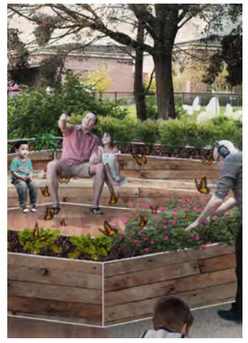
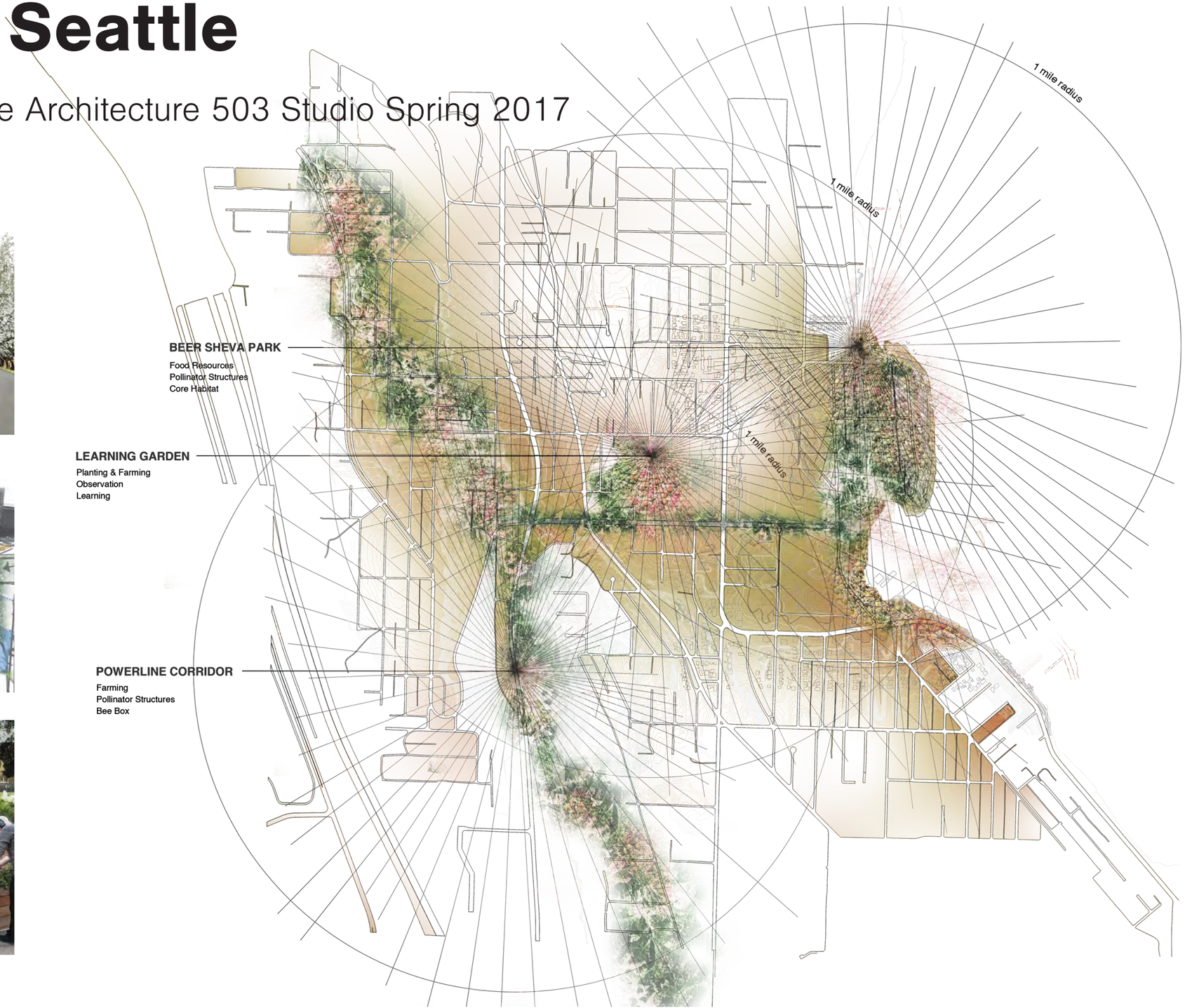
Urban Agriculture as a Civic System

Rainier Beach | Seattle

University of Washington Landscape Architecture 503 Studio Spring 2017





University of Washington | Landscape Architecture 503 Studio | Spring 2017

“The best place to realize the environmental, economic, and equitable benefits of a more local system of agriculture may not be in some rural or exurban location, but in and among the places we pass by daily on our way to work, home, school, commerce and recreation.”

