

Binder 4: Process

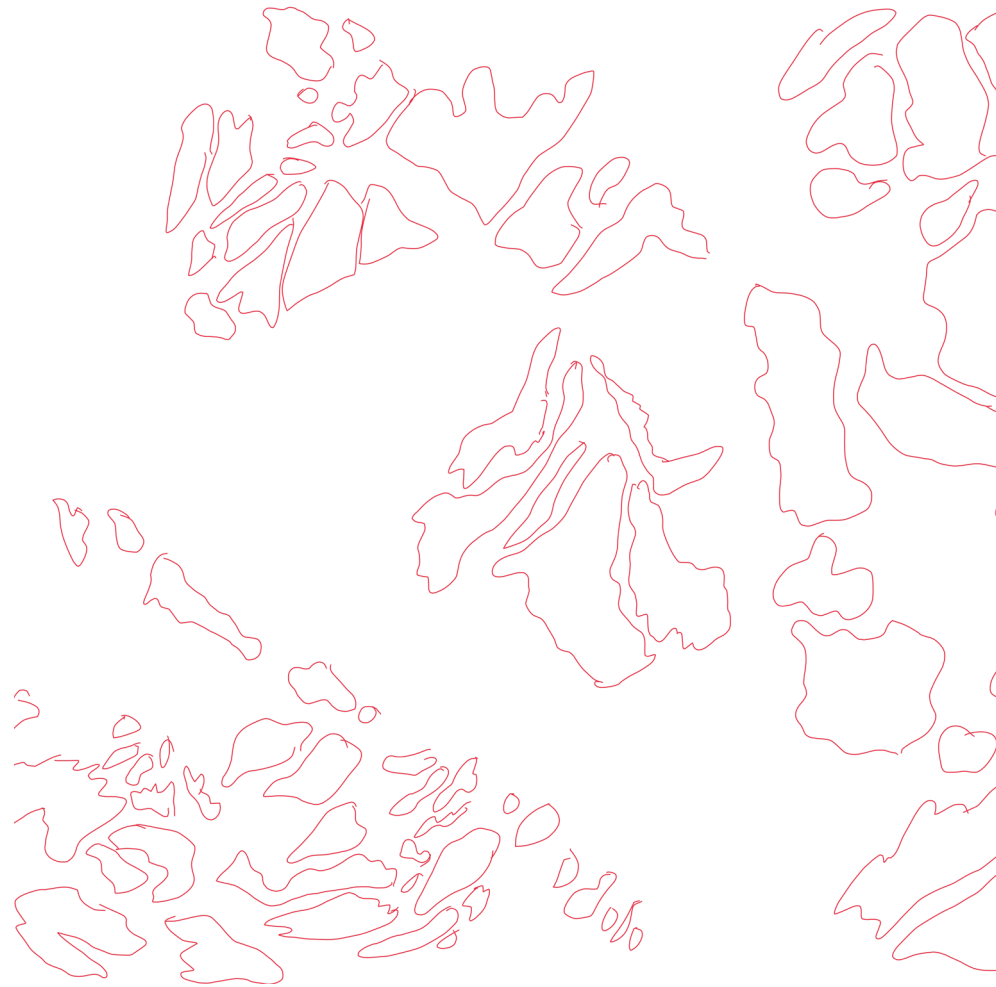
Sergio Andrés Gómez Barrios
Landscape Architecture
Spring 2023

Landscape tracings

Tracing small scale patterns



Tracing large scale patterns



Tracing directionality

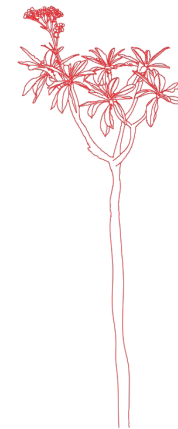


Tracing river and clearings



Frailejones tracings

Espeletia Hartwegiana



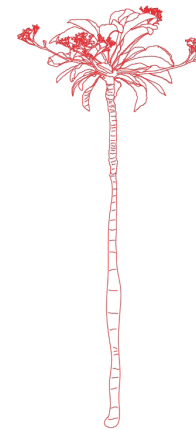
Maximum height: 12 m
Colombia and Venezuela
Endangered species

Tamania Chardonii



Maximum height: 4 m
Colombia
Least concern species

Espeletia Uribei



Maximum height: 10 m
Colombia and Venezuela
Endangered species

Espeletiopsis Purpurascens



Maximum height: 4 m
Colombia
Least concern species

Espeletia Barclayana



Maximum height: 1.8 m
Colombia
Endangered species

Espeletia Tunjana



Maximum height: 2 m
Colombia
Near threatened species

Espeletia Schultesiana



Maximum height: 1.5 m
Colombia and Venezuela
Critically endangered species

Espeletia Steyermarkii



Maximum height: 3 m
Colombia
Vulnerable species

Espeletia corymbosa



Maximum height: 1 m
Colombia
Critically endangered species

Espeletia Raquirensis



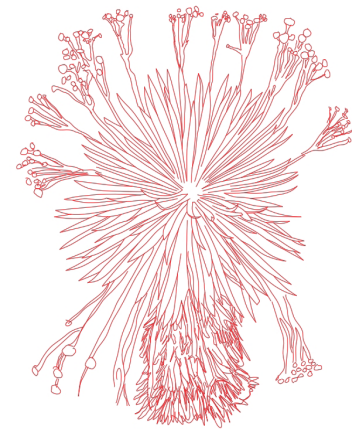
Maximum height: 2.5 m
Colombia
Least concern species

Paramiflos Glandulosus



Maximum height: 1.5 m
Colombia
Critically endangered species

Espeletia Paipana



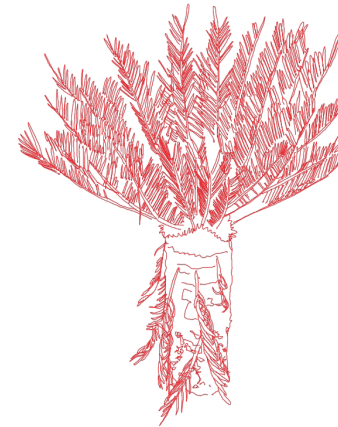
Maximum height: 1.5 m
Colombia
Vulnerable species

Blechnum Loxense



Maximum height: 1.2 m
Colombia
Critically endangered species

Espeletia Oswaldiana



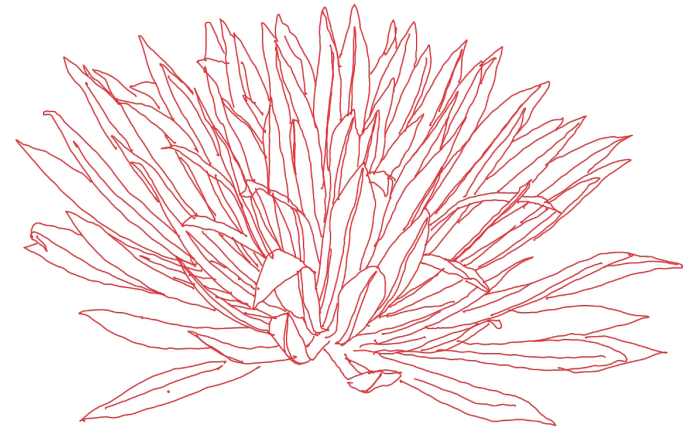
Maximum height: 1.5 m
Colombia, Bolivia, Ecuador, Perú and Venezuela
Non-threatened species

Espeletia Argentea



Maximum height: 1.5 m
Colombia
Critically endangered species

Espeletia Miradorensis



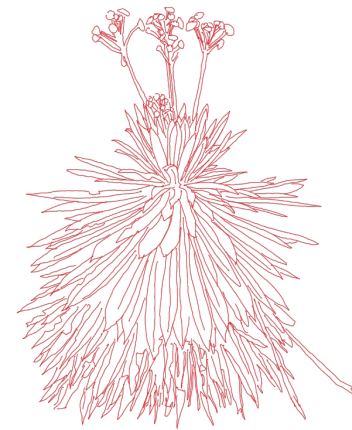
Maximum height: 1 m
Colombia
Least concern species

Espeletiosis Santanderensis



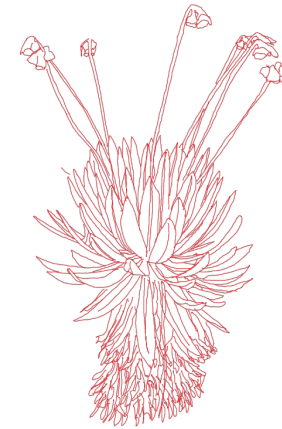
Maximum height: 1.2 m
Colombia
Critically endangered species

Espeletia Mirabilis



Maximum height: 1 m
Colombia
Non-threatened species

Puya Goudotiana



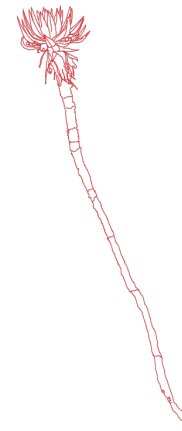
Maximum height: 2 m
Colombia
Critically endangered species

Espeletia Dugandii



Maximum height: 2 m
Colombia
Non-threatened species

Puya Nitida



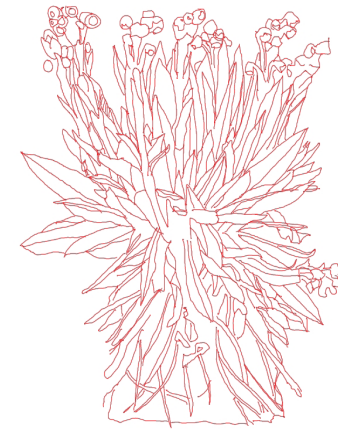
Maximum height: 6 m
Colombia
Critically endangered species

Espeletia Cachaluensis



Maximum height: 2 m
Colombia and Venezuela
Non-threatened species

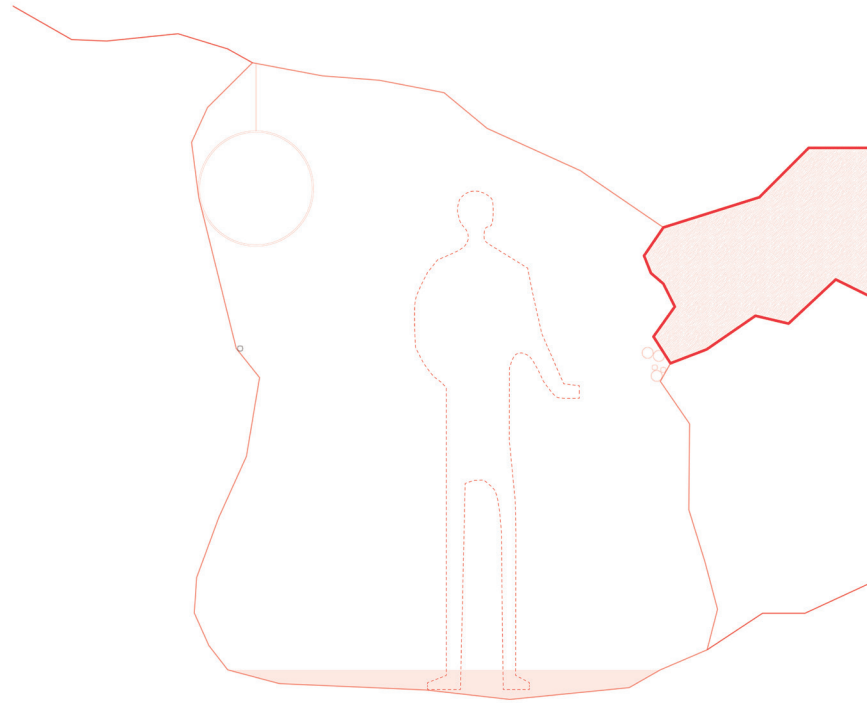
Espeletia Azucarina



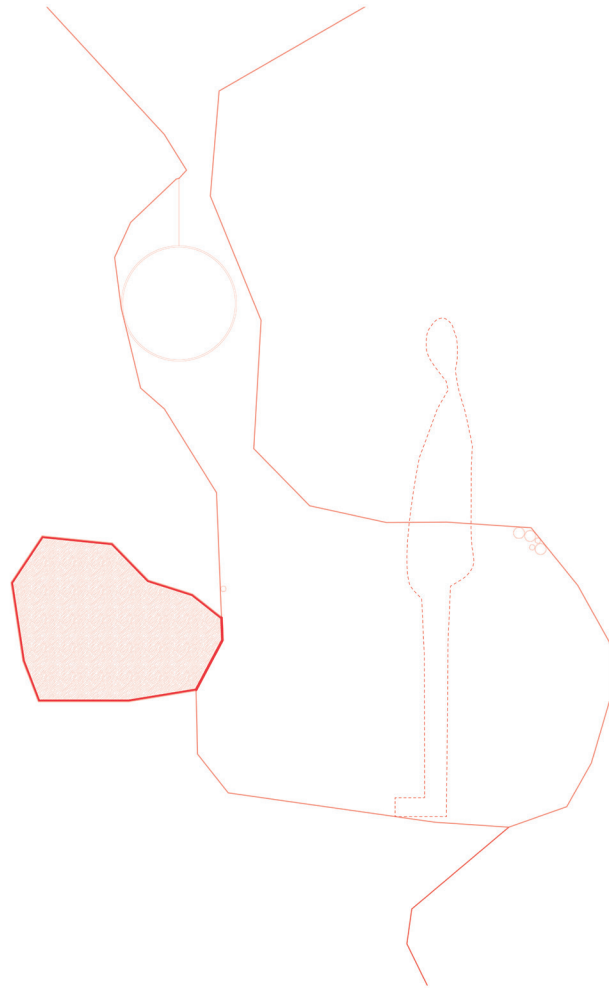
Maximum height: 1 m
Colombia
Critically endangered species

