









EDIBLE GARDEN FOR KINGSWOOD COMMUNITY CENTER



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PROJECT INTRODUCTION

According to Food Empowerment Project, "Food deserts are geographic areas where residents' access to affordable, healthy food options, especially fresh fruits and vegetables is restricted or nonexistent due to the absence of grocery stores within convenient travelling distance." Today, residents of the City of Wilmington, Delaware are experiencing the problems associated with living in a food desert. "According to the New Hanover County Manager Chris Coudriet, approximately 16,000 Wilmington residents live in a food desert." (Olivia,2018) Food deserts cause negative effects on residents of a community, such as obesity and diabetes. Additionally, as the costs of living rises, food cost also increase. The impact is that people are not able to cannot obtain enough food resources in general, and healthy, which tends to be more expensive than unhealthy food, is particularly unaffordable. In food deserts, people cannot obtain fresh, healthy and local food to reach their best state of health state. Long-term inappropriate eating habits will result in chronic diseases such as nutritional deficiency, high blood pressure, and obesity. (Center for Science in the Public Interest, n.d) Therefore, growing vegetables and fruits locally within the cities is becoming a trend to reduce food miles which means the distance travels from where it is grown to where it is ultimately consumed by customers.It provides fresh and seasonal food to promote physical and mental health in terms of physical and mental.

Although a large garden can provide much of the fresh food that people in a rural area need, it is not possible for people living in urban areas to sustain themselves from a garden because there are insufficient areas for each family to plant and grow food. However, urban communities usually have an empty lot or parcel of land that can be designed for use as a community garden. And while community gardens may not yield the same amount of production, it is possible to produce a significant amount of vegetables and fruits.



LOCATION MAP



SITE : Kingswood Community Center

Kingswood Community Center (KCC) is a 9.1 acre property located in the northeast part of Wilmington, Delaware at 2300 Bowers Street. The community is near the Brandywine River is adjacent to commuter railroad tracks. The KCC has been operational for over 70 years and provides resources, opportunities, and events for community members of all ages. The name Kingswood comes from Kingswood Methodist Episcopal Church. At the back of building, there is an existing 0.15 acres large community garden with edible plants including raspberries, blackberries, blueberries, and strawberries. Correspondingly, there is a food pantry that stores and distributes the freshly grown produce from the garden. This small urban garden is already helping to solve the problem for the neighbors who take advantage of the food pantry. It is helping them even though they live in what is technically a food desert. As mentioned, the community center is home to a small edible garden that is planted with a variety of existing fruits in raised planting beds. I proposed to expand the edible garden area and function so that it is large enough to produce more food for the local community.



OBJECTIVES

The scope of this project includes designing for 5 objectives, listed in priority order below

1. Enlarge the edible garden to produce more fresh food for the local community.
2. Provide a connection between groups using the community center and the edible plants grown on the property.
3. Provide fresh healthy organic food to the residents within one-mile radius of the community center.
4. Maintain the existing raised planting bed function and all other recreations uses on the property including the playground, and basketball court.
5. Manage stormwater and provide an onsite habitat for pollinators on sitecourt, parking lot, and food kitchen.



