

Entangled Stewardship: Examining Contaminated Landscapes at the American Periphery

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DEDICATION:

I would like to dedicate this work to My Family, Midwestern Roots and my Fiance, Chris. Thank you for all the encouragement and support over this last year when I could not fathom that I would reach the finish line.

I also would like to dedicate this work to my Thesis committee. Thank you for your dedication and patients towards my chaotic way of research and development. I simply would not have made it this far without your help. You all have my highest form of gratitude.

architectural thinking. By emphasizing kinship², assemblage relationships within contaminated diversity³, “infrastructural principle”⁴, the homogeneous and ruinistic landscapes might be alternatively re-thought.

Introduction

Infrastructure spaces define many of the spaces in which society experiences all aspects of their lives. And it is not surprising that in some instances it is preferred for the ease of convenience and reliable sources for everything no matter the form or shape.

Food is an exploitative commodity as well and as seen over the last 25 years is not always accessible or of good quality. Food deserts exist across the united state which means that residents cannot access food without a car and creates other barriers preventing residents from reaching a place to purchase fresh food. This raises another question: how can the reliance on large produce chains be challenged at a local scale and can it be achieved without the exploitative nature of capitalism? The responsibility to the wellbeing of the community is abruptly ignored in the larger capital society and the once occupied space by the store now becomes part of the big box retail landscape called “Junkspace,” a term Rem Koolhaas utilized to describe the developments that devalue the architectural contexts contributing to creating the inescapable generic place devoid of nearly everything.

However this infrastructural state dictated by capitalism has produced local economies and abandoned local economies in order to better accumulate the wealth for those at the top of the supply chains. In these abandonment, towns have been destroyed and left in ruin, however, opportunity is created for other non- human inhabitants that can operate outside the confines of capitalism. How can Architecture aid in this collaborative Agrarian stewardship in order to create transformative space for humans and multi- species to collaborate in human destroyed places?

In order to develop a strategy for creating a space for ecological kinship, historic land-use is analyzed to establish how the Agriculture and homogenization of the landscape has historically been approached. Then, new strategies for

Beyond many American City cores exist a series of land uses characterized by waste, former infrastructures, homogeneous development, and ecologically entangled spaces of the American economy and productivity. This is reflected in all forms of industry, including agricultural land uses are all rooted in the same industrial methodology that leads to homogenized land-uses.

In the race for convenience and profit, these spaces are created to limit risk, increase predictability and economic expectancy. The scale of this risk aversion and flows of capital are referred to by architectural theorist Keller Easterling as “infrastructure space”. Infrastructure space is described as the buildings and processes created for the extraction of capital and strictly defined by priority of networked financed systems, governance, and territory. These efficiencies are rooted and perpetuated by the 19th century ideas of Enlightenment progressivism, which emphasize linearity and efficiency in pursuit of a singular goal. These ideological frameworks, coupled with modern capitalism lend themselves to the current epoch of the Anthropocene, marked most distinctly by the landscapes suggested above and the long-distance destruction of landscapes and ecologies. However, anthropologist Anna Tsing, author of *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*, refuses to look away from these issues, or to reduce the earth’s urgency to an abstract system of causative destruction rooted in undifferentiated capitalism. Instead, she argues that precarity—in opposition to the supposed promises of Modern Progress—characterizes the lives and deaths of all earthly creatures.¹ She offers that this precarity offers room for intervention in the unplanned, as part of a larger framework for the “arts of living on a damaged planet,” and as a necessary “skill for living in ruins.” Tsing’s thinking coupled with Donna Haraway’s notions of “speculative fabulation” for inventing in sensitive ways by re-unfolding in order to re-play with what has been sidelined in history, a whole series of possibilities that are still active today in the margins of society, to transform things and one of those things is “radical kinship” offer directions for how to intervene. To intervene in the ruins of agricultural and infrastructural landscapes suggests going beyond the strategies and methodologies of recent

¹ Anna Lowenhaupt. Tsing, *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015).

² Donna Haraway: *Story Telling for Earthly Survival*, Amazon Video (Amazon, 2019)

³ Anna Lowenhaupt. Tsing, *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015).

⁴ Tung-Hui Hu; *Black Boxes and Green Lights: Media, Infrastructure, and the Future At Any Cost*. *English Language Notes* 1 March 2017; 55 (1-2): 83. doi: <https://doi.org/10.1215/00138282-55.1-2.81>

ecological facilitation is examined through an analysis of five case studies: Akoaki, in Detroit, Michigan, is examined for the utilization of agriculture as an incubator for social regrowth at a larger scale; Agraria, located in Yellow Springs Ohio, for its stewardship for ecological restoration and regenerative agriculture, "Properties with Property" Project proposed by Zago Architects, which is examined for the approaches to redefine foreclosed subdivisions for ecological integrations placing emphasis on the reintroduction of a relationship with biodiversity and living within it.

The Mound Office Park in Miamisburg, Ohio. A 300 acre site once used for the production of nuclear weapons, at the peak of the Cold War. The site offers local as well as international significance. The site also holds a conical burial mound of the Adana culture built between 800 B.C. to A.D. 100, suburban tract home development, industrial ruins, a golf course, and various agricultural and recreational uses, offering an array of seemingly incongruent uses. My interest is in exploring the relationships between these uses to suggest an alternative way of approaching design in the Anthropocene. Ultimately, this juxtaposition of land uses, deep time, and governmental scales provides a site rich for exploration.

Historic Stewardships

One of the fundamental elements of American Agriculture has been based on labor-intensive farming. A diversified family farm was run because it was the means for economic and personal survival and came out of the fruition of the Homesteading Act of 1862. The Homestead Act provided land ownership of 80-160 acres initially. By the end of the legislation term it had provided nearly 270 million acres for cultivation across the USA.⁵ Through farming, the government created the systematic approach for wilderness and unknown to be conquered for the growth of the United State and provide economic opportunities for immigration.

However American Agriculture is no longer this diversified and has witnessed a gradual shift towards type 6 farming over the course of the last 90 year. The Food and Agriculture Organization of the United Nations recognize six basic farm types. These types are based on varying factors including the purpose of the farm, degrees of independence and its scale. The types range from

"Type 1. Small subsistence-oriented family

*farms... which made up the majority of the farms awarded by the farmsteading act [and] Type 6. Commercial estates, usually mono-crop and with hired "management and absentee ownership which is what we typically see today."*⁶

The transition from small family farms to highly specialized commercial estates began in the 1930s when America was during the Great Depression and during the Dust bowl which was exacerbated by the destructive nature of traditional agriculture. The Dust bowl was a period of severe drought that killed many people, livestock and caused crop failure across the Southern Plains causing many Farmers to abandon Agriculture all together. Agriculture continued to decline from 6.8 Million Farms in 1935 to only 2.21 million farms by the mid-1980s. Large conglomerates combined large swaths of land and the amount of acres grew exponentially to consolidate which was described as the process of accumulating wealth which is a direct result from a capitalist system.⁷ Eradicating Effectively diversity and multi-species dependence which was actively at work at type one farming.

The idea of "Nature" as a commodity was influenced by Landscape Fredrick Law Olmstead and utilized it to create a new way to design residential places back in 1868. This idea led to the creation of suburbia within "Nature". This idea was called garden suburb and the first was in Riverside, Illinois. This design establishes a plan for suburban growth, to deal with the inevitable Metropolis growth that would result from the transition to a mass produced industry within American cities.⁸ From this commodified idyllic nature city such as Greenhills, Ohio were created as Green Belt cities. It was constructed in 1939 by the efforts of planners Justin Harzog, William Strong, and architects Roland Wank and Frank Corner. This is a large-scale planning initiative scaled up Olmsteads theory of "Nature" by centralizing the town and living within rings of nature and agriculture. In figure 1 depicts these belts and defined zones for separated uses.

This approach for organizing spaces and separating people in distinct boundary conditions had a lasting legacy. Zoning is still used to aid in development of agricultural swaths of land and open space today Self-containment is quantifiable which is necessary for exploitation and expansion

⁶ "2. Farm Management And Farm Types", Food And Agriculture Organization of the United Nations. <http://www.fao.org/3/w7365e/w7365e05.htm#2.2%20farm%20types%20and%20structure>

⁷ Anna Lowenhaupt. Tsing, *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015).

⁸ Robert Fishman, "1.2 The Divided Metropolis - The Suburb and the Explosion of Global Urbanization," in *Infinite Suburbia*, ed. Alan M. Berger (Hudson, NY, Princeton Architectural Press, 2017), 39-50.

at any scale which is a large part of the idealized business in this economy. Riverside and Greenhill's both involve elements of "nature" as a tool to define space in between to sculptured landscape. however this needs to begin to be applied in a way that the

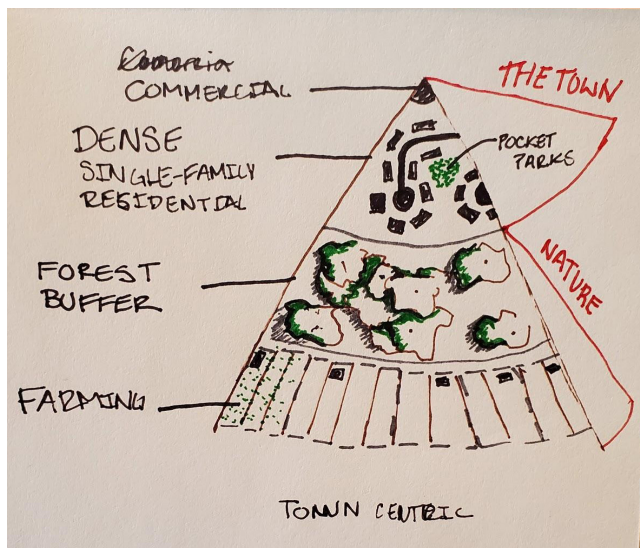


Figure 1: Green Belt Cities⁹

boundaries and intersections between the two become intentionally obscured. And directly opposed

The potency of interdependence between elements of living is described in story telling by Donna Haraway and in the Terranova documentary Donna Haraway: Story Telling for Earthly Survival¹⁰ Donna Haraway is an American scholar in the field of science and technology studies and a feminist. explain the importance of the here and now and explicitness of being connected to some but not all things but realizing one is a part of the entire ecological existence. This idea stands in directly in opposition the Anthropocentrism¹¹ But how does this relate to the built environment? Human interaction by building upon the landscape this manner is still a necessary form of interaction within this system.

Architecturally, providing the opportunity for crossing of species is a viable challenge for permanence of Architectural design and it is even more challenging to find a balance for design in a productive environment because a farm is not traditionally a product of Architectural special design. But the nature of farming is a key comment that needs to be adaptable to how to address design. This quality in farming is the ability to be inherently transformative in its effort

9 Margaret Woolf. Green Belt City Diagram .2020. ,Ohio

10 Donna Haraway: Story Telling for Earthly Survival, Amazon Video (Amazon, 2019), https://www.amazon.com/Donna-Haraway-Telling-Earthly-Survival/dp/B07PDNJFMN/ref=tmm_aiv_swatch_0?_encoding=UTF8&qid=&sr=.

11 <https://en.wikipedia.org/wiki/Anthropocentrism>

to make the next year better than the year before and this manipulation has resulted in Agricultural buildings form being related directly to their purpose. This behavior of the barn is directly related to the industrialization of farming practices that drew the practice away from the diversity that existed in smaller farms. With a diversity of "persons" on a productive landscape there exists a stronger argument that design can facilitate the opportunities for which these "persons" human or non-can flow through. As Anna Tsing describes as a "contaminated diversity"¹² It is a term used to describe that nowhere today is purely separated and self contained as we like to imagine nature and instead it is more productive to recognize a livable collaboration. However as Anna explains it is the messiness of these relationships that make it impossible for it to be harnessed by economic gains so it has been suppressed.¹³ So if you take this understanding for livable collaborations this can then begin to describe "who" we should be designing for and utilizing the individual life to describe quality of spaces that are not dominant for only human comfort.

To return to the barn as one of the common intersections between human and non-human persons, one should look at a barn from the medieval times. These barns appropriate elements of architecturally significant religious structures from Roman history into their form. The barn utilizing the Roman Basilica form acts as an element of scripture for the farmers who were sustaining food for survival and it was a gift from god that it is protected. Figure 10 shows the largest example of tithe barns in Bristol in England.



Figure 10: Bradford-on-Avon Tithe Barn, Bristol

Barns like Bradford-on-Avon¹⁴ in England

12 Anna Lowenhaupt. Tsing, *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015).

13 Anna Lowenhaupt. Tsing, *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015).

14 Awn Burder, 'The mediaeval tithe barn, Bradford-on-Avon: report on the work of repair', *Wiltshire Archaeological and Natural History Magazine*, 39 (1915-17), 485-90 (accessed 31 Mar 2020).

and across the United States also provides an opportunity space for cultivation living collaboratively

Biodiverse Farms

Urgency is evident in the Agricultural Field to implement change in the standardized methods. and Miguel Alteri, a professor at the University of California, Berkley and Parviz Koohafkan Director of the Land and Water Division in the Natural Resources Management and Environment Department of FAO in Rome, Italy, recognize that these systems are destabilizing slowly over the last century and historically by exacerbated by stress of water shortages, salinity, aridity and heat while still combating the growth for the demand of food.¹⁵ This same effect was recognized in *The Economics of Ecosystems and Biodiversity initiative* by Food and Agriculture Organization of the United Nations acknowledges that “The future of civilization on the planet will need an agriculture that is rooted in the ecological rationale of [non-commercialized] traditional farming systems ...”¹⁶ The discovery concluded and affirmed that farms practicing high levels of biodiversity are more likely to survive climatic events such as drought, invasive pests, flooding, and soil erosion.¹⁷

A solution to finding biodiversity that can be stable within the social construction of the world was created by The Economics of Ecosystems and Biodiversity initiative by the United Nations. Produced a study in 2018 Localizing food production systems that begin to consider biodiversity and reject specialized mono-productivity evaluated by. This study recognizes that Eco-Agri- Food

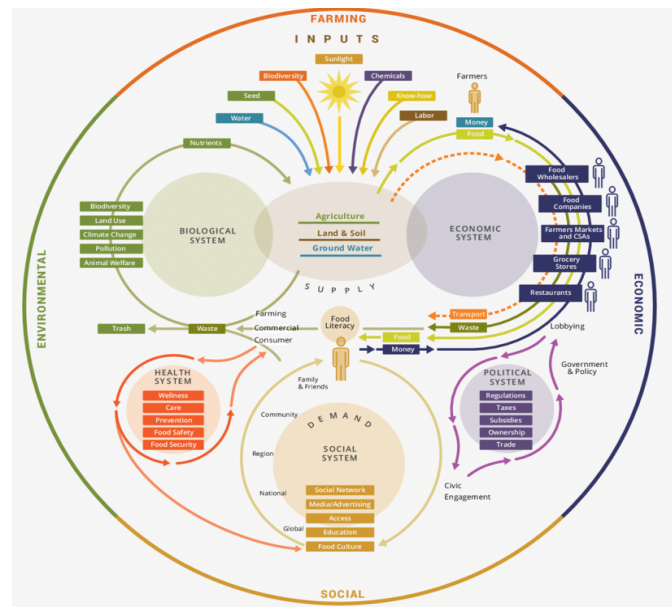
Systems are “dynamic complex and multifunction” and they do not operate in isolation from other societal systems like energy and mobility.¹⁸ If applied to the development to create a hub for

¹⁵ Alteri, Miguel & Koohafkan, Parviz. *Enduring Farms: Climate Change, Smallholders and Traditional Farming Communities*(Third World Network-Environment and Development Series 6,2008)pg.4-6

¹⁶ Zhang, Wei, and John Gowdy. "SYSTEMS THINKING: AN APPROACH FOR UNDERSTANDING 'ECO-AGRI-FOOD SYSTEMS.'" In *TEEB FOR AGRICULTURE & FOOD SCIENTIFIC AND ECONOMIC FOUNDATIONS REPORT*,. Geneva: UN Environment, 2018.14

¹⁷ Zhang, Wei, and John Gowdy. "SYSTEMS THINKING: AN APPROACH FOR UNDERSTANDING 'ECO-AGRI-FOOD SYSTEMS.'" In *TEEB FOR AGRICULTURE & FOOD SCIENTIFIC AND ECONOMIC FOUNDATIONS REPORT*,. Geneva: UN Environment, 2018.14

¹⁸ Zhang, Wei, and John Gowdy. "SYSTEMS THINKING: AN APPROACH FOR UNDERSTANDING 'ECO-AGRI-FOOD SYSTEMS.'" In *TEEB FOR AGRICULTURE & FOOD SCIENTIFIC AND ECONOMIC FOUNDATIONS REPORT*,. Geneva: UN Environment, 2018.



