

Country / City Santiago, Chile.

University / School Pontificia Universidad Católica de Chile

Academic year 2019

Title of the project Phytodepuration Oasis: Water Infrastructure and Consolidation of the Pampa Austral Tailings Dam

Authors Gonzalo Quevedo Egaña



TECHNICAL DOSSIER

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|---|---|
| Title of the project                    | Phytodepuration Oasis: Water Infrastructure and Consolidation of the Pampa Austral Tailings Dam |
| Authors                                 | Gonzalo Quevedo Egaña   |
| Title of the course                     | Graduation Project Workshop   |
| Academic year                           | 2019  |
| Teaching Staff                          | Pilar García · Ignacio García Partarrieu · Arturo Scheidegger                                   |
| Department/Section/Program of belonging | MAPA...Magister en Arquitectura del Paisaje   |
| University/School                       | Pontificia Universidad Católica de Chile  |



Atacama Desert is recognized as the most arid place on Earth, where water is understood as a strategic resource and allows the development of an exceptional ecosystem in this dry climate. The Pampa Austral Tailings Dam, located in this region, is a critical area, resulting from a complex production system of copper mining, where a large amount of highly intervened water is required, producing large and polluted territories of tailings in dams. Pampa Austral Tailings Dam, in the middle of the desert, is a critical case because of the large amount of water contrasting with the region's growing water scarcity, but — at the same time — it presents a great opportunity for productive, social, and ecological development.

The proposal responds to the productive, social, and ecological activities that are possible to develop using the water in the Pampa Austral Tailings Dam. The project develops a chain production system around the treatment of contaminated water and shows the possibility of using this liquid by just cleaning a small part of the pollutants. This would allow the development of various activities around the dam such as agriculture and new urban green space.

The water treatment process uses phytodepuration techniques on a serial of semi buried plant filters, located on the dam's bay. By using these kind of filters, ecological activities are enhanced, increasing its vegetation cover, strengthening the already exceptional microclimate and improving the ecological succession over time, consolidating the birth of a new Oasis.



CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

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SCHOOL PRIZE





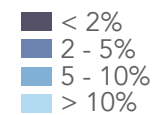
Definition of the site where the filters are distributed.

Simplification of the topography of the site and extraction of the centroid of each triangle.

Spatial modification of the centroid according to the slope of the terrain to adapt the size of the cells.