EXISTING CONDITION

EXISTING SITE PHOTOS



Entrance



Wall Drawing



Existing Community Garden



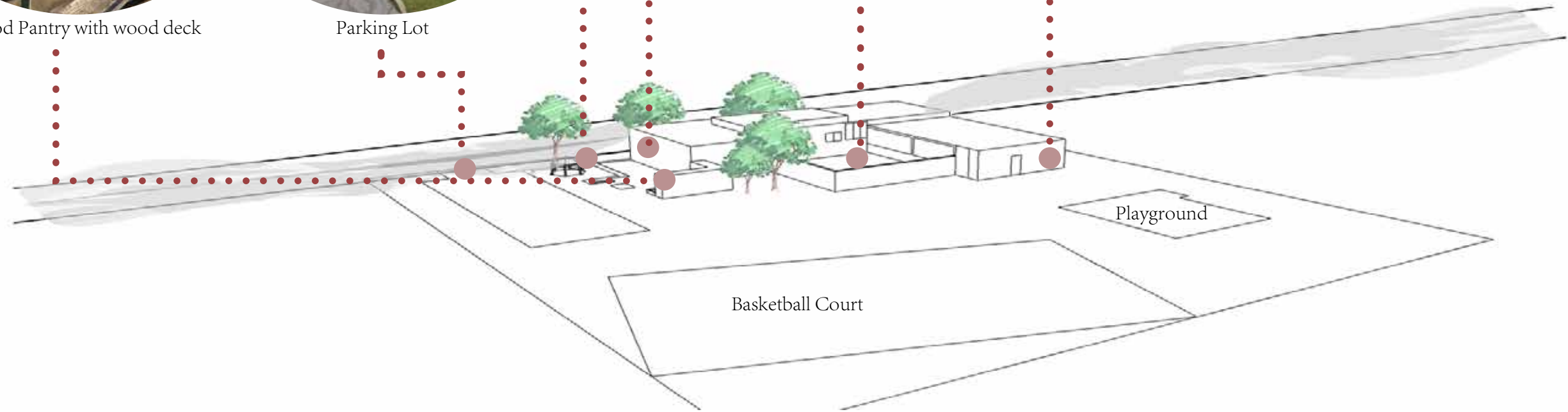
Wall Drawing

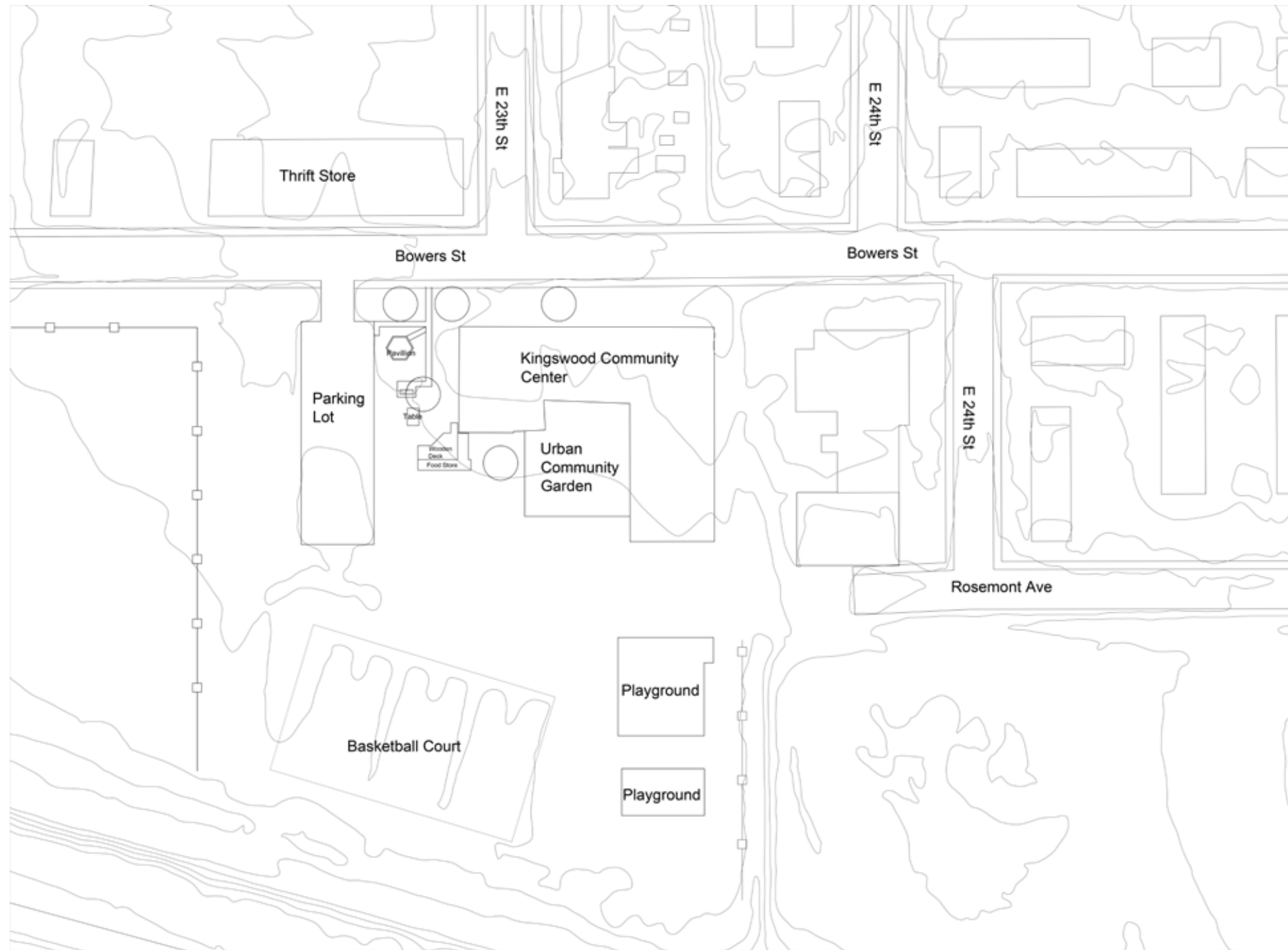


Food Pantry with wood deck



Parking Lot





EXISTING BASE PLAN

The property is basically rectangular in shape and is separated on all sides with fences. The building is on the right side of property, and is rectangular shape made of red-brown stone. The left side of the property is used for sports activities and sepeated by fence, so is not considered in this plan. The project site area is the right side of the property.

The current site use includes basketball, playground, food pantry, tables, a pavilion, and a parking lot. Currently, there is a preschool and community center housed within the community center and it is also a site for teen programming. There is one area that has standing water near the parking lot after heavy rainstorms. Otherwise, the site is well drained. The most predominant groundcover is turfgrass. The site will be redeveloped in terms of active programming and ecological programming. Expand existing edible garden in aesthetic and functional way, And while add outdoor kitchen, food forest trail, open space, and educational area.



Drawing Title Existing Plan	
Project Title Edible Garden in Kingswood Community Center	
Scale 1"=400'	
Drawn by YanJun Wang	Date 3/10/2019

PRECEDENT STUDY

PRECEDENT STUDY

The following projects are community edible gardens that provided ideas for me to consider while expanding Kingswood Community Center's edible garden. These studies show how different community garden works in both social and ecologically ways. While all the community gardens provided fresh local food for the community, another common characteristics that three precedent study have is that they attracted fixed groups of people from local communities and facilitated social relations. But according to the differences in the venue, their community gardens have uniquely different characteristics and levels of innovation.

PRECEDENT STUDY

PRECEDENT STUDY

THE DENNY WOO COMMUNITY GARDEN

01

Description

The goal is uniting community members of all ages from Seattle's Chinatown through sustainable gardening. The garden is a place where youth and elders connect to the land and to each other. The garden spreads knowledge and teaches visitors about the relationship between the health of urban environment and healthy lifestyles choices for people of all ages.

Innovative Practices

1. The terrace shape site design reflects Asian agricultural culture, which is a really nice multicultural and multigenerational gathering space.
2. Vegetable washing station, worm bins, toolshelter and chicken coop.
3. Community space for gathering and talking, entry gate and signs

<https://www.dannywoogarden.org/>

<http://interimicda.org/whatwedo/dannywoocommunitygarden/>



02 ORCA K-8 SCHOOL GARDEN

PRECEDENT STUDY

Description

The goal is to provide programs for sustainability, environmental science, and organic gardening for all students. K-8 teachers help students to explore relationships between humans and food. Gardens are maintained by students. Students learn firsthand about nutrition, through cooking and tasting what they grow.

Innovative Practices

- 1. Students learn about nutrition that cooking and tasting what they grow.
- 2. Blogs record all of the students' activities in the garden.
- 3. Use of trellis for small space gardening.

Orca's Famous Garden Program
<https://orcagarden.wordpress.com/>
https://orcak8.seattleschools.org/student_activities/garden



PRECEDENT STUDY

03

BEACON FOOD FOREST



Description

The goal is to bring the richly diverse community together by fostering a Permaculture Tree Build approach to urban farming and land stewardship. The food is available to visitors. Also Beacon food forest works on reducing agricultural climate impact, improve our local food security, provide education.

Innovative Practices

1. Raised and shaped planting bed.
2. Honey bees.
3. Specialized area for placing food and organizing events.

<https://beaconfoodforest.org/>
<https://www.facebook.com/pg/beaconfoodforest/photos/>



SITE ANALYSIS

SITE ANALYSIS

The following site analysis includes soil analysis, user analysis, topography & standing water analysis and plant community analysis. These analysis help me have a fully understanding of site. I learned sun and shade during different times and season, local sights and sounds, drainage status and soil condition. Also I realized what user group will use the site, and what kind of plants are suitable for planting in this site.

SITE ANALYSIS

SOIL ANALYSIS

The soil type on site is UzC which are loamy acidit (pH of 5.5) soils with a coarse texture and they are granular composition. These soils have good aeration facilitating the flow of oxygen in the soils and can hold water for a short period of time. A soil test was not conducted during this project, but many plants on site seem to be healthy including a large Taxus sp (common yew) and several trees.

UzC: 0 to 10 percent gently slopes
 Well suited
 Udorthents, loamy (90%)
 PH Rating(1 to 1 Water): 5.5 Acidic Soil
 Very low organic matter
 High vegetative cover

Map Unit Legend			
New Castle County, Delaware (DE003)			
New Castle County, Delaware (DE003)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NxB	Neshaminy-Urban land complex, 0 to 8 percent slopes	126.9	49.2%
UaB	Udorthents, bedrock substratum, 0 to 8 percent slopes	22.6	8.8%
UwA	Udorthents, wet substratum, 0 to 2 percent slopes	47.8	18.5%
Uy	Urban land, bedrock substratum	30.3	11.8%
UzC	Udorthents, 0 to 10 percent slopes	30.5	11.8%
Totals for Area of Interest		258.2	100.0%



SITE ANALYSIS

USER ANALYSIS

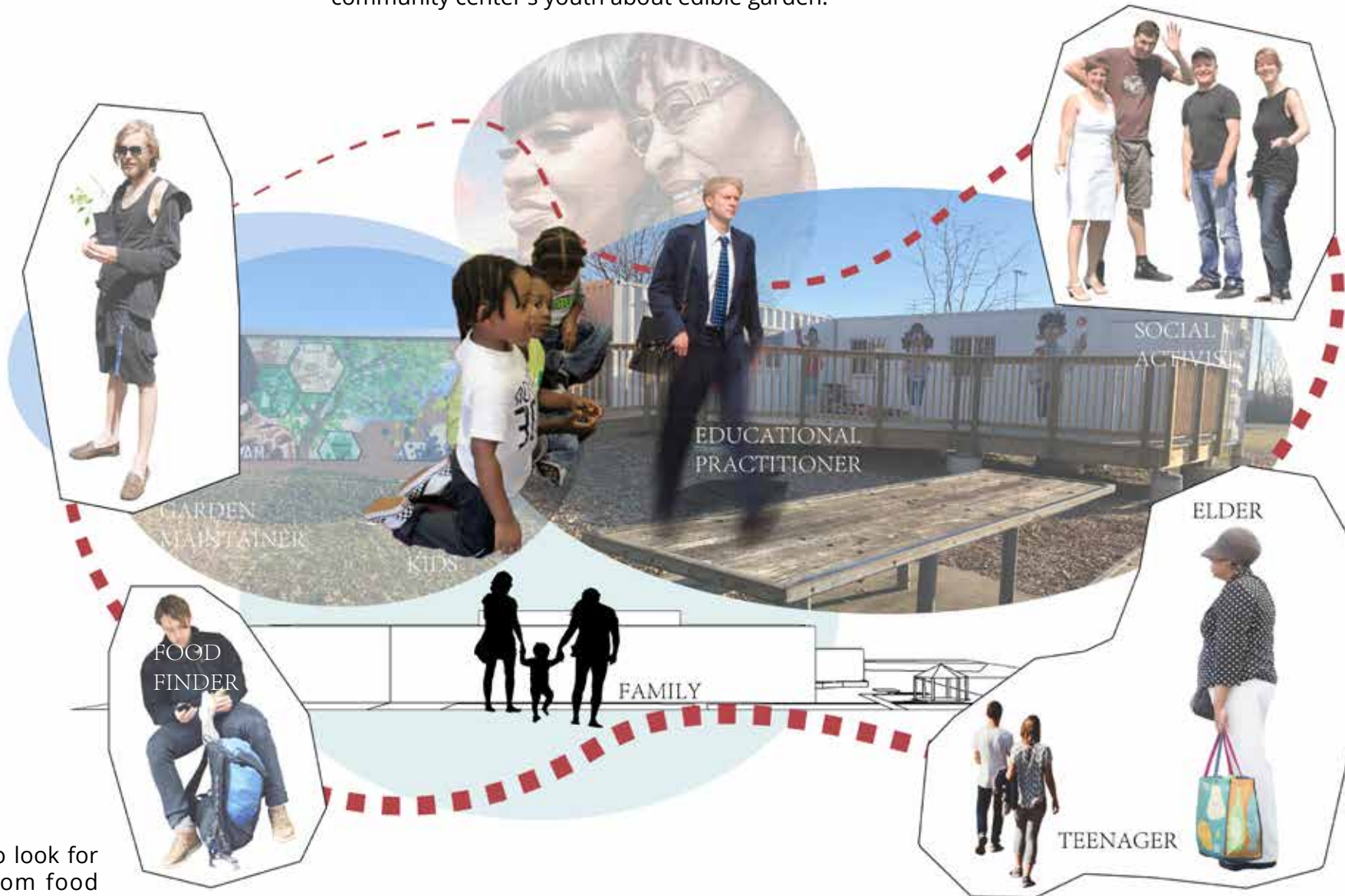
The majority of the people who will be use the site includes kids from 6 to 12 ages, kids' families, teenagers, elders, educational practitioner, social activist, and food finder.