Mine Research

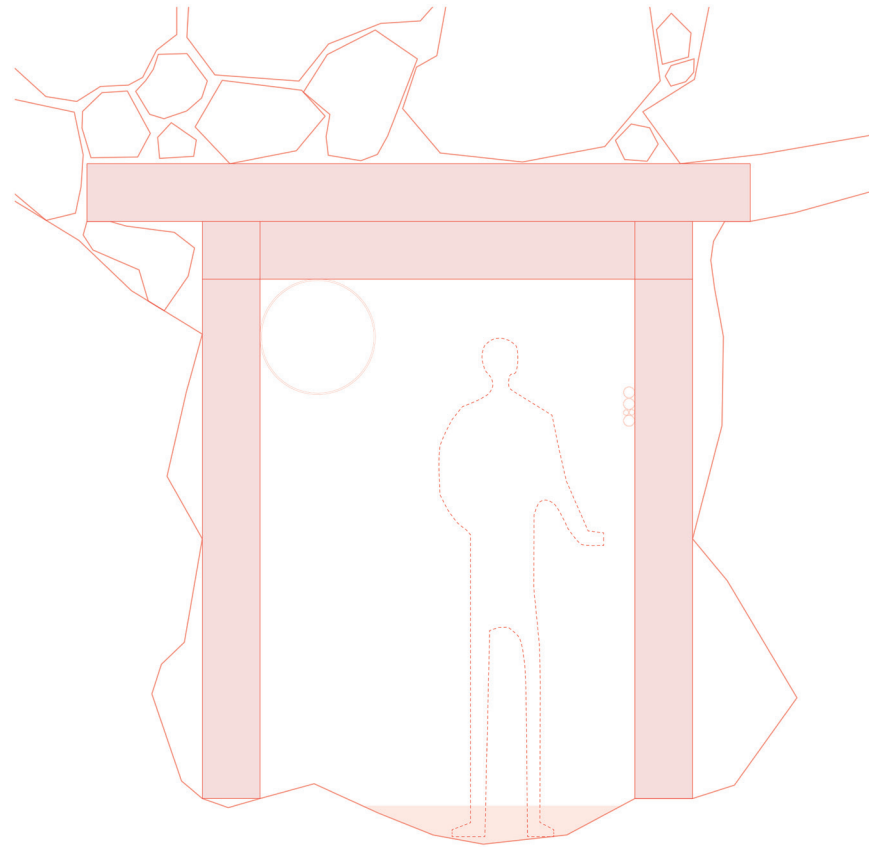
Regular space of a mine



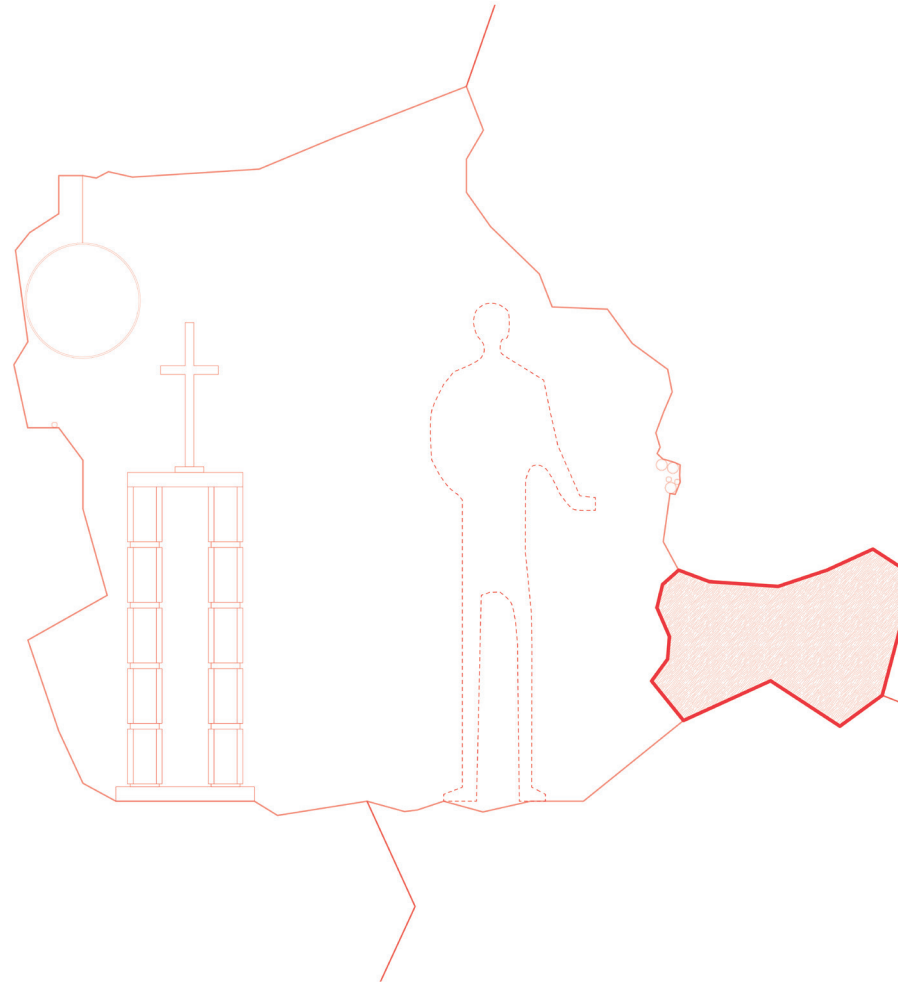
Tight spaces of a mine



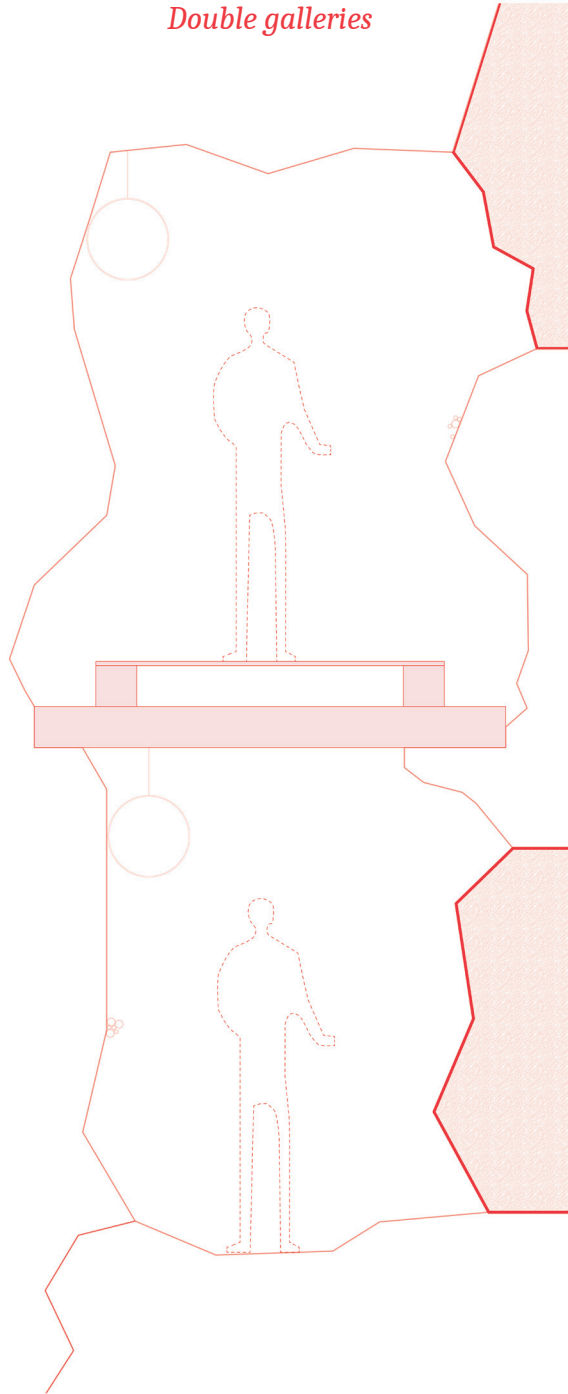
Structures to contain landslides



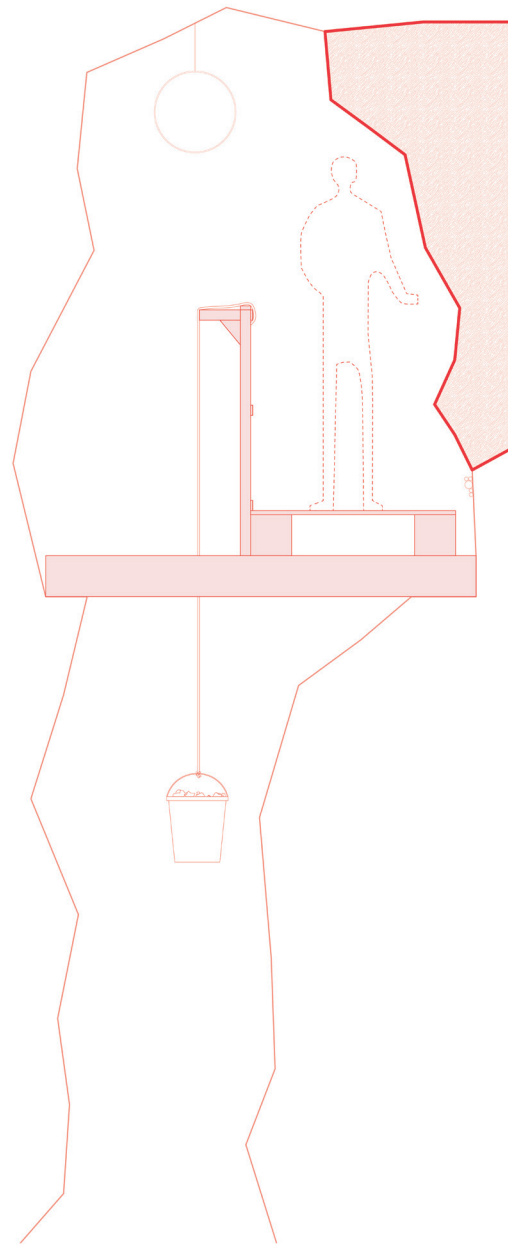
Religious areas



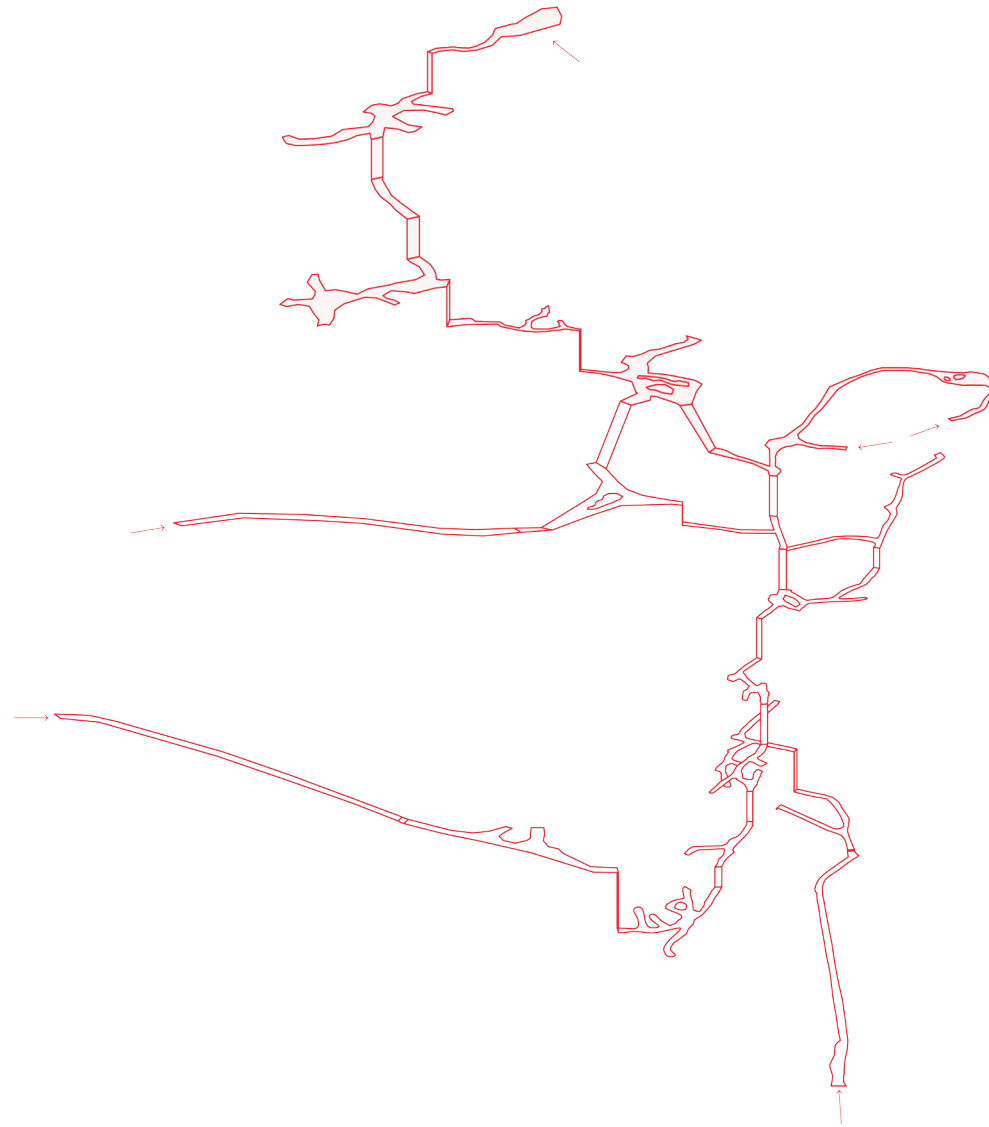
Double galleries



Handcrafted lifts for material movements

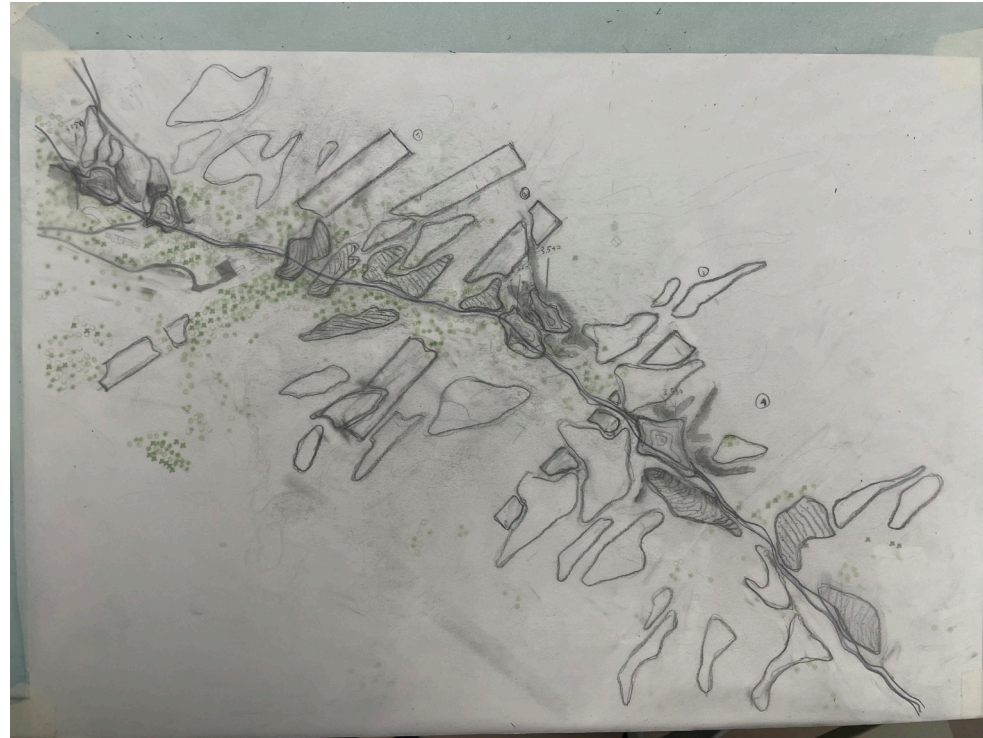


Axonometric of a existing mine

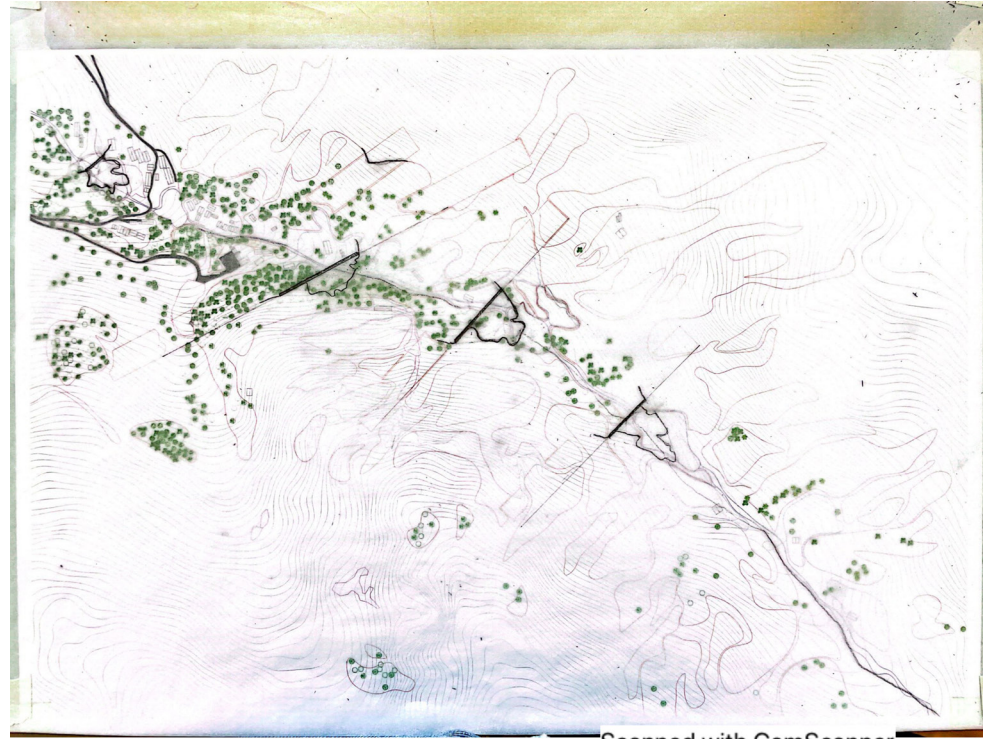


Sketches

Main landscape structure

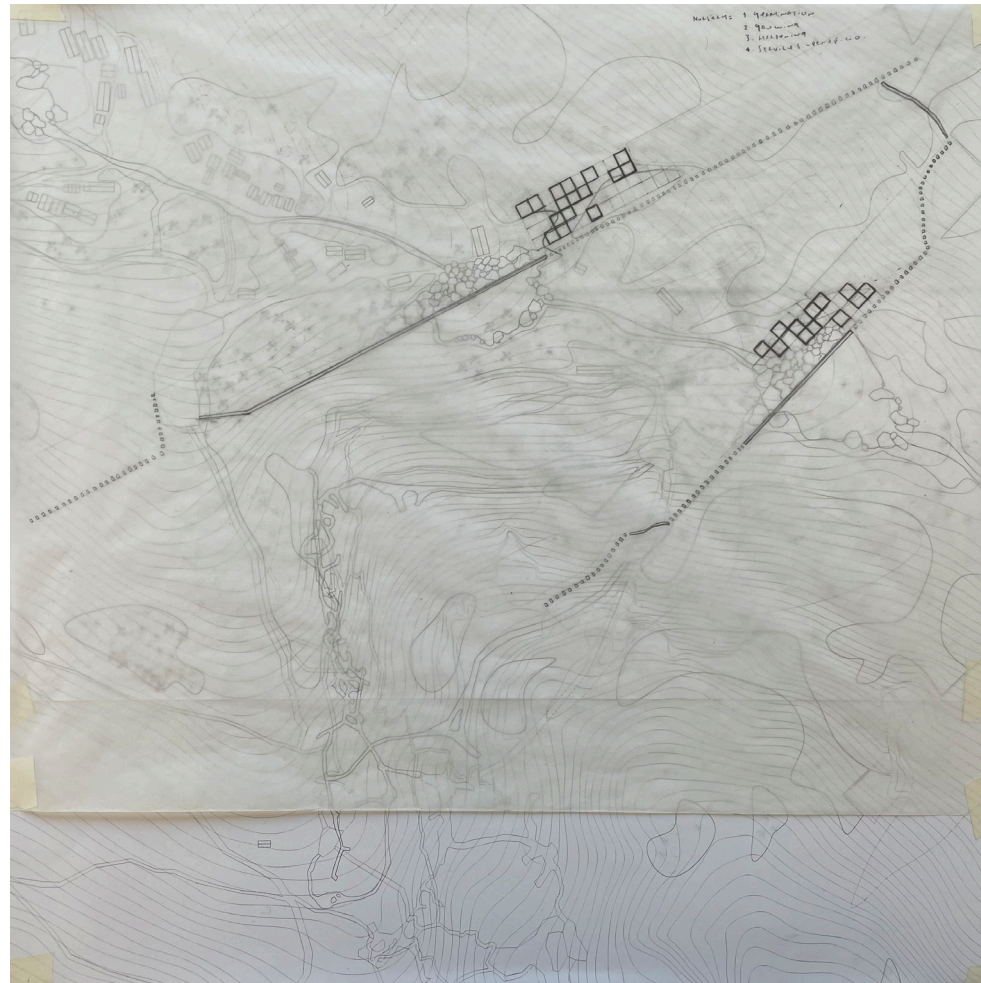


Ponds for water treatment

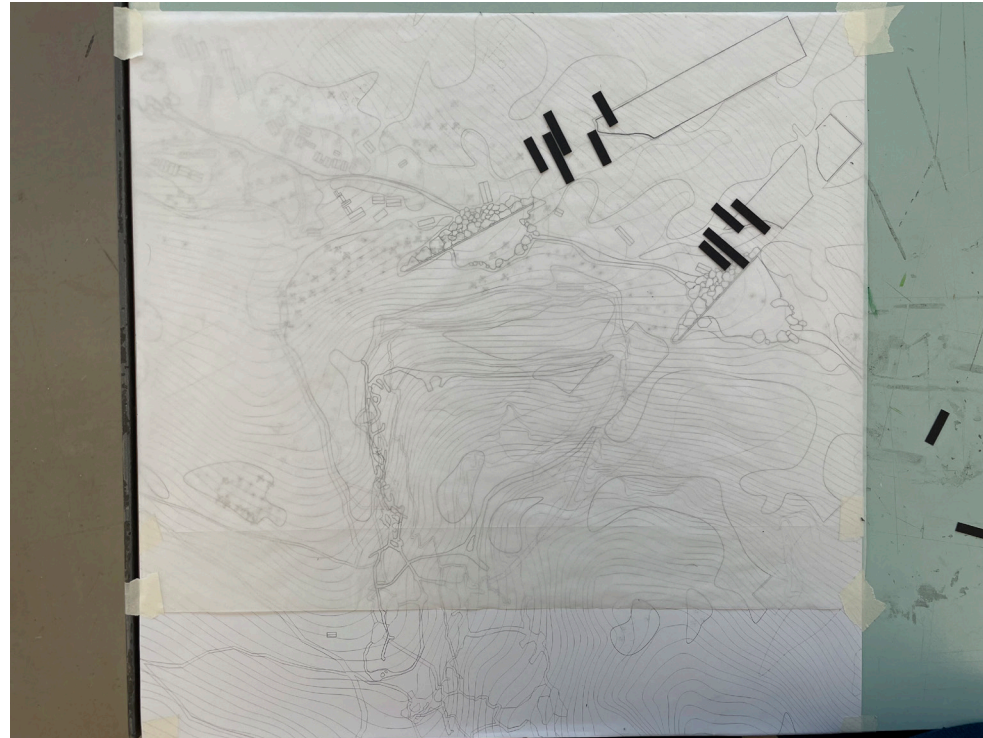


Scanned with CamScanner

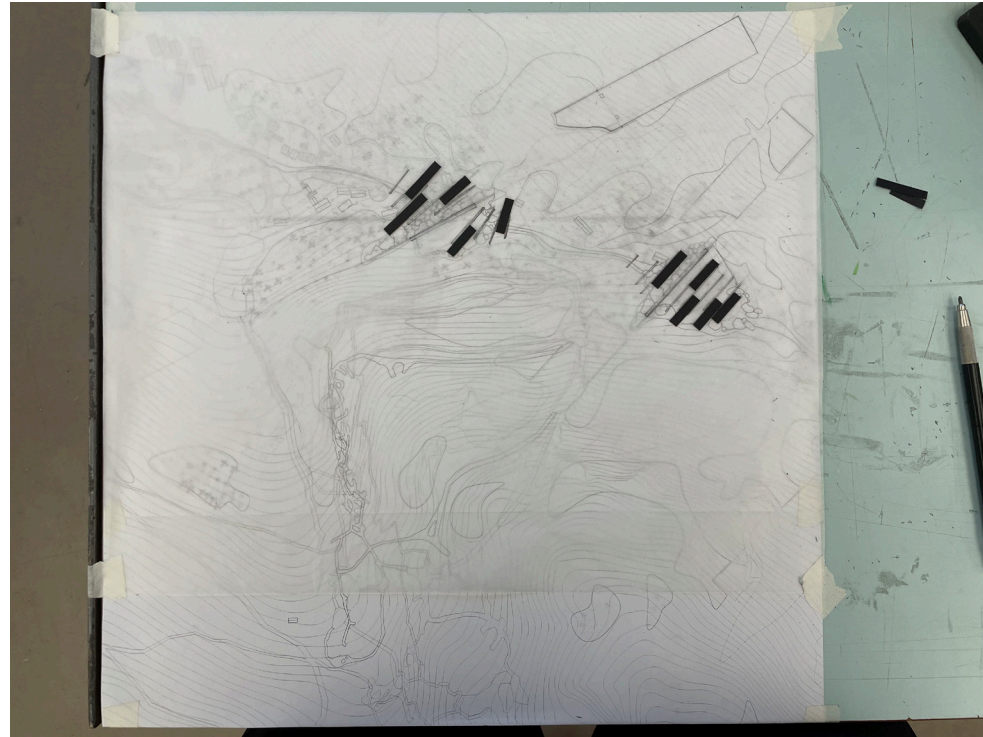
Nurseries exploration 01



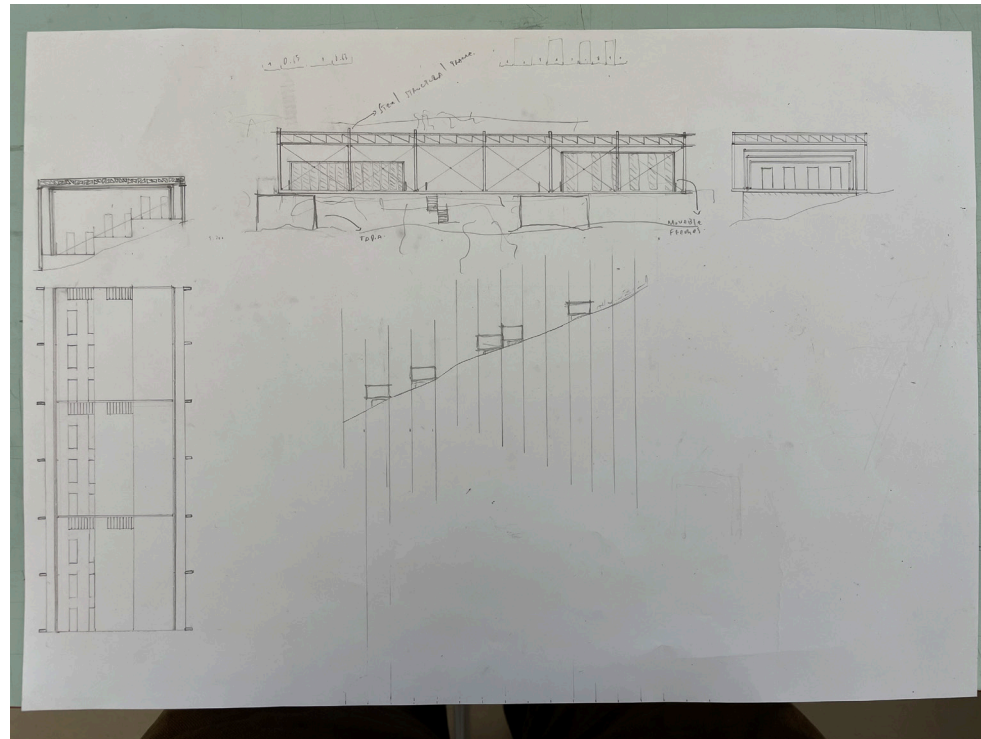
