

layer 4

1961 4

context

warrenton virginia

Fauquier County's close proximity to Washington DC and Richmond has made the area one of the most sought after settlement areas. Located 40 miles southwest of DC, and bounded on the west by Culpepper and Rappahannock counties and accessed by Interstate 66, the county has become a thriving settlement area for those who work in DC. The county that was once a trade route for the English settlers to the west was in 1759 established as a settlement at the county seat of Warrenton. In 1835 the town of Warrenton had a population of 1300 with 71 acres of land along with a Court House, academy and jailhouse. By 1853 a railroad reached the town and further improved the town's thriving mercantile establishments. Warrenton's impact from the civil war, during which the town became a stopping ground for both confederate and union armies, further intensified the county's population and importance as the town west of DC. In 1950 the population had grown to 21,248. Between 1990 and 2000 the population had grown 13.1%. Today the county consists of 600 square miles (442,000 acres) with a population of 54,000, which includes the towns of Warrenton, Remington and The Plains. Based on statistics it is possible that Fauquier County could be the next Loudoun County, which has experienced an average 70% population growth since 1990 and is regarded as the second fastest growing county in the United States.

In order to facilitate my exploration for this thesis, I chose to work with an existing 10-acre landfill that currently serves as the dumpsite for all Municipal Solid Waste (MSW) in Fauquier County. The landfill is part of a larger 220 acre site. Located just 50 miles west of Washington DC and 95 miles to Richmond, Virginia, the site is situated en route to Skyline Drive which leads to the Shenandoah Valley National Park. Geographically the site lies in the upper Piedmont at the foot of the Blue Ridge Mountains. Due to the counties affordable housing, availability of land, and closeness to major cities, the county's has been a hotspot for housing development. As the population grows in this area so has the abundance of waste due to consumer and housing waste.

Due to the population growth, it is possible that the county could succumb to development that will reduce the amount of open space and agricultural land that is so abundantly present in the county. It is also possible that Fauquier County could experience the same issues of waste management as that of Loudon County in the upcoming years in which the amount of waste generated exceeds the holding capacity of presently used waste management facilities. The county has the potential to integrate land reclamation practices by reclaiming the waste facilities for use as recreational areas. Mount Trashmore, a 400 acre landfill converted into a recreational park located in heavily populated Virginia Beach, is an example of a successful land reclamation project. Like Fauquier, Virginia Beach has had to accommodate a growing population, up to the present day at 425,000 people, was once in the 1950's, only 10,000 people. The recreational space at Mount Trashmore has served as the one of the last remaining open spaces in the county.

the site: Fauquier County Landfill Warrenton, Virginia



Aerial plan



Location of leachate ponds



Location of landfills. Site is the landfill on the upper left.



the site: Fauquier County Landfill Warrenton, Virginia



a. On top of landfill looking west.



b. Looking east towards to the top of the landfill.



c. On top of the landfill looking north.



d. On top of landfill looking down at leachate pond.



e. Public road leading to landfill.



layer 5
| 9 λ 6 | 2
concept





It suddenly struck me that that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth.

I didn't feel like a giant.

I felt very, very small.

Neil Armstrong

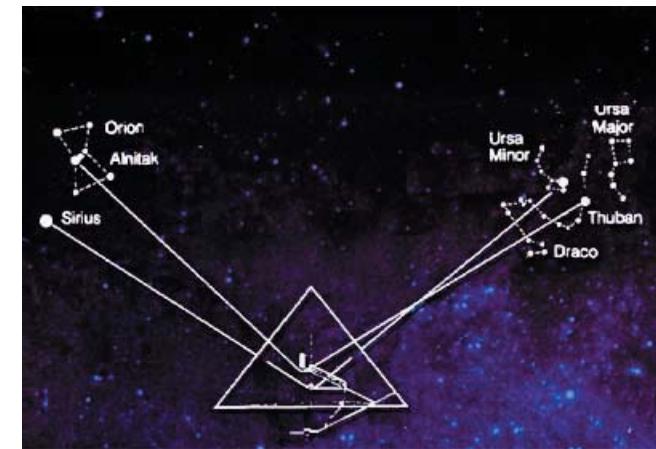
concept



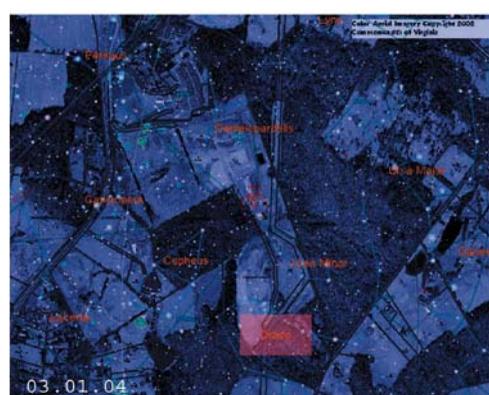
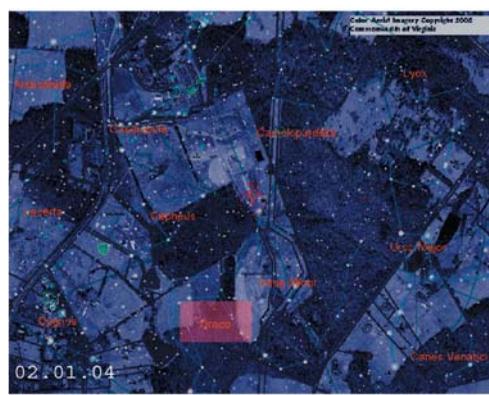
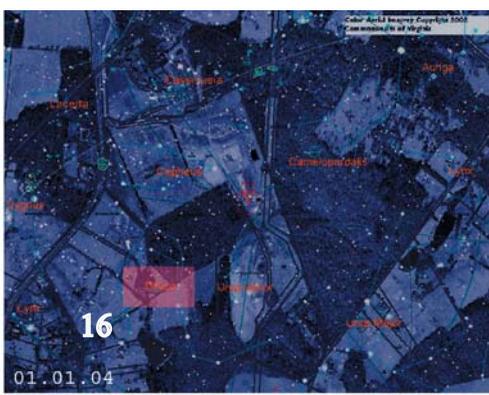
In 3500 years BC the constellation Draco included the north star, Thuban. Today, we look to Ursa minor for Polaris, the present day north star. Draco, in its symbolic form, represents the dragon, the protector of the underworld. Mythology explains that Draco was an intermediary between the above and under world. It was used during primitive years to engineer the great pyramids of Egypt.

Draco was studied in this design to represent the passage of time and the concept of impermanence. The constellations were integral to the design as it informed the concept of reflection that was a mainstay in the concept development. The main dialogue that I wanted to celebrate in this design was that of the earth and the universe, metaphoric for the known and unknown.