-- Darrin Nordahl. 2012. Public Produce: The New Urban Agriculture. Washington, DC: Island Press, p. 8.

The design process and proposals address issues of social justice and environmental health, and envision multiple benefits of:

- healthy food and environments,
- ecological learning,
- community-building
- evolving beauty

Looking to a **more resilient future in the face of climate change and food production as ecological infrastructure**, this graduate studio explores where and how urban agriculture may be practiced in Seattle’s Rainier Beach neighborhood, notably on **civic landscapes, as a system of productive landscapes.** This neighborhood serves as an ideal context, with site- and community-based efforts towards growing healthy food, including the evolving Rainier Beach Urban Farm and Wetlands, the Rainier Beach Learning Garden, Thistle P-Patch, school gardens, the Rainier Beach Food Innovation District, and the Seattle Department of Parks and Recreation’s Good Food Program through the Rainier Beach Community Center.

Image Source: UW Center for Urban Horticulture
https://botanicgardens.uw.edu/center-for-urban-horticulture/gardens/uw-farm/

The studio got underway with a simultaneous **immersion into urban agriculture processes, practices or typologies; Seattle-based urban agriculture precedents, and thematic analysis of the Rainier Beach neighborhood.** The first two weeks involved touring 12 sites, in which each student developed a guide for a site. Each student also investigated and presented as a poster one of the following: healthy soil; water and irrigation approaches; pollinators, climate and micro-climate considerations; permaculture principles and practices; raised beds and containers; in-ground planting; vertical planting typologies; canopy planting; and animals. These served as references to inform subsequent design proposals. Thematic analysis of the neighborhood was enriched by prior research undertaken by this year’s MLA Capstone Studio addressing the Rainier Beach Urban Farm and Wetlands and “maker” initiatives. **Our understandings were enriched by visits to neighborhood sites and meeting with community representatives.**

Resonating with Darrin Nordahl's proposition, students identified a site and/or route(s) that serve community uses today for learning, play, growing food, gathering, shopping, working, or traveling. The existing urban agriculture sites and the Rainier Beach Food Innovation District, as well as the new light rail station and other civic landscapes, anchor a **network of proposed sites as productive landscapes**, developed by the following students:

Rainier Beach Urban Farm and Wetlands + Beer Sheva Park + Rainier Beach High School
Sujing Sun

Rainier Beach Learning Garden + South Lake High School meadow
Yuchia Chan

Mapes Creek path (52nd Ave S) + Safeway site + street ends
Drew Badgett

Neighborhood crossroads: sites on S. Henderson St flanking Rainier Ave S.
Margot Chalmers

Rainier Beach Branch Library
Shan Huang

Rainier Beach Community Center
Anran Liu

Potential Food Innovation District development at Rainier Beach Light Rail Station
Gina Christofanelli

Power line corridor + Chief Sealth Trail at Rainier Beach Light Rail Station, extending from Thistle P-Patch
Aaron Parker

Power line corridor + Chief Sealth Trail extending south of Henderson to 51st Ave S.
Yuxi Jin

The students' designs are **envisioned in relation to each other, affording community and ecological synergies and a more cohesive identity across the neighborhood.** The design proposals and "maker" elements of the ongoing MLA Capstone Studio for Rainier Beach Urban Farm and Wetlands also were integrated where relevant. The design proposals **evolved through an iterative process**, with peer and instructor conversations, and with guest reviewers taking part in concept, schematic, and final design reviews/conversations. These proposals also were displayed at the Rainier Beach Urban Farm and Wetlands as an addition to the MLA Capstone Studio's "Maker" event and design exhibition on Saturday, June 3. **The proposals presented in this booklet are intended as catalysts for continued community dialogue and action around the ways in which urban agriculture may grow as an integral, essential and enriching part of our urban fabric and everyday life.**

