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October, 2024

Forge Garden

# Water Feature Research

# 1)Project Description
# 2)Problems
# 3)Brainstorm
# 4)Research
# 5)Design


# Project Description

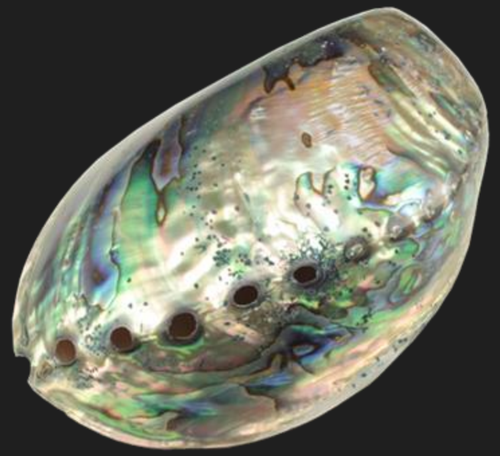
- Collaboration with the Muwekma Ohlone Tribe and Forge Garden
- For the Muwekma Ohlone Tribe and the general community
- **Objective:** Create a water feature, where the sound of running water could be heard
  Preferred budget: $100

# Interview Summary

- Abalone shells are an importance to the Muwekma Ohlone Tribe
- The water should fall vertically and the fountain itself should be relatively small
- The system should be on 24/7 using renewable energy
- Cares about longevity, but can have some maintenance necessities aspects
- Abalone shells are emphasized (we don’t know if she wants it on the fountain or around)

