QUITO [FLEXIBLE GRIDS AND ECOLOGIES]

A Dissertation

Presented to

The Faculty of the Department Gerald D. Hines College of Architecture

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Bachelor of Architecture

By

Gabriela Degetau Zanders

May, 2019

QUITO [FLEXIBLE GRID AND ECOLOGY]

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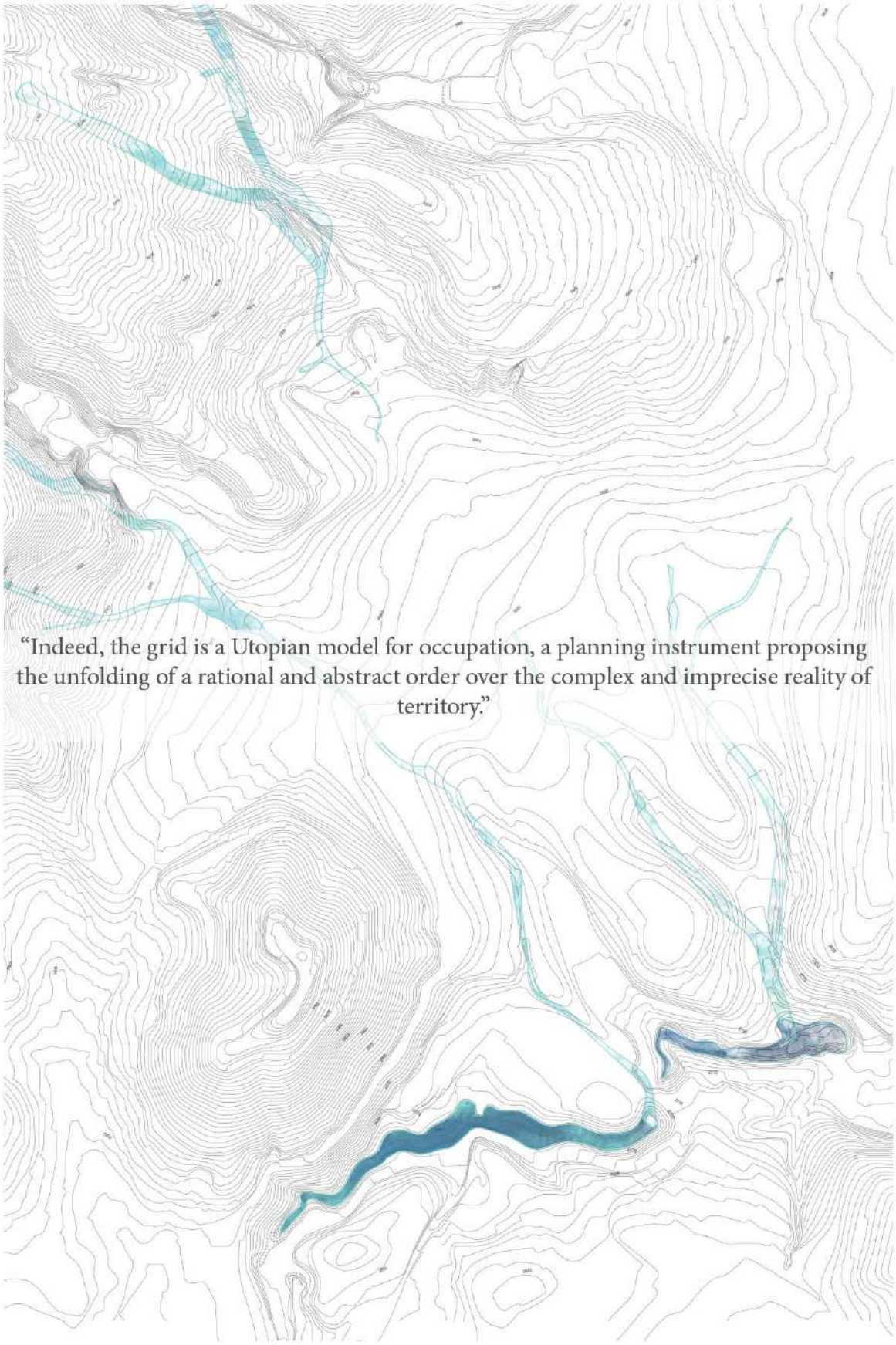


"Indeed, the grid is a Utopian model for occupation, a planning instrument proposing the unfolding of a rational and abstract order over the complex and imprecise reality of territory."

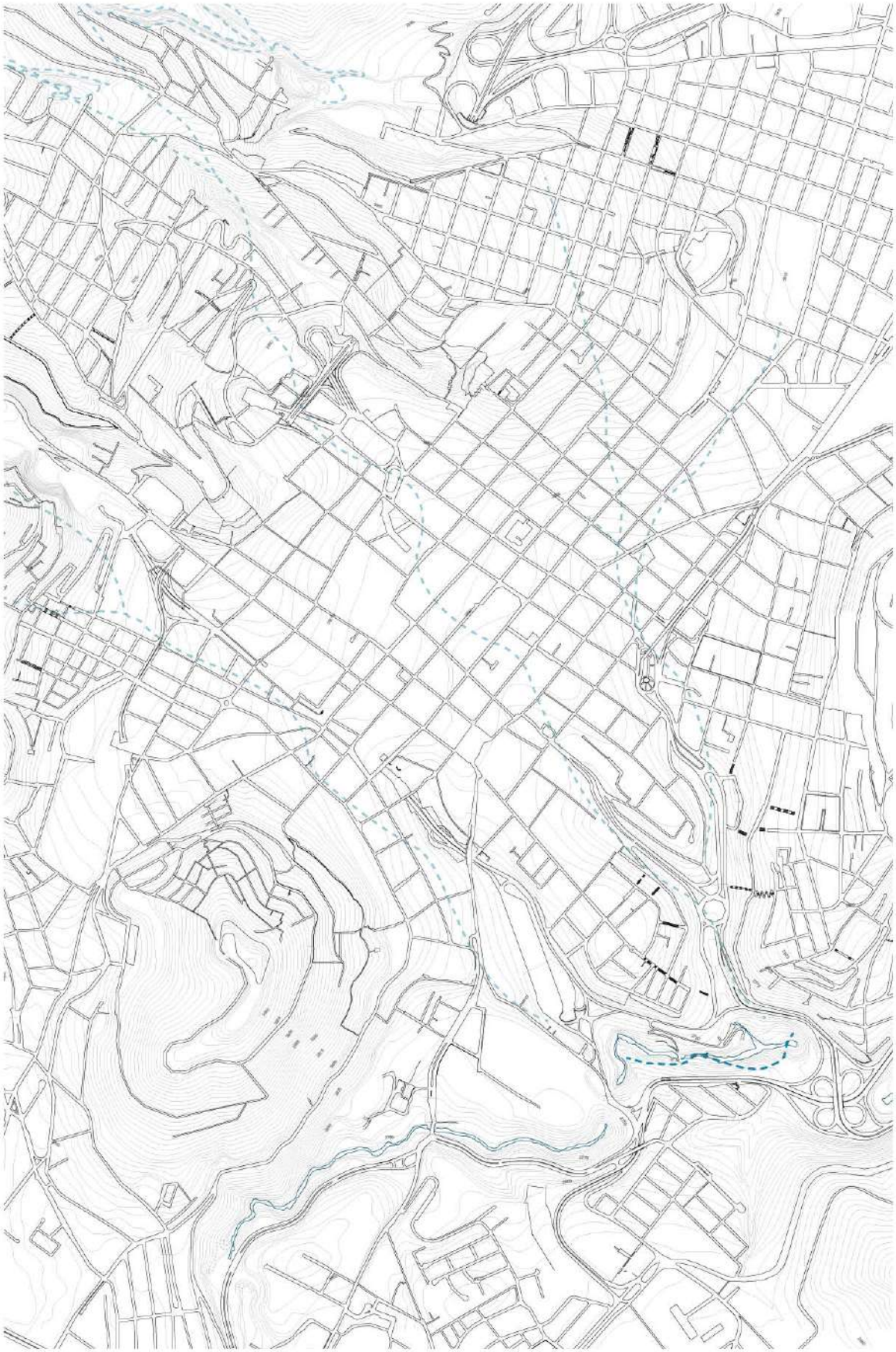

Cumbre de San Juan
Avenida 24 de Mayo
Quebrada Matancilla
Cumbre del Panecillo
Avenida 24 de Mayo
Río Machangara

ABSTRACT
[Flexible Grids and Ecologies]

In Una Línea en Los Andes, Pablo Pérez explains the curious condition where the "intended rectangular tabula rasa" contrasts the dominant and imprecise geography of the city. Mountains, volcanoes, rivers, and gullies define Quito's landscape, and topographical difficulties have traditionally been a central obstacle to urbanization. Spanish colonizers were the first to remap the territory as an even, mathematical space, ignoring existing pre-colonial conditions in an attempt to recreate the order of cities they knew/understood. The development of a static grid as a utopian manifestation has become as Colin Rowe describes an "object to contemplation," or an "image to be adored," rather than a "directly applicable instrument to seriously alleviate social order." Looking closely at the urban structure of Quito, the artificial grid has traces of the pre-existing topography in the slight bends of the otherwise ideal colonial structure. However, utopian desires for predefining space do not reflect, nor can they contain a city's complex topography and culture in flux.

This thesis highlights the conflict between the European grid and the geographical agents in Quito's historic city center. It proposes flexible ecological urbanism, where an adaptable grid integrates Quito's natural and built environments, viewing architecture (culture) through a lens of nature. An Ecology center and research park are the catalysts to redefining the interaction between an organism and its constructed environment.

CONTENTS
[Flexible Grids and Ecologies]



PROSPECTUS
[Flexible Grids and Ecologies]

"But what is the territory? Operationally, somebody went out with a retina or a measuring stick and made representations which we then put-upon paper. What is on the paper map is a representation of what was in the retinal representation of the man who made the map and as you push the question back, what you find is an infinite regress, an infinite series of maps."

QUITO'S GEOMETRY

[Flexible Grids and Ecologies]

Latin American cities with their most remarkable history are constantly reminded of their European ancestors. On December 6th of 1534, the Spaniards founded San Francisco de Quito, which was established in the same place as the indigenous settlement for two main reason; the abundant presence of native population, which was required for agricultural labor, and the topography of the area. The Pichincha volcano and the deep ravines which crossed the territory protected the city. The Spanish settlement took advantage of the natural barriers which were challenging to penetrate an easy to defend.

The colonizers trumped the complex topography dividing the city into a series of blocks, split initially by seven deep gullies formed by rain that fell on the hill, led to the establishment of order over the space, covering the three major macro-geographic components of the city: the highlands, the coastal plains, and the Amazonian basins.

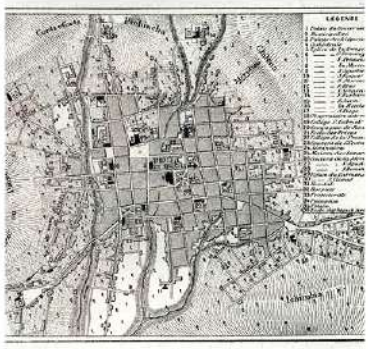
Sebastian de Benalcazar was responsible for tracing the Grid over the city, creating blocks and streets which were distributed amongst the founders. As the colonial system intensified, exploitation became consolidated and the city started to expand, the broken topography that once was advantageous it became a problem for the traditional grid of the Spanish urbanism.

1897

1920

2016

1774



1883

1903

1914

1922

1931

1949

1960

1983

The filling of the gullies at the margin of the city started at the end of the Nineteenth Century, canalizing the water and building drains that later filled with earth. The grid is flanked to the west by the Jerusalem ravine and the East by the Manosalvas ravine. The 24 the Mayo Avenue, was traced with shorter transversal streets running down to the gullies.

Quito has throughout its 500 years of urban history developed a complicated relationship between the geometry of the grid and its geography. In some of the first comprehensive surveys from Quito's plan the overlap between the expanding grid and the geometry of the precolonial ecology are visible. Even though, as the years passed, gullies and ravines were slowly filled as the Spanish grid expanded throughout the Andes, some of these moments are still clear on Quito's master plan, were the grid skews and bends bringing a long history of battles and conquest to the present. As Calvino says, "The city does not tell its past, but contains it like the lines of a hand ..." The conflict and the inconsistencies between the grid (plan) and the local characteristics of the city are clear. The ground elevates, and the shape of the gullies mark the territory, making apparent the progressive change or even the disintegration of the perfect and strict division, that resulted from the implementation of a utopic model over the imprecise and complex topography of the City of Quito.

Today, 300 blocks make up the historic city. The streets surround the central square known as la Plaza de la Independencia, where the major seats of political, religious and cultural institutions are located.

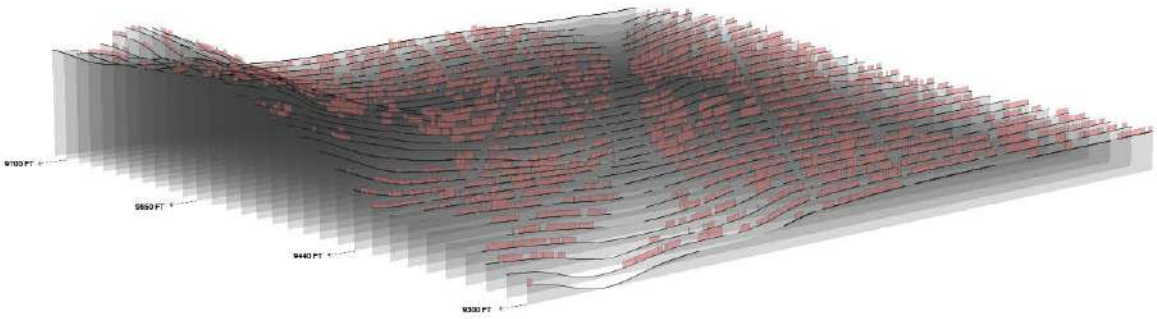
"The flexible environment must also be included along with the flexible organism because, as I have already said, the organism which destroys its environment destroys itself. The unit of survival is a flexible organism-in-its-environment."

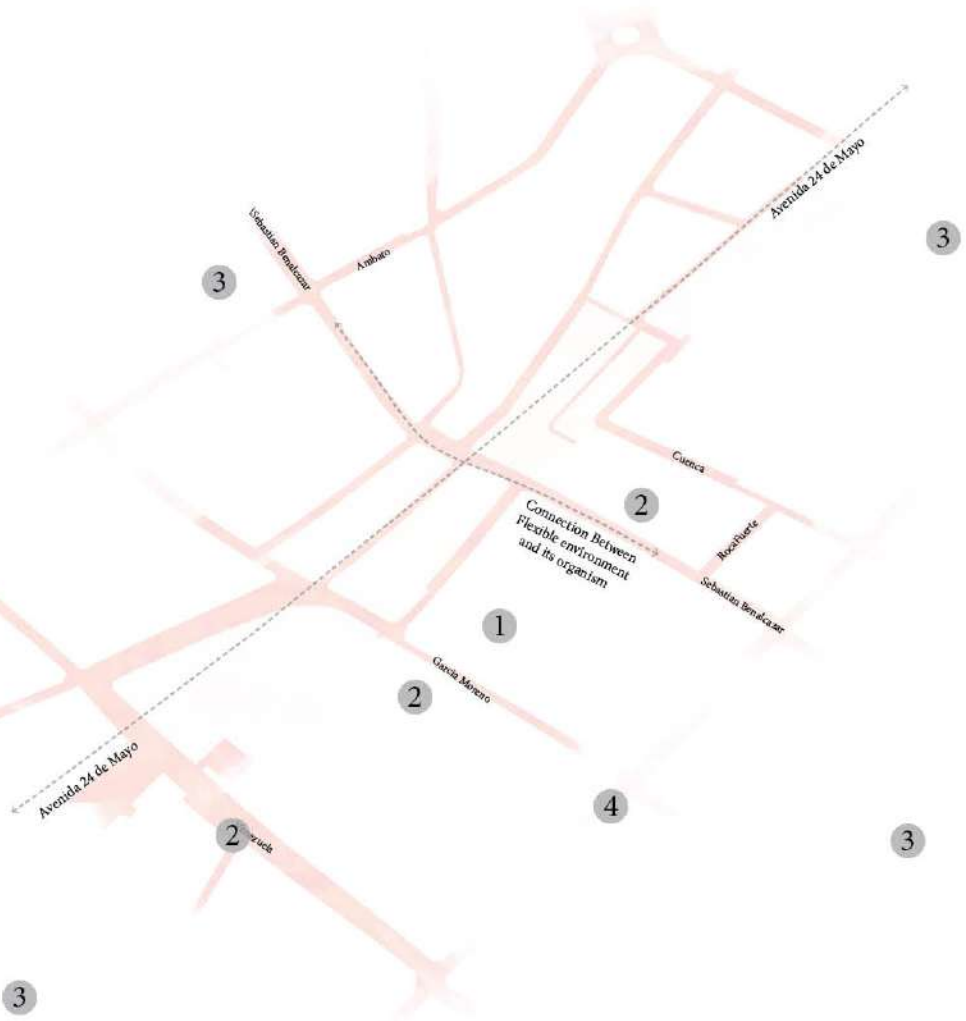
TOWARDS A FLEXIBLE URBANISM

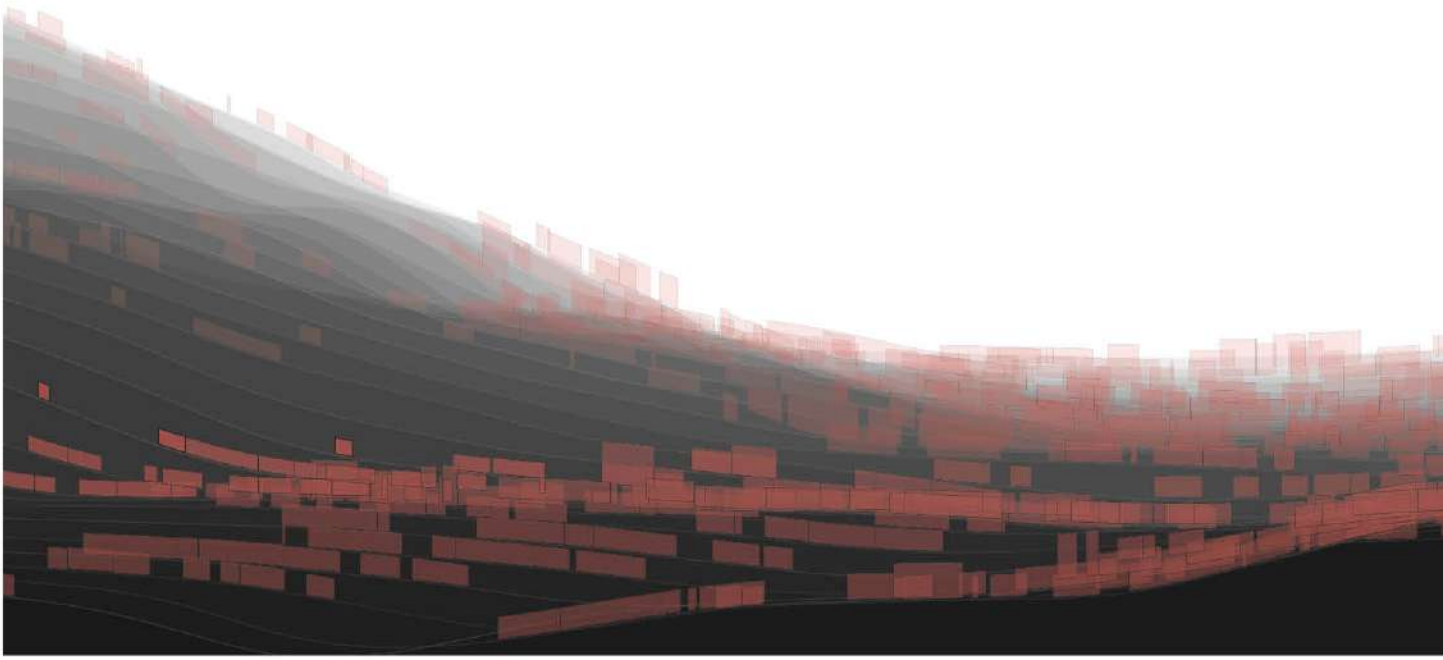
[Flexible Grids and Ecologies]

Quito cannot be described without mentioning its ravines and gullies, as the grid had to adapt to the conditions of the terrain. Fillers, retaining walls, and platforms were used to level the uneven territory. Historically, urbanization depended on the landscape and its ecology to be sustained. Nowadays, because of the difference between the landscape and the of the city, as role of cities as centers of consumption, urbanization has severed the connection between cities like Quito and their immediate ecosystems, creating a disruptive ecology.

