



HCC PROTOTYPE DEMONSTRATION

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PHYSICAL PROTOTYPE

- **Question:** How well does the proposed turbine integration align with structural and spatial constraints at Granite Reef Diversion Dam?

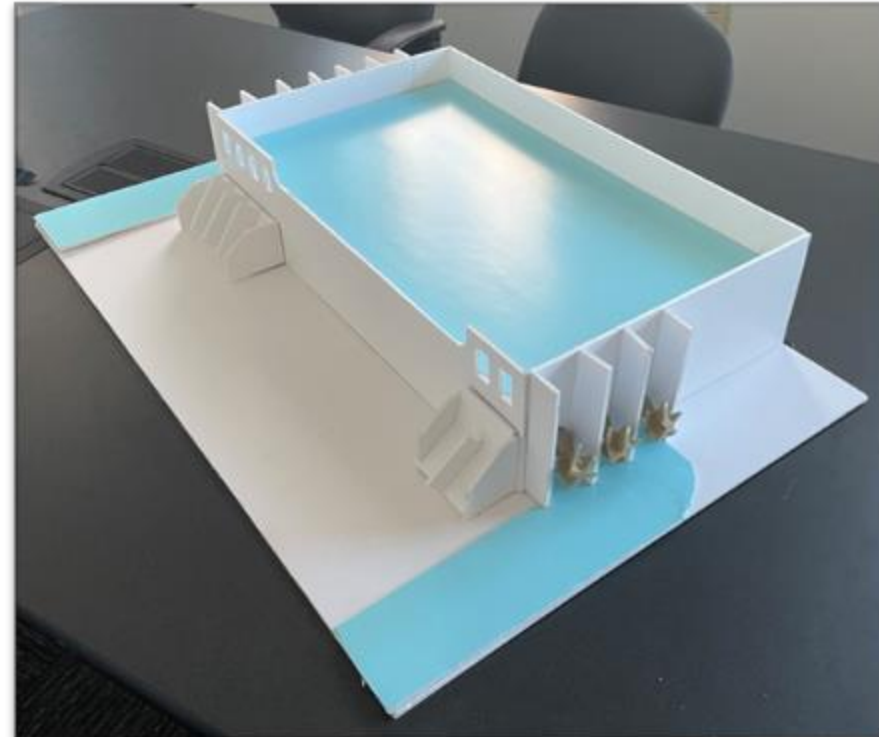


Figure 1: South Canal turbines

PHYSICAL PROTOTYPE

- **Answer:** The existing infrastructure on the north and south gates provide suitable conditions for instillation of Voith StreamDiver turbines.
 - The current structure has 18, 7' x 5' regulatory gates on north canal side. The spacing between the cement columns are about 30 feet each in width. StreamDiver diameter 5 – 8 ft.

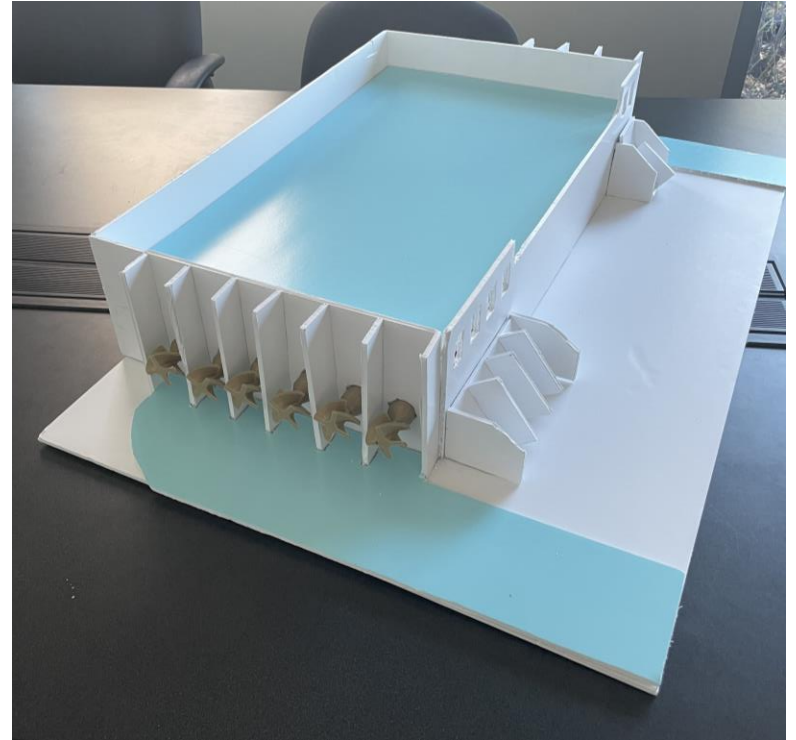


Figure 2: Arizona Canal turbines

HOW WILL THIS INFORM OUR DESIGN?

- **Answer:** The structure can handle around 18 StreamDiver turbines on the north canal and 9 on the south canal. Moving forward, flow data will determine how many we chose to implement in our design.