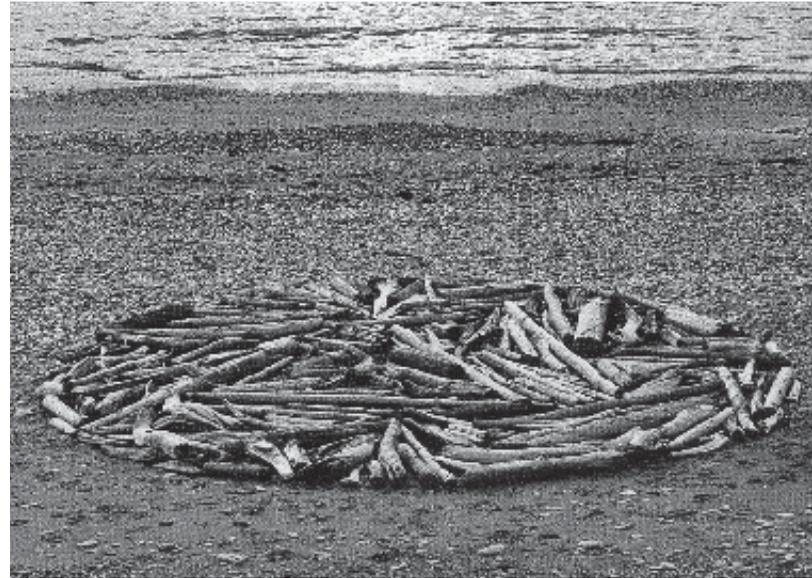
The notion of impermanence was also an important factor in using the constellations as the concept development. It is the intent that the visitor would ponder his/her own impermanence while gazing up to Draco and the greater universe.



The data shows how Draco moves counter-clockwise above the landfill site.



concept



Richard Long 'A Circle in Alaska'



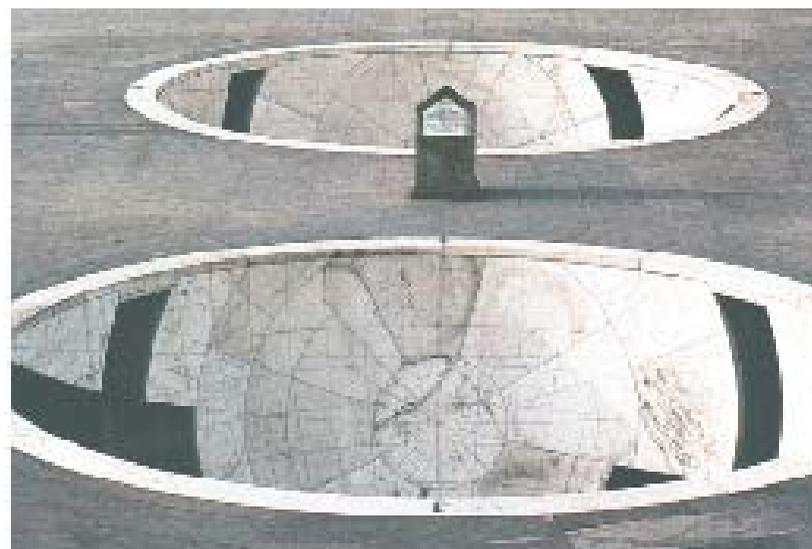
Teotihuacan, Mexico



Sienna, Italy



Lawn Waves, Maya Lin



Jai Singh, New Delhi India



The Pyramids, Egypt

concept

Earlier concept sketches investigated the meeting point between the earth and that of the constellations. In figure A, there was an investigation into the push and pull that relates to the earth and the atmosphere. In Figure B, it is the area that creates an almost intense color that is difficult to replicate by merely mixing the watercolor paint. It to me became the unknown and by pushing and pulling this area, I was able to show how interrelated the two areas were. This concept study ultimately resulted in the viewing station at the entrance of the landfill.

Figure C. are earlier sketches of the development of the amphitheater and some optimal solar system viewing seated positions.

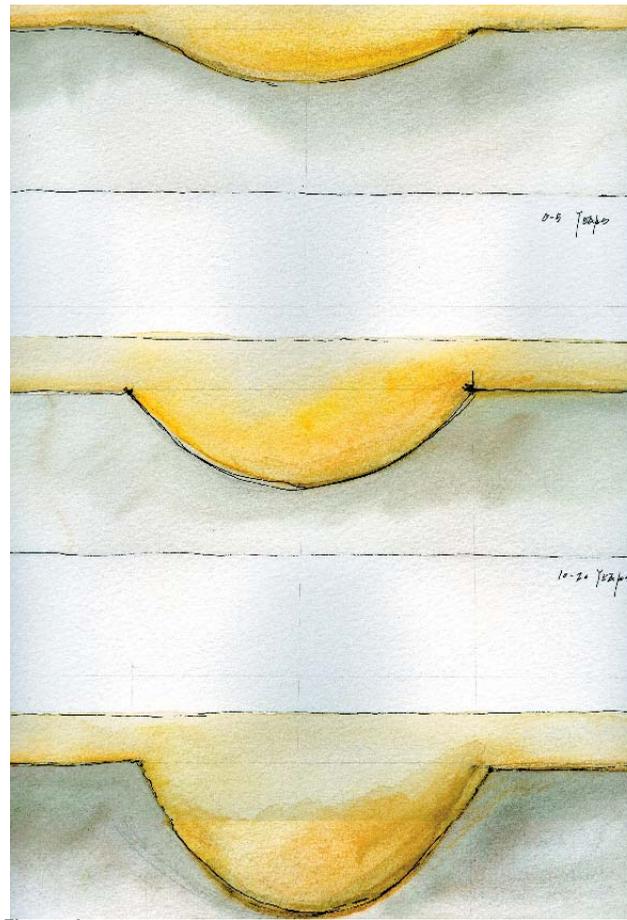


Figure A.

