

Fly Ranch

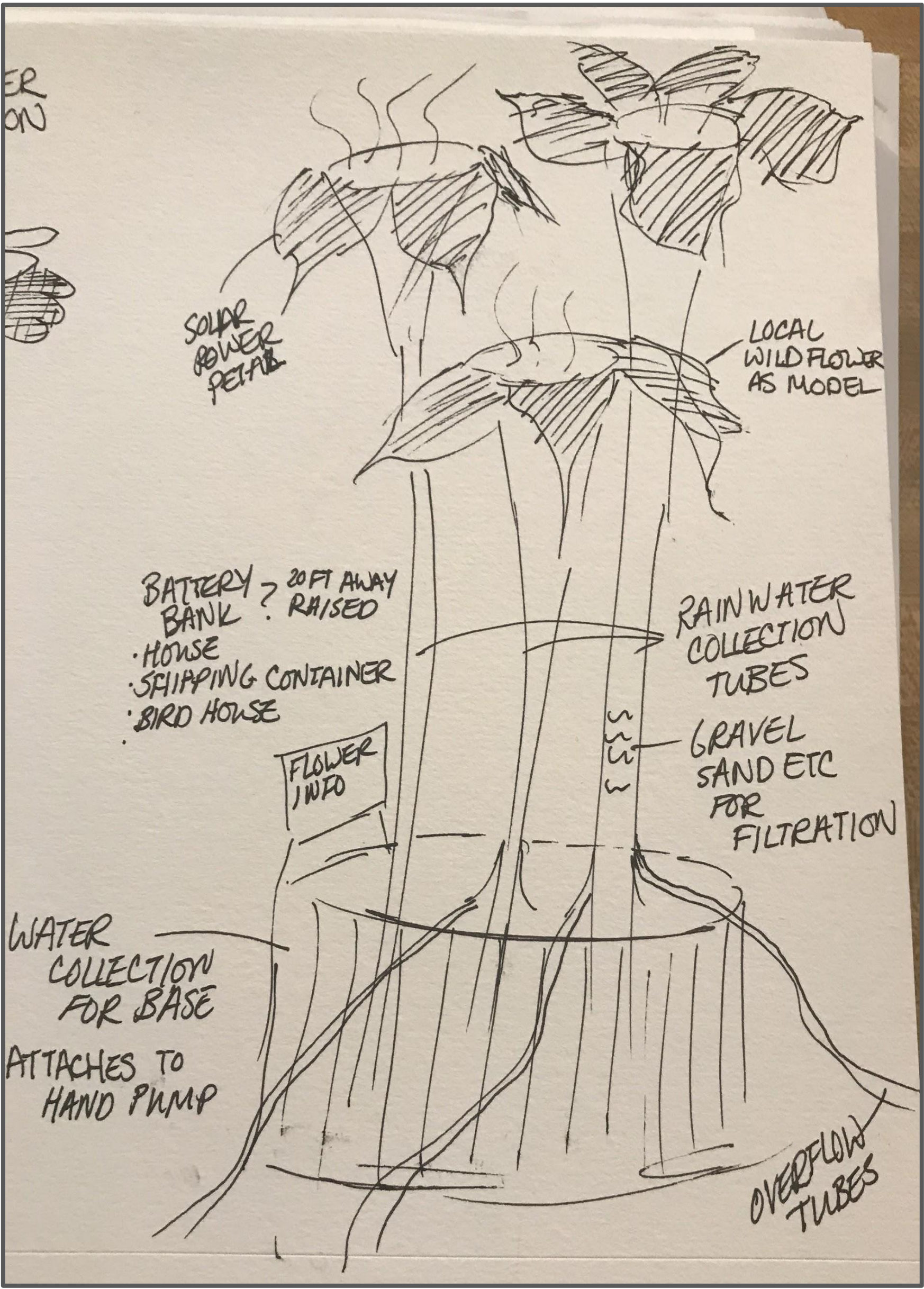
Lagi Design Competition

Power & Water

The Idea:

Giant Metal Art Sculptures in the form of local area Flowers. Each clump of flowers varied in height and style has a rainwater collection system through the stem and solar collection on the leaves and petals. Provides shade and shows how a solar farm could also be a work of art. Each plant would have an educational plaque with the description of what it was, when it blooms, and any unique features or information on it. As well as information on water purification and solar farming.