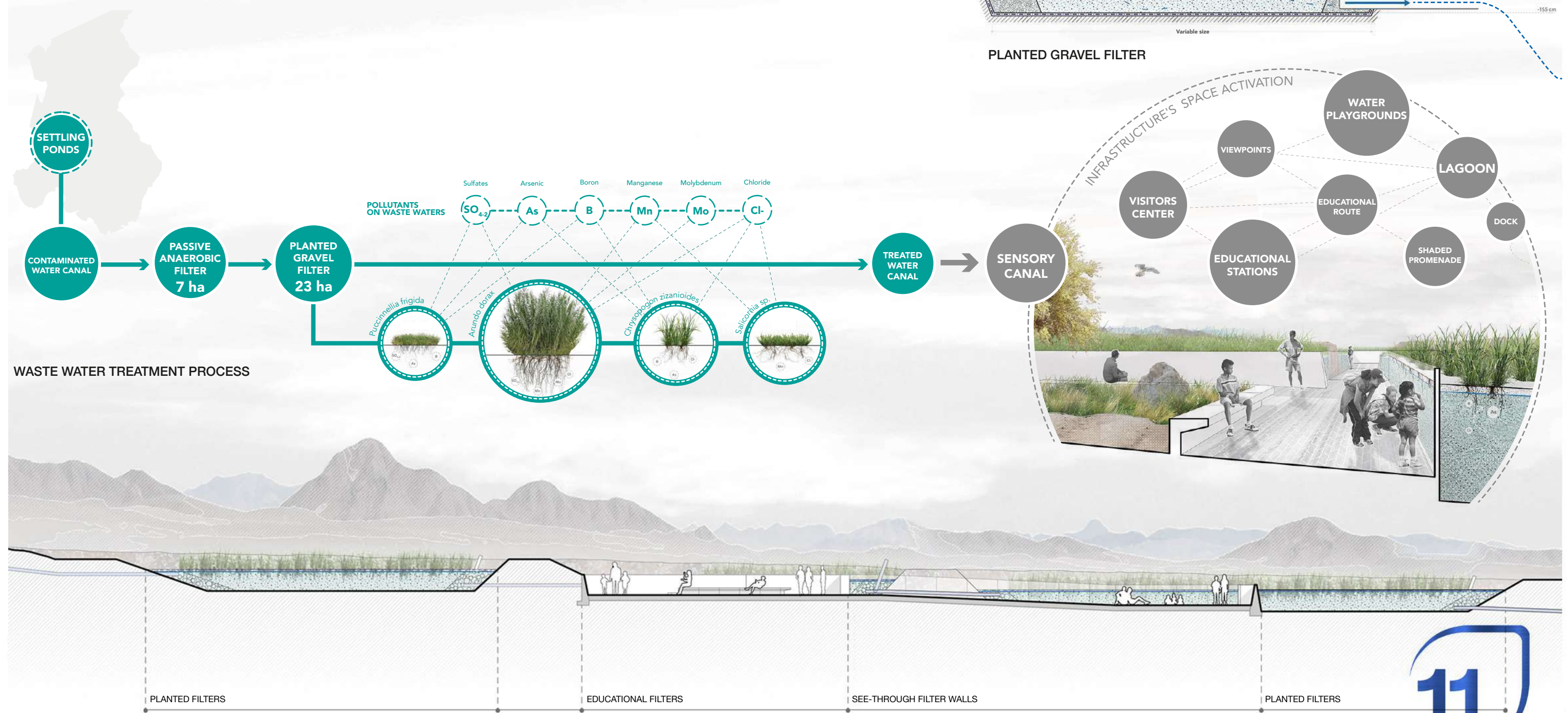
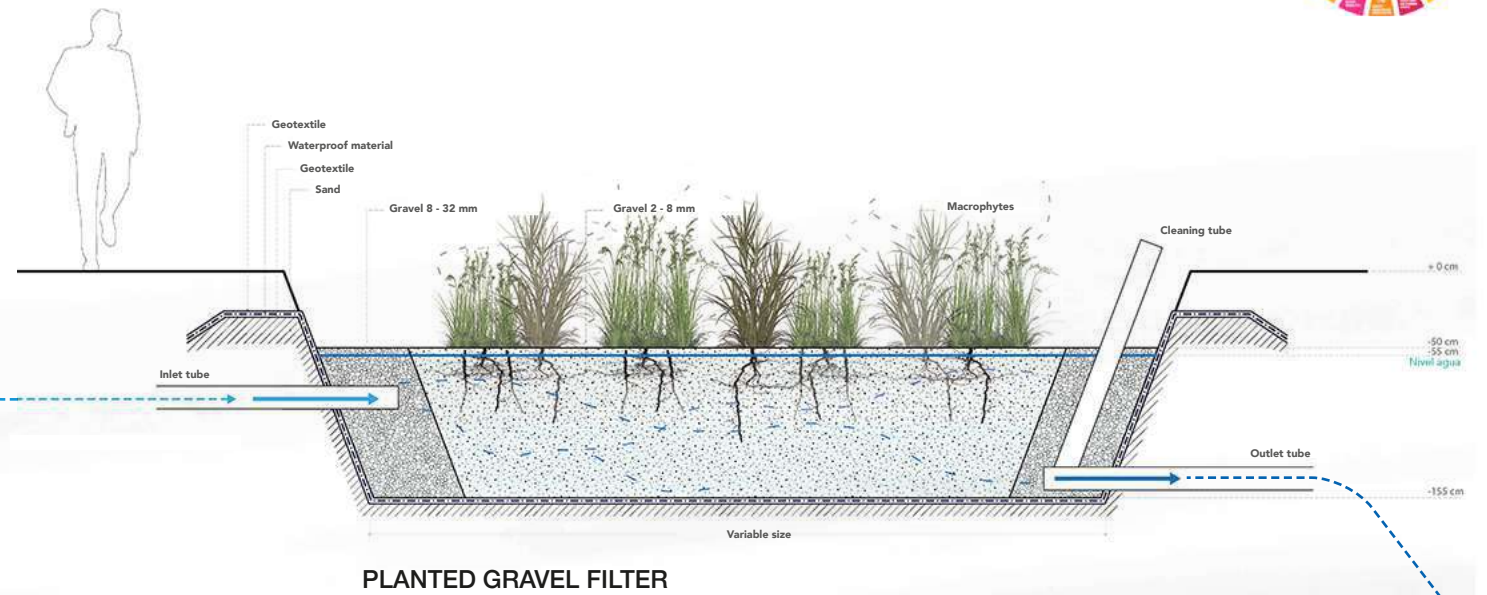
