Log Book CYSF

DATA:

River: Roughly 20 Inches
Base: 30x30 inches
Battery: 3 1/2x3 inches
Base thickness: 2 inches

Progress:

Dec 14, 2025

: On December 14 I built the “stand” of the model

Feb 19, 2026

Up until this date I have been building a plan, researching, and collecting materials.

I built the simulated river by carving a line, and painting it blue. I then added a continuous loop of transparent pipes into a basket with a turbine in the middle to generate energy which will charge the battery, powering the house. It is pushed through the pipes and turbine with a water pump in the basket/ reservoir.
Unfortunately there was a leak in the pipe where it connected to the turbine.

Feb 20, 2026

The leak was fixed by tightening and rewiring the piping. The light switches, outer LEDs, inner lights, battery, and wiring were added today.
The original battery purchased was 12 volts and when attached to the project, started a mild fire, fortunately there was parental supervision to stop it immediately. Then a 9 Volt battery was tested, although it made the lights flash on a bit, it was not strong enough to power the lights continuously. A smaller 12 Volt battery was tested and worked but the battery itself was heating up and this idea was scrapped due to safety concerns. A different 18 volt

battery was the best option because it safely lit up the house.

Feb 22, 2026

Today I realized my problem. I was using a battery imputing 60 Amps, far too strong for my system. I installed a current limiter to decrease the output to 3 Amps. I was correct and this fixed my problem. After that I traced the shape of everything onto a green felt and cut it out. A lot of empty space was left and I didn't like that so I glued toy animals and a fence. For extra realism on the “river” I got some rocks from my backyard and glued them on.

NOTES AND IDEAS:

When I originally thought of my project, I had very ambitious goals, lots of lights and interactions, but I Later decided spending more time to perfect and completely understand less things would be better than skimming and rushing through a lot! I wanted to be able to show the power from the hydropower,

hence the voltage meter! I spent lots of time confused after the struggle with the batteries but I figured it out eventually and corrected my mistakes, I think that’s what matters. I'm going to try adding a current limiter

RESULTS

I think my biggest challenge was getting the battery to work before the realisation of the need for a current limiter. I am very happy with how my project turned out.

CONCLUSION

My representation of a hydro-powered house can work, with proper thought and calculations it will be very successful.

Materials

- felt
- Wood
- LEDs
- Pipe
- Clamps
- Water
- Sharpie
- Measuring tape
- Wires
- A 12 Volt battery
- A current limiter
- Toggle switches
- Water pump
- Basket
- Voltage meter
- Drill
- Measuring tape

- rocks
- Toy animals
- Scissors
- glue