Garden maintainer are people who are specialized in gardening and monitor the edible garden and edible forest trail very well. Make sure plants are in good condition and recording the plant numbers and status.

Food finder are people who look for food and can ask food from food pantry in Kingswood Community Center.

Educational practitioners such as landscape architect designer, professors may rent community center's hall to hold symposium or presentation. They may walk around the site and visit educational area and discuss about site with accompanying students, or give advise how the site can be better, or provide more ecological knowledge for community center's youth about edible garden.

Kingswood Community Center's hall is available for different activities and events such as birthdays, anniversaries, funeral repasts, corporate events and more; Therefore, the site attracts social activists who can deliver a message rapidly to more people. It will attract more people participate in planting.

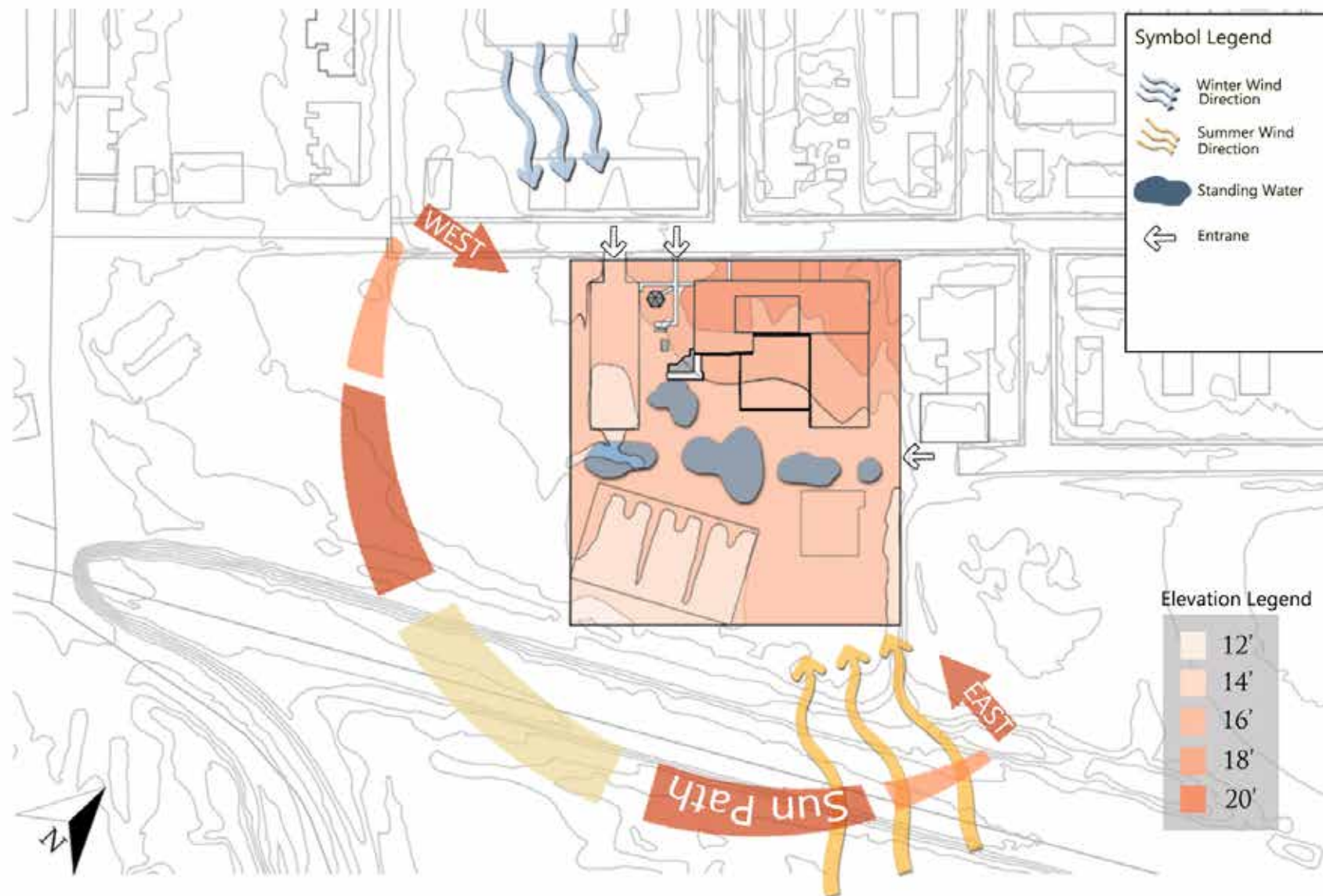


Community Center provides early learning center and Teen&Youth for kids youth, and teens. Planting and harvesing process will gain their cognitive ability, social ability and health management ability. They will learn ecological knowledge through the process of planting and learn how a plant grow from a seed to mature status. Edible garden also welcome kids or youth's family members joining planting activities, and cooperate with their kids.

Kingswood Community Center provides Jimmy Jenkins Senior Center for elders. The program helps them to manage their mental and physical health and they will know how to better care for themselves through healthy diet and reasonable exercise. Productions from edible garden and planting exercise will strengthen elders' ability with healthy aging.

SITE ANALYSIS

TOPOGRAPHY & STANDING WATER

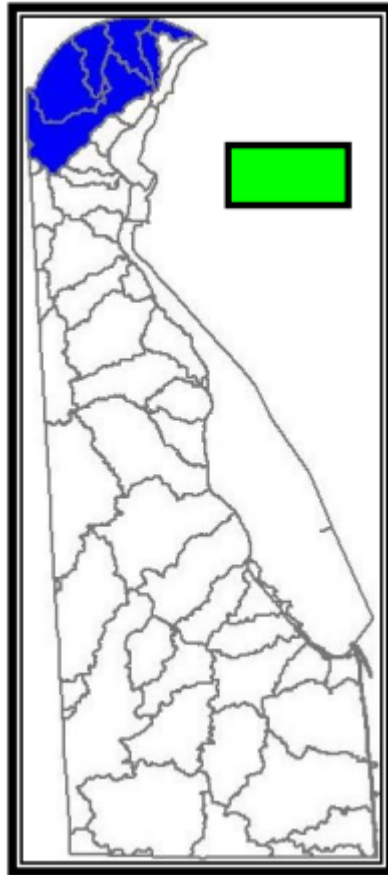


The slope of the site is 0 to 10 percent gentle slopes which makes the site not to experience flooding as the slope is not flat. It also helps in preventing soil erosion. The climate of the area is continental climate with cold winter temperatures, hot summers and ample precipitation throughout the year.

The map shows change of elevation from high to low as gradient of dark orange to light orange. Blue bubbles in the center represent standing water after raining on the site. There are area that have standing water near the parking lot and playground after heavy rainstorms. Otherwise, the site is well drained. According to the summer sun path, it is a full sun site and do not have much shade area.

