

# Permaculture Design Plan for the María Amor Foundation



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For:  
María Amor Foundation

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## Abstract

The María Amor Foundation, a women's shelter for domestic abuse victims, sits on a large unused plot of land. The goal of our project was to design an integrated land-use plan to provide food for internal use as well as to sell. Onsite we interviewed employees of the foundation and visited local farms to learn about the needs of the foundation and local agriculture practices. Our final design included functional, sustainable features which allows the shelter to serve as a safe space for women to recover and reconnect with nature. We left the property with suggestions on how to evolve to be completely self-sustaining.

## María Amor's Mission

The María Amor Foundation, located in Cuenca, Ecuador, has been dedicated to providing shelter for women and their children who are victims of domestic abuse since 2004. María Amor sought to counter domestic violence through their mission of creating a safe and welcoming space for these victims to recover. The foundation provides sanctuary for about 100 women and 150 children each year. Food, shelter and counseling are just a few of the amenities offered to the residents. A newer building, the Nina Huasi shelter, was donated to the foundation at the end of 2013 and currently sits on a largely unused plot of land.

## Who We Are

We are a group of four engineering students from Worcester Polytechnic Institute. The María Amor Foundation partnered with our university to allow us to complete an interactive qualifying project that could meaningfully contribute to the foundation. We arrived in Cuenca mid-October and worked until the middle of December of 2018. Throughout the process we consulted administratives working for the foundation and local agriculture experts to design a land-use plan for Nina Huasi that would suit the needs of the foundation as well as provide a place for the women to reconnect with nature.

## The Design

Our goal for this project was to design a permaculture land-use plan for the María Amor Foundation. To fulfill this goal, we had identified three objectives:

1. Understand the best practices in sustainable landscapes

2. Record the needs and expectations of the stakeholders
3. Assess the limitations and opportunities of the land



Figure 1: Final Design Plan

## Our Recommendations

### Recommendation 1: Plants and Animals

We recommend that these plants be grown in the fields at Nina Huasi:

- Alfalfa
- Quinoa
- Chocho
- Corn
- Garlic
- Onion
- Potato
- Jicama
- Oca
- Melloco

We recommend that these plants are grown in the greenhouse at Nina Huasi:

- Ají
- Broccoli

- Cabbage
- Lettuce
- Cauliflower
- Tomato

We recommend that these fruit trees be grown at Nina Huasi:

- Plum
- Peach
- Mora
- Lemon
- Fig
- Tomate de Arbol

We recommend that these medicinal herbs be grown at Nina Huasi:

- Chamomile
- Mint
- Lamb's ear
- Rosemary
- Oregano

We recommend that these animals are raised at Nina Huasi in their respective amounts:

- Hens (15-20)
  - Chickens are easy to take care of so twenty will not be difficult. They will also provide four to five eggs daily. We recommend buying egg-laying chickens to maximize egg output. We recommend buying chicks to start.
- Guinea Pigs (1 Male, 5 Females)
  - Guinea pigs reproduce rapidly. Six will allow for them to start breeding and producing food. More guinea pigs would be difficult to separate and control, and might reproduce more than needed without careful attention.
- Pigs (2)
  - Each pig provides a lot of meat, but also require a lot of attention and food to raise. The farm must be built up first so that there will be enough excess food to feed them. Two will be a good starting point without being overwhelming. We

suggest buying piglets instead of breeding pigs as it can be difficult, and pigs have eight to twelve piglets at a time.

We recommend the following in terms of composting:

We recommend that the property continues to produce compost following the procedures already in place. In the event that there is a greater need for compost than what is being produced, yeast can be added to the mixture to speed up the decomposing process.

### Recommendation 2: Landscape Design

Our landscape design encompasses a plan for the entire property. It includes values of permaculture to create the most practical land use plan for the María Amor foundation. It takes into account existing landscape features and buildings to layout an achievable, sustainable and functional farm. Each of these features is part of our master plan, and they will be broken up into increments for implementation in the timeline section.