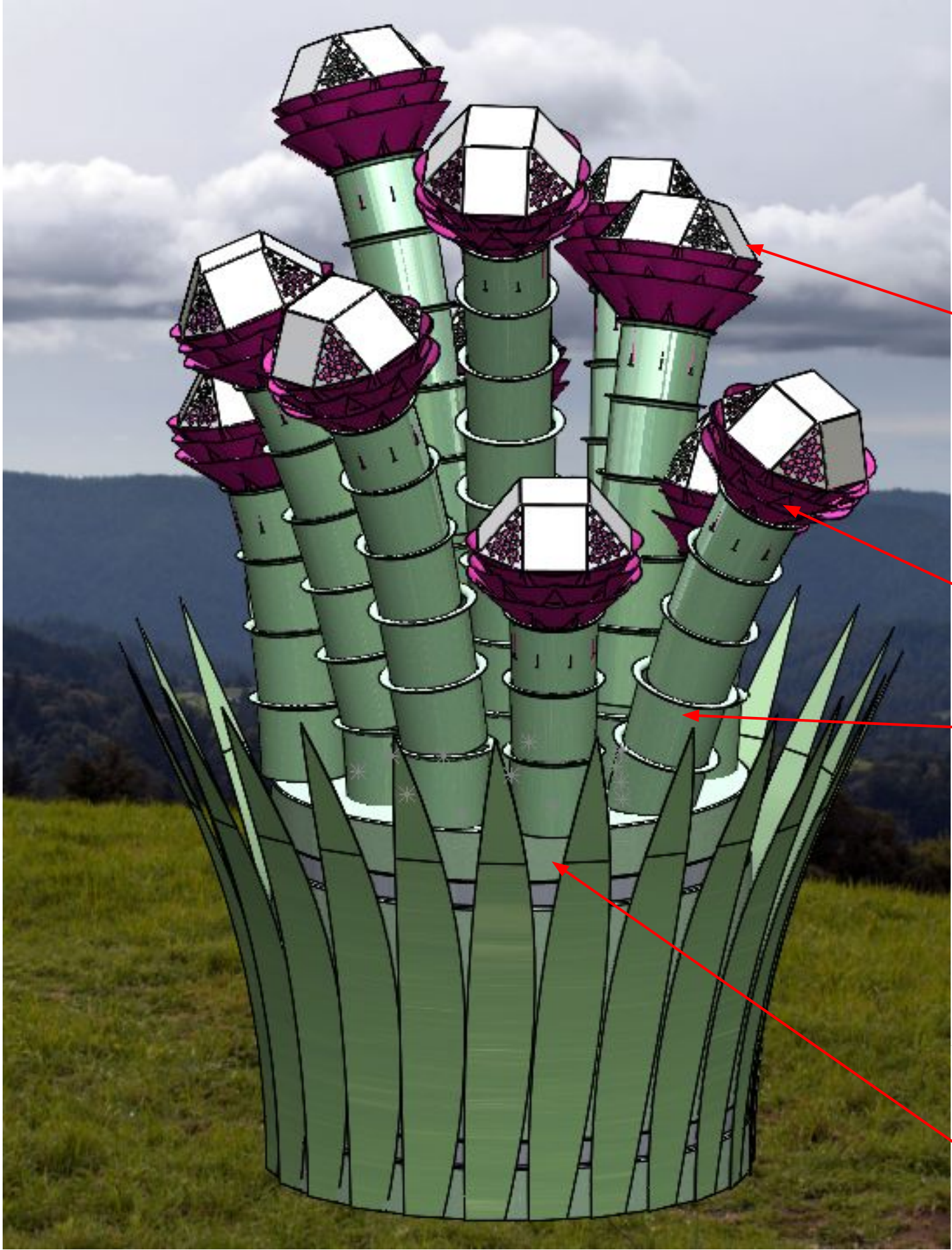
- Water barrels to collect 100+ gallons for human consumption or watering
- Solar panels collect 110 Amp Hour for use by living pods or trailers. Output to 110v plugs and/or USB



Team

This project requires a small amount of prototyping with materials for proof of concept. Concepts will be built in a workshop home. All manufacturing will be completed locally and done by hand. We are made up of a few experienced engineers, artists and makers.

Example of Rosy Everlasting



Solar Panel array on top of each flower. 5 panels per bud in this type of flower. Solar collection will be based on the number of flowers in the sculpture Goal is 100 Amp Hours minimum.

Stem and Petals are rainwater collection and purification



Rainwater Collection Barrel approximately 350-1000 Liters (100-250 gallons). Connects to pump offset from barrel. Can be used to water any vegetation or for drinking water.

- Not shown: Metal leaves with additional real estate for solar panels.
- Heavy duty plastic and powder coated steel will be used to handle the harsh environment and weather. Components are modular for easy upkeep.