SITE ANALYSIS

PLANT COMMUNITY: Northern Piedmont
Mesic Oak-Beech Forest



Associated soil type: Silt loam, Well drained

Currently there are several trees and shrubs planted on site all of which are in good condition. It is an urban location, but the type of plant community indigenous to the area is the Northern Piedmont Mesic Oak-Beech Forest, which is present throughout Piedmont of Delaware and is perhaps most common in the White Clay Creek Valley. It includes dominant plants such as tuliptree, American beech, red maple and black gum.

Herbaceous Plant:



Christmas fern
(*Polystichum acrostichoides*)



Solomon's seal (*Polygonatum biflorum*)



White wood aster (*Eurybia divaricata*)

Canopy Tree:

Tuliptree (*Liriodendron tulipifera*) and American beech (*Fagus grandifolia*) are frequent in the canopy and are associated by white oak (*Quercus alba*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*) and hickory (*Carya* spp.).



Tuliptree (*Liriodendron tulipifera*)



American beech (*Fagus grandifolia*)

Understory Tree:



American hornbeam
(*Carpinus caroliniana*)



Sweet birch (*Betula lenta*)



Red maple (*Acer rubrum*)



Black gum (*Nyssa sylvatica*)



Flowering dogwood (*Cornus florida*)



American beech (*Fagus grandifolia*)

SITE ANALYSIS

EXISTING SPATIAL LAYOUT



I conducted an analysis of the current circulation on site and found there are three main entrances for visitors to enter the site, which are respectively from parking lot, pathway and Kingswood Community Center's gate in Bowers St. The last entrance is a pathway close to property line of the site; therefore few people choose enter from that pathway.

Main circulation is represented by red dash line, and gray dash line represent internal circulation of the site and show how people can walk around the site.

All of arrows that touch with building and community garden represent there is a gate to provide people go through.

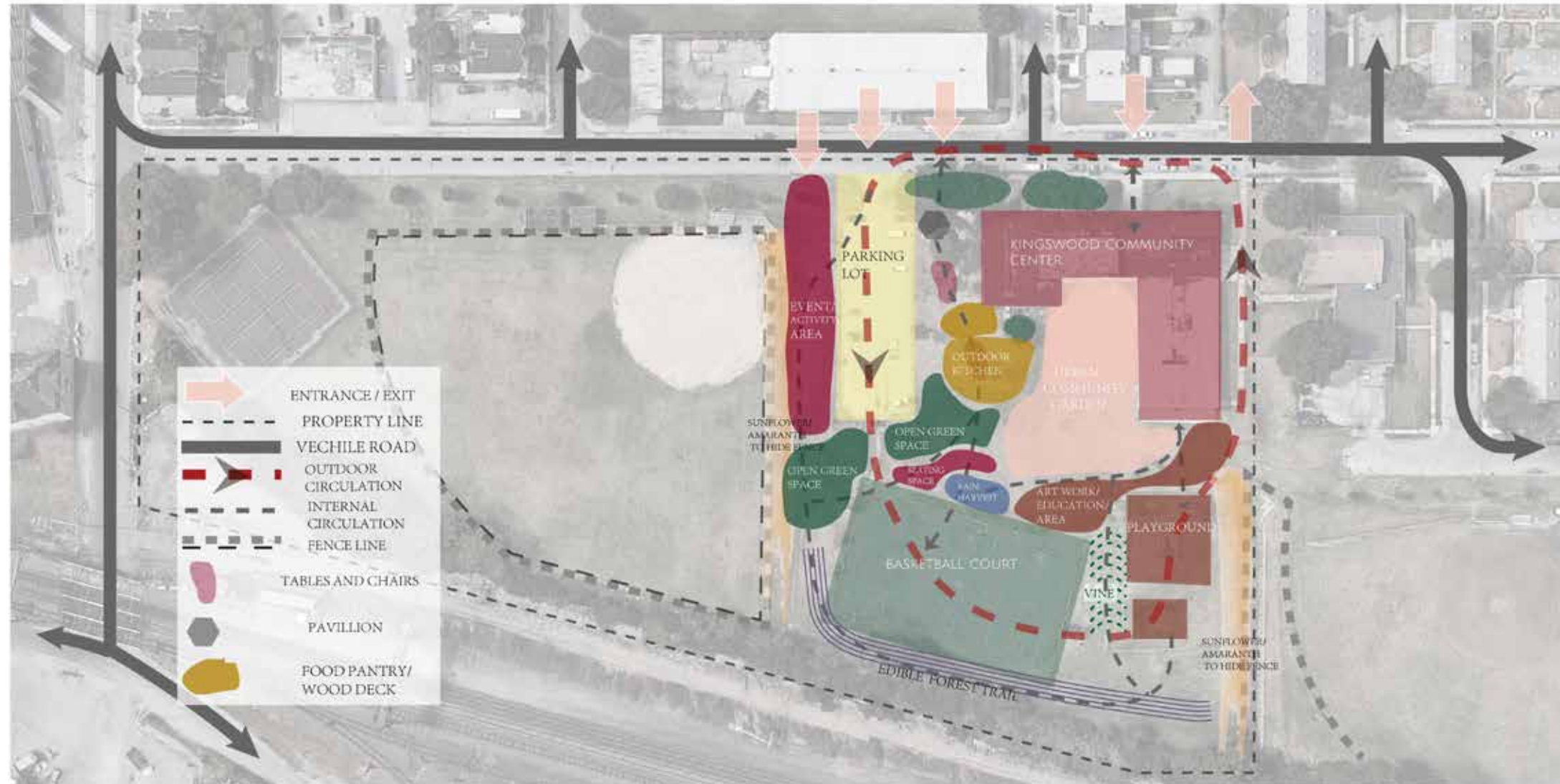
DESIGN PROCESS

DESIGN PROCESS

After site analysis, I have a fully understand about site's existing conditions, and analysis process helped me to ensure what kind of gardens and facilities are suitable for installing in the site. I started my design steps. I developed my concept design plan by using bubbles, then transform those bubbles to particular shape that are suitable for the site by handdrawing.

DESIGN PROCESS

CONCEPT PLAN ①



In the concept plan, it shows the expected circulation and location of functional area by using bubbles. I still use red dash line showing main circulation around the site.

Different from existing condition, I wish to add one more entrance on the left side of parkinglot. It also can be an area of activity and event such as farmer's market. Rightmost pathway are changed to main exit.

Outdoor kitchen are installed next to the extend community garden and food pantry, which are more convinient for cooking event.

Seating space next to the parking lot and keep enough green space for people gathering to communicate.