Nurseries exploration 02



Nurseries explortion 03



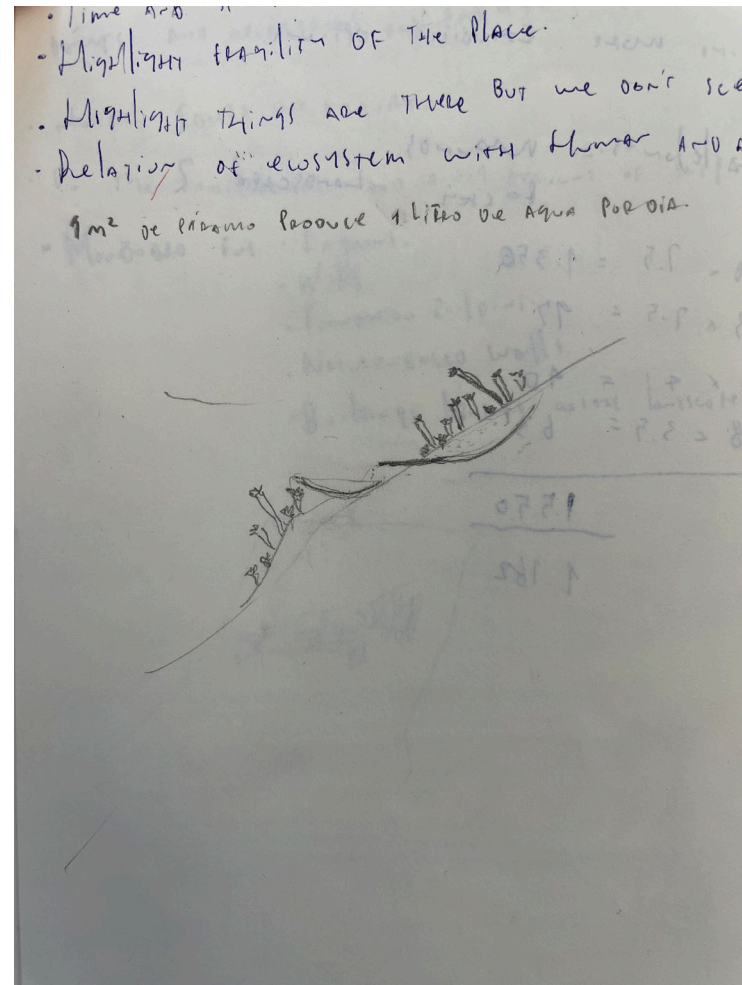
Nurseries design



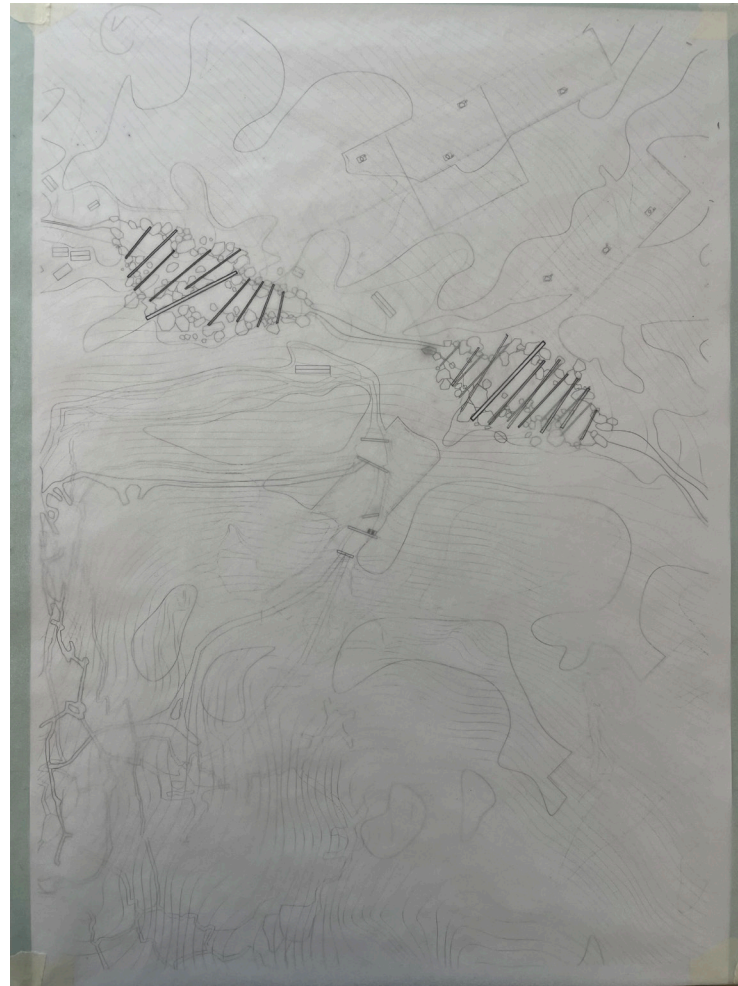
Awareness artifacts and ponds terraces



Awareness artifacts section



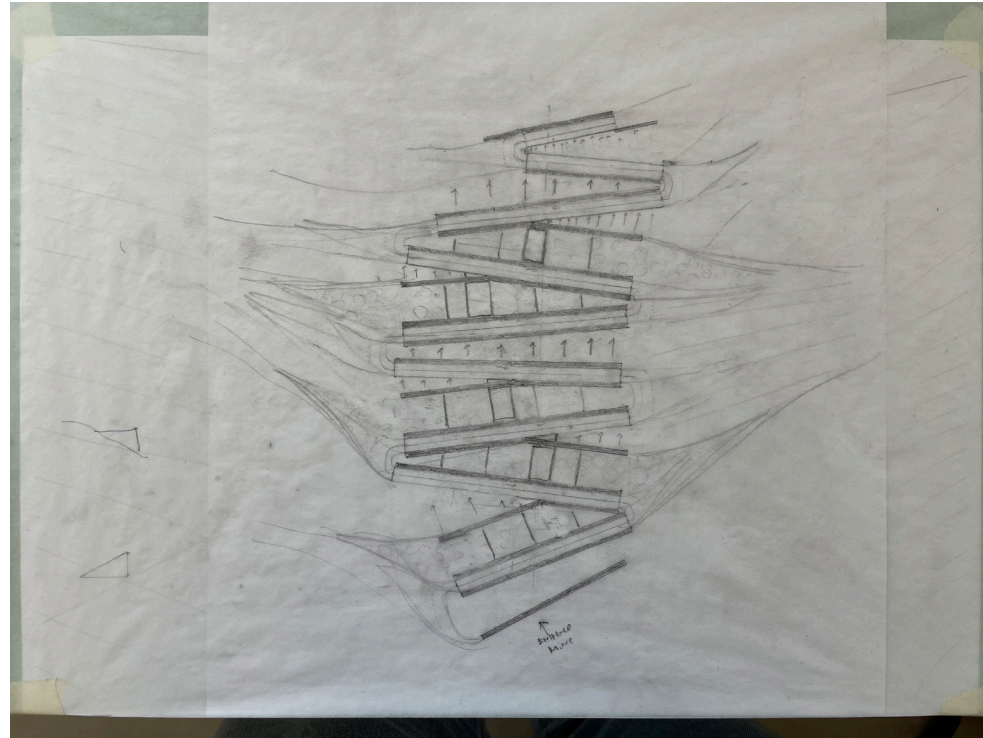
Alternative ponds terraces



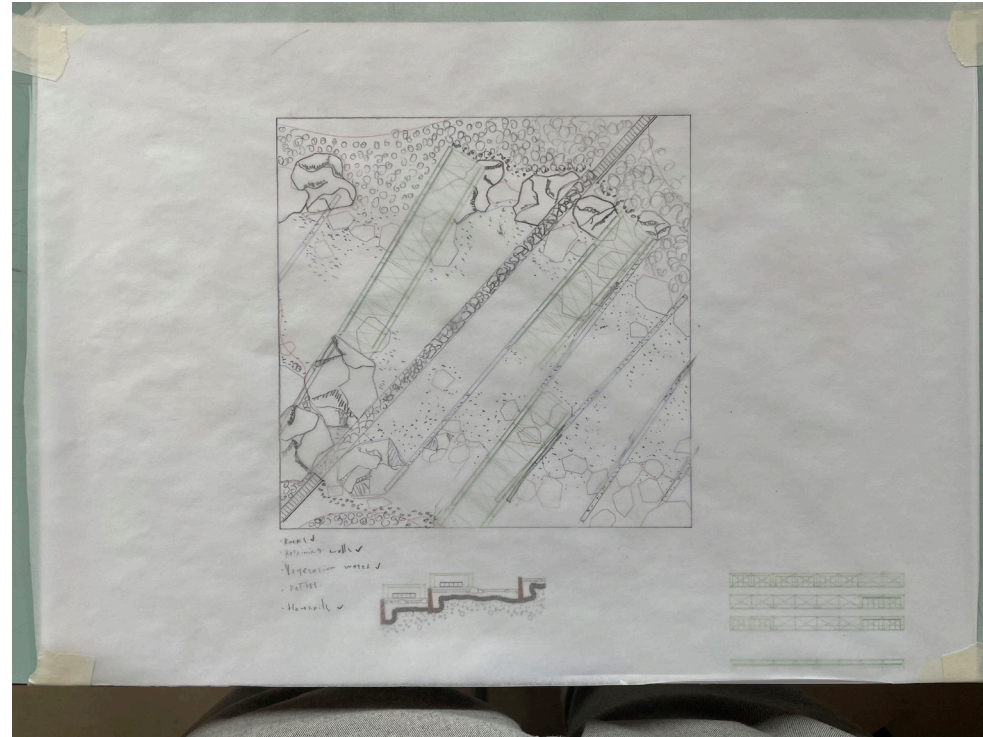
Entrance to mine exploration 01



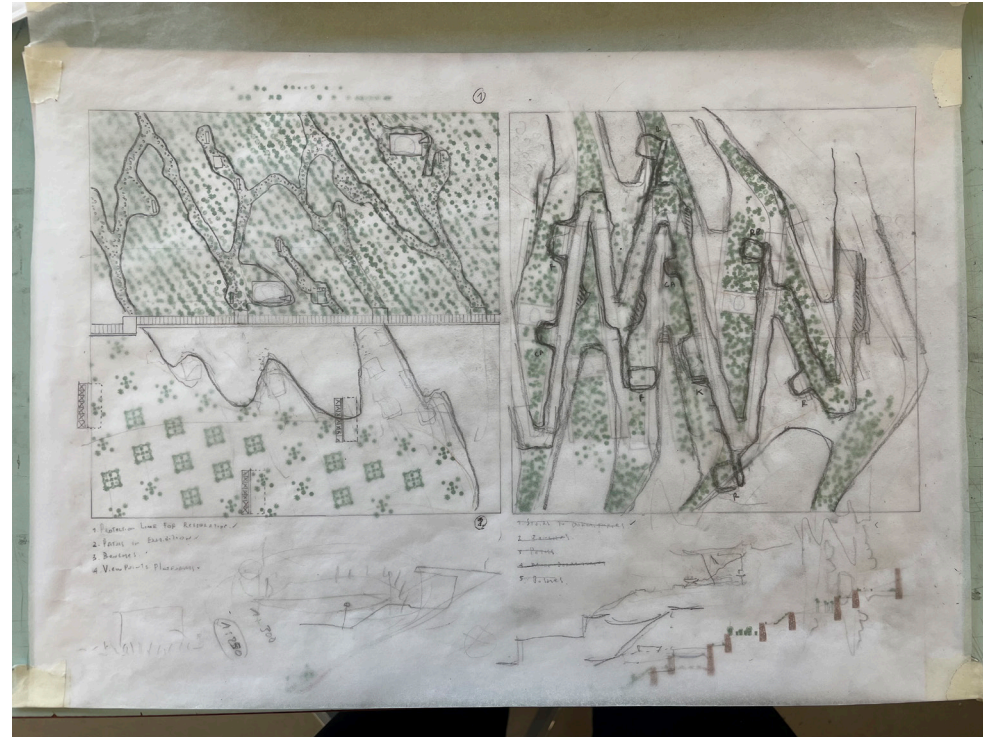
Entrance to mine exploration 02



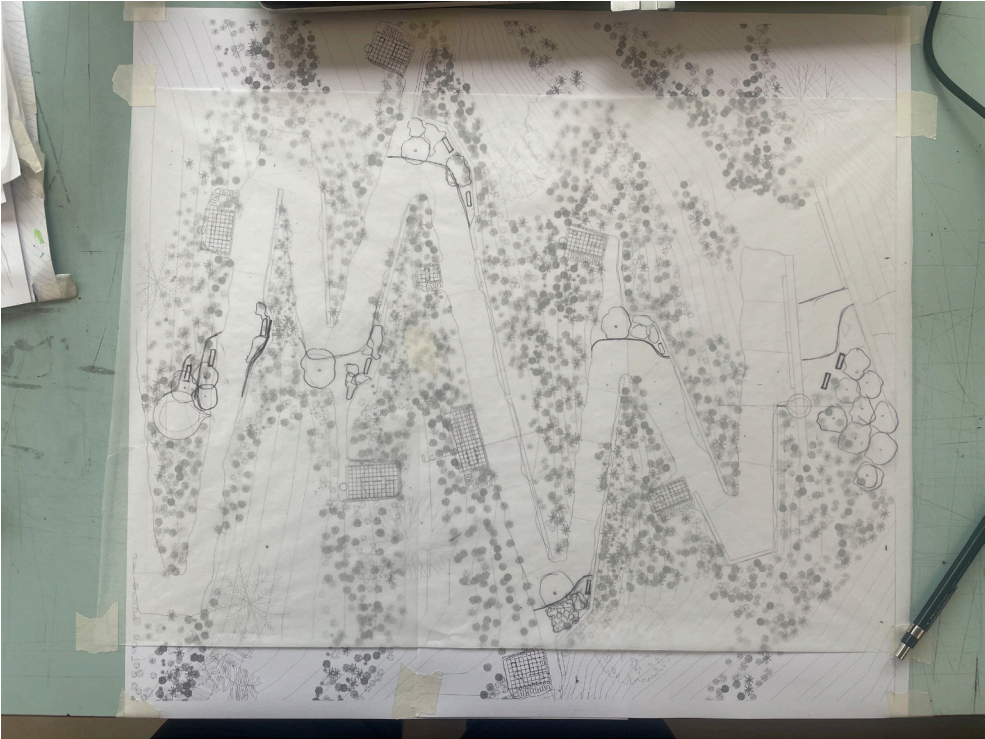
Zoom in nurseries



Zoom in restoration / exhibition and entrance to mine



Exploration entrance to mine

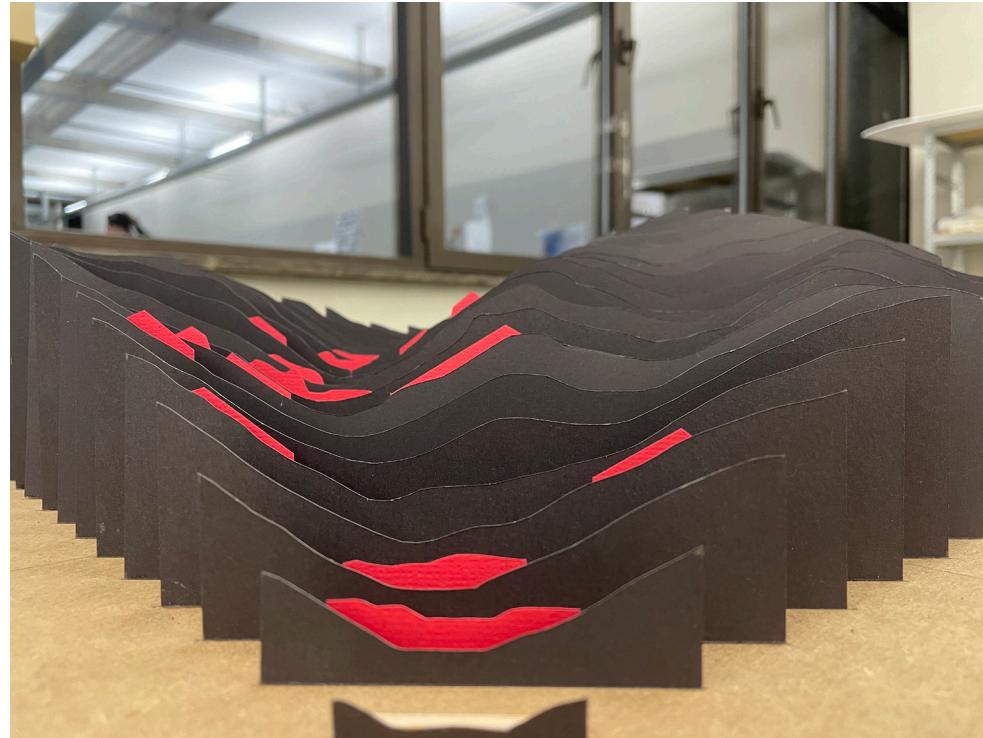


Working Models

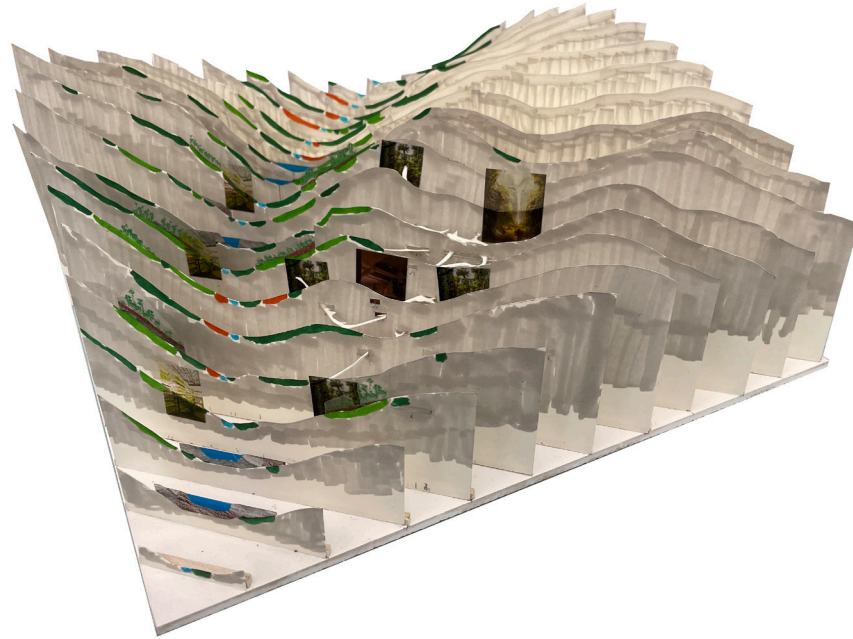
First topography model with height explorations



First topography model with height explorations