Quito's urbanization process reflects a rigid system, which creates a dissociation between the plan and the reality of the terrain. The grid negates spontaneity, as well as the native landscape, and traditions, enforcing an order that surpasses time and space, and that entitling control while implementing hierarchy.
Even though the grid covers the natural landscape and ignores the ecology of the valley, moments of intersection between the grid and the terrain are still visible.



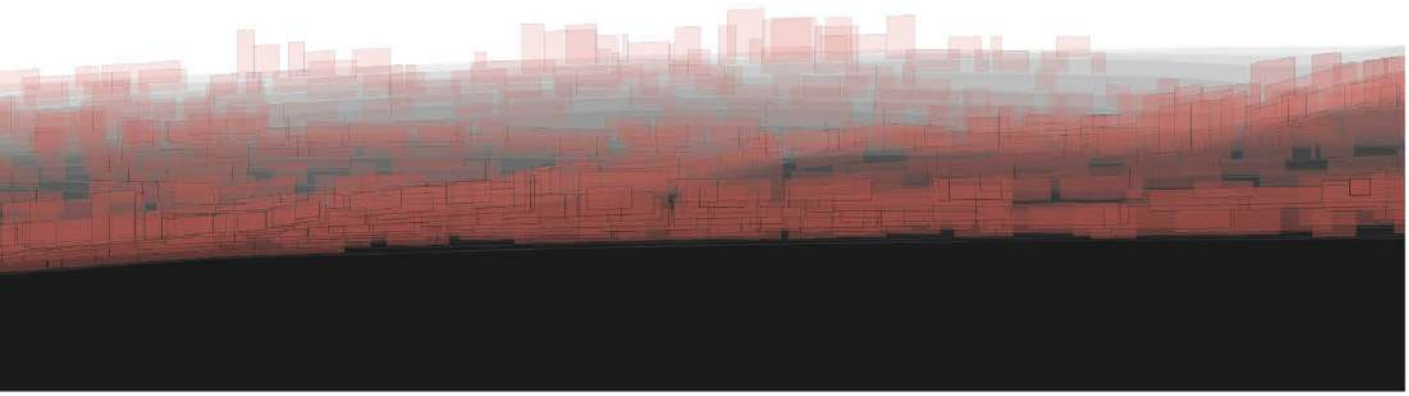

Avenida 24 de Mayo
Sebastian Benalcazar
Ambato
Cuenca
Connection Between
Flexible environment
and its organism
RocaFuerte
Sebastian Benalcazar
García Moreno
Avenida 24 de Mayo
3
3
2
1
2
4
2
3
3

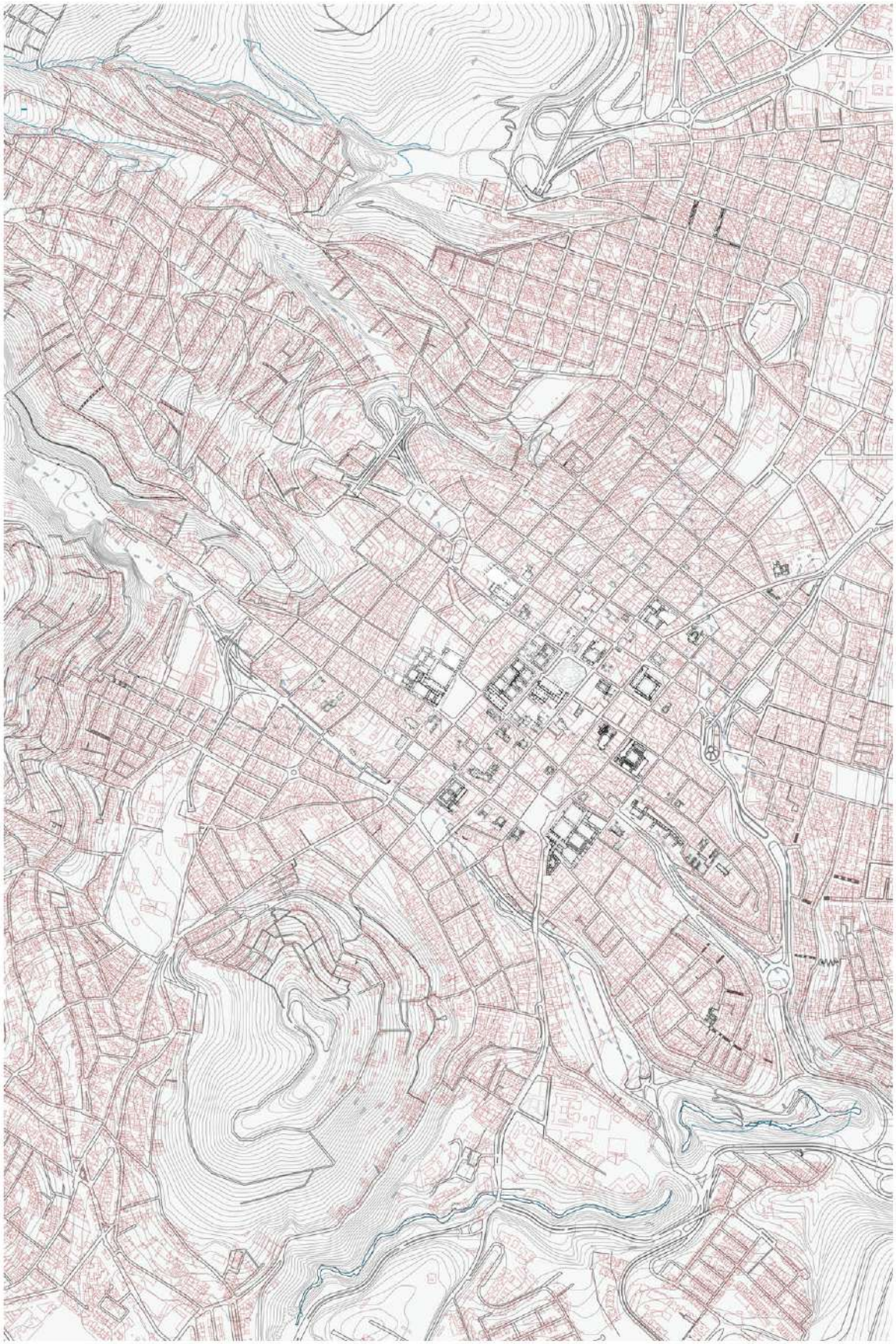


These flexible moments where the grid bends to accommodates the topography present opportunities to highlight the ecology of the city of Quito that was lost after the Spanish Colonization.
It is essential to re-establish the connection between the social, urban, and contextual aspects of the city in order to emphasize a socio-ecological link while reinforcing flexibility, As Bateson states, "A new approach where flexibility rather than efficiency becomes a priority." Flexible urbanism expresses the required dynamic in order to unfold the potential between the historic City Center and its ecological vectors. The proposal creates a demand for a building typology that allows transformation to occur by taking into account the existing possibilities and providing a foundation for a flexible program, which respects time and evolution. A flexible program, which gives the opportunity to deal productively with both the complex inner city and Quito's layered ecology.

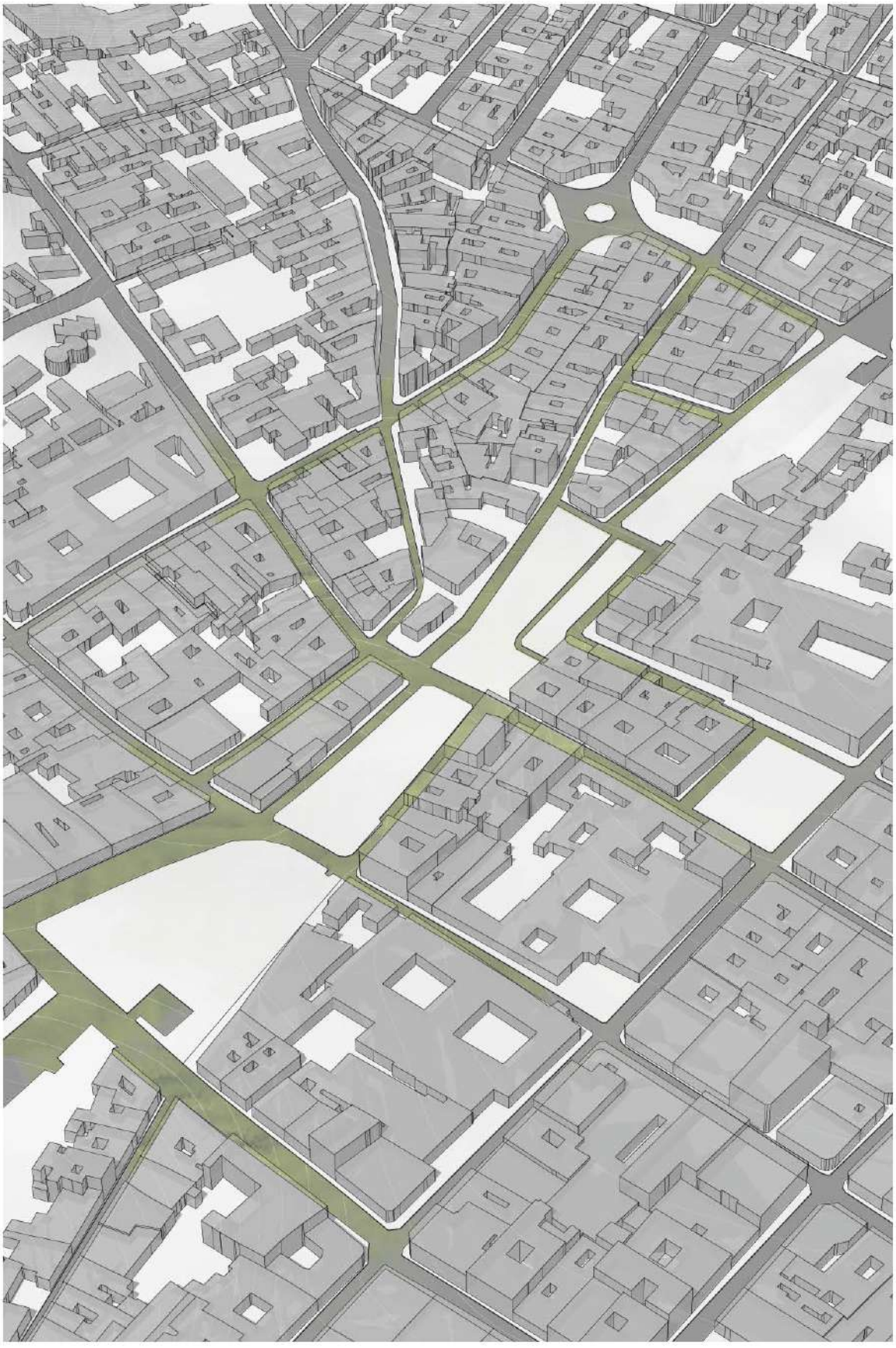
Core set of community values, according to historian Suzanne Rhees,

1. an interconnected but variable street pattern
2. an open space system
3. a hierarchy of streets designed with shade trees and sidewalks
4. a town or neighborhood center





"[Nature in the city] is the consequence of a complex interaction between the multiple purposes and activities of human beings and other living creatures and of the natural processes that govern the transfer of energy, the movement of air, the erosion of the earth, and the hydrological cycle, The city is part of Nature."



FRAMING AN URBAN ECOLOGY

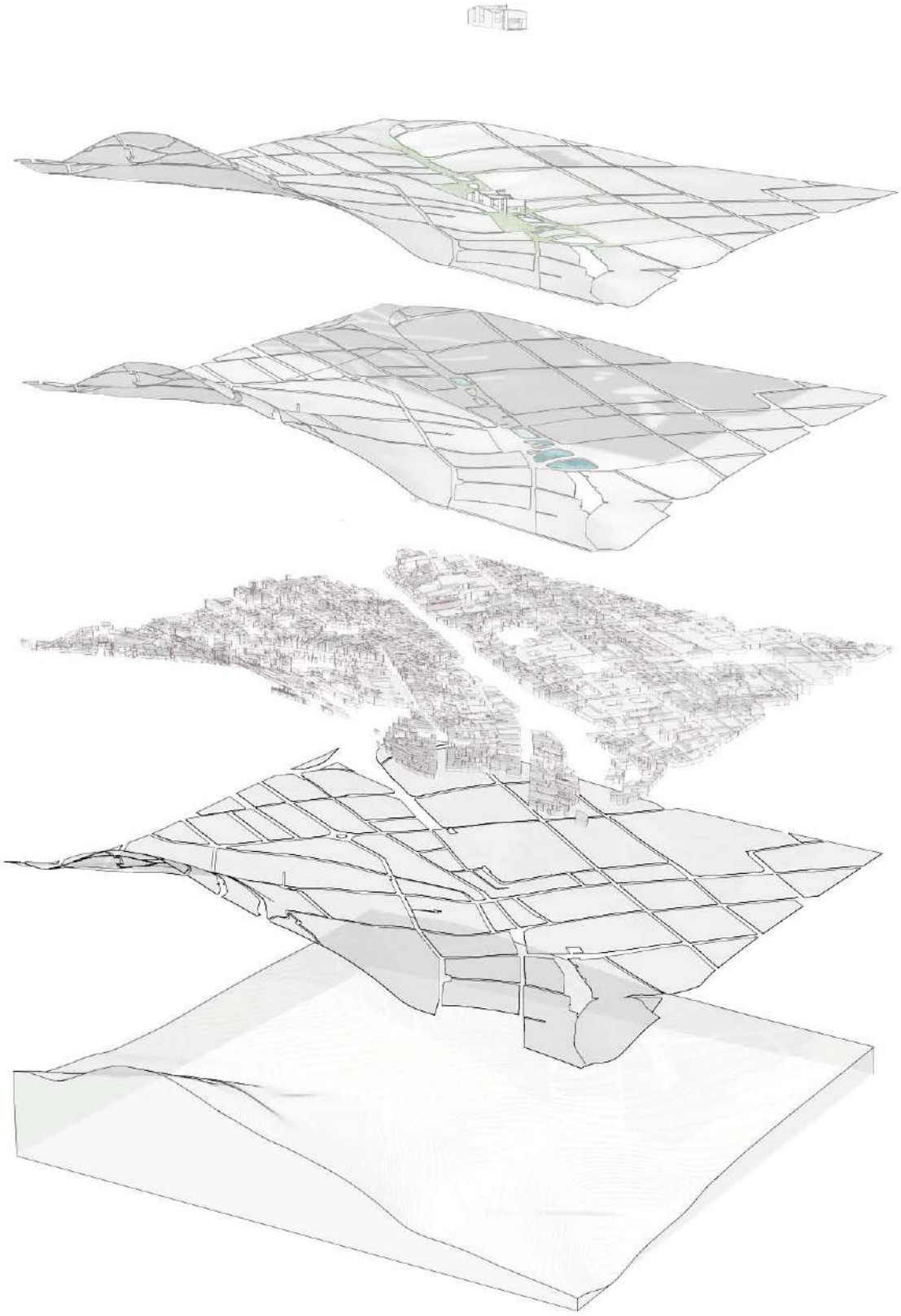
[Flexible Grids and Ecologies]

"Quito suffers from the problem of an imperfect transport system, environmental deterioration and the lack of identity."

Quito was a city of gullies, where the water followed its course, and life had a natural flow. Over time, urbanization has become a threat to ravines and the ecosystem. As cities are built, dwellers replaced the soil and the biology of the territory, streams, ravines, and gullies are filled and merged into sewer systems. This resulting leveling of the landscape with asphalt and concrete, replaced rainwater systems and gullies as canalized drainage.

Even though the City Council introduced the Metropolitan District Act and helped with the rehabilitation of city's historical heritage, there is still a lack of connectivity between the historic architecture and Quito's ecosystem; and an urge for rehabilitation of public space fueled by ecological awareness amongst the population. Quito's downtown has fragmented public spaces with little or no connection to its original ecosystem. For example, the Jerusalem Ravine, which is a hidden reminder of the ecology as public space, was filled and buried beneath the city.

These waterways are embedded in the city can shift the ecology, instead of being an isolated system, the can become an oasis between the asphalt.



Gullies can continue to help urban zones and increase the cities function. The geological and vegetal characteristics of the ravines, can improve the regional ecological performance and re-establish interest amongst the residents about how the system works.

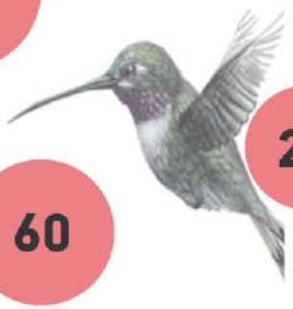
As Orff clarifies, "By valuing water as an environmental and civic common asset, it can be designed back into the city fabric to regenerate biological and social life." By suggesting a new relationship to the gullies and the water within the urban landscape as a public space, a project that expands amenities for urban living and connection between the context and its ecology. The strategy is to motivate and inform the public through an interactive and water-based landscape, that changes the rigid pattern of Quito's historic center by highlighting the environmental system with a flexible form, performance, and program. This will result in the beginning of the restoration and recreation of the native habitat along the 24 the Mayo Avenue aiming to recuperate the ecological integrity of ravines through an Ecology Institute and Research Park, connecting the geographical agents of the city with the historical center and generating eco-awareness.

