albeit without using dispatch modelling,<sup>12</sup> and the CAISO used dispatch modeling of the Western U.S. grid to analyze regional impacts include emissions from grid regionalization.<sup>13</sup> More generally, dispatch modeling of the WECC to quantify the locations and amounts of generation changes due to changes in the grid has been conducted extensively by both electric utilities and developers, as well as their regulators.

Such a study would benefit the public by determining the location and magnitude of the emissions impacts of the proposed PSP and documenting its net greenhouse gas and other emissions.

f. Economic Viability Study.

An economic viability study is needed to address whether and why any additional pump storage would be prudent or needed when existing pump storage projects are not currently fully utilized. For example, there are two pumped storage hydroelectric projects larger than 1,000 Mw, each operating in California that are in relative proximity to the high demand/load centers and renewable generation. These are PG&E's Helms Project in Fresno County in the Sierra Nevada and the Castaic power plant in

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<sup>10</sup> See BPA, 4/88, Intertie Development and Use FEIS, DOE/EIS-0125-F.

<sup>11</sup> NRDC, *Going With the Flow: Replacing Energy from Four Snake River Dams*, April 2000, by David Marcus and Karen Garrison. (Executive Summary available at <http://www.bluefish.org/goingwth.htm>)

<sup>12</sup> E3, October 2015, *Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration*, Technical Appendix, pp. 39-42.

<sup>13</sup> See <http://www.caiso.com/Documents/Presentation-SB350RatepayerImpactsAnalysis-BrattleGroup.pdf#search=SB350>, pp. 9-10. Note particularly the last bullet item on p. 9: "Simulations will also yield emissions (GHG, NOx, SOx) for environmental analysis."

northern Los Angeles County operated by the Los Angeles Department of Water and Power (LADWP) in cooperation with the California Department of Water Resources.

The Helms Project was specifically built as a pumped storage project and includes the 123,000 acre-foot Courtright Reservoir and the 129,000 acre-foot Wishon Reservoir, with an installed capacity of 1,212 MW.<sup>14</sup> With a nominal installed capacity of more than 1,500 MW, the Castaic project uses the State Water Project's Pyramid Reservoir and Castaic Reservoir to generate hydroelectricity via pumped storage, but the primary purpose of the reservoirs is to store water from the State Water Project for export to southern California cities.<sup>15</sup>

Both the Helms and Castaic projects were designed primarily to generate electricity during periods of high demand (summer afternoons in particular) and to pump water back into the upper reservoirs at night when electricity demand and costs were low. During California's energy crisis of 2000-2001, the Helms project was unable to operate because of the round-the-clock demand and high electricity costs caused by the crisis.<sup>16</sup>

The cost of construction of the Helms project ballooned from an initial estimate of \$200 million to \$600 million.<sup>17</sup> More recently, the increase in electric demand in Central California has consumed transmission capacity prompting PG&E to plan to construct a new 150 mile-long 500 kV transmission line to restore the flexibility of Helms operations.<sup>18</sup>

The CAISO has repeatedly studied the economics of adding new pumped storage capacity to serve California loads, and has repeatedly found negative economic impacts. For example, a 2017

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<sup>14</sup> [https://en.wikipedia.org/wiki/Helms\\_Pumped\\_Storage\\_Plant](https://en.wikipedia.org/wiki/Helms_Pumped_Storage_Plant) .

<sup>15</sup> [https://en.wikipedia.org/wiki/Castaic\\_Power\\_Plant](https://en.wikipedia.org/wiki/Castaic_Power_Plant) .

<sup>16</sup> <https://www.latimes.com/archives/la-xpm-2001-jan-24-mn-16302-story.html> .

<sup>17</sup> <http://large.stanford.edu/courses/2014/ph240/galvan-lopez2/> .

<sup>18</sup> [https://www.nwcouncil.org/sites/default/files/ManhoYeung\\_1.pdf](https://www.nwcouncil.org/sites/default/files/ManhoYeung_1.pdf) .

update to earlier studies found that a 1,400 Mw pumped storage project would have revenue requirements well in excess of its benefits under numerous different planning assumptions.<sup>19</sup>

To avoid waste of economic resources, the applicant needs to do an economic study analogous to that done for the CAISO, but with costs and benefits specific to the proposed PHS Project individually and together.

g. Interconnection Study.

Presumably the applicants believe there would be available capacity on the electrical grid to accommodate its generated power. However, recent information suggests that there is likely to be no capacity available.