Second topography model with program explorations



Mine in second topography model



Nurseries model



Models photos

Restoration and exhibition final model



Restoration and exhibition final model



Entrance to mine with shelters final model



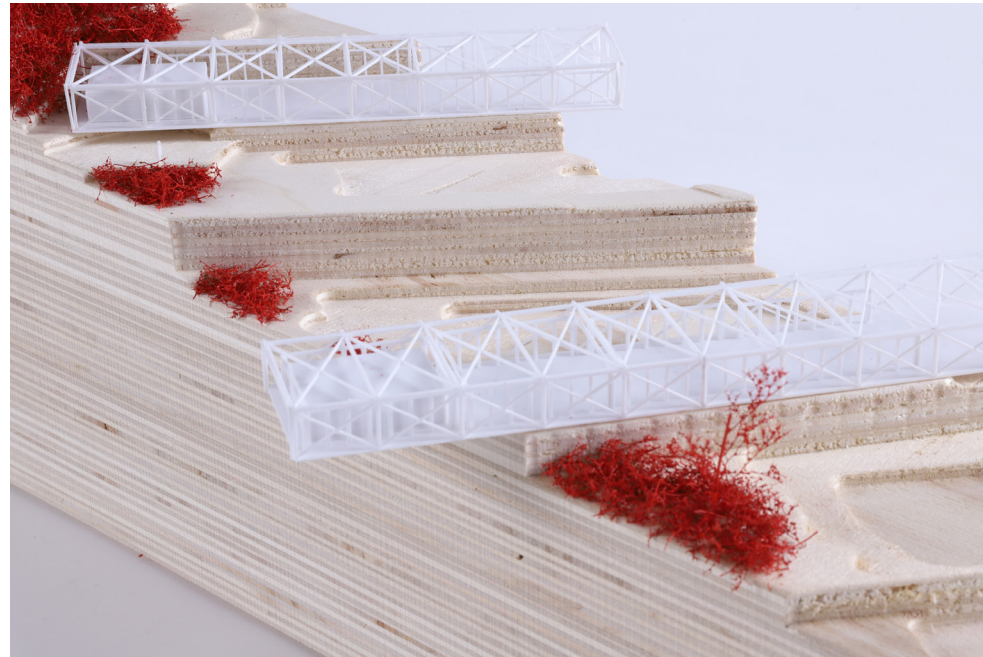
Entrance to mine with shelters final model



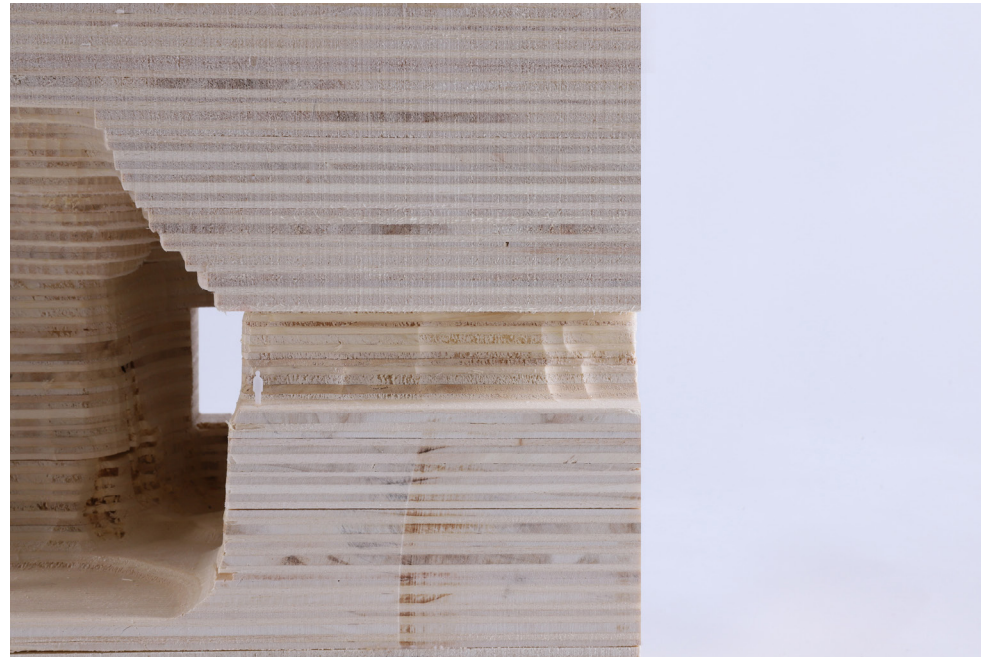
Nurseries with ponds final model



Nurseries with ponds final model



Exhibition in mine final model



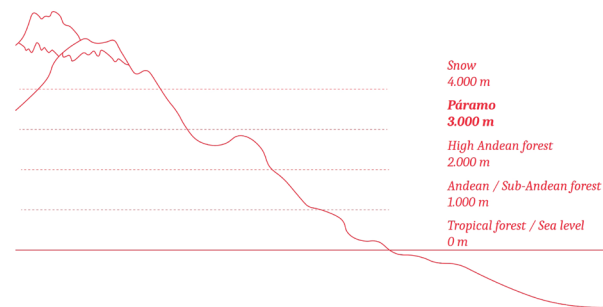
Exhibition in mine final model



Diagrams presentation

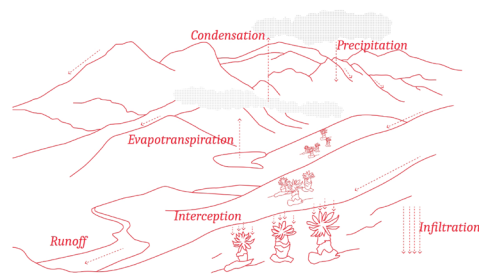
What is a *Páramo*?

The páramos are natural ecosystems geographically located under two principles that must always go together: the first refers to latitude, and the second, to altitude.