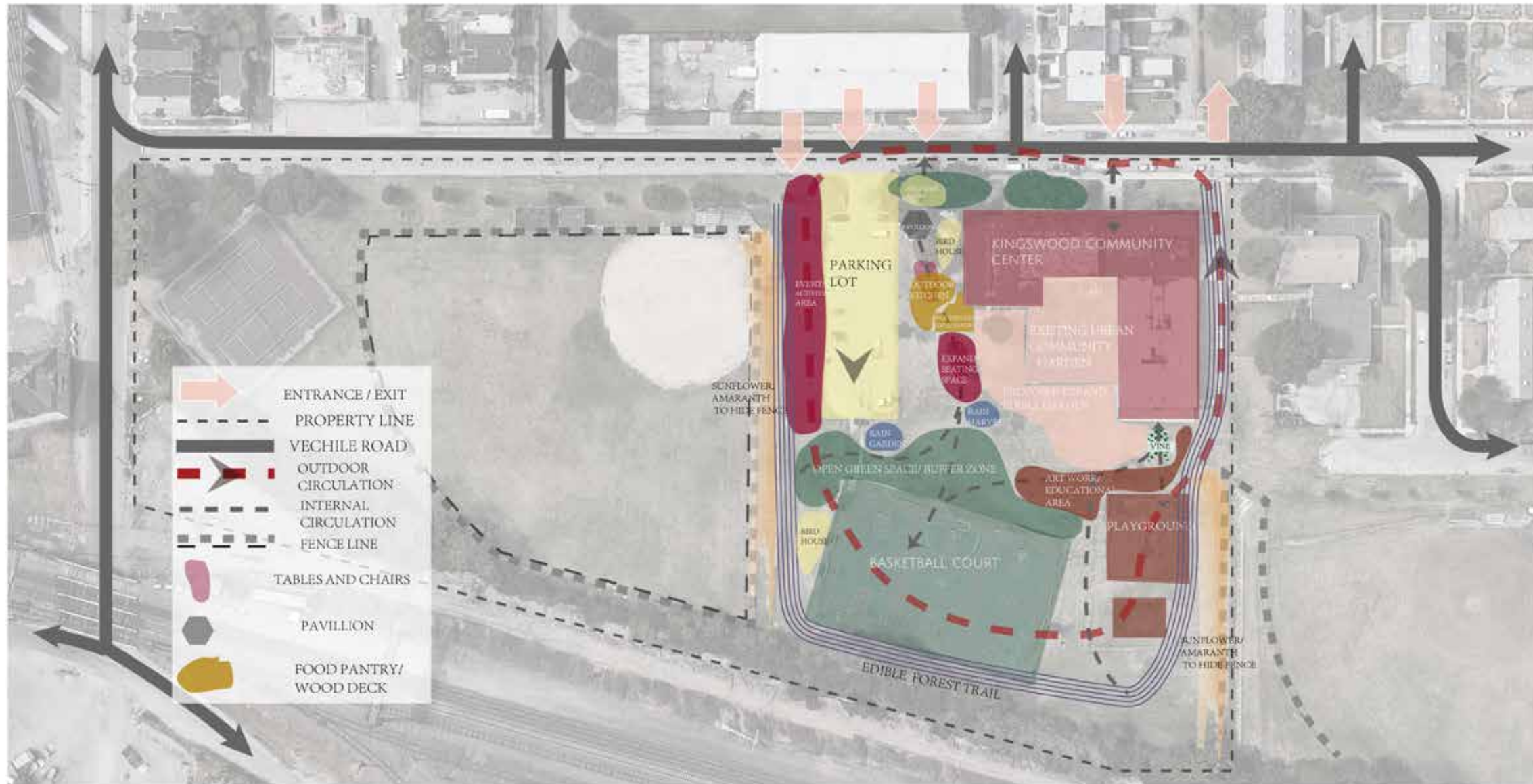
Sunflowers are planted along with fence to play an role of hiding the fence and provide some shade area for visitors.

Vine trellis installed between playground and basketball court provide more opportunities for people find interesting in harvesting.

Plant edible trees in the existing forest trail and create a pathway for visitors through the whole forest trail

DESIGN PROCESS

CONCEPT PALN ②



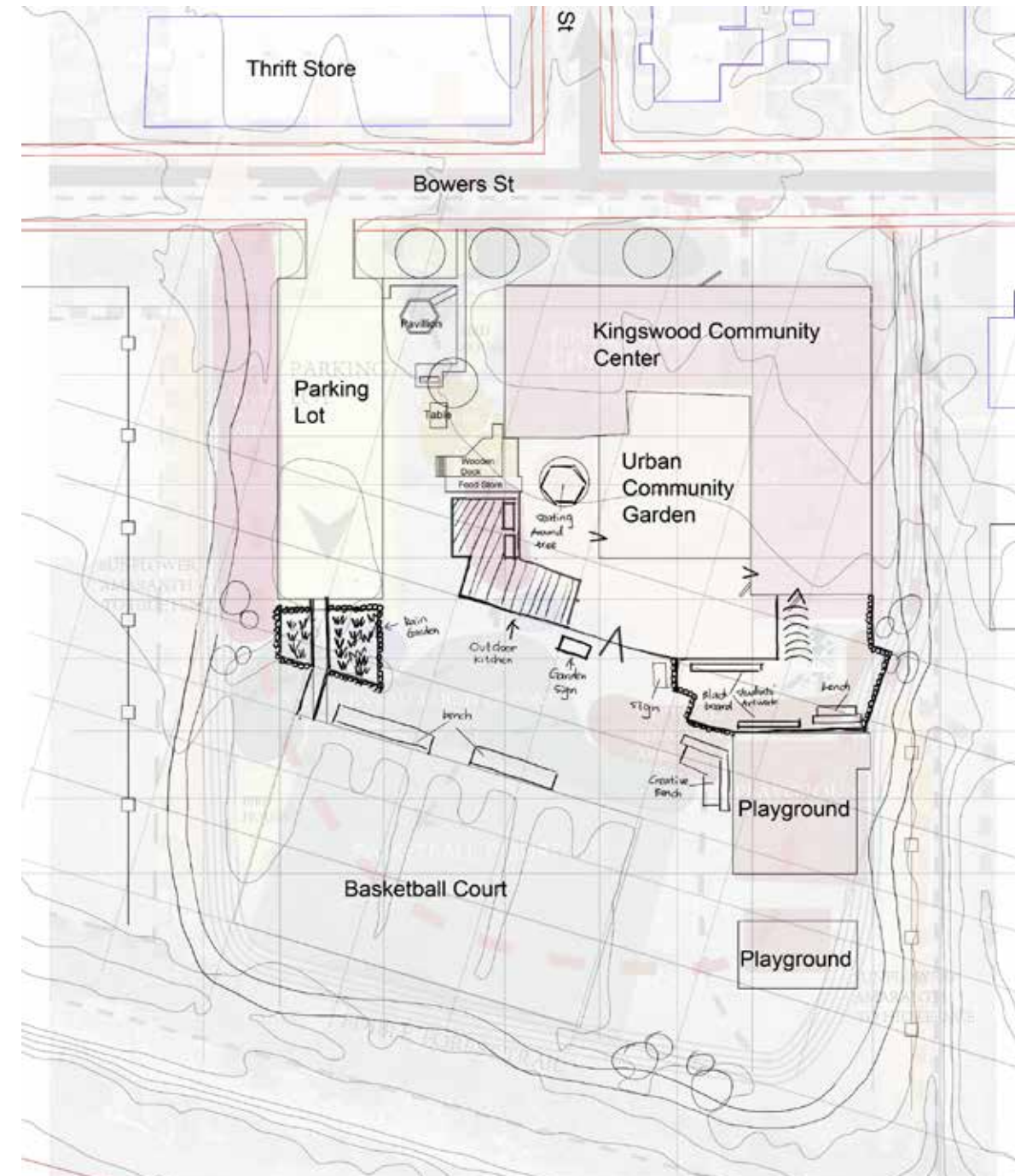
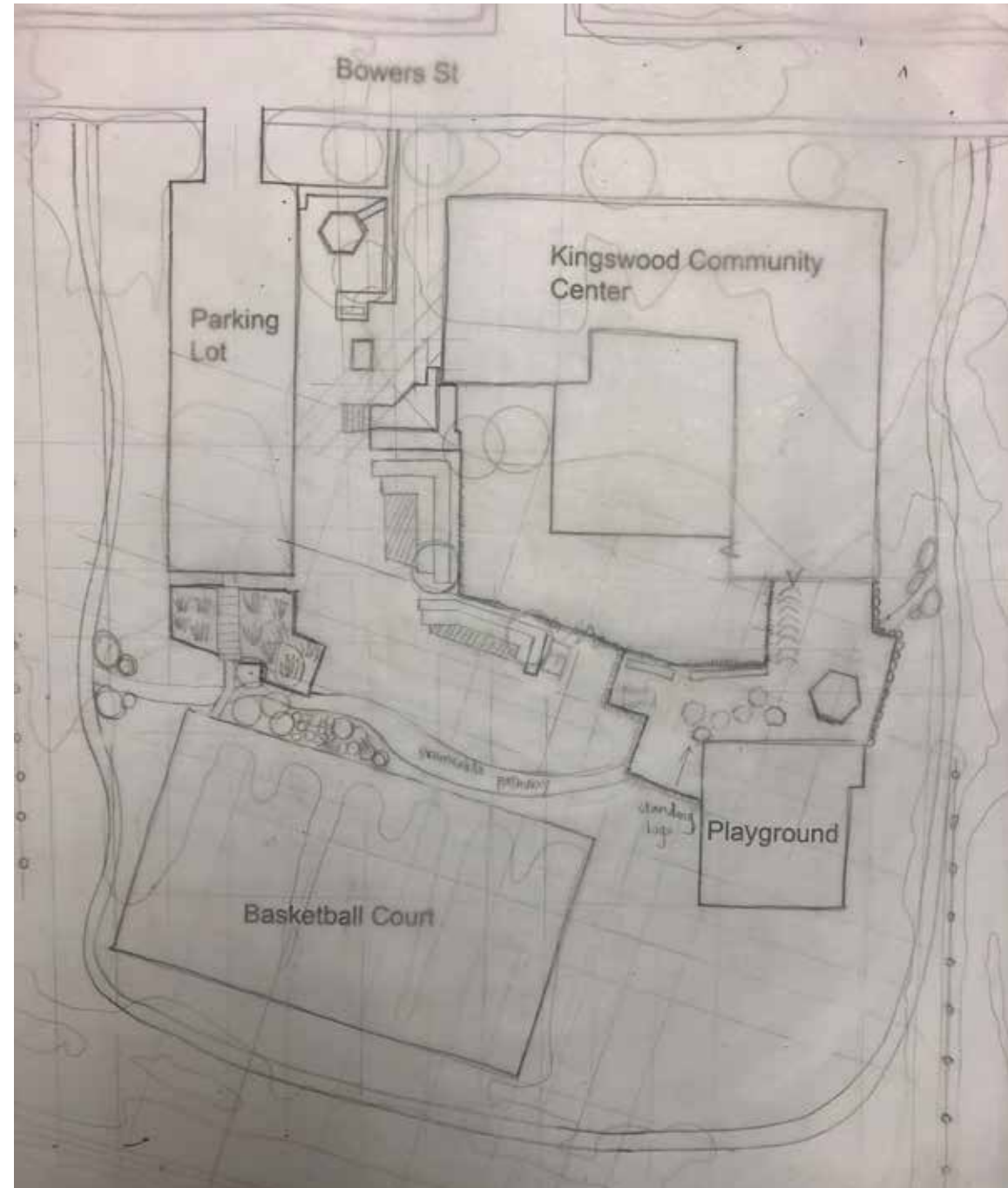
In concept plan ②, I changed location of vine trellis next to the extend edible garden and connect with the gate of building. When people in building go outside through that gate, they can enjoy the shade of vine trellis and harvest.