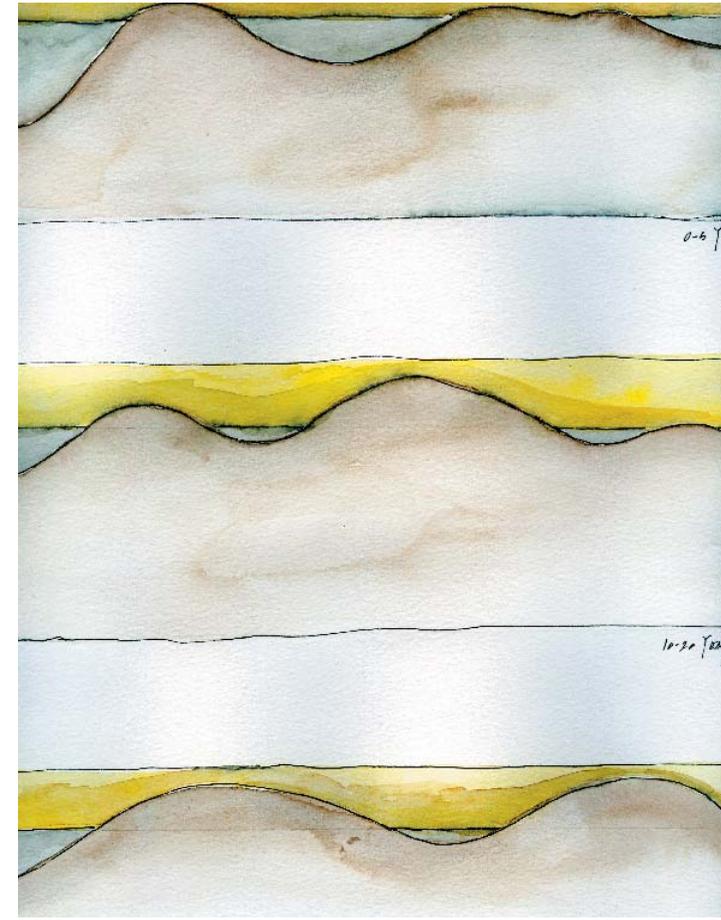
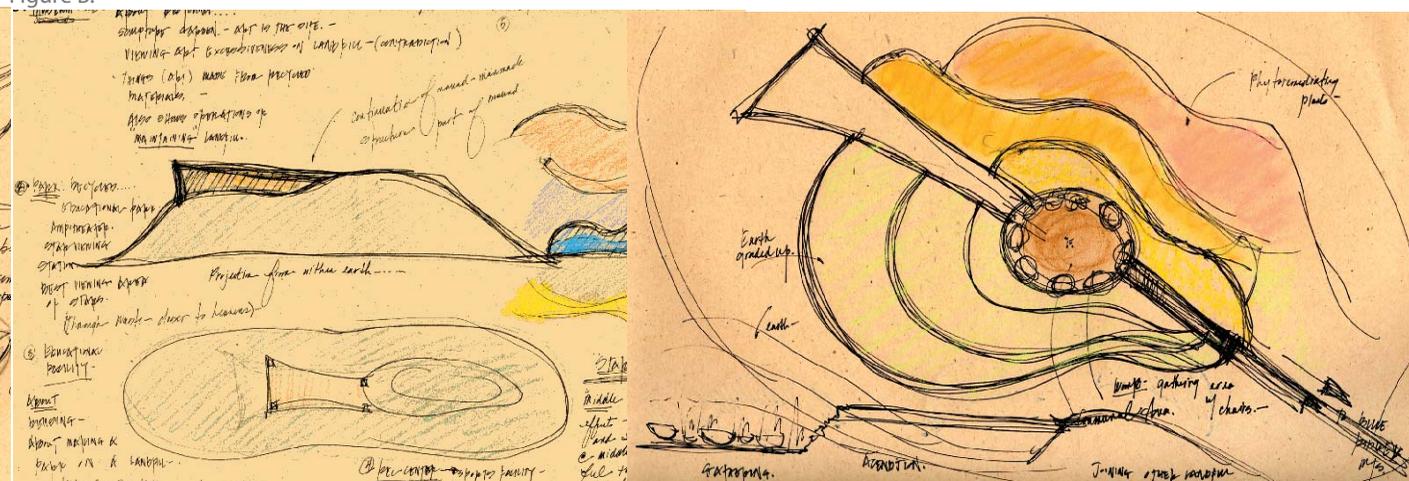
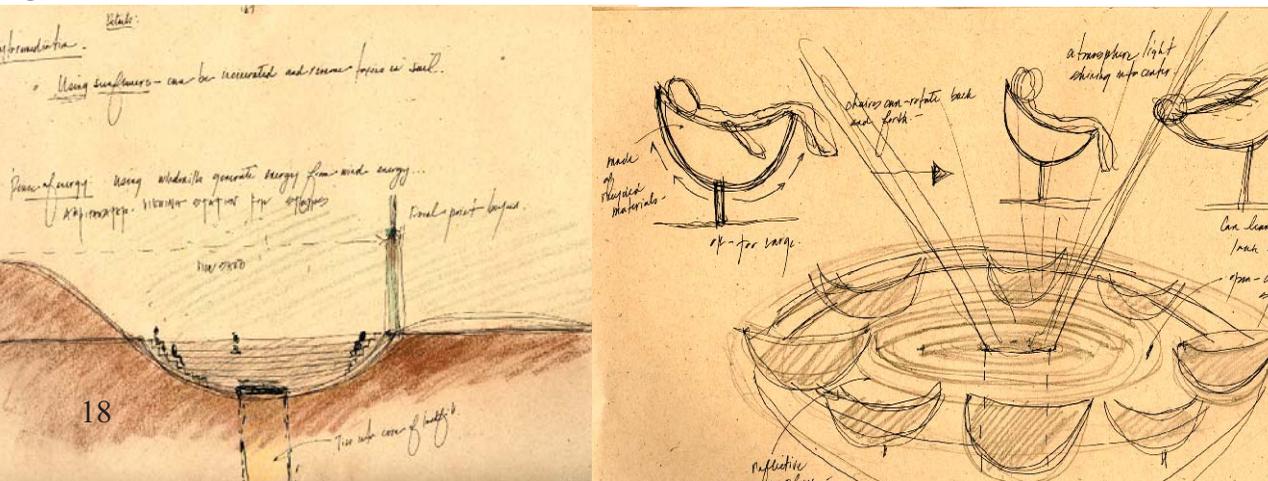


Figure B.

Figure C.