Battery bank off the ground and away from water collection system. Shows how solar works behind a plexiglass window or wood door

Examples of Local Wild Flowers that flower clumps would be used for artistic design: [Plant Communities in Black Rock-High Rock Country](#)



evening primrose (*Oenothera* spp.)



desert parsley (*Lomatium* spp.)



wild onions (*Allium* spp.)



rosy everlasting (*Antennaria rosea*)



false dandelion (*Agoseris glauca*)



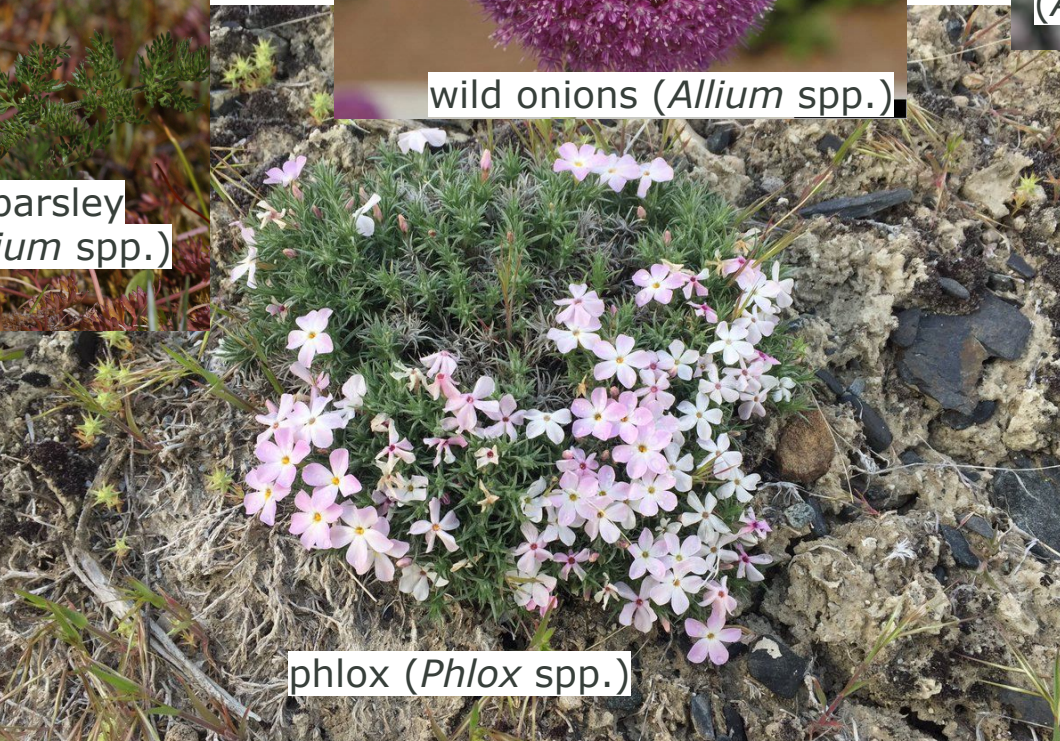
loco weeds (*Astragalus* spp.)



Arrowleaf (*Balsamorhiza sagittata*)



waterleaf (*Phacelia* spp.)



phlox (*Phlox* spp.)



Penstemon (*Penstemon* spp.)



lupines (*Lupinus* spp.)