Kate Orff explains, "A project that rethinks how public space can hold water and how cities and downtowns can redefine and reveal their relationship with natural systems."

15

Animal species of heritage, iclude the spectacled bear, paramo wolf, the tucan, the yumbo, the sparrow, the marsupial frog, the hummingbird, and butterflies

Variety of birds 90



20

Variety of mammals 60

Variety of insects

40

Plant species whose names are derive from of Quito name exist in the district

Emblematic tree 1

50%

Species of plants and animals that live in the Quito ravines

Quito's emblematic plant species include Tuna, Arrayan, Guavo, Chocho, Salvia, Mora

7

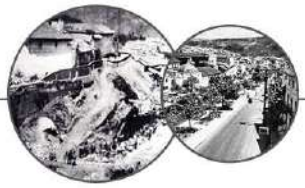
Due to Quito's location close to a zero latitude, the area is covered by a 10m to 20m thick silty volcanic ash. The permeable topography is eroded by the rain allowing the cretion of deep and steep ravines inside the city. Gullies are recognized as green corridors, where many species live within the urbanized area. Ecuador is one of the five mega-diverse countries in the world. More than 111 mammals, 542 bird species and 92 amphibians live in Quito. According to studies, 50% of the fauna and flora in Quito live in the gullies. Among these species, there are butterflies, birds, snakes, frogs, insects, and others. It is possible to find more than 90 species of birds, 60 species of mammals and 20 species of insects withing the ravines. In addition to the Ecuadorian fauna, the flora of the country plays a significant role in these corridors. As a result of the variety of elevation there are more than 18,000 vascular plants. Many of this plants still live in the gullies across the city. Currently, more than 12 species are endemic or in danger of extinction.
By using the existing public spaces and the urban fabric as green corridors it is possible to reinforce and improve the relationship between the city and nature by revealing layers of the ground and juxtaposing programs and infrastructure within the landscape.

XIV
The Ullaguanga-huayco ravine was the main artery of pure water for domestic use in the city. The water coming from it was called "water from the quarry", the indigenous families settled on the margin of the stream forming a "chaquiñán"

XVI
With the arrival of the Spaniards, the geometrical tracings of the grid was consolidated. The ravine changed its name to Jerusalem.

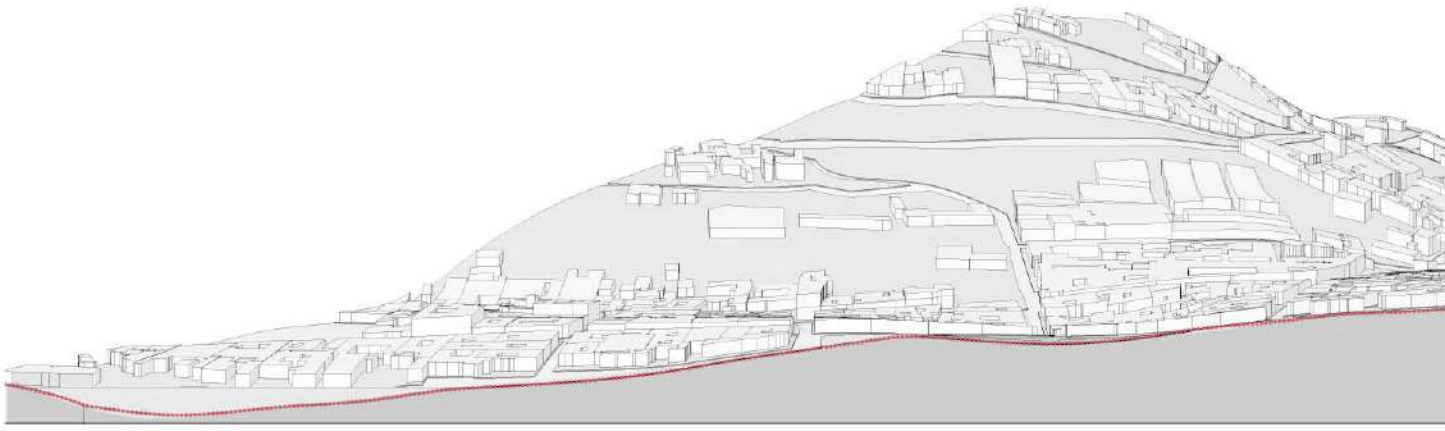
1556
Due to health problems the Cabildo decided to build a canal from the ravine, which had to pass around the convent, to finally end at the water source built in the Plaza de San Francisco

1905
At the beginning of the 20th century, the city began a sanitation process. Because the ravines were an infectious point to fight, given the incorrect use by the citizens, becoming in the receivers of all types of waste - Jerusalem was filled



1922
The Boulevard was inWaugurated on May 25, 1922, the project had a length of 300 meters that ran from Venezuela St to Imbabura St The design was conceived under European criteria, it was visualized as a walkway with three roads separated by broad tree lined parterres,

AVENIDA 24 DE MAYO



SITE ANALYSIS
[Flexible Grids and Ecologies]

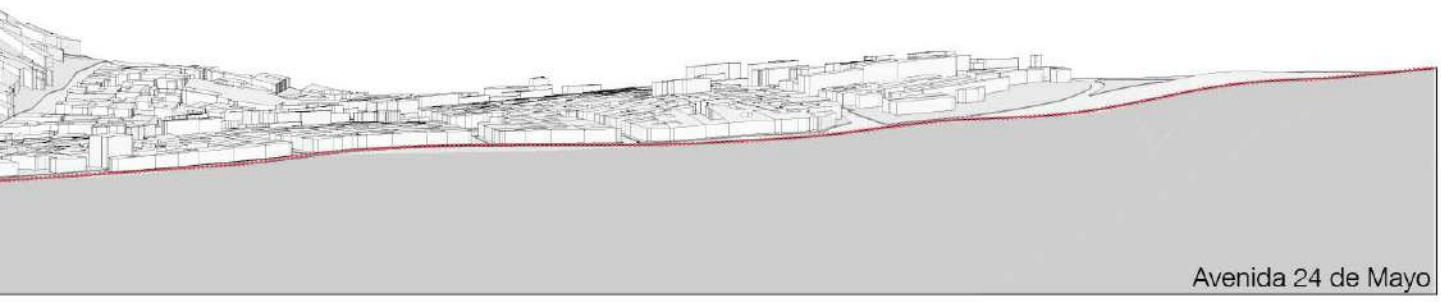
1970-1975
Av. 24 de Mayo started to deteriorate, given the exacerbated conditions by the abandonment of its traditional inhabitants due to different urban problems such as prostitution, delinquency, informality.

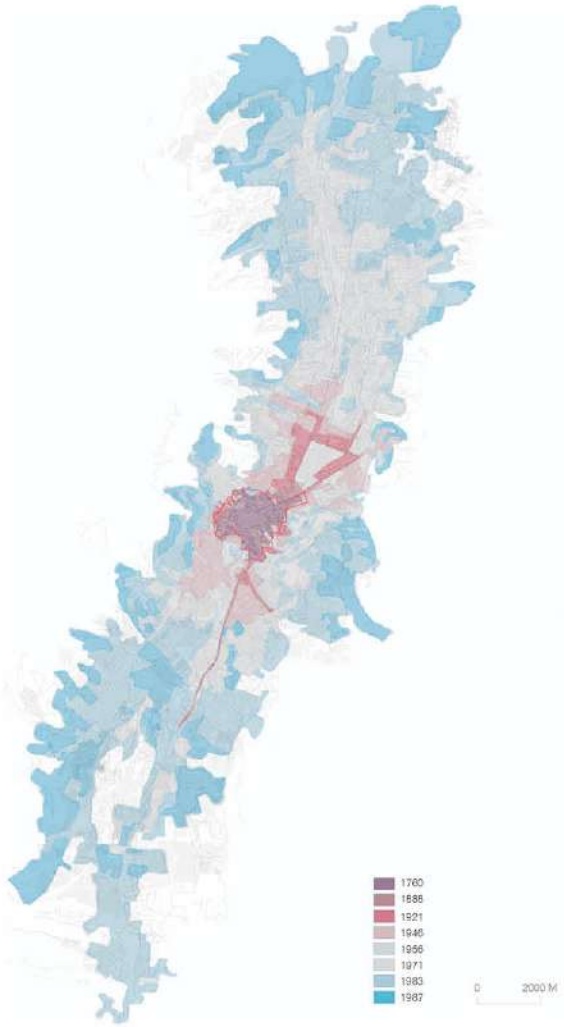
1978
In 1977, the "Colloquium on the preservation of historic centers in the face of the growth of contemporary cities" took place in Quito, under the auspices of UNESCO and in 1978 Quito was declared a World Heritage Site.

1980
The construction began on a viaduct below the Av. 24 de Mayo that allowed to connect Av. Occidental with Av. Oriental. This fact led to the destruction of the old boulevard. The execution of this work lasted approximately 12 years

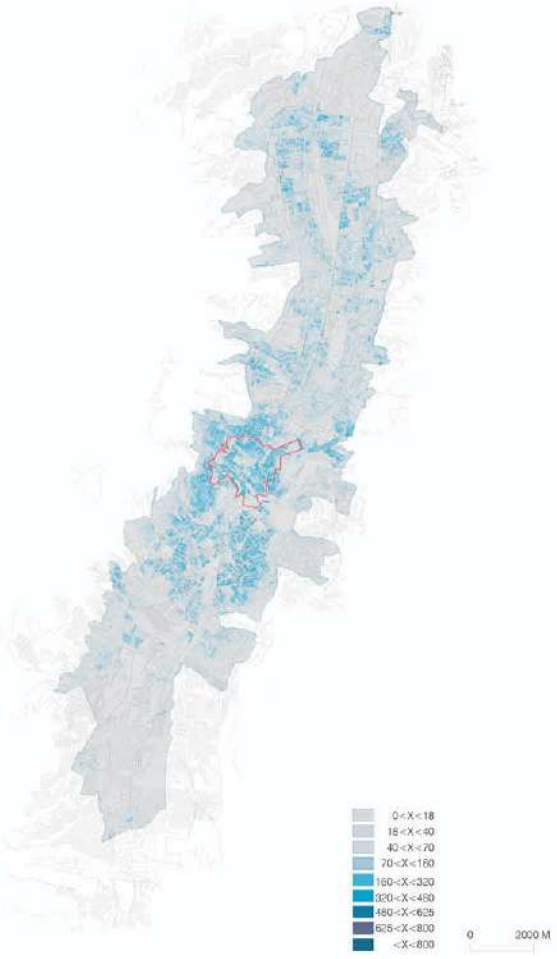
1992
The Viaduct was inaugurated in 1922. The name, therefore, belongs to the twentieth century. Remember the culminating fact of the process of independence

2011
The Avenue was called boulevard once again. The result was a rehabilitated space only in its infrastructure, aimed for tourism. The social fabric was not appropriated or identified with this new space due to the lack of socialization during the planning process. It consists of planters, bollards and details in general that serve a purely decorative function