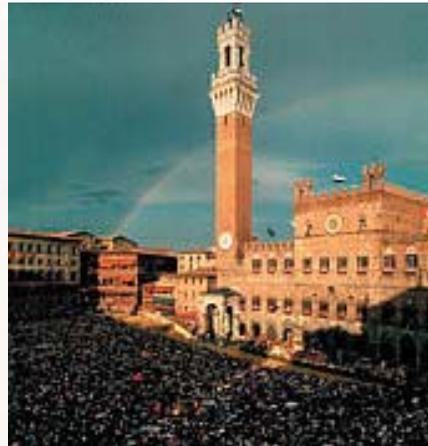


concept

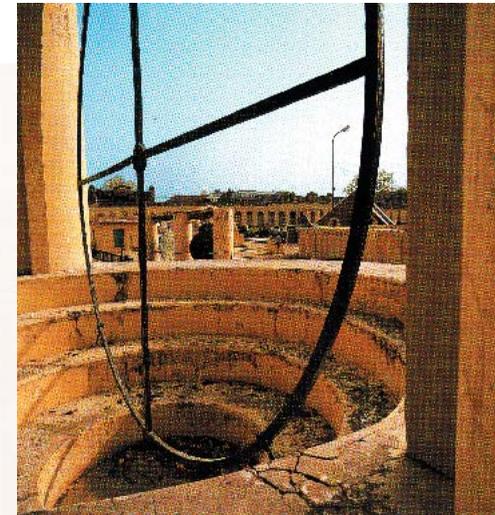
This concept sketch investigated the connection between the earlier study of the grand viewing station, the wind moving carbon fibers, the methane tube and phytoremediating sunflowers. This earlier sketch shows how the four ideas were intially combined.



Phytoremediating sunflowers- The purpose of the sunflowers atop of the landfill are for following the movement of the sun.



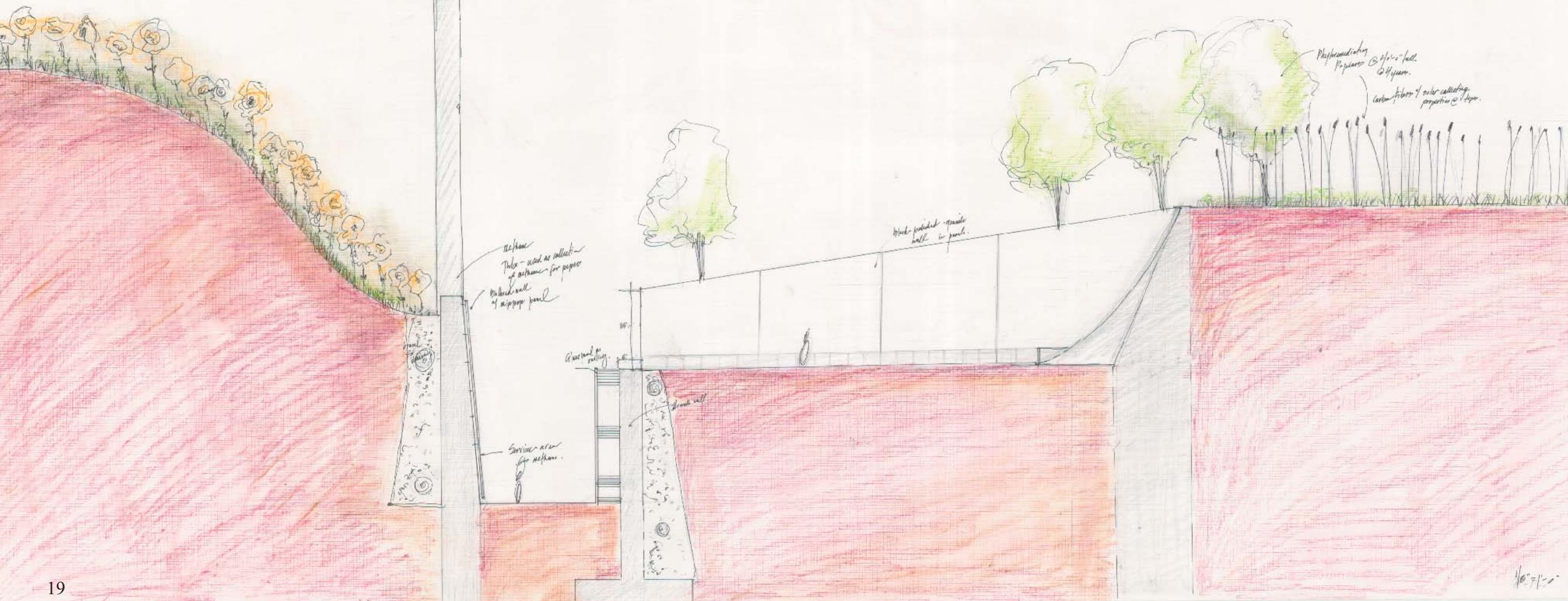
Sienna, Italy sundial-The methane tube which is a necessity for the landfill process also acts as a sundial as it casts shadows on the site depending on the placement of the sun.



Jai Singh observatory- was the inspiration for the landfill's giant 60' wide ampitheater basin, with its ampitheater-like seating.



20' tall carbon fibers interplanted with 10' tall ornamental grasses are wind collectors and sway along with the wind's direction. During the day photocells collect the solar energy of the sun and at night the light is emitted.



concept



Figure A.



Figure B.



Figure C.



Figure D.

Clay models were used throughout the design process to explore how the viewing platform atop the landfill would be arranged in terms of scale and relation to other design ideas.

Figure A. The earlier concept of the leachate tube extending out towards the public access road that leads to the landfill.

Figure B. The earlier stages of the great viewing basin that was inspired by the Jai Singh Observatory in New Delhi, India.

Figure C. The east side of the landfill.

Figure D. The earlier concept of placing phytoremediating Poplars atop the landfill. This idea never came to fruition due to the risk of penetration of the cap due to Poplar roots. This model view also shows the carbon fibers that were ultimately used in the design.

layer 6

Ἰγλαεῖς

design

The design program was to create an outdoor observatory that allows city dwellers and locals a chance to escape the light pollution and view the constellations. The intent was to provide a space on top of the landfill, which would be used during the day and night and allow visitors a chance to contemplate and learn more about the universe. It was my intent to design a space that would engage the visitor to think not only of the present but also of the past and the future. The present being the current state that our society is in, with its overabundance of waste and greater need for landfills, the past being how earlier civilization relied on the universe and the future symbolic for the reuse of the site. To me the energy, or middle ground that is created when earth comes in contact with garbage is a beautiful and inspirational moment.

The design process started by overlaying the constellation Draco over the entire site. This helped inform me on how the circulation would occur throughout the site. Whether the visitor walks the long tree-lined allee to the top of the observatory, or drives through the site they will always be made aware of the overlaying Draco due to each star of constellation being an elevated light. During the day, these stars in the constellation will shine due to the reflection of the sun, and at night due to an artificial light.

The park was designed to accommodate visitors who would be experiencing the space either by foot or by car. When arriving by car, upon entering the site, there will be a short stretch of the road that will direct the driver along the axis of the leachate tube which is lined with phytoremediating Poplars. The viewer will then have a quick look at the top of the landfill. The view that will be most notable will be of the methane tube that will be extending 80' out of the landfill. During the day the tube will be bright due to the sun's reflection. At night, the 2 year capped landfill will emit sparks of flames from the combustion of the methane.

