

Formation of a bath - geological processes in Architecture



Thesis submitted by **Nina-Christin Vogler** to the faculty of Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of **Master of Architecture**.

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Formation of a bath - geological processes in Architecture



Abstract

Geological processes define every place on earth. They tell us their story of formation, of shaping events that have long passed and about current conditions that continue to form the place. Each place therefore reveals its historical events and points towards its future.

Man manipulates these processes and often ends the dialog between the past and the future.

I wanted to explore an architecture related to this dialog, that occupies a site but also enters its existence and future.

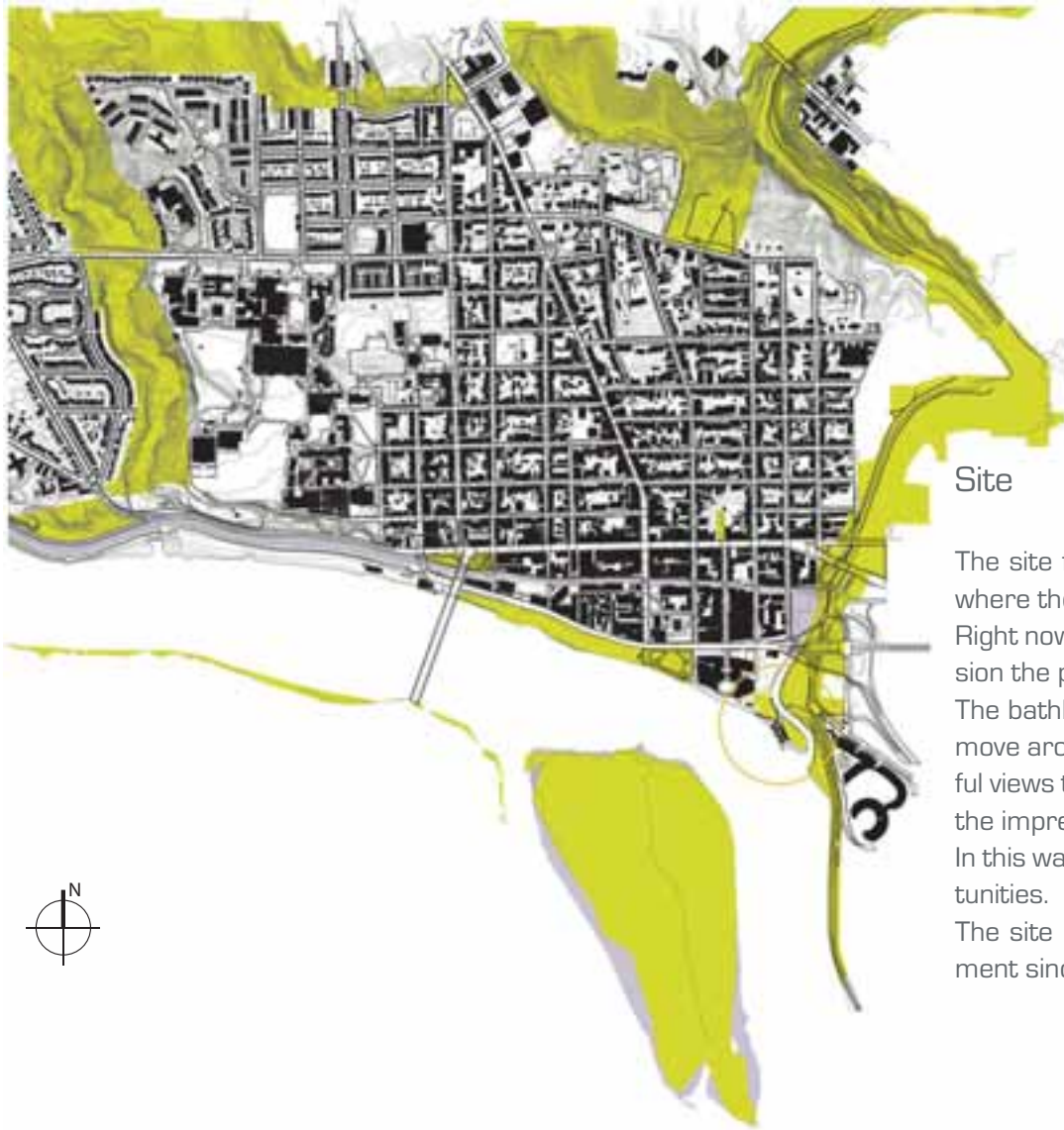
Erosion is the all-encompassing term for the processes that constantly sculpt and ultimately wear down the landscape of the earth. It accompanies weathering, the break up of material at the earth's surface through chemical, physical and biological processes. Gravity plays a vital role in these processes. It is urging all of the erosional debris downhill. Most of the material is carried by running water, transported downstream often to the world's oceans.



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Site

The site for the bathhouse is located in Georgetown on a peninsula where the Rock Creek meets the Potomac.

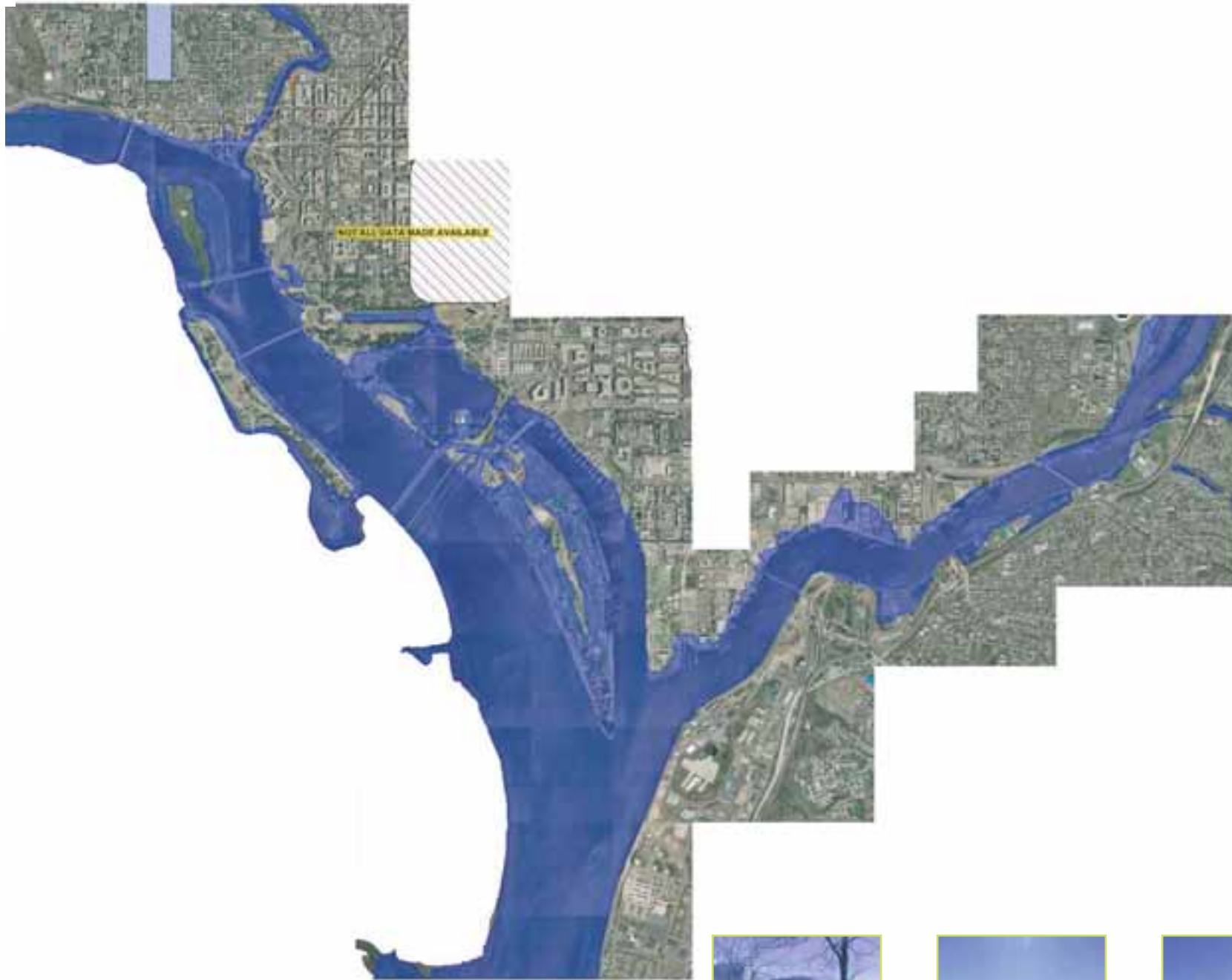
Right now the site is occupied by a boathouse which gives the impression the peninsula is private property.

The bathhouse is sitting on the edge of the site and allows people to move around it. It creates a public outdoor space which offers beautiful views towards Roosevelt Island and along the Potomac that leaves the impression one just left the city behind.