Extend edible forest trail to the entrance of the site and provide shade to visitors of event area.

Outdoor kitchen are installed behind food pantry because there are existing shade area.

Green space close to basketball court for visitors gathering as well as a buffer area.

DESIGN PROCESS



Transform from bubbles to particular shape by handdrawing

MASTER PLAN



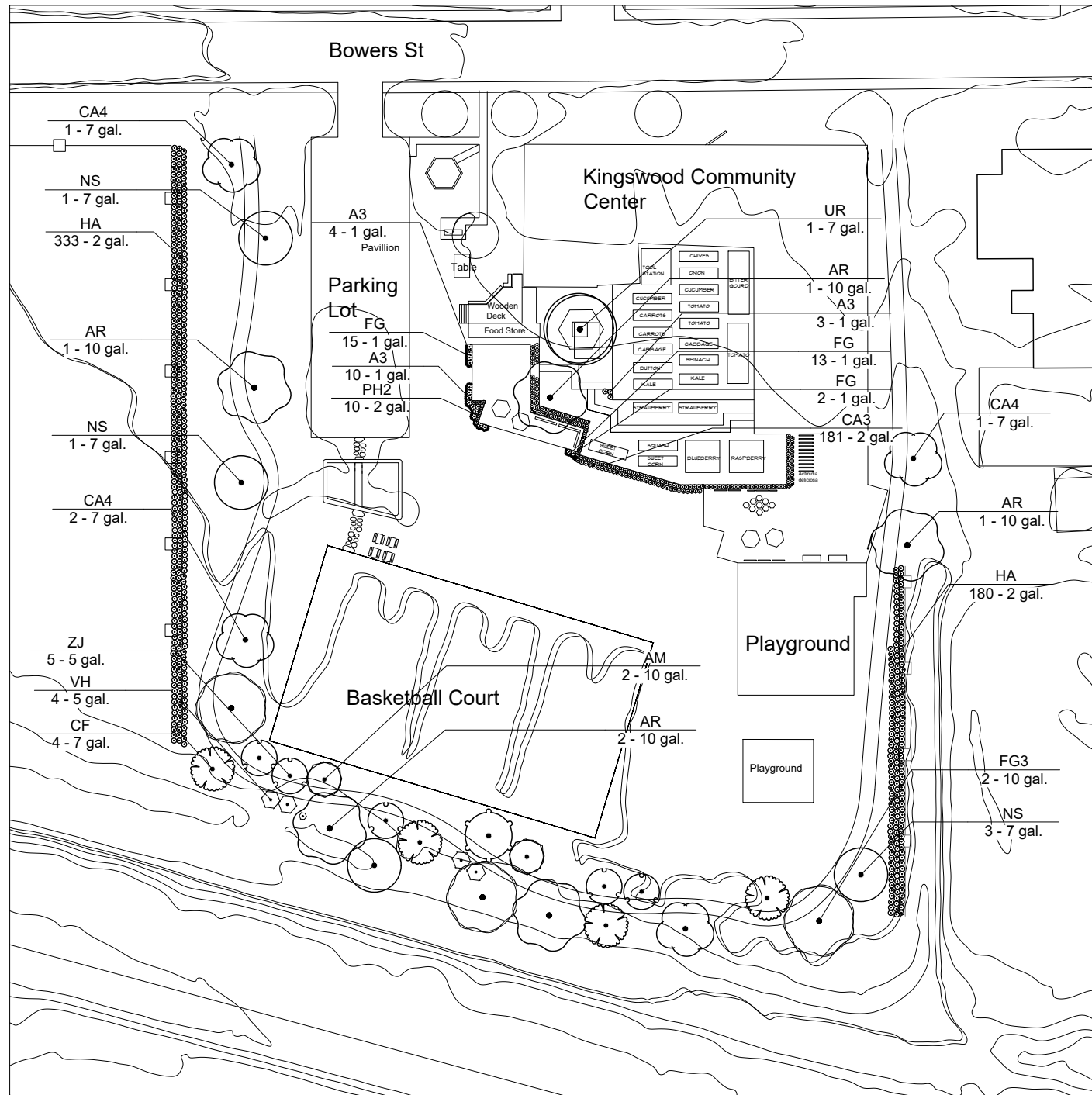
- ① Sunflowers to hide fence
- ② Edible forest trail
- ③ Rain garden
- ④ Outdoor kitchen
- ⑤ Educational Area
- ⑥ Extending Edible Garden

Drawing Title	
Master Plan	
Project Title	
Edible Garden in Kingswood Community Center	
Scale	
1"=400'	
Drawn by	Date
Yanjun Wang	5/23/2019



PLANTING PLAN

PRODUCED BY AN AUTODESK STUDENT VERSION



PLANT SCHEDULE							
TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	QTY	DETAIL	REMARKS
	AR	Acer rubrum	Red Maple	10 gal.	5		
	AM	Amelanchier canadensis	Shadblow Serviceberry Multitrunk	10 gal.	2		
	AL	Amelanchier laevis	Allegheny Serviceberry	7 gal.	1		
	CA4	Carpinus caroliniana	American Hornbeam	7 gal.	4		
	CF	Cornus florida	Eastern Dogwood	7 gal.	4		
	FG3	Fagus grandifolia	American Beech	10 gal.	3		
	NS	Nyssa sylvatica	Sour Gum	7 gal.	4		
	UR	Ulmus rubra	Slippery Elm	7 gal.	1		
	ZJ	Ziziphus jujuba	Chinese Jujube	5 gal.	5		
SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	QTY	DETAIL	REMARKS
	A3	Agastache foeniculum	Blue Giant Hyssop	1 gal.	19		
	CA3	Calamagrostis x acutiflora 'Avalanche'	Feather Reed Grass	2 gal.	161		
	FG	Festuca glauca	Blue Fescue	1 gal.	67		
	HA	Helianthus annuus	Sunflower	2 gal.	513		
	PH2	Penstemon digitalis 'Husker Red'	Beardtongue	2 gal.	10		
	VH	Vaccinium corymbosum	Highbush Blueberry	5 gal.	4		