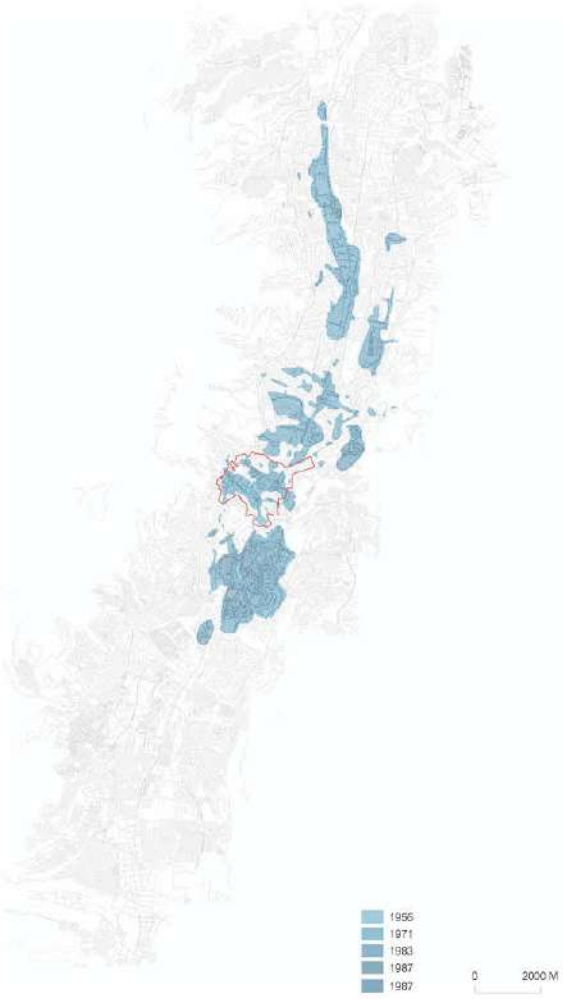




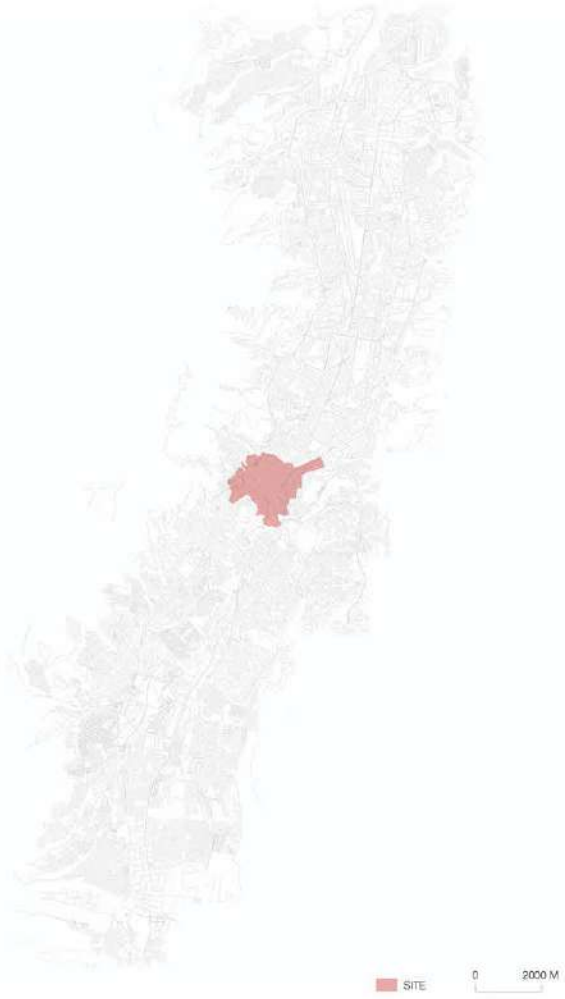
URBAN SPRAWL 1760-1987



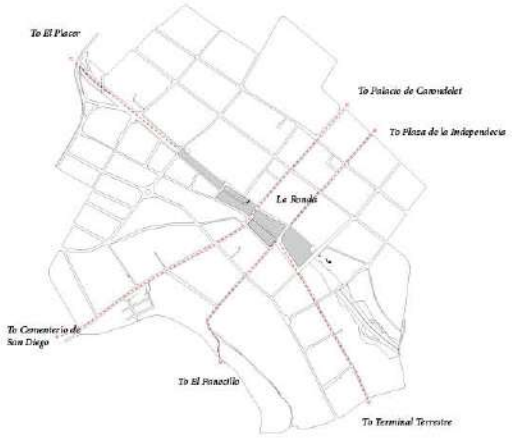
POPULATION DENSITY 1987



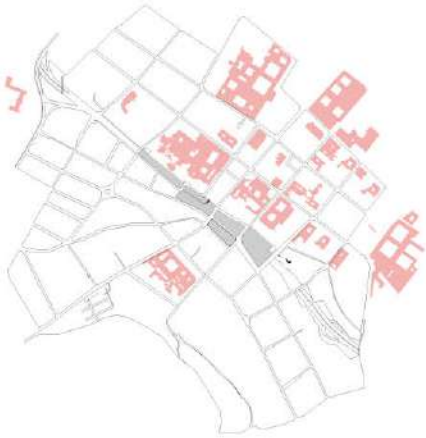
INUNDATIONS 1900-1988



SITE LOCATION CHQ

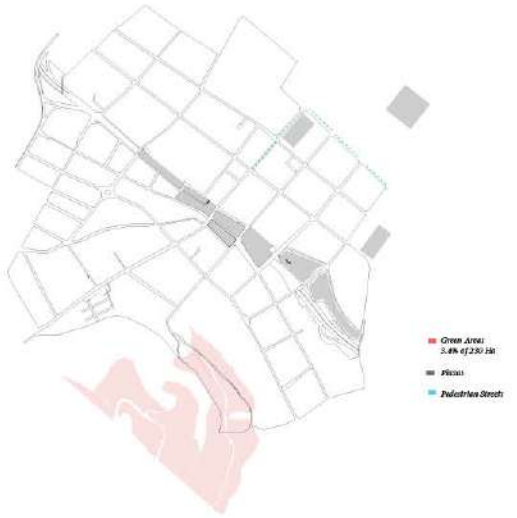


DESTINATIONS

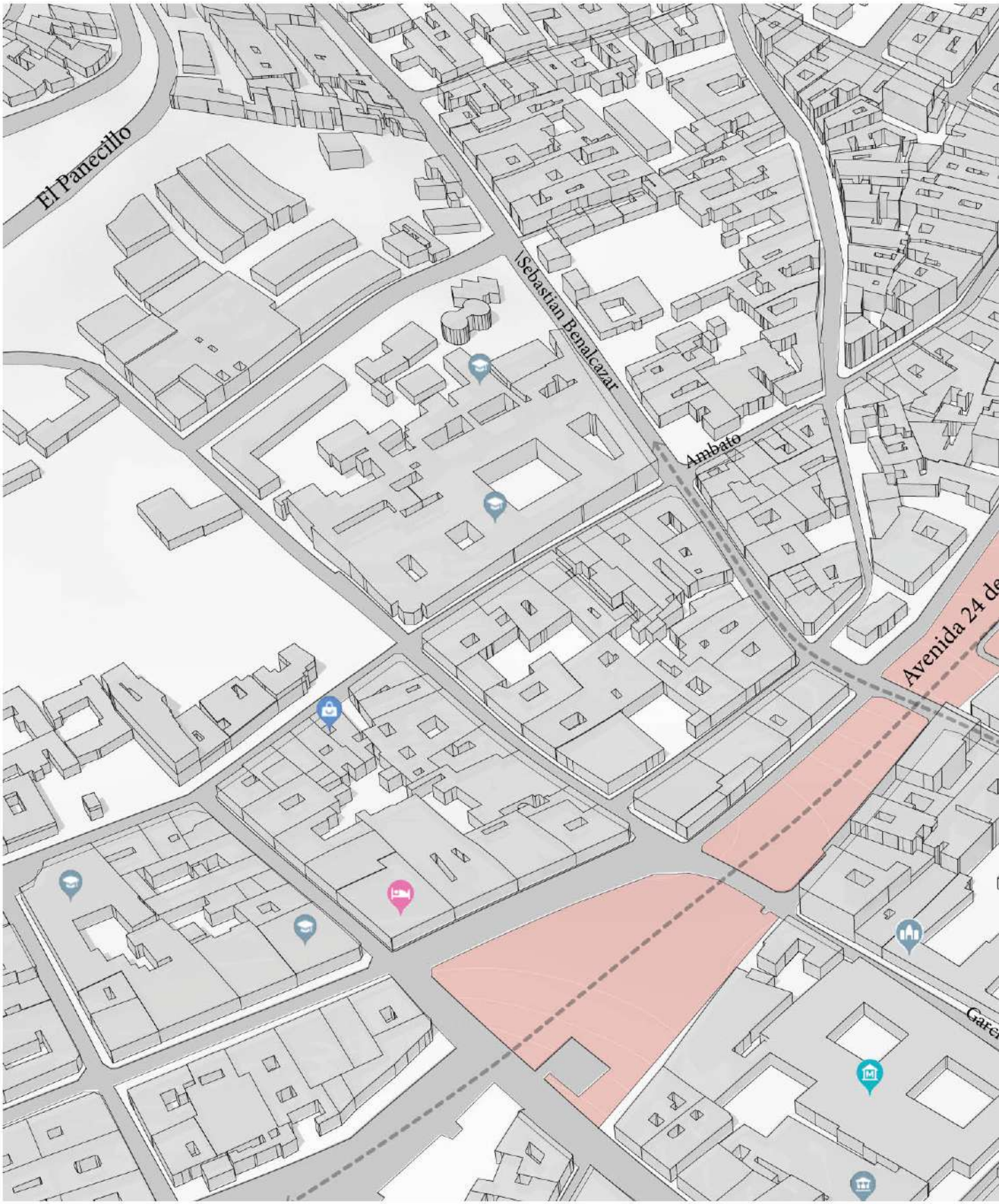


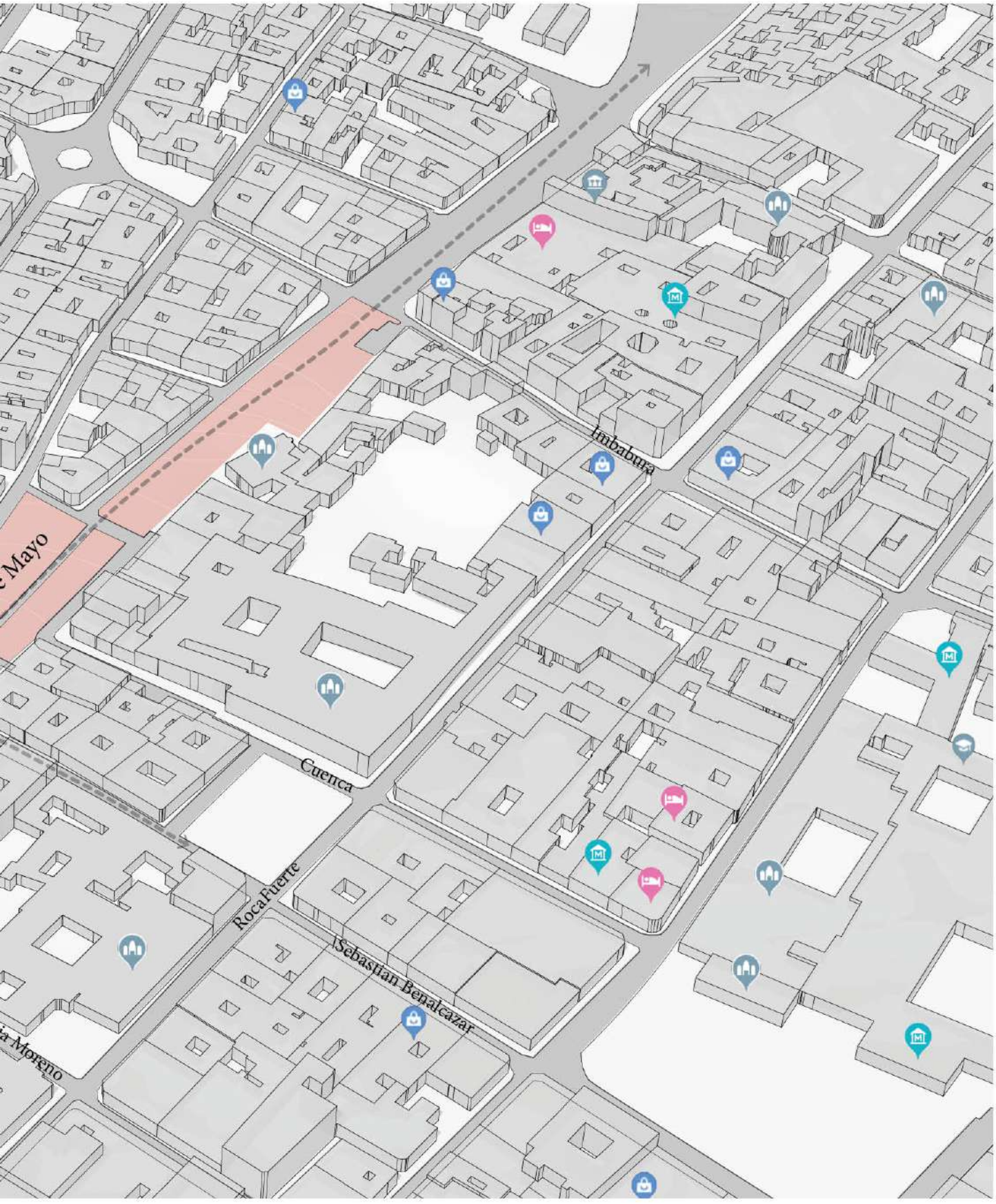
FIGURES

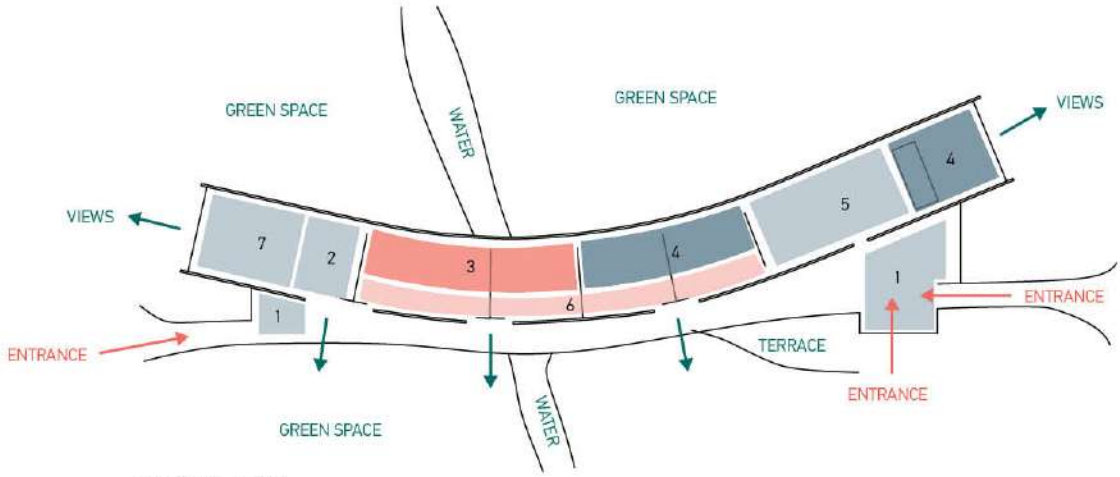
GEOGRAPHY



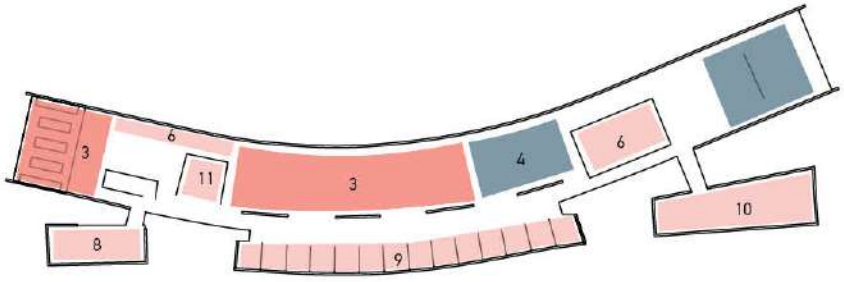
PUBLIC SPACE


El Panecillo
Sebastian Benalcazar
Ambato
Avenida 24 de

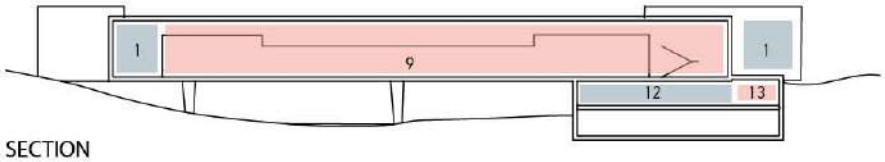

Imbabura
Cuenca
Roca Fuerte
Sebastian Benalcazar



GROUND LEVEL



UPPER LEVEL



SECTION

Program Legend

1. Lobby
2. Classroom
3. Research Labs
4. Teaching Lab
5. Cafe
6. Lab support
7. Computer lab
8. Meeting room
9. Offices
10. Admin
11. X-ray
12. Shop
13. Loading

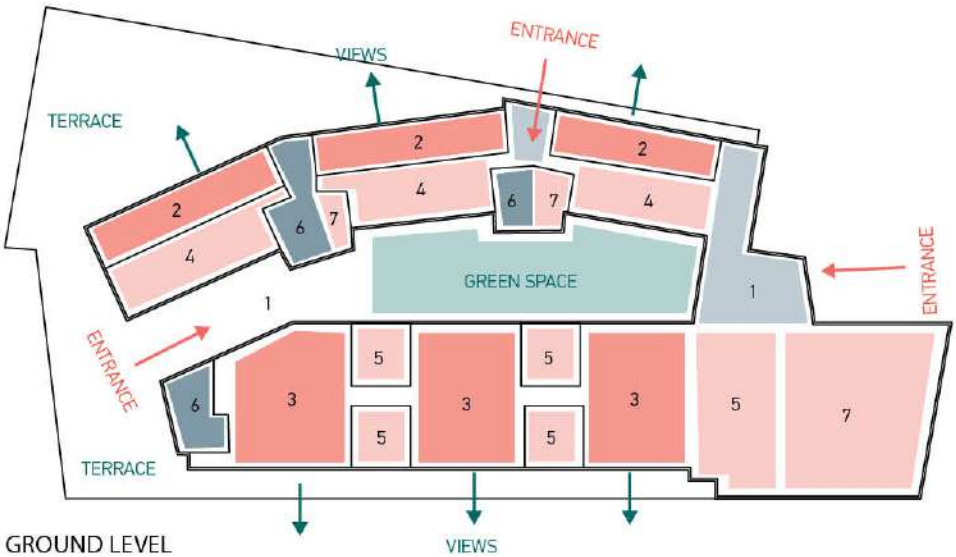
Private
Public
Landscape

PRECEDENT:
VASSAR BRIDGE FOR SCIENCE
[Flexible Grids and Ecologies]

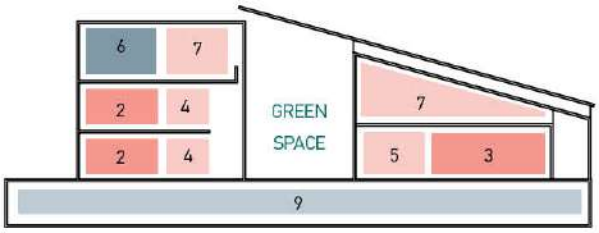
Architect: Ennead Architects
Year: 2016
Program: Academic
Size: 7,400 m2

The bridge for laboratory and sciences, located in Poughkeepsie, incorporates several strategies that could be implemented in an Ecology Center. The ecology center incorporate a difficult topography and a long history of urbanization within the site which applies to the idea of fitting the building within the landscape. The design in Quito could integrate the idea by creating a bridge that flows through the campus while restoring the wetland into a natural landscape. Energy usage, climate impact strategies, and water usage reduction are some of the executed ideas. This project can be a great example to understand how to integrate architecture, landscape and research laboratories.

The purpose of this precedent is to analyze the relationship between the building and its environment, as well as to look at energy and environmental design. This thesis will incorporate a similar approach by seeking to intertwine the building to the geography, the landscape, and the context and understand the different ecological strategies.



GROUND LEVEL



SECTION

Program Legend

1. Lobby
2. Wet Labs
3. Dry research
4. Office
5. Lab Support
6. Conference Room
7. Mechanical
8. Circulation
9. Parking

Private
Public
Landscape

PRECEDENT:

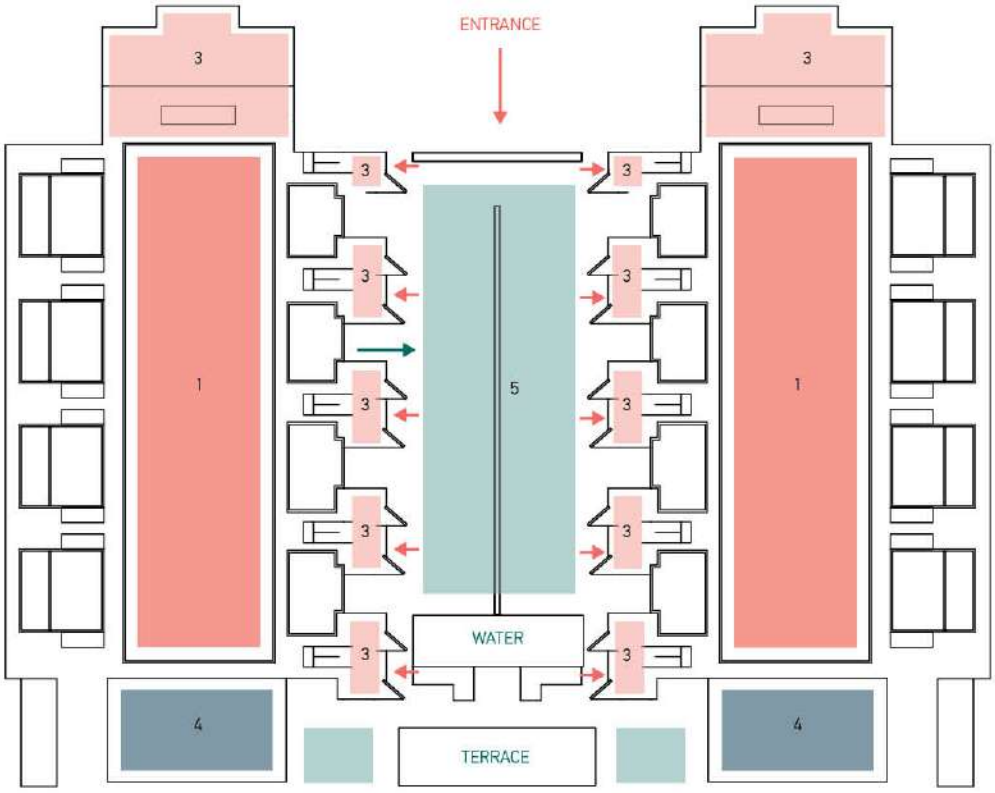
CRAIG VENTER INSTITUTE

[Flexible Grids and Ecologies]

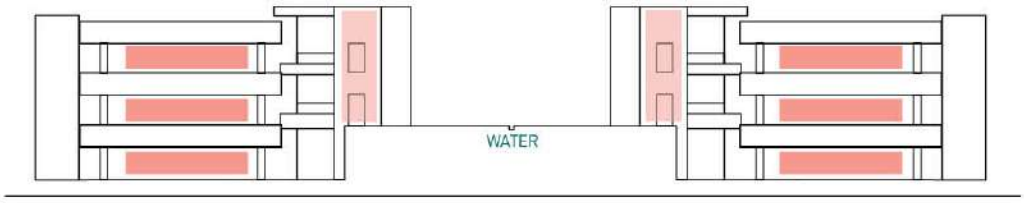
Architect: ZGF Architects
Year: 2013
Program: Laboratory
Size: 44,607 SF

The Craig Venter Institute, located in La Joya, California is a single story laboratory wing, with a central courtyard which is used as a collaborative outdoor space. The building is a net zero laboratory and serves as a model for sustainable research buildings and integrates every system holistically. The building organization regarding the laboratories, the offices and the courtyard could be an example for the ecology center in Quito. To reduce energy loads and to optimize the mechanical system, the computational laboratories and administrative spaces are located in one wing, and wet laboratories occupy the other.

The purpose of this precedent is to understand the design of a net zero laboratory and the organization. The building is a complete research laboratory and only occupies 44,000 SF. This thesis wants to achieve a low usage of soil in order to allow for more public and landscape space. By understanding the organization of the program a small size building would be achievable.