“Figure 2: Food systems map that shows how multiple subsystems interact¹⁹

Resiliency my site a design that will allow the stewards of the facility will need to include a focus on repairing the biological systems, utilizing good Agricultural practices, integrate a robust Economic Systems ,Work with the political system, and still maintain a healthy environment for all involved. This complicated almost enclave compound closed look circle will help maintain energy flows within the Eco-Agri-Food Systems so that vitality can remain. Again however how does this assemblage of complexity transform a landscape architecturally?

Agraria: A Regenerative Farm

Agraria is in Yellow Springs, Ohio just east of Dayton, Ohio. Purchased in 2017 by Community Solutions, Agraria has become the model in the state of Ohio for regenerative Land use.²⁰ Regenerative Land-Use is the practice of utilizing ecological restorative practices to enhance soil quality onsite while maintaining its ability to be productive Agriculturally. Agraria is a research facility and education center located on the 128 acres farm. Agraria currently has a one-hundred-year-old wood barn, as well as the original farmhouse, and a couple of side buildings used as offices. see figure 3 . The farm was initially purchased by Community Solutions in 2017 with the help of Tecumseh’s Land Trust, as well as the Yellow Springs Credit Union and other smaller groups in the community. Agraria’s mission statement is that they are “the center

¹⁹ *ibid*,39

²⁰ Community Solutions. “01-Introductions”February 4, 2020,video,4:15,<https://vimeo.com/389316850>

Akoaki- Detroit Cultivator

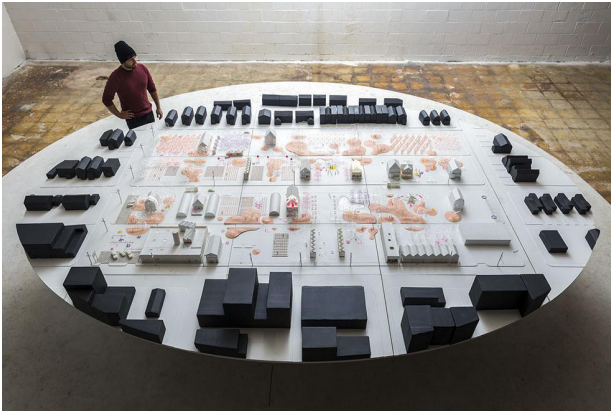


Figure 5: Site Model of Detroit Cultivator²²

The Detroit Cultivator is an urban farm designed by the firm Akoaki in Detroit's northern neighborhood in partnership with the Oakland Avenue Urban Farm. It is a designed master plan that combines elements of agriculture, culture, and business. The goal of the master plan is to change the bleak landscape of Detroit that had been so badly destroyed by envisioning a project that was more economically and ecologically sustainable. With these ideas in mind and looking to implement this project over a large area of a neighborhood, the group had to focus on major issues regarding land ownership, pressure from developers, water access, and many other issues that came with returning damaged soil to this type of agriculture. Volunteers came from many different places, including the University of Michigan's Ross School of Business, where business plans were set up to try to keep this project sustained. The project prioritizes farm productivity as the source of income while utilizing a flexible space for neighborhood entrepreneurs to come in and help productivity. Existing in an already established neighborhood, the twelve-acre site already had structures that they would then transition into places of public interest or public spaces. For example, the multi-tenant commercial space that will also enhance or provide a performance venue for the neighborhoods.²³

Sirota and Farges, the leaders of Akoaki, sought to activate the existing structures through building and site interventions. They considered this an urban prototype but they knew they had to integrate multiple elements to make the farm become a permanent fixture in the neighborhood. Effectively creating social diversity. Unfortunately, when looking at other models, due to funding and

pressure from developers, there is a tendency for the farms to be short-lived as the farms inherently add value to the housing stock and therefore become desirable for developers who then want to purchase the lands, that are provided and operated by the city, to develop new products and inherently destroying the farm.

Detroit has begun to recover from financial calamity during the recession, which is why Akoaki saw an opportunity to connect and invest in innovative ways. Anya Sirota, head of Akoaki, is a professor at the University of Michigan thus allowing the connection to be made with the University. The important part of this project is that it had a long-term growth plan because the site layout and redesign of existing structures with new structures needed to facilitate this type of design were created by a team of architectural students from the University of Michigan. The designers argued that they wanted to find a way that the farm could become an autonomous cultural actor in a complicated urban scenario²⁴. With the insight is given by the Akoaki design firm, the farm on the property was not under their ownership and so they worked with the Detroit Land-bank to obtain ownership of the land with little cost to the community and this ownership model will keep the land away from developers and those who would destroy the efforts that have been put forth in the past twenty years.

This project is particularly interesting as it outlines the large importance with multidisciplinary behaviors in creating a farm that is stable within this community where business planning and master planning for growth allows little foresight as well as purchase protection from outside Ventures that may disrupt the incremental growth that they are trying to achieve. I also believe that at this scale this intervention for restoration of community vitality is a strong aspect of the design. So, the next logical question is who the powers is involved. the University played a strong role in providing the stewards for the creation of the human social sphere. How does this human based social sphere translate further into the social aspect of ecological kinship not based solely on food but also allowing the players of other species such as raccoons or "Mushrooms" and integrating layers of ecological scaled interventions within the site to repair as well as work within the confines of abandoned building in a vacant lot. What does this look like? What else can the abandoned box store become that inherently benefits the culture of humans and the creature? These questions will begin to be explored within each site individually to know the multi-species that utilizes the space

²² Anya Sirota and Jean Louis Farges. "Site Model of Detroit Cultivator".2016.. Multimedia model.<http://www.akoaki.com/oakland-av-urban-farm.html>

²³ Anya Sirota and Jean Louis Farges. "Detroit Cultivator".Akoaki. accessed March 23,2020.<http://www.akoaki.com/oakland-av-urban-farm.html>

²⁴ Anya Sirota and Jean Louis Farges. "Detroit Cultivator".Akoaki. accessed March 23,2020.<http://www.akoaki.com/oakland-av-urban-farm.html>

with us. The next project visually attempts to rectify these adjacencies between the alienated suburban landscape and nature by speculative solutions for ecological intervention.

Properties with Properties

Properties with Properties is a project developed in 2012 to respond to the 2008 economic crisis which halted the construction industry and resulted in a significant number of foreclosures on homes and suburban development. Zago Architecture focused on re-imagining the typical developer subdivision in its incomplete form. The project pertains to this research of land use as it looks not only at the Economic desolation and interventions but also integrated 3 levels of ecology. Graphically this project explores how this site can "mis-register" traditional boundary lines between residential and ecological interventions. This project worked to shift the form from the rigidity of typical subdivision design to create a new set of home to that align public private relationship. Architecturally, the result begins to transform the way the buildings begin to relate to their surrounding context inviting interactions with wildlife and humanity. The process of form mis-registration delineated in Figure 9 .



Figure 9: House Form25

The process for re-directing the cultural standard towards transformation to a new form of housing occurs when design is responsive to the in-between space. Allowing the connection to the in-between begins to misregister boundary lines of public, private, and nature. Within the in-between, Architects worked to weave the ecological corridors within these spaces reintroducing the idea that nature should not be separate from our built environment, as it never really is. By introducing Wilderness corridors Figure 10: it provides means for nature to function harmoniously with the development design.

The embracing of this embedment of wilderness brings challenges that were previously brought to fruition by the division and displacement of nature. The cultural opinion of the inconvenience of nature and pests is the narrative that wild animals habitually have been the perpetrator of private garden demolitions. The battle against the "pest" has fostered a negative relationship towards these species which development ultimately encroaches upon.

However, this project tries to aid in connecting wilderness through the site providing wild animal's haven. But perhaps therefore this project is changing the way humanity connects to nature. The process of trying to foster ecology and change cultural opinion of "wilderness" become an obstacle to overcome. In a survey I conducted of 89 people, many were asked about how they consider wildlife where they live and a large percentage of people confirmed that they considered them non-existent or a hindrance outside of a park or a place designated for nature. Which is reflected in this project through the cage and zoo approach to creating connection between the residents and the large predators. The adjacency of Biodiversity is achieved however, the proposed reserve by fencing contradicts this project goal to the boundary blurring of the suburban rigidity. It becomes a spectacle rather than integration. The inversion prominent pavement and nature within the subdivision proves to provide a good example for refocusing the neighborhood and can become a strategy in most neighborhood design makes the most significance as it makes the development permeable and interlinked with the ecology that surrounds the development.

Conclusion

Inevitably humans cannot sustain life without the addition to the quality of life (water, sleep and food) there must be a revival to the beneficial social interactions with all organisms outside of our domesticated ones. Architecturally we have achieved boundaries that we seek to eradicate the intruders and non-human inhabitants. However, this is how humanity has burn-out large swath of our land. And yes the non-inhabitants will return but what if we design spaces that begin to cultivate the intersections of these life lines? In inevitably all living things survive by cultivating their food. However, not many exploit land to the extent at which capitalist gains have accumulated control. Alienating us from having any relationship with the items we buy of the shelves of a commodified grocery store. Space for transformative relationships to should exist in the damaged landscapes provides a vital place for transforming landscapes for regenerating the quality of life achieved from multi-species interaction. how people remove the cultural appropriated ideas of exploitation, utilizing regenerative land-use practices in a disturbed setting will ultimately. However, through architecture it is vitally important to design a "host" tree to provide sustenance for the site to operate and provide a framework for the "Mushrooms" to draw from. This host must provide an assemblage of framework that can be built on. However, this cannot be scalable in a regulated way as it exists in this

25 "Property with Properties." Zago Architecture. Accessed April 23, 2020. <http://zagoarchitecture.com/Property-with-Properties>.

ruined landscape and the cracks of capitalism. What appears to be pilots across spaces should have a strong underground network that ties the functions and site development together. This includes providing space for human social interactions as well to provide a platform for humans to join the interdisciplinary relationship with the land and sustaining growth as seen within the Detroit Cultivator project as a method for stabilizing the farm to ensure permanence within the neighborhood is a necessary component to challenge working in opposition to capitalism.

The research has led to the discovery of 3 sites from which humans have disturbed and have attempted to rectify the disturbance through either conservation efforts in Cuyahoga National Park, A cold war research facility in Miamisburg Ohio, and lastly a partially Abandoned insane asylum in Athens ohio. Each has their own criterion for site conditions however each will be evaluated for the historical significance of human disruption on site the return of living things within these contaminated sites²⁶. This project seeks to create onsite a fabric for a transformative landscape rather than that just for conservation which I believe can be achieved with opportunities of reintroduced.

regenerative agrarian systems to provide a platform to create within the Anthropocene period space that man is not in control of but a participant within.

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Addendum

This thesis evolved over the course of many semesters with the inclusion on the additional work understanding the roll of monumental infrastructure within the modern era. In conjunction with the previous research regarding land restoration, and productivity and community empowerment, the project took on a new rolls for the community of Miamisburg, Ohio beyond just the possibilities of food production. This thesis worked to explore how the use of restorative bio-diversity in infrastructural production improve economic stability and provide public amenity within a contaminated landscape. Further research was done upon institutes such as the Bio Hill in Copenhagen, Denmark which opened in 2019 as a waste to energy plan that also provided public amenity. Comparison in scale were drawn to traditional infrastructure within the US such as the smaller facility in Cadillac, Michigan which was a Biomass to energy facility however it stood in isolation and was considered blight for the community. However considering shell and architectural elements from both project many other Monumental infrastructure was examined from the early 20th century.

From this research I knew that a site in need of a reformed infrastructure was needed.

Such as conditions were found at the Miamisburg Mound research facility which wad in operation from about 1947-1993 when it became declassified. So I decide to take the challenge of remediation the site.

The program exploded and it became challenging to handle a project of this scale however with an intervention of public growing as an assemblage of infrastructure began to secure this project in reality which seemed difficult to comprehend early on. This facility was designed a place for which a productive landscape can be created. First a an in depth ecological restoration as seen in the developed site plan in conjunction with a phase 2 production facility to introduce to the public the ideas of alternative energy production from biomass materials grown on site such as the switch-grasses that act not only as a commodity for the bio energy plant but also ais in regeneration of soil quality on site with little to no maintenance as it is a native plant to the southern, Ohio area. Extensive research was also conducted in the balancing of adjacency between pollinator

field to promote wildlife habitat on the large 400 acre site as well as integrating this idea into the roof form of the Miamisburg Ecomask.

I spent time analyzing form of the building for which to create natural forms I returned to the behavior of fractal geometry to develop a organizing strategy for structural form which can be seen in plan and exemplified by the hills of the roof structure its self.

Another important element which was used to bring these non congruent items together is the idea of Assemblage, Kinship and Entanglements. Utilizing the idea of assemblage to honor the historical 16foot wall of the original research facility bomb shelter was a big challenge in the design as the damaging history is embedded in the landscape and in order to preserve this history I chose to develop a structure which would sit a top this structure while integrating the original structure into the facility itself so that the habitant themselves can experience these original space with the new adaptation of use.

One way this is achieved it through specific punctured holes through the 16' concrete wall the intensify the experience as the travel along an observation path leading from incongruent space to the next. Utilizing the walls a a natural transition from interior dark space controlled lab to greenery filled spaces of the botanical garden used for active research in the botany sciences before passing one more time back into a completely new space of the interior grow labs where gets can see feel and experience the grow space with the violet light and the temperature controlled space with the vegetation grow racks. Along with general space planning of the additional spaces this assemblage added the entanglement in which the guest would experience along the way. The last is kinship which is directly related to the many public spaces that teach people how to grow, buy, cook or maintain food production at home or in a public garden space I you will see beyond this page. Al together this facility achieved it goals to provide adequate space for the infrastructure of food and energy to assist in economic stability of a post industrial town in Ecological Stewardships that will leave behind a better environment than in it's current state of abandonment.

Entangled Stewardship in the Contaminated Landscapes of a 21st Century Periphery City



How can the use of restorative biodiverse diversity in infrastructural production improve economic stability and provide public amenity within a contaminated landscape?

