

An aerial photograph of a large concrete dam spanning a deep canyon. The reservoir behind the dam is a deep blue color. The canyon walls are steep and composed of layered, reddish-brown rock. The sky is a clear, pale blue. The text "Salt River Pumped Storage Project" is overlaid in large white letters.

# Salt River Pumped Storage Project

Stakeholder Workshop

November 2023

A blue geometric graphic element consisting of two overlapping triangles, one pointing right and one pointing left, creating a larger triangular shape.

# Welcome

# Open House Purpose

## Share Project Details

- Generation
- Transmission
- Resources
- Considerations



## Share Feedback:

- Site Selection
- Route Options



## Review Details & Ask Questions

- Breakout Sessions
- Displays
- Technical Experts

- Comment Cards
- Feedback Form
- Stickers
- Discussions
- Website



A wide-angle photograph of a massive concrete dam situated in a deep, rugged canyon. The canyon walls are composed of layered, reddish-brown rock. A river flows through the center of the canyon, its water a deep blue. The dam is a long, curved structure that spans the width of the river. In the background, more rugged mountain peaks are visible under a clear sky. The lighting suggests it might be late afternoon or early morning, with long shadows cast across the canyon walls.

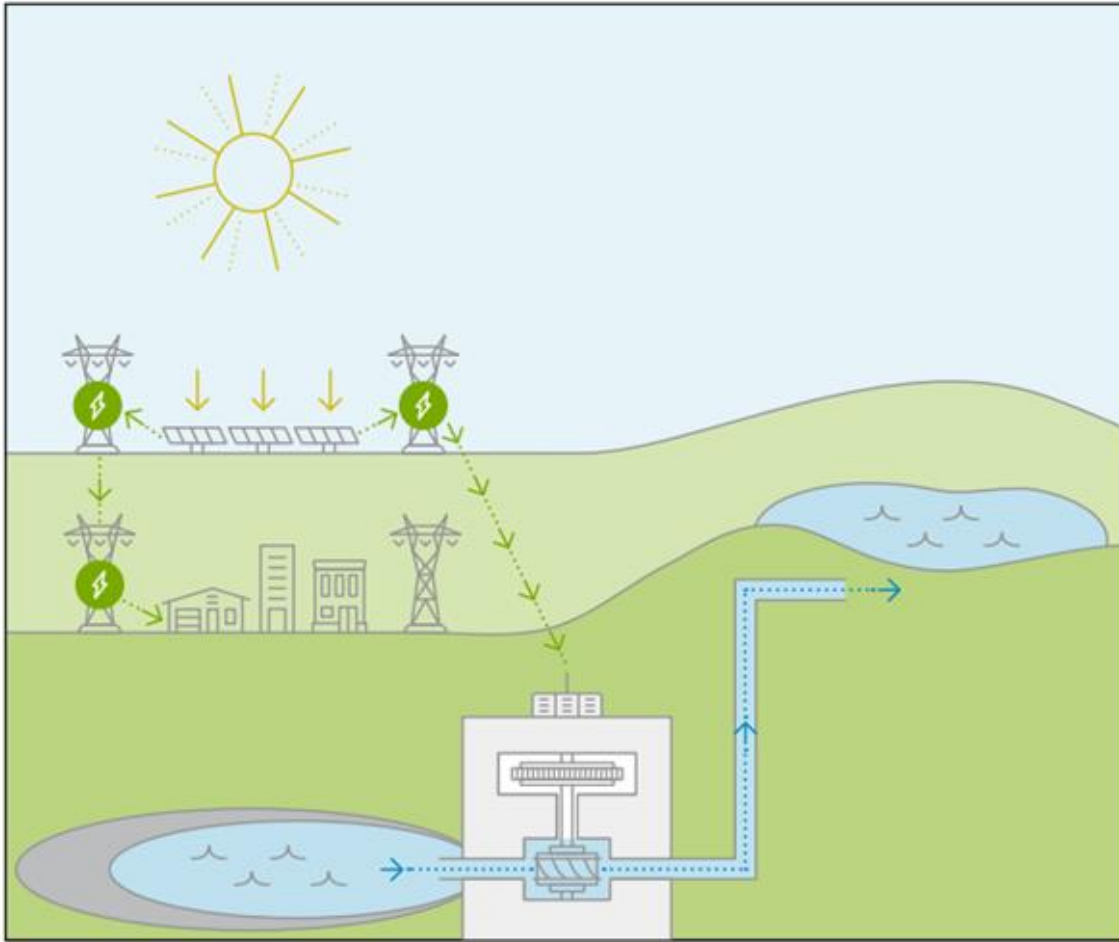
# Background: What is Pumped Storage?



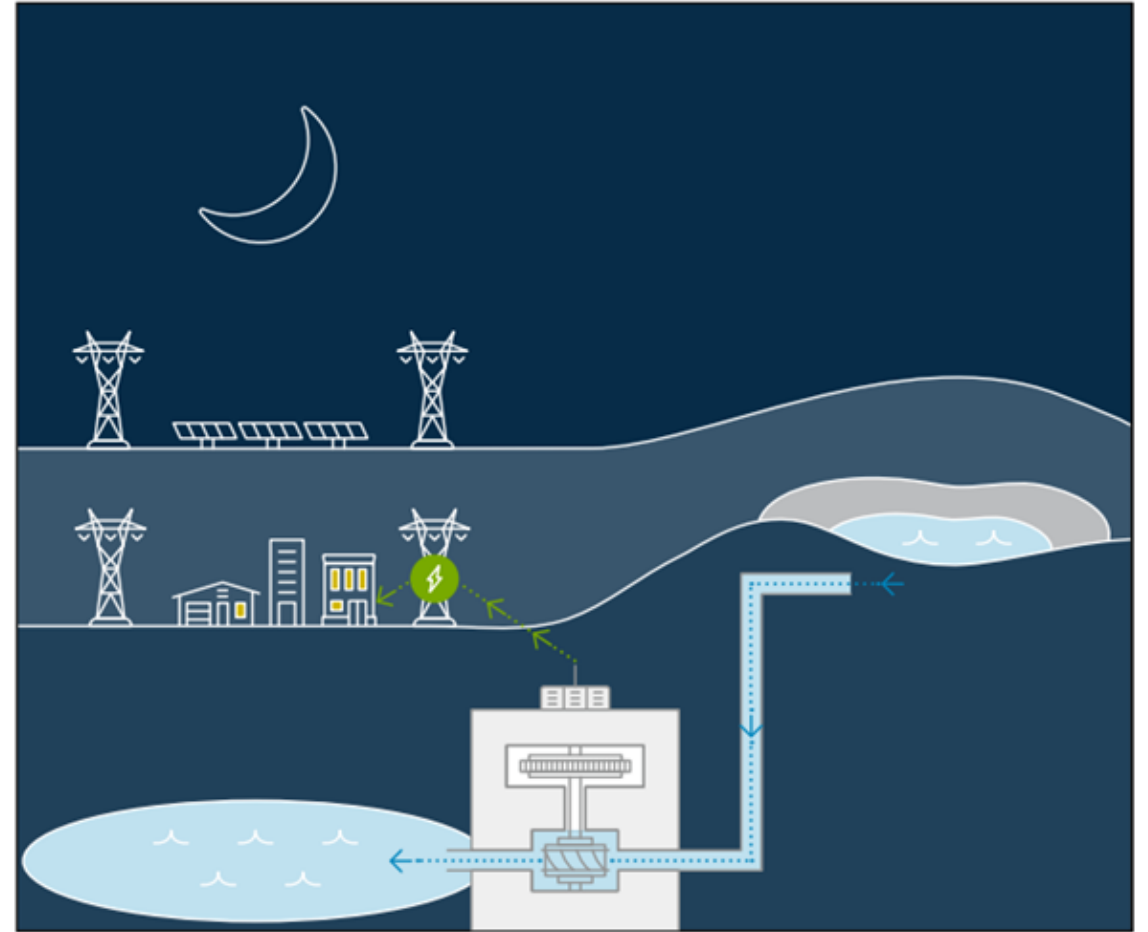


# Pumped Hydropower Technology Overview Example

## Morning and Midday Operation



## Late Afternoon and Overnight Operation





An aerial photograph of a large concrete dam situated in a deep, rugged canyon. The canyon walls are composed of layered, reddish-brown rock. A river flows through the canyon, curving around the base of the dam. The water is a deep blue. The sky is a clear, pale blue. The text "Background: Resource Plan & Need" is overlaid in white, bold, sans-serif font.