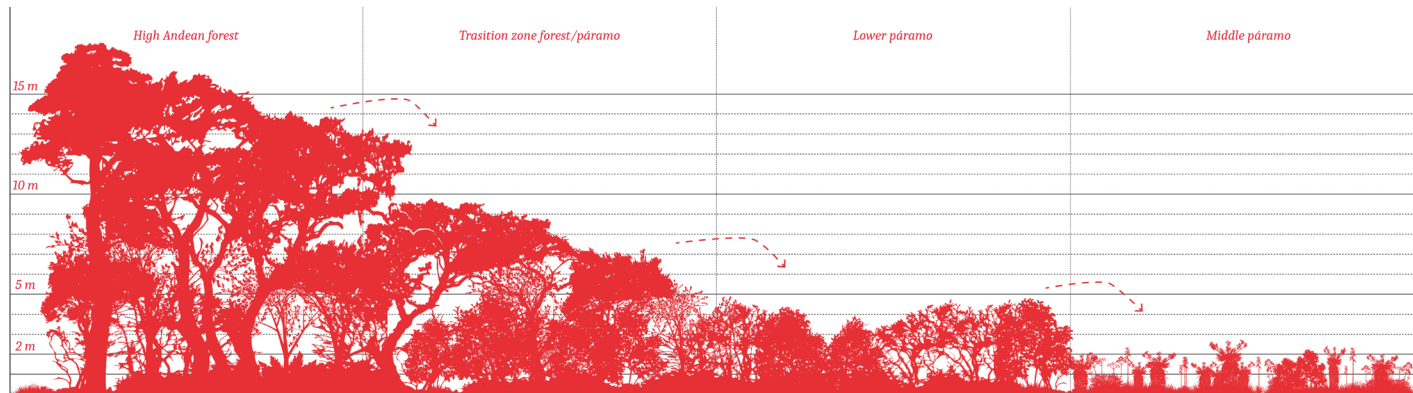
Páramo: **Ecologically**

The páramos are strategic ecosystems that regulate and provide about 70% of Colombia's water resources, store large amounts of atmospheric carbon in their soils and have high levels of endemism.



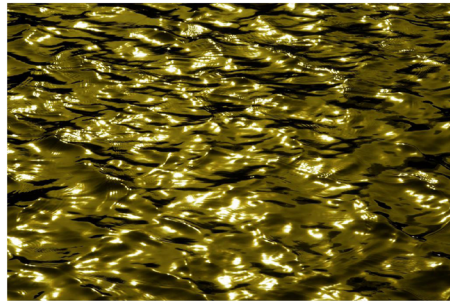
Páramo: Vegetation loss

The proportion of secondary vegetation increased from 0.6 to 0.9% from 2009 to 2012. This trend indicates that, despite the degree of protection and conservation, the pressure on the páramos remains. This pressure is related to agricultural, cattle and mining activities.



Páramo: Imaginary of Colombian culture

An attempt by foreign multinational companies to extract gold within the páramo limited area was the beginning of a dispute that still continues today and that generated different cultural expressions in defense of it.



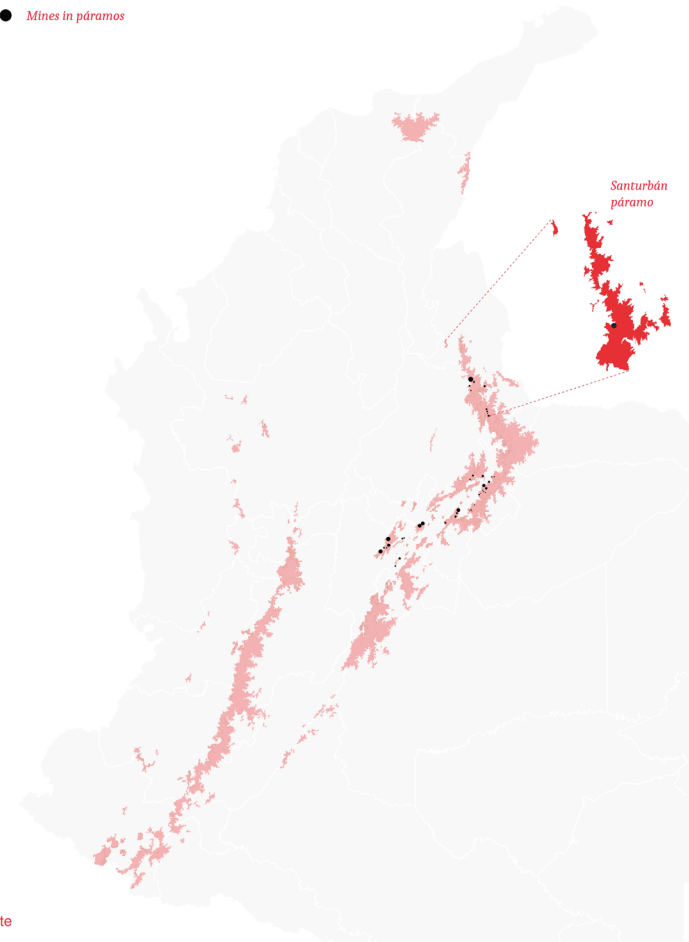
*Nuestro oro es el agua. Our gold is the water.
Photograph by Freddy Barbosa.*

Gold mines in Colombia

Between 2002 and 2010, mining titles increased 755%, where 122,000 titles were delivered within páramo areas, therefore, in 2010 it was decided to delimit the páramo ecosystems to protect them.

The Santurbán's páramo, where Vetás is located, would be the first delimited páramo that would serve as a pilot plan for the 36 remaining páramo complexes in Colombia.

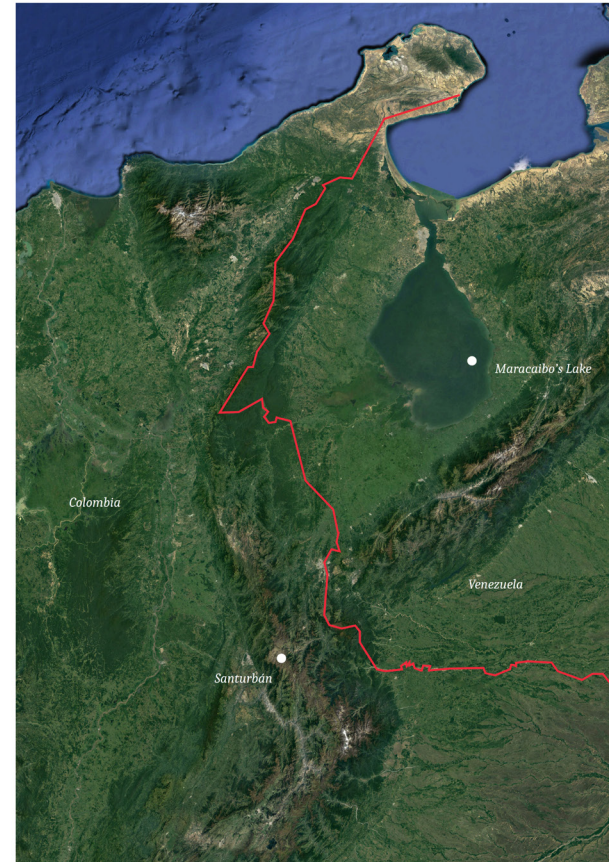
● Mines in páramos



Santurbán's páramo

The Santurbán's Páramo has an extension of 142,000 hectares at an altitude between 2,800 and 4,290 meters above sea level with temperatures that can go between -13°C and 15°C.

It is a strategic páramo due to its capacity to recharge and regulate water, from which more than 2.3 million people are supplied, in addition, the waters that flow down from Santurbán are the most important waterflow that supplies Maracaibo's Lake in Venezuela.



Vetas area

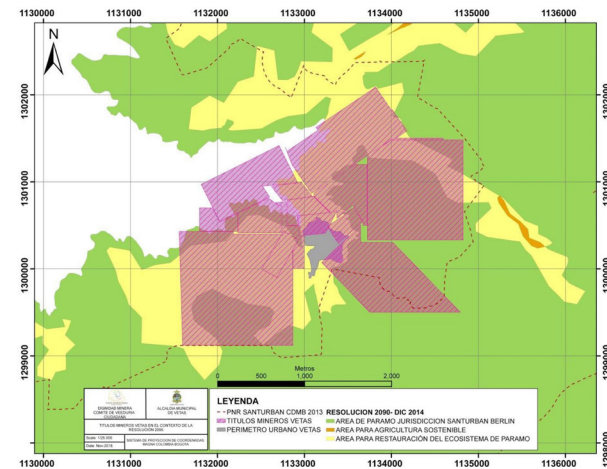
The chosen site has unique features that make it a place with many opportunities to develop. The site is located in the area surrounding Vetas, a town in Santander (Region), which is within the limits of the Santurbán's Páramo and on which its economy and jobs are based on gold mines.

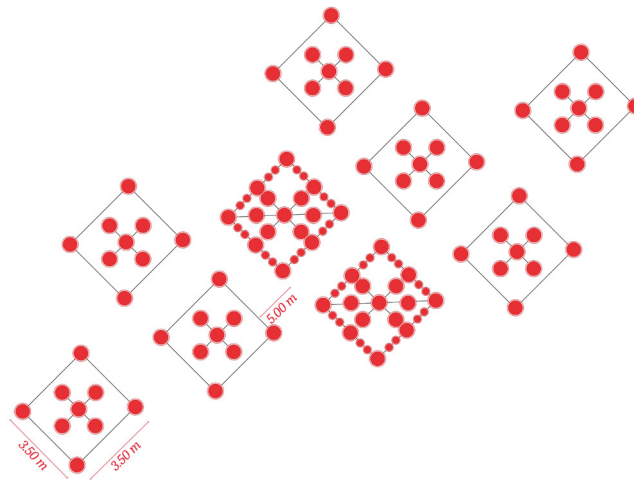


Delimitation plan

In 2014, a delimitation of the páramo was delivered, indicating the páramo area, transformed areas that must begin a restoration process, and exploitation areas. However, in 2016 the Constitutional Court of Colombia annulled this document, since "it violated the rights to participation and access to information...".

After 13 years, the Santurbán's páramo continues without delimitation.





Pioneer plants:

These are species of fast growth, easy and rapid germination, which quickly form cover and have high leaf production.

Facilitating plants:

In some cases, there are plants that are extremely important for the restoration of an ecosystem function, but whose requirements for establishment or survival are high. For this, the use of facilitator plants is useful, since under their leaves or near them they create adequate climatic conditions for the plants with the highest requirements to grow. For example, plants in clusters can help maintain soil temperature and thereby help germination and growth of other plants.

1. Trees, shrubs, herbs.



PLAN

2. Rosettes, shrubs, herbs.



PLAN

3. Rosettes, shrubs.



PLAN

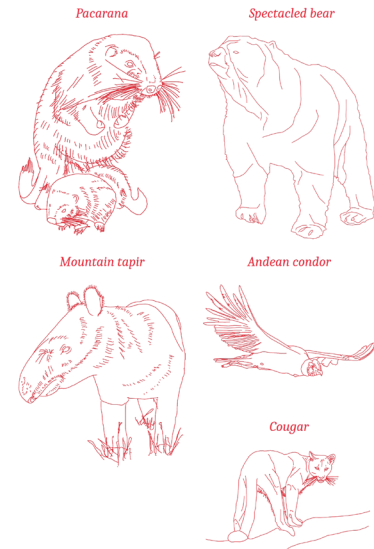
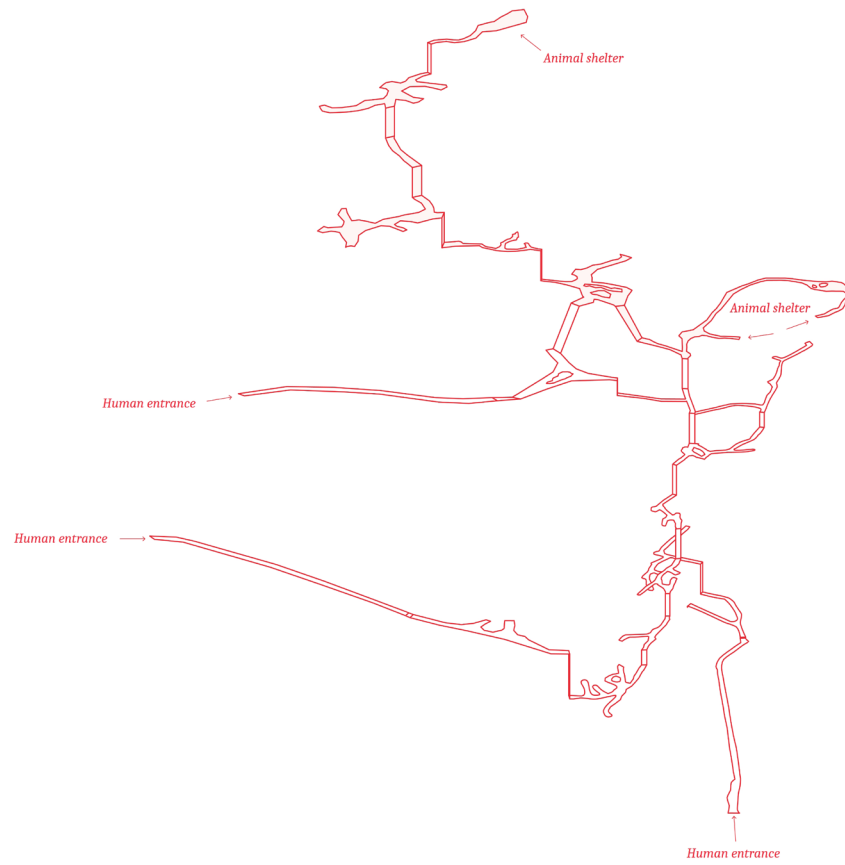
4. Rosettes, herbs.