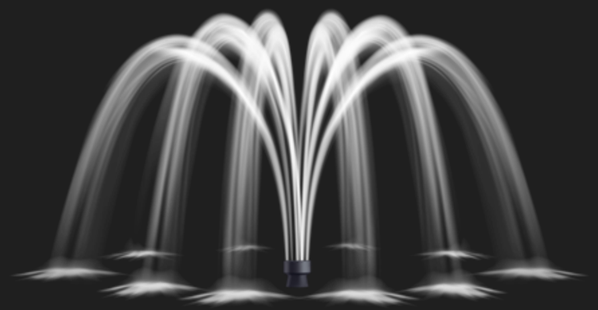
# Brainstorm

Elements that are needed



**Abalone Shells**

Aesthetics



**Water Feature**

Core of Project

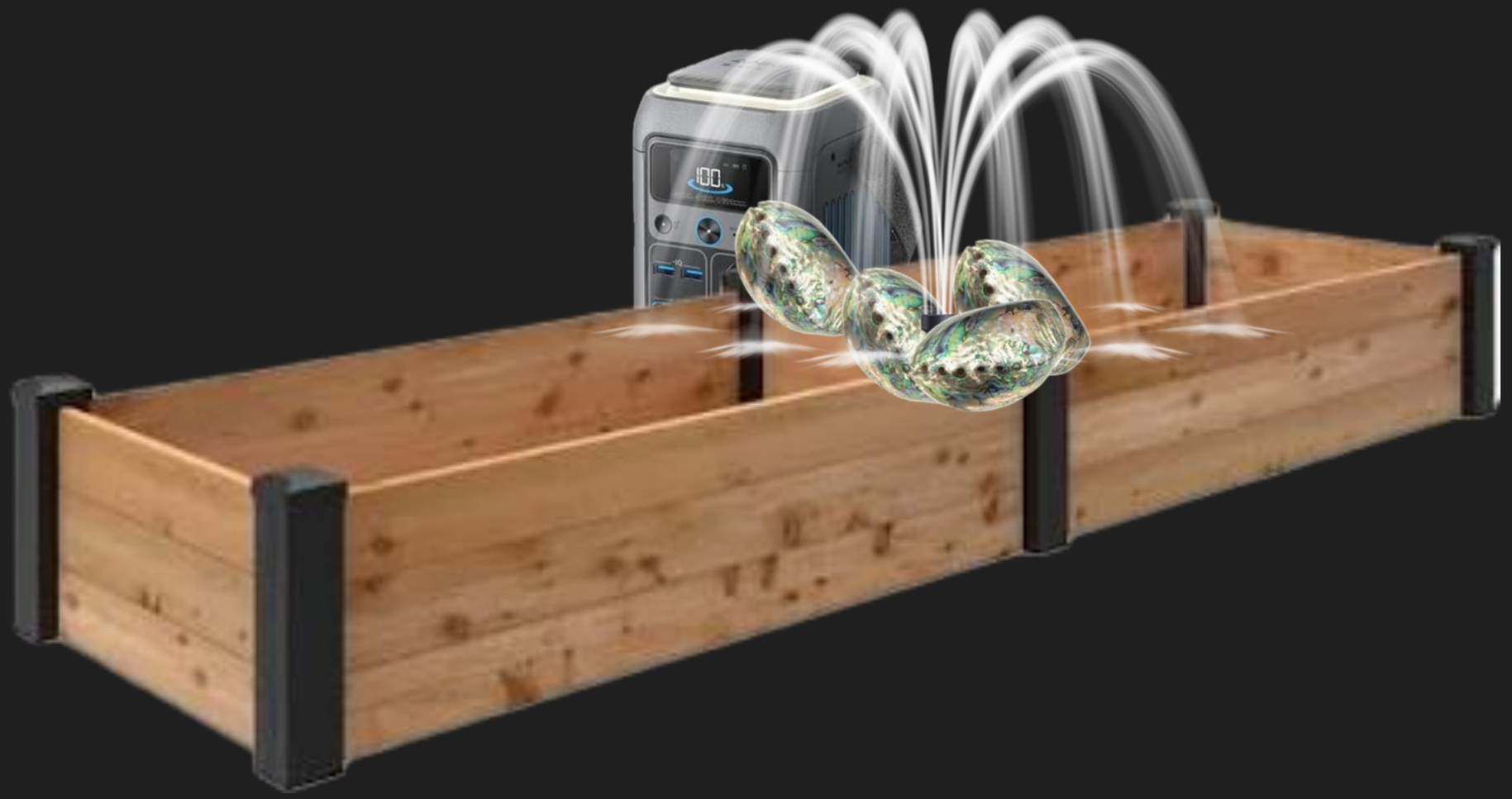

**Uninterruptible Power Supply (UPS) with solar**

Additional Benefit

**Plant Bed (provided)**

# Brainstorm

Forge Garden: Water Feature



# Brainstorm

Forge Garden: Water Feature

# Brainstorm

Forge Garden: Water Feature

# Proposed Plan

**Battery Cap in Wh x Battery Efficiency / Wattage = Total Time**

**Runtime Calculation will differ for each pump Consider the efficiency, and power factor of the battery.**

**Consider the solar panel conversion factor.**

Source

Jackery
Solar Generator

## Working Process of a Solar-Powered Water Pump

1 **Solar Panels Collect Sunlight**

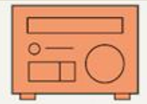
When the sun's rays strike these cells, they excite the electrons and create an electric current through a process known as the photovoltaic effect.

2 **PV Cells Generates Direct Current**

The electricity generated by PV cells is Direct Current (DC), which flows from the panels to cables to the inverter or directly to the pump.

3 **Inverter Converts DC Into AC**

The inverter then converts the DC electricity into an Alternating Current and passes it on to the controller.



4 **Controller Regulates The Voltage**

The controller then regulates the voltage within the safe limits to prevent overcharging and potentially damaging the batteries.

5 **Water Pump Operation**

The DC or AC electricity is passed onto the water pump, which uses it to lift water from the source and deliver it to the desired location.

www.jackery.com

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# Cost Analysis: Battery w/ Panels


## $109.99

+ Affordable
+ 22,500 mah

## $319.98

+ Longevity
+ 90,000 mah

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# Cost Analysis: Water Features

## $43.39

+ 16” x 27”
+ Rustic Barrel
- Might not be what they’re looking for

## $62.57

+ More sound
- Needs water underneath

## $99.35

+ Wood
- Pricy

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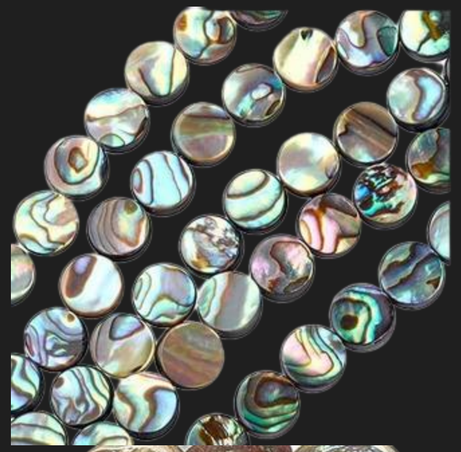
# Cost Analysis: Abalone Shell



## $15.99

+ Cheap
+ More reflections and coverage

## $28.99

+ Full shells
- Pricy

## $17.97

+ Many Shells
- Looks less like abalone
  Less shiny

# Alternate: DIY Build a Water Feature

Material Estimated Costs (from video):
Pump: $34.28
¼ Tube: $11.99
Water Holding: $71.95
Screws: $9.32

Total cost: ~$127.54

Note: This price does not include the renewable energy