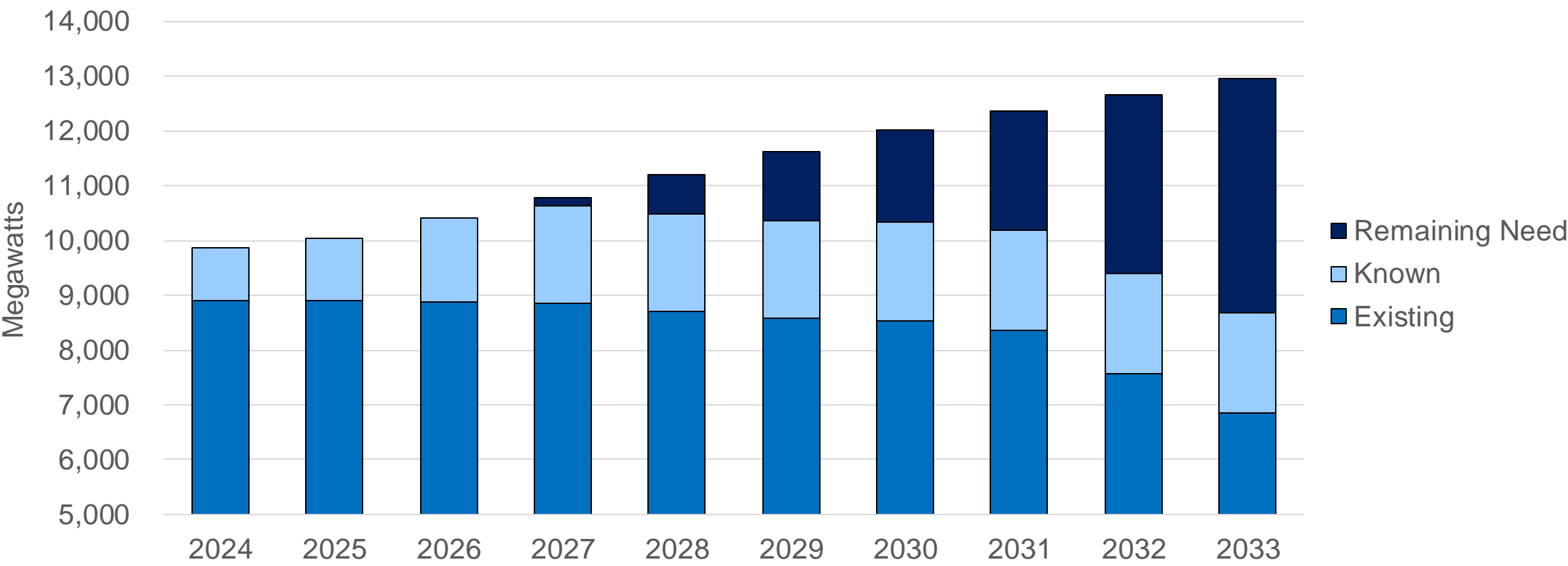
# Background: Resource Plan & Need





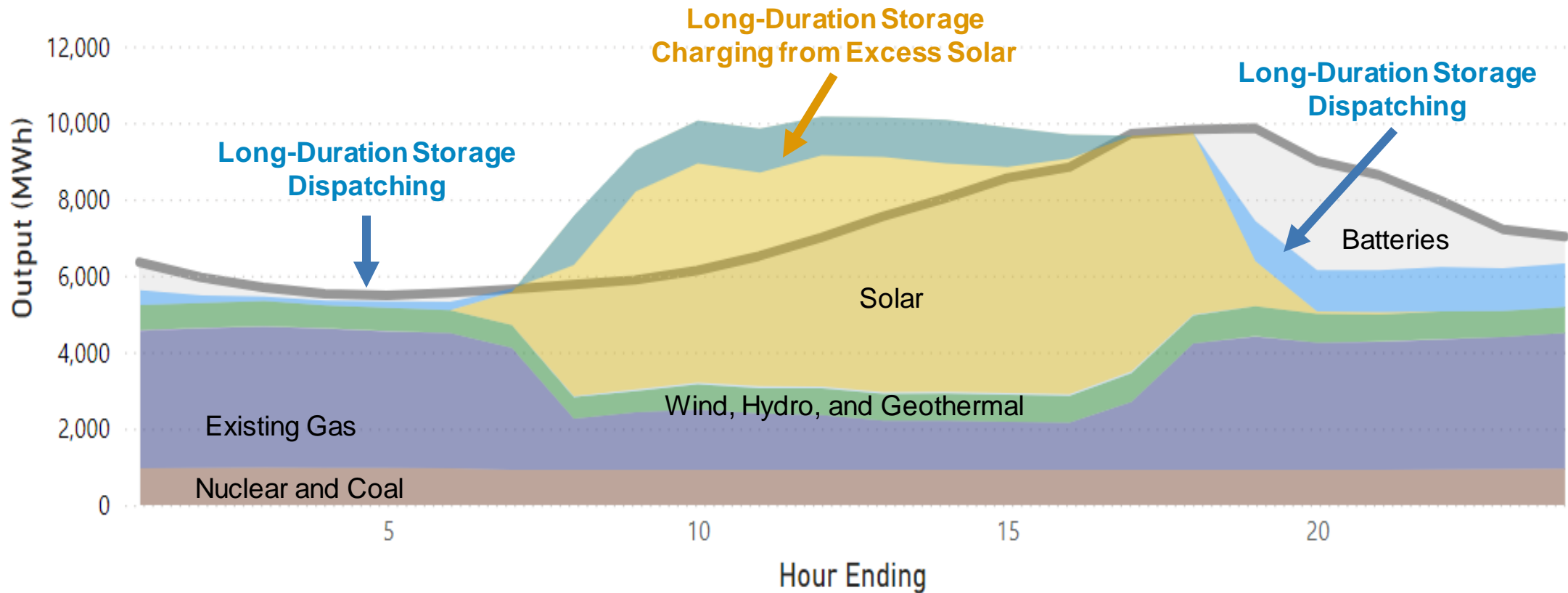
# Resource Needs to Meet Summer Peak Demand \*

\* Based on Oct 2023 Load Forecast



**Key Takeaway:** SRP needs >4,000 MW by 2033; pumped storage could provide 1,000 MW in this timeframe

# Example Day in Summer 2033 \*

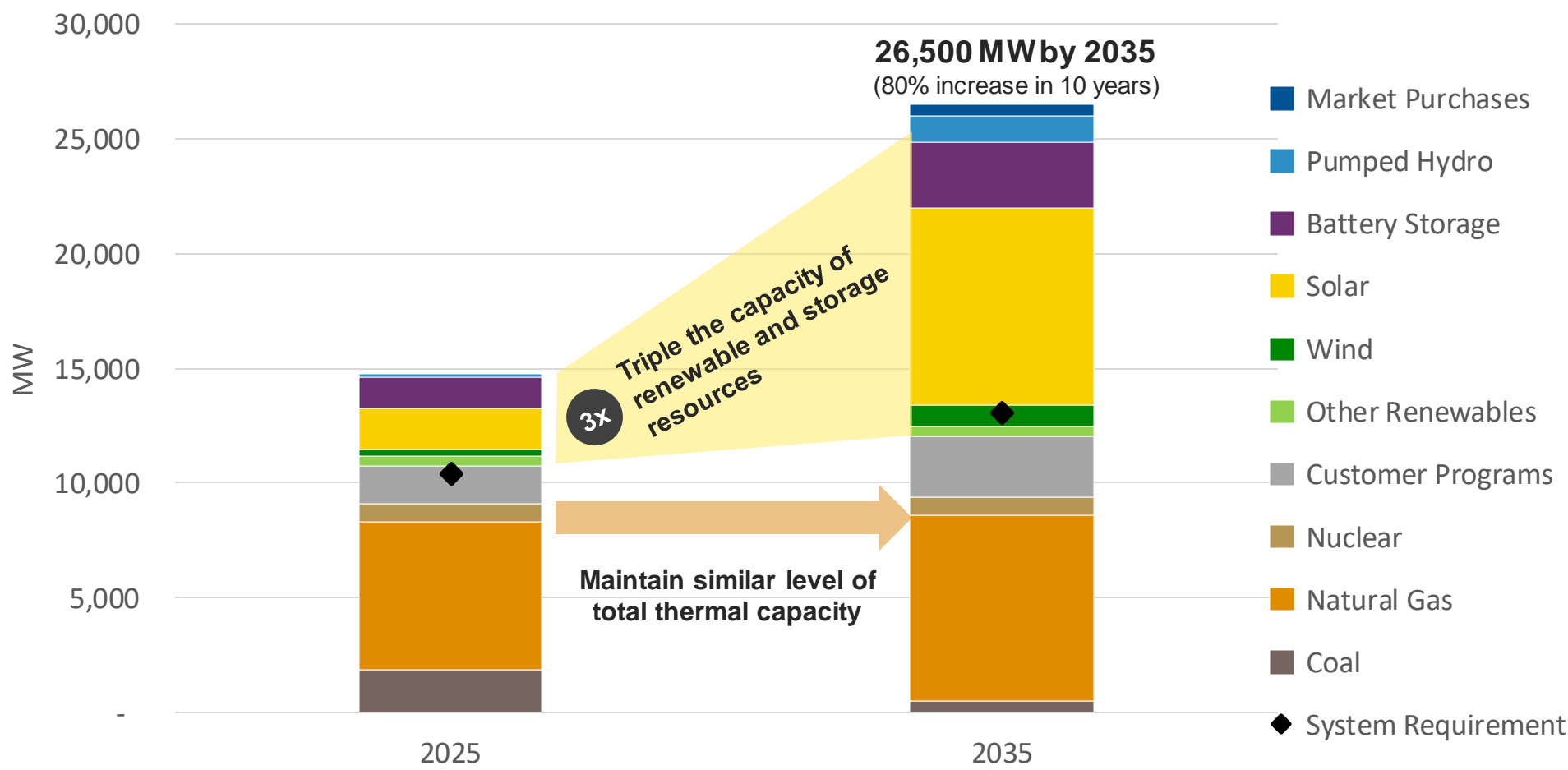


**Key Takeaway:** Pumped storage can store solar and discharge it to meet peak demand and through the night

\* Modeling result – actual operations may differ



# Planned Resource Additions \*



**Key Takeaway:** Majority of resource additions over this time will be solar and battery storage

\* Based on 2023 Integrated System Plan Balanced System Plan. Plans may change over time.

# Pumped Storage Benefits

## Benefits

- Resource Diversity
  - >3,900 MW of 4-hour battery storage by 2033 (~1/3 of SRP portfolio)
  - Supply Chain & Workforce Diversity
- Proven Technology
  - SRP has ~150 MW in operation today
  - Less expected performance degradation
  - Provides a reliable source of inertia
- Long Asset Life
  - 100 years vs. 10-20 years for battery

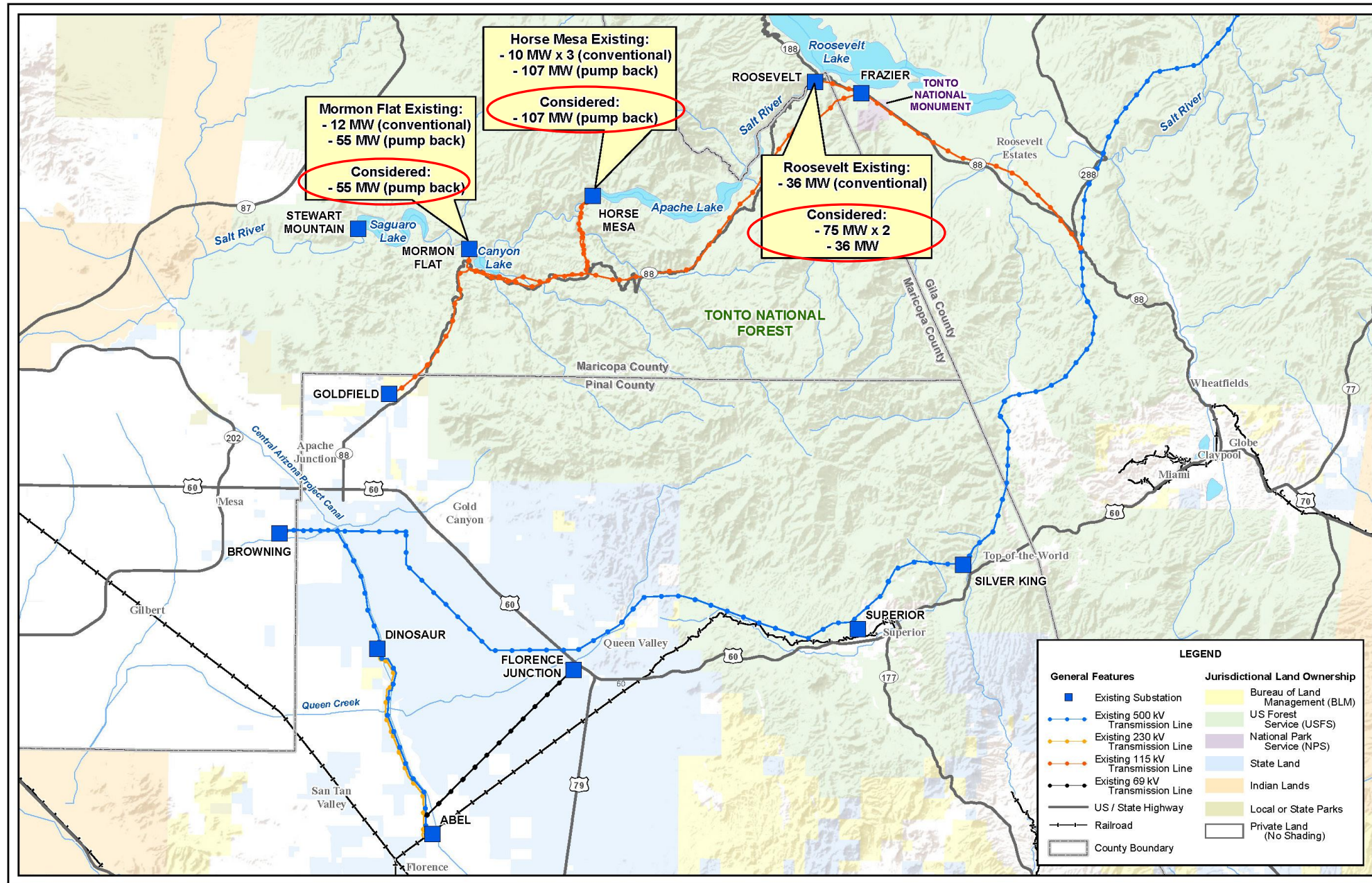


An aerial photograph of a large concrete dam situated in a deep, rugged canyon. The canyon walls are composed of layered, reddish-brown rock. A river flows through the canyon, curving around the base of the dam. The water is a deep blue. The sky is a clear, pale blue. The text "Background: Project Location & Facilities" is overlaid in large, white, sans-serif font across the center of the image.