GROUND LEVEL



SECTION

Program Legend

1. Laboratory
2. Loggia
3. Office
4. Library
5. Central Court

Private
Public
Landscape

PRECEDENT:

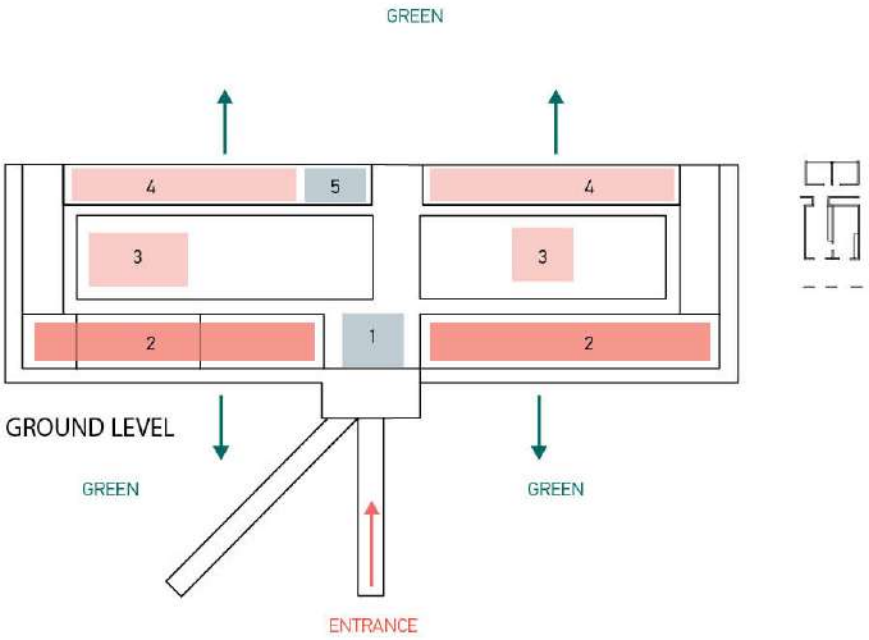
SALK INSTITUTE

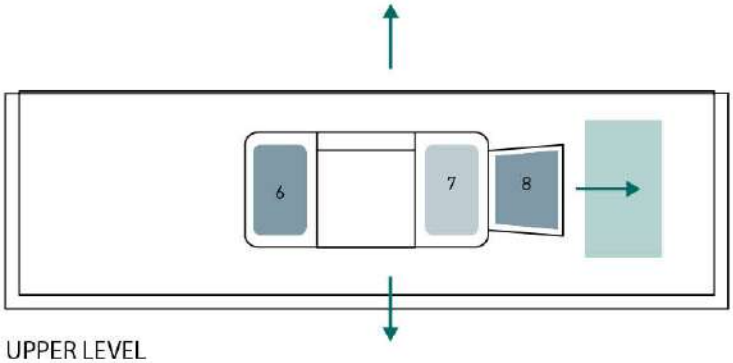
[Flexible Grids and Ecologies]

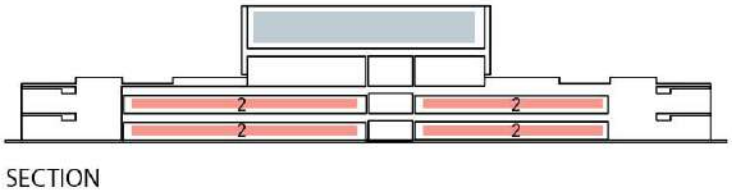
Architect: Louis Kahn
Year: 1965
Program: Research Laboratory
Size: 240,000 SF

The Salk Institute, located in La Joya, California consists of two mirror structures divided by a travertine courtyard. Three floors house laboratories and libraries and the rest are for utilities. The laboratory levels are flooded with natural lighting and a spectacular view. Also, the configuration of the laboratories, which are spacious,and easily updated, provide spaces for shared enterprise and spontaneous collaboration. Nevertheless, the building was envisioned as a "monastery: a secluded intellectual community." That would be the opposite goal, since the design seeks to introduce an open space for Quito's population.

The purpose of this precedent is to analyze the organization and threlationship between the laboratories, the work environment and service in a research center. This thesis will incorporate a similar organization to develop a flexible environment, with a more open and unobstructed layout, to make the building be able to "guess tomorrow,"







Program Legend
1. Lobby
2. Laboratory
3. Support Lab
4. Offices
5. Library
6. Conference
7. Cafe
8. Roof Terrace

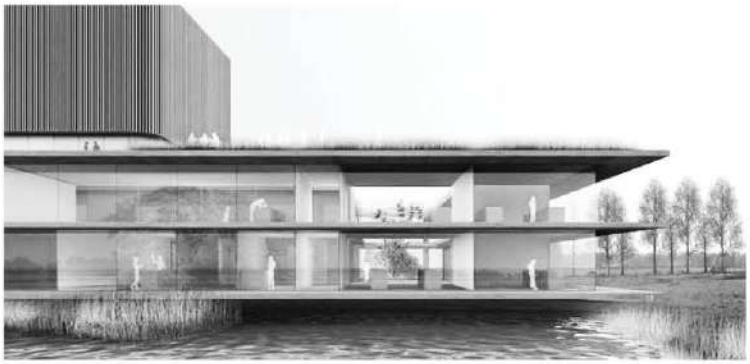
Private
Public
Landscape

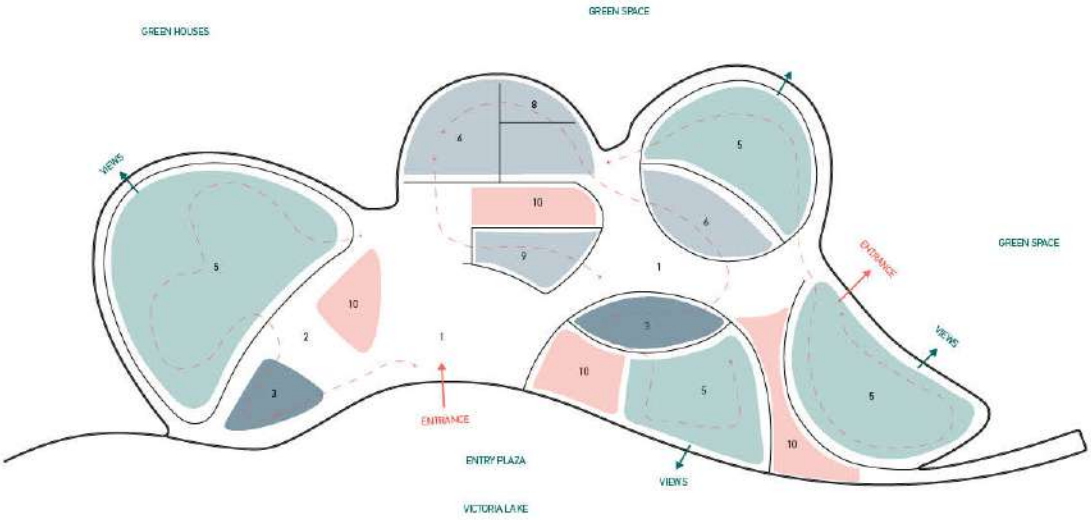
PRECEDENT:
NETHERLANDS INSTITUTE FOR ECOLOGY
[Flexible Grids and Ecologies]

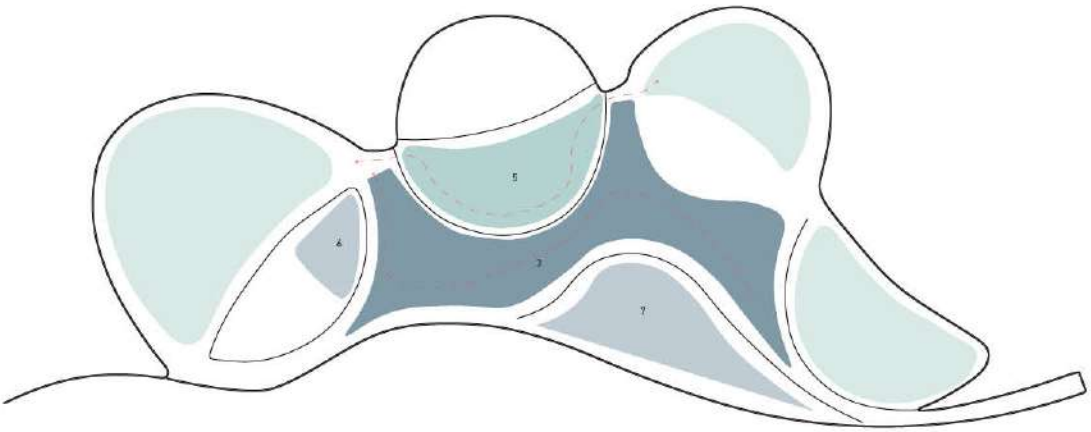
Architect: Claus en Kaan
Year: 2010
Program: Academic
Size: 10,000 m2

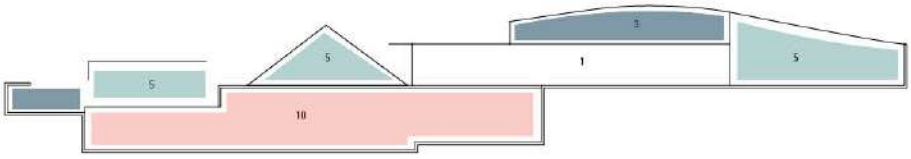
The Netherlands Institute for Ecology, located in the Wageningen University, is a sustainable research institute. The main building houses laboratories, a restaurant, and an auditorium. In a separate series of buildings and spaces, the Campus incorporates botanical and zoological research, test beds and ponds. This strategy can be used along the Avenida 24 de Mayo, combining different programs allowing to interconnect the whole stretch and optimizing the relationship between user and application. The building also uses different strategies and materials to attain optimal sustainability and a natural appearance.

The purpose of this precedent is to understand the relationship between program and landscape as an Institute for ecology. A similar approach will be implemented into this thesis, as the structure will be developed in a separate series of structures and program throughout the landscape.









Program Legend

1. Lobby
2. Hall
3. General Exhibit
4. Special Exhibit
5. Ecology Zones
6. Cafeteria
7. Restaurant
8. Archive
9. Education
10. Service

Private
Public
Landscape

PRECEDENT:

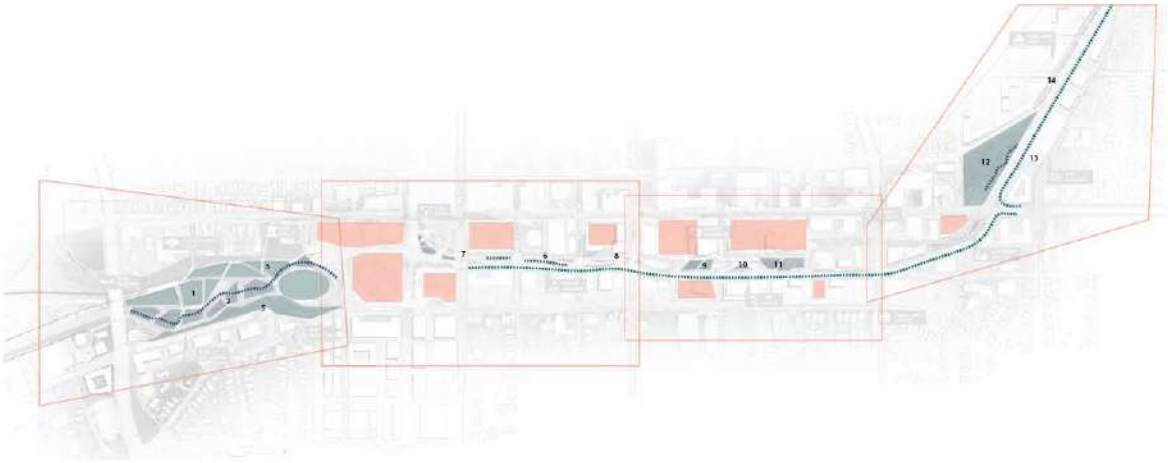
ECORIUM

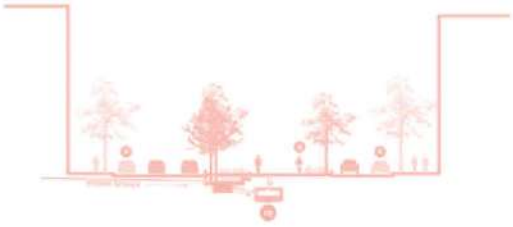
[Flexible Grids and Ecologies]

Architect: Samoo Architects & Engineers, Grimshaw Architects
Year: 2012
Program: Ecological park
Size: 33,090 m2

Ecoplex ecological park, located Seocheon-gun, Korea, is a governmental initiative to preserve the natural environment. Ecorium is an exhibition facility composed of different greenhouses and environments. The building has a curated climate which allows the public to enjoy the different experiences. The strategies used to attract the public and to create awareness to preserve the natural environment. As well as the implementation of a realistic environment that promotes education on environmental issues is crucial for the development of the Institute in Quito.

The purpose of this precedent is to understand the relationship between program, landscape and public space. A similar approach will be implemented in this thesis, to allow the public to be more involved with the program as well as to promote an educational environmentt the building and the site.





CLEAN

Town Branch is expressed as a series of water filtration gardens that shape an expanded pedestrian steetscape and bicycle trail

CONNECT

A Headwaters stream links two historically divided neighborhoods and provides a direct connection between Downtown and the bike/pedestrian trail

REVEAL

Revealed and daylit stream that connects the Bluegrass Region and the new recreational Park

CARVE

A Surface parking is transformed into a public event plaza, scattered with cuts and karst windows into the culverted water body below. Pools and other elements organize the flexible open space

Program Legend

1. Floodable Space
2. Habitat Rooms
3. Event Terrace
4. Amphitheater
5. Picnic Grove
6. Filtration Gardens
7. Pop up Vendors
8. Seating Lawn
9. Gallery and Cafe
10. Lex Arts
11. Theater Square
12. Memorial Garden
13. Community Garden
14. Bikeway

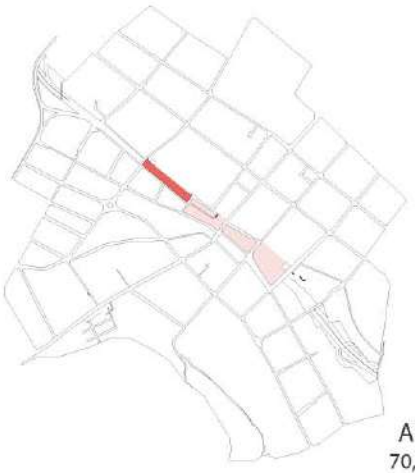
Program
Water
Landscape

PRECEDENT:
TOWN BRANCH COMMONS
[Flexible Grids and Ecologies]

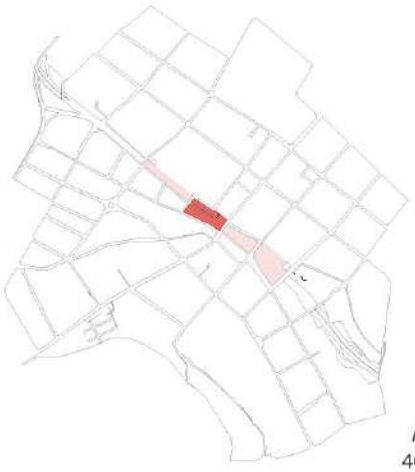
Architect: Scape
Year: Competition 2013
Program: Streetscape/ Urban Design
Size: 2.5 miles

The Town Branch Commons project, located in Lexington Kentucky, uses the opportunity to reconnect the city with the once buried waste canal, sewer and water conduit. Rather than having a daylit stream channel, the project intertwines the identity of the town with a public space network that introduces: open trails, a hybrid park and a water filtration landscape. Using strategies like clean, reveal, carve and connect the project brings the city and the community together, which emphasizes the "ecological and cultural potential of the built environment."

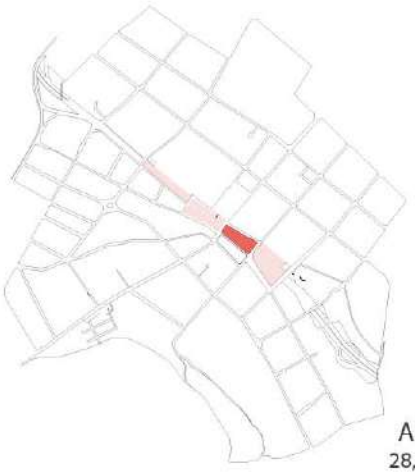
The purpose of this precedent is to understand different strategies like, clean, connect, carve and reveal to bring the community together. A similar approach will be implemented into this thesis, in order to develop a strong landscape strategy that relates the ravines, the water sewage and the current situation in The 24 de Mayo Avenue.



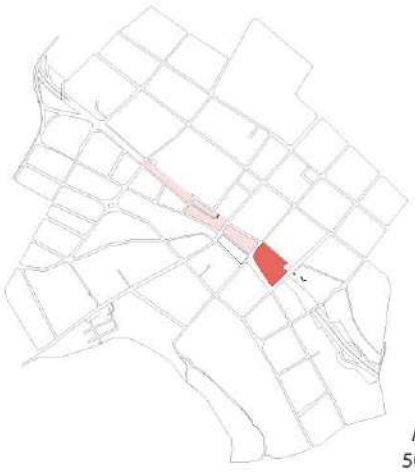
AREA 1
70,000 SF



AREA 2
40,000 SF



AREA 3
28,000 SF



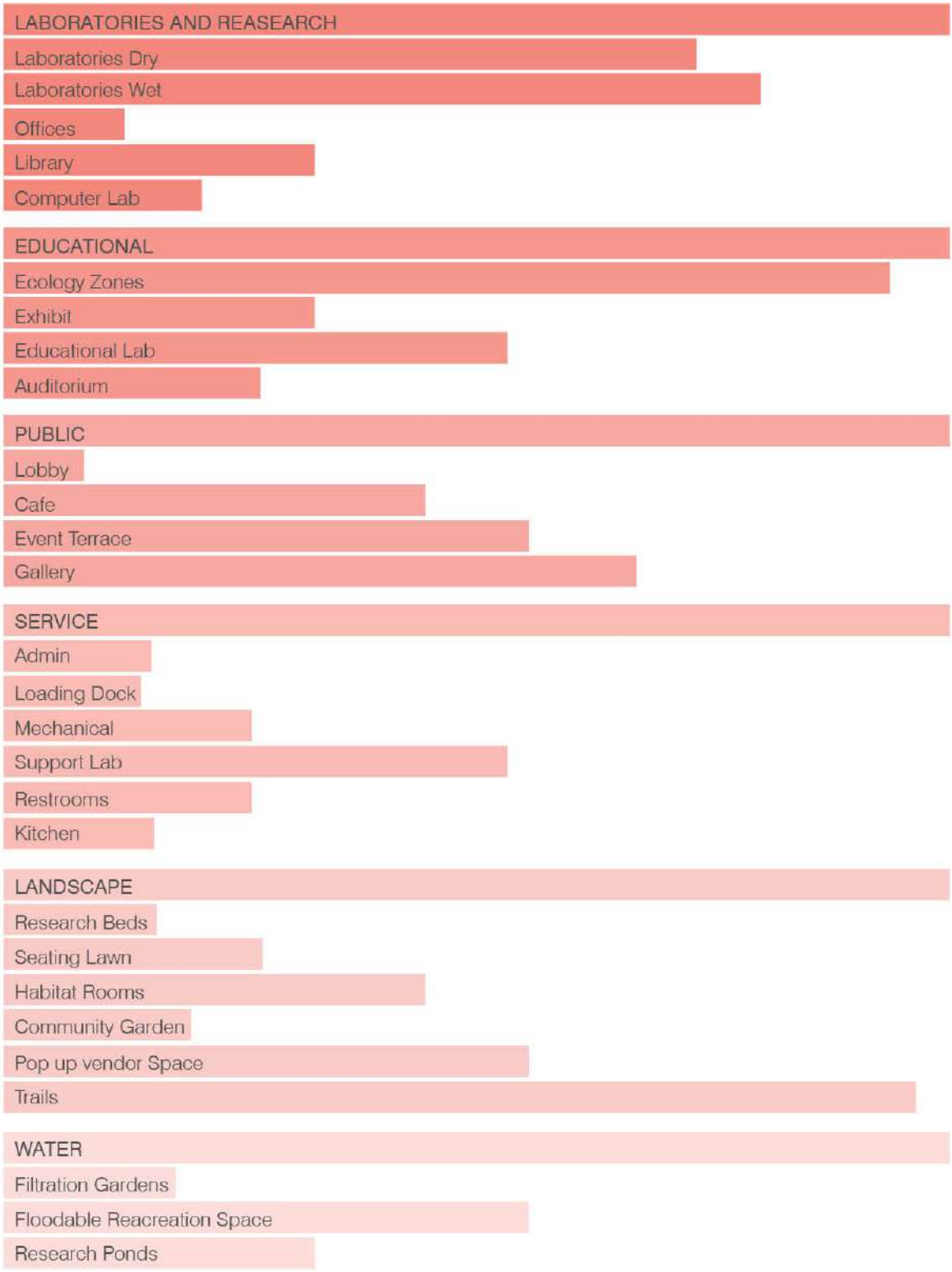
AREA 4
50,000 SF

SITE AREAS

PROGRAM
[Flexible Grids and Ecologies]