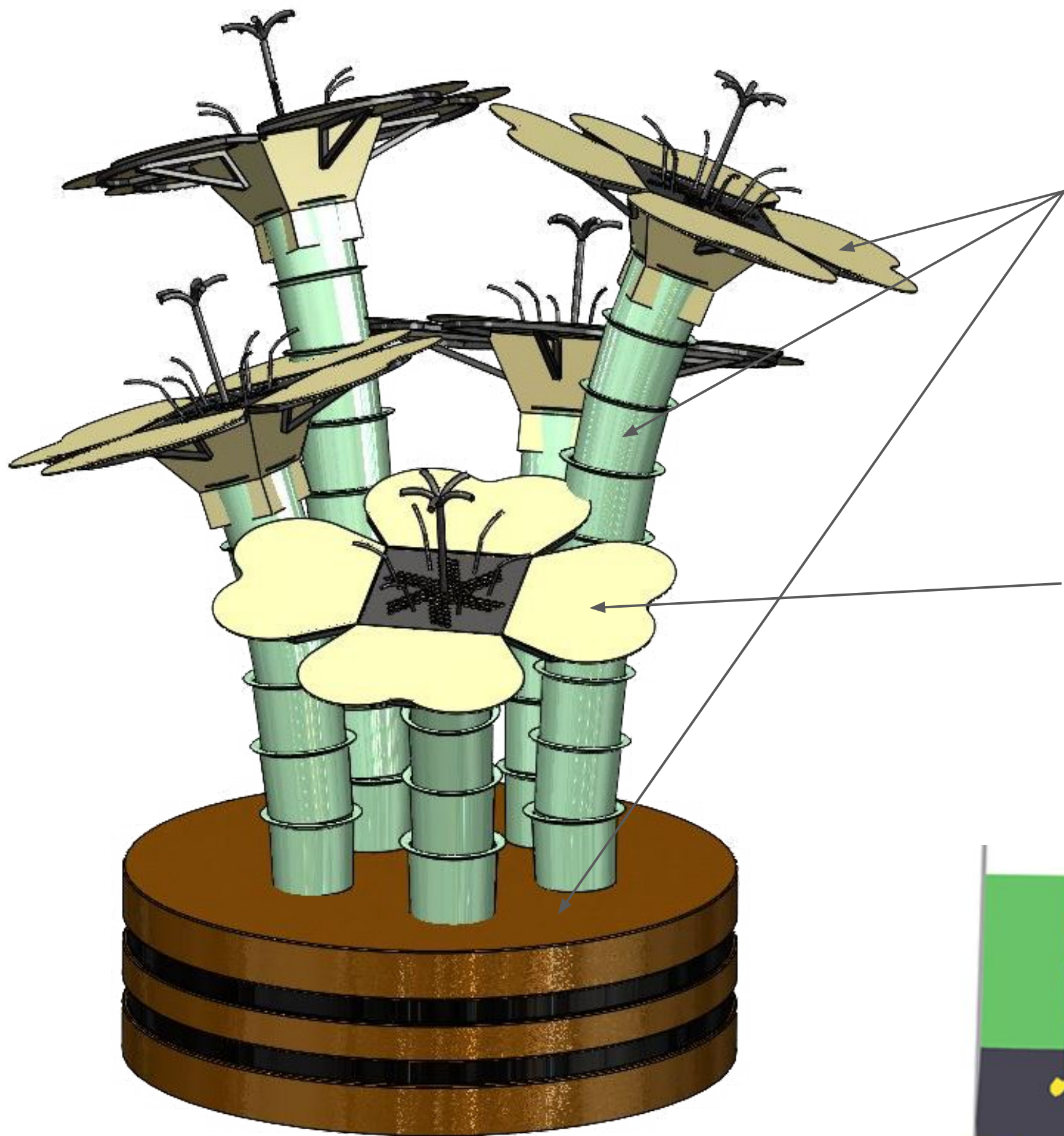


buckwheat (*Eriogonum* spp.)