# Background: Project Location & Facilities

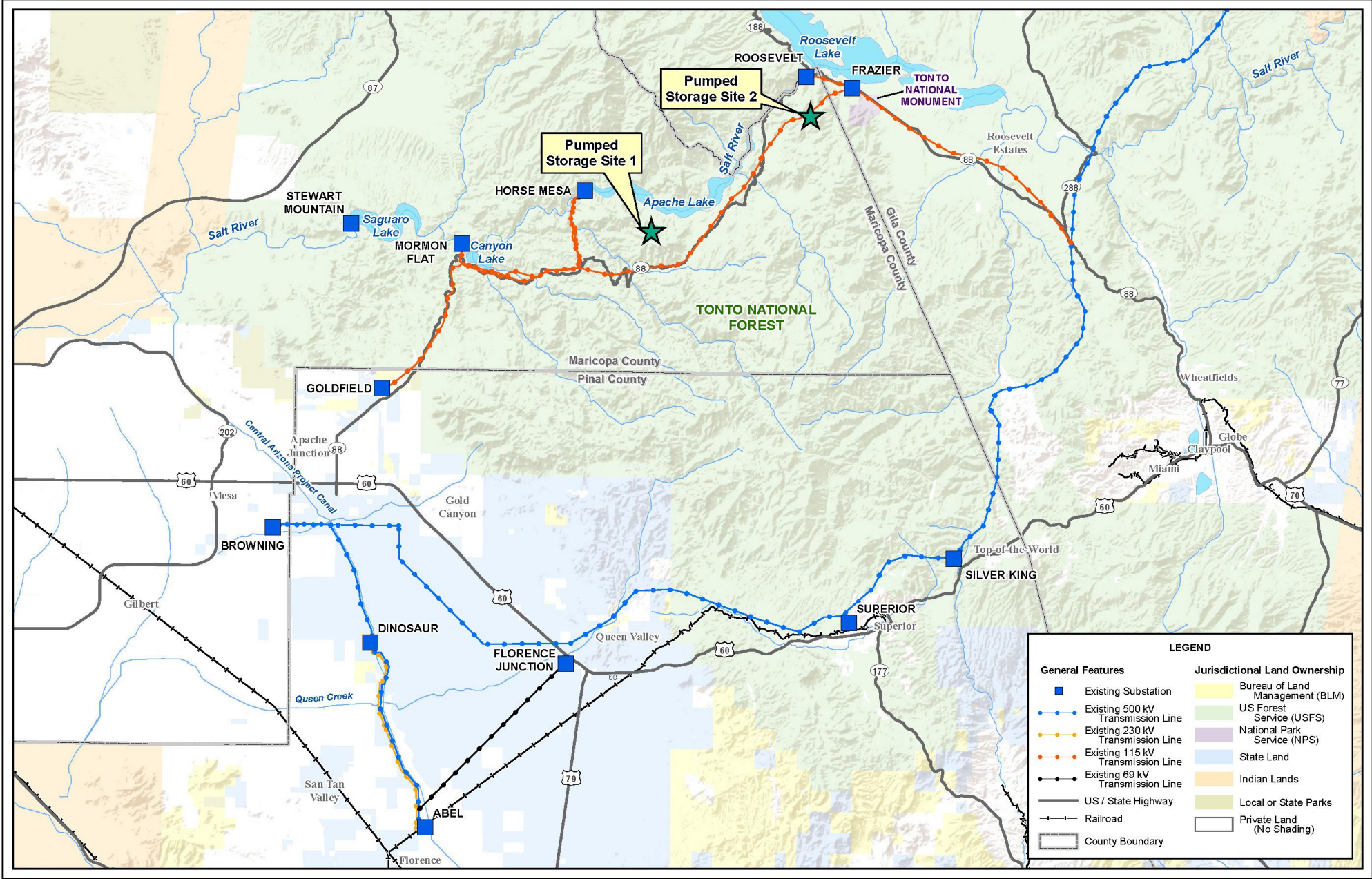


# Pumped Storage Sites Considered but Eliminated from Further Study



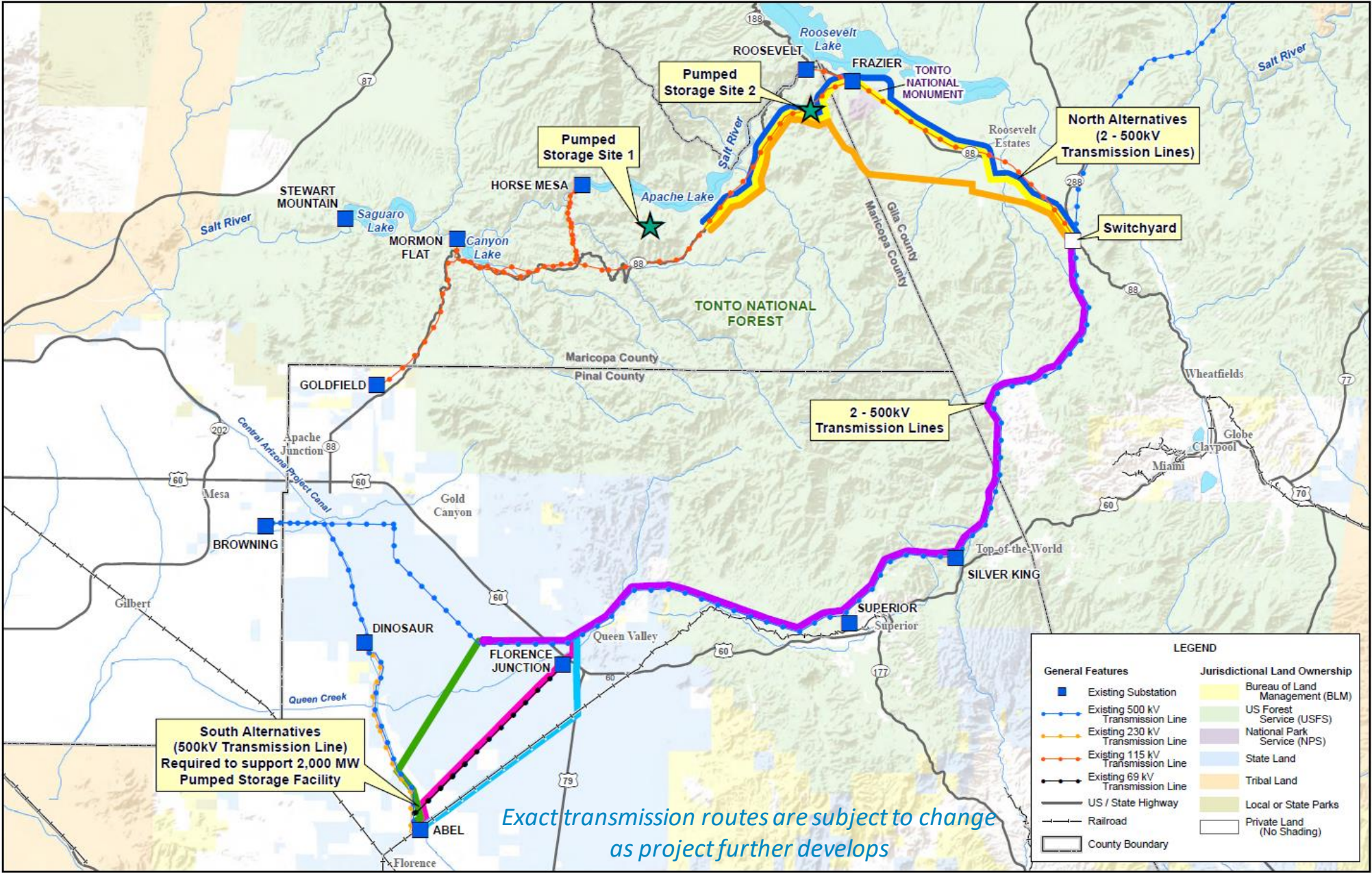


# Pumped Storage Site Options





# Project Area– Generation and Transmission Options



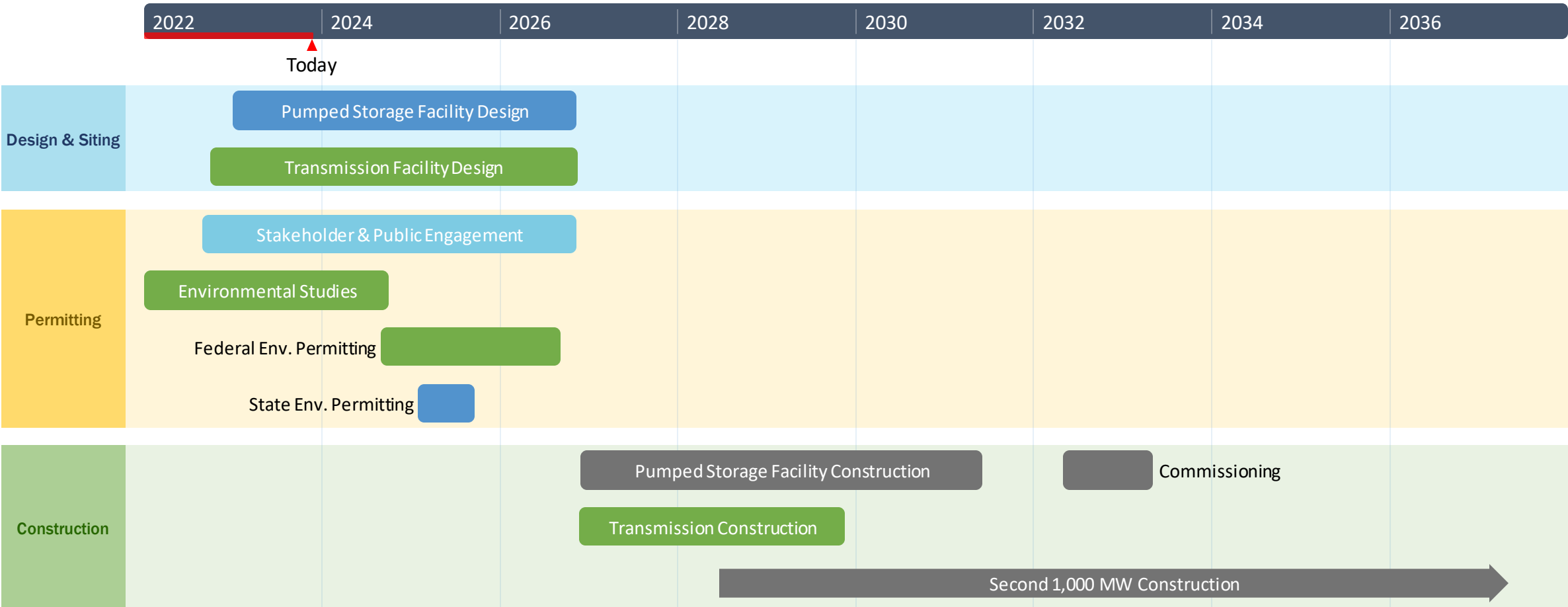


A wide-angle photograph of a massive concrete dam situated in a deep, rugged canyon. The canyon walls are composed of layered, reddish-brown rock. A river flows through the center of the canyon, its water a deep blue. The dam is a long, curved structure with several spillways. The sky is a clear, pale blue. The text "Background: Project Development Timelines" is overlaid in large, white, sans-serif font across the middle of the image.