Once the driver makes the turn they will enter into the visitor center. The parking lot of the visitor center takes on the shape of Draco's head. Here the visitor can learn about the constellations, landfills and ultimately waste reduction. The surface of the parking lot is made of grass pavers which allows for a permeable surface to help with water run-off.

If the driver decides not to walk up to the allee to the landfill they could continue to exit the site along a winding road. At a third of the way towards the exit, the driver will go through a thicket of lush and beautiful woods. Surrounding the perimeter of the woods is a red wall that is illuminated during the day and night. This red wall symbolizes the footprints of the future landfill once the Fauquier County's existing landfills exceed their capacity in waste. (See Figure A.)



design

The red walls that mark the perimeter of the “future landfill” are highlighted by the long vista that starts at the leachate runnel walk (Figure A). The axis is accentuated with Red Maples *Acer rubrum* that will mirror the red walls in fall when their leaves turn a deep red, as well as a clearing in the thick wooded area and a grove of evergreen trees that mark the entrance to the future landfill site.

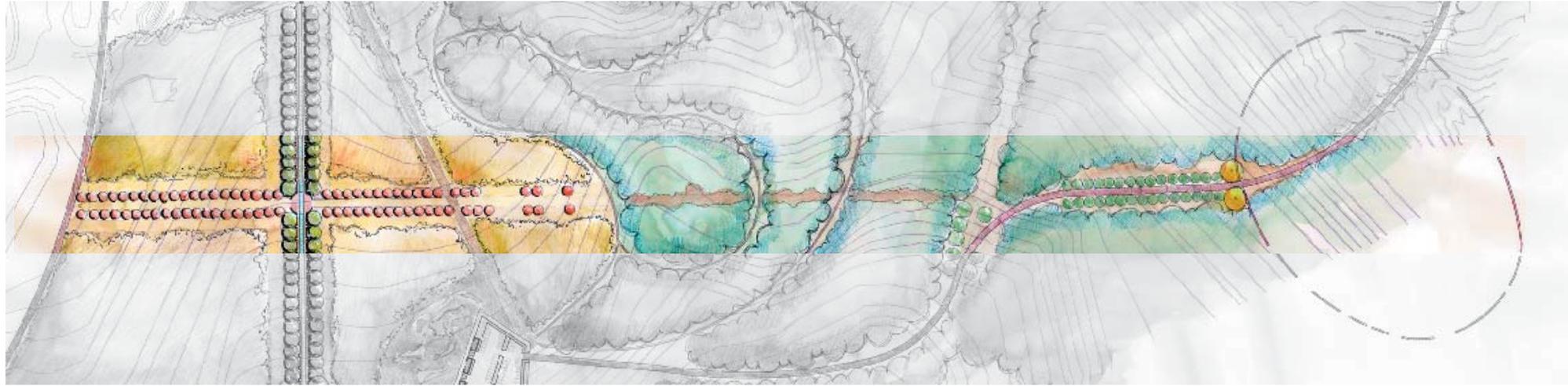
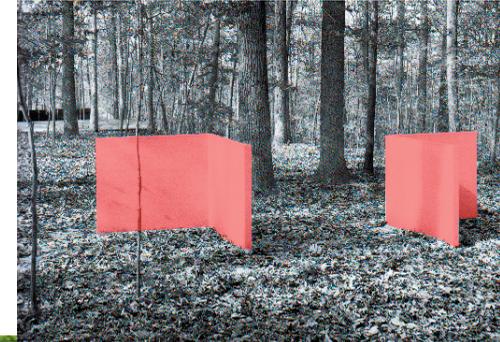


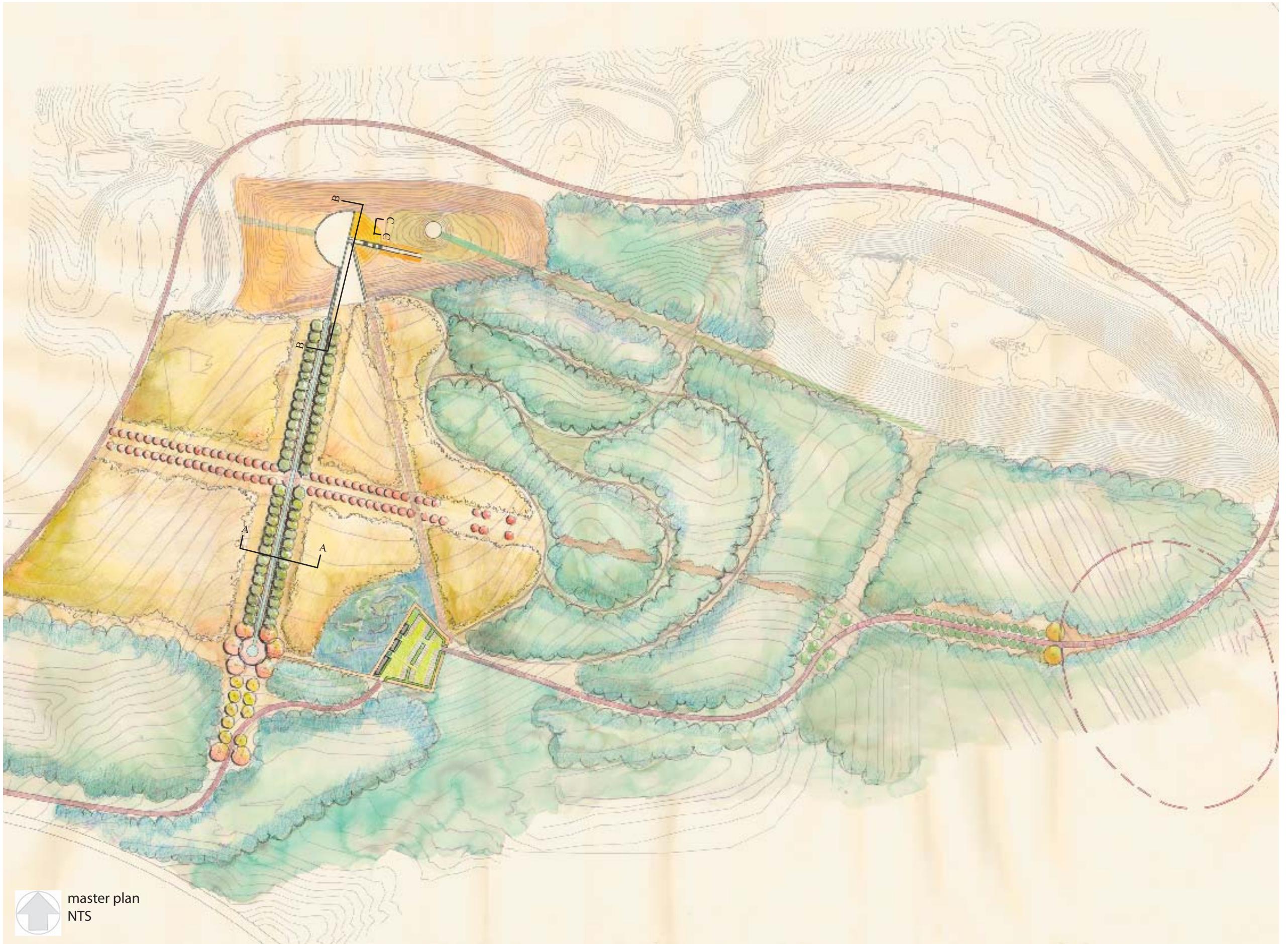
Figure A.