—Julie Johnson, Associate Professor

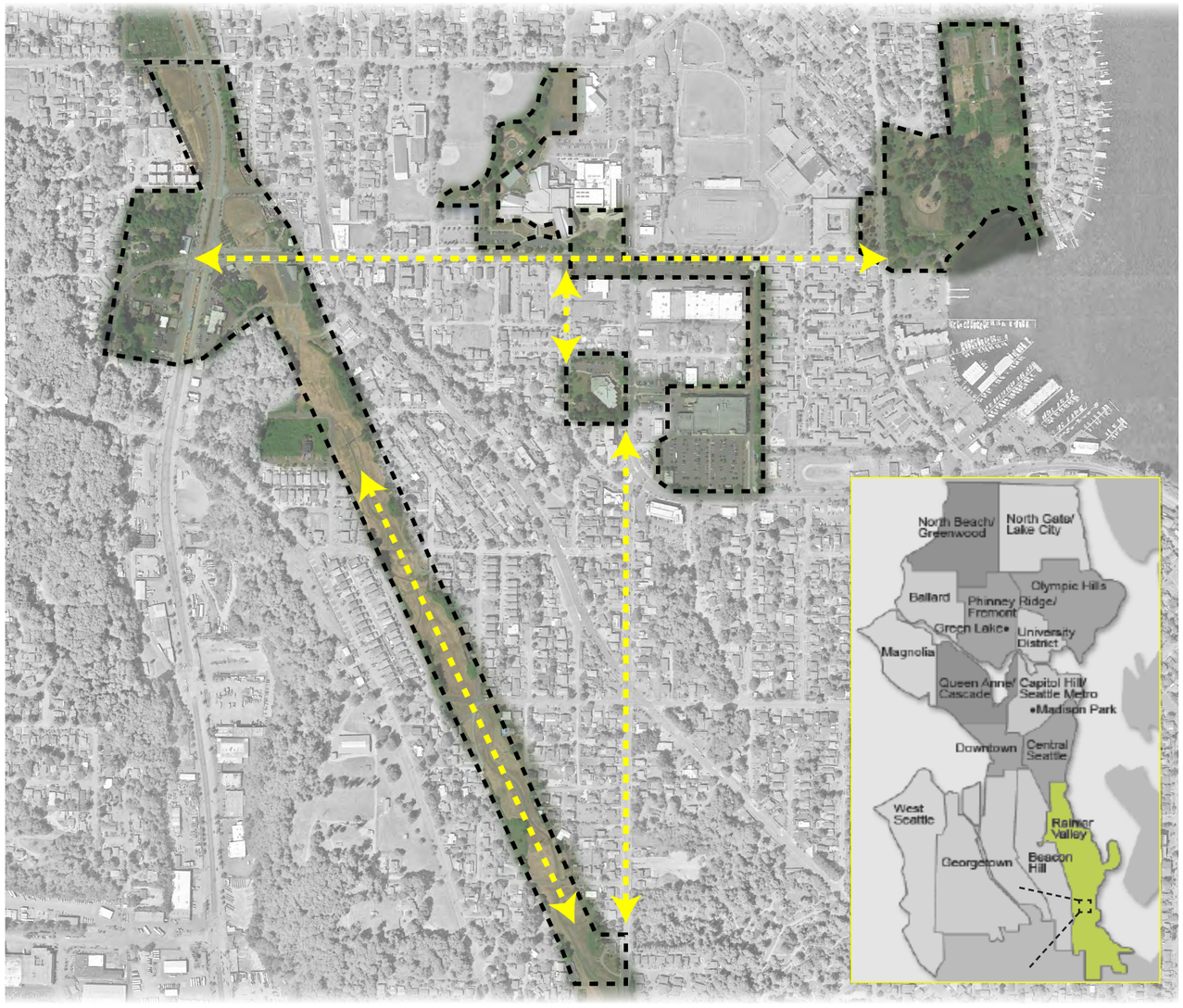


Image Source: Google Maps (student project sites highlighted)