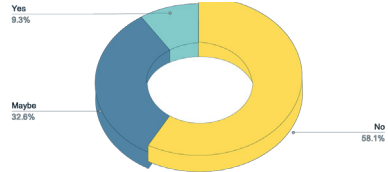
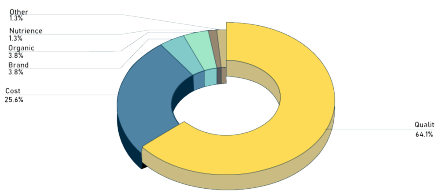
Goals:

- Reimagination of a productive landscape
- The role of monumental infrastructure
- Public interface within this landscape

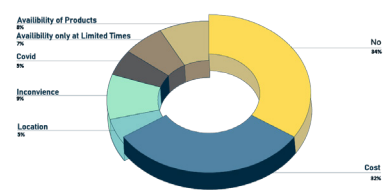


SUMMER SURVEY

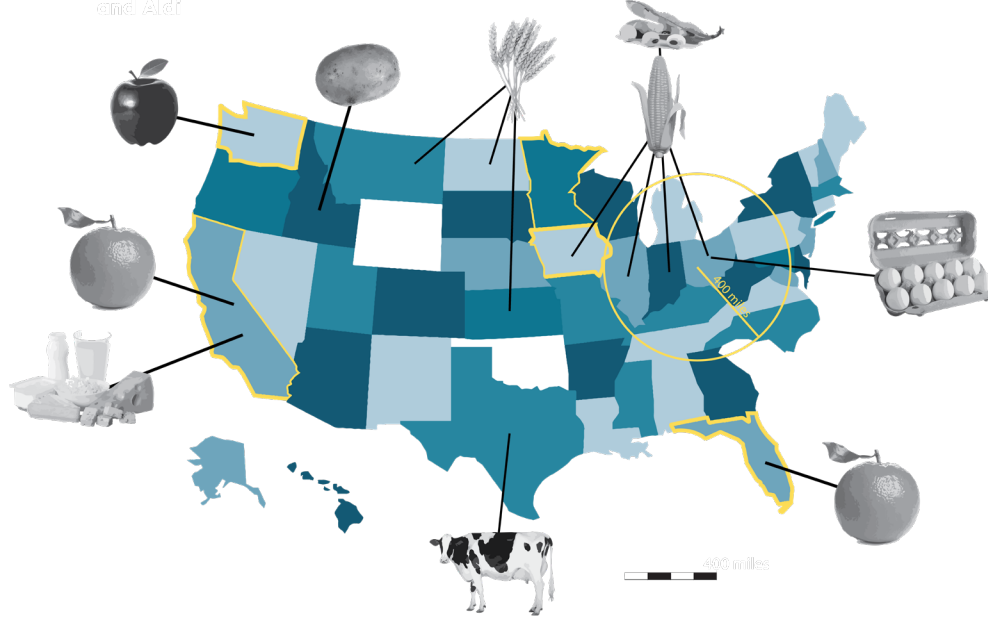
What do you look for in the product that you are purchasing?



Are there any obstacles for you purchasing or selling organic or locally grown food?

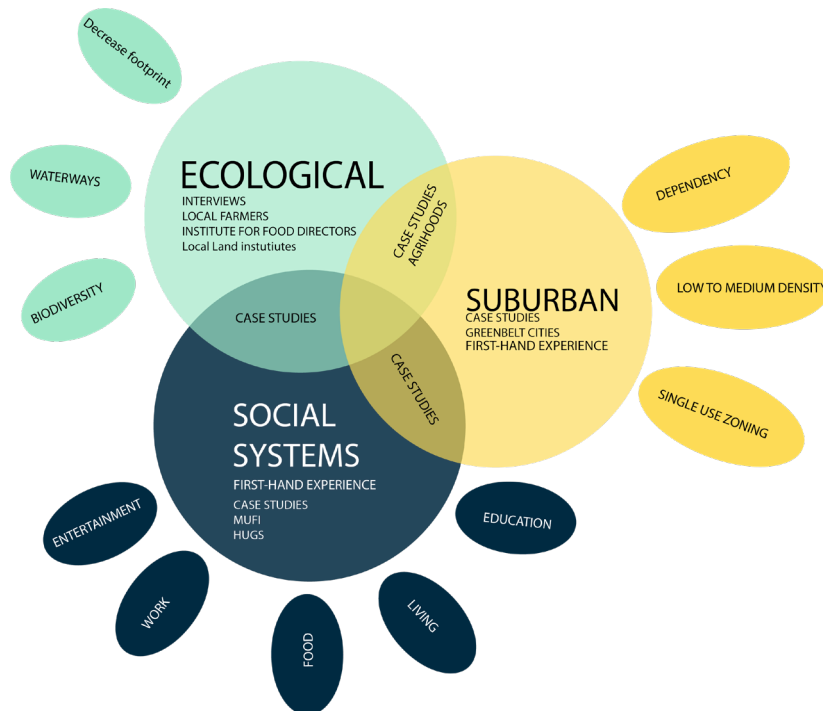


75 percent of all major commodity crops in the US are produced in these states. Outside of the 400-mile radius, major retailers like Kroger, Walmart and Aldi