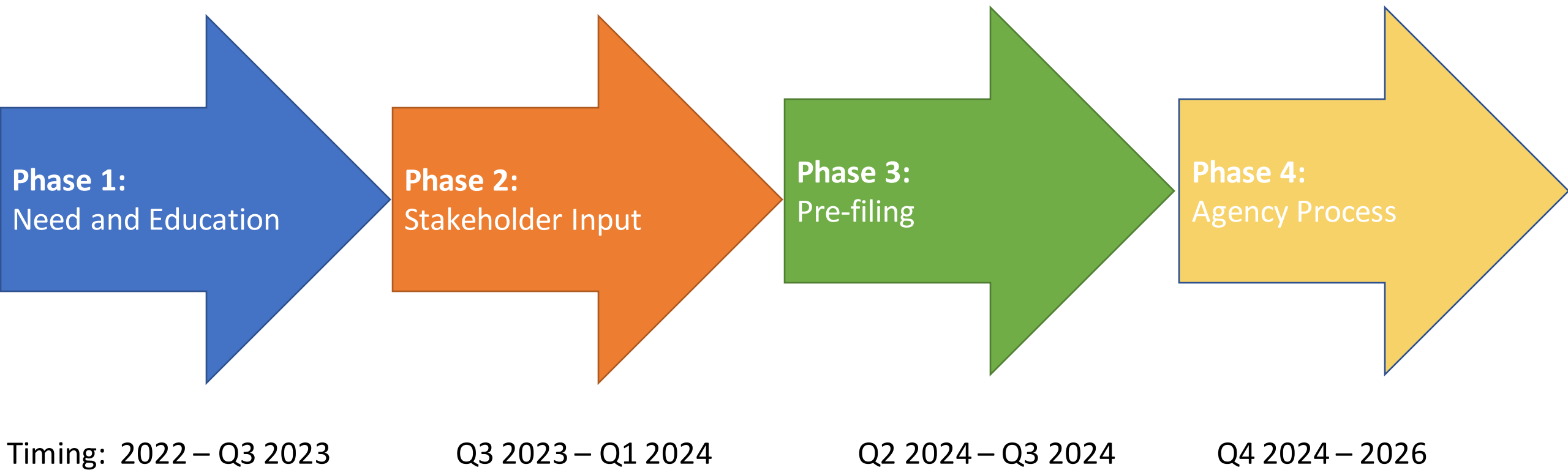
# Background: Project Development Timelines