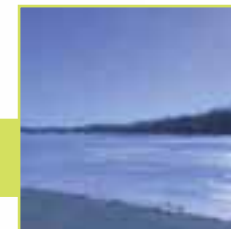
In this way the site and the program of the building offer similar opportunities.

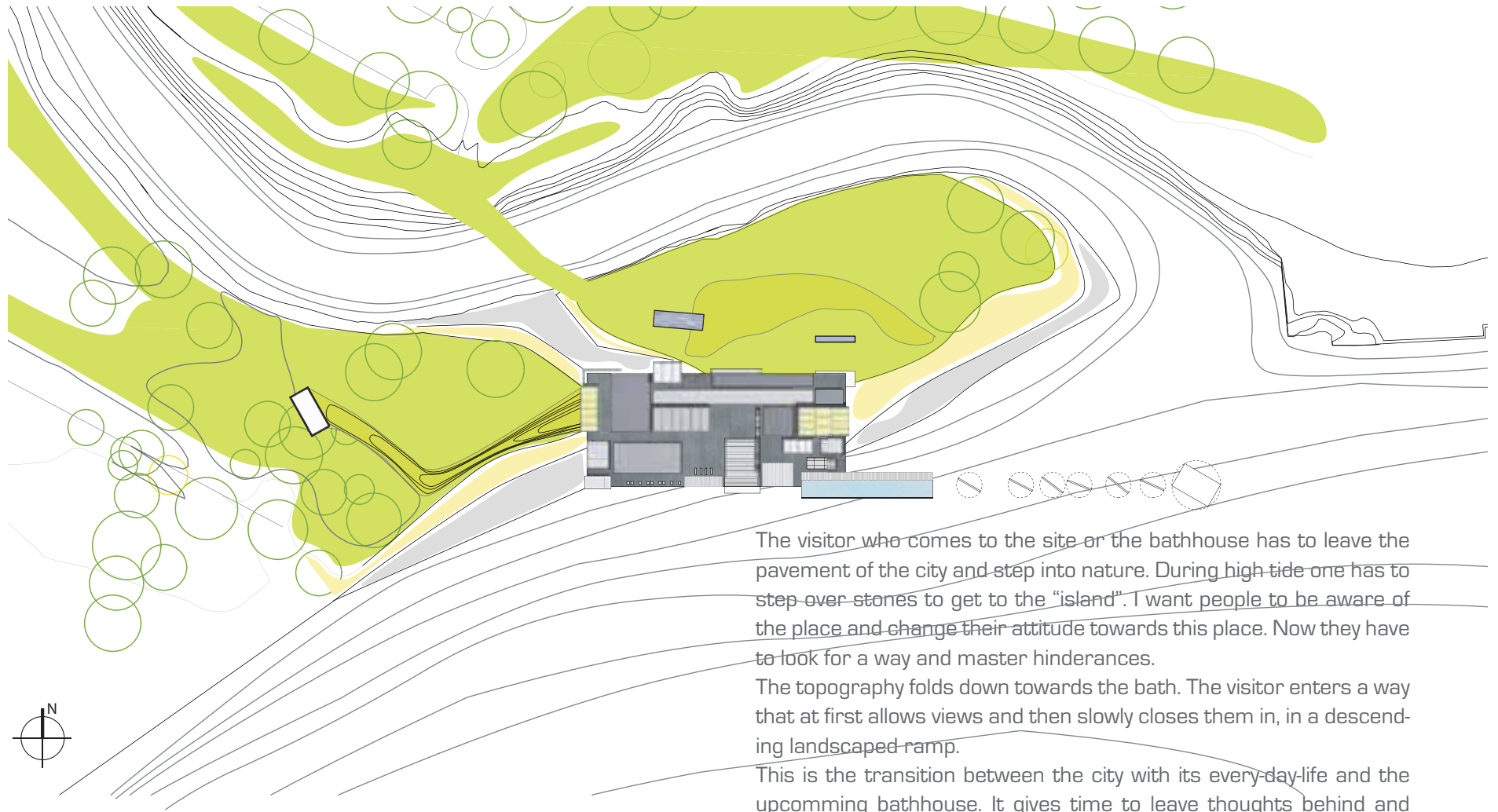
The site is clearly dominated by the two rivers and the water movement since there is a 1.5 meter tidal change affecting the area.





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The visitor who comes to the site or the bathhouse has to leave the pavement of the city and step into nature. During high tide one has to step over stones to get to the "island". I want people to be aware of the place and change their attitude towards this place. Now they have to look for a way and master hinderances.

The topography folds down towards the bath. The visitor enters a way that at first allows views and then slowly closes them in, in a descending landscaped ramp.

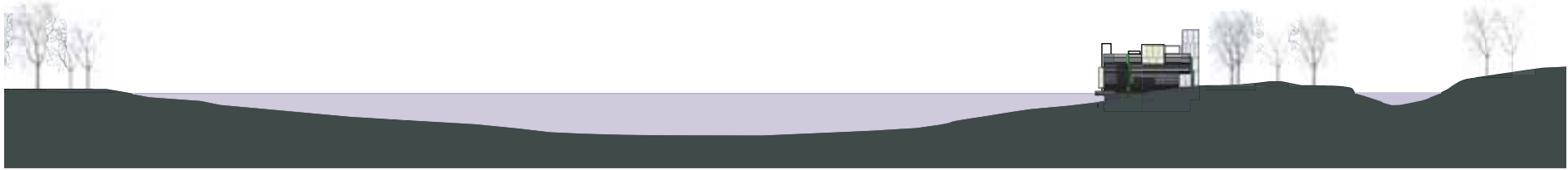
This is the transition between the city with its every-day-life and the upcoming bathhouse. It gives time to leave thoughts behind and focus on the bathing.

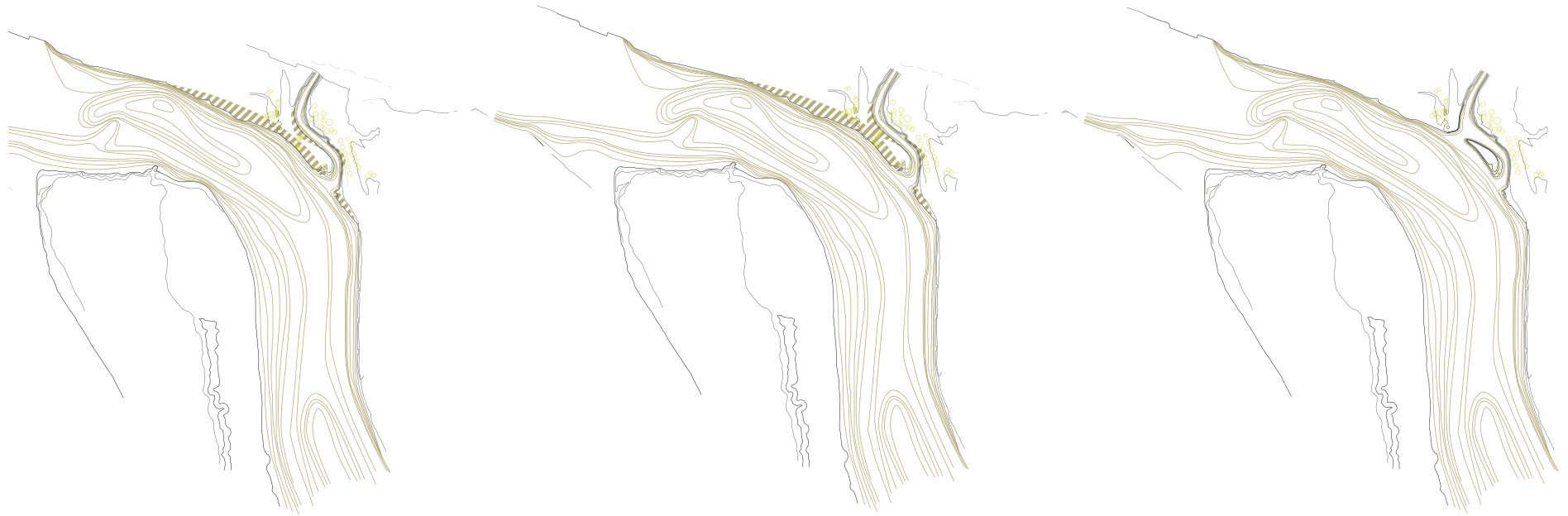
The stone areas will give an experience of the bath on the outside. They could be warm and steam will rise up on cold days, or cold. Sound or light could emerge from them.





Site Elevation





Geology

The waterforce of the two rivers will eventually erode most of my site. Rivers wash away material on their outer curves and material will collect on the inner curves.

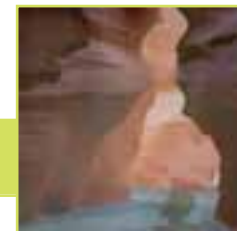
According to these geological processes on the site I carved the peninsula in a way that allows us to experience the waters and the tidal changes.

At high tide the water runs across the site. At this time of the day the two rivers meet in the building. And it is visible what nature will do to the landscape.





This building is coming from somewhere and going to somewhere. It once was a block of conglomerate stone. Over time the stones broke out and the cement which holds together the stone now holds the bath.