PLAN

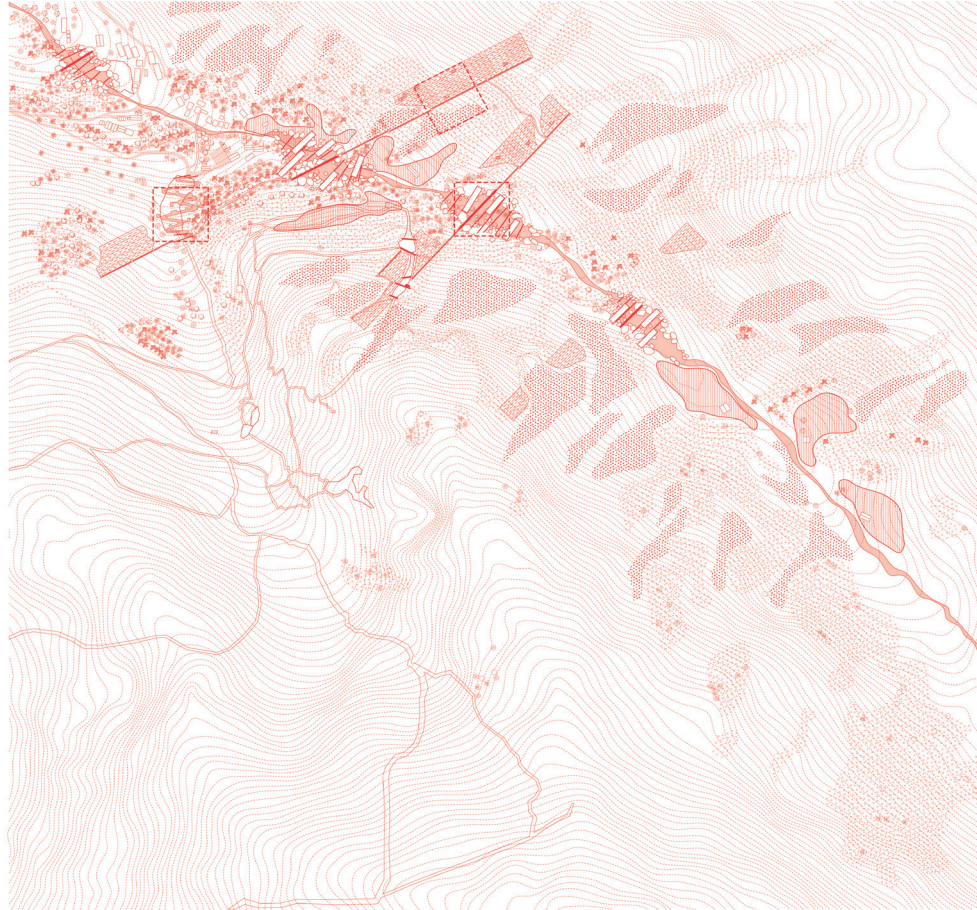


AHO - The Oslo School of Architecture and Design / páramo range



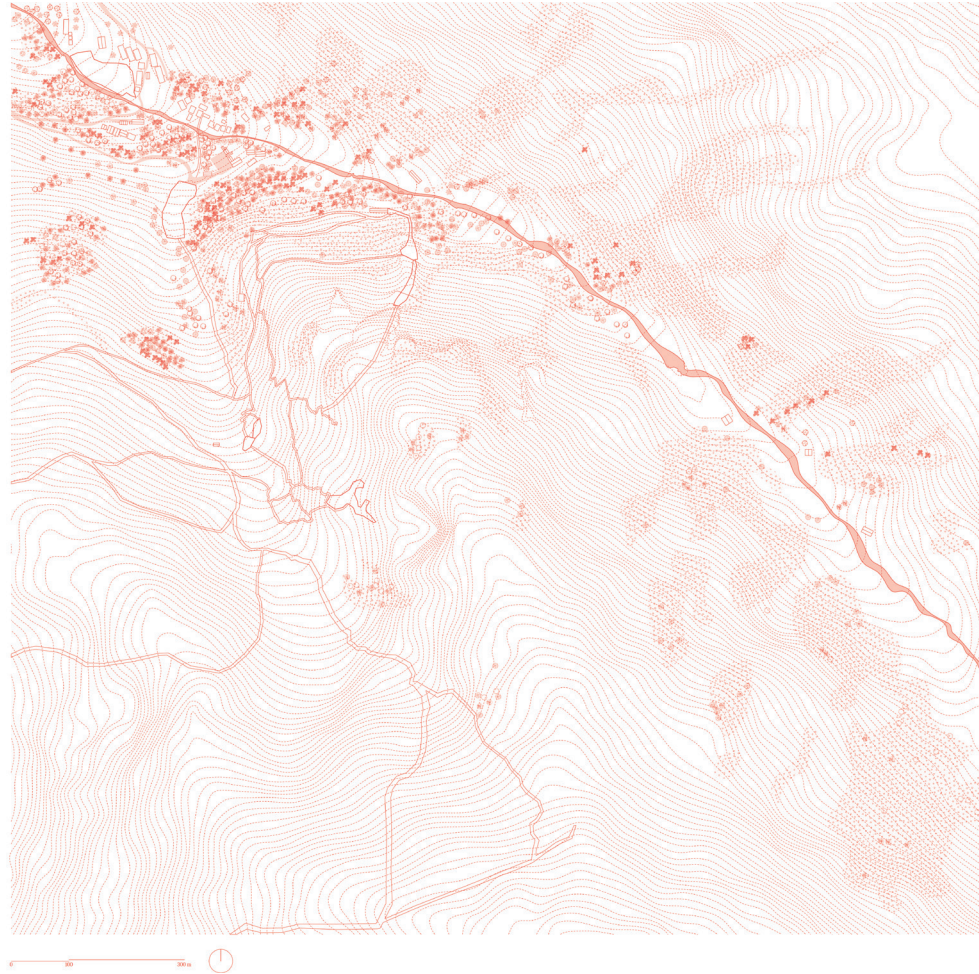
Plans

Large scale plan

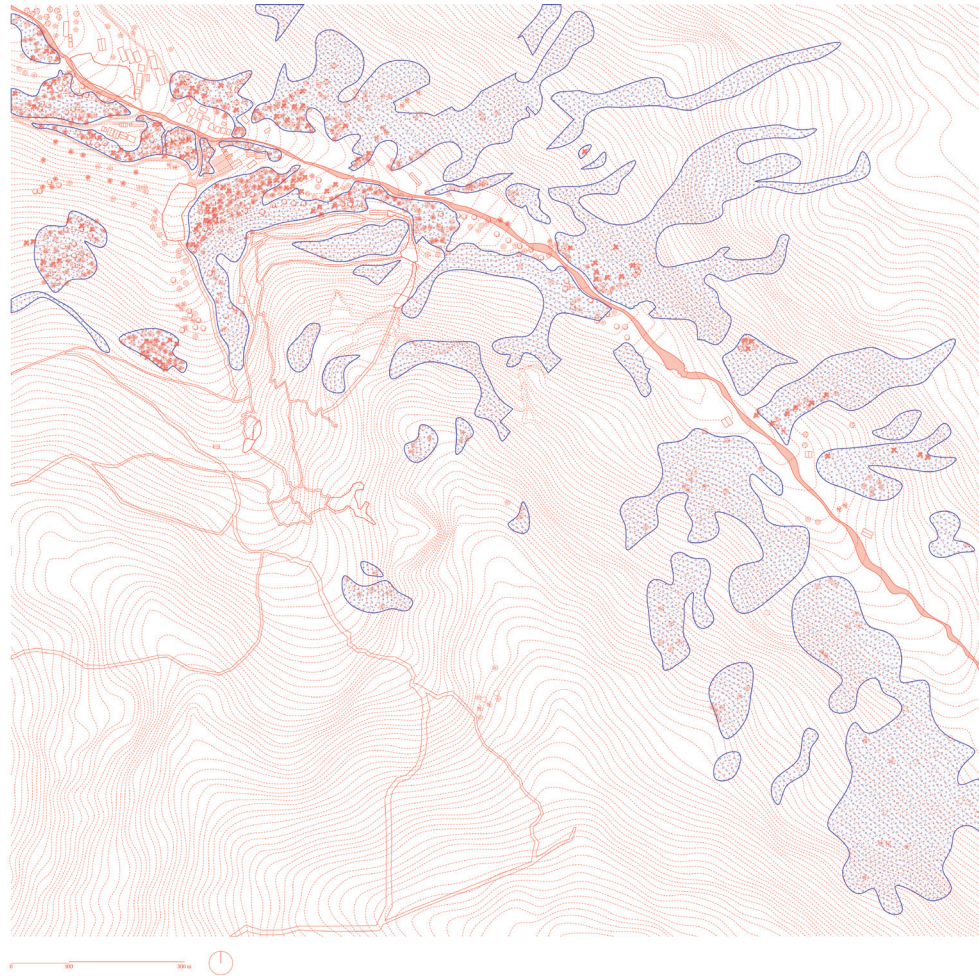


0 200m

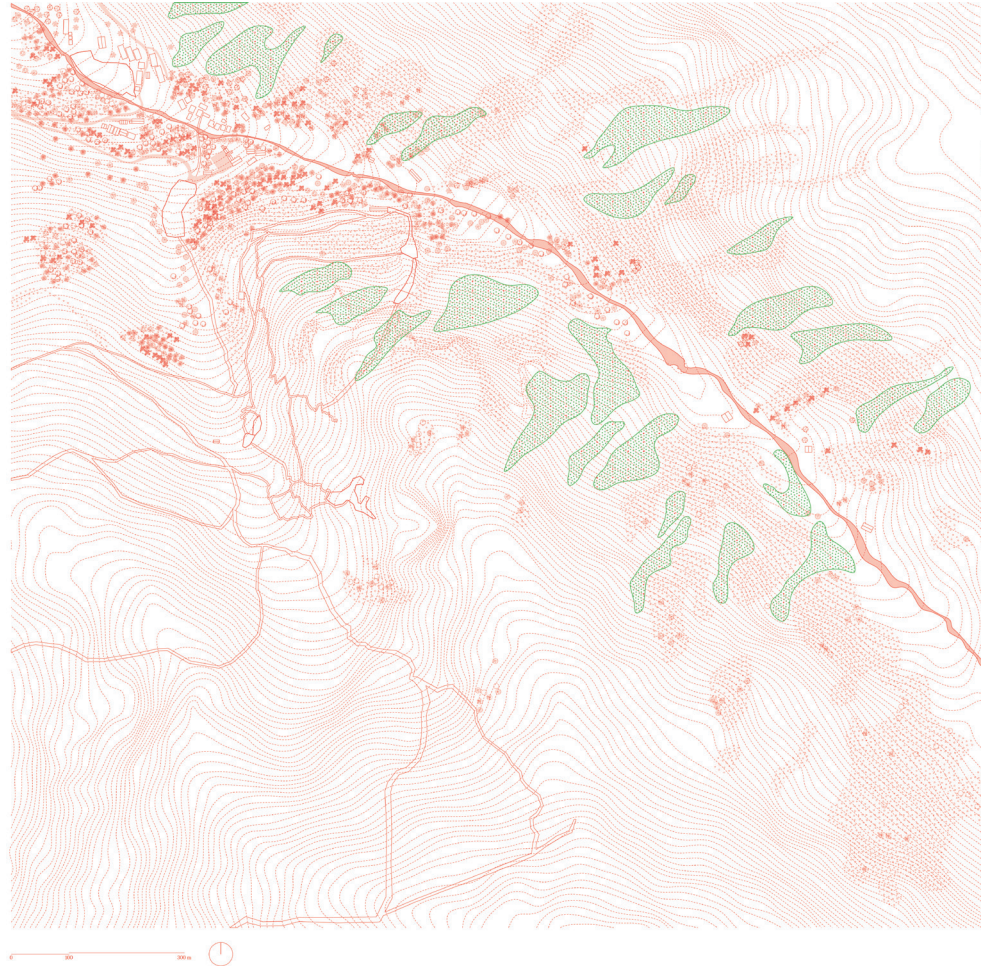
Tracing of base plan



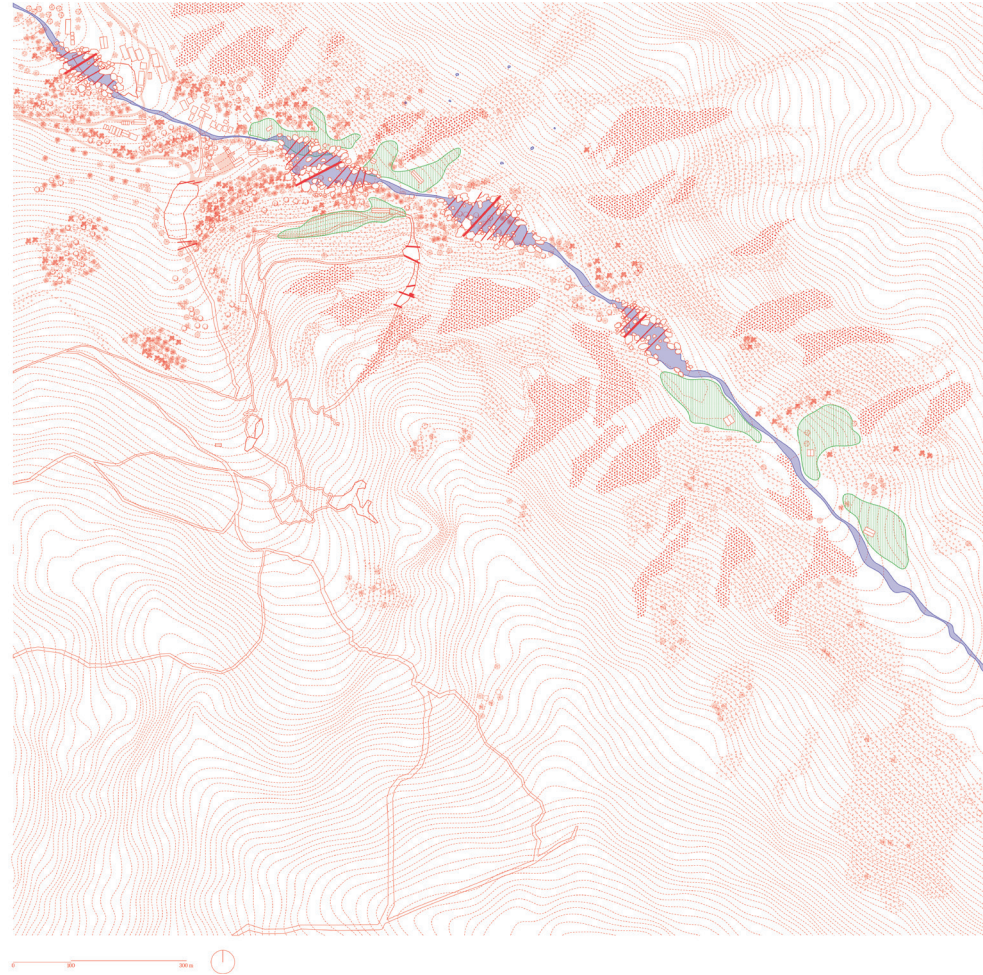
Clusters of existing vegetation



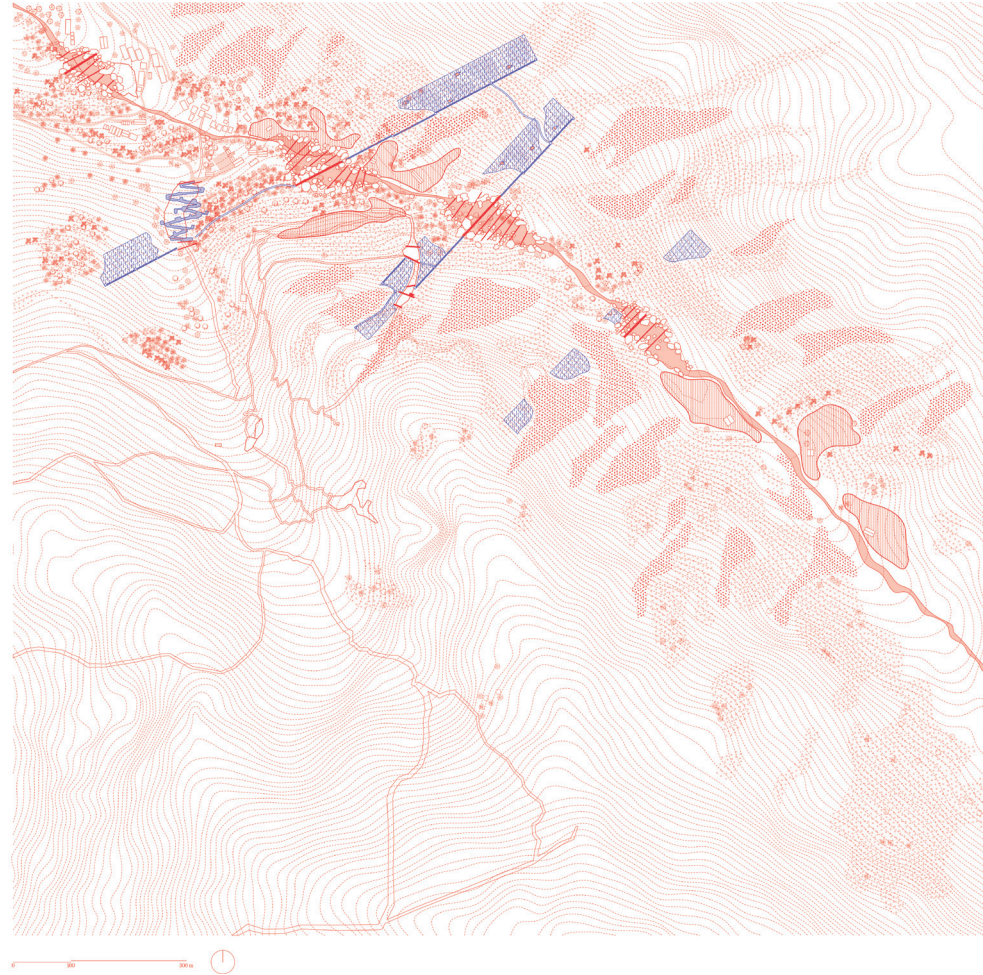
Areas to be restored



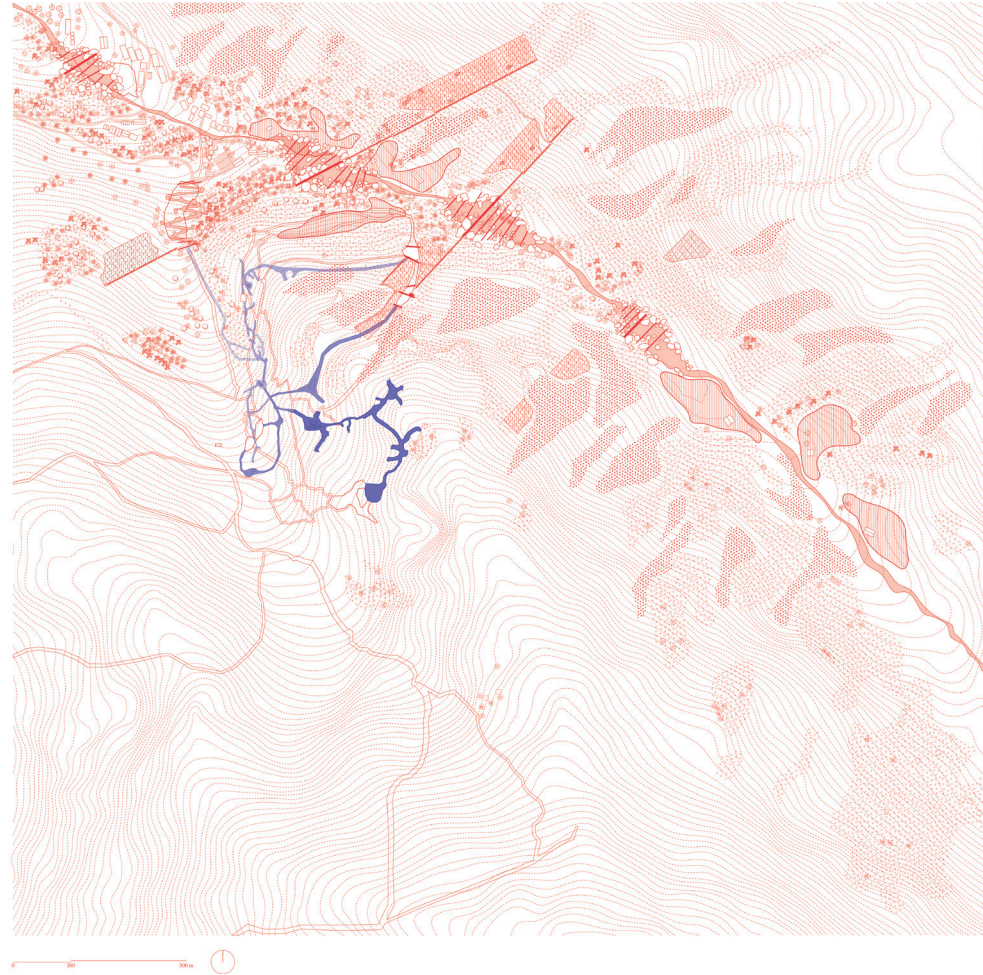
Agricultural land and cleaning ponds



Frailejones exhibition areas



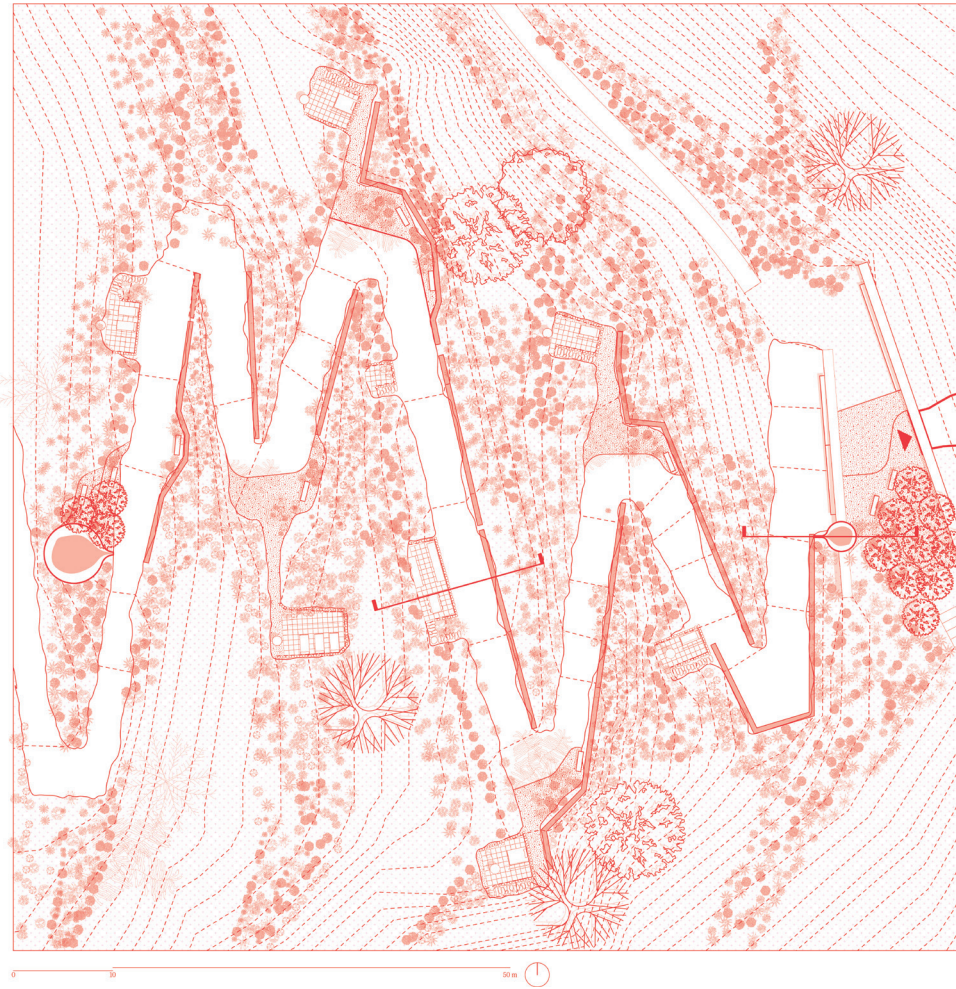