Figure 3: Granite Reef Diversion Dam prototype

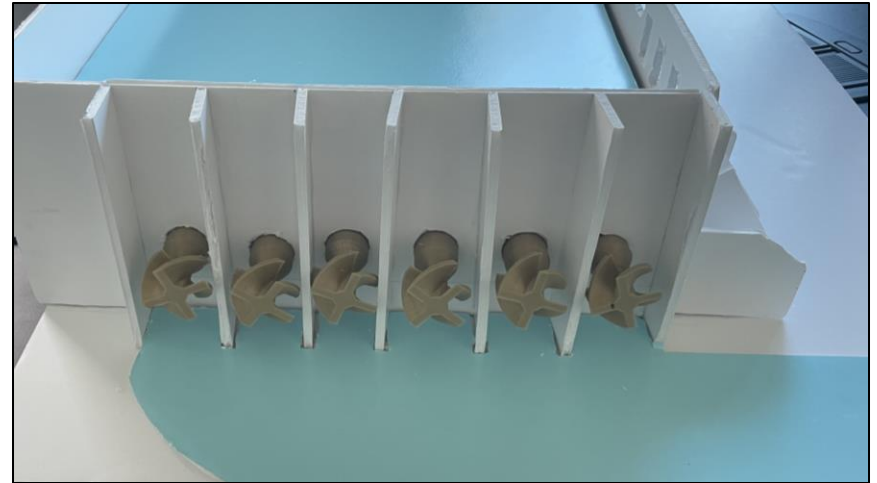


Figure 4: Arizona Canal turbines

VIRTUAL PROTOTYPE

- **Question:** How do the trends in daily flow data influence the patterns observed in estimated energy generation?

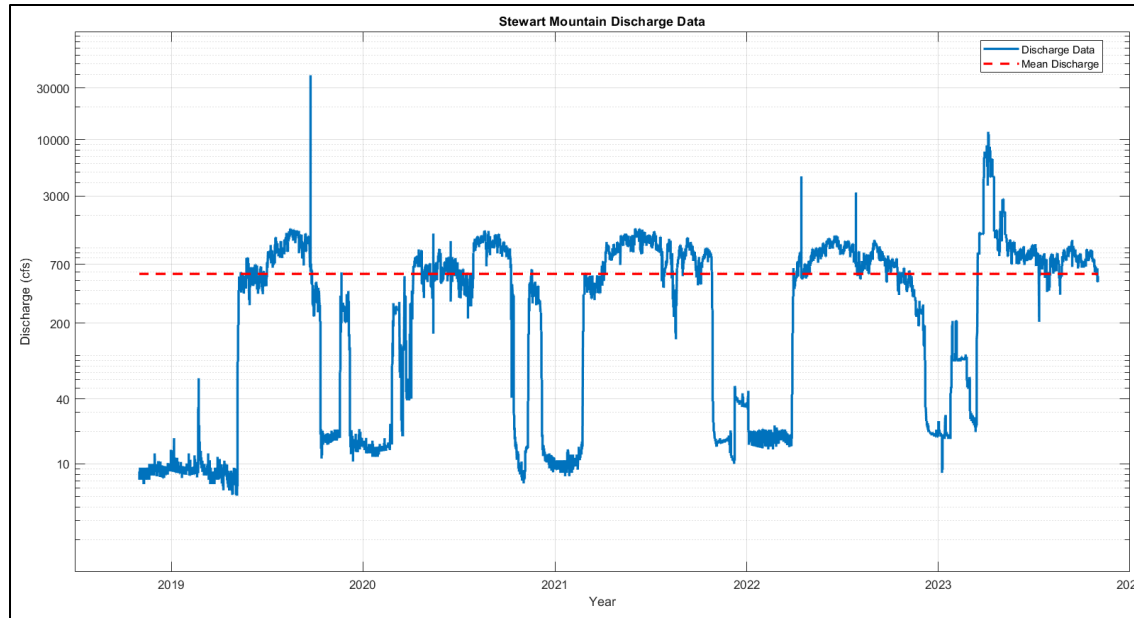
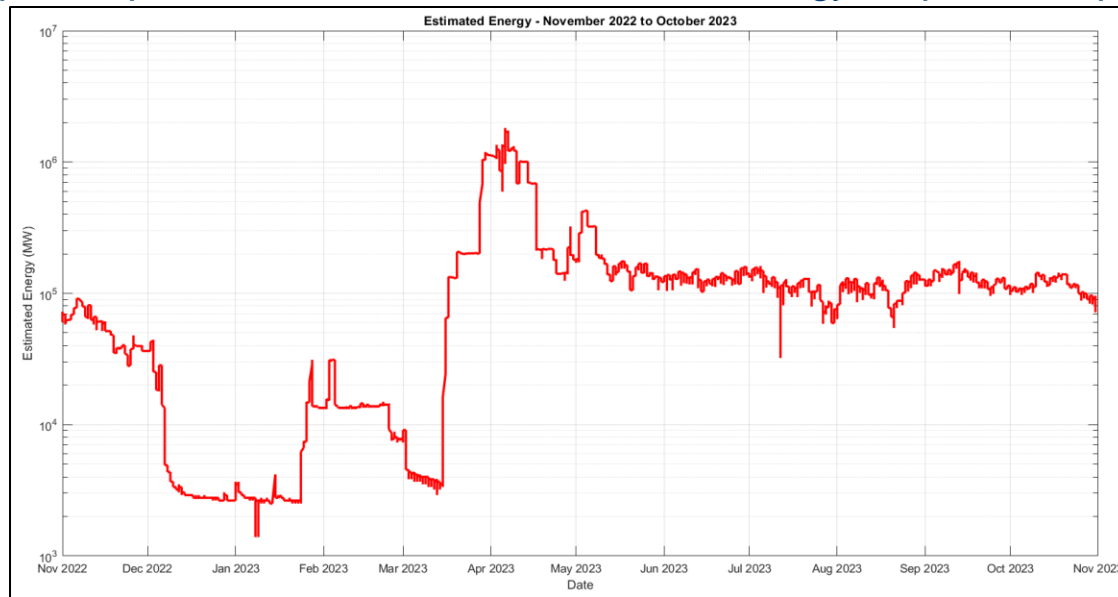