Study 1

This study model shows how the water force transforms material. It creates smooth topographies and cavities within the matter. The block is formed in unpredictable ways, every condition influences this process.

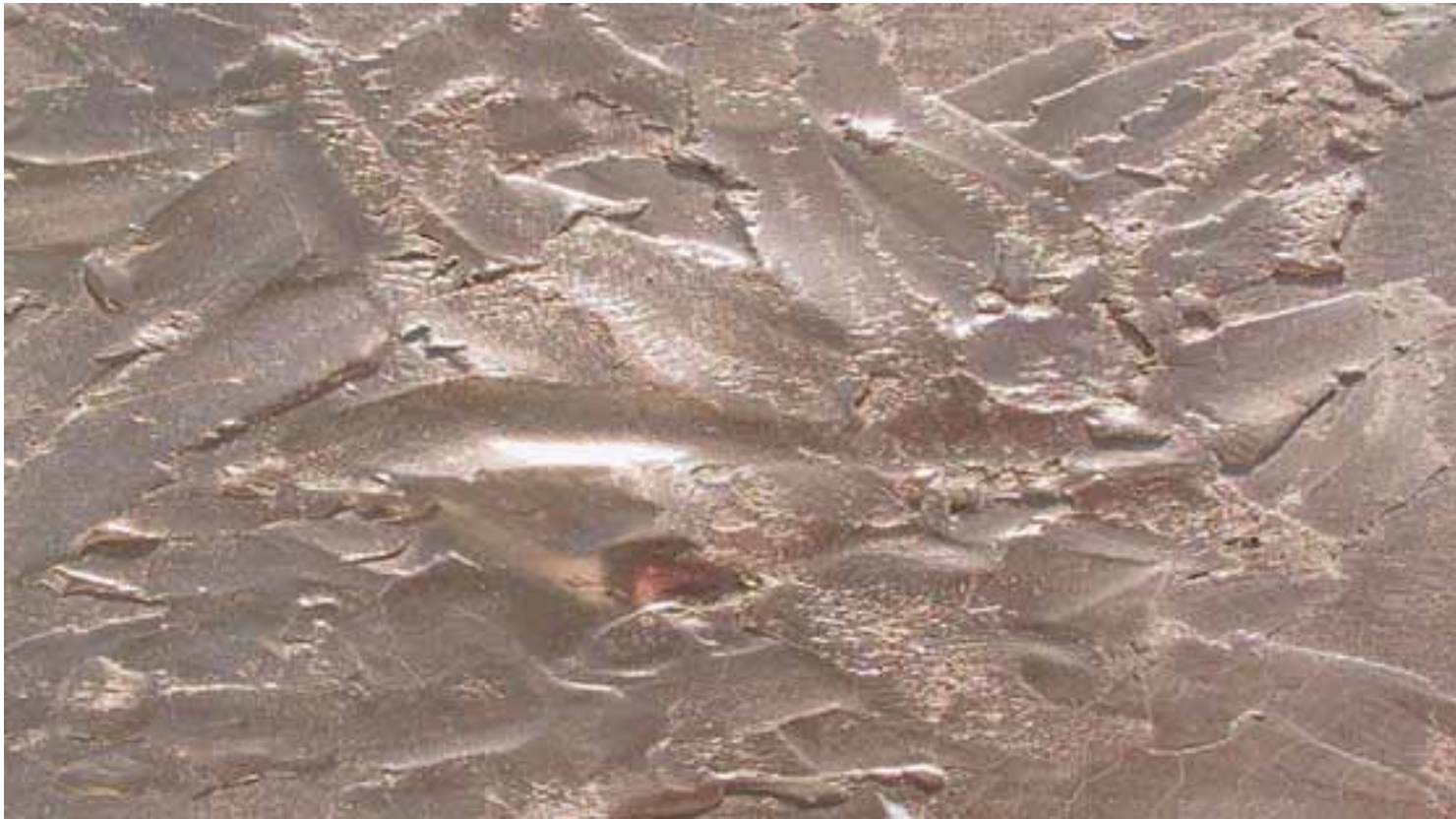




Study 2

This study model shows the influence of chemicals on the process of erosion. The material simply changes its properties or is dissolved. It might also result in the complete disappearance of matter. This process is often initiated by running water.





Study 3

The movement of material caused by outside influences results in a process that transforms the surface and structure of a material. Movement of the tectonic plates show this in a very radical way but even air movement has its influence.





Study 4

The act of carving is often found as the manmade weathering of material. Humans create their habitats through the process of carving. Today we do not use the cave that is created but the material that is taken out.





Study 5

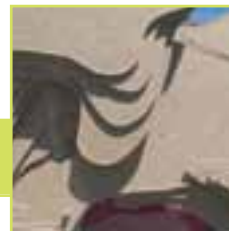
Pressure or weight has a great influence on the transformation of materials. These forces often even create new materials. Gems are formed under pressure from far less valuable materials.





Study 6

The earth's crust is made of various layers. It varies in materiality and its properties. A section through the crust shows that the thickness of the layers changes and that caves and water veins intersect it.

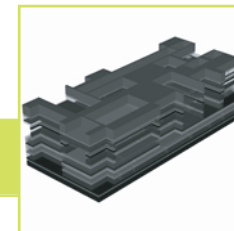


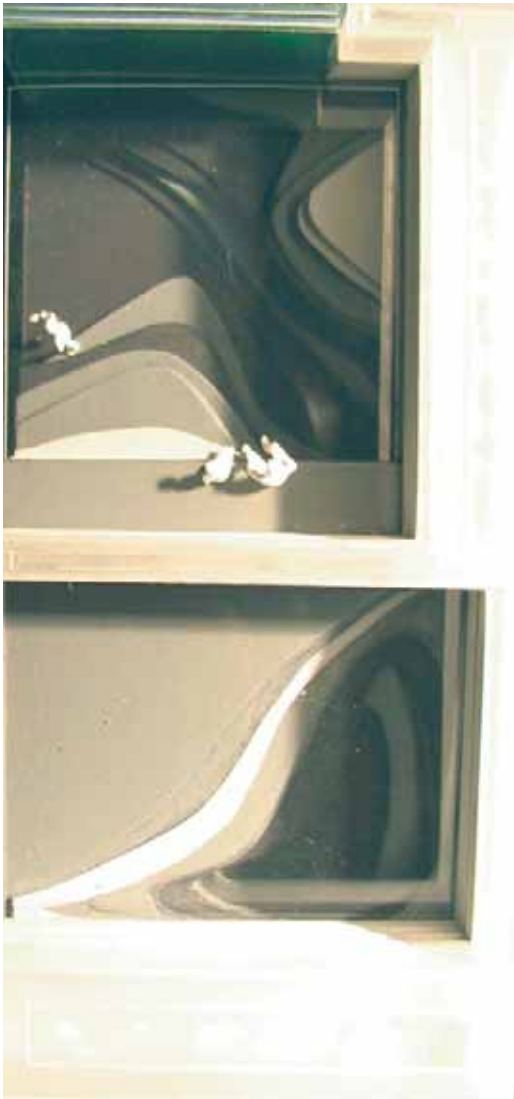


Materiality

I am using precast concrete blocks with different colors and finishings. The layered structure varies from dark and rough to light and soft and finally to light-transmitting concrete.

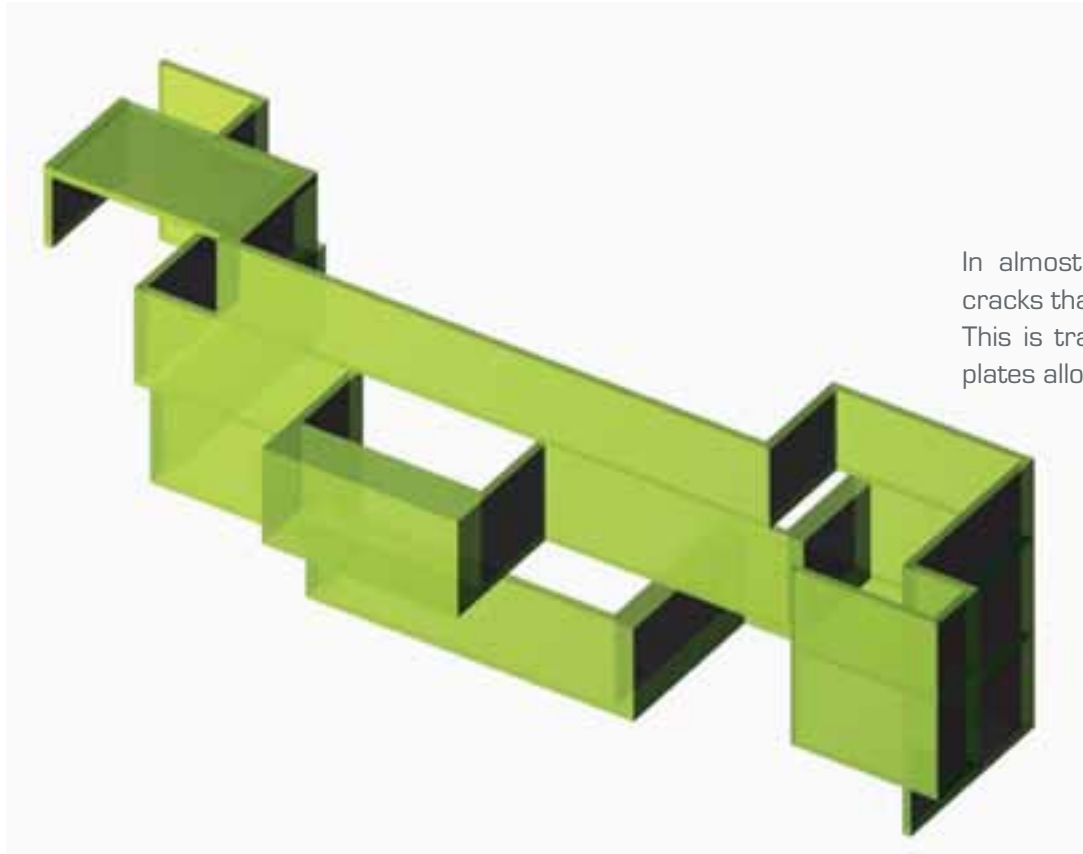
While the visual properties of opacity and transparency are understood and certain, translucency occupies the curious territory between the two, where spatial boundary or extension are shifting dependent upon the light conditions at the moment and the position of the observer.