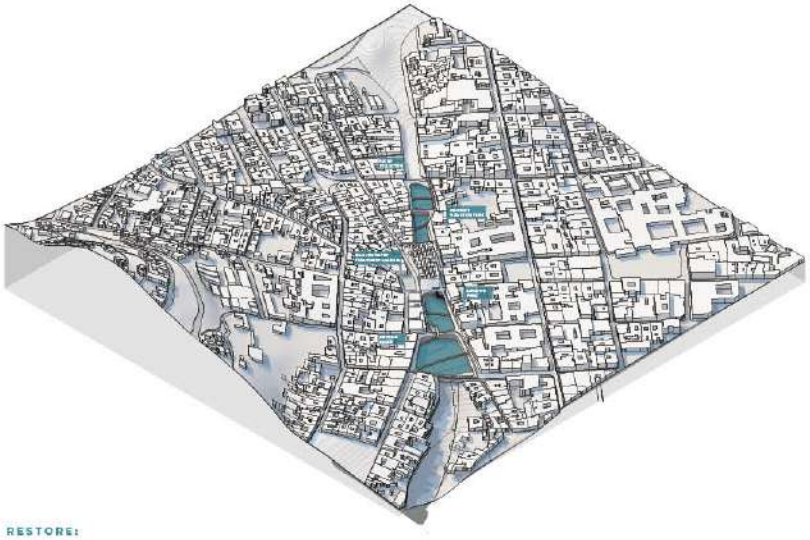
This thesis will incorporate Quito's natural and built environments by developing a landscape and a built program that highlights specific moments of the geographical and historical aspects of the site.
The facility will allow the public to engage with the ecology of Quito while creating awareness and research opportunities to solve current issues in Quito, Ecuador concerning its ecosystem. Within the four identified areas of the site, measuring a total of 180,000 SF, the program integrates an Ecology center and public wetland treatment park.
This thesis will integrate strategies and embed multiple programs of analyzed precedents to be able to design a facility that will generate opportunities to reconnect the city center and the community by producing a public space network across 24 de Mayo Avenue.
Within the half kilometer of landscape development, the boulevard will incorporate a total of five pools: water collection pool, water filtration pool, shallow treatment pool, aeration pool, and a riparian edges pool, creating stormwater remediation and wetland treatment area for Quito.
The pools will allow the area to clean and remediate canalized and stormwater, manage water and the recovery of native habitats.

AREA 1	AREA 2	AREA 3	AREA 4	SITE TOTAL
70,000 SF	40,000 SF	28,000 SF	50,000 SF	188,000 SF


LABORATORIES AND REASEARCH
Laboratories Dry
Laboratories Wet
Offices
Library
Computer Lab
EDUCATIONAL
Ecology Zones
Exhibit
Educational Lab
Auditorium
PUBLIC
Lobby
Cafe
Event Terrace
Gallery
SERVICE
Admin
Loading Dock
Mechanical
Support Lab
Restrooms
Kitchen
LANDSCAPE
Research Beds
Seating Lawn
Habitat Rooms
Community Garden
Pop up vendor Space
Trails
WATER
Filtration Gardens
Floodable Reacreation Space
Research Ponds

Ecology Institute and Research Park	Area Description	Rooms	SF	SubTotal	Total
Lab and Research					
	Dry Lab	6	1100	6600	68700
	Wet Lab	6	1200	7200	
	Offices	12	100	1200	
	Library	1	3000	3000	
	Computer Lab 40ppl	1	2000	2000	
Education and Research					
	Ecology zone	3	3000	9000	
	Exhibit	3	1000	3000	
	Teaching Lab	6	800	4800	
	Auditorium	1	2500	2500	
Public					
	Lobby	1	800	800	
	Café	1	4000	4000	
	Event Terrace	1	5000	5000	
	Gallery	3	2000	6000	
Service					
	Admin	1	1500	1500	
	Loading Dock	1	1000	1000	
	Mechanical	3	800	2400	
	Support Lab	6	800	4800	
	RR	4	600	2400	
	Kitchen	1	1500	1500	
Landscape					
	Research Beds	3	1000	3000	26500
	Seating Lawn	1	2500	2500	
	Habitat Rooms	4	1000	4000	
	Community Garden	1	2000	2000	
	Vendor Space	1	5000	5000	
	Trails	1	-		
Water					
	Filtration Garden	20	100	2000	
	Floodable Area	1	5000	5000	
	Research Ponds	3	1000	3000	
					95200

CONNECTING:



RESTORE:

ACTIVATE:

A FLEXIBLE GRID AND ECOLOGY

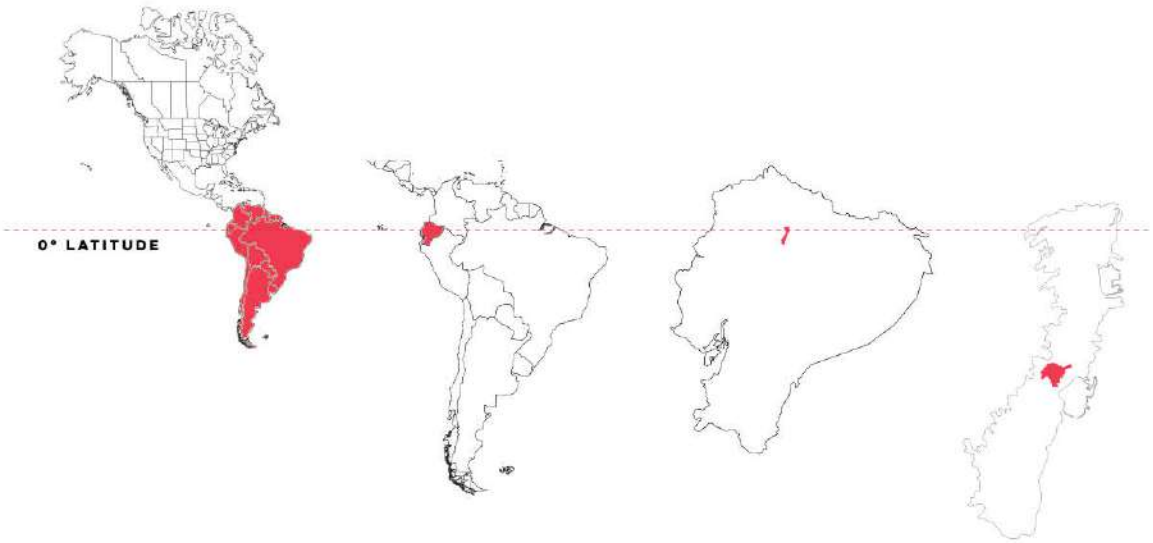
[Flexible Grids and Ecologies]

Contemporary Quito's map still shows traces of the pre-existing topography and bends the ideal colonial structure. The project proposes a flexible urbanism which integrates Quito's natural and built environment while using the existing public space and the urban fabric as an Ecology Institute and water-based infrastructure to reinforce the relationship between the city and nature.
Three main strategies were used to develop the project:

1. Connect: the idea is to use the surrounding paths and urban fabric to establish a flexible interconnection across the site supporting cultural and ecological activities within a resilient fabric of layered programs

2. Restore: the project intends to reveal the filled gully through a network of water windows allowing the stream to connect the site and native landscape.

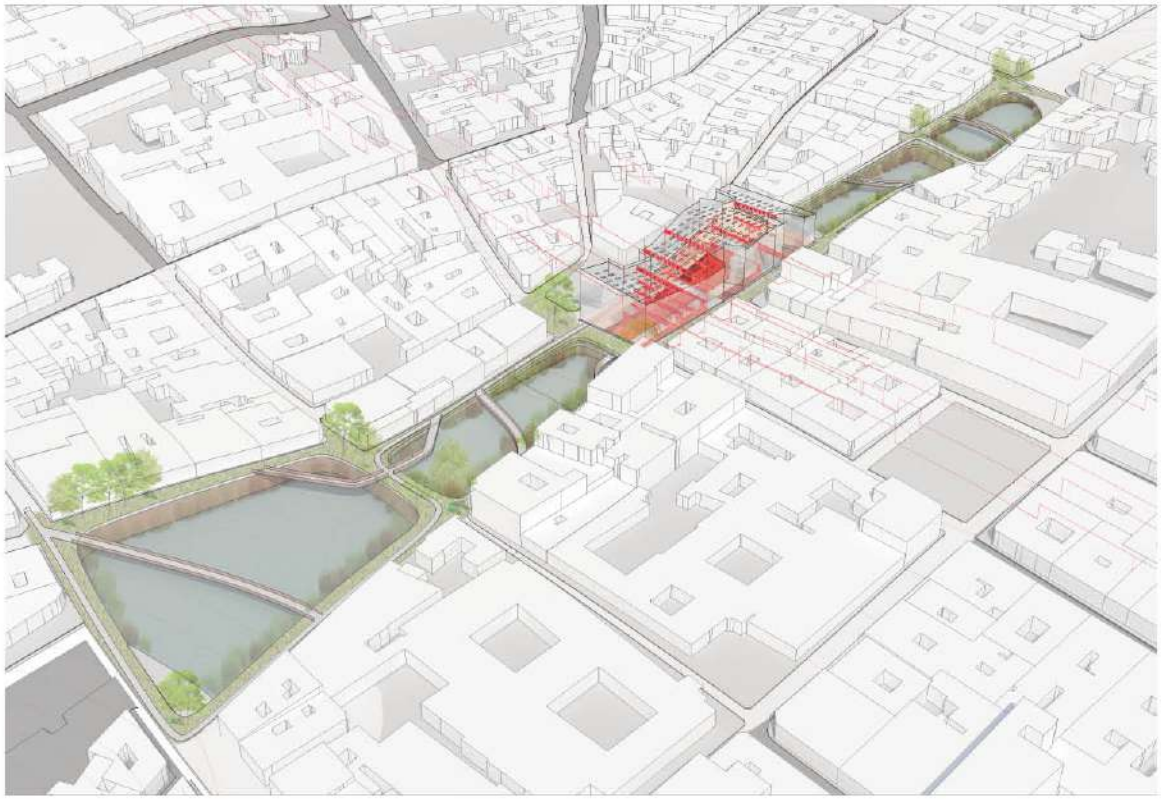
3. Activate: by using the pattern between the topography contour lines and the connecting paths the project aims to create a continuous public space, embracing a diverse series of environmental programs fusing nature and culture allowing the public to engage with Quito's Ecology and create awareness.
The building will incorporate research and teaching laboratories, ecology zones, and exhibit areas amongst other public spaces that connect to the water-based park that will retain and remediate the storm-water, adding multiple ecosystem services, including storm-water management, water cleansing, and recovery of native habitats, as well as a creation of public space for gathering and enjoyment making water the active agent in regenerating a healthy ecosystem to provide natural and cultural services.



Above: Site location

DRAWINGS AND MODELS

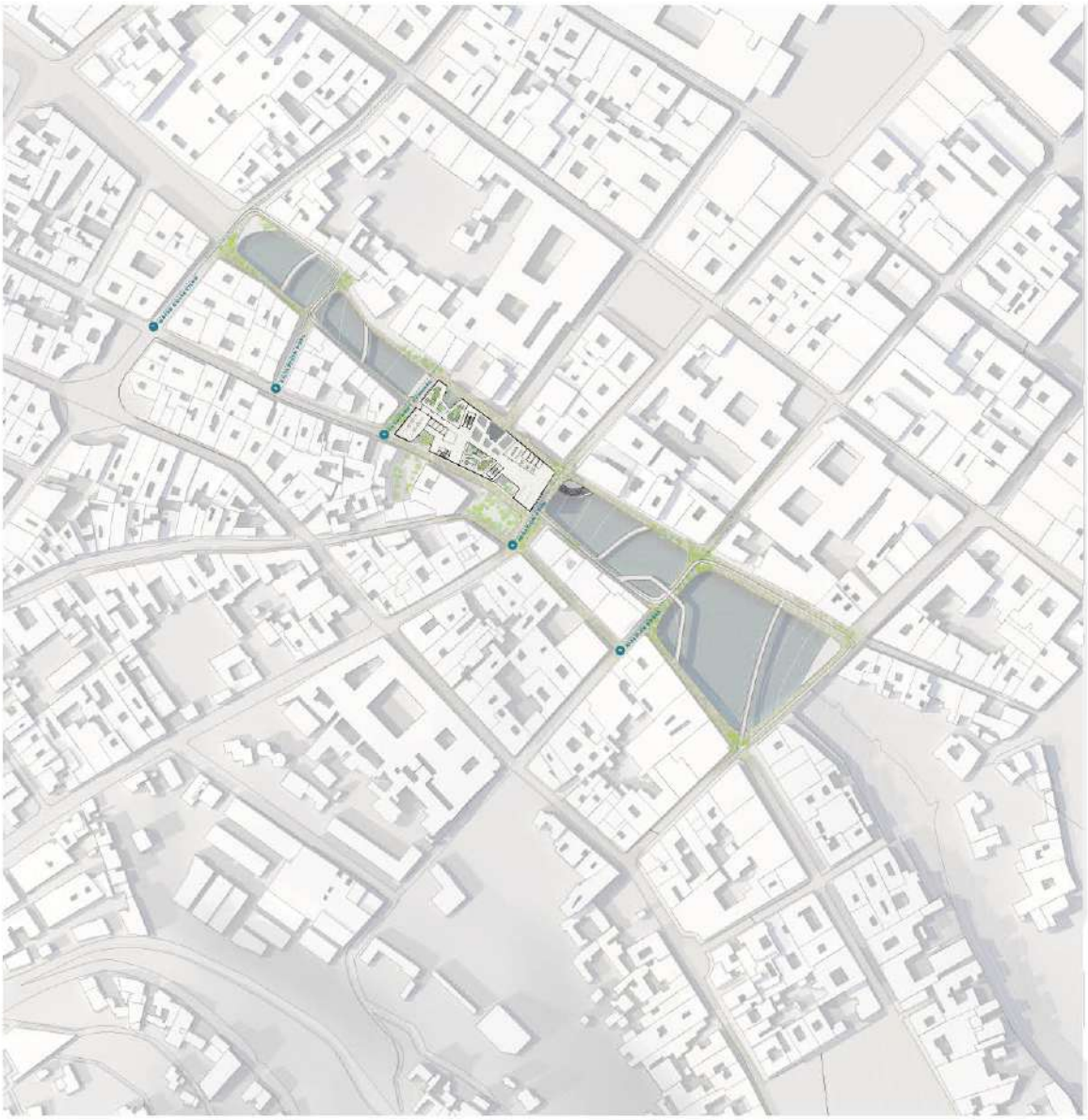
[Flexible Grids and Ecologies]



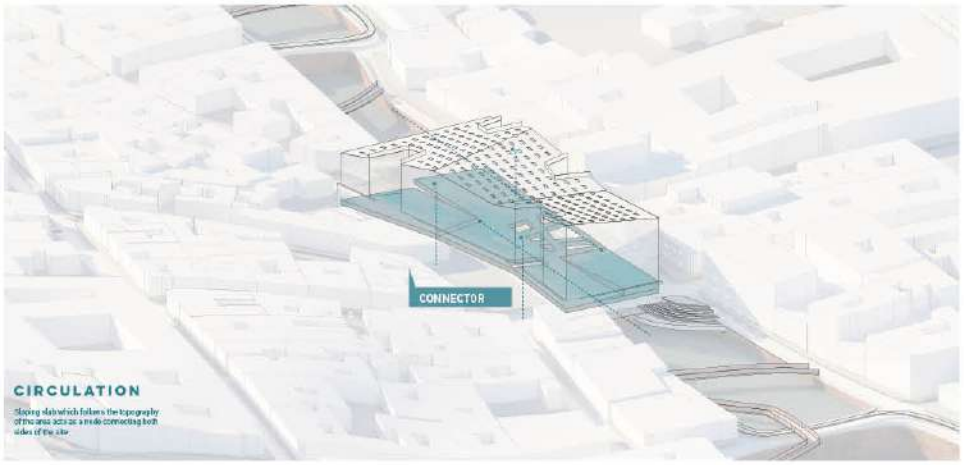
Above: Concept drawing

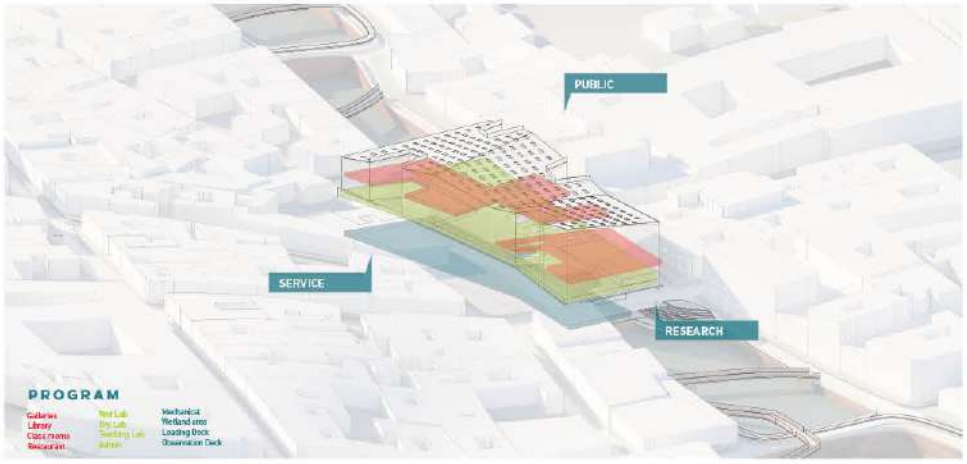
Above: Riparian pool perspective

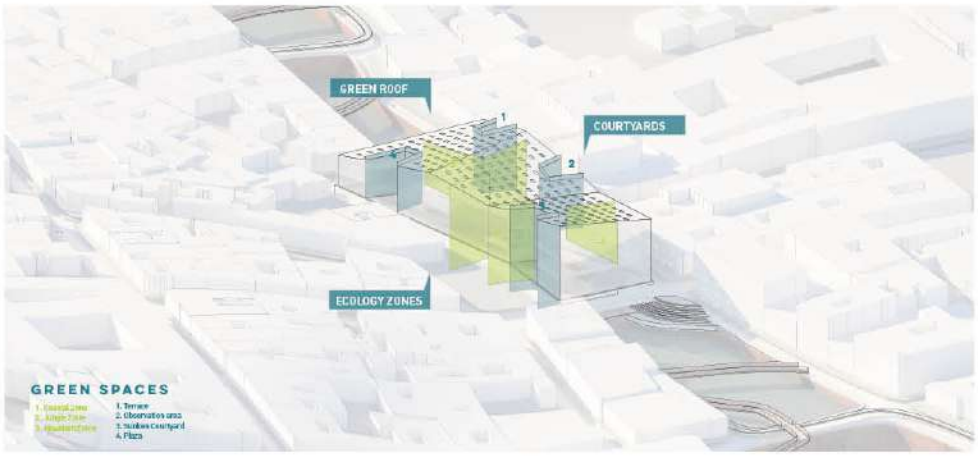
Above: Site Model representation
Below: Front side building perspective