The growing fields are placed in locations in which terraces and clearings already exist. They were placed here to minimize effort needed to prepare them for crops (Figures 2 and 3).

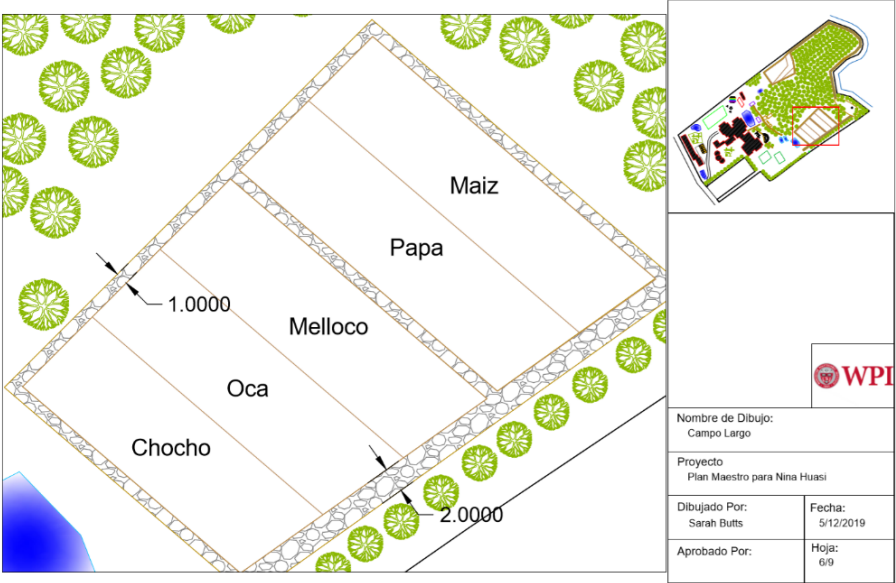


Figure 2: Large Field

A cluster of fruit trees should be placed next to the smaller field to provide plenty of fruit (Figure 2). A new reservoir should be placed close by to allow for easy irrigation (Figure 3).