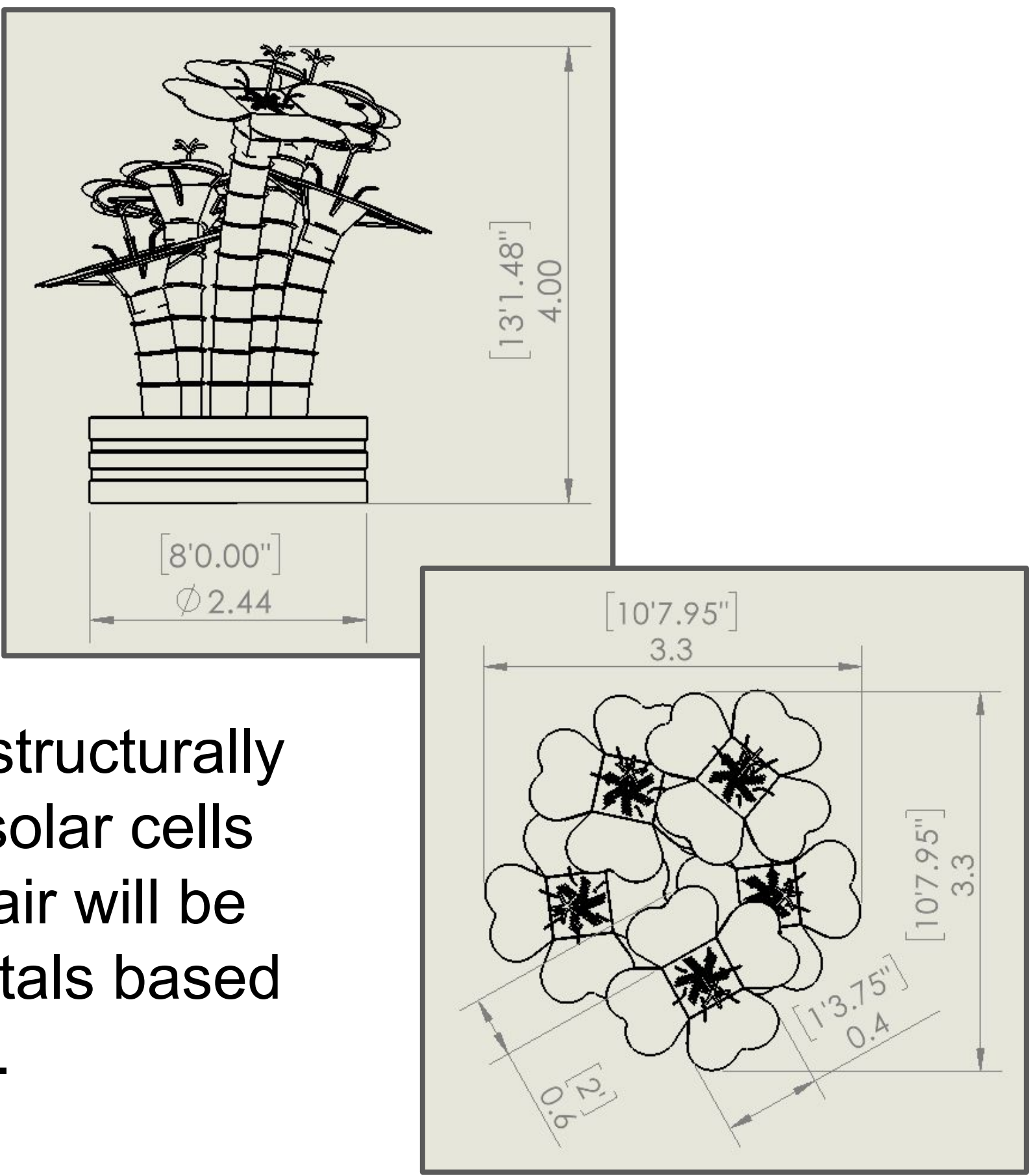
tapertip hawksbeard (*Crepis acuminatus*)

Example of Evening Primrose



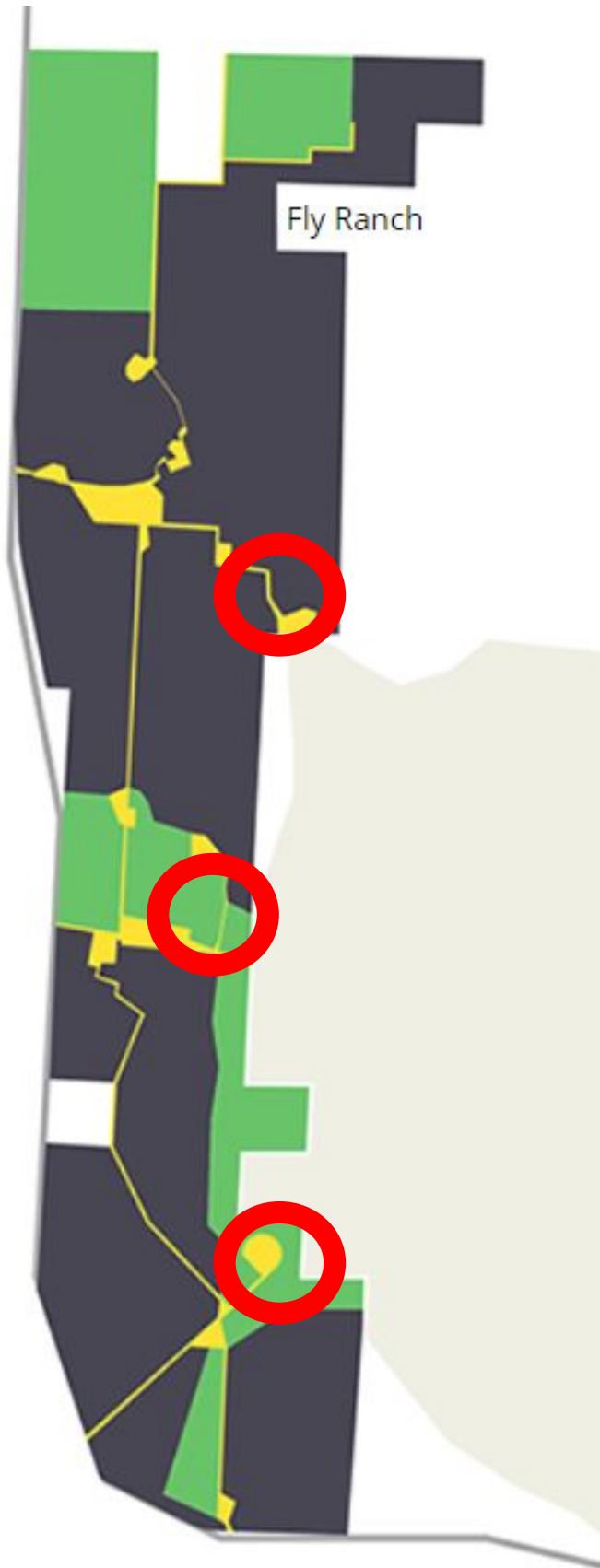
Colors of flowers, stems, and barrel to match the true colors of wildflowers in the area