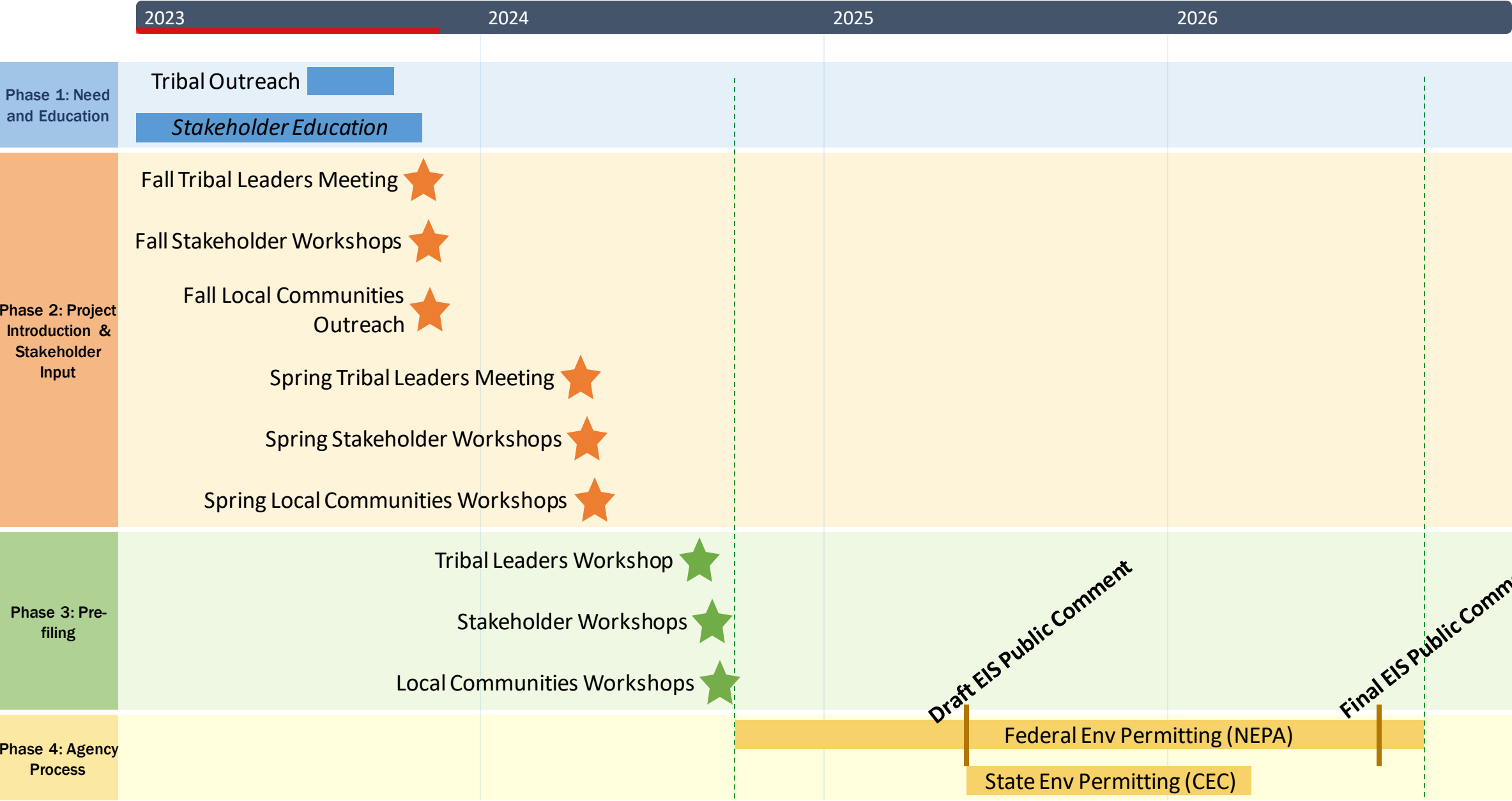
# Development Timeline



# Outreach Strategy: Phased Approach



# Outreach Activities & Milestones



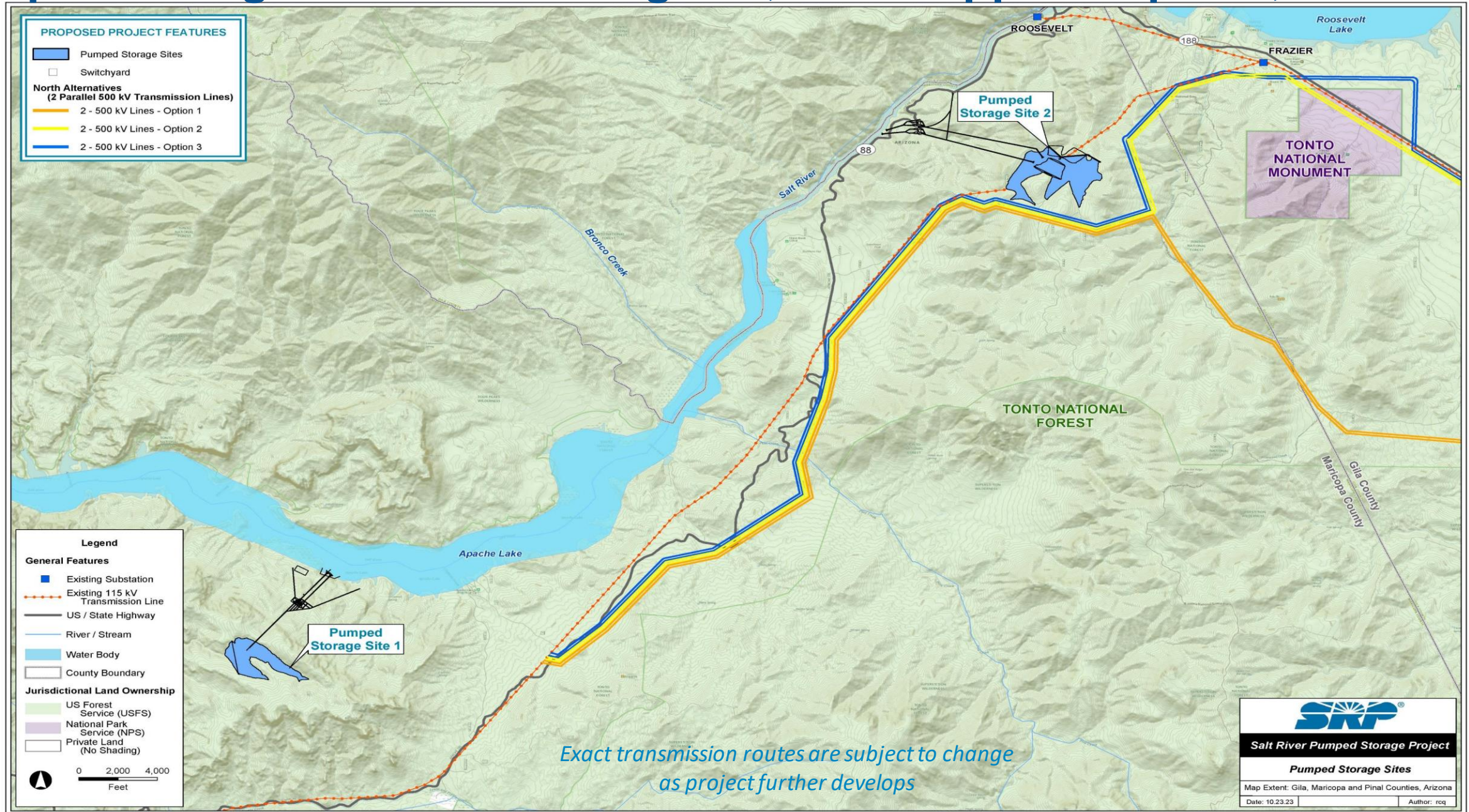


# Generation Facilities







# Pumped Storage Sites—Selecting one, each supports up to 2,000 MW





PROPOSED PROJECT FEATURES

-  Pumped Storage Sites
-  Switchyard

Apache Lake

TONTO NATIONAL  
FOREST

Pumped  
Storage Site 1



Salt River Pumped Storage Project

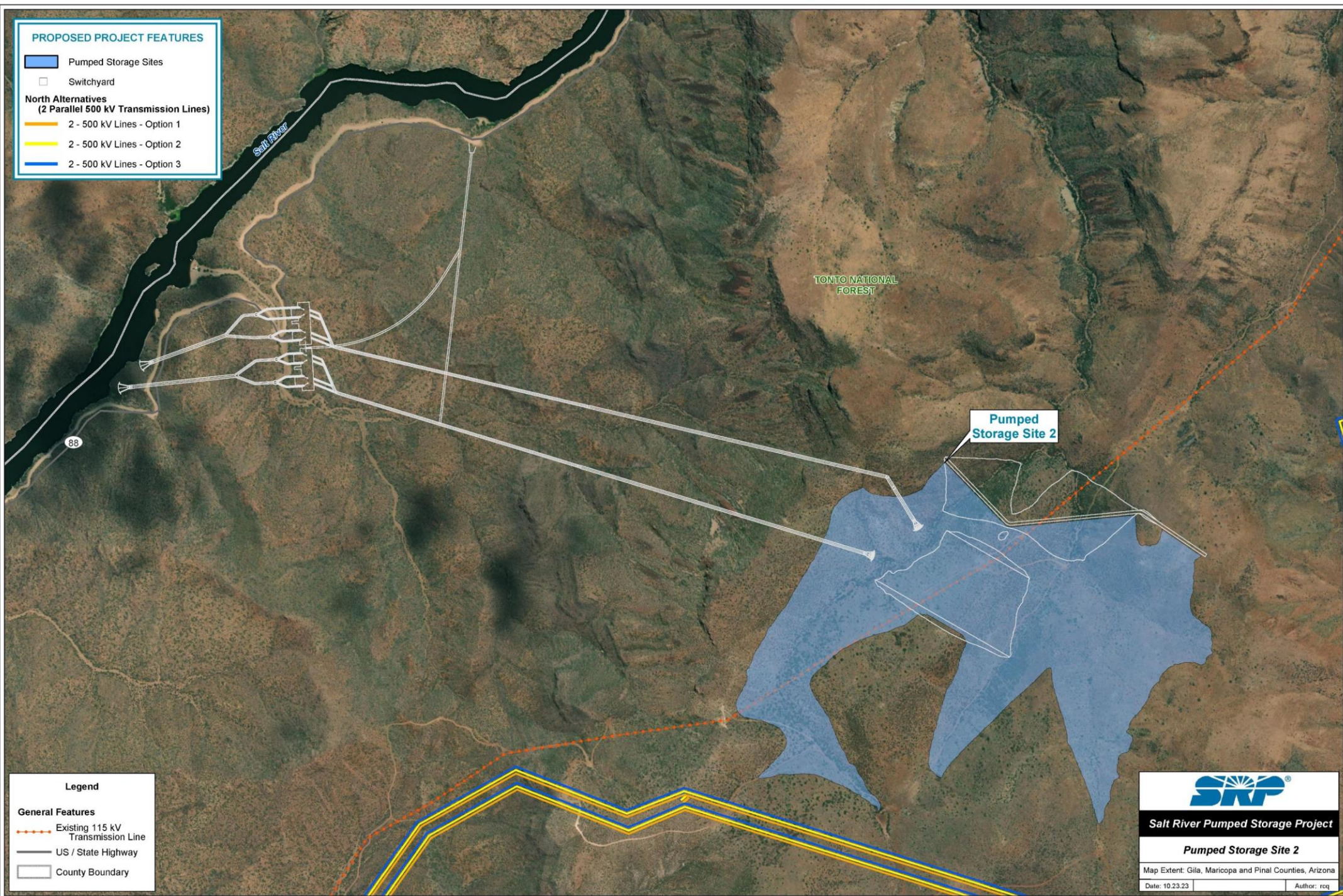
Pumped Storage Site 1

Map Extent: Gila, Maricopa and Pinal Counties, Arizona

Date: 10.23.23

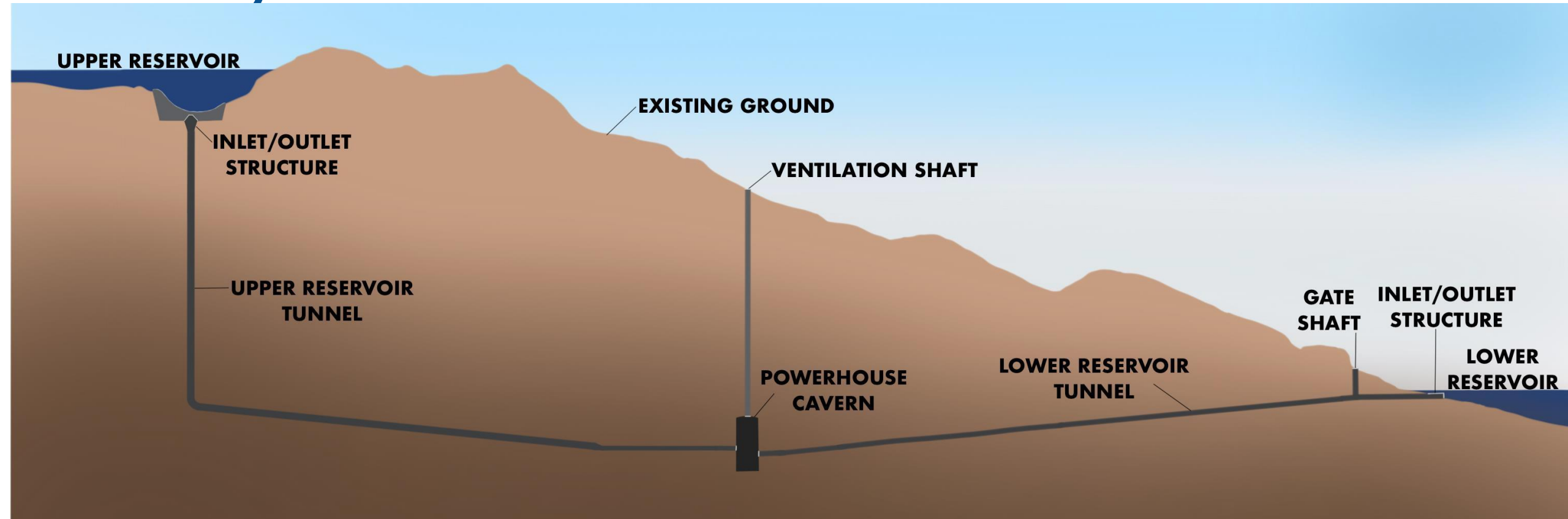
Author: roq







# Pumped Storage Option: Tunneled Underground (UG) Waterway Profile



## Legend:

**Inlet/Outlet Structure:** Structure where water enters a tunnel from a reservoir.

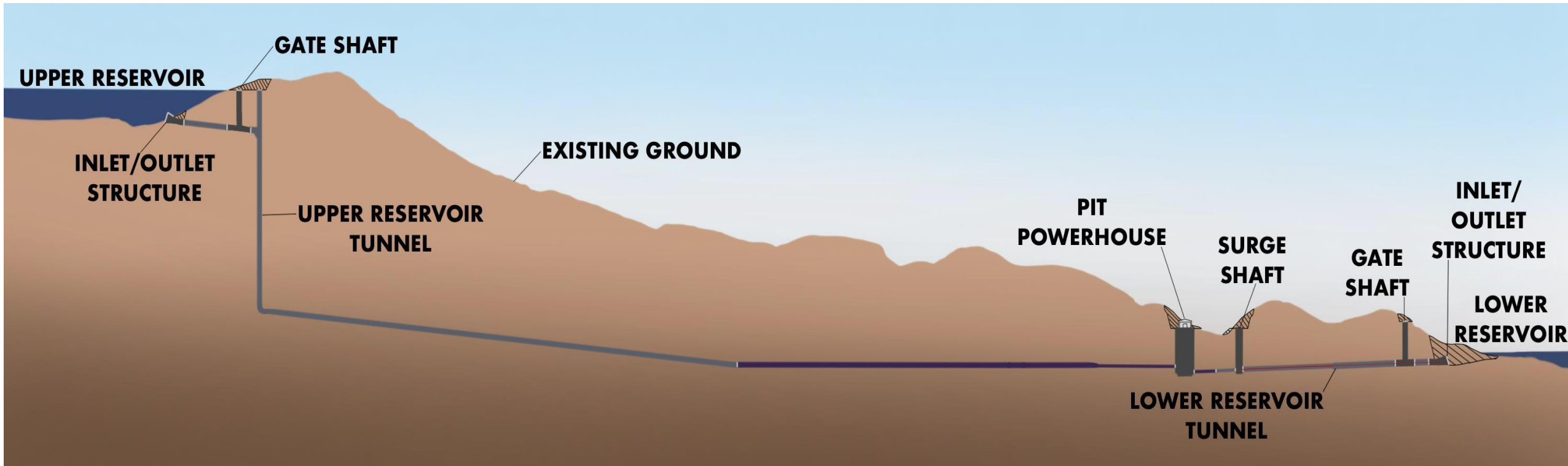
**Reservoir Tunnels:** Watertunnel connecting the reservoirs to the powerhouse.

**Ventilation Shaft:** Provides fresh air to the underground powerhouse where people and equipment are located.

**Powerhouse Cavern:** Fully underground cavern where pump-turbines and other power generating equipment is located.

**Gate Shaft:** Structure with gates to shut water flow from the reservoir to allow maintenance activities to be completed.

# Pumped Storage Option: Pit Waterway Profile



## Legend:

**Inlet/Outlet Structure:** Structure where water enters a tunnel from a reservoir.

**Reservoir Tunnels:** Watertunnel connecting the reservoirs to the powerhouse.

**Ventilation Shaft:** Provides fresh air to the underground powerhouse where people and equipment are located.

**Pit-style Powerhouse:** Below-grade excavation exposed to the surface where pump-turbines and other power generating equipment is located.

**Gate Shaft:** Structure with gates to shut water flow from the reservoir to allow maintenance activities to be completed.

**Surge Shaft:** Pipeline that allows air to enter or exit a water tunnel to improve water flow characteristics.



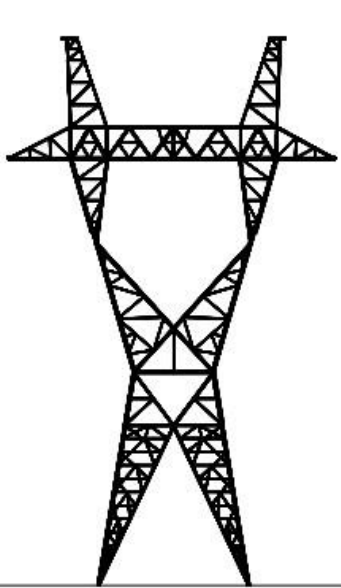
A wide-angle photograph of a massive concrete dam situated in a deep, rugged canyon. The canyon walls are composed of layered, reddish-brown rock formations. A river flows through the canyon, curving around the base of the dam. The sky is a clear, pale blue. The overall scene is bathed in the warm, golden light of late afternoon or early morning.

# Transmission Facilities and Route Options

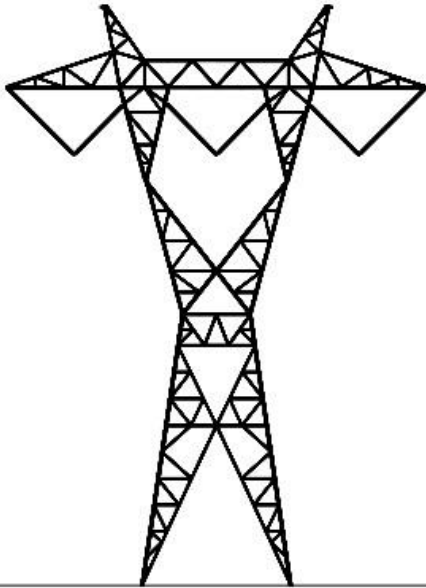




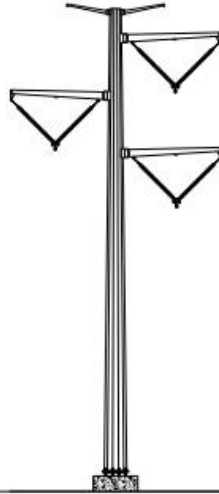
# Typical Structure Types



5A6 Tower Family  
500kV - Single Circuit  
Height: 114-145 ft.



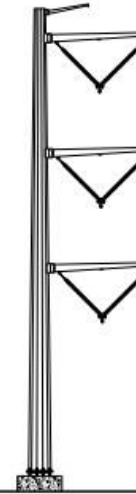
5T3+BE Tower Family  
500kV - Single Circuit  
Height: 97-160 ft.