The red walls illuminated during the day

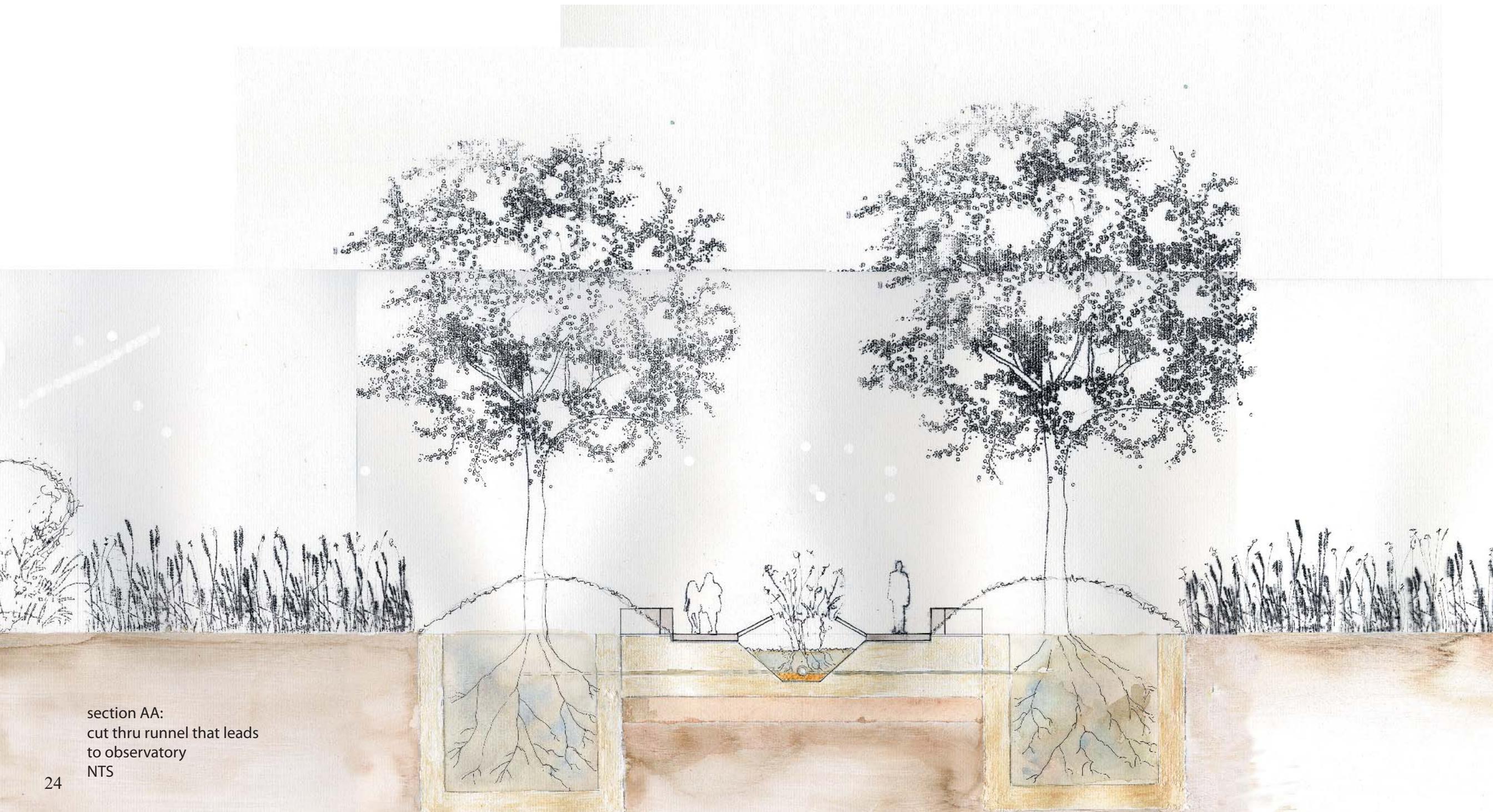


The red walls illuminated during the night



design

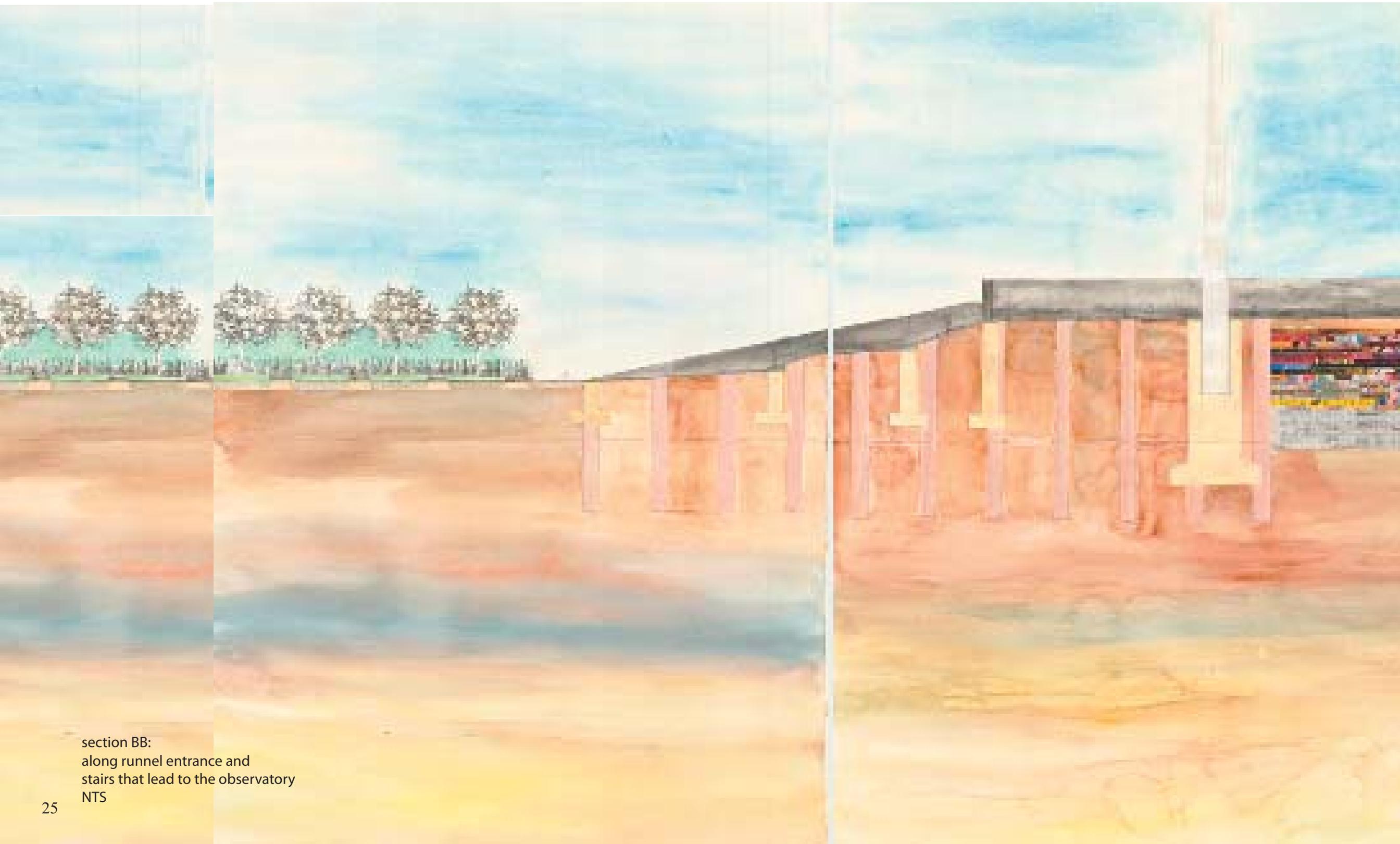
Section AA- is taken through the leachate runnel. Leachate is collected at the base of the landfill and transported along this runnel. This system contains a cleansing mechanism of phytoremediating Poplars and other plants that aid in the cleansing process. The process is exposed to the viewer as they walk along the axis. The ultimate destination of the newly cleaned leachate water is into the naturally occurring wetland that is found at the base of the runnel. All along the runnel are seat walls and benches for resting and contemplation. The idea is that as the water moves towards the base of the runnel the water appears clearer since it will be cleansed of leachate.



section AA:
cut thru runnel that leads
to observatory
NTS

design

Section BB- is taken through the entrance to the top of the landfill observatory. Upon leaving the leachate runnel the visitor will ascend black granite stairs. The stairs actually cut into the landfill and symbolize a “wound” in the landfill. Due to the properties of granite, the visitor will be able to see their reflection in the retaining wall. Once at the top, the visitor has a clear view over the entire site. Once the visitor ascends the sunflower hill alongside wind blown carbon fiber they will be at the the highest point of the landfill.