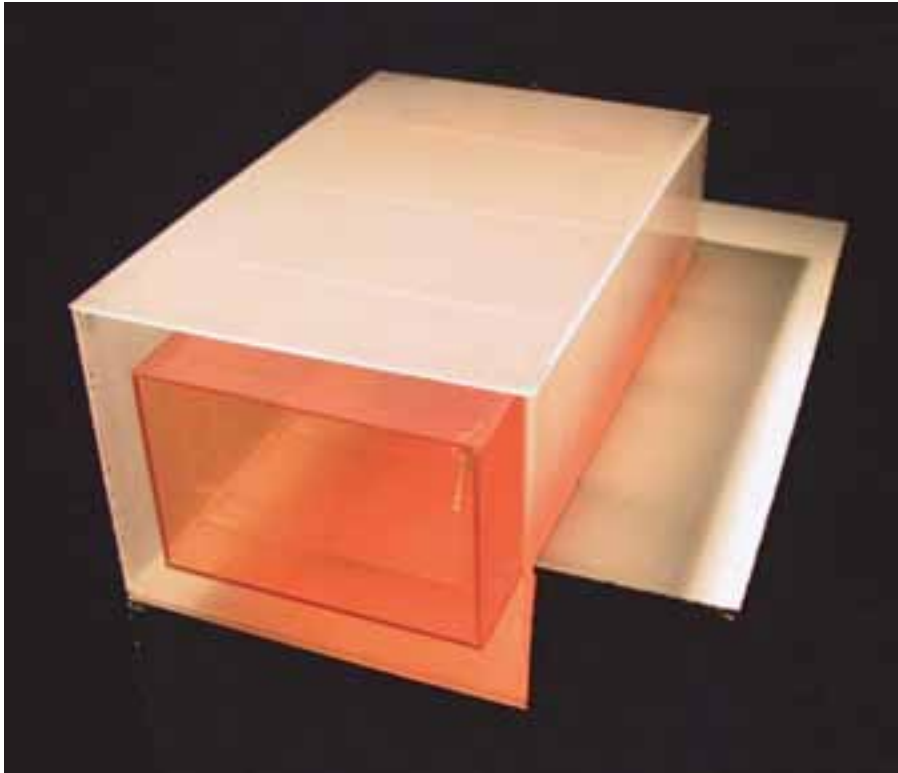
The bath's pools are conceived as if washed out of the building mass by the two rivers – the Potomac and the Rock Creek. The pools show within the building what could happen to the site over time. In contrast to the world above the water surface they are a smooth topography. They make visible that the world under the surface of the water is a very different.



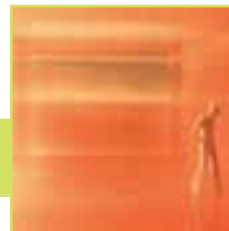


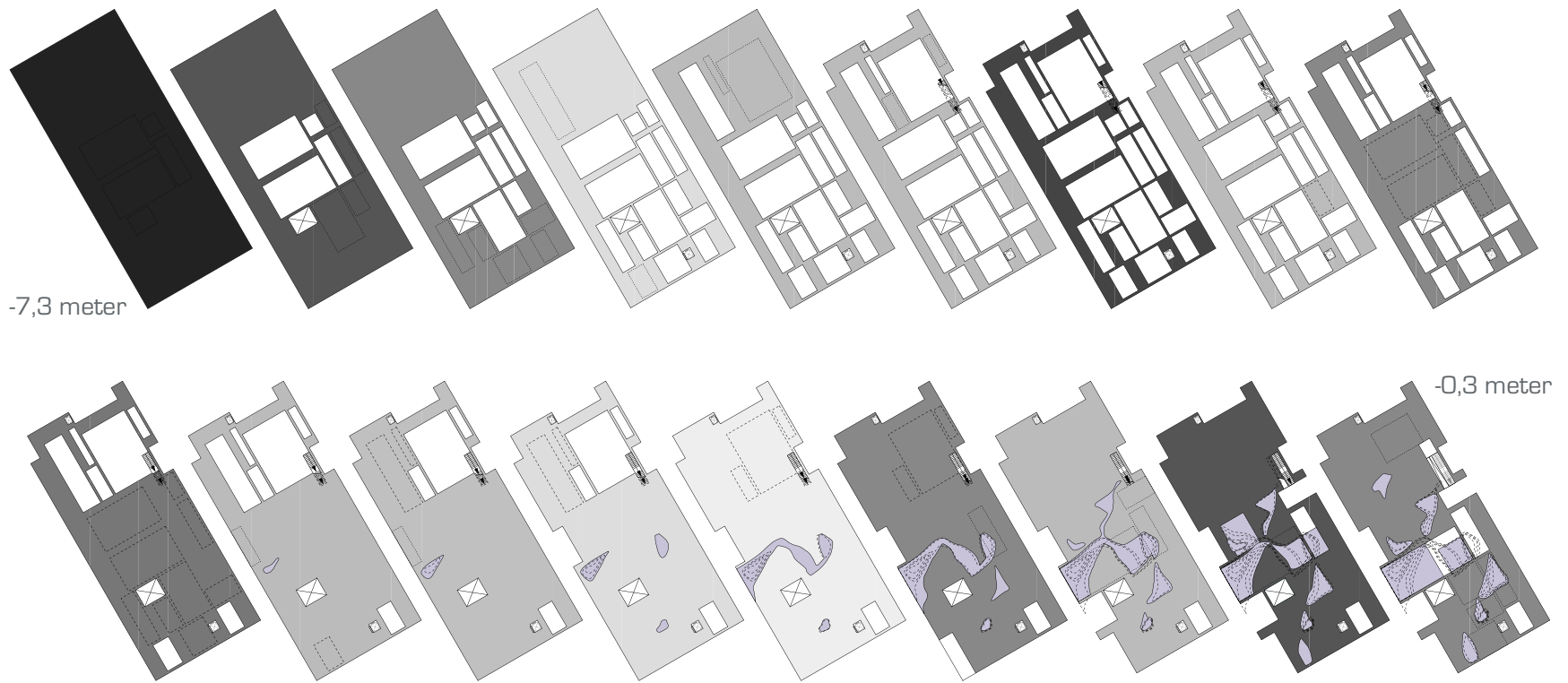
In almost every stone there are disturbances, for example little cracks that allow light to enter and moss to grow within. This is translated to my lighting system. It is a band of glued glass plates allowing light to enter during the day and leave during the night.





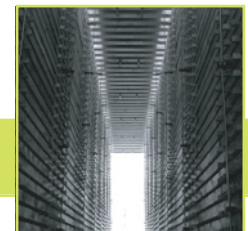
The glass boxes are growing out of the mass like crystals grow out of stone. These glass structures provide a totally different light situation and spatial perception. They are constructed in two layers in order to hide the steel structure. The inner glass plates are colored to strengthen the special appearance.