PRODUCED BY AN AUTODESK STUDENT VERSION

PRODUCED BY AN AUTODESK STUDENT VERSION

Scale 1" = 400'	REVISIONS			Project Edible Garden for Kingswood Community Center	Address 2300 Bowers Street, Wilmington, DE	Designed Yanjun Wang Drawn Yanjun Wang Checked
	Date	Description	Approved			
	12/5/ 2019					
					Drawing Number L 1	

PRODUCED BY AN AUTODESK STUDENT VERSION

PLANT PALLETTE FOR EDIBLE FOREST TRAIL

Asimina triloba
(Pawpaw)



Amelanchier sp.
(Serviceberry)



Cornus florida
(Eastern Dogwood)



Nyssa sylvatica(Sour Gum)

Ziziphus jujube(Jujube)

Vaccinium corymbosum
(Highbush Blueberry)



Acer rubrum
(Red Maple)



Fagus grandifolia
(American Beech)



RENDERING

EDIBLE FOREST TRAIL





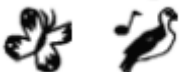






Edible Forests Trail



Edible forest trail will be installed around the site. It starts from the entrance on the left side of parking lot. It is an additional entrance that I wish to add, because there is an area of existing turf can be used for different activities or events such as farmer's market. I wish add more trees along with the left side of forest trail to provide shade for activity area. On the left side of rain garden, it will have a exit for visitors to leave from forest trail to enter the green space. At the back of trail, it will be planted with small to middle size edible shrubs or trees, such as paw paw and serviceberry. There is another exit where is between basketball court and playground, and allow people to enter the green space. At the end, the trail ends at right side of educational area, because it exists a paved road on the right side of building for visitors to leave.

PLANT PALLETTE FOR RAIN GARDEN

	<p>Arisaema triphyllum Jack-in-the-pulpit</p>	-----		
	<p>Asclepias incarnata Swamp milkweed</p>	-----		
	<p>Chelone glabra White turtlehead, turtlehead</p>	-----		
	<p>Helianthus angustifolius Swamp sunflower</p>	-----		
	<p>Heracleum maximum cow parsnip</p>	-----		
	<p>Mimulus ringens Monkeyflower, Allegheny, Monkeyflower</p>	-----		
	<p>Monarda didyma Beebalm, Oswego tea</p>	-----		

Plants choose of rain garden come from Newcastle native plants list and they are suitable for planting in full sun site with loamy soil and ph range are meets the site's ph value.

RENDERING

RAIN GARDEN



Material may be used for Wood bridge



Rain Garden Base Plan

Native plants rain garden is designed ecologically and functionally between parking lot and basketball court where has standing water problem. It will provide habitat for pollinators on sitecourt, parking lot, and food kitchen, and It will allow part of rainwater soak into the ground compared to conventional lawn. Meanwhile, wood bridge will provide people a pathway to flow between parking lot and basketball court and avoid problem of standing water. At the side of parking lot, a seating area are added to provide visitors and sporty people having a rest. Also. at the left side of the rain garden, it allows visitors leave from edible forest trail to enter the green space.

RENDERING

SUNFLOWER TO HIDE THE FENCE



RENDERING

OUTDOOR KITCHEN



Outdoor Kitchen

Outdoor kitchen is designed next to food Pantry and extending edible garden. Wood deck may be used for paving of outdoor kitchen to keep the kitchen's boundary clear, and seating area are provided in the area for visitors or members of Community Center. The location will provide convenient for people who will use the kitchen.

At junction of kitchen and edible garden, It has an entrance for people having a better move. At the back of food pantry, additional stairs for exiting wood deck to improve mobility.

The kitchen will be used to make some simple food such as salad. All of the food come from edible kitchen, so students can enjoy the vegetables or fruits.

Inspiration photos and material may be used for outdoor kitchen



Inspiration photos come from internet

RENDERING

EDUCATIONAL AREA



Educational Area

Inspiration photos and activities can be hold in educational area



Art Panel



Sketching



Recording of exploration process of activities in edible garden

Inspiration photos come from internet

Educational area are designed next to the playground and extending garden. It can be educational to students or visitors. Knowledge about edible garden, pollinators, benefit of native plants or healthy diet can be pin up on whiteboards in the educational area. Facilities such as art panel, hexagon tables and chairs provide study opportunities for youth of Community Center in outdoor environment. They can freely do sketching and record what activities they have done in edible garden. Bower Actinidia vine trellis are adjacent to a gate of the main building, which can gain usage of that gate, and encourages foraging. Besides, visitors from the direction of kitchen, rain garden and playground can leave the site from the educational area.

EXISTING GARDEN AND EXTENDING EDIBLE GARDEN



Existing garden is designed as fruit garden, and extending edible garden is designed as vegetable garden. It is easier to maintain when it has clear separate between existing garden and extending garden. Besides, food will be made in outdoor kitchen should be mostly made of vegetables; therefore, vegetables can be planted in extending garden where is closer to outdoor kitchen. Brown line represents the circulation in two edible gardens. Vertical planting are designed on the boundary of the building to keep adequate temperature inside of the building and reduce electricity usage.

Legend

- ① Tool Station
- ② Vertical planting
- ③ Circulation inside of edible garden
- ④ Dry grass

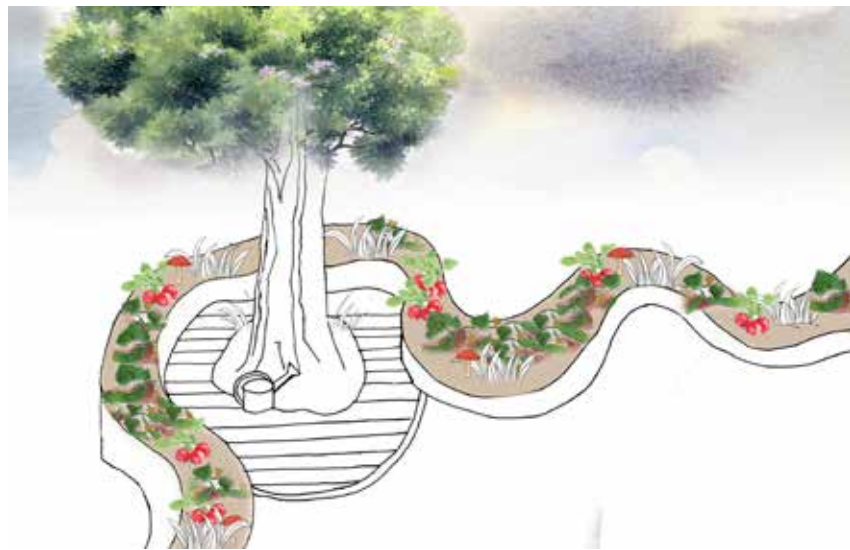
APPENDIX

Activity for kids, teenagers and adults in Kingswood Community Center

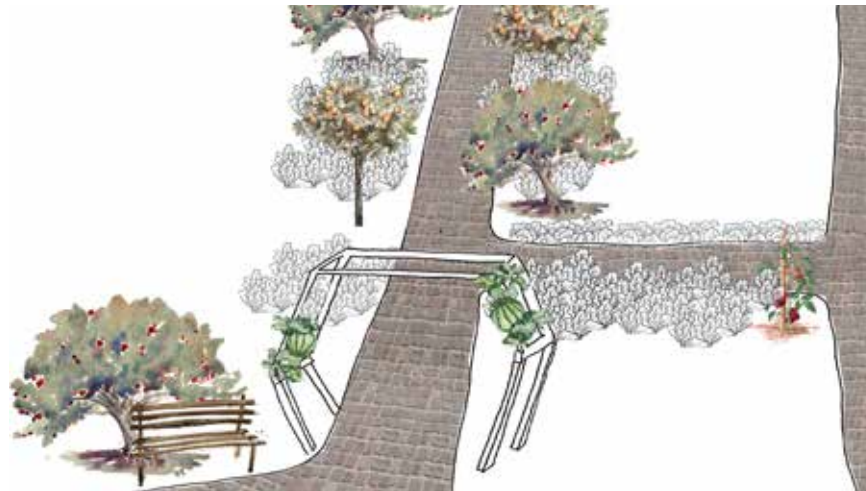
Before the process of designing, I developed an activity for kids, teenagers and adults of Kingswood Community Center to explore what kind of edible garden they want. It also helps me to clear my design objectives and compositions.