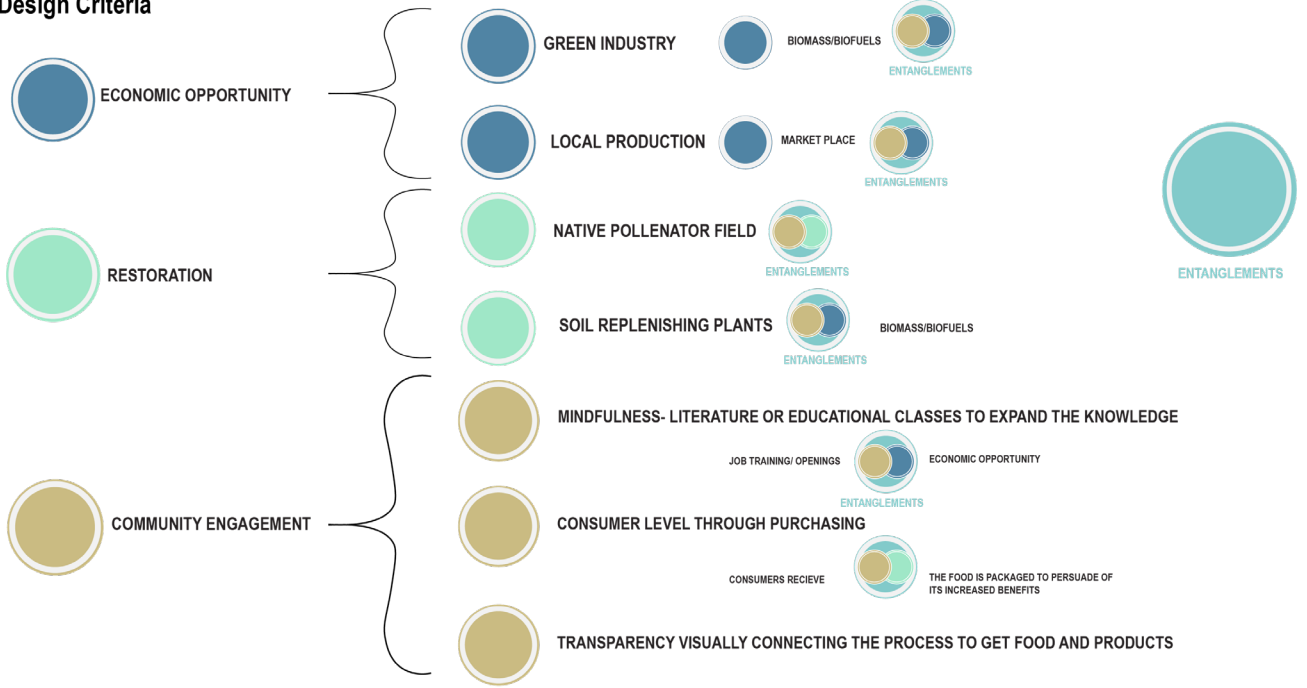


https://www.nass.usda.gov/Data_Visualization/Commodity/index.php

POTENTIAL ENTANGLEMENTS



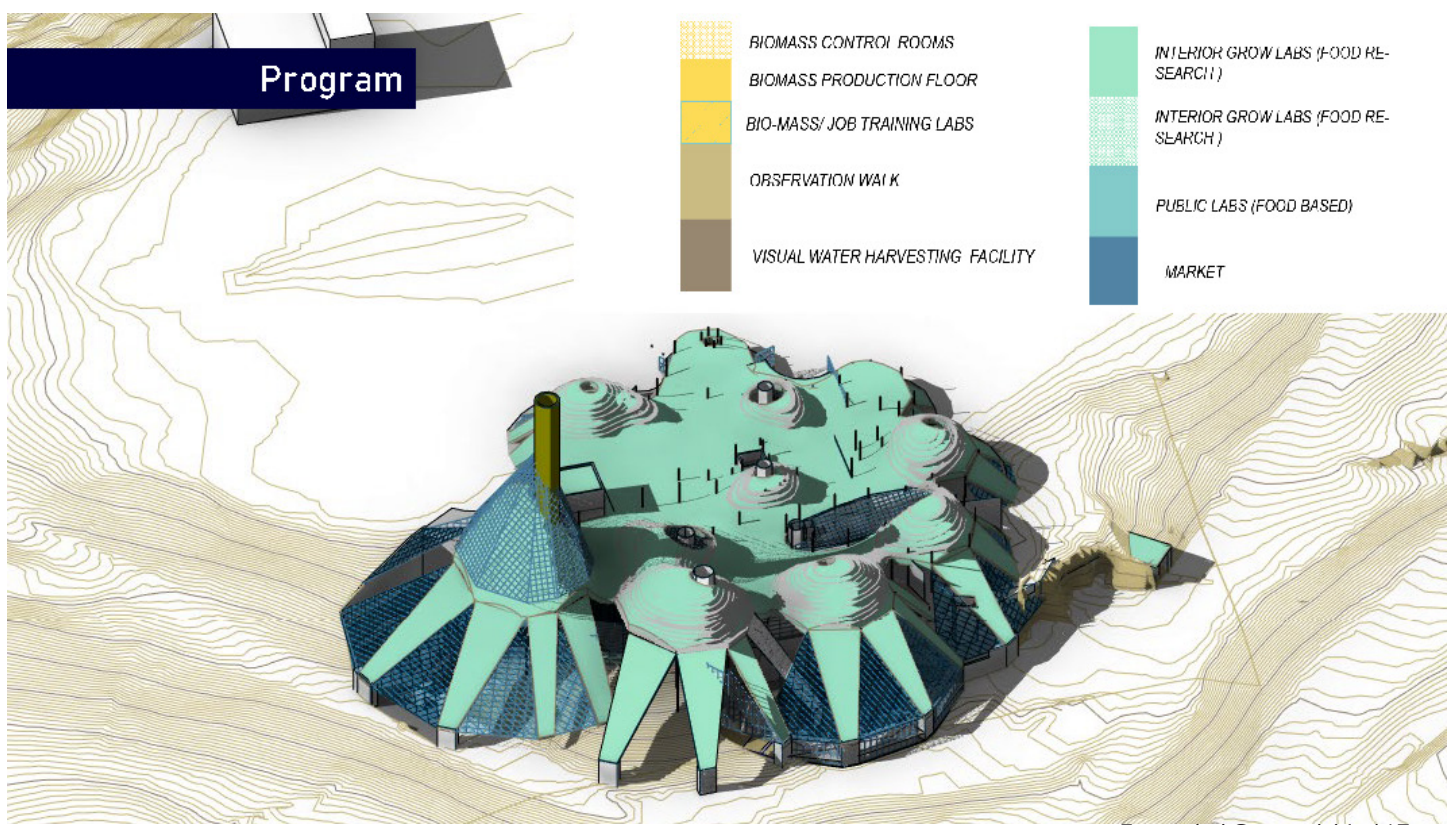
Design Criteria



A Assemblages

K Kinship

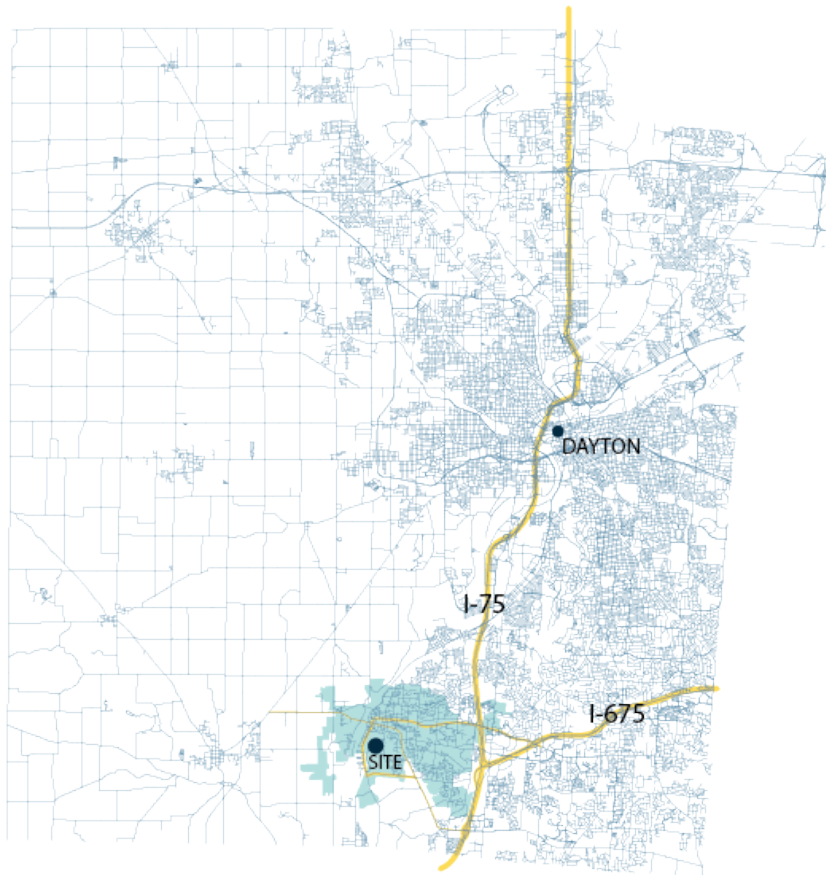
E Entanglement



SITE LOCATION-COUNTY



SITE LOCATION-COUNTY



DAYTON
METROPOLITAN
AREA



Population 799,232 people

Miamis burg



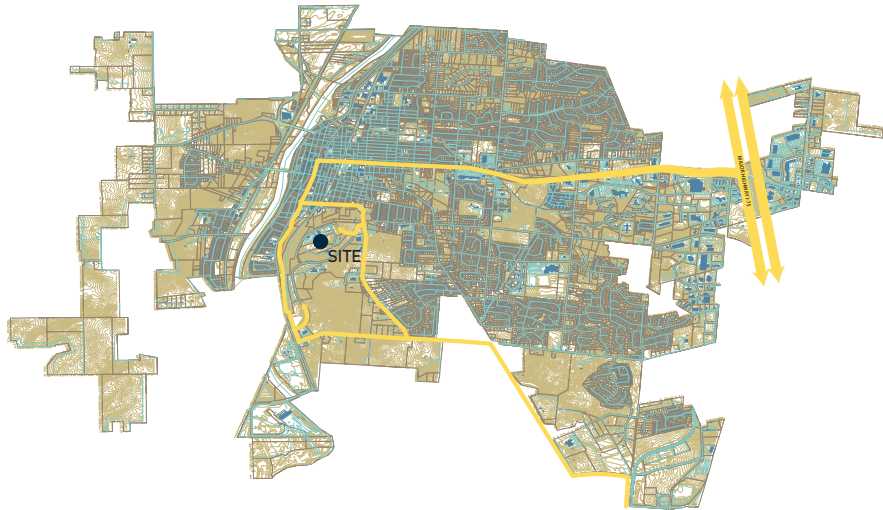
Population 20,000 people

Poverty: 12%

Income per capita 31,081

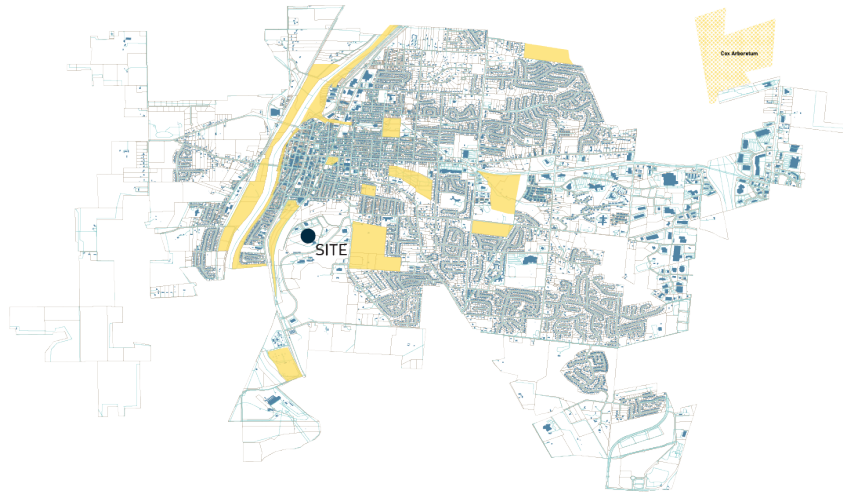
Primary industry: Manufacturing

Pathways to Access Site



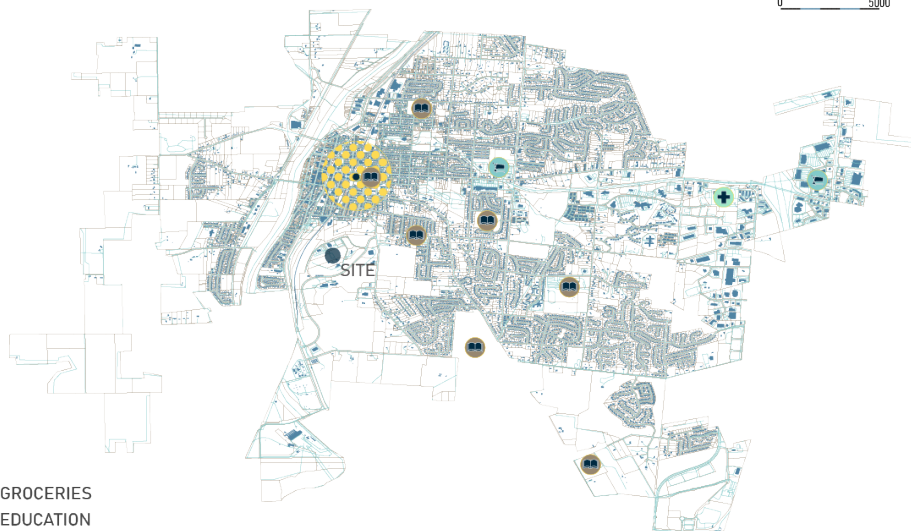
0 5000

Open Public Green Spaces



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BASIC AMENITIES

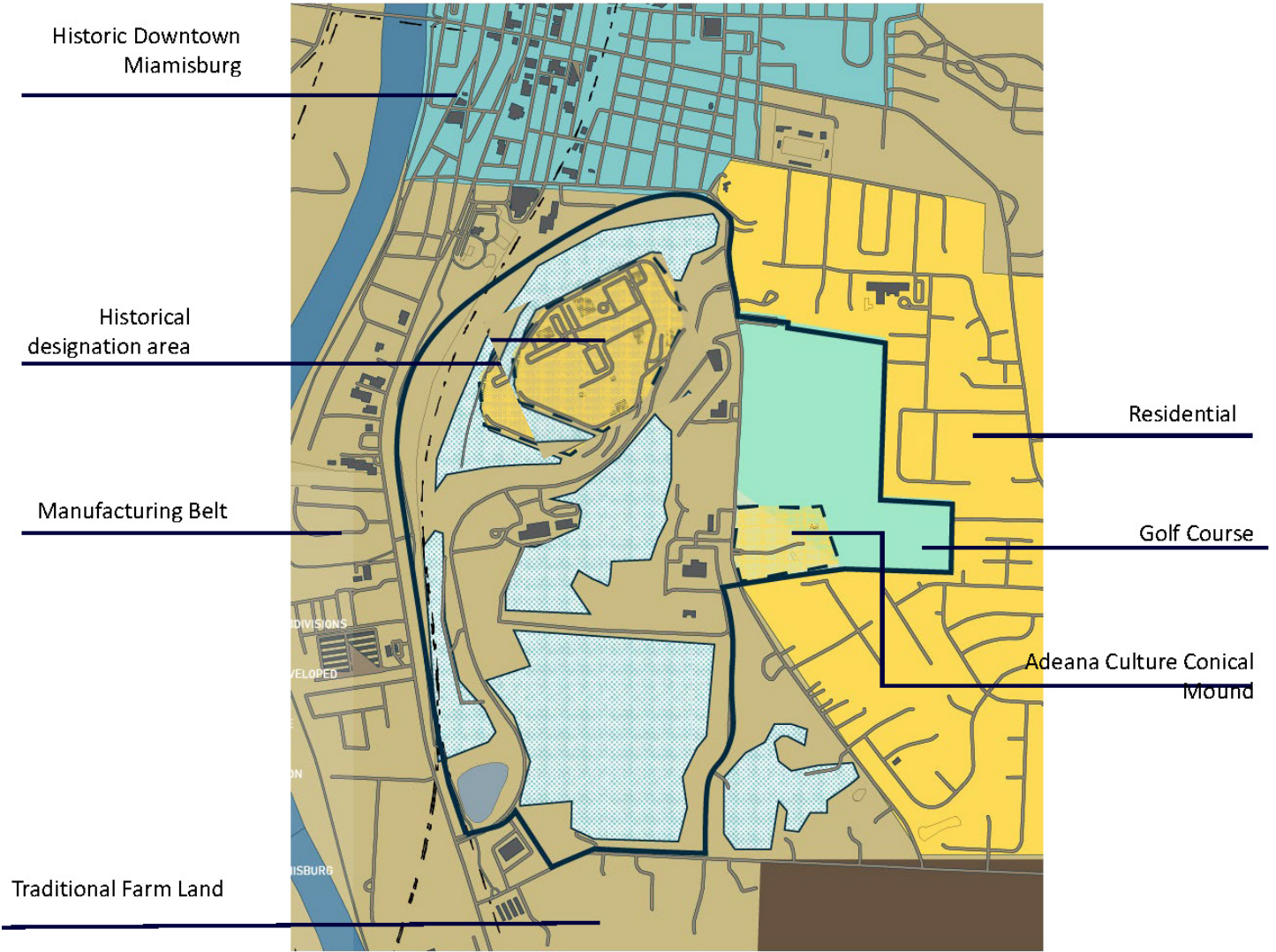


- GROceries
- EDUCATION
- HEALTHCARE
- COMMUNITY CENTER

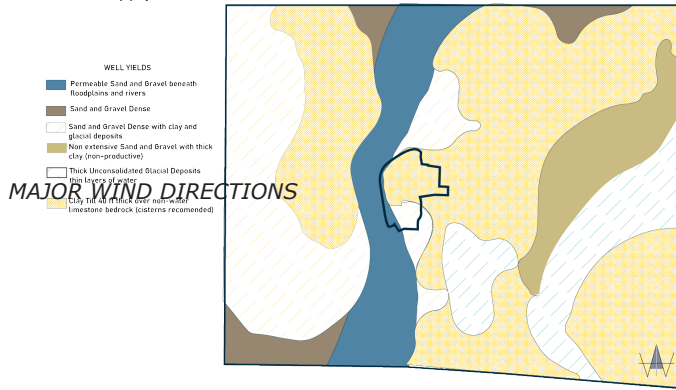


0 5000

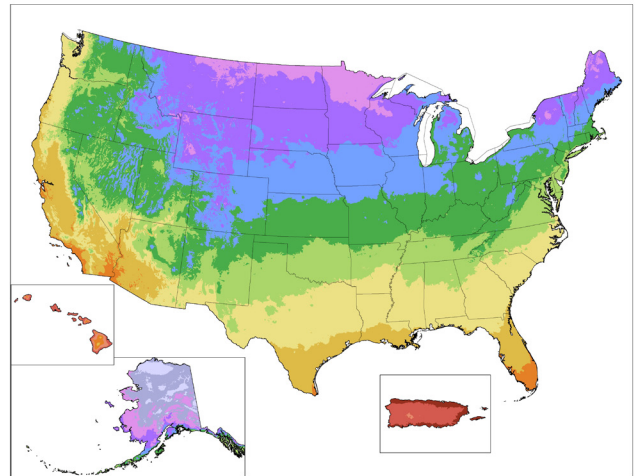
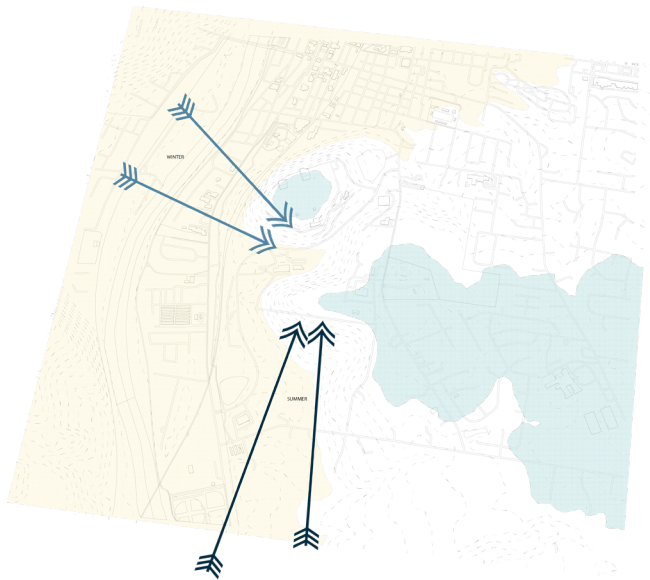
SITE ANALYSIS



Water Supply

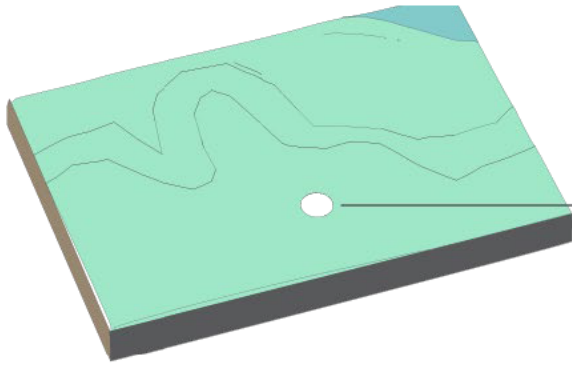


https://www.mcdwater.org/wp-content/uploads/2017/07/Montgomery_GWR_35x29.pdf



The First to inhabit

800B.C-100 B.C. the largest Conical Burial mound east of the Mississippi was created by the Adena and for the following centuries prior to the US colonization the area was shared by many tribes including the Miami tribe for hunting and gathering.

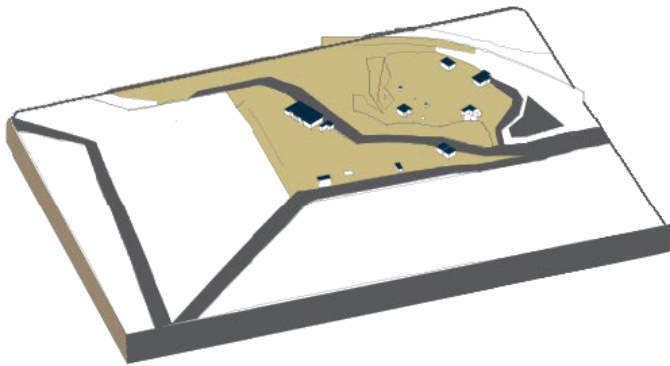


300 B.C



The Superfund Cleanup

Between the year of 1993 till around 2009 the federal government used the Superfund site grants to remove as much of the soil and replace it with non contaminated topsoil which has allowed the return of people for industrial only restricted uses. And the restriction of use for all ground water as the contaminate levels are far too high

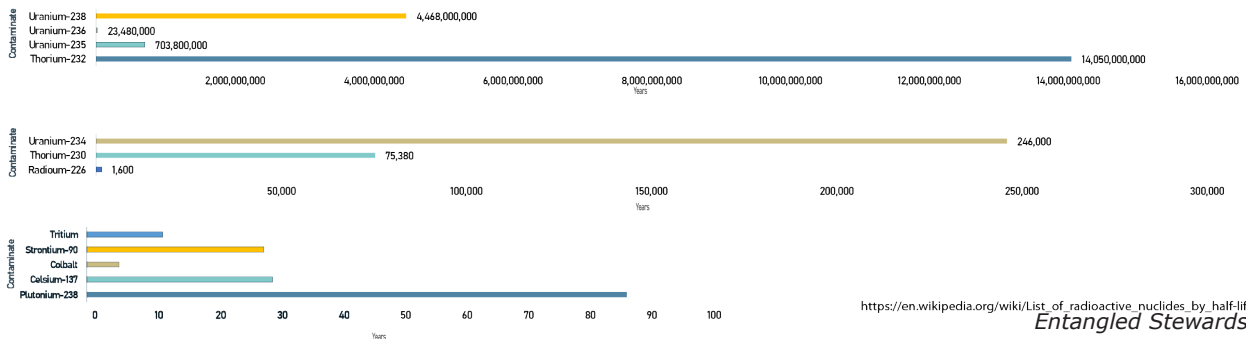


2009



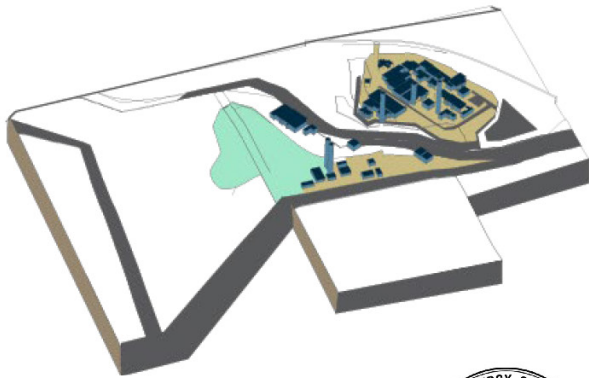
Thousands of contaminated sites exist nationally due to hazardous waste being dumped, left out in the open, or otherwise improperly managed. These sites include manufacturing facilities, processing plants, landfills and mining sites. In response, Congress established the [Comprehensive Environmental Response, Compensation and Liability Act \(CERCLA\)](#) in 1980.

Contaminate Isotope Halflives On-site in 1993

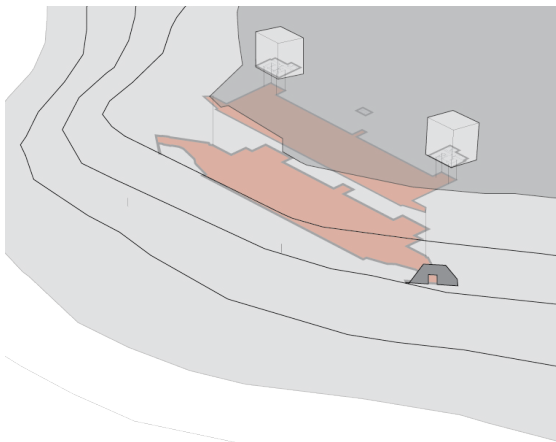


The Source of Contamination

The Atomic Energy Commission continuously worked with Radio isotopes during the half century of time which had led to leeching into the solid and effectively destroying the ecology of the site in the process.