Flowers are flat and structurally capable of handling solar cells and cables. Artistic flair will be added leaves and petals based on solar panel layout.



Teaching and Interaction

Each portion of the system should have an educational plaque explaining the science behind what is happening including solar, water collection, and local wildflower information. Education level to be 5th grade.



Location Thoughts

Flower structures should be placed near travel lanes throughout the ranch located in the yellow sections defined by the map.

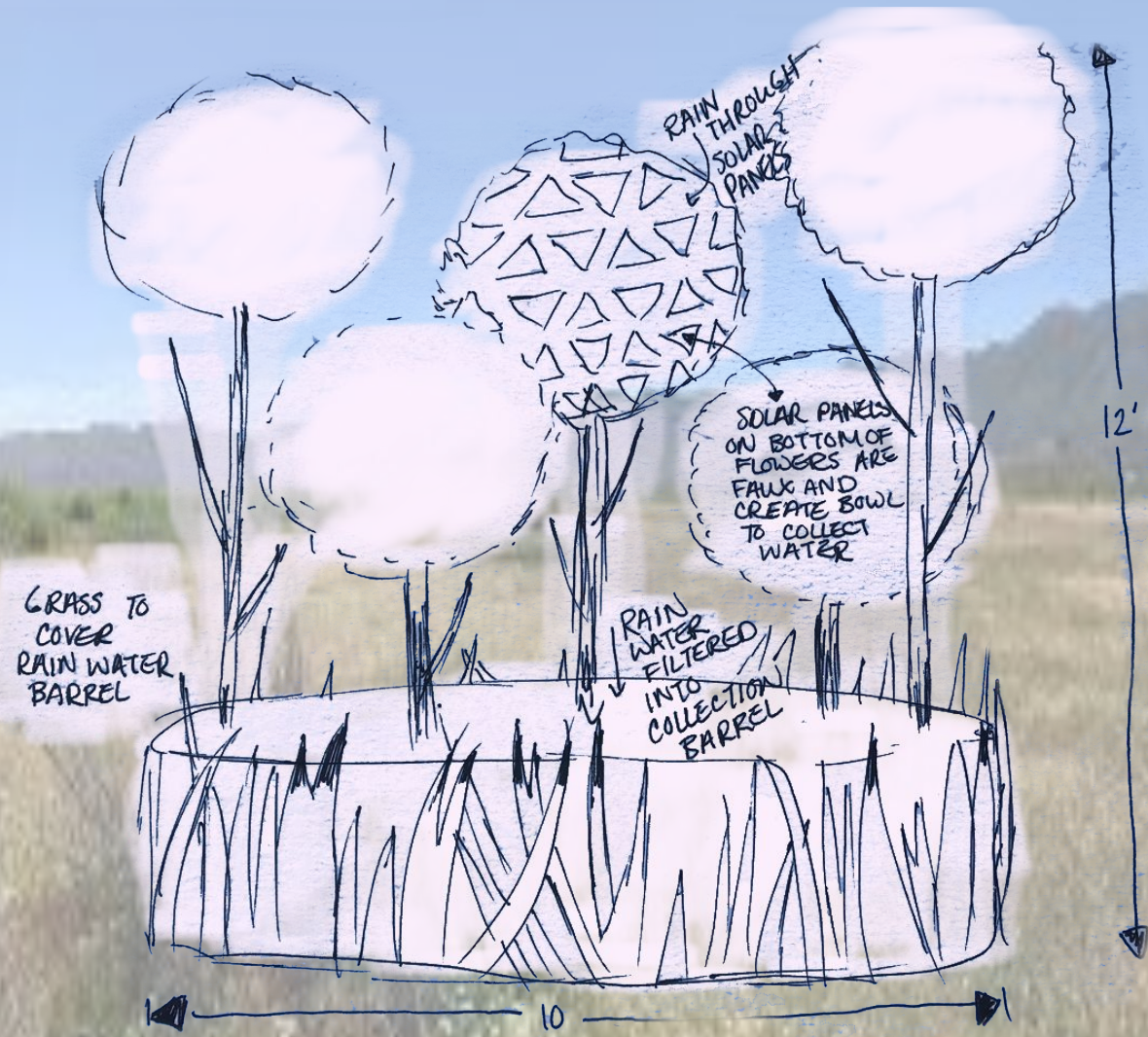
- During build and maintenance land would be minimally disturbed at a maximum of 4 meters in diameter
- Allows guardians and guests to interact with the structures easily
- Supports ability to bury power lines and water lines for safety
- Structures are as far east as possible to allow for maximum sun exposure, within the red circles.