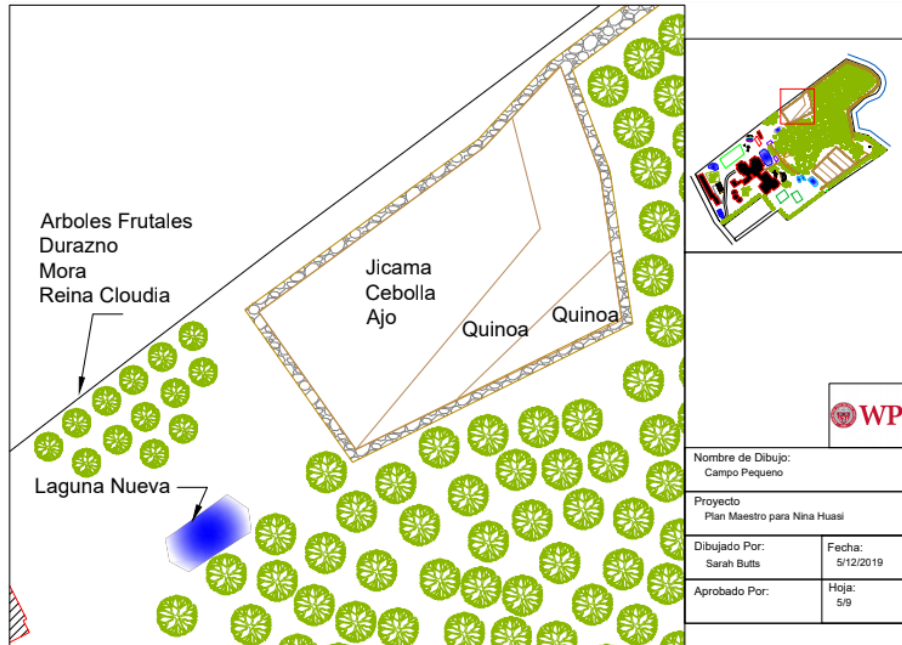


Figure 3: Small Field with Reservoir

Our animal pens are positioned an adequate distance apart from one another with their doors facing perpendicular to the wind (Figure 4). They are close together to make caring for them more convenient for workers on the farm. They are placed close to the main buildings to offer protection from local wildlife. They are also placed amongst the trees in the forest to offer protection from the wind and sun. Each animal has certain requirements for their pens. We recommend that the pigs be given strongly reinforced pens that prevent them from breaking or uprooting them. The guinea pigs should have at least eight sections in their pen so they can be properly separated. We recommend splitting their four meter by one meter pen into eight half meter by meter sections. The chickens should have a coop that protects them from predators as well as a pen for them to roam. We also recommend planting alfalfa close to the animals to make feeding the guinea pigs easier.

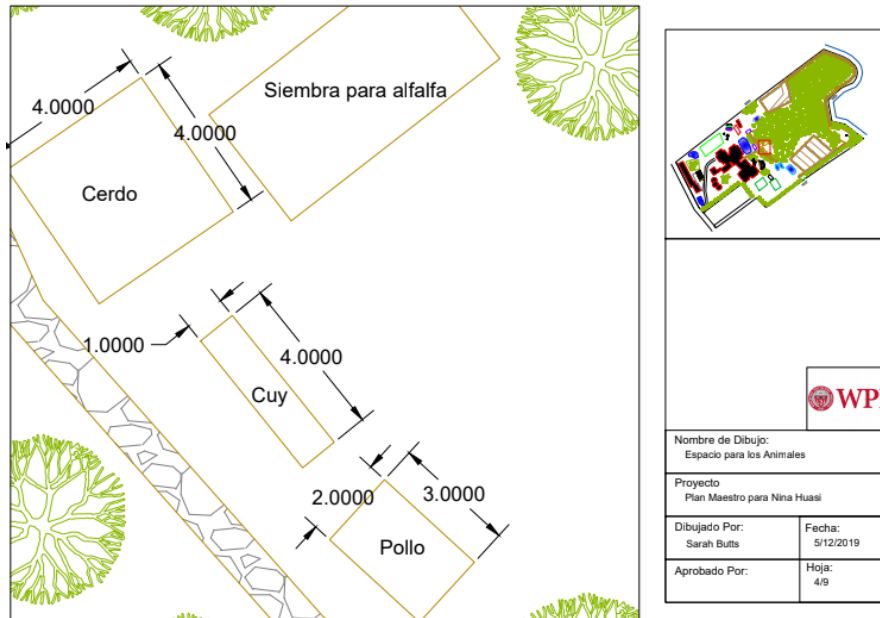


Figure 4: Animal Pens

We suggest a path that runs from the back entrance of the shelter to the greenhouse (Figure 5). We recommend an herb garden, a bench, fruit trees, and a bird garden along this path. This will bring nature closer to the shelter, and give the residents an additional place to relax.