1947-1993



Miami's Berg which you know this site is actually laying pretty much empty, for the most part, because of what happened in its history, which is through contamination.

And I'm talking and contamination and you know multiple different ways, one is the most traditional way of impaired mixture of undesirable sets of substances.

And then the other one is that humanity in general can be considered contaminant which in some ways we've done that to the entire United States.

But the first to inhabit my site, perhaps, were the native Americans in the 800 BC to about 100 BC by the Edina culture and then followed on by many other tribes use this area of hunting and gathering and left behind this native American mind that just sits directly East of the site.

But the main source of contamination comes in the form of the Atomic Energy Commission.

which worked here from 1947 and 1993, which was the first point, in which the site was completely developed for this master scale of.

Producing radio isotopes for atomic initiators for the Manhattan project in the Cold War and up until 1993 they aided into other science experiments, leading to contamination with the ground and water.

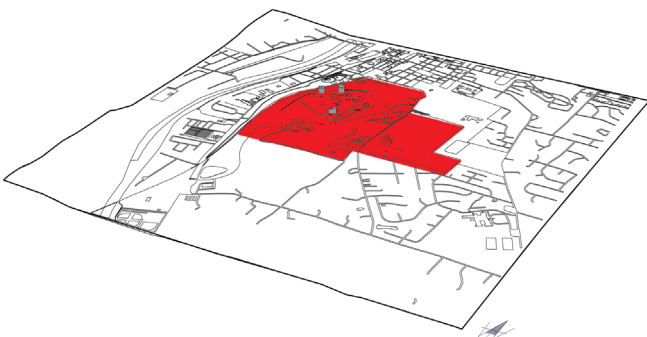
On this site which required in 1993 to about 2009 super fun clean up with the Federal Government, however.

Lessons have been learned from these cleanups that not all contaminants can be removed from these sites as the groundwater is still being monitored today.

For you know levels of toxicity and there actually is controls on this site that restrict things to just business use, so in that terms it made me look at my project of what it could be aiding this progress of regeneration, as well as introducing phases, for the larger monumental facility.

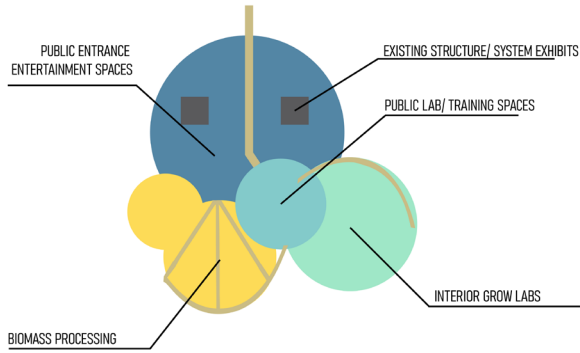
And later on, additional facilities within at a smaller scale, and what I mean by this is first and foremost, is site strategy for the restoration of soil content.

and groundwater and in that sense, I took a broad kind of view of the 300 acres and kind of looked at what a best management strategy for land use.

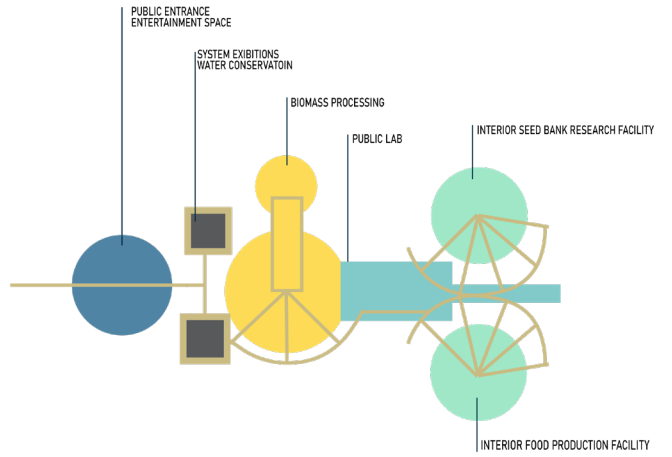


PROCESS

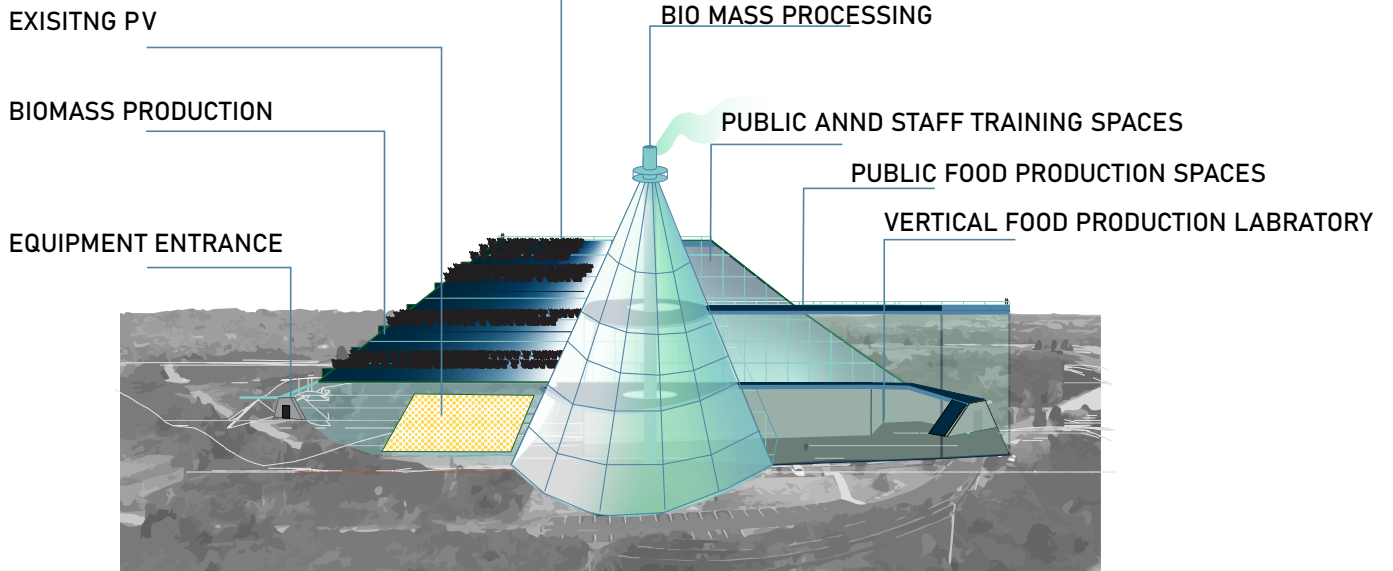
PROGRAM ADJACENCY



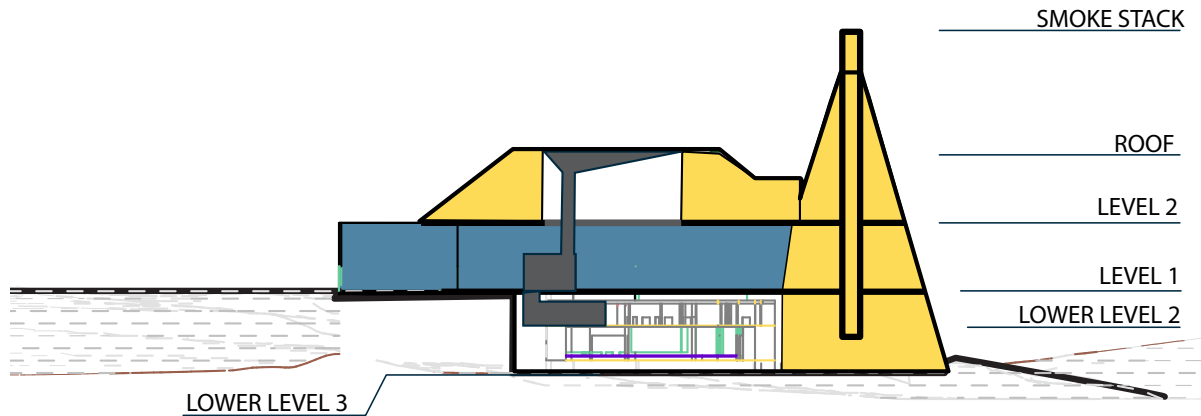
PROGRAM ADJACENCY DIAGRAM



OUTDOOR PUBLIC SPACE AND RAIN WATER HARVESTING

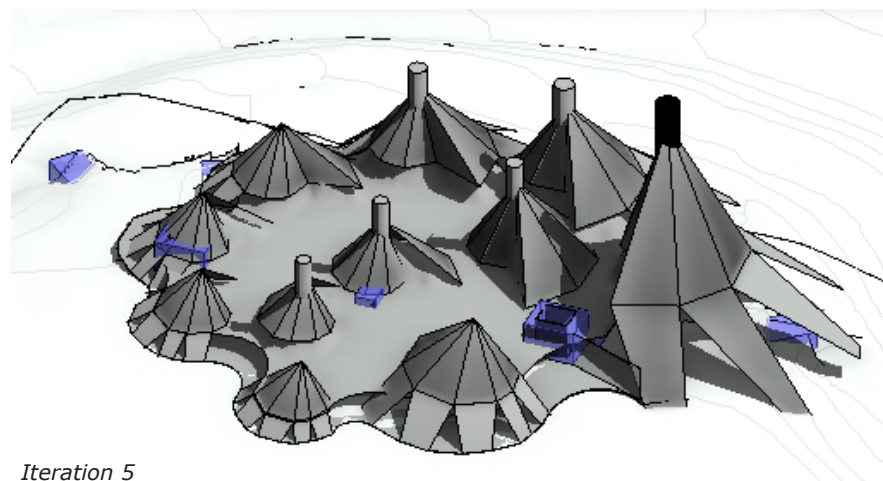
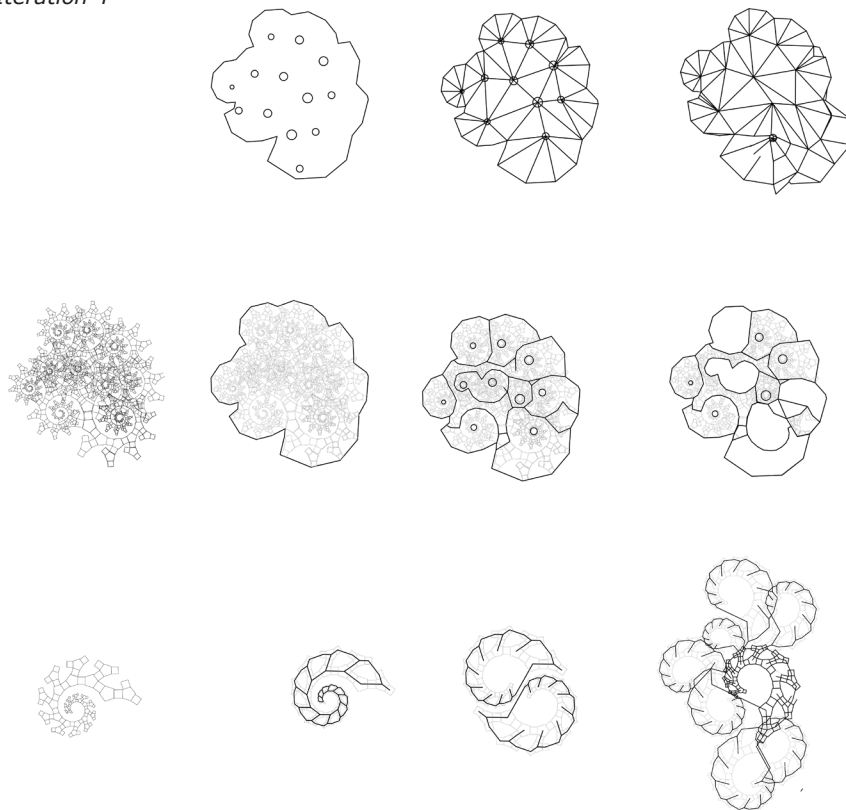


Iteration #3





Iteration 4



Iteration 5

FINAL DESIGN

The goals include things of reimagining a productive landscape, or what a productive landscape could be the role of monumental infrastructure and the public interface within this type of landscape.

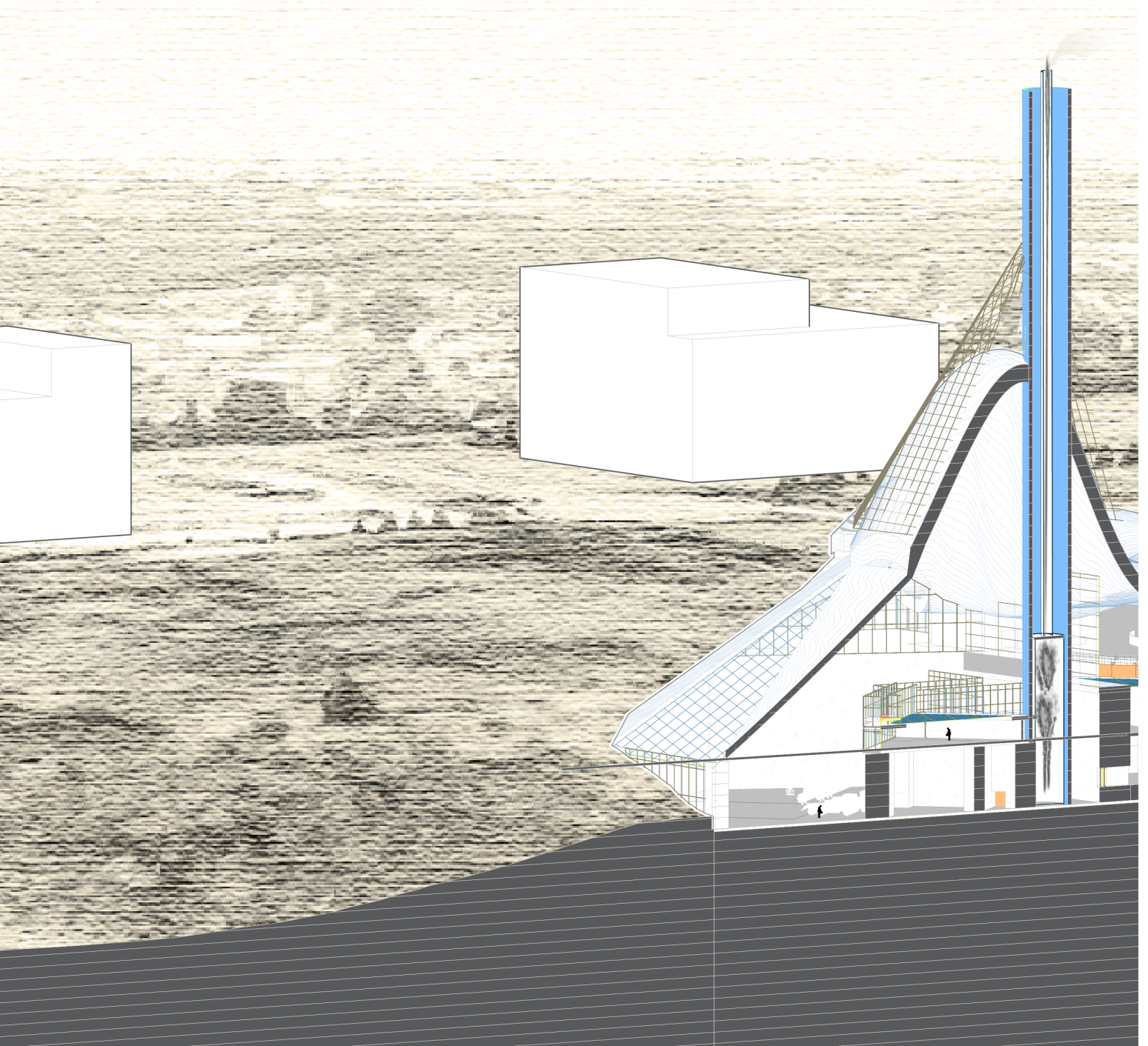
So, first, I need to address two very different things that would be kind of showcased in this project, again, the infrastructural space, as we have described it and seen through many iterations stuck in the.