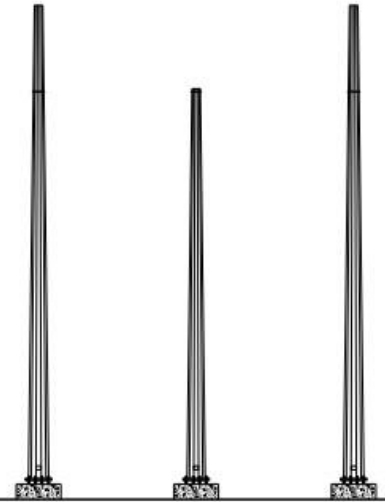
Monopole Tangent Delta  
500kV Single Circuit  
Fdn. Width: Up to 20 ft.  
Height: Up to 190 ft.



Monopole Tangent Delta  
500kV Single Circuit  
Fdn. Width: Up to 20 ft.  
Height: Up to 190 ft.



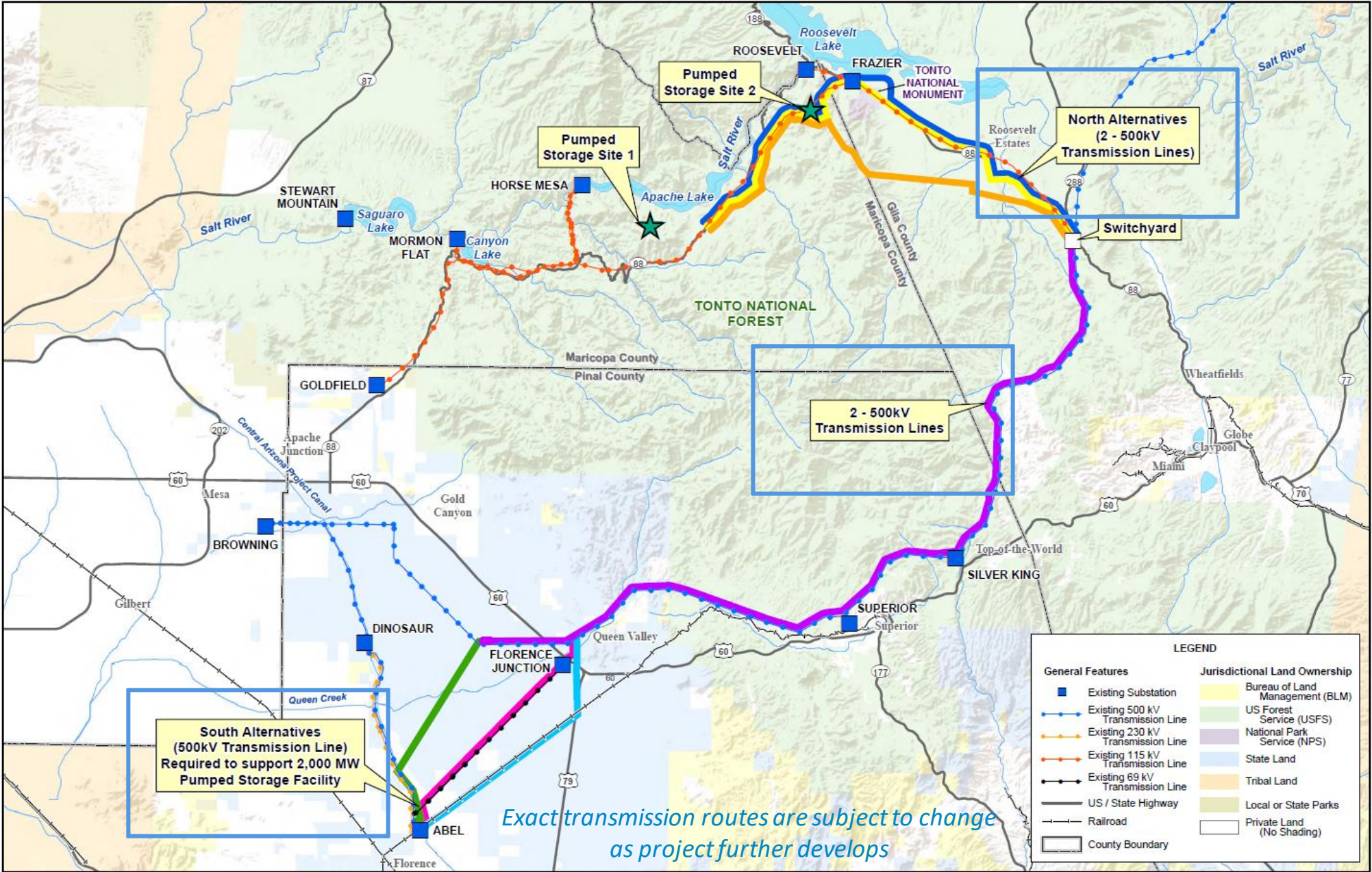
Monopole Tangent Vertical  
500kV Single Circuit  
Fdn. Width: Up to 20 ft.  
Height: Up to 190 ft.



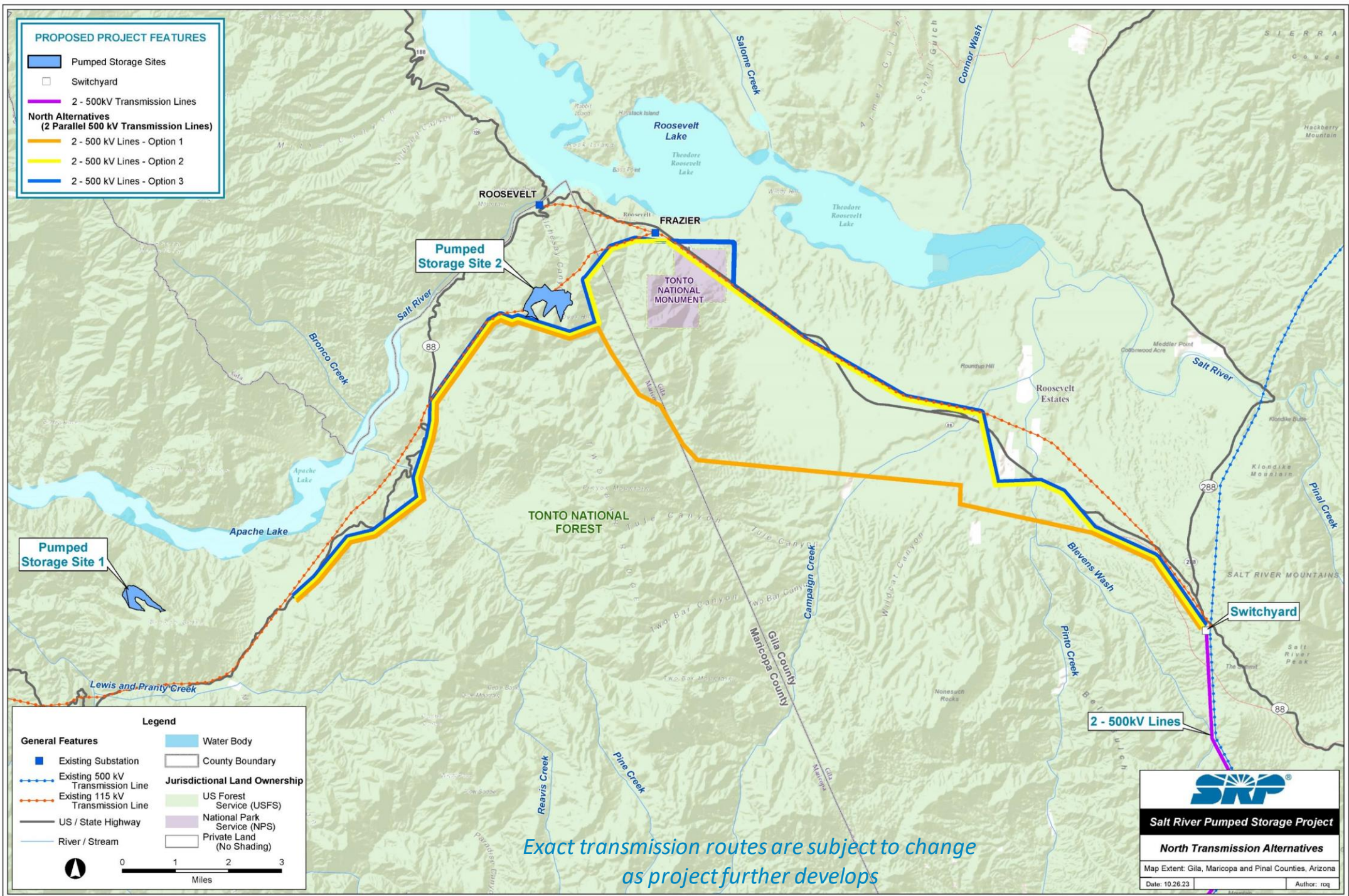
3-Pole Deadend  
500kV Single Circuit  
Fdn. Width: Up to 20 ft.  
Height: Up to 190 ft.

*Represents SRP's typical structures. Actual structure types for this project have not yet been determined and may vary depending on location.*