According to the Southline Transmission Line Project FEIS, “[e]xisting transmission capacity in southern New Mexico and southern Arizona is presently almost fully utilized and congested.”<sup>20</sup> The FEIS elaborates: “The electrical grid across southern New Mexico, southeast Arizona, and west Texas faces challenges from severe demand spikes resulting from large temperature swings—especially during hot summer months. Because loads on power lines are constantly changing and utilities need to reserve capacity to meet required levels of reliability, the congested state of the electrical grid exacerbates the difficulties of local utilities to provide reliable service, even when increased electrical load can be

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<sup>19</sup> CAISO, Economic Planning-Production cost model development, 2017-2018, pages 51-116 (available at [http://www.caiso.com/Documents/Day2\\_ISO-Presentation\\_2017-2018TransmissionPlanningProcess\\_PreliminaryReliabilityResults.pdf#search=pumped%20storage,pdf](http://www.caiso.com/Documents/Day2_ISO-Presentation_2017-2018TransmissionPlanningProcess_PreliminaryReliabilityResults.pdf#search=pumped%20storage,pdf)). Those pages consist of a 66 page presentation entitled: Bulk Energy Storage Resource Case Study-Update to the 2016-2017 Transmission Plan Studies, *Shucheng Liu, Principal, Market Development, 2017-2018 Transmission Planning Process Stakeholder Meeting, September 21, 2017*. The charts on pp. 23, 38, 47, 56, and 65 each show, for different planning assumptions, that the revenue requirements for a new pumped storage plant (in green) would exceed the revenues and values that such a plant could produce.

<sup>20</sup> Southline Transmission Line Project Final Environmental Impact Statement, October 2015, Section 1.3.2, available at [https://eplanning.blm.gov/epl-front-office/projects/nepa/83613/112786/137921/SLT\\_Final\\_EIS\\_Volume\\_1.pdf](https://eplanning.blm.gov/epl-front-office/projects/nepa/83613/112786/137921/SLT_Final_EIS_Volume_1.pdf)

anticipated. The poor physical condition of certain components of the transmission grid, coupled with this current state of congestion, makes the entire system itself vulnerable to cascading outages and potential regional blackouts.” FEIS at Section 1.3.2.

Thus, a study needs to be conducted to determine whether the electrical grid would have capacity for any power the propped project might generate.

## **V. CONCLUSION**

WHEREFORE, Center for Biological Diversity requests that the Commission grant its Motion to Intervene in the proposed PSP (P-14995-000) proceeding.

Dated: February 21, 2020

Respectfully submitted,



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Douglas W. Wolf, Senior Attorney  
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### **CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing upon each person designated on the official service list in the proceedings Docket No. 14995-000 as compiled by the Secretary of the Federal Energy Regulatory Commission by electronic mail or by first-class mail if no e-mail address is provided.

Dated at Washington, DC this 21st day of February 2020.

A handwritten signature in black ink, appearing to read 'Douglas W. Wolf', written in a cursive style.

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Douglas W. Wolf

Document Content(s)

2020-02-21 Dkt 14995-000 Comment lttr.PDF.....1-23

2020-02-21 Dkt 14995-000 CBD intervention.PDF.....24-48





February 24, 2020

ELECTRONIC FILING SUBMITTED VIA COMMISSION E-FILING SYSTEM

P-14995-000

San Francisco River Pumped Storage Project  
Pumped Hydro Storage, LLC  
FERC Notice of Preliminary Permit Application

Dear Mr. Tim Konnert,

On behalf of UNS Energy Corporation/Tucson Electric Power (UNS-TEP), thank you for the opportunity to comment on the FERC application for a preliminary permit to study the feasibility of the San Francisco River Pumped Storage Project proposed by Pumped Hydro Storage, LLC in Greenlee County, Arizona and Catron County, New Mexico.

UNS-TEP provides safe and reliable electric service to its customers and serves more than 417,000 customers in the Tucson metropolitan area and its service area. Our power facilities extend to other territories in Arizona and include a transmission system. There are two UNS-TEP 345-kV transmission lines located in the vicinity of the proposed project on Forest Service lands identified on Exhibit 3-1 of the application.

If the intent is for the project's new power generating sources to connect to the existing UNS-TEP 345kV facilities, the project would require a Large Generator Interconnection Request and would go through the Large Generator Interconnection Process. For additional details, and to initiate coordination with UNS, please visit:

<https://www.tep.com/generation-interconnection-services/>

UNS requests to be included on further notices and any scoping for this project and would be happy to assist in further feasibility studies.

Please do not hesitate to contact me with any questions or concerns. I can be reached at (520) 884-3981 or via email at dsandoval1@tep.com.

Respectfully,

Diana Sandoval  
Environmental & Land Use Planner  
Tucson Electric Power Company, a UNS Energy Corporation

Cc: Renee Darling, Supervisor, Environmental and Land Planning (Alternative Contact)  
Telephone: (520) 884-3916, Email: RDarling@tep.com

Document Content(s)

Tucson Electric Power Co\_P-14995-000.PDF.....1-1



February 27, 2020

**VIA ELECTRONIC FILING**

Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Re: San Francisco River Pumped Storage Project

Project No: 14995-000

Dear Secretary:

Enclosed for electronic filing in the above-captioned proceeding, please find the Notice of Intervention of the Arizona Game and Fish Department.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Ty E. Gray", is written over a horizontal line.