Figure 5: Daily Discharge Data from Nov 2019 – Nov 2023

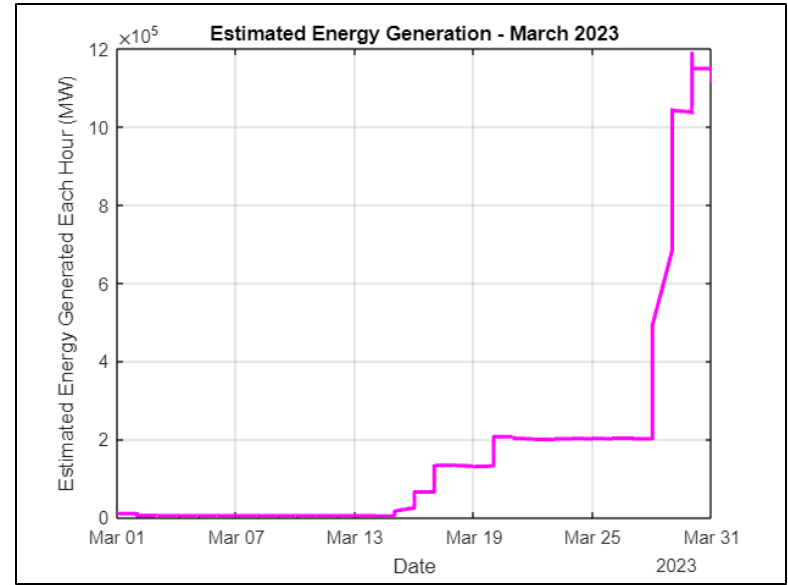
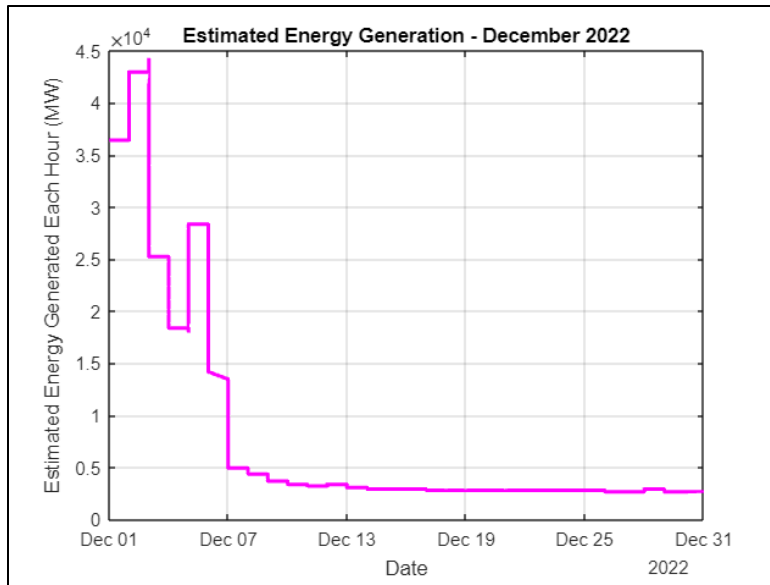
VIRTUAL PROTOTYPE

- **Answer:** The simulation reveals periodic correlations between flow data and the associated annual/monthly variations in estimated energy generation.
- Highlights specific periods of increased/decreased energy output in response to flow.



HOW WILL THIS INFORM OUR DESIGN?

- Identify peak and off-peak periods for energy generation
- Refine calculations for Levelized Cost of Energy (LCOE)
 - Forecast energy output with associated revenues



THANK YOU!