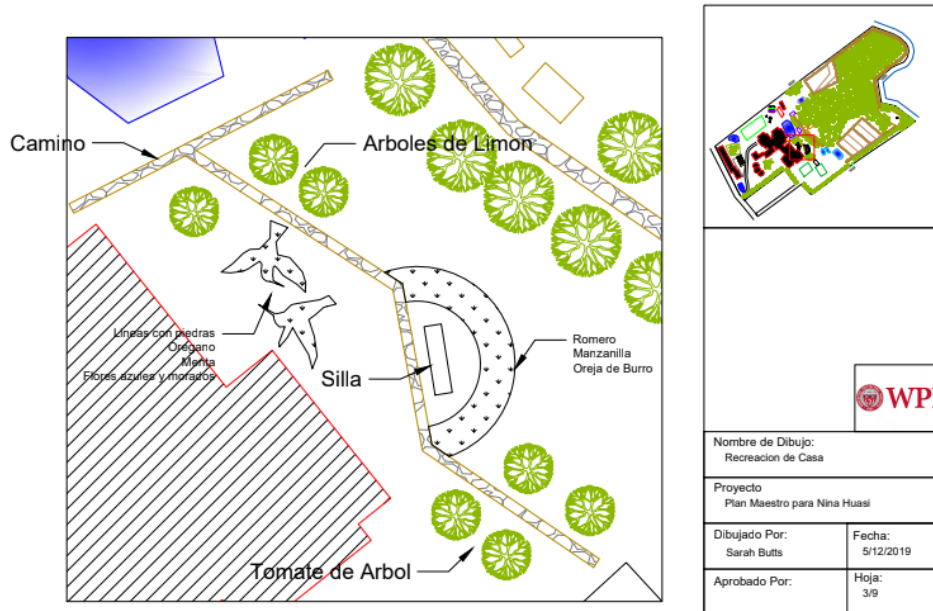
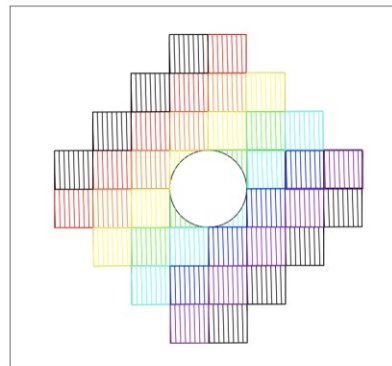


Figure 5: Herb Garden



Placing an herb garden between the laundry facility and the soccer field will allow for easy access of medicinal herbs when needed (Figure 6). The garden is in the shape of a chakana to incorporate local culture.



Hecho de hierbas y flores  
Encima de la colina

WPI

Nombre de Dibujo: Chakana de Hierbas y Flores	
Proyecto Plan Maestro para Nina Huasi	
Dibujado Por: Sarah Butts	Fecha: 5/12/2019
Aprobado Por:	Hoja: 8/9

Figure 6: Chakana Herb Garden

A relaxation area is placed by the river to provide a secluded, quiet place for the residents to spend time with nature (Figure 7). Another area is placed by the soccer field and one of the suggested herb gardens so that the residents spend more time around the herbs and help facilitate any interest in gardening (Figure 8).