There are two steps of the activity. First, a base map and three types of edible garden are provided for respondents. Respondents can write down their favorite garden number at anywhere they desire on the map. Also they can draw their imagined garden shape on the back side of the map page. The second steps of activity is that respondents can circle vegetables, fruits or mushroom they like. The activity are divided into two respondents group. One is kids' group, another one is teenagers and adults' group. For kids' group, it totally had 14 survey respondents. They have a rich imagination about their desired edible garden by drawing on the map. For teenager and adult's group, they provide nice and logical ideas and help me learn more details about Kingswood Community Center.

STEP 1: Respondents write down favorite garden type number where they want, and draw any shape of garden they like.



TYPE 1: Shaped and raised planted bed



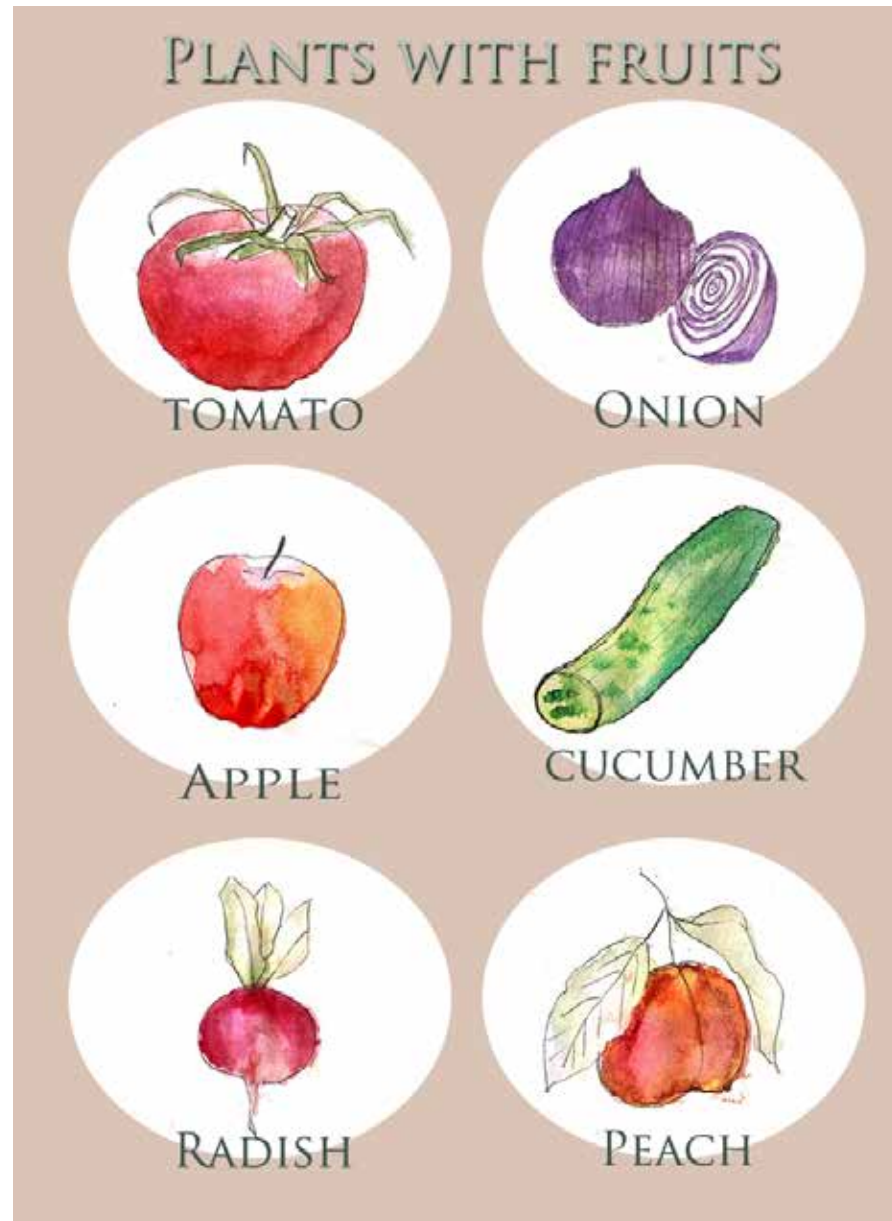
TYPE 2: Planting pathways



TYPE 3: Maze garden

APPENDIX

STEP 2: Respondents cycle vegetables, fruits, or mushroom they like.



ACTIVITY RESULT STATISTICS FOR KIDS

TOTAL NUMBERS OF FEEDBACK FROM KIDS: 14



TYPE1: SHPAED AND RAISED PLANT BED

5 kids like



TYPE1: PLANTING PATHWAYS

3 kids like



TYPE3: MAZE STYLE EDIBLE GARDEN

3 kids like



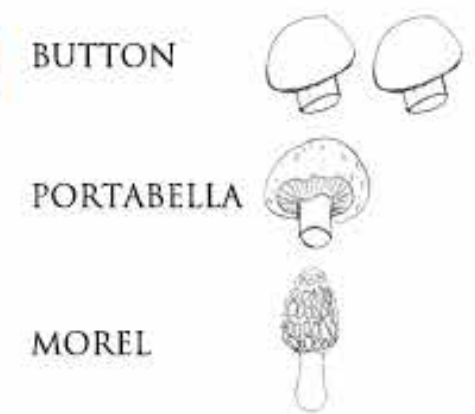
FRUIT AND VEGETABLES

6 FEEDBACK



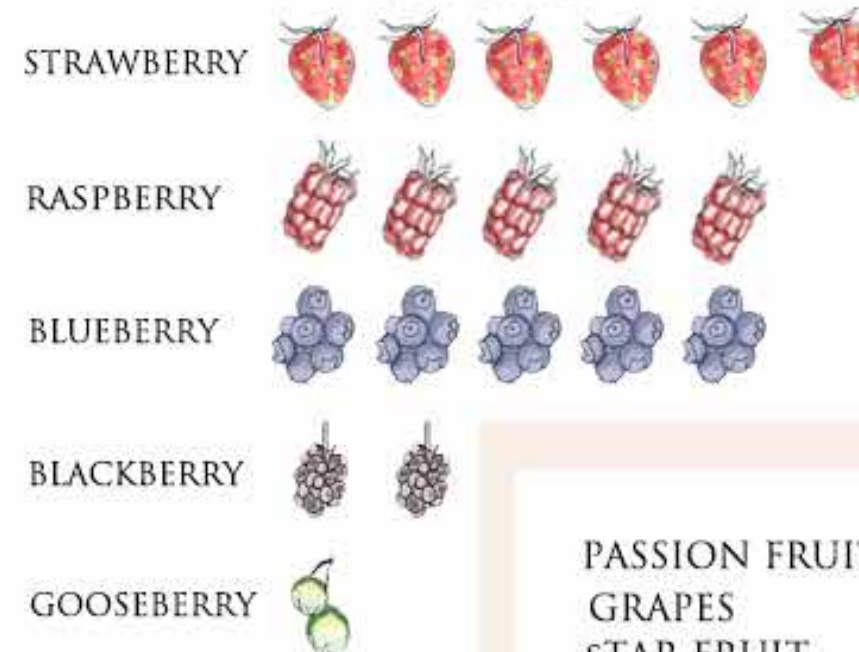
MUSHROOMS

3 FEEDBACK



PLANTS WITH BERRIES

6 FEEDBACK



OTHER IDEAS:

PASSION FRUIT
GRAPES
STAR FRUIT



ACTIVITY RESULT STATISTICS FOR TEENAGERS AND ADULTS

TOTAL NUMBERS OF FEEDBACK FROM TEENAGERS AND ADULTS: 4



TYPE1: SHPAED AND RAISED PLANT BED
1 adult like



TYPE1: PLANTING PATHWAYS
2 teenagers and 1 adult like



TYPE3: MAZE STYLE EDIBLE GARDEN
none

FRUIT AND VEGETABLES 1 FEEDBACK

APPLE



CUCUMBER



TOMATO



PEACH



MUSHROOMS 1 FEEDBACK

BUTTON



PORTABELLA



OYSTER



CHANTERELLE



PLANTS WITH BERRIES 1 FEEDBACK

STRAWBERRY



RASPBERRY



BLUEBERRY



REFERENCE

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