# Project Area– Generation and Transmission Options









# Existing View: Tonto National Monument Visitor Center Overlook



Looking North



# Rendering: Tonto National Monument Visitor Center Overlook



Looking North – Transmission Option 2



# Rendering: Tonto National Monument Visitor Center Overlook



Looking North – Transmission Option 3



## Existing View: Tonto National Monument Trail Overlook



Looking North



# Rendering: Tonto National Monument Trail Overlook



Looking North – Transmission Option 2

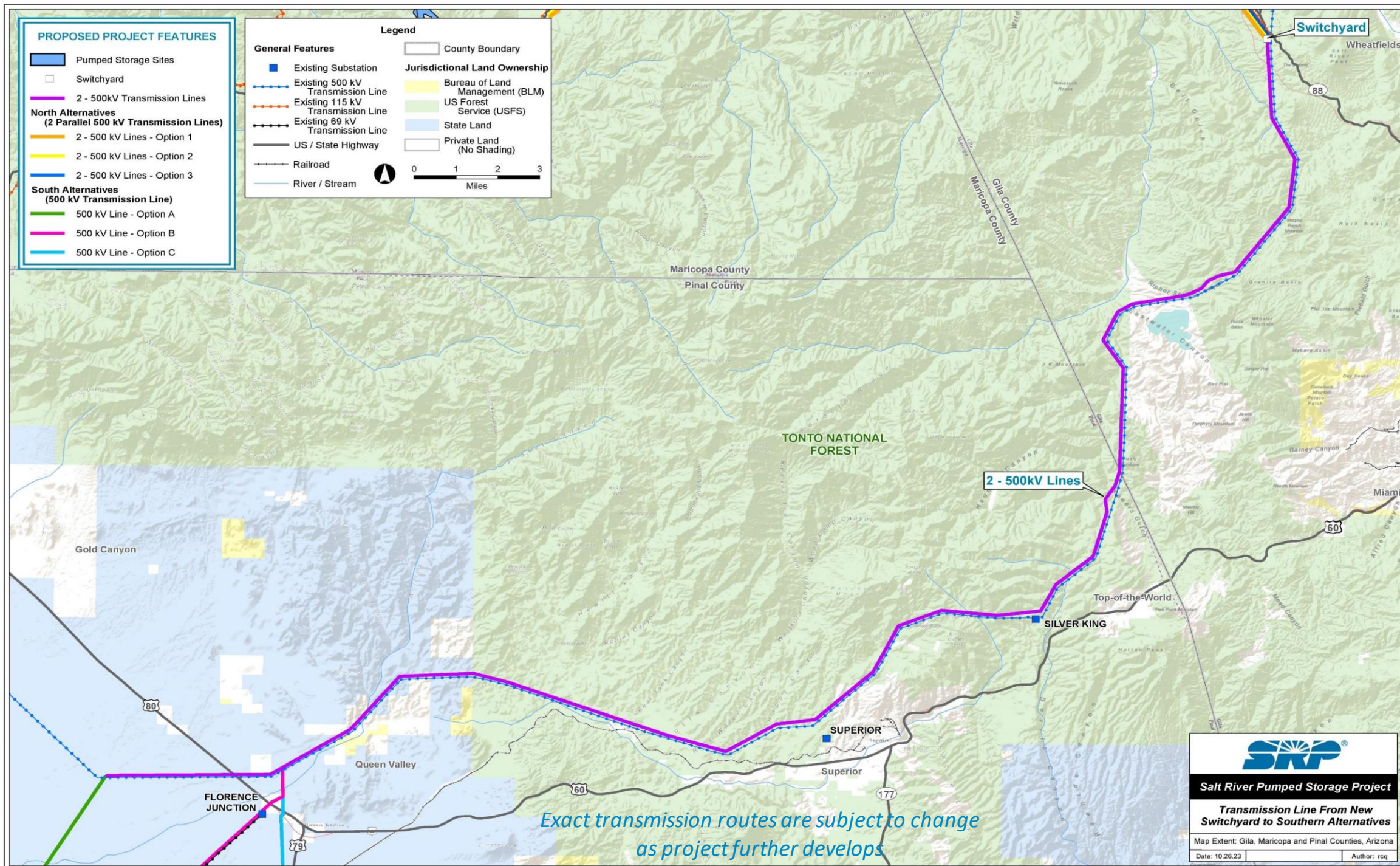


# Rendering: Tonto National Monument Trail Overlook




Looking North – Transmission Option 3





Exact transmission routes are subject to change  
as project further develops



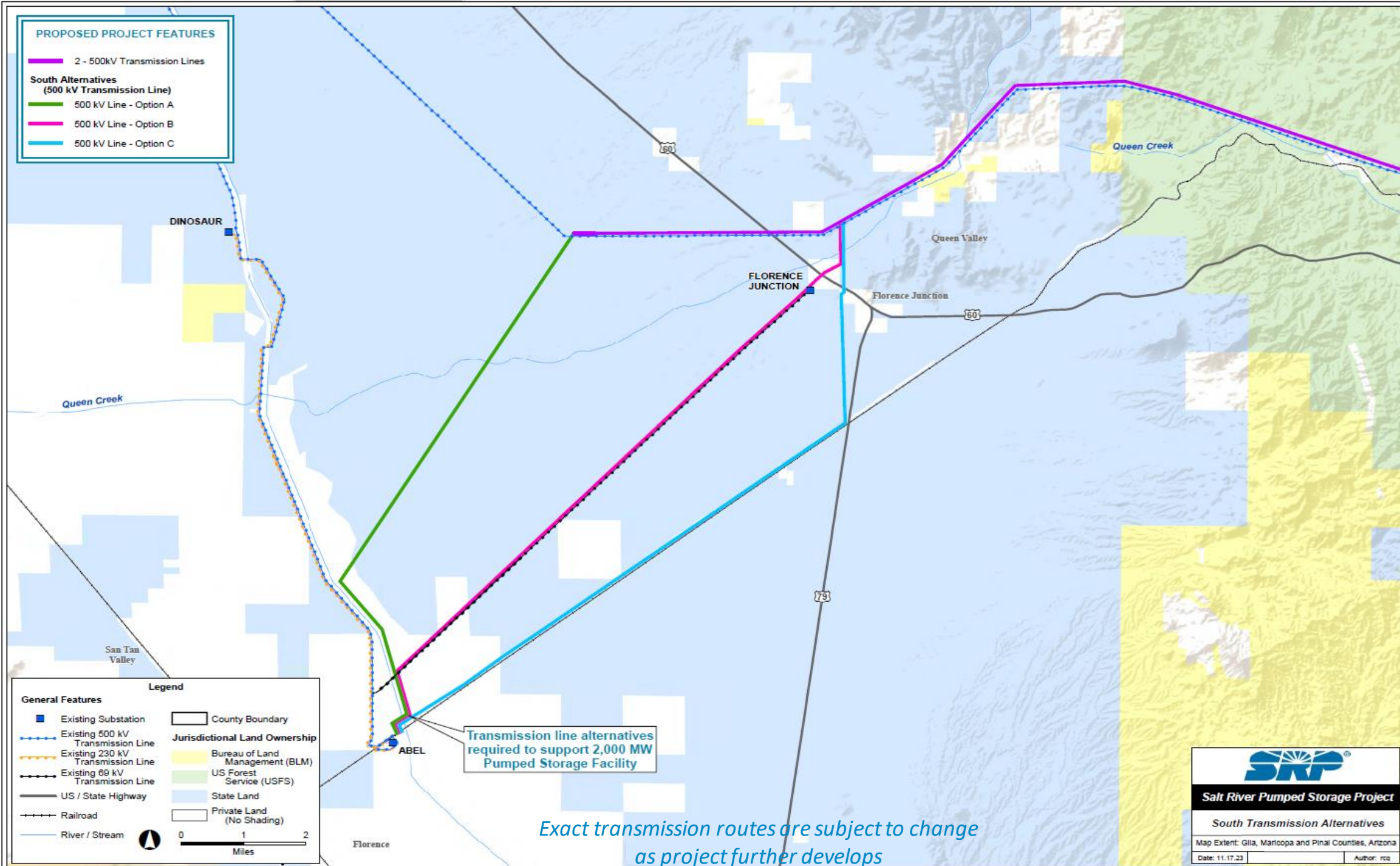
**Salt River Pumped Storage Project**

**Transmission Line From New Switchyard to Southern Alternatives**

Map Extent: Gila, Maricopa and Pinal Counties, Arizona

Date: 10.26.23 Author: rcq





**PROPOSED PROJECT FEATURES**

- 2 - 500kV Transmission Lines
- South Alternatives (500 kV Transmission Line)**
  - 500 kV Line - Option A
  - 500 kV Line - Option B
  - 500 kV Line - Option C

**General Features**

- Existing Substation
- Existing 500 kV Transmission Line
- Existing 230 kV Transmission Line
- Existing 80 kV Transmission Line
- US / State Highway
- Railroad
- River / Stream

**Jurisdictional Land Ownership**

- County Boundary
- Bureau of Land Management (BLM)
- US Forest Service (USFS)
- State Land
- Private Land (No Shading)

**Legend**

0 1 2 Miles

Transmission line alternatives required to support 2,000 MW Pumped Storage Facility

Exact transmission routes are subject to change as project further develops

**SRP**  
Salt River Pumped Storage Project

**South Transmission Alternatives**

Map Extent: Gila, Maricopa and Pinal Counties, Arizona

Date: 11.17.23 Author: rca



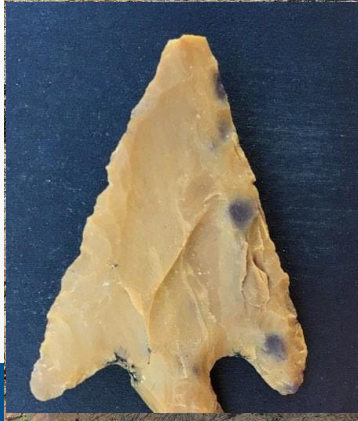
# Resources







# Cultural Resources within Project Area





# Cultural Resources

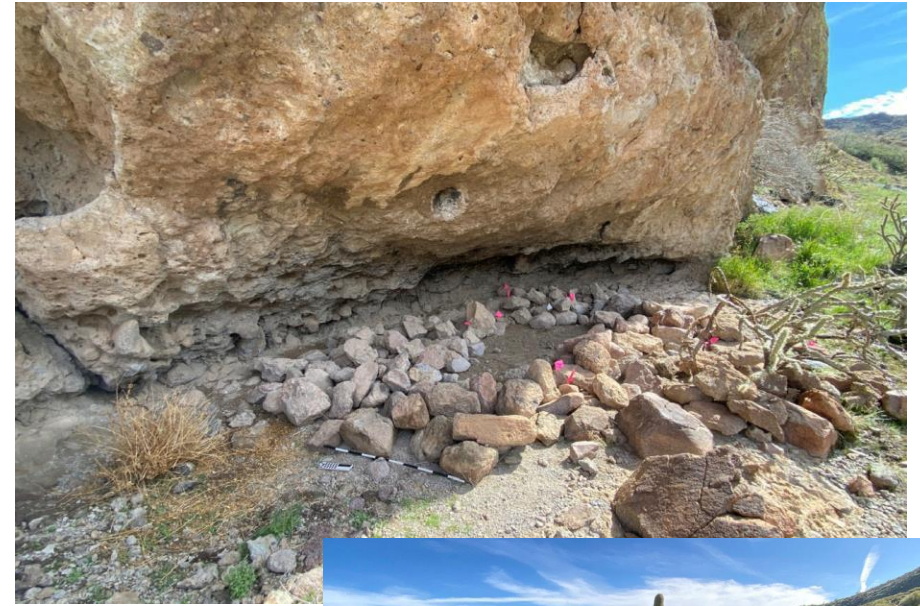
- Class III (intensive pedestrian) survey conducted in January – March 2023 by Westland Resources prior to geotechnical drilling.
- Purpose to identify archeological sites, historic cultural resources, and places important to Native American Tribes.
- Area around pumped storage facilities have been surveyed.
- Transmission rights-of-ways need to be surveyed.





# Pumped Storage Site 1

- 588 acre inventory area.
- 22 cultural resources identified:
  - 18 ancient Native American archaeological sites, including habitation sites, campsites, and gathering areas.
  - 2 historic-era archaeological sites, one corral and one campsite.
  - 2 multiple-component ancient and Historic-era archaeological sites.
  - In addition, two seep springs were identified by Tribal archaeologists as important Native resources.
- Area was likely used for permanent or seasonal habitation as well as for the foraging of wild resources such as medicinal plants, game, and raw rock materials.
- Area also was a likely travel corridor used by ancient O'odham and historic Apache or Yavapai groups.
- Site 1 contains many significant cultural resources that would be impacted by construction.





# Pumped Storage Site 2

- 943 acre inventoried area.
- 17 cultural resources identified:
  - 7 ancient Native American archaeological sites.
  - 1 rock feature, likely Basque shepherd related.
  - 1 historic highway camp, 1 mine prospect, and 1 historic artifact scatter.
  - 6 historic utility lines and roads.
- Area was a source of abundant and important toolmaking and plant resources likely used seasonally and sporadically inhabited by ancient O'odham and historic Apache or Yavapai groups.