Above: Site plan
Below: Floor plans

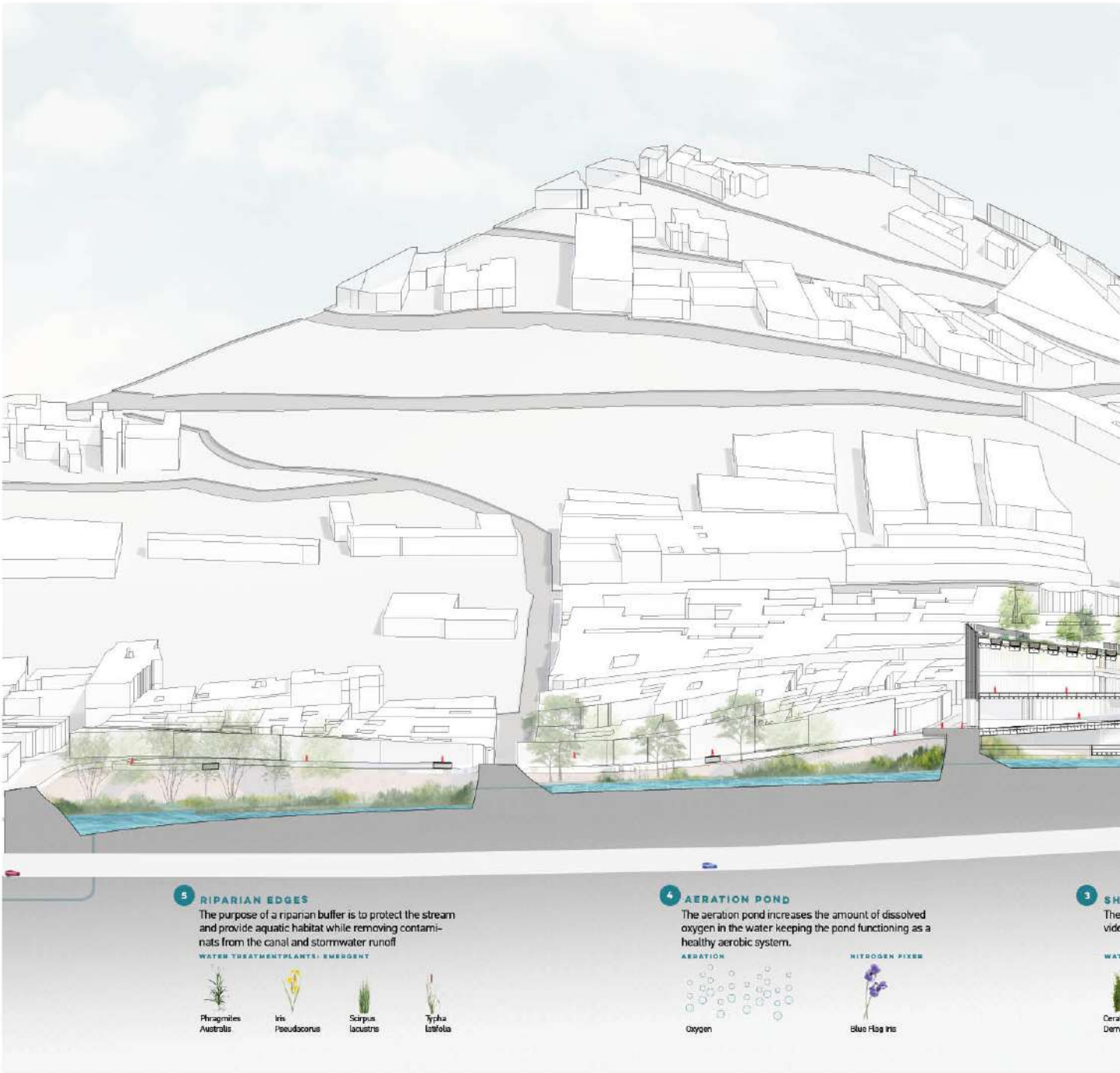




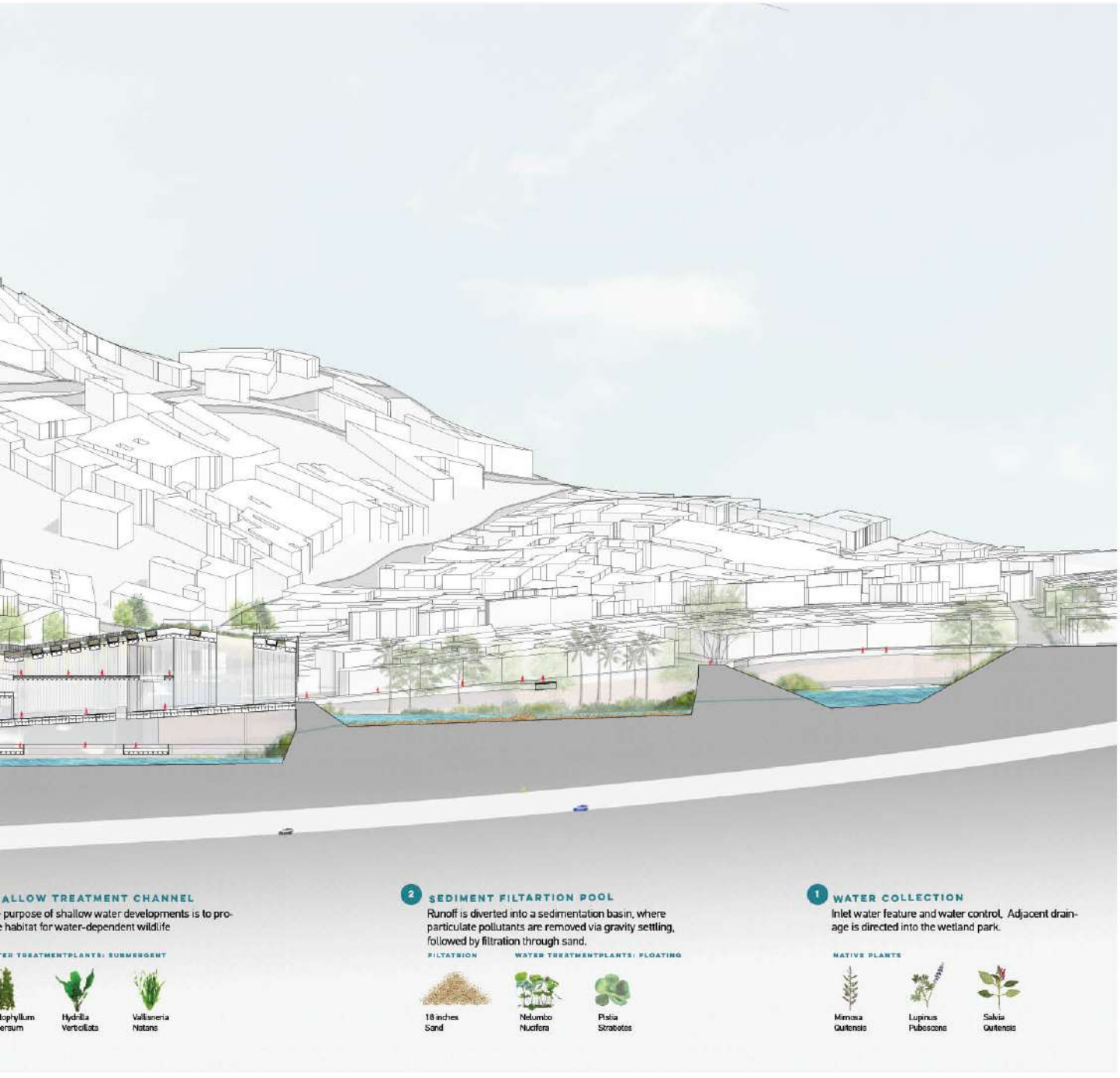


Above: Circulation Diagram
Middle: Program Diagram
Below : Green Spaces Diagram

Above: Interior perspective
Below: Right side building perspective



Above: Site long section and pools



ALLOW TREATMENT CHANNEL

purpose of shallow water developments is to pro-
habitat for water-dependent wildlife

ER TREATMENTPLANTS: SUBMERGENT

ophyllum
ersum

Hydrilla
Verticillata

Vallisneria
Natans

2 SEDIMENT FILTARTION POOL

Runoff is diverted into a sedimentation basin, where particulate pollutants are removed via gravity settling, followed by filtration through sand.

FILTATRION

18 inches
Sand

WATER TREATMENTPLANTS: FLOATING

Nelumbo
Nucifera

Pistia
Stratiotes

1 WATER COLLECTION

Inlet water feature and water control. Adjacent drainage is directed into the wetland park.