Mine location



Zoom Shelters roof plan



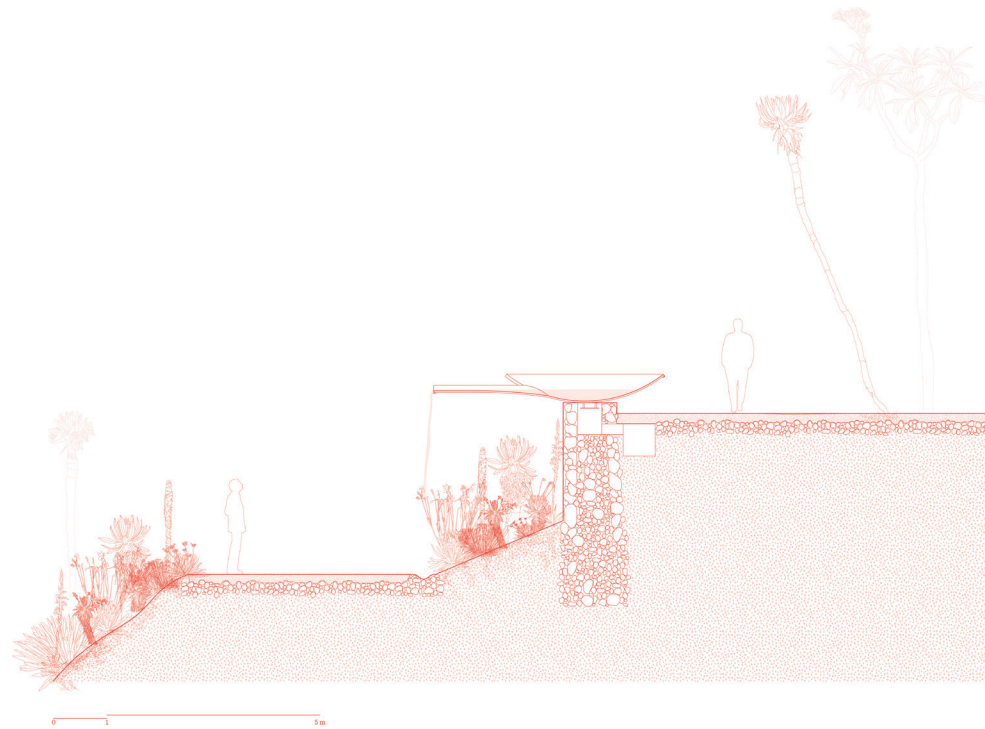
Zoom Shelters plan



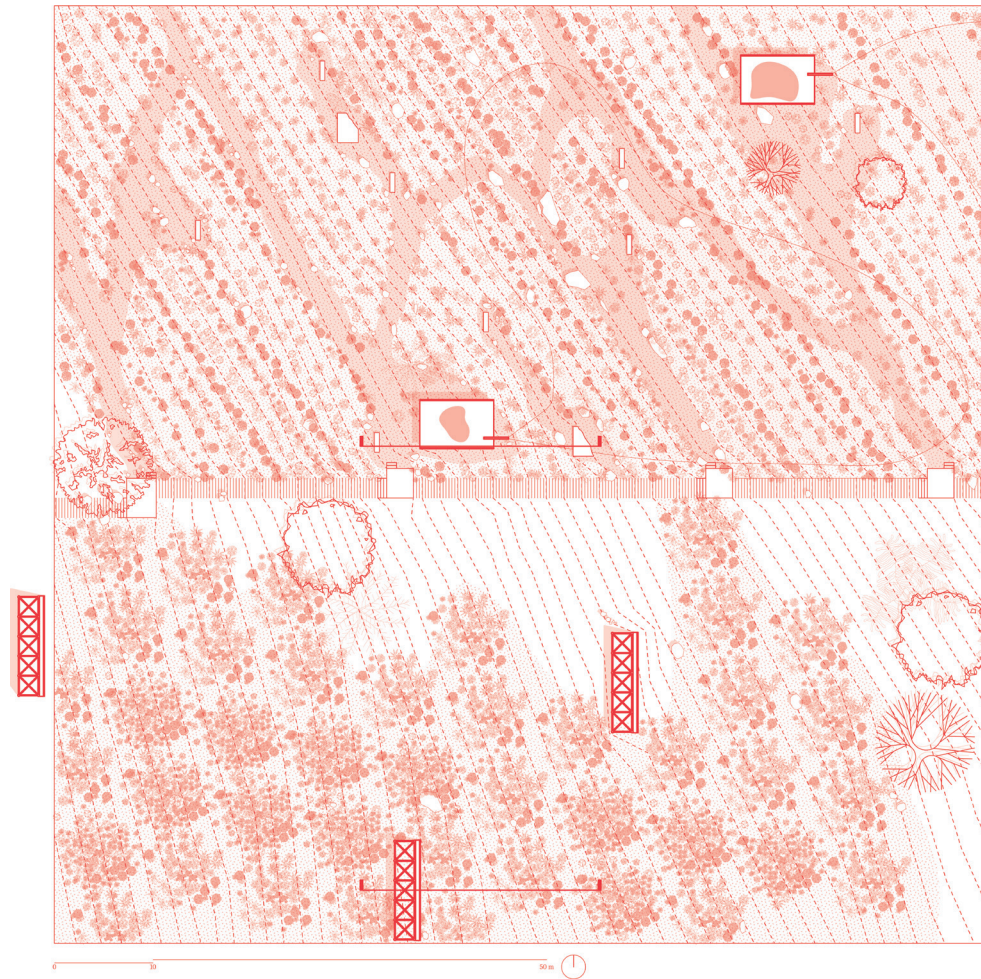
Kitchen section



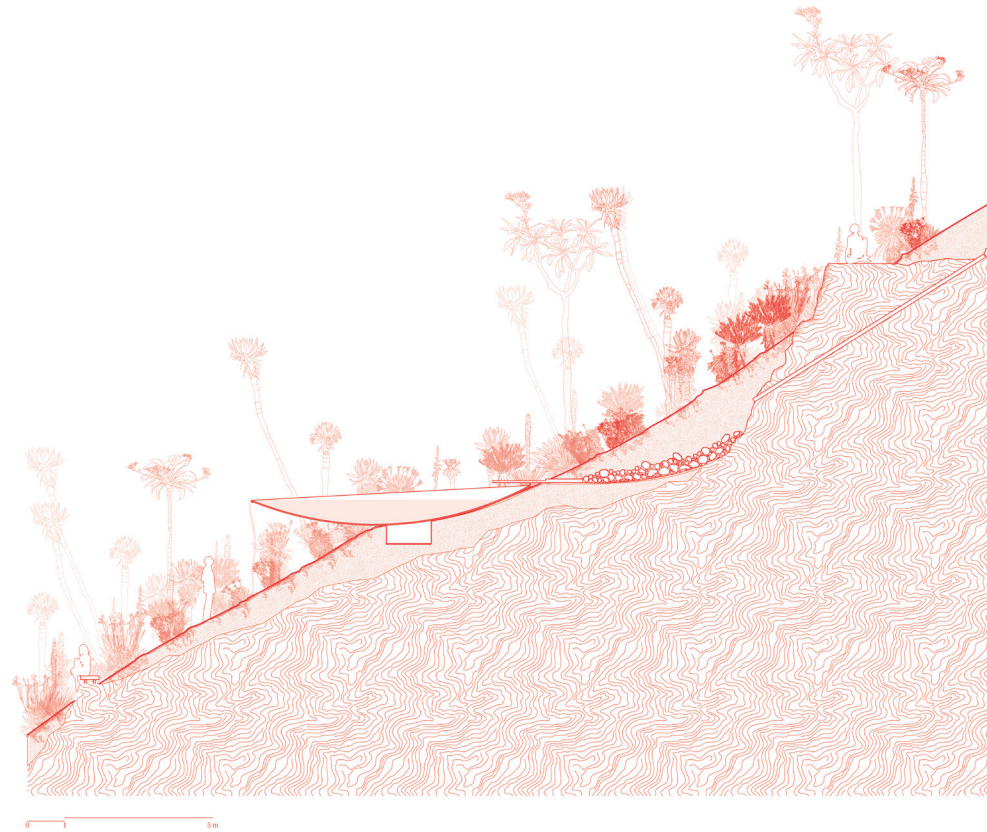
Fountain section



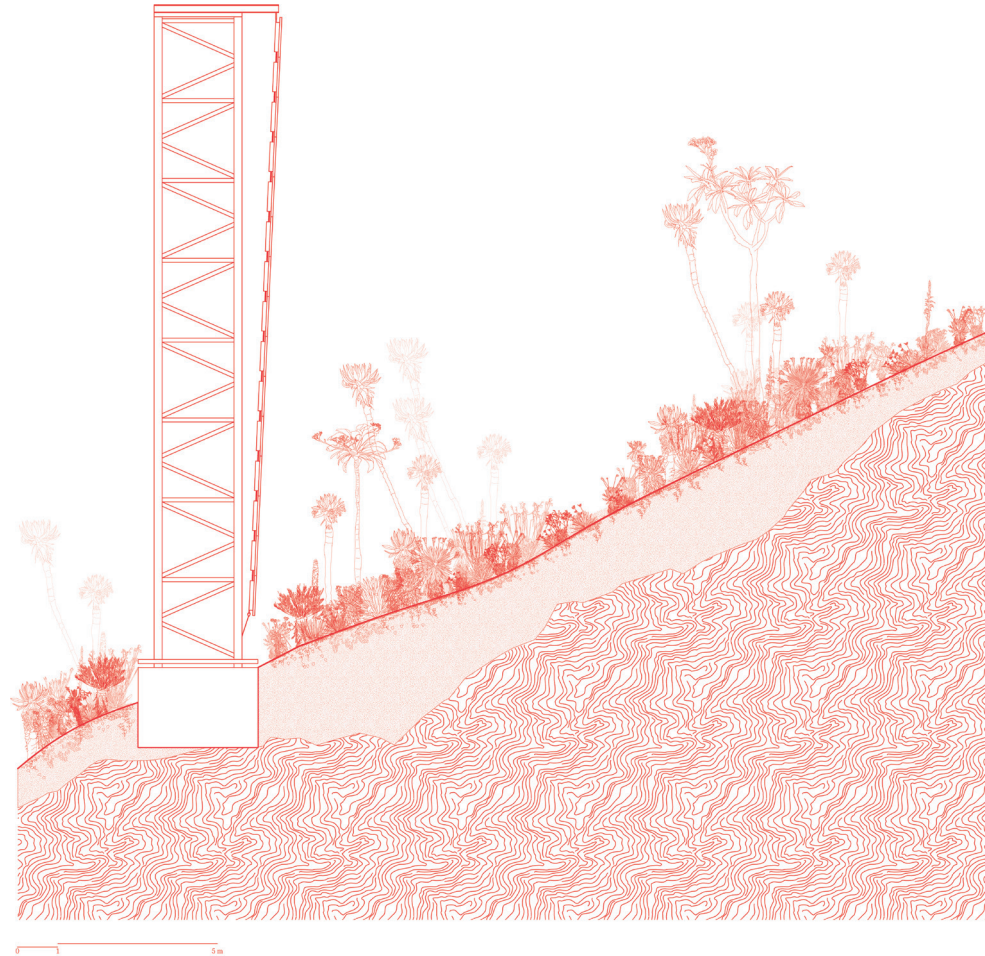
Zoom restoration and exhibition plan



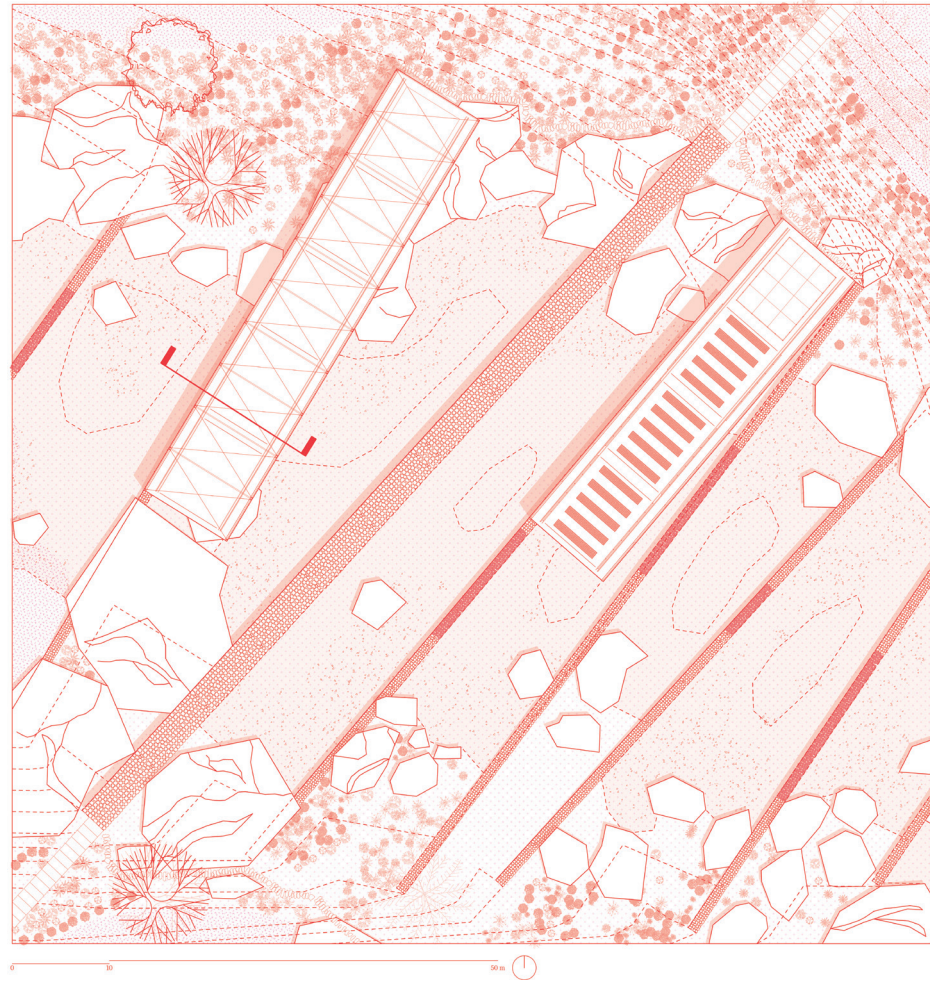
Water plate section



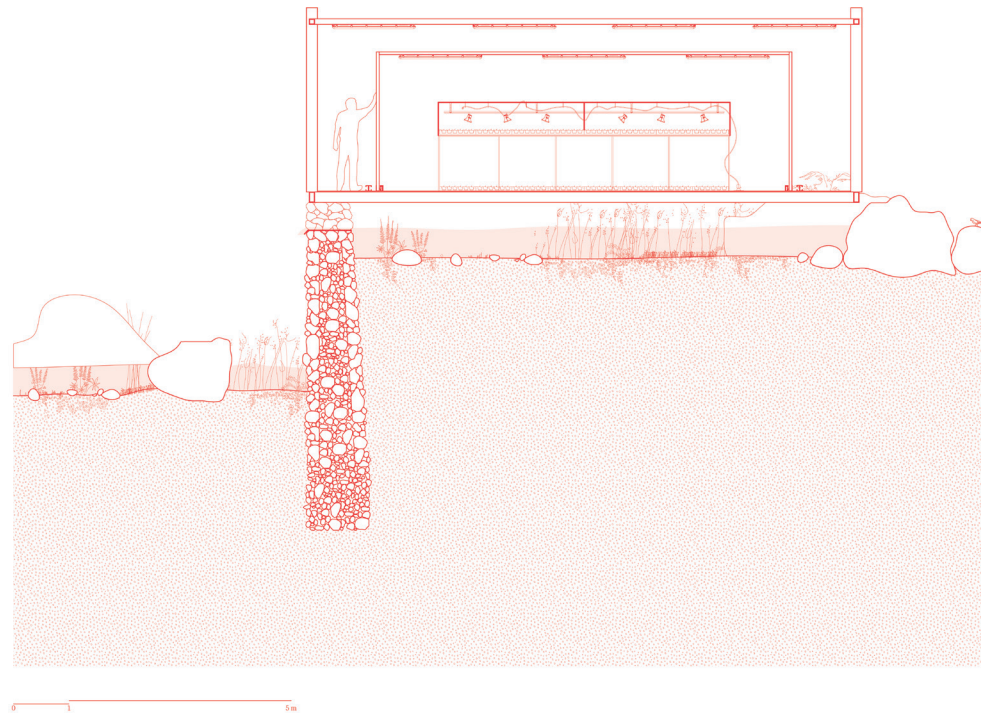
Screen section



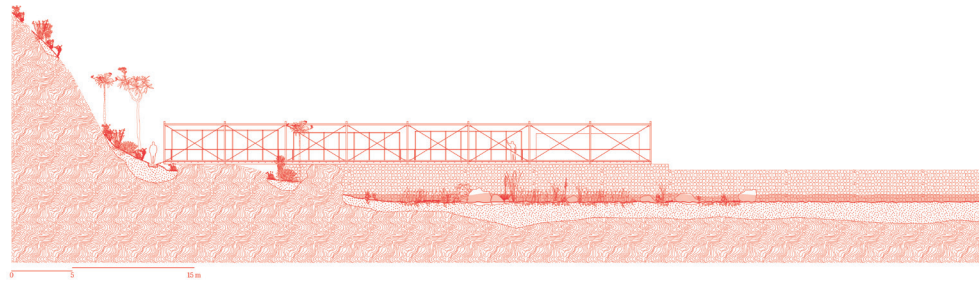
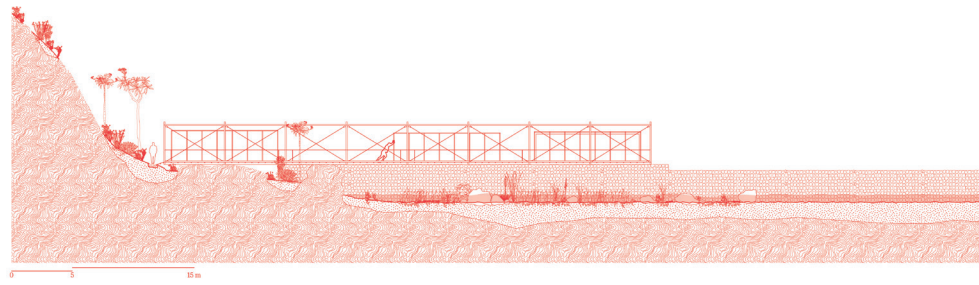
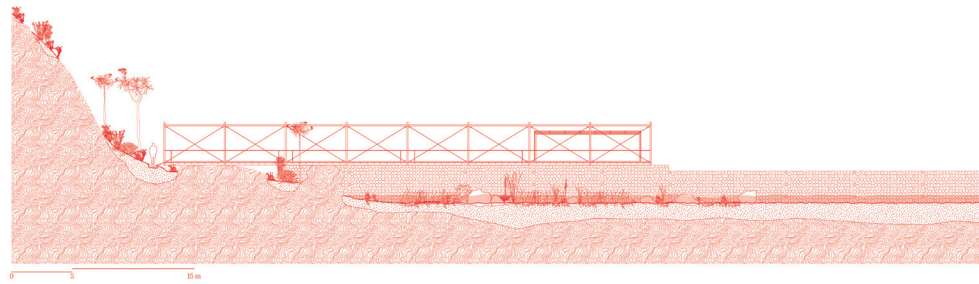
Zoom nurseries plan