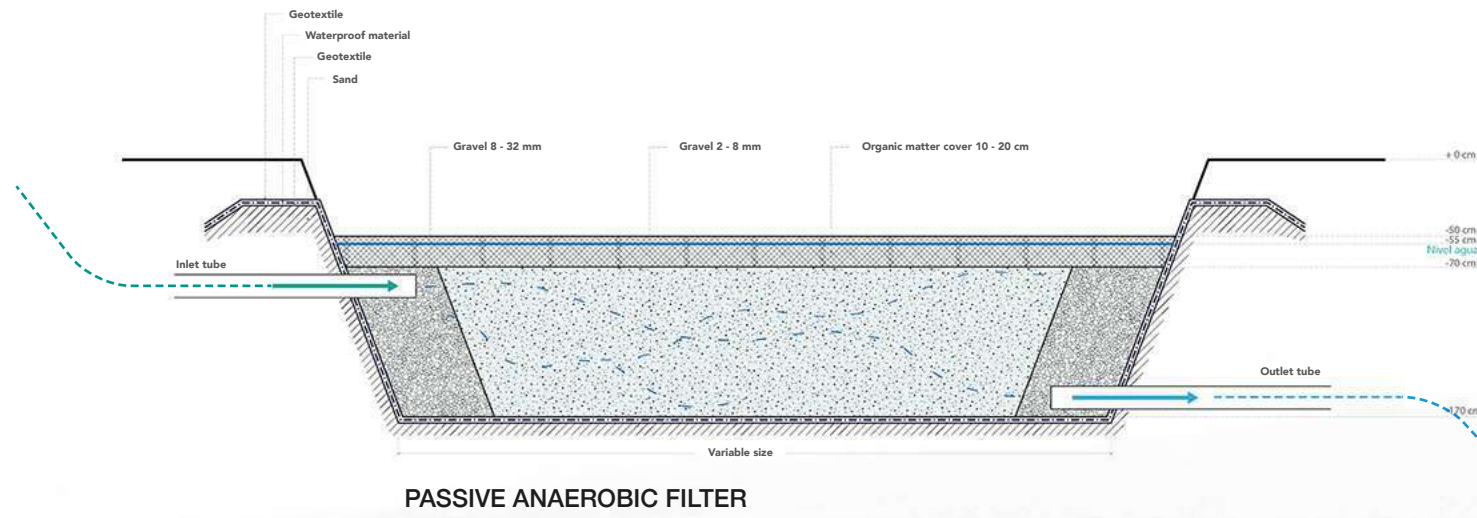
Calculate the mean distance between adjacent points and build irregular cells.