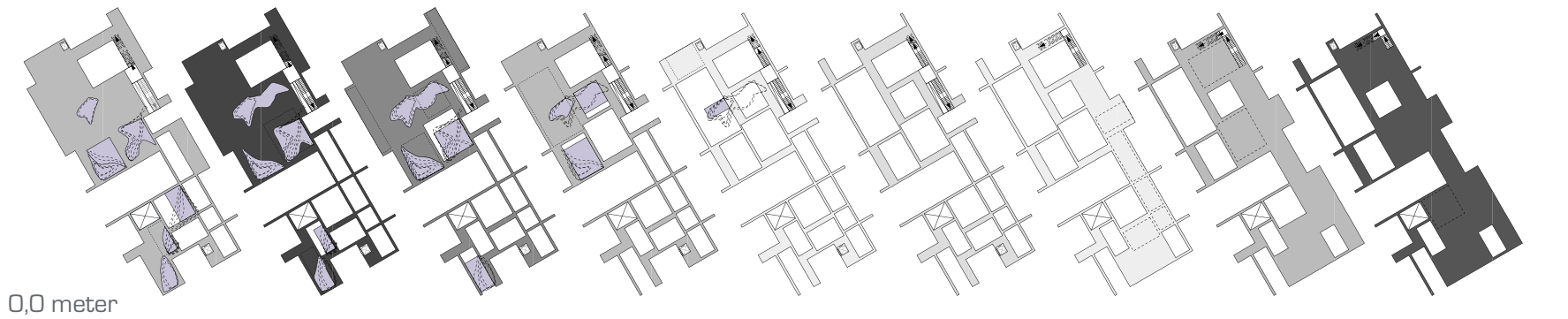




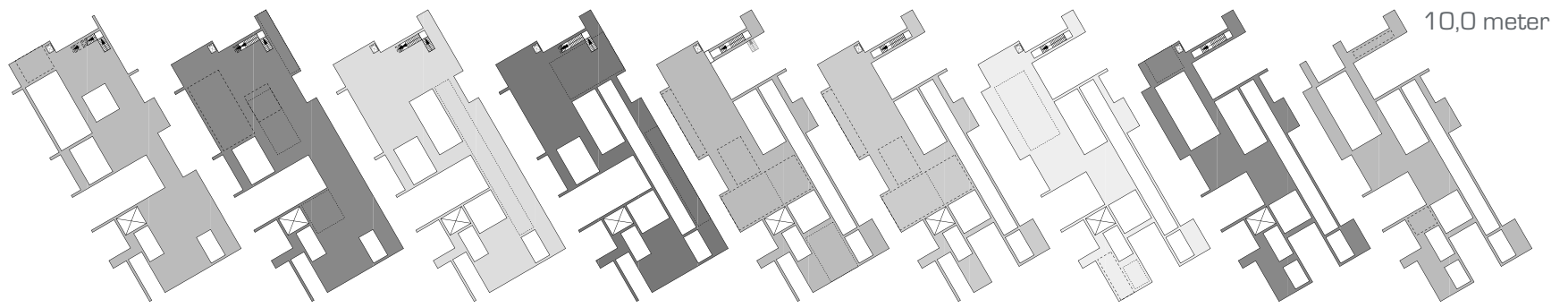
Horizontal sections

These sections show the development of the rooms and pools within the building. All 36 sections explain the vertical development of the building and the relationships that are created.



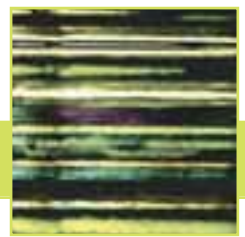


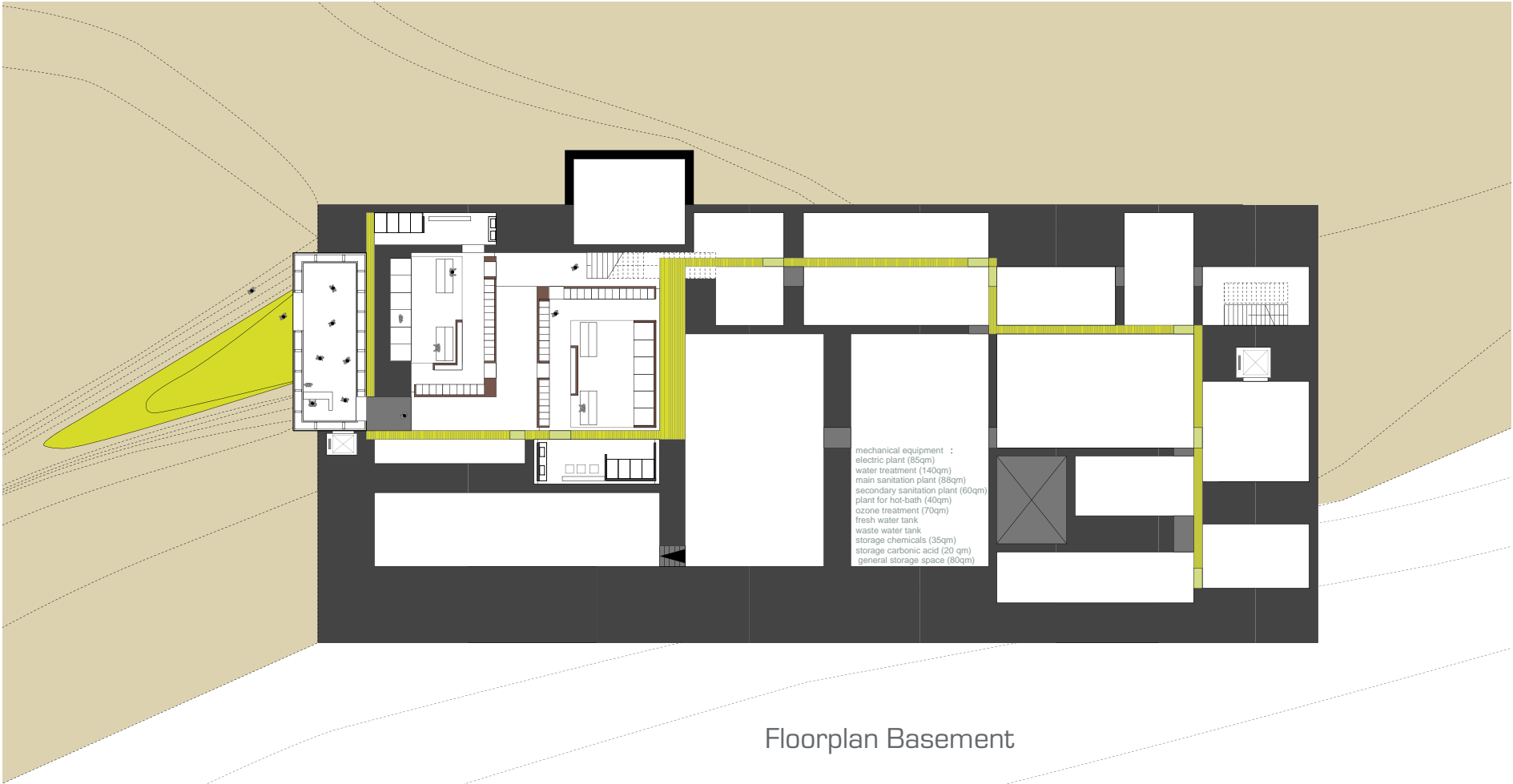
0,0 meter



10,0 meter

Horizontal sections





Floorplan Basement



0 3 6 9 ft





Floorplan Ground-level



0 3 6 9ft

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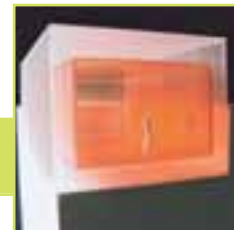


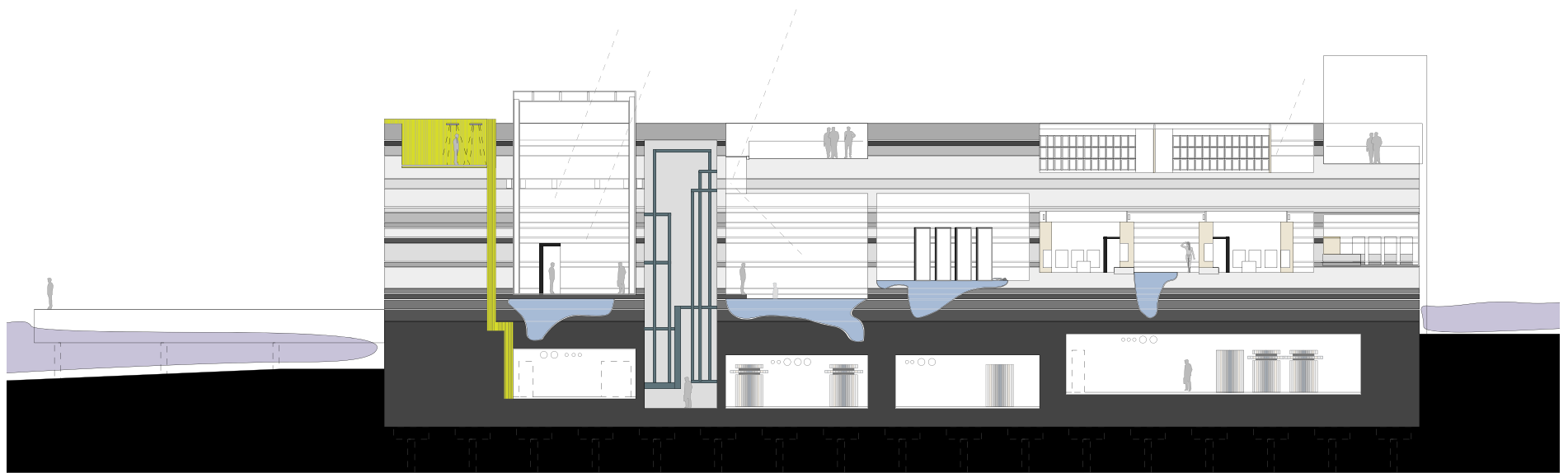


Floorplan Upper-level

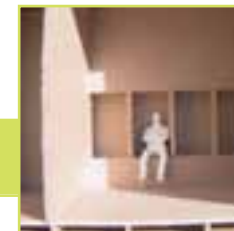
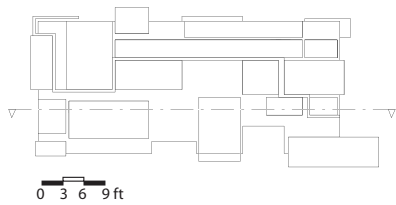