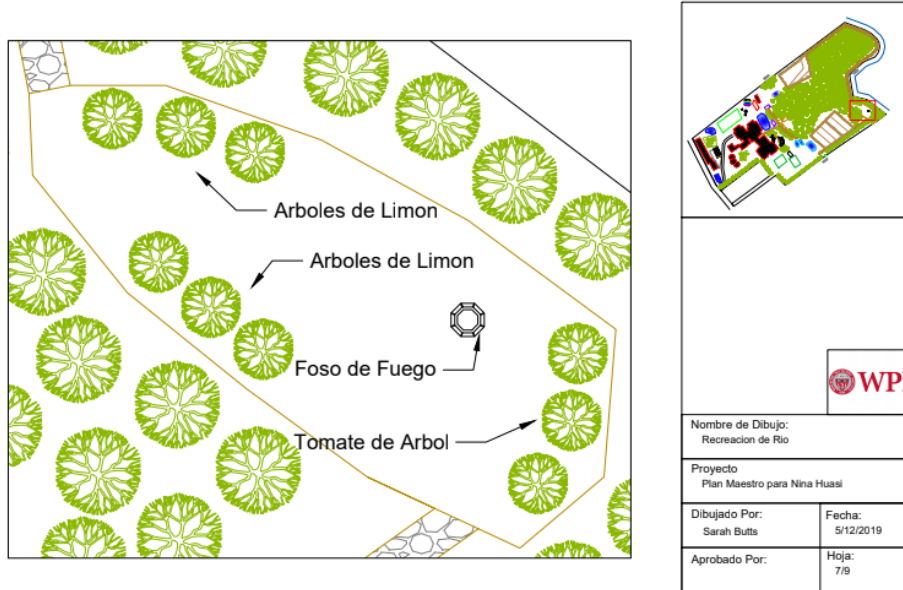


Figure 7: Relaxing Area by River

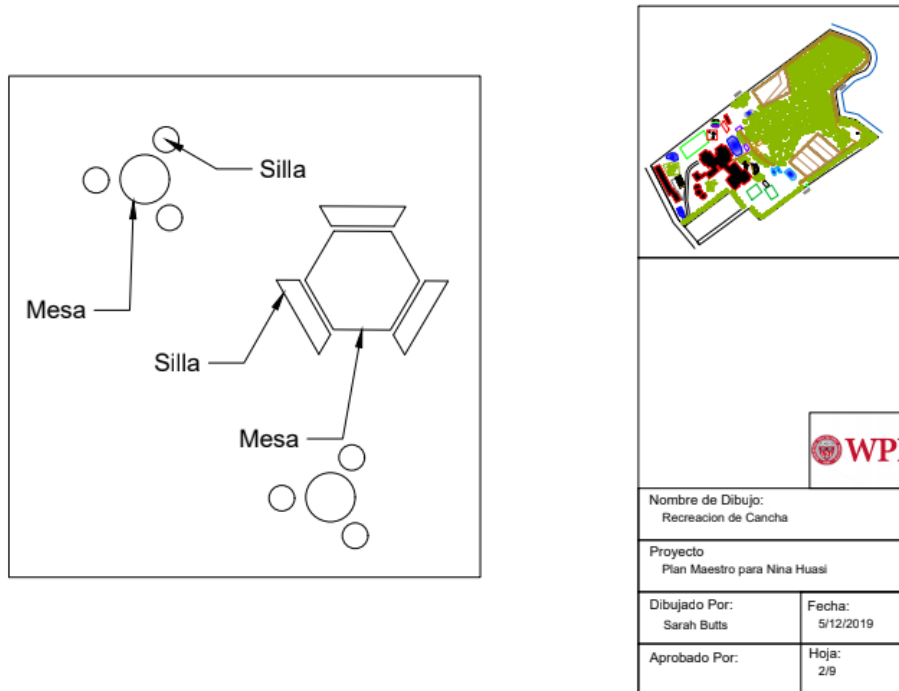


Figure 8: Relaxing Area by Soccer Field

We recommend a few additional features. Placing fruit trees along the edge of the property will make use of normally unused space, and offer more privacy for the women's shelter. Changing the current herb garden into a children's garden will allow for the children to feel more involved while sparking their interest in sustainable farming. It serves as an opportunity to teach children not only about gardening but about the importance of sustainability and recycling. The old herb garden is the perfect spot for this because it is next to the playground and daycare center where the children are all day. Lastly, we suggest making a path down the right side of the property will allow residents to take a walk by the farm down to the river. This path doubles as an easy access route to the crops

### Recommendation 3: Timeline

We recommend constructing landscape elements in three stages. Since each element's construction depends on raised funds and availability of volunteers, it would be limiting to follow a year by year schedule. Increments can be implemented whenever labor and funds are available.

#### Stage 1:

- All fruit trees
- Chickens
- Crops in the large field
- Greenhouse revamp

#### Stage 2:

- Guinea Pigs
- All crops
- Herb gardens
- Fix current relaxing area with bench
- New reservoir
- Hire at least one dedicated full time caretaker

#### Stage 3:

- Pigs
- All relaxing areas and trails
- Children's garden

## Conclusion

With this landscape design plan, María Amor will be able to grow food for internal use and to sell at local markets. The plan allows for the sustainable cultivation of crops and incorporates areas to allow women to recover. María Amor needs funding and volunteers to build and maintain their farm. With a fully built and functioning farm, María Amor will be able to produce enough food for the women staying in the shelter, to use in their cafe and eventually to open an organic restaurant.