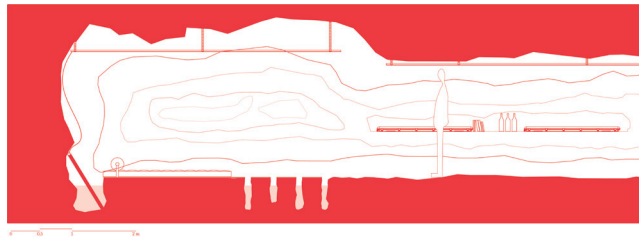
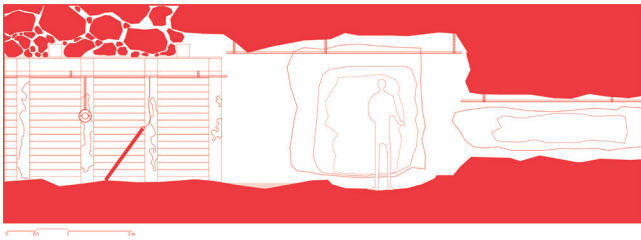
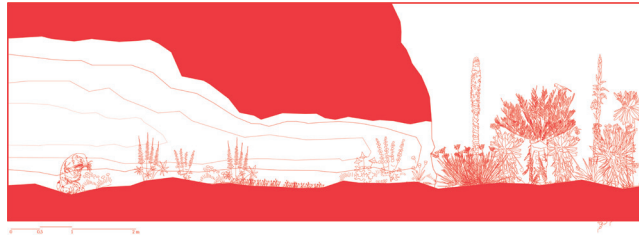
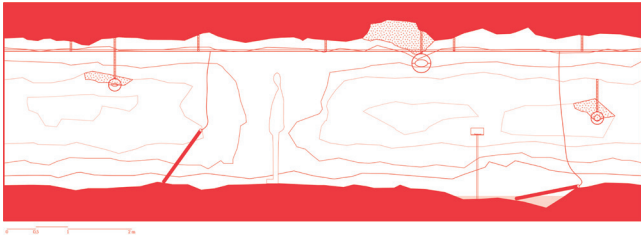
Nursery section



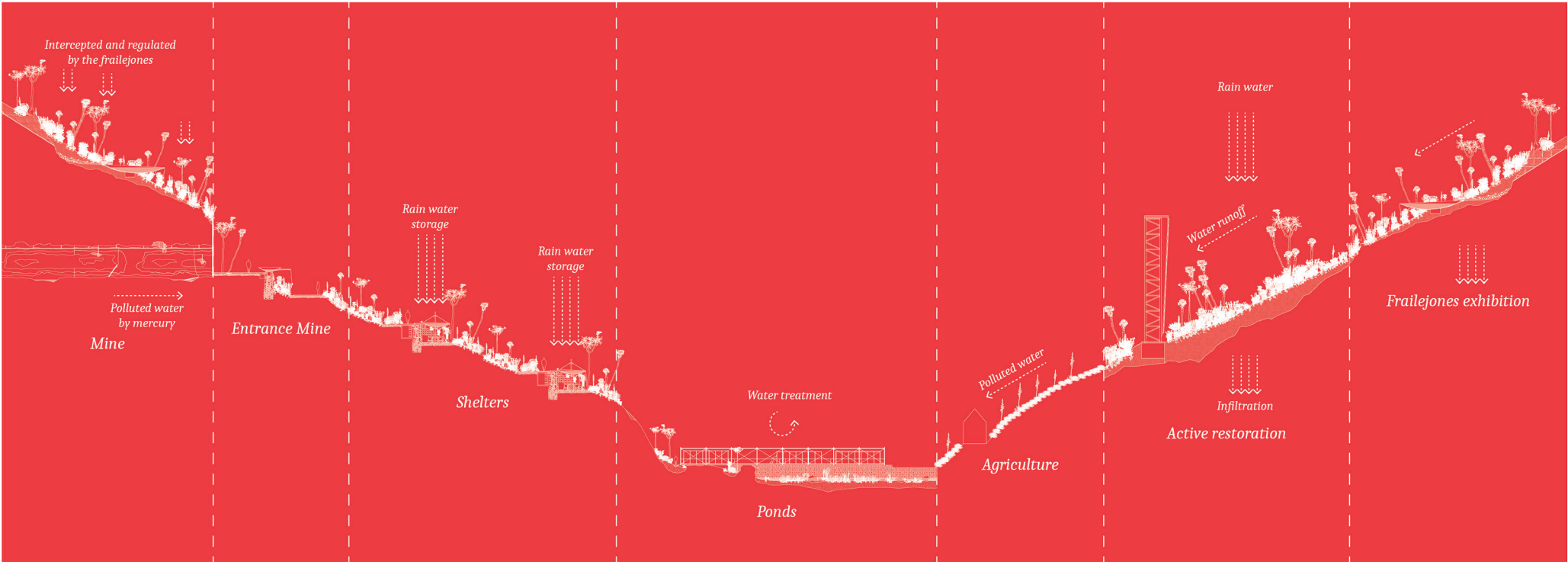
Nursery facade



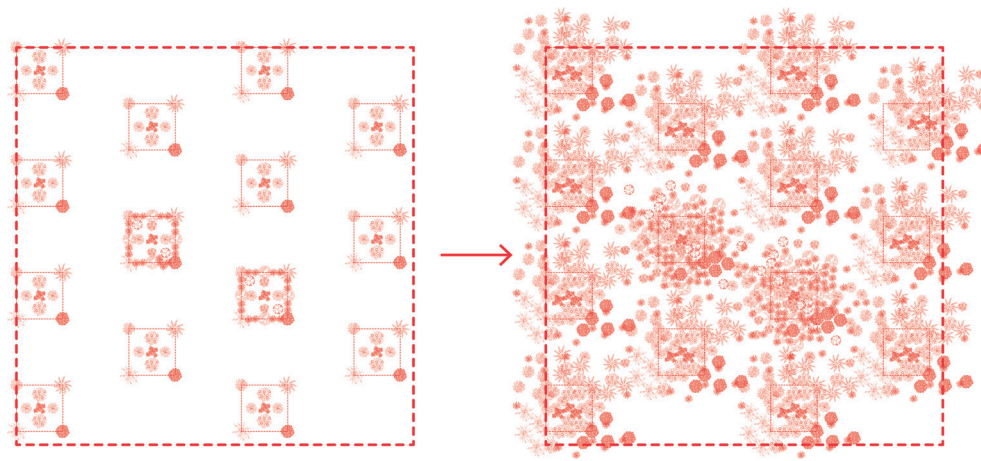
Mine sections



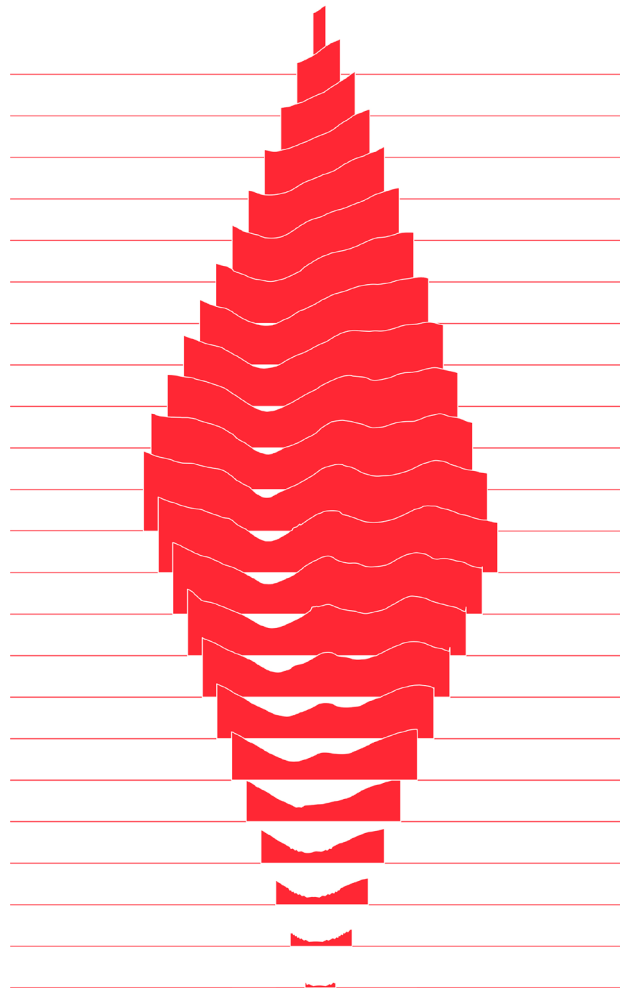
Large scale section



Core restoration strategy diagram



Topography poster

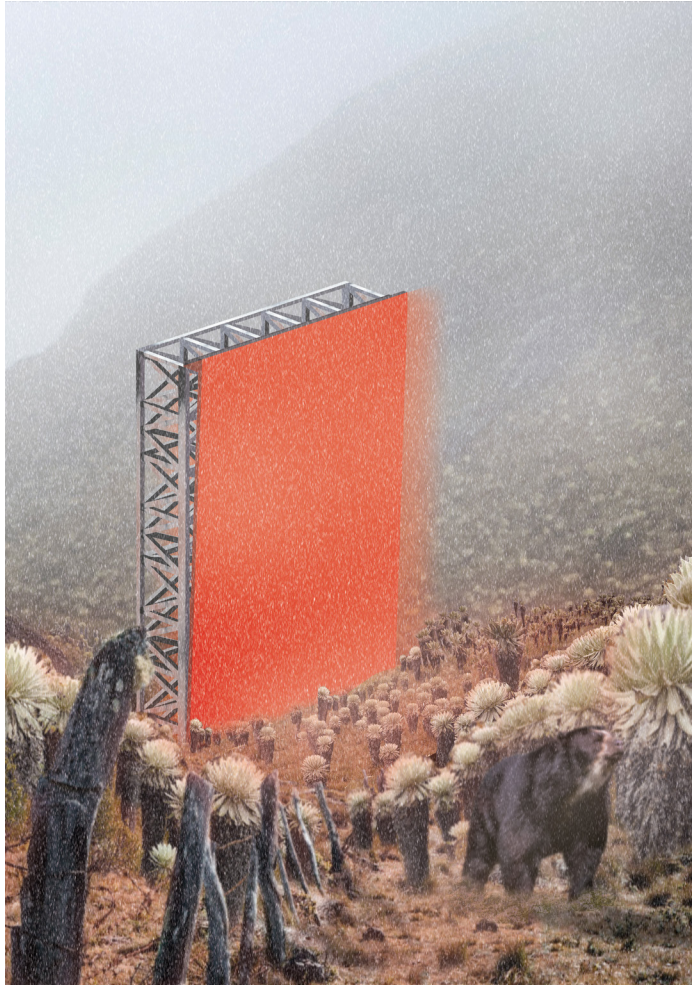


Collages

Frailejones exhibition collage



Restoration collage



Nurseries collage



Shelters collage



Mine collage