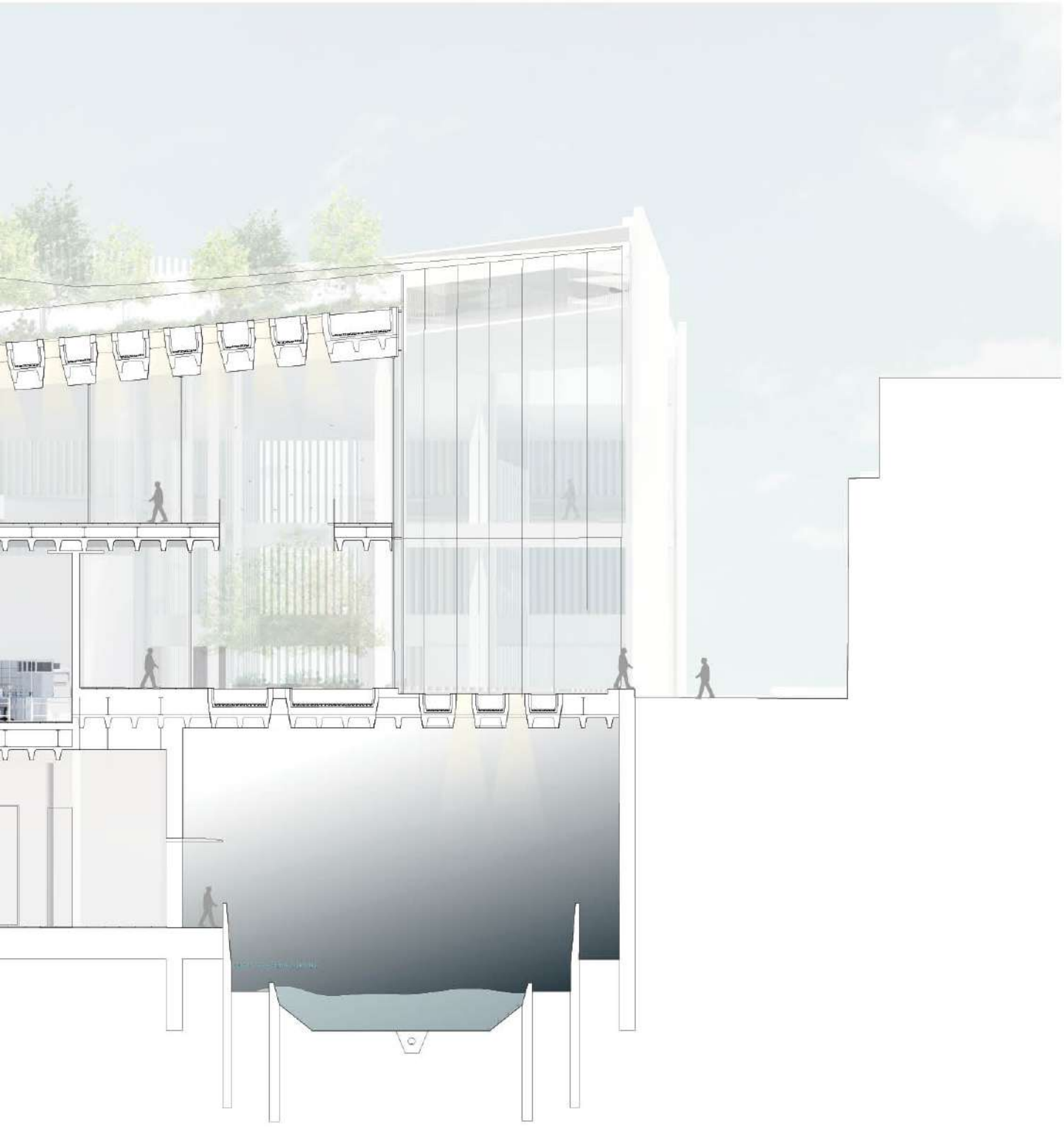
NATIVE PLANTS

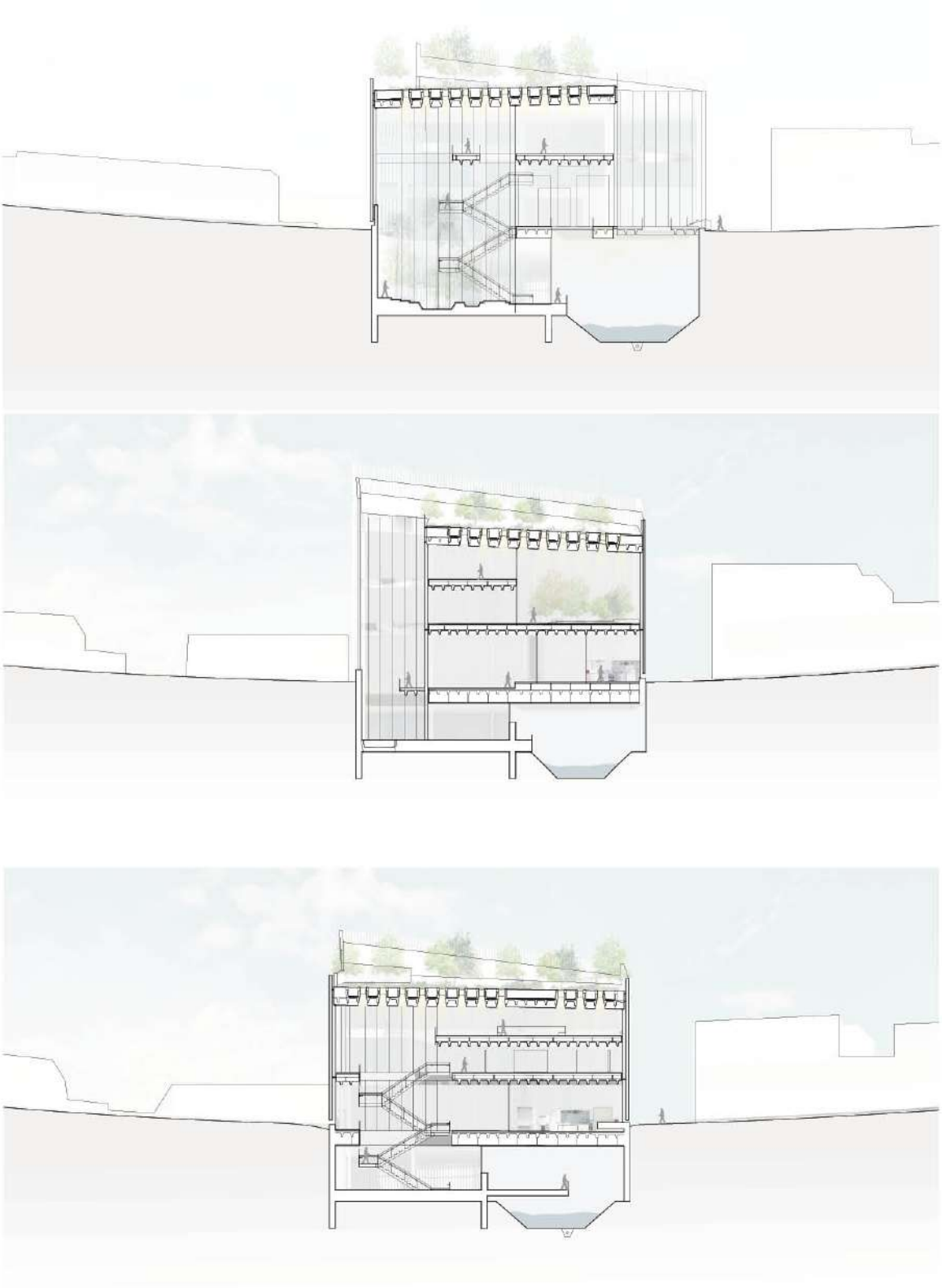
Mimosa
Quitensis

Lupinus
Pubescens

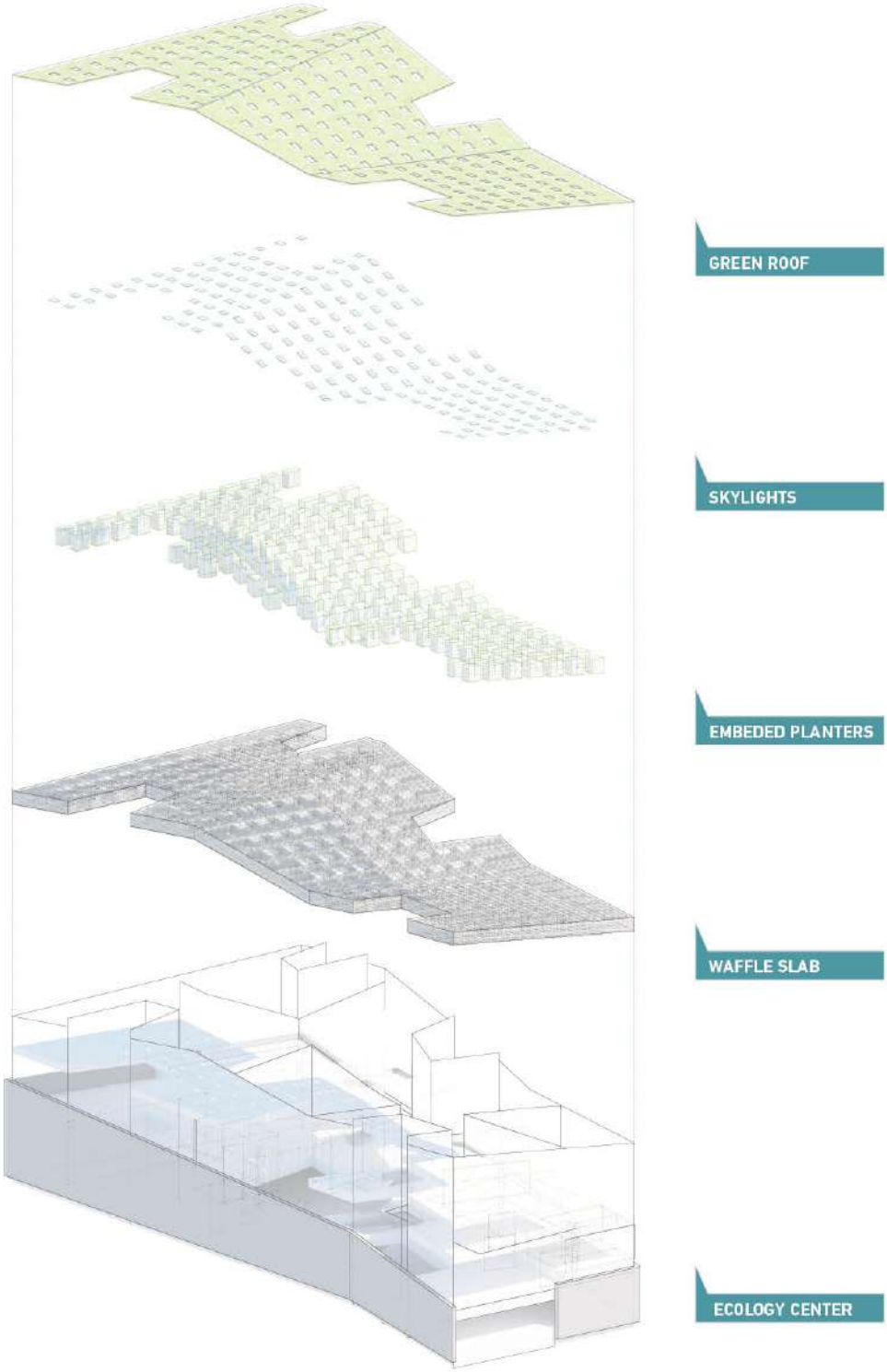
Salvia
Quitensis

Above: Short section A



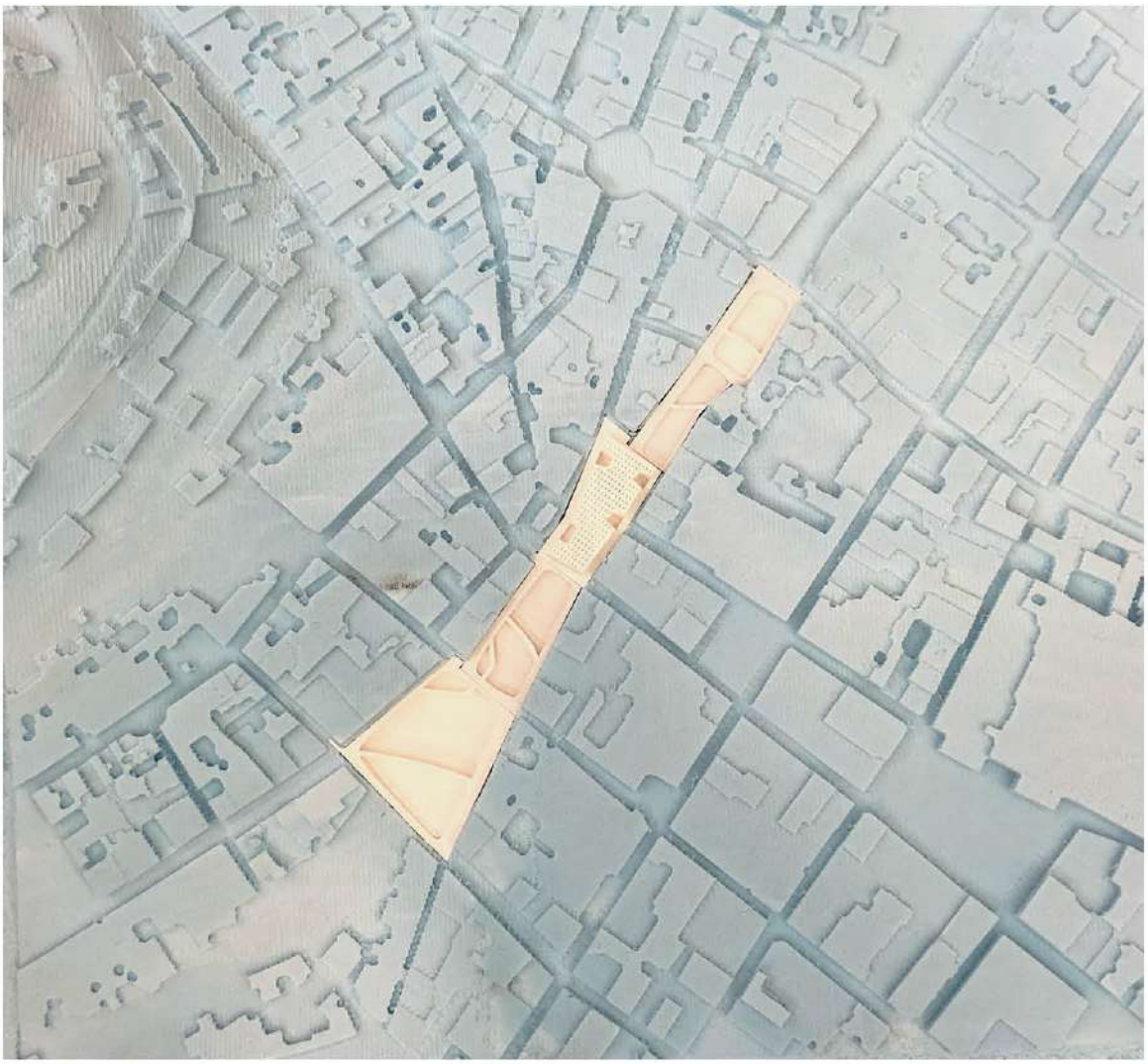


Above: Short section B
Middle: Short section C
Below : Short section D

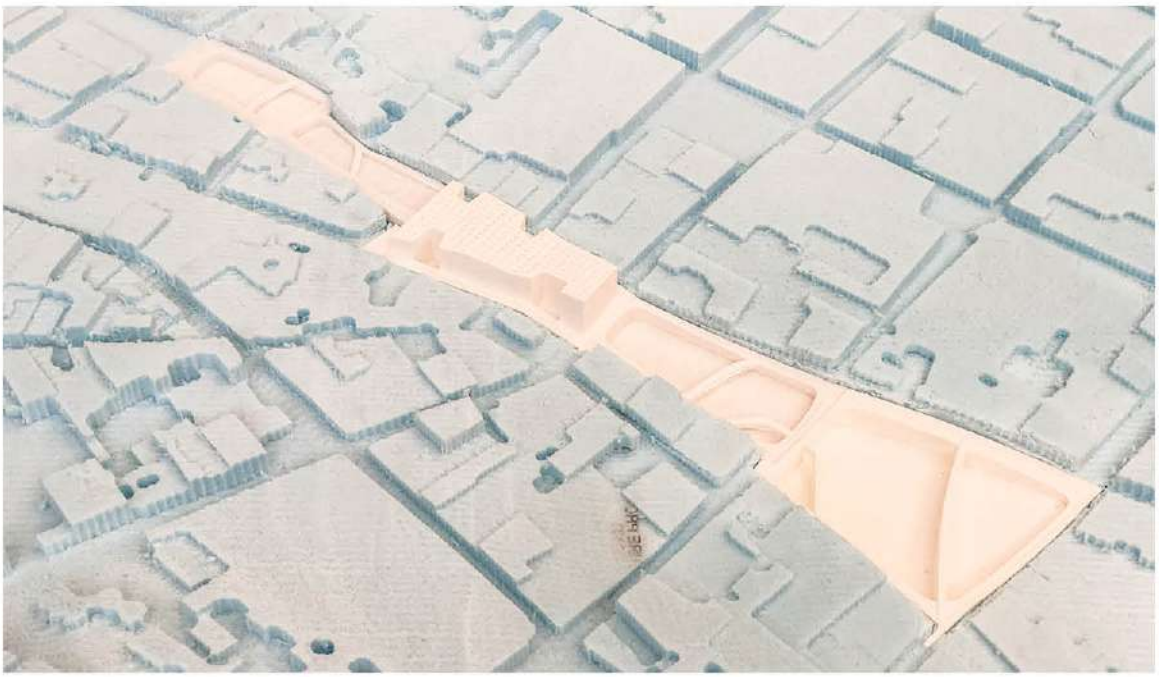


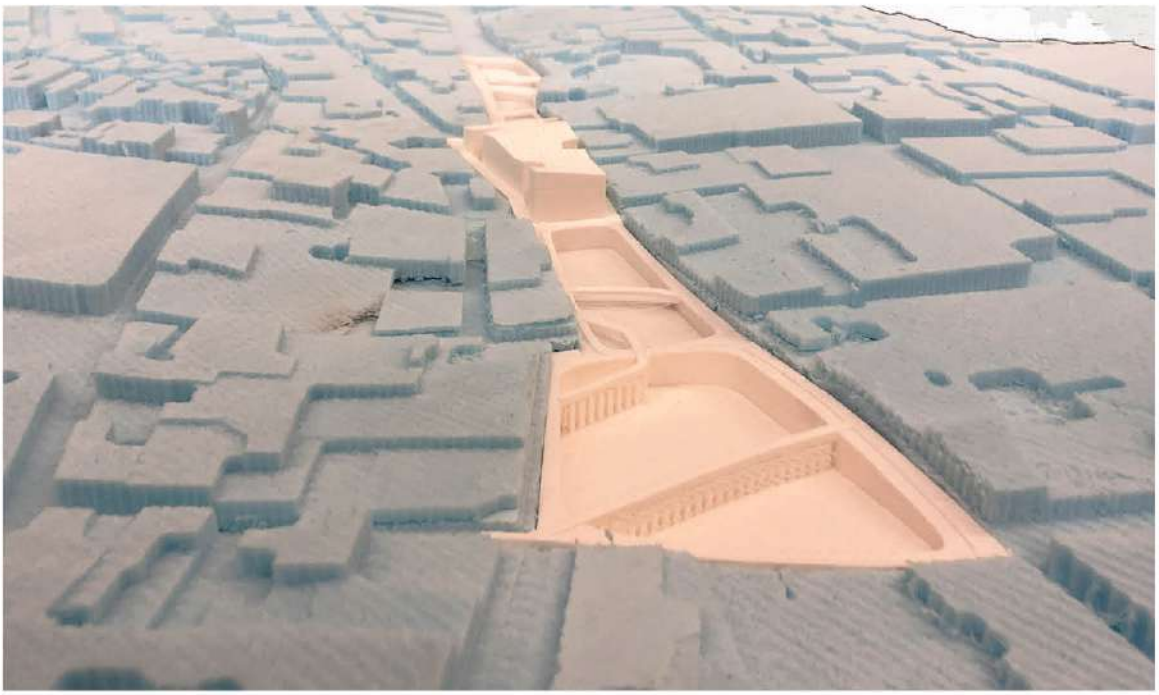
Above: Roof and building diagram

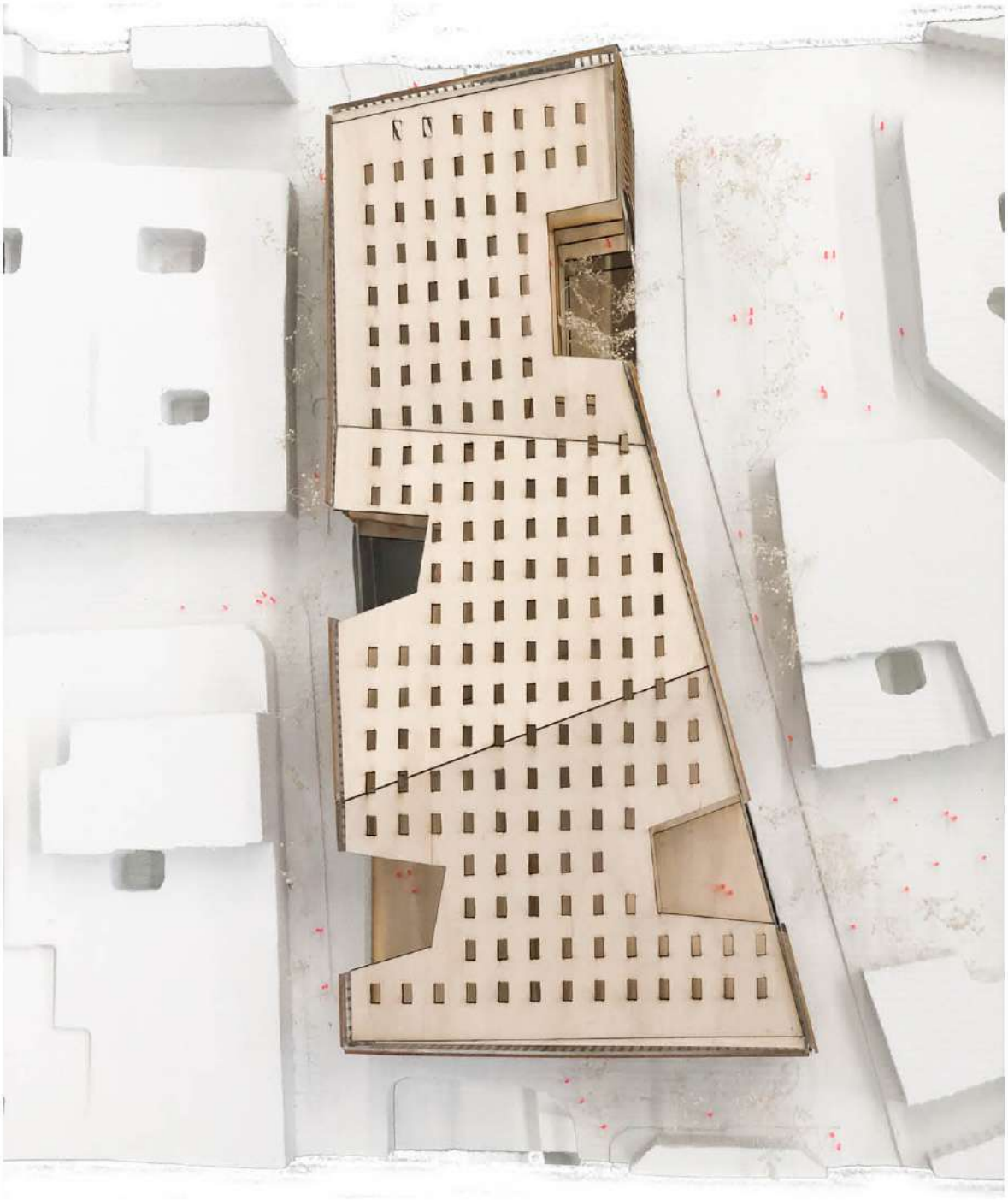
Above: Interior Pespective, Ecology Zone



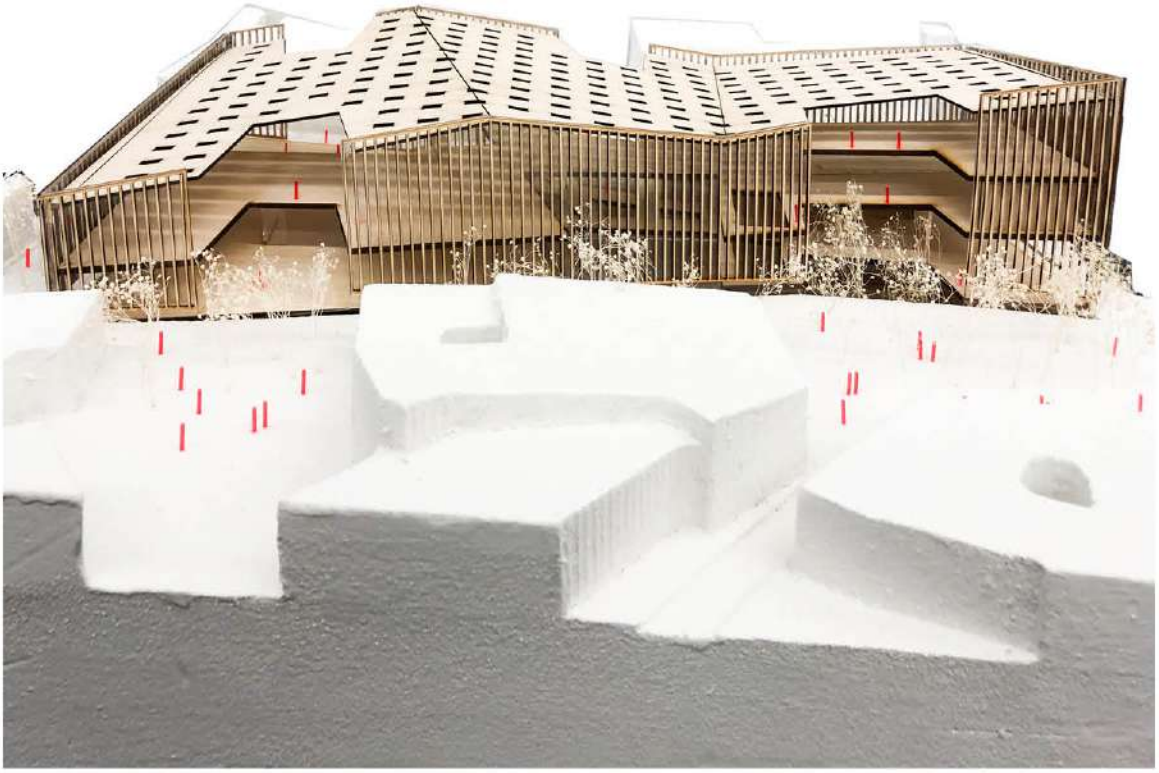
Site model pictures
Scale: 1'- 1/64"







Building model pictures
Scale: 1'- 1/16"



Building model pictures
Scale: 1'- 1/16"

Section model pictures
Scale: 1'- 1/8"

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