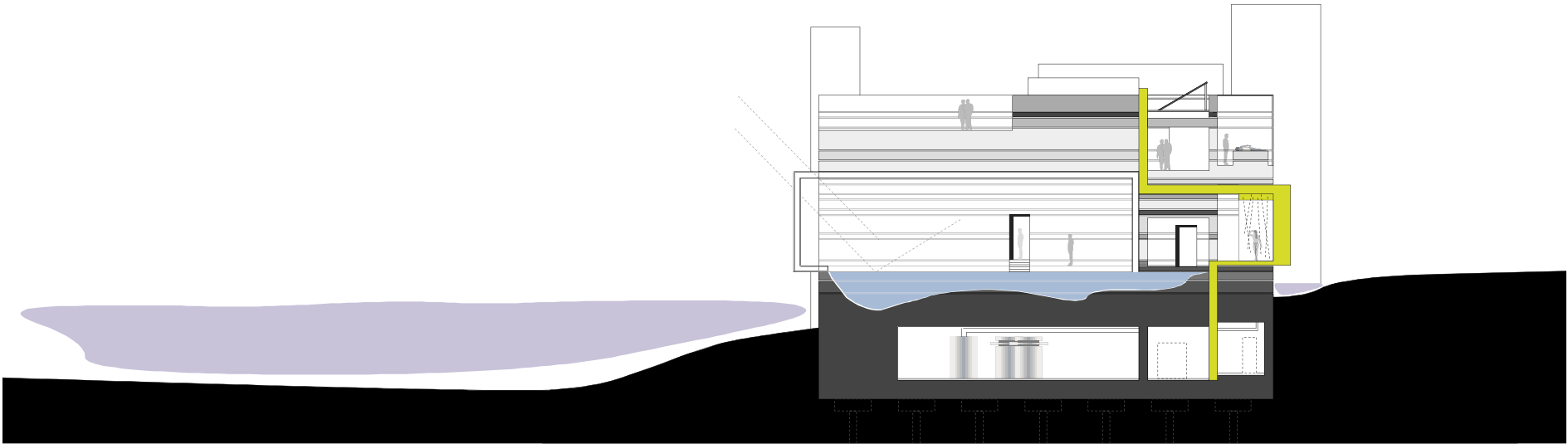
0 3 6 9ft



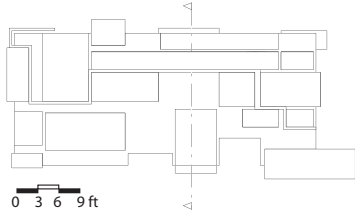


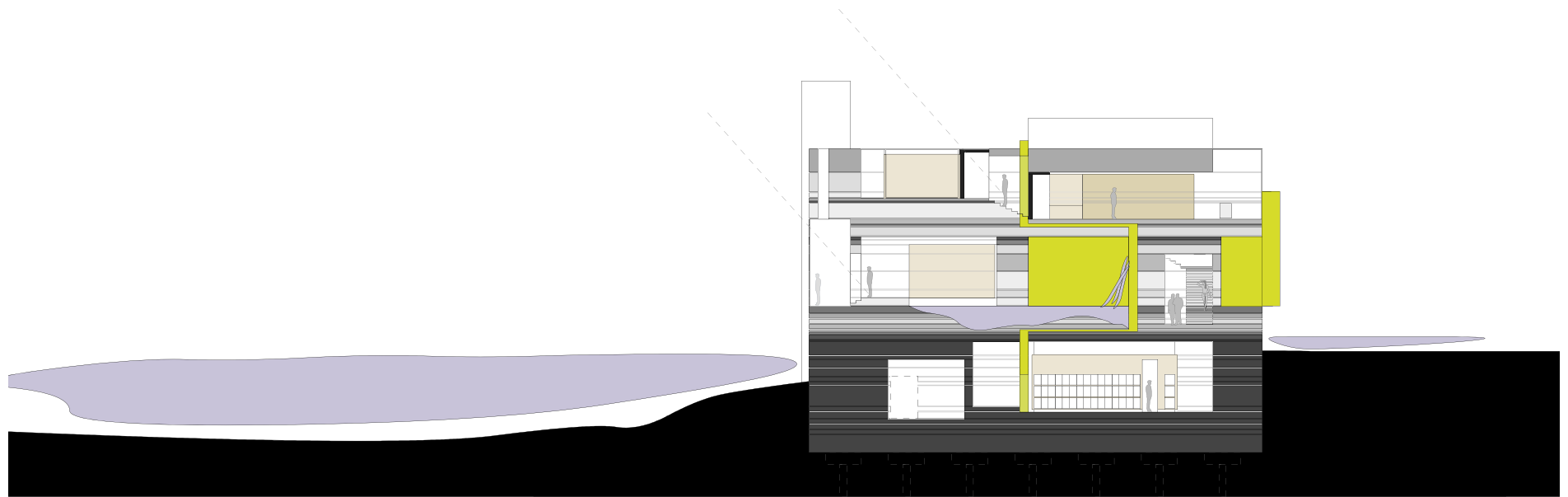
Longitudinal Section



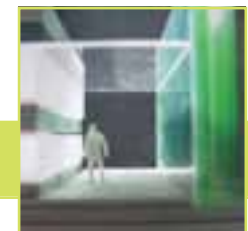
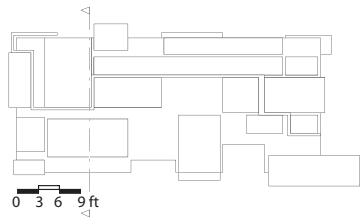