Image by Gina Christofanelli

FROM THE SPRING 2017 UW LARCH 503 URBAN AGRICULTURE STUDIO

Julie Johnson, Associate Professor

Drew Badgett, Margot Chalmers, Gina Christofanelli, Shan Huang, Yuchi Jan, Yuxi Jin, Anran Liu, Sujing Sun, and Aaron Parker

Studio Booklet Design + Development: Margot Chalmers

SPECIAL THANKS TO THOSE WHO MET WITH US AND OFFERED INSIGHT:

Community Organization Representatives

Belinda Chin, Seattle Department of Recreation
Cayce James, Seattle Office of Planning and Community Development
Chris Hoffer, Tilth Alliance
David Sauvion, Food Innovation District, Rainier Beach Action Coalition
Gretchen DeDecker, Seattle Public Schools
Katie Bang, Seattle Department of Parks and Recreation
Maren Neldam, Tilth Alliance
Nat Mengist, Tilth Alliance
Robert Scully, Seattle Office of Planning and Community Development
Sue Gibbs, Friends of Rainier Beach Urban Farm and Wetlands
Vienna Wong and **members of the Rainier Beach High School Green Team**
Yun Pitre, Seattle Department of Neighborhoods

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Meredith Sessions
Will Shrader
Lori Tang
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University of Washington

Manish Chalana, Urban Design and Planning
Jeff Hou, Landscape Architecture
Gundula Proksch, Architecture
Iain Robertston, Landscape Architecture
Ben Spencer, Landscape Architecture
MLA Capstone 2017 Studio

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URBAN AGRICULTURE TYPOLOGIES

University of Washington's Seattle Youth Garden Works Urban Farm

Image: Julie Johnson

PERMACULTURE: PRINCIPLES AND PRACTICES

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URBAN AGRICULTURE TYPOLOGIES | SYSTEMS

PERMACULTURE: Addresses the development of agricultural ecosystems intended to be sustainable and self-sufficient. Permaculture is a creative design process based on whole-systems thinking informed by ethics and design principles that feature on the site. This approach guides us to mimic the patterns and relationships we can find in nature and can be applied to all aspects of human habitation, from agriculture to ecological building, from appropriate technology to education and even economics. The techniques and strategies used to apply these principles vary widely depending on the location, climatic conditions and resources that are available. The methods may differ, but the foundations to this holistic approach remain constant.

Hugelkulture: Utilized raised beds and woody material to provide nutrients and moisture retention for growing plant s and developing micro-ecosystems. As the years pass, the organic material degrades and the soil become rich with nutrients.

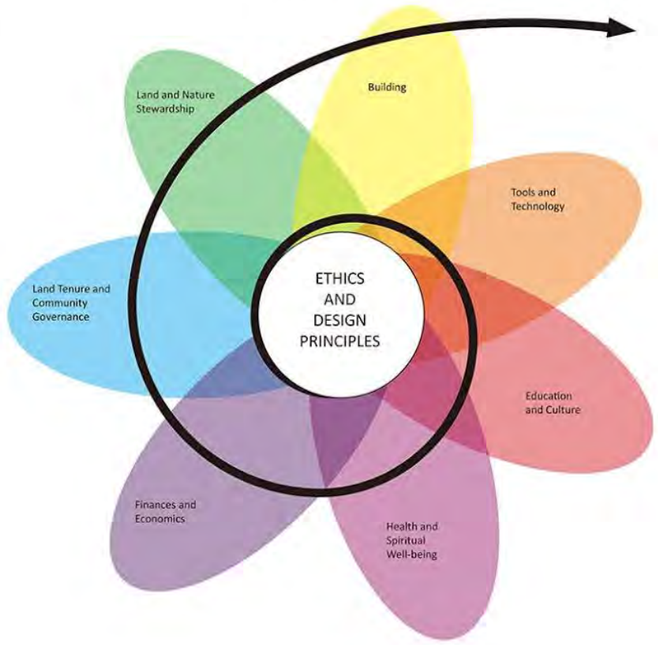
images courtesy Paul Wheaton / RichSoil.com

Herb Spiral: The spiral creates many micro-climates from the center at the top to the ground; some parts will get more sun and some more shade; some areas in the more raised parts drain better and the lower areas retain more moisture. Ideal size is about 2 meters wide and high can vary, but consider runoff. A pond at the base of the spiral can provide increased habitat.