Ty E. Gray  
Director, Arizona Game and Fish Department

Enclosures

cc: All Parties on Service List

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**azgfd.gov | 602.942.3000**

**5000 W. CAREFREE HIGHWAY, PHOENIX AZ 85086**

**GOVERNOR:** DOUGLAS A. DUCEY **COMMISSIONERS:** CHAIRMAN, ERIC S. SPARKS, TUCSON | KURT R. DAVIS, PHOENIX  
**LELAND S. "BILL" BRAKE, ELGIN | JAMES E. GOUGHNOUR, PAYSON | JAMES S. ZIELER, ST. JOHNS** **DIRECTOR:** TY E. GRAY **DEPUTY DIRECTOR:** TOM P. FINLEY

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**San Francisco River Pumped Storage Project No: 14995-000**

**NOTICE OF INTERVENTION OF THE ARIZONA GAME AND FISH  
DEPARTMENT**

Pursuant to Rule 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (“Commission” or “FERC”), 18 C.F.R. §§ 385.214(a)(2), the Arizona Game and Fish Department (“Department”) respectfully submits this Notice of Intervention as of Right in the application by Pumped Hydro Storage, LLC for a Preliminary Permit for the San Francisco River Pumped Storage Project, Greenlee County, Arizona and Catron County, New Mexico. In support of this Notice, the Department states:

**I. COMMUNICATIONS**

All correspondence, communications, pleadings and other documents relating to this proceeding should be served upon the following person:

David A. Weedman, Aquatic Habitat Program Supervisor  
Arizona Game and Fish Department  
5000 West Carefree Highway  
Phoenix, AZ 85086  
Email: [dweedman@azgfd.gov](mailto:dweedman@azgfd.gov)

**II. IDENTIFICATION OF PARTY**

The Arizona Game and Fish Department (Department) is a state fish and wildlife agency with statutory management authority for fish and wildlife resources (Title 17, Arizona Revised Statutes).

**III. INTEREST OF THE DEPARTMENT**

This proceeding involves a proposed hydropower pumped storage project on the San Francisco River in Greenlee County, Arizona and Catron County, New Mexico. The proposed project facilities may include:

- 1) A new 180-foot-high, 3,000-foot-long upper dam impounding a 200-acre reservoir;
- 2) a new 200-foot-high, 650-foot-long lower dam impounding a 900-acre reservoir;
- 3) two new 12,000-foot-long, 32-foot-diameter penstocks;
- 4) a new reinforced concrete powerhouse containing five 250-megawatt turbine-generator units, for a total installed capacity of 1,250 megawatts;
- 5) a new 1-mile-long, 345 kilovolt transmission line; and
- 6) appurtenant facilities.

The proposed project would produce about 3,400 gigawatt hours of energy annually.

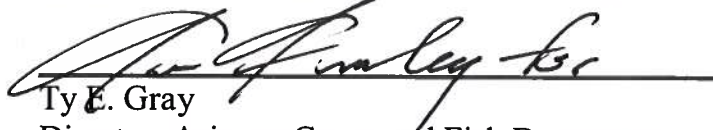
As the state's wildlife management agency, the Department has a unique interest in the protection and appropriate use of land and water resources and wildlife habitat in the state, and especially as it relates to the San Francisco River, an interstate water. The construction of a dam located on the San Francisco River and impounding 60,000 acre-feet of water has the potential to drastically alter the hydrology of the San Francisco River. Dams are commonly known to alter the timing, magnitude, frequency, and duration of flows in the rivers downstream from them. These impacts can alter the physical, chemical and biological properties of the downstream aquatic habitats and affecting species for which the Department has statutory management authority.

The Department further seeks to protect the public interest in maintaining recreational opportunities on state and federal lands, including wildlife watching, hunting, and fishing which fall within the Department's statutory jurisdiction and expertise. The proposed project lies entirely on the Apache-Sitgreaves National Forest, Arizona and Gila National Forest, New Mexico. The lands are currently accessible to the public for hunting, fishing, and recreational opportunities. The Department's interests cannot be represented by any other party in this matter and its involvement in this proceeding will promote the public interest.

#### **V. CONCLUSION**

WHEREFORE, the Arizona Game and Fish Department submits this Notice of Intervention as of Right in this proceeding.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Ty E. Gray", is written over a horizontal line.


Ty E. Gray  
Director, Arizona Game and Fish Department  
5000 West Carefree Highway  
Phoenix, Arizona 85086  
(602) 942-3000

Dated: February 27, 2020

## CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing Notice of Intervention upon each person designated on the official service list in this proceeding as compiled by the Secretary of the Federal Energy Regulatory Commission.

Dated at Phoenix, Arizona this 27 day of February, 2020.

  
David Weedman

Document Content(s)

San Francisco River Notice of Intervention 14995.PDF.....1-5