Educational Information Plaque Example

- Evening primrose is a plant native to North and South America that also grows throughout Europe and parts of Asia. It has yellow flowers that open at sunset and close during the day. The oil from evening primrose seeds contains omega-6 fatty acids, including gamma-linolenic acid (GLA).
- Native Americans made poultices from the evening primrose plant for bruises and wounds and used its stem and leaf juices as topical remedies for skin inflammations. The leaves were taken orally for gastrointestinal complaints and sore throats. In the 17th century, evening primrose oil became a popular folk remedy in Europe, where it was known as "King's cure-all."
- Today, evening primrose oil dietary supplements are promoted for atopic dermatitis (a type of eczema), rheumatoid arthritis, premenstrual syndrome (PMS), breast pain, menopause symptoms, and other conditions. Evening primrose oil may also be included in products that are applied to the skin.



Example of Allium



Example of Arrowleaf



Example of Waterleaf



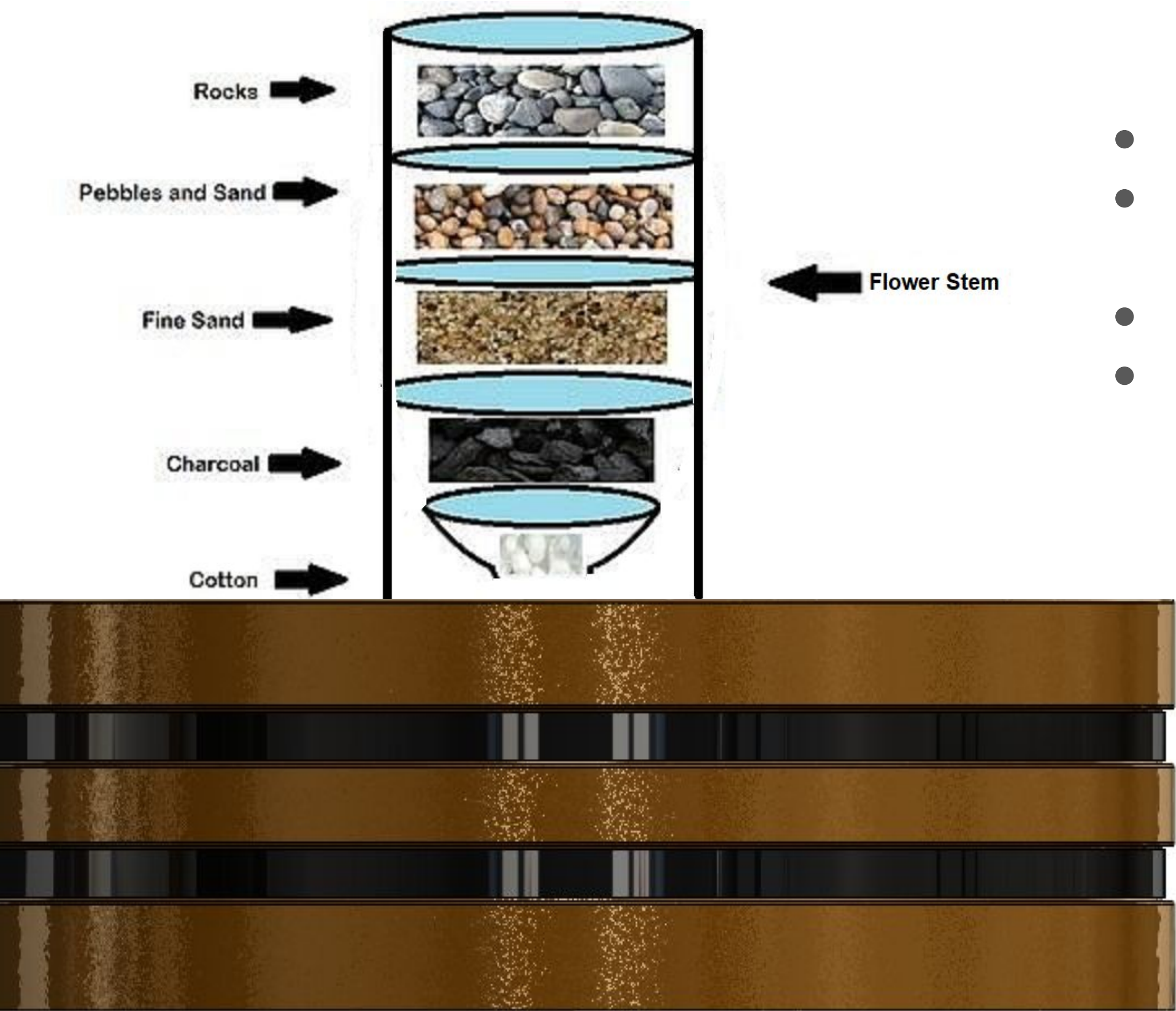
Environmental Assessment

Our goal as a team is to have the least possible effect on the surrounding land and ecosystems of fly ranch. To obtain this goal our plan is to fabricate in Portland Oregon and assemble on Fly Ranch when the time comes. Design testing and validation will happen in Portland on a smaller scale to test all engineered concepts. Design will incorporate materials and coatings that can withstand the weather and environment of the Black Rock desert without degradation or damage to the surrounding area. Material type should reduce the amount of maintenance required. Components will be made to be modular which will ease servicing or replacing items for any reason. Coloring and material to be as close to natural surrounding habitat to blend into the surrounding area and affect local wildlife.