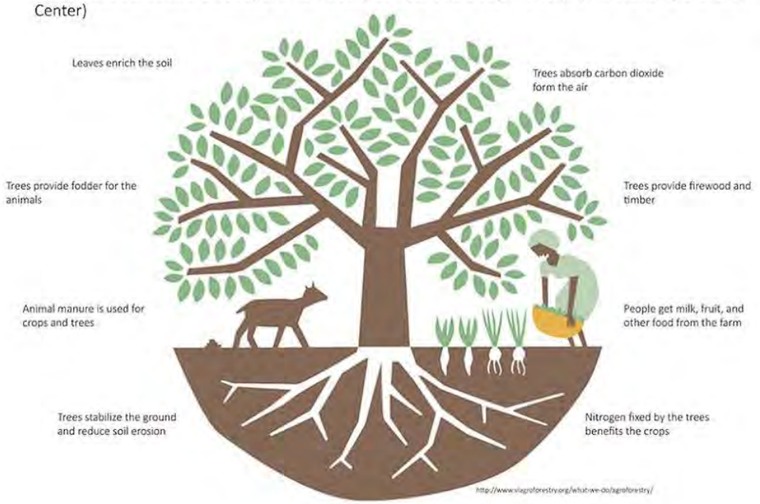
http://myurbangardener.com/herbspiral.html

http://gardeningliving.org/build-your-own-herb-spiral-zagorska-bodyzare-oasis/

PERMACULTURE ELEMENTS



Agroforestry: "Land-use systems and practices in which woody perennials are deliberately integrated with crops and/or animals on the same land management unit. The integration can be either in a spatial mixture or in a temporal sequence. There are normally both ecological and economic interactions between the woody and non-woody components on agroforesty." (The World Agroforestry Center)



http://www.viagroforestry.org/what-we-do/agroforestry/

LAND AND NATURE STEWARDSHIP

- Bio-intensive gardening
- Forest gardening
- Seed saving
- Organic Agriculture
- Biodynamics
- Natural Farming
- Water Harvesting
- Holistic Rangeland Management
- Natural Sequence Farming
- Agroforestry
- Nature-based Forestry
- Integrated Aquaculture
- Wild Harvesting and Hunting
- Gleaning

HEALTH AND SPIRITUAL WELL-BEING

- Home Birth and Breast Feeding
- Complementary and Holistic Medicine
- Yoga, Tai Chi and Other Body/Mind/Spirit Disciplines
- Spirit of Place, Indigenous Cultural Revival
- Dying with Dignity

BUILDING

- Passive Solar Design
- Natural Construction Materials
- Water Harvesting and Waste Reuse
- Biotechture
- Earth Shelter Construction
- Natural Disaster Resistant Construction
- Owner Building
- Pattern Language

FINANCES AND ECONOMICS

- Local and Regional Currencies
- Carpooling, Ride Sharing
- Ethical Investment and Fair Trade
- Farmers Market and Community Supported Agriculture
- WWOOFing and Similar Networks
- Tradable Energy Quotas
- Life Cycle Analysis and Energy Accounting

TOOLS AND TECHNOLOGY

- Reuse and Creative Recycling
- Hand Tools
- Bicycles and Electric Bikes
- Efficient and Low Pollution Wood Stoves
- Fuels from Organic Waste
- Wood Gasification
- Bio-char from forest wastes
- Co-generation
- Micro-hydro and Small Scale Wind
- Grid-tied Renewable Power Generation
- Energy Storage
- Transition Engineering