section BB:
along runnel entrance and
stairs that lead to the observatory
NTS

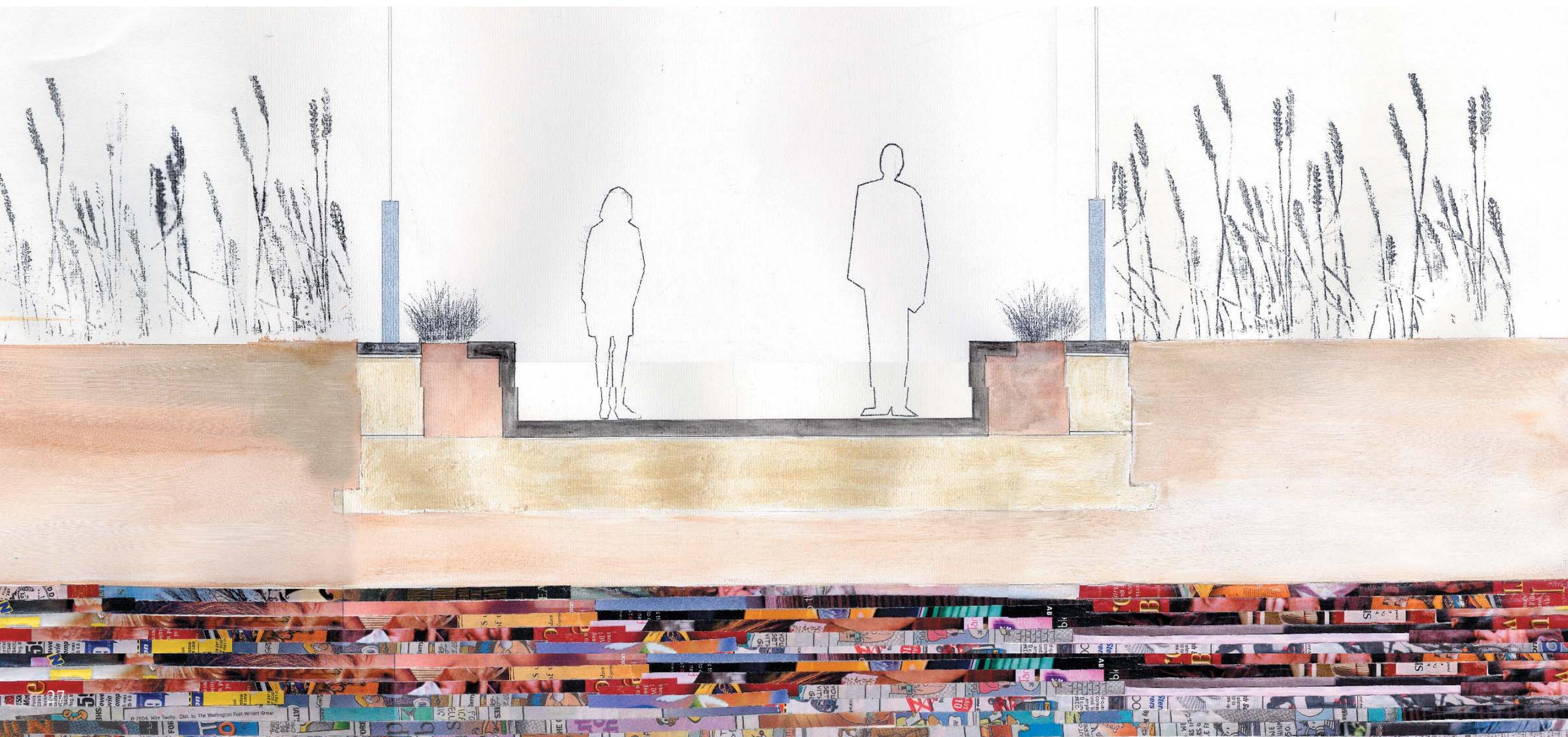
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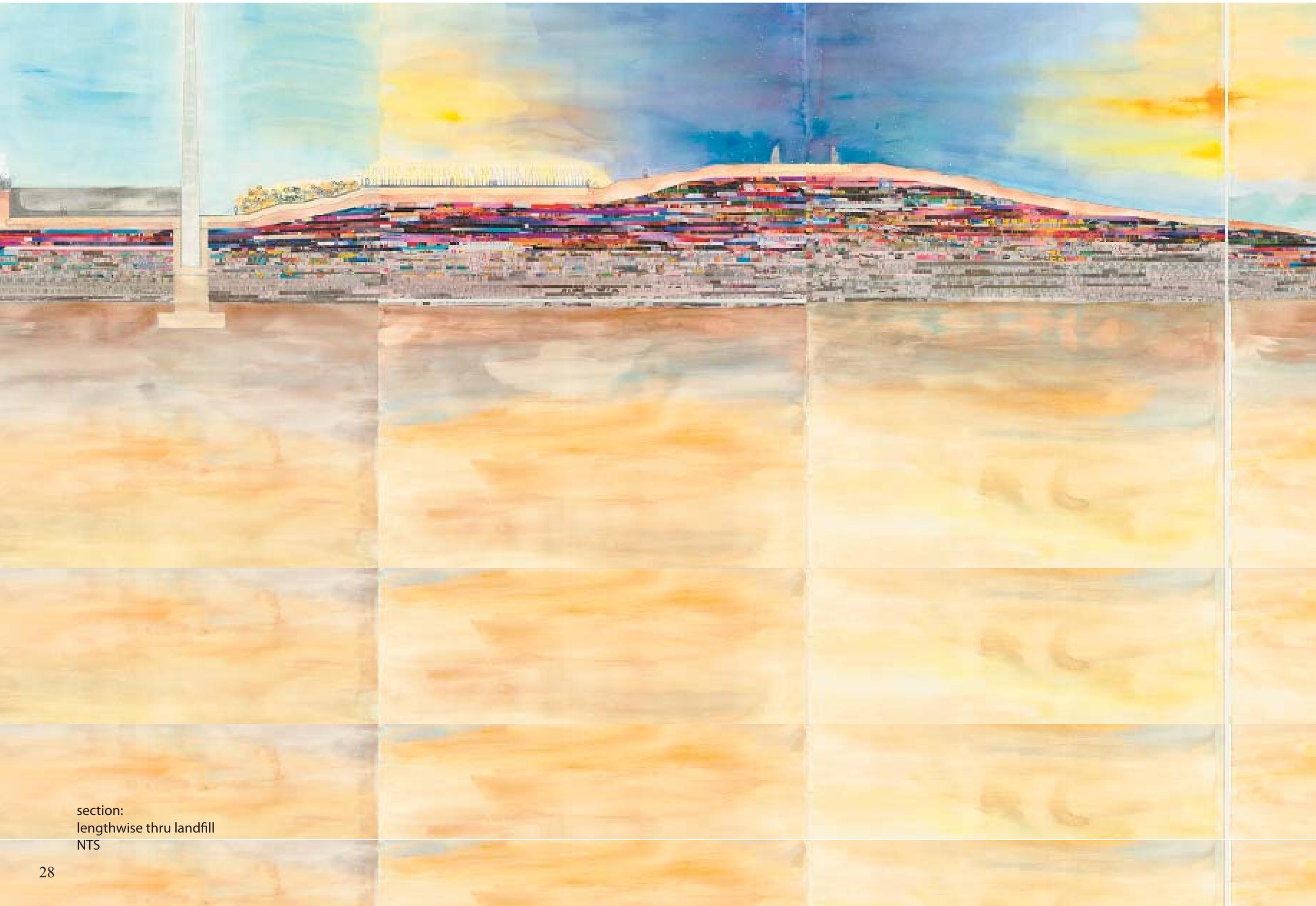
design

Section CC-is cut through the stairs that lead to the highest point of the landfill for ideal solar system viewing. Either side of the stairs are lined with carbon fibers and phyto-remediating grasses. During windy periods both become active as they sway in the wind. During the night, the tips of the carbon fibers emit light that was collected solarly from the sun. On both sides of the walk are seatwalls.

section:
thru walkway lined with carbon fibers and grasses leading to upper observatory
NTS



design



section:
lengthwise thru landfill
NTS

reflection

REJECTION

It was my intent through the thesis process that I would enlighten myself and those who would read my book to the wastefulness of our society and rethink the way we treat waste. Hopefully, I have made a small impression on someone who will find this book on the internet or in the thesis book catacombs at WAAC. This thesis has enlightened me in many ways. Although I did not find the "truth", I found the reason why I decided to study landscape architecture in the first place.

The statistics of how humans have depleted the natural resources of the planet are staggering. I am a proponent of seeing our species continue for many years to come. I am however, not sure how we can survive without the earth's rich resources. Changing our views on overconsumption is integral to the health of the planet. The way our society stigmatizes trash and waste, has to change.

My solution to educating the public and awakening them to the "damage done" is to expose the problem by exposing the landfill. Until technology improves, building atop a closed landfill poses many financial and health concerns. The issue that I ran into with my thesis was how the footing for the observatory would not interfere with the landfill cap. My solution to create an oversized platform for the footings to rest on without penetrating the cap is feasible but costly. Another concept for the footings was to have them resting on larger "floating footer" that sat above the cap. This would result in settling and thus cracking. I liked this idea as it would show the changing or "impermanence of the landfill" over time. Perhaps the site would turn into a giant archeological dig in the year 9005!

Although I don't have the absolute solution on how to build atop landfills, I am hopeful that the technology will improve to further investigate the endless possibilities of existing landfills. Projects such as Mount Trashmore, Hilltop and Meadowlands give me hope that building atop existing landfills is possible. Technologies such as bioreactors, chemical compounds that accelerate the decomposition and stabilization of waste have the potential to eliminate the need for future landfills.

As a result of this thesis and the group of individuals I was fortunate to work with throughout the process, I feel that I have grown as a designer and as a human being. Now my goal is to bring my knowledge of sustainability to other areas of the landscape architecture profession.

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