19th century I let enlightenment progressive ideas that you know it's for an area of linearity and efficiency and for capitalism gains and extraction.

versus these other ideas of sublime nature, which is this idolized concept of a romantic nature that's untouched and divided from the rest of the world, perhaps most exemplified by famous projects such as Central park or the ideas of the garden cities in the 19th century.

But there is an in between of this which I looked at briefly with monumental infrastructure, space and the role of these infrastructures becoming more than just these.

Capitalist gains efficiency models for design and what that role can be and how can we return to these types of models to enhance the public space and public's understanding of what the roles of infrastructure play in society.





BIOMASS CONTROL ROOMS
BIOMASS PRODUCTION FLOOR



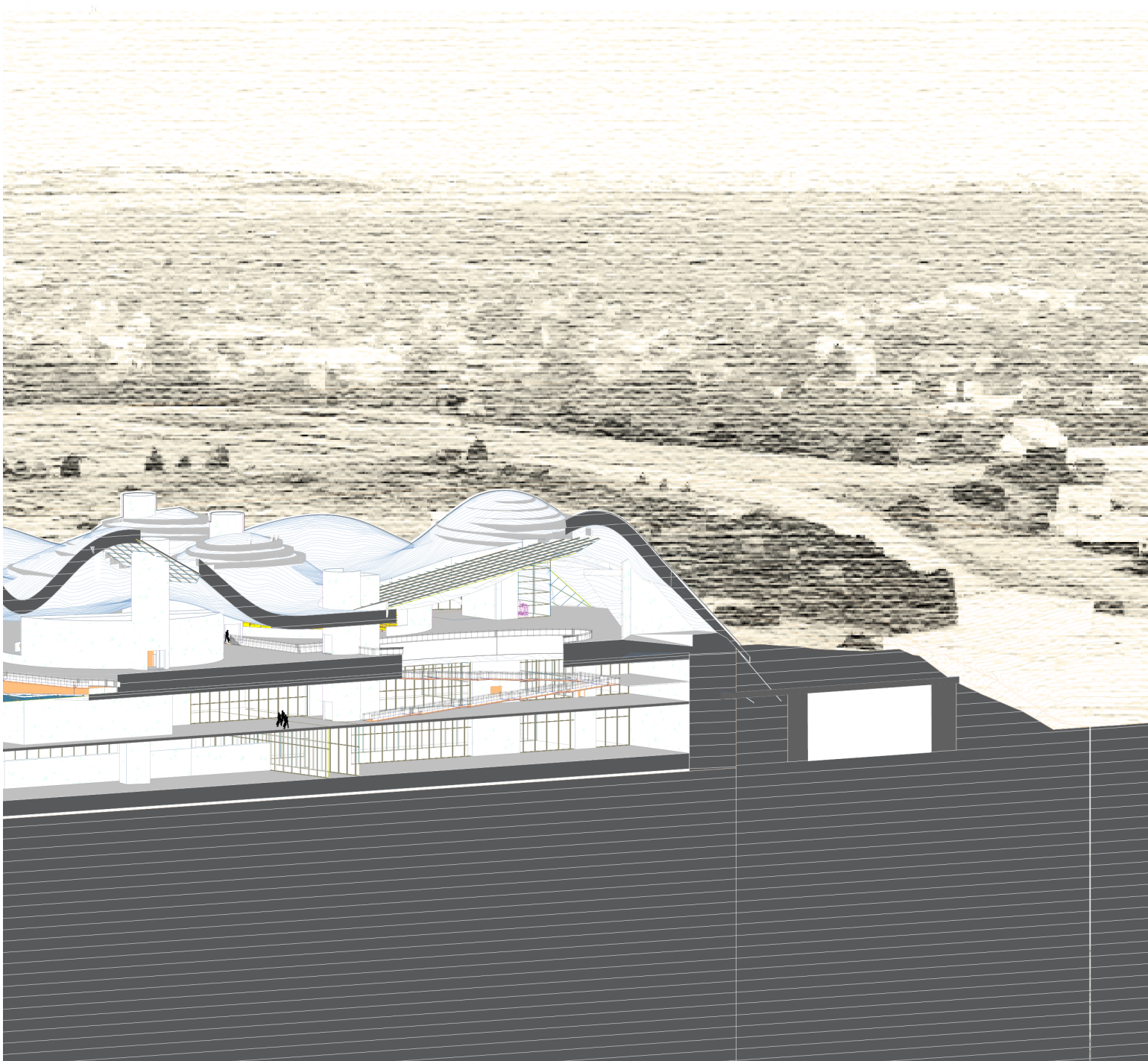
INTERIOR GROW LABS (FOOD RE-
SEARCH)
INTERIOR GROW LABS (FOOD RE-
SEARCH)



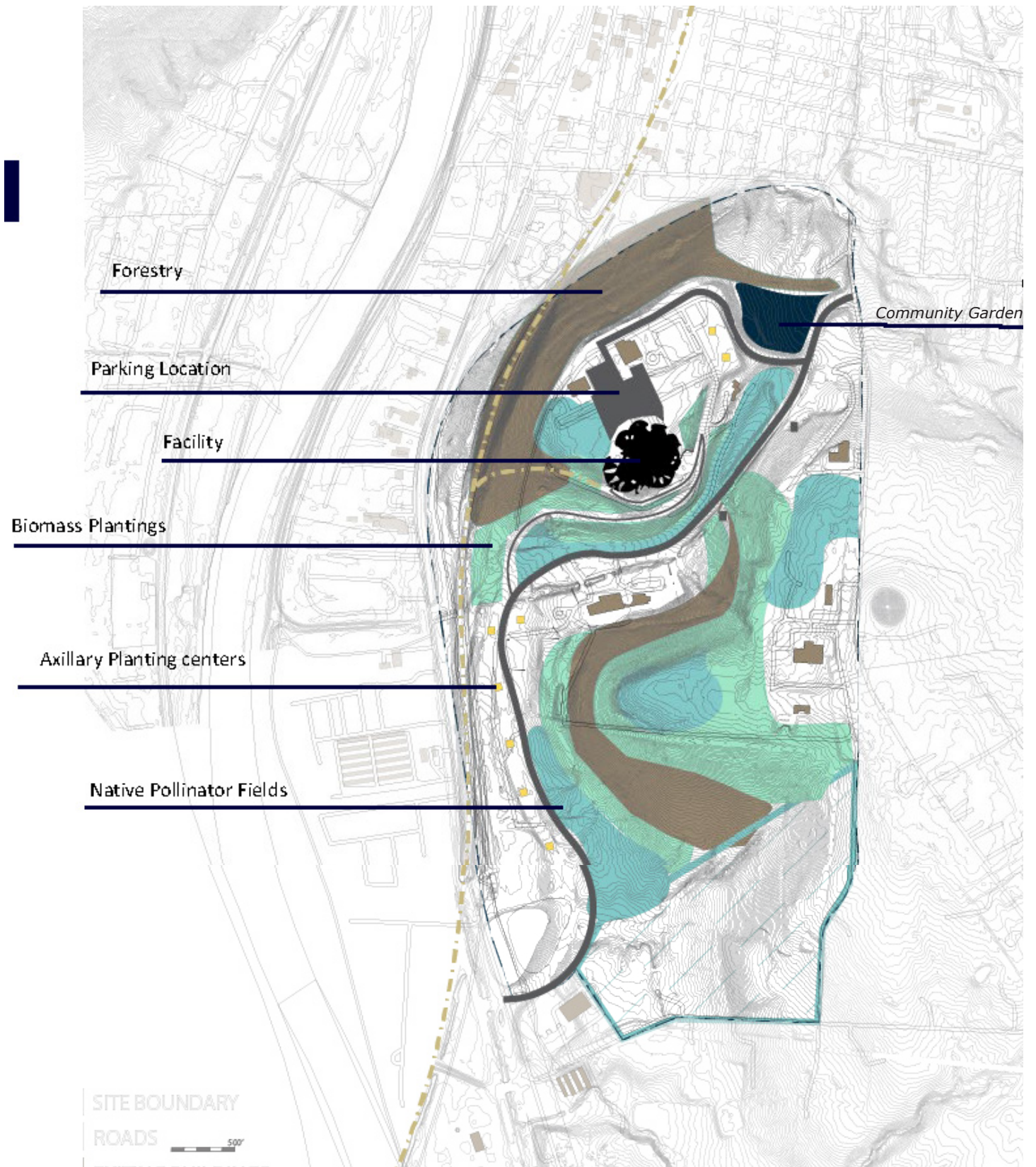
OBSERVATION WALK



VISUAL WATER HARVESTING FACILITY

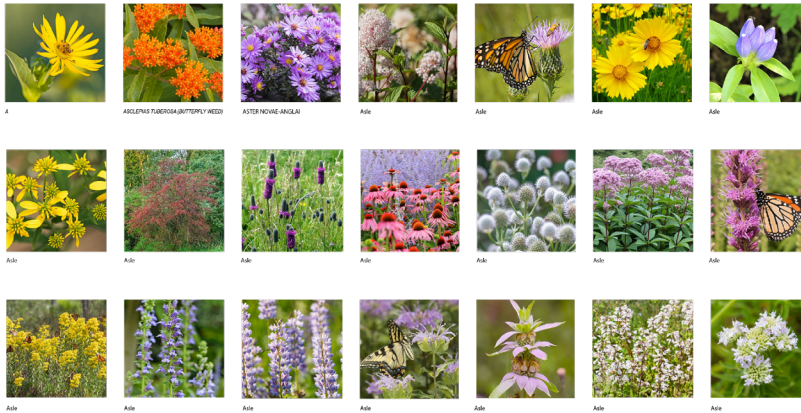


SITE REMEDIATION PLAN



PHASE 1- Site Remediation

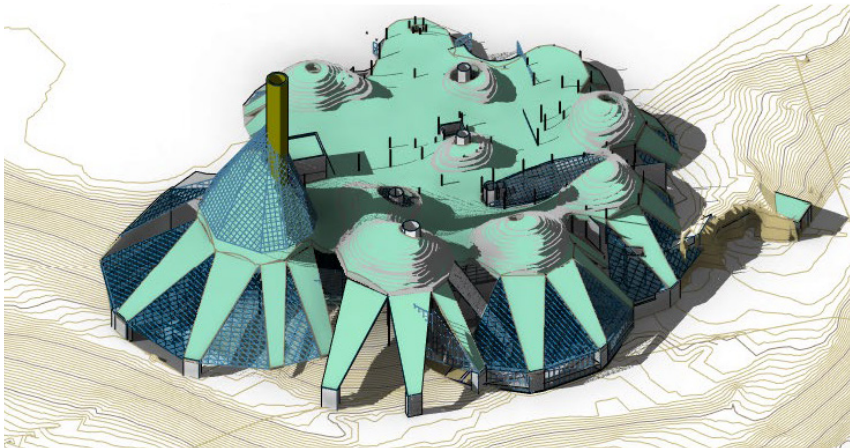
NATIVE OHIO POLLINATOR PLANTS



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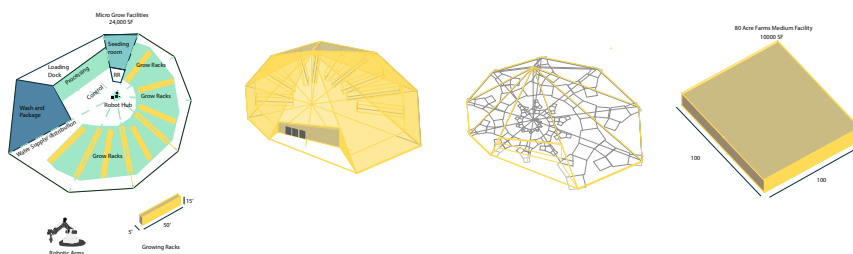
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PHASE 2- Facility Construction



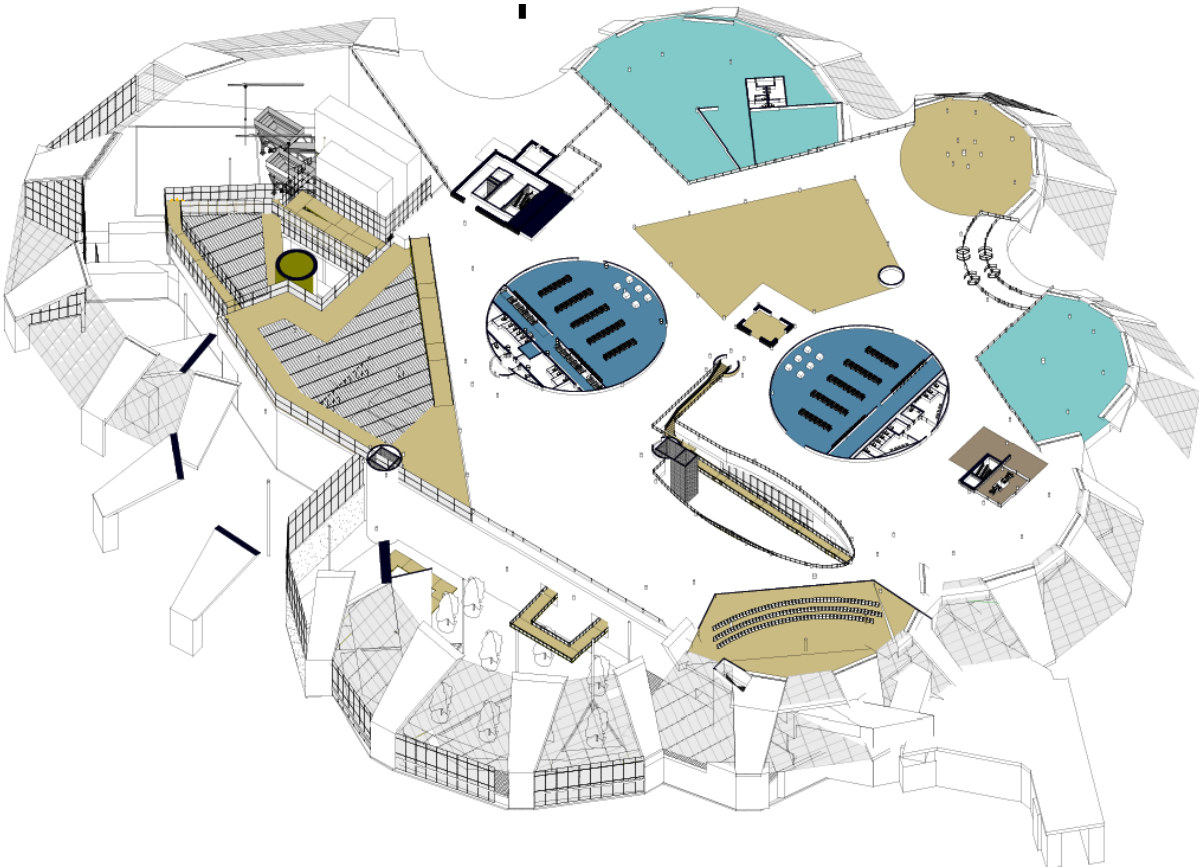
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PHASE 3- Axillary Grow Spaces