Bald Eagle



Southwest Willow Flycatcher



Saguaro



Golden Eagle

# Potential Species within Project Area



Hedgehog Cactus



Yellow Billed-Cuckoo

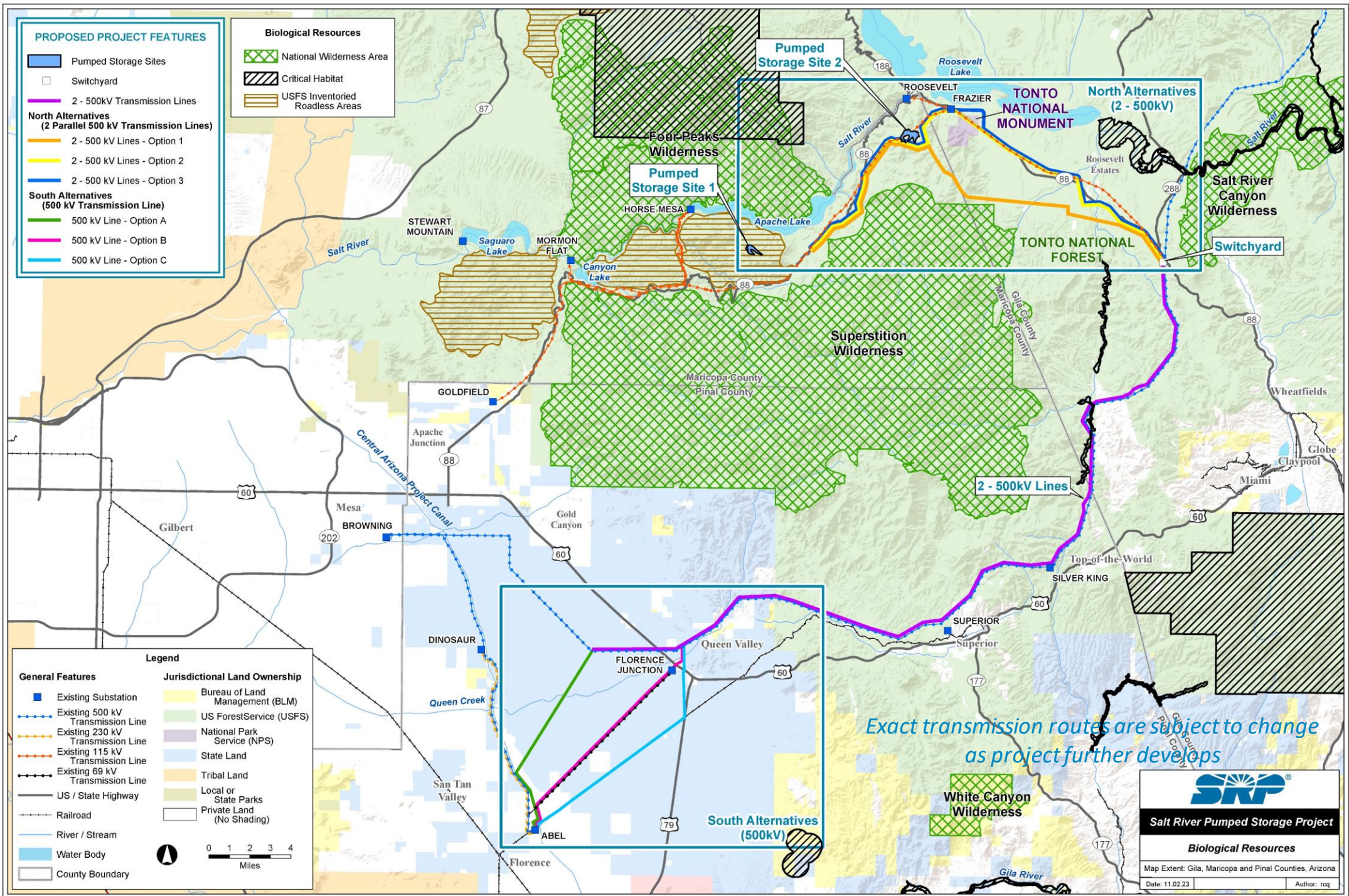


Gila Topminnow

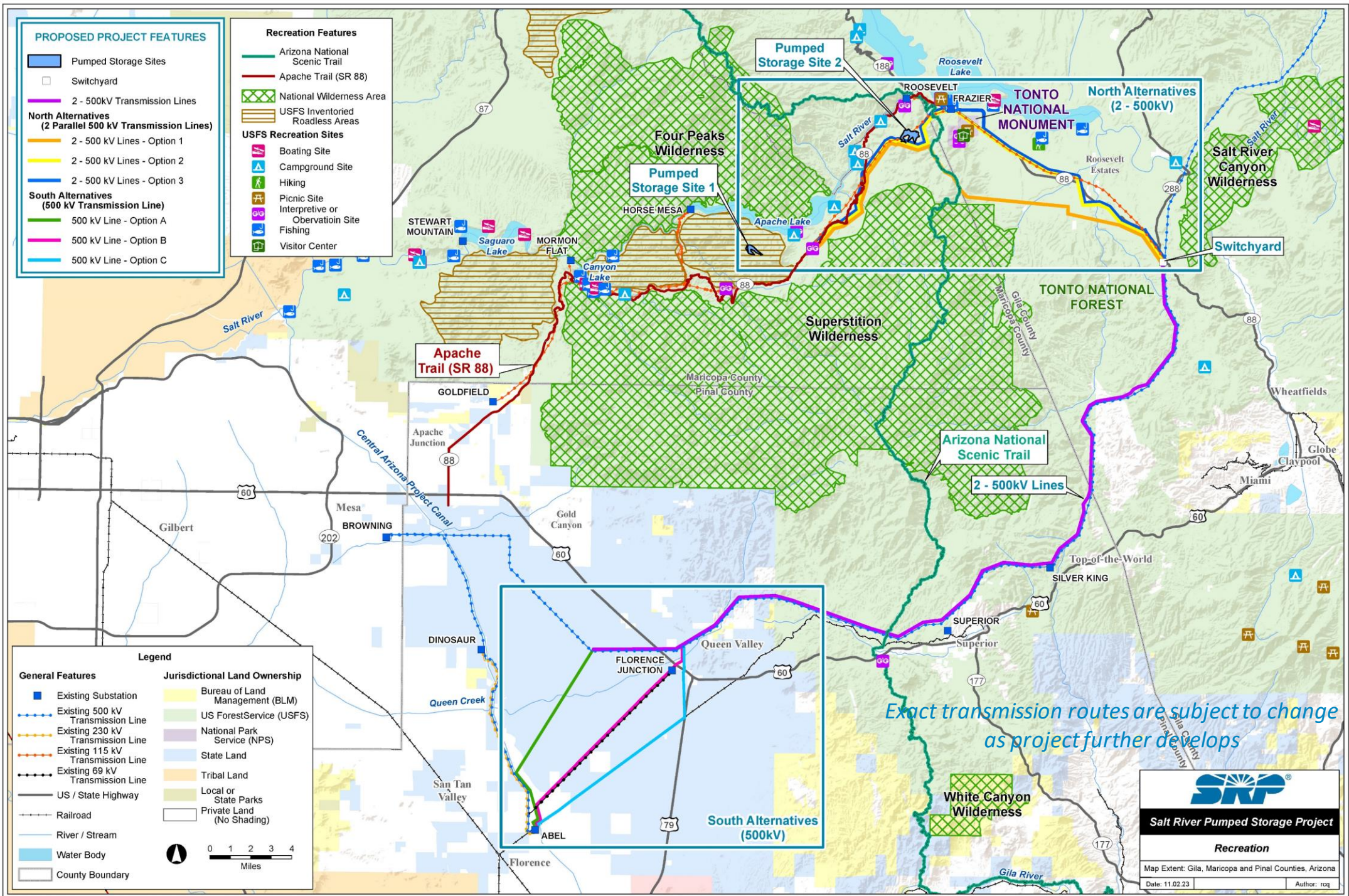


Sonoran Desert Tortoise









Exact transmission routes are subject to change as project further develops



Salt River Pumped Storage Project

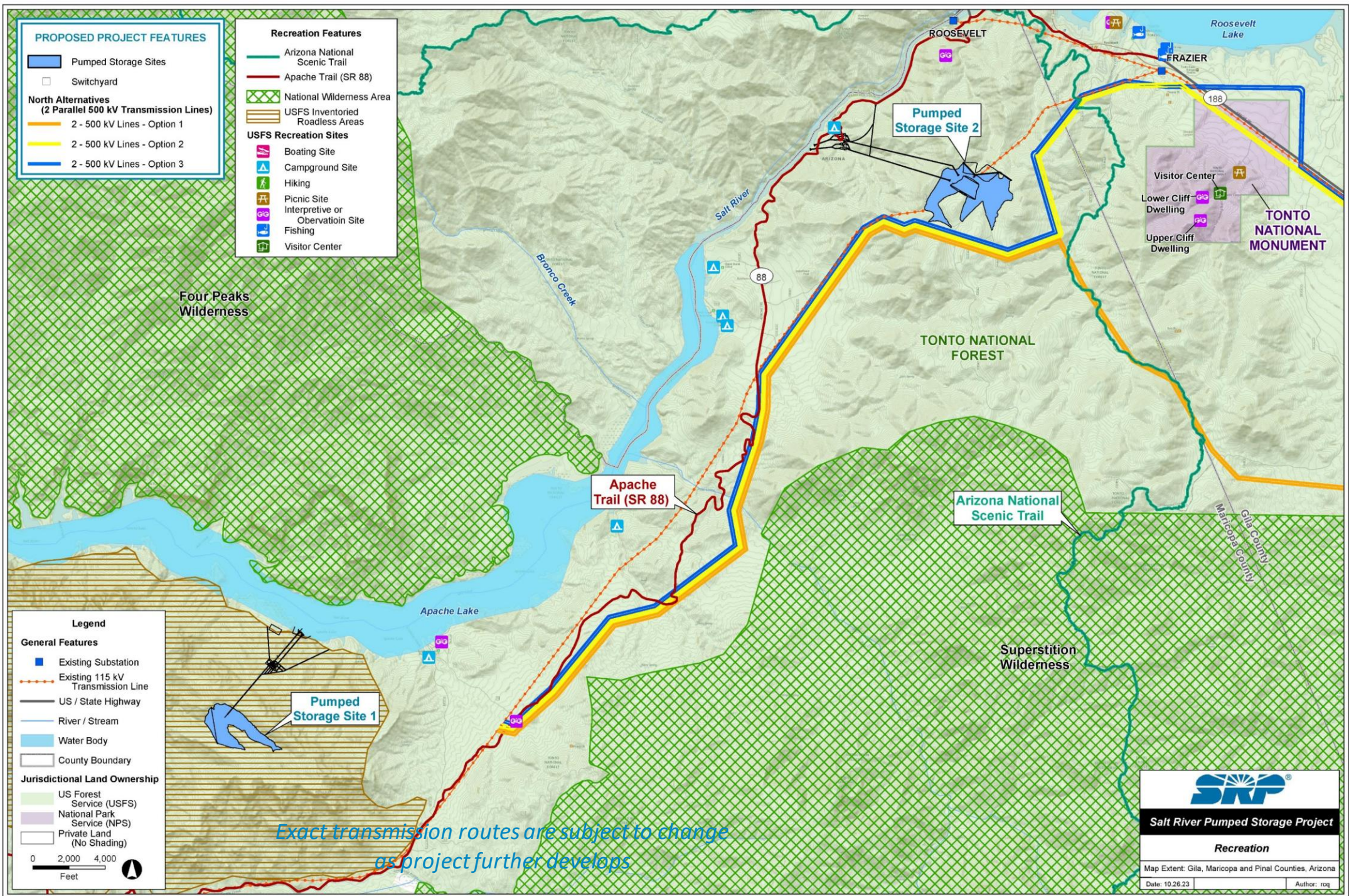
Recreation

Map Extent: Gila, Maricopa and Pinal Counties, Arizona

Date: 11.02.23

Author: req







# Next Steps

- **Complete remaining fall workshops seeking input**
- **SRP take input and incorporate in site selection decision process**
- **Spring Workshops: Spring 2024**
  - Re-engage with Tribal Leadership, Local Communities, and Stakeholders
  - Summarize feedback from fall workshops
  - Share decision rationale on site selection
  - Present updates on site selection process
  - Provide opportunity for input



# Feedback and Thank You!



Scan this QR Code to add your feedback



[srp.net/pumped-storage](https://srp.net/pumped-storage)

1-855-584-1484



thank you!