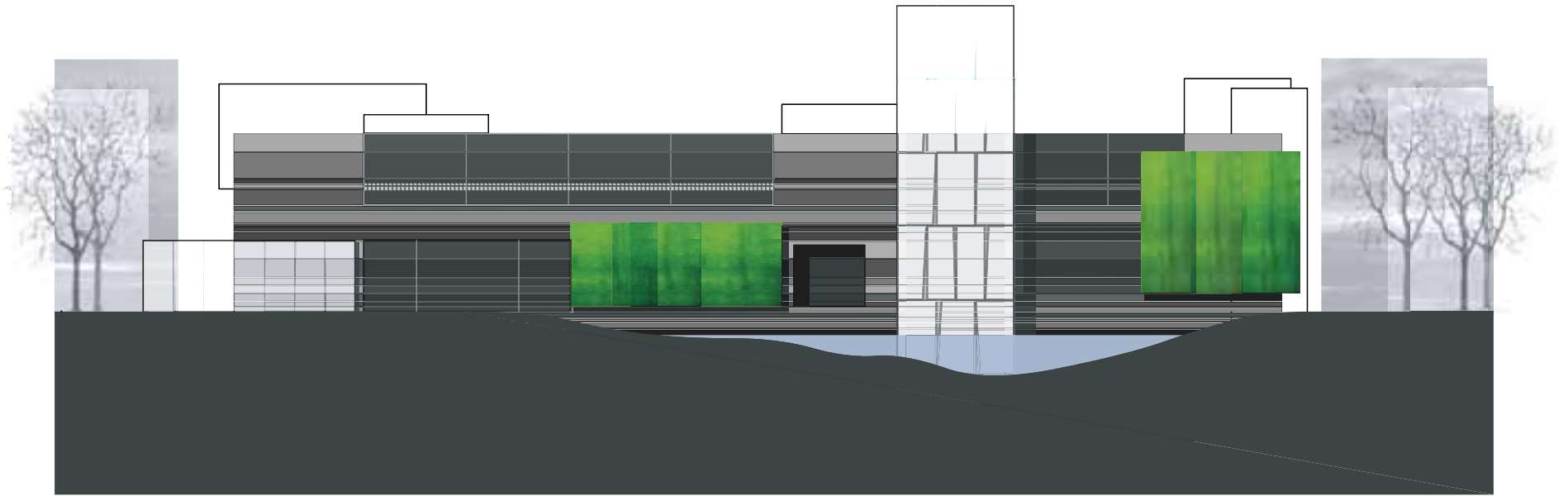
Transverse Section



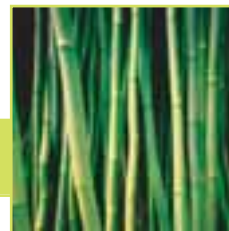


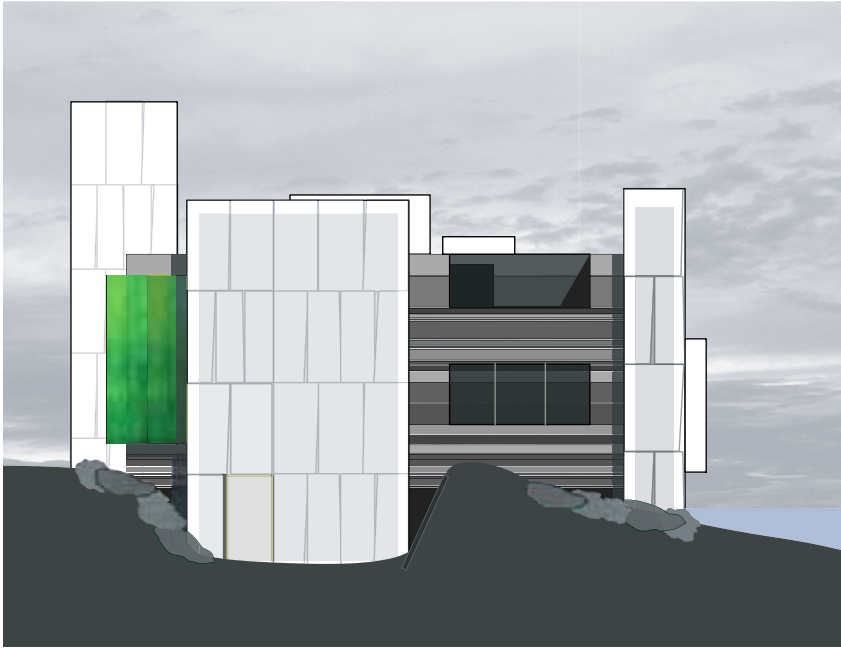
Transverse Section



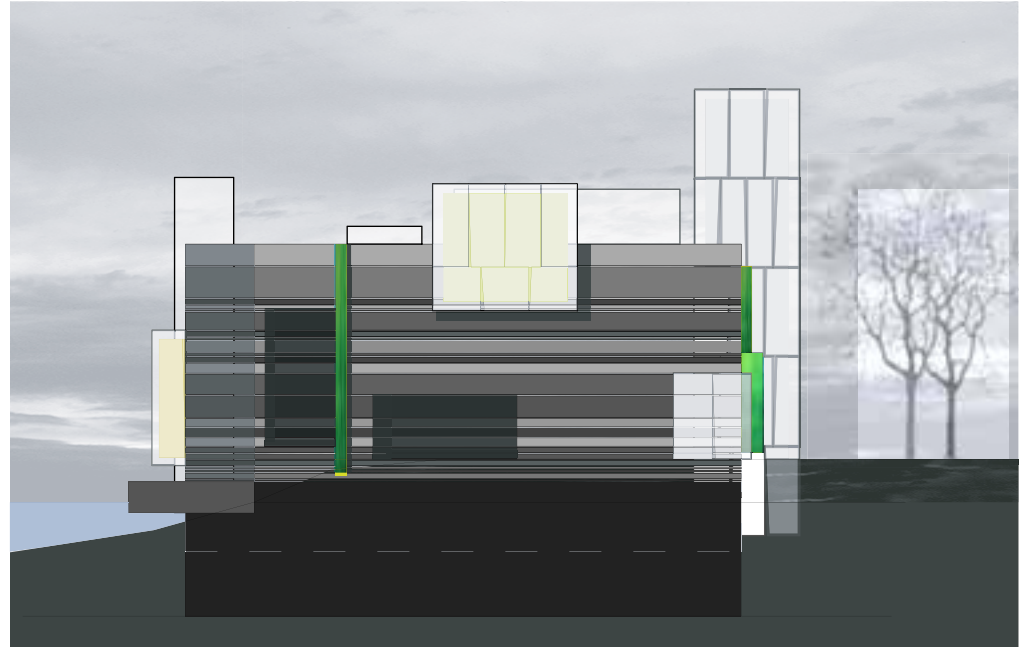


North Elevation

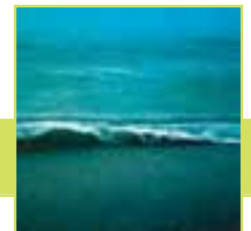


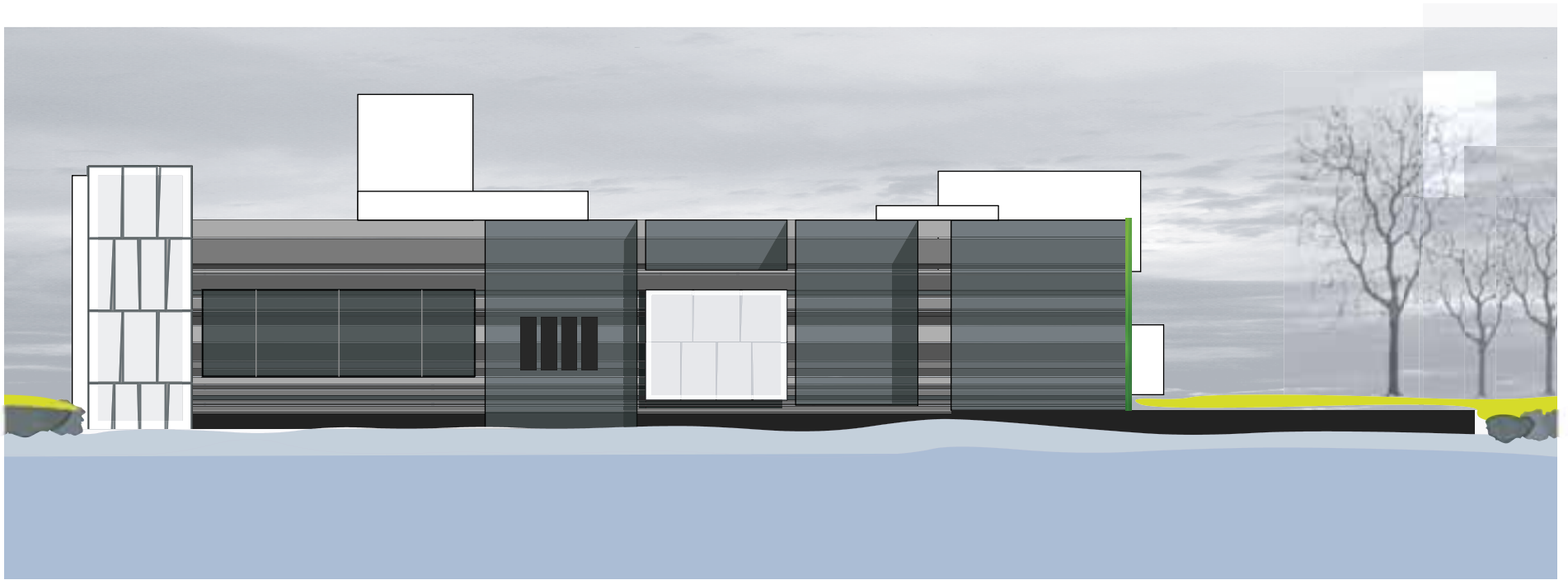


West Elevation



East Elevation

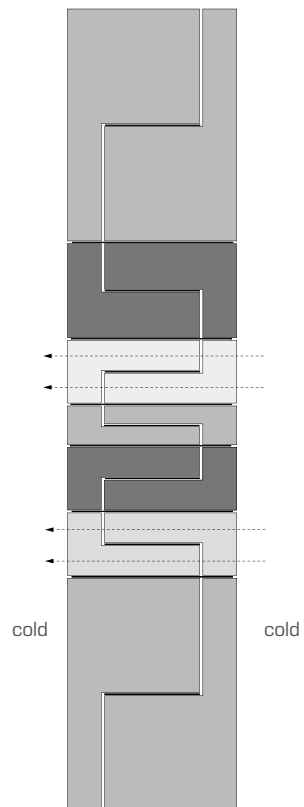




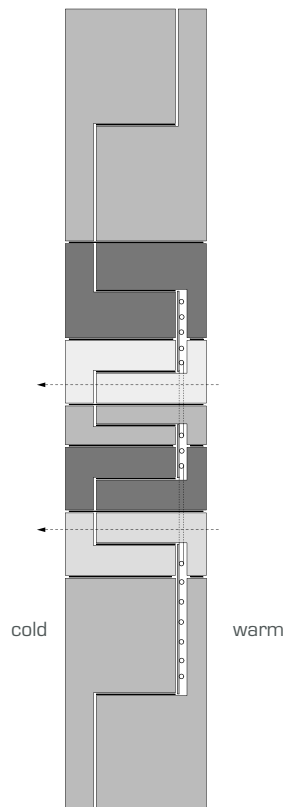
South Elevation



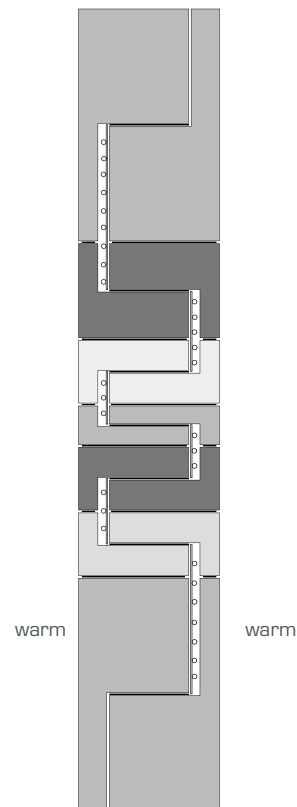
Wall heating system



no integrated heating system-
in walls dividing rooms with low temperatures or between the exterior and cold zones within the building.