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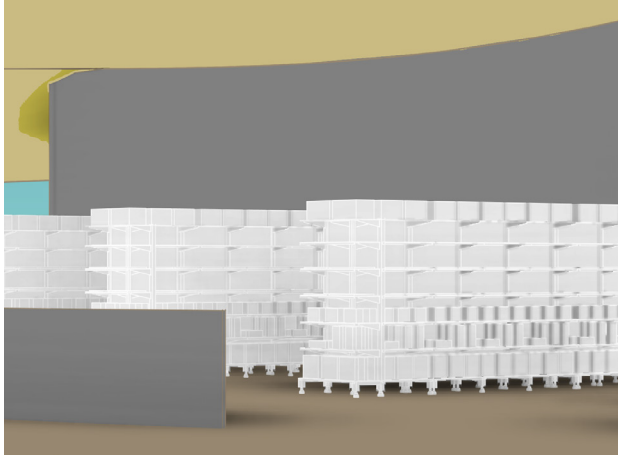
Main Public Concourse



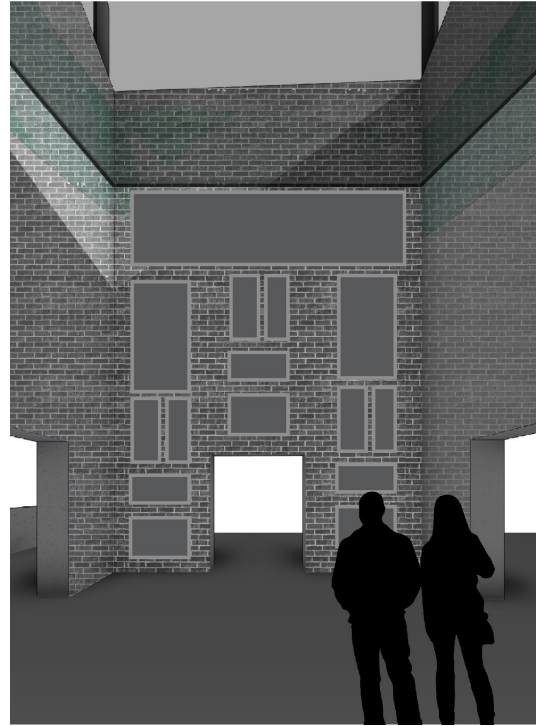
MARKET

PUBLIC LABS (FOOD BASED)

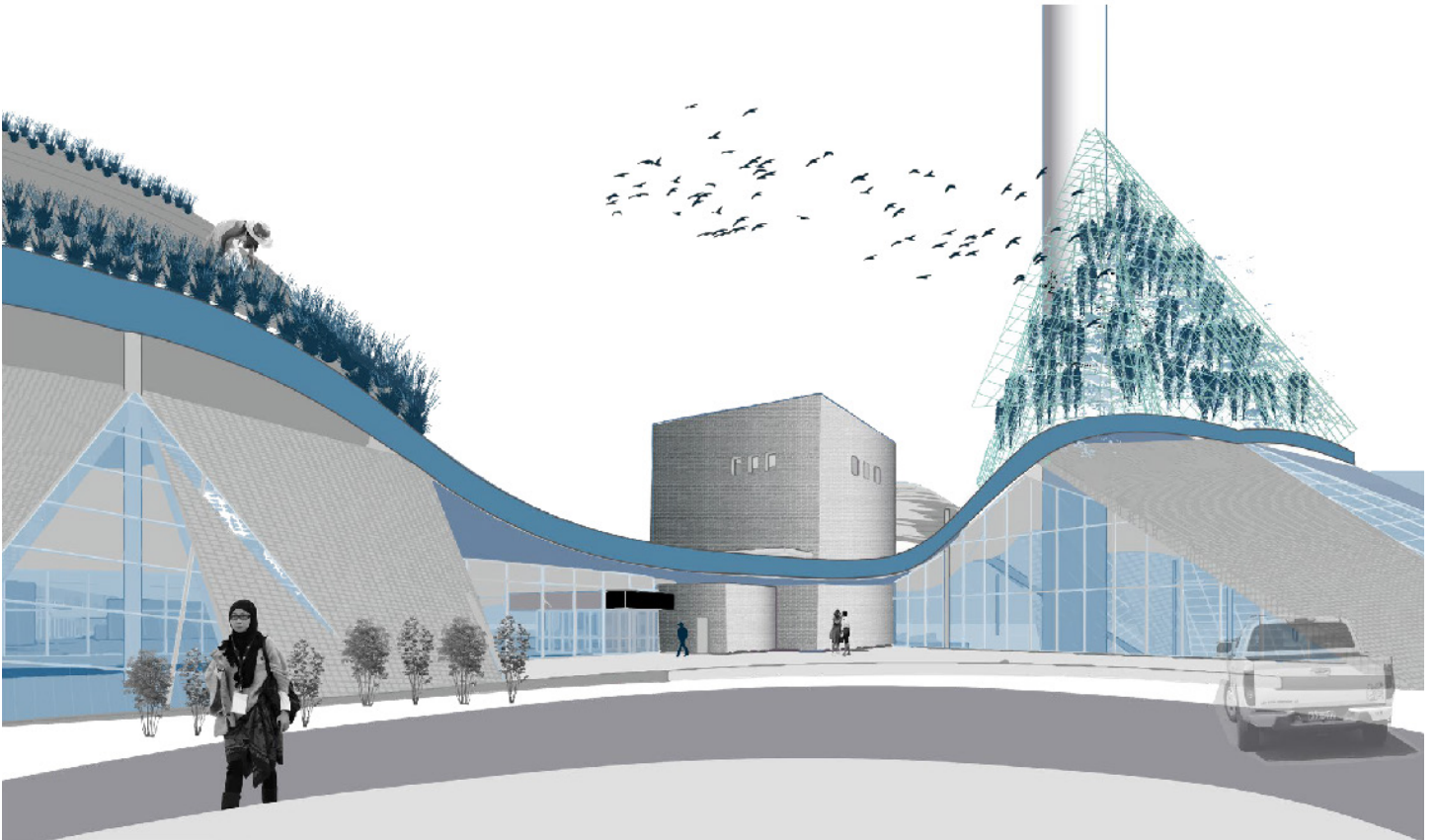
OBSERVATION WALK



Market

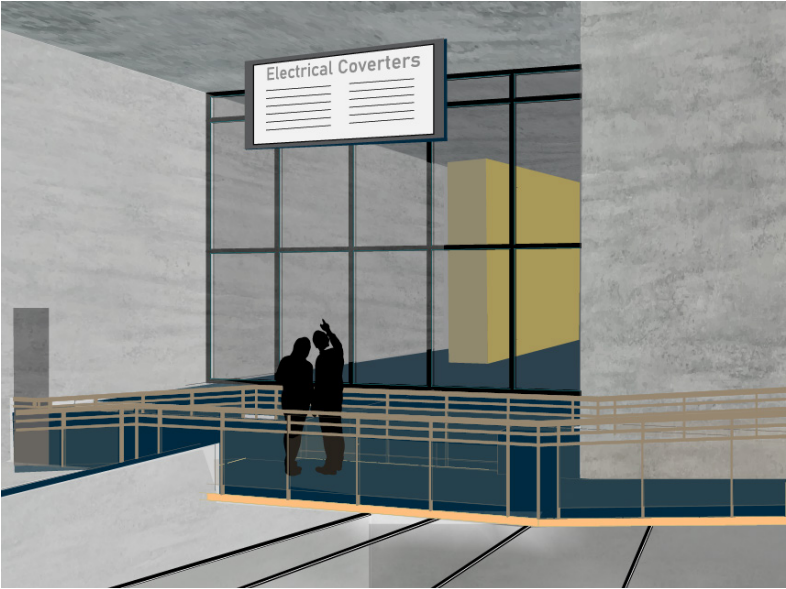
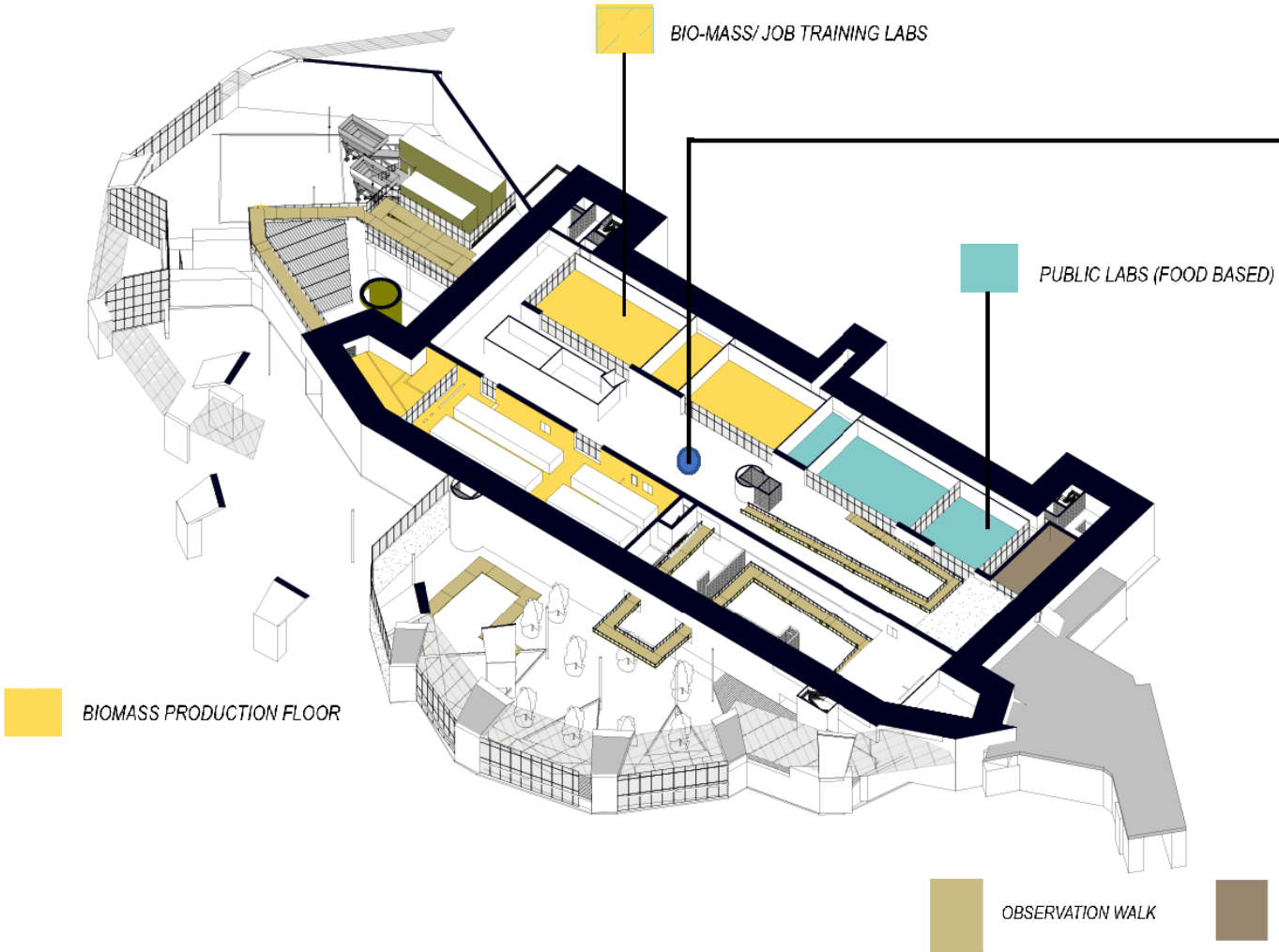


History Memory Room



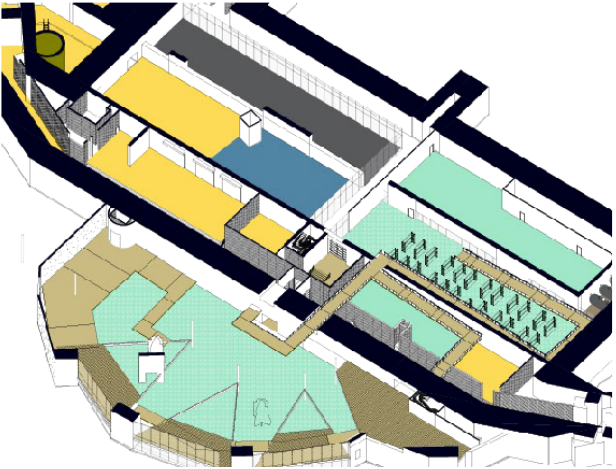
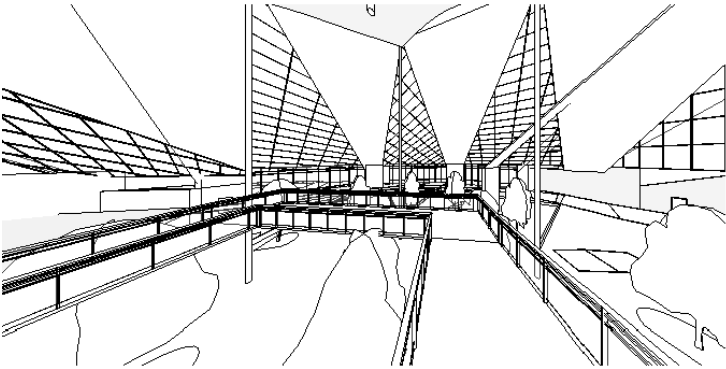
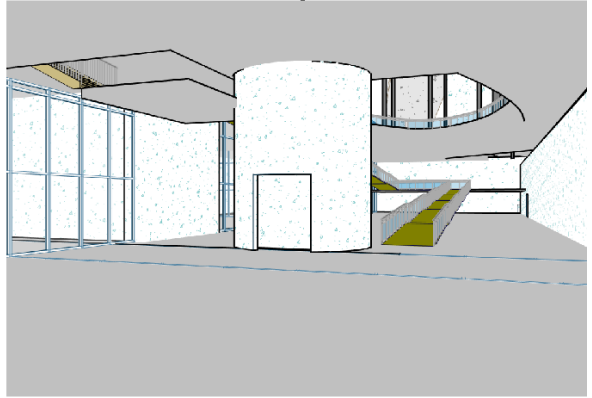
Main Entrance