Selection of larger cells, freeing up space in the steepest areas for the spontaneous development of native vegetation.





# - WASTE WATER TREATMENT -

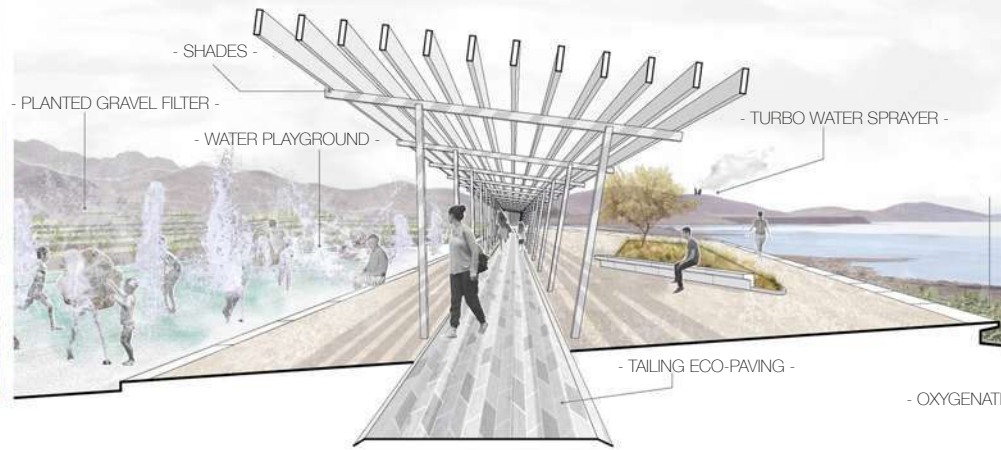






- GREENHOUSE -

- SHADE HOUSE -



- SHADES -

- PLANTED GRAVEL FILTER -

- WATER PLAYGROUND -

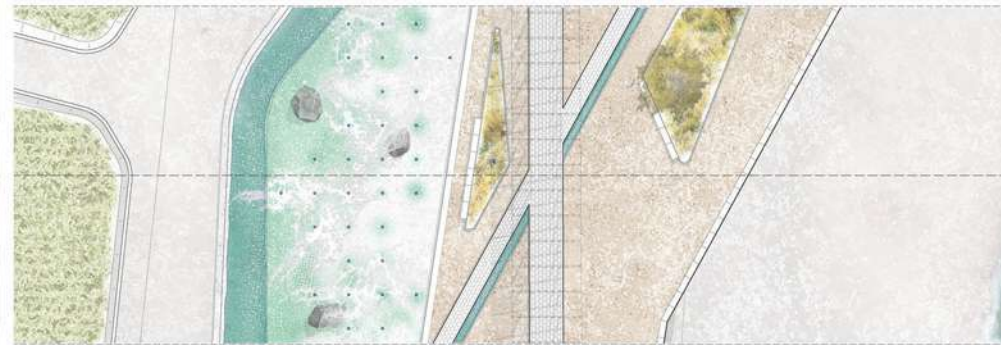
- TURBO WATER SPRAYER -

- TAILING ECO-PAVING -

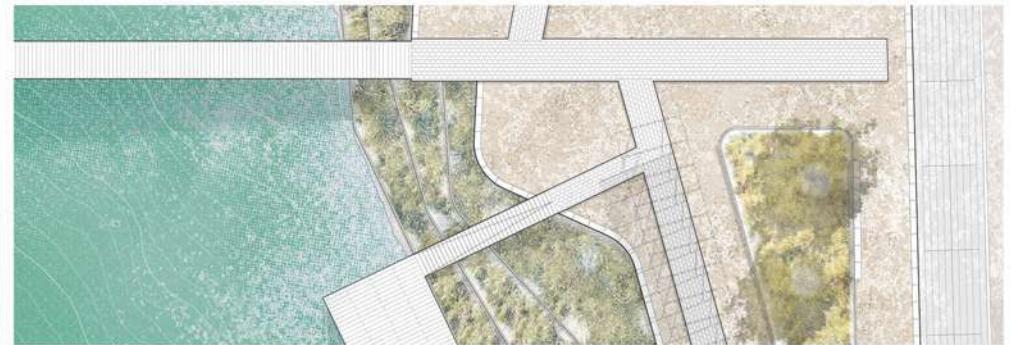
- OXYGENATION CASCADE -



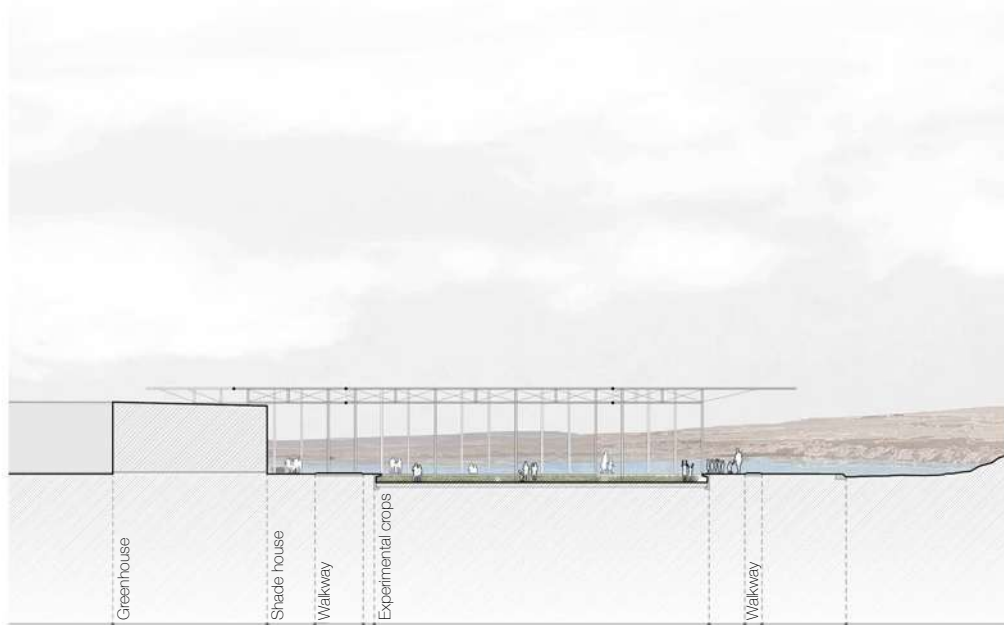
- DEVELOPMENT CENTER -



- PROMENADE -



- TREATED WATER LAGOON -



Greenhouse

Shade house

Walkway

Experimental crops

Walkway



Treated water canal

Water playgrounds

Vegetation cells

Shaded promenade



Dock

Vegetated bay

Shaded promenade

Vegetation cells

Dam retaining wall