The following is a list of digging and holes that need to made for installation that will disrupt the land. For safety electrical cables need to be buried a minimum of 1 meter underground and 3 meters from the water collection barrel. Water line to be buried ½ meter underground and ½ meter away from the water collection barrel. Water Barrels need to be anchored to the ground using 1-2 meter length anchors with a minimum of 3 anchors for the circumference of the barrel. The maximum affected area for flower cluster is 4 meters.

Maintenance should be limited to replacing the water filtration materials and replacement of the batteries approximately every 5 years. Solar panels need to be cleaned occasionally for better performance.

Rainwater Collection System



- Water purification happens inside the stem of each flower
- Rain barrel is attached to pump offset from flowers with fresh water spicket
- Rainwater can be used by visitors or to feed a greenhouse
- Needs to have a backup out spout if it is not being used up allowing the water to go back into the land not seen in models



Solar Panel Recommendation

<https://fullbattery.com/collections/solar-cells>

Sign in or Create an Account

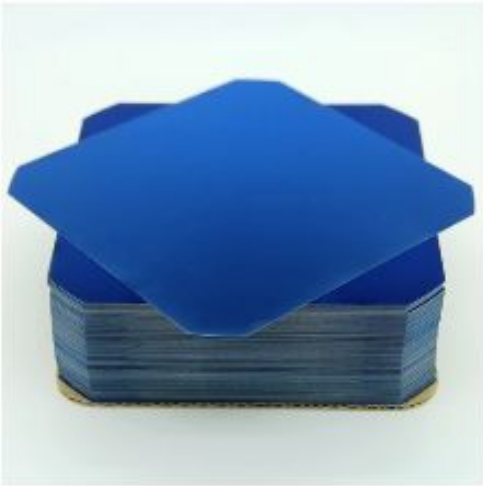
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SOLAR CELLS



Sunpower C60 Solar Cell
3.55W
\$3.69



Dog Bone Bus Bar
tabbing strip interconnect
for Sunpower C60 Solar
Cells
\$0.18



Copper flat wire - solar
tabbing strip bus wire
\$0.25

Battery Recommendation

<https://www.renogy.com/deep-cycle-hybrid-gel-battery-12-volt-200ah/>

Renogy Deep Cycle Hybrid Gel Battery 12 Volt 200Ah

4.3 ★★★★★ 31

Renogy

Renogy's 12V Deep Cycle Hybrid GEL Battery is an excellent choice for standby or daily power needs – even in the most severe conditions. Built tough with a leak-proof ...

Other options

View all product details

\$404.99
+\$0.00 est. tax
Renogy

\$477.31
+\$0.00 est. tax
Home Depot
92% positive

\$482.13
+\$0.00 est. tax
Lowe's
Free delivery by Wed, Nov 4
92% positive

Compare prices from 5+ stores

- Ideally we would like to use solar cells placed in a unique pattern matching the petal outline of the different flowers
- Batteries to be housed offset from flowers with outlets