Public Labs

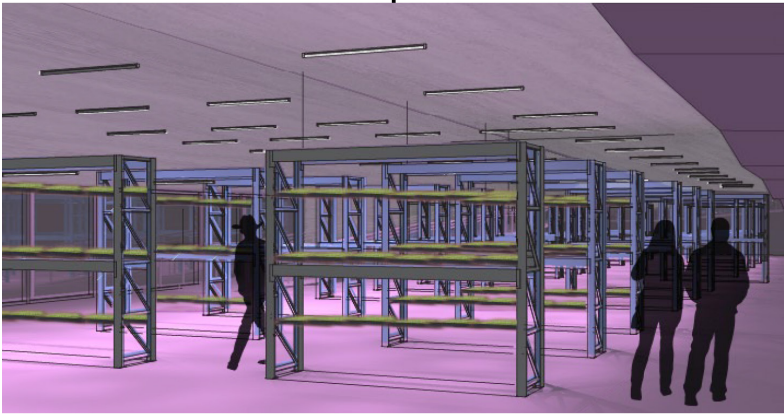


Observation walk through existing 16 foot structure

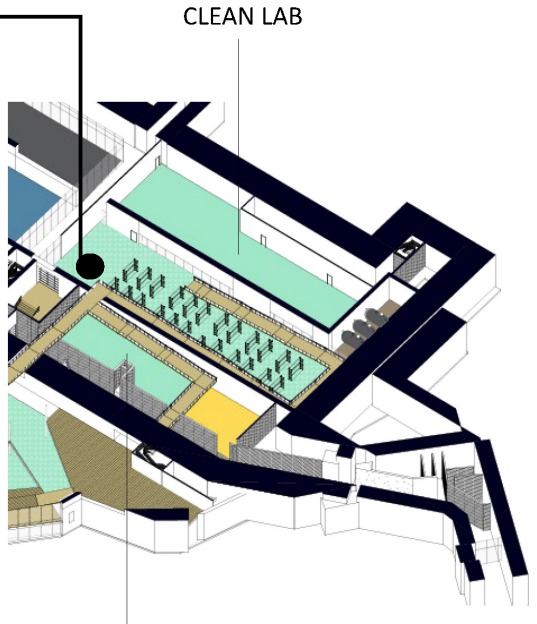
Botanical Garden



Research Labs

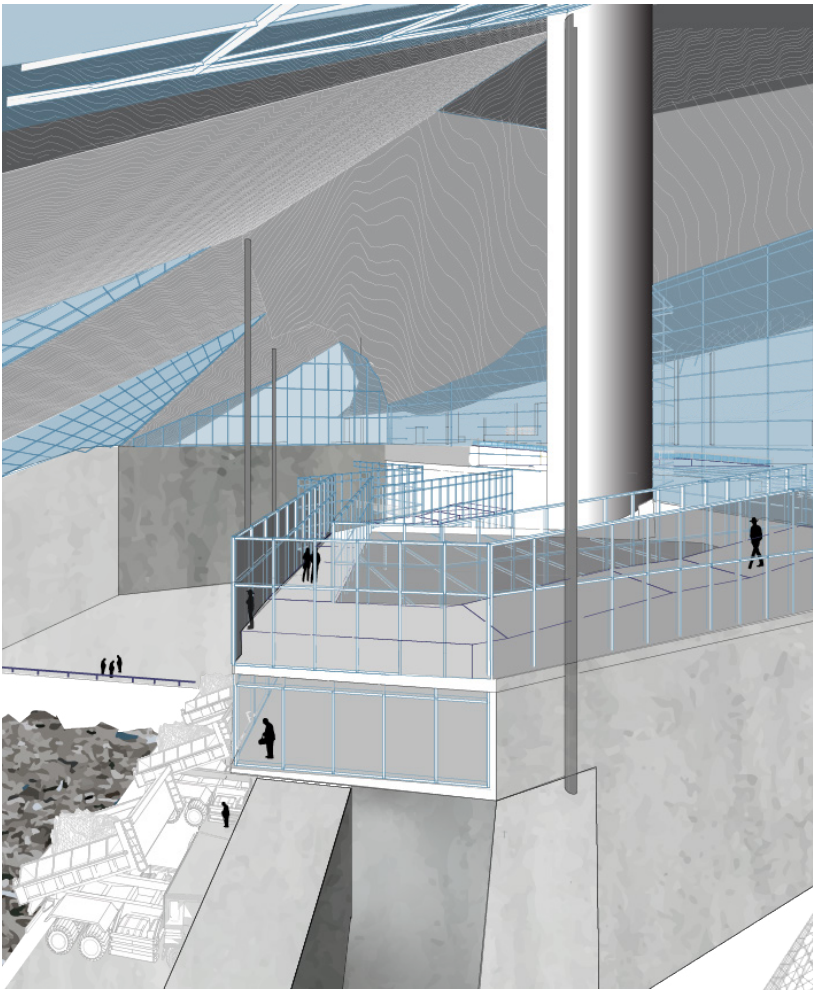
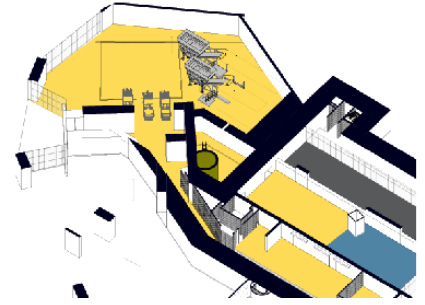


INTERIOR GROW ROOM

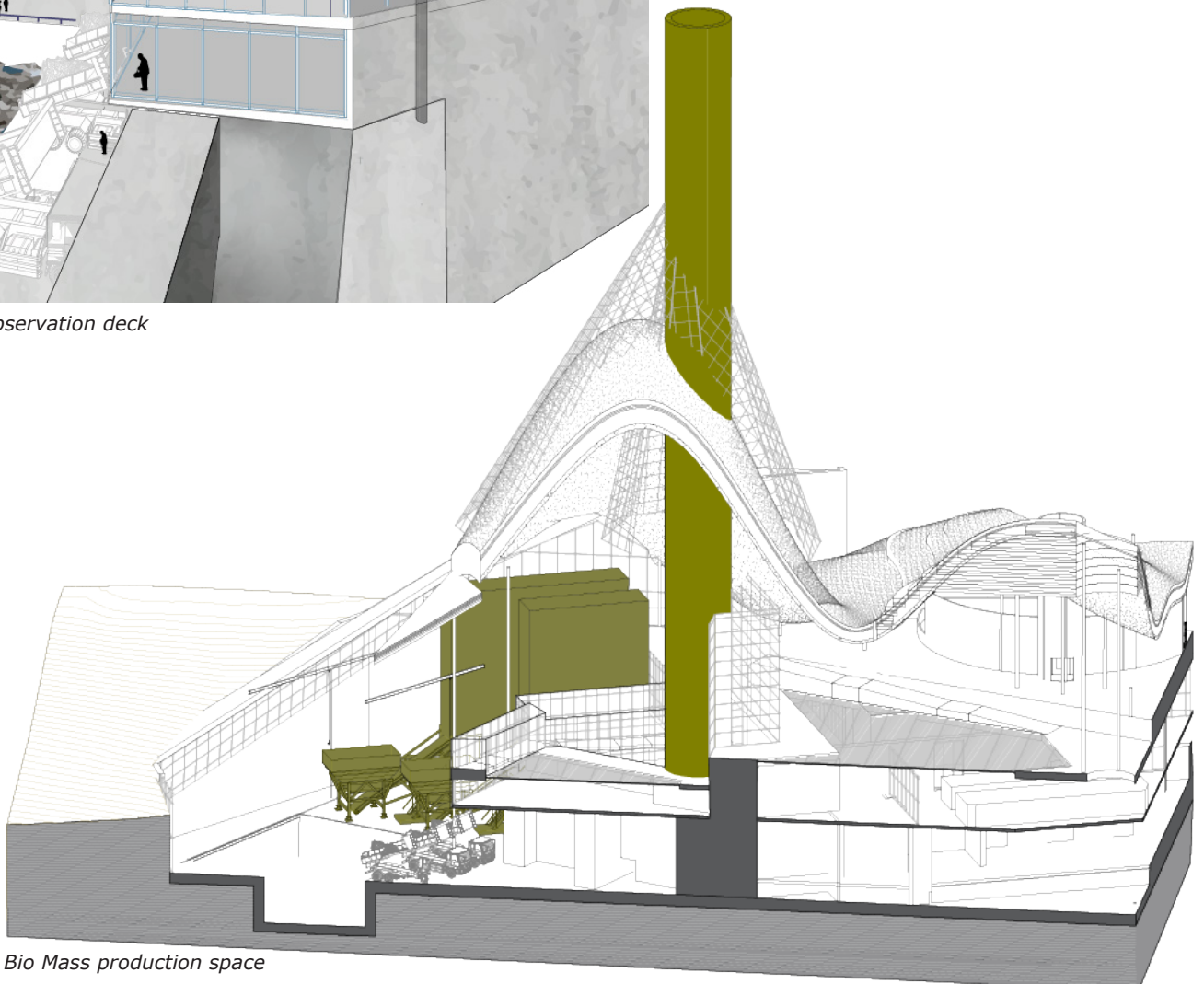


SEED VAULT

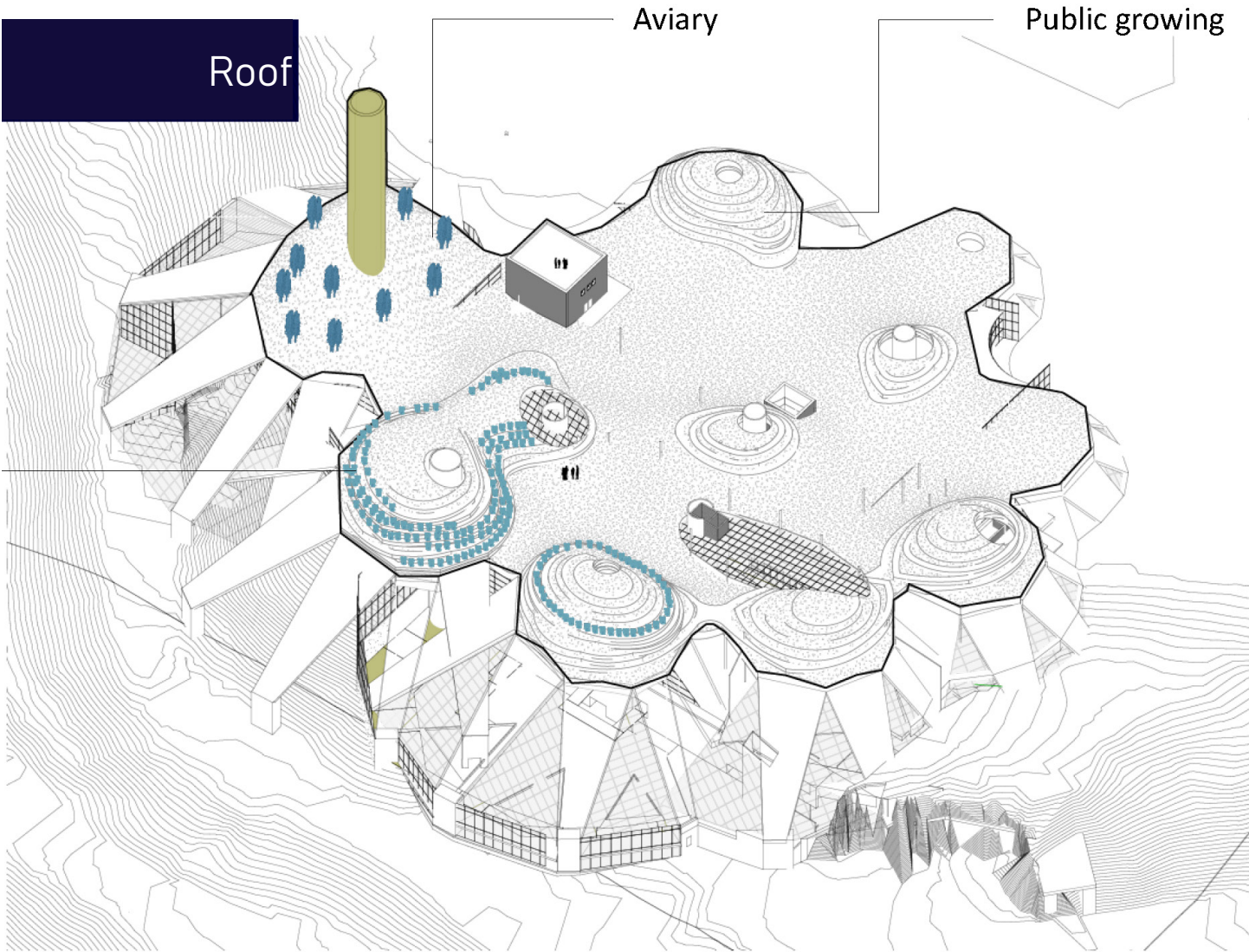
Bio Production



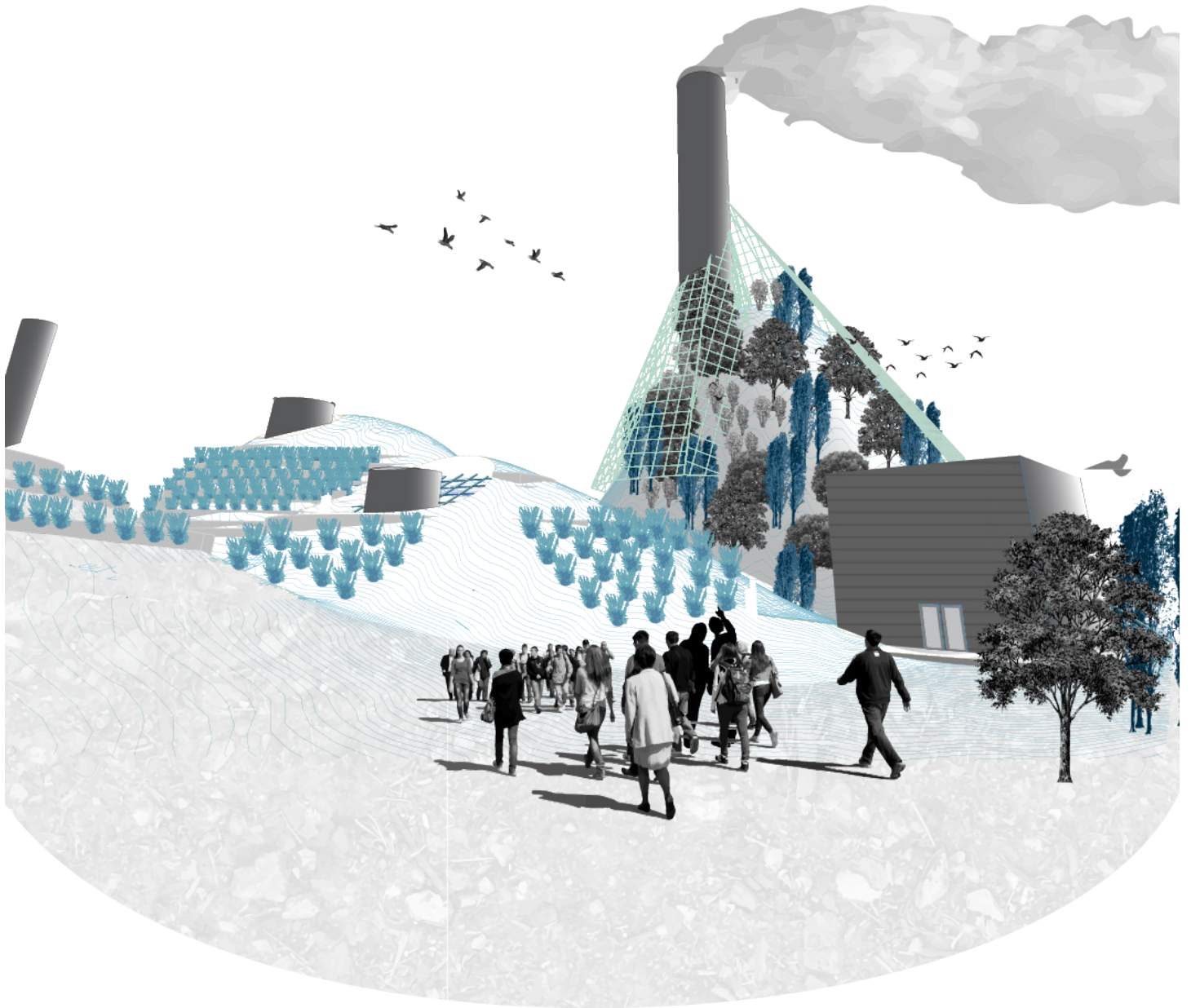
View of Observation deck



Bio Mass production space



Rooftop kinship initiation



*View from Roof top of Aviary and
Biomass smokestack*