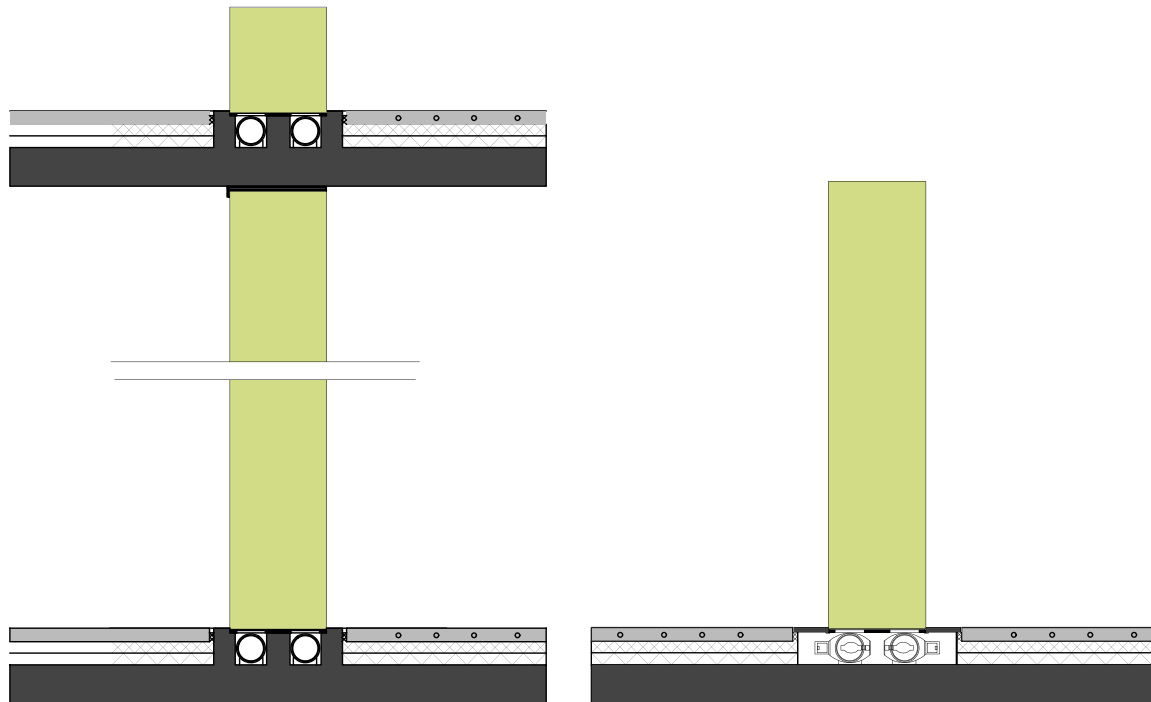
one sided heating system-
in walls dividing rooms with different temperatures or between the exterior and warm zones within the building.



double sided heating system-
in interior walls dividing rooms with high temperatures.



Lightpipe system

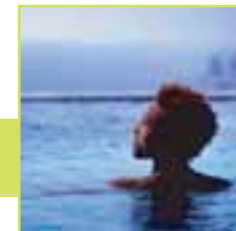


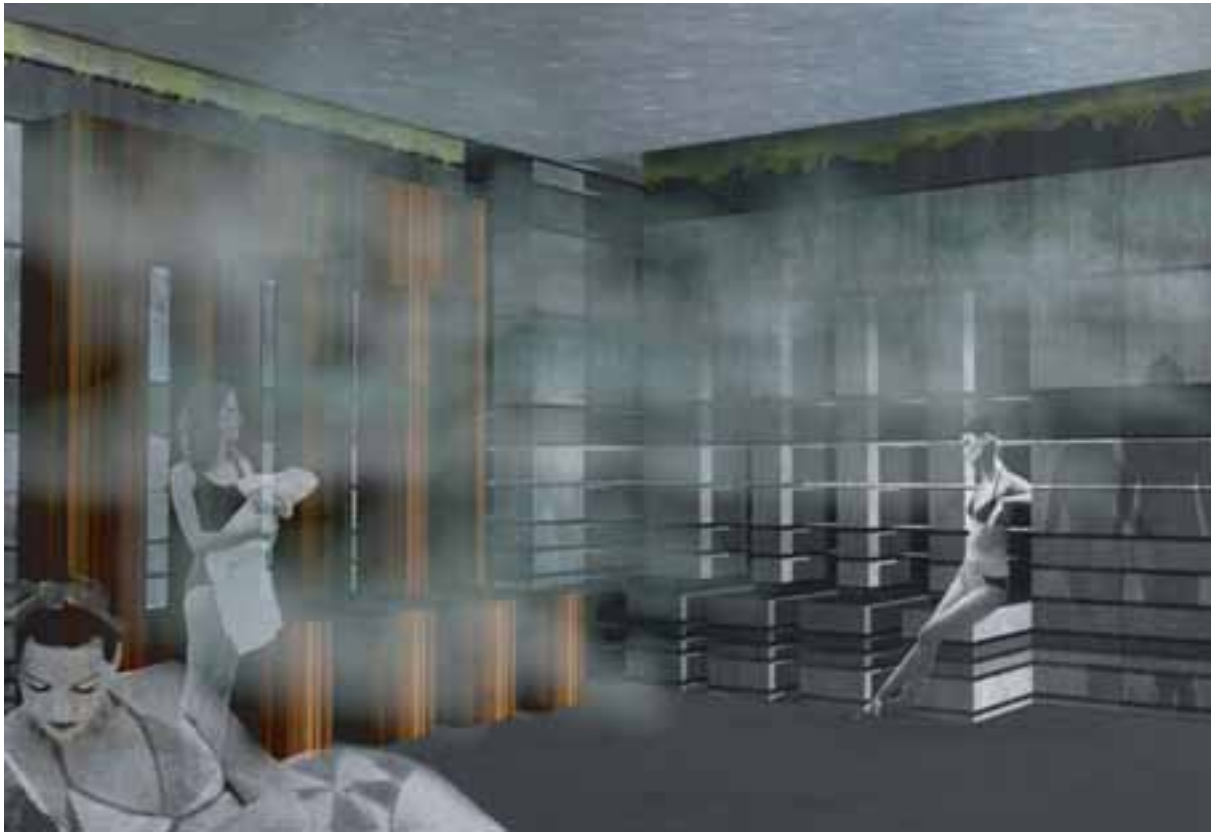
The glass wall that runs through the bath divides the pools from the other functions. It is an instrument of orientation and enables the visitor to draw special conclusions. At night it is glowing from within and therefore becomes a landmark on the Potomac. In order to achieve this light effect it was important to integrate the light sources underneath the glass wall. The Lightpipe system allows to light up to 36m with only one light source. The effect of the wall illuminated from below reminds one of rain dripping down.





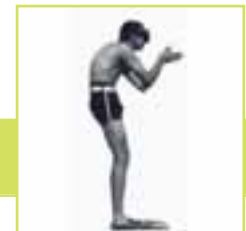
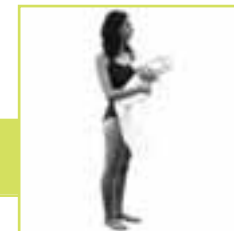
Interiorview of the Cold Bath





Interiorview of the Steam Chamber

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Section model



Conclusion

Even though the original hygienic and social purposes of a public bath are not valid in our society anymore, the bath defines a territory apart from everyday life and the clothed world. Steam melts inhibitions and melts the protective shells we carry with us for most of our everyday life.

Bathing leads to mental and physical relaxation in a socially warm environment.

In the bathroom you are alone with yourself and your fears but in a bath it is a sensual and communal experience.



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Vita

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2005

Virginia Polytechnic Institute, Washington Alexandria Architecture Center,
Master of Architecture

2003

University of Applied Sciences, Hamburg, Professional Degree in Architec-
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2003

Fulbright Scholarship, for Graduate Studies at Virginia Tech

2004

Virginia Society Prize, Award of Distinction, Revitalization of a Hydroelectric
Plant

2003

5th Interschool Competition, 3rd Prize, Concept for a Market in Washington
D.C.

2003

WAAC School Competition, 1st Prize, New Metro entrance on the National
Mall