LAND TENURE/COMMUNE GOVERN

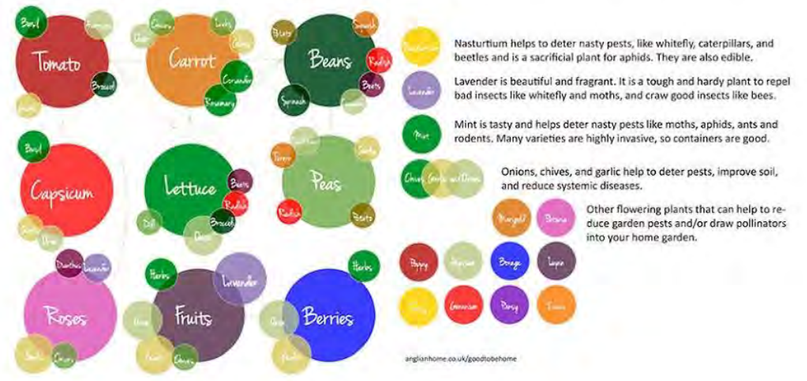
- Cooperatives and Body Corporates
- Co-housing and Eco-villages
- Native Title and Traditional Use Rights
- Open Space Technology and Consensus Decision Making

countrygardenfarms.com

EDUCATION AND CULTURE

- Home Schooling
- Waldorf Education
- Participatory Arts and Music
- Social Ecology
- Action Research
- Transition Culture

Biointensive Farming: Most life in nature occurs at the interface of soil, water, air, and sun. This practice of soil preparation practices create growing beds with more surface area to maximize the effect of nature's life processes. Double-dug beds, with soil loosened to a depth of 24 inches, aerate the soil, facilitate root growth, and improve water retention. The health and vigor of the soil are maintained through the use of compost. Close plant spacing is used to protect soil microorganisms, reduce water loss, and maximize yields, Companion planing facilitates the optimal use of nutrients, light and water, encourages beneficial insects and creates a vibrant mini-ecosystem within the garden, open pollinated seeds also helps develop diversity and acclimatized cultivators



anglianhome.co.uk/goodtobehome

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AARON PARKER | 4/10/2017

WATER AND IRRIGATION APPROACHES

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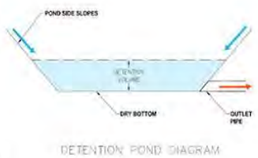
URBAN AGRICULTURE TYPOLOGIES | SYSTEMS

1.STORMWATER HARVESTING

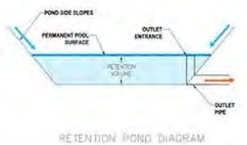
Stormwater harvesting system consists of collecting, delivering and resuing. When there is too much water, it will be captured in detention or retention wetlands, which may contain a cistern underground for overflow and reuse.

[Big Scale Intervention]
· DETENTION: provides only flood control with dry ponds. The pond is intended to drain the stormwater within a period to make the volume available for the next storm event.

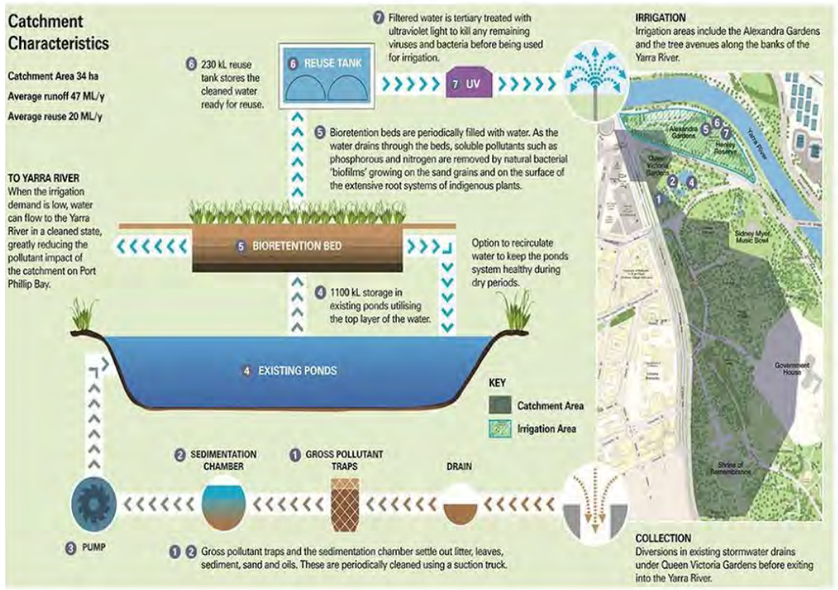
· RETENTION: holds a permanent pool of water and are referred to as wet ponds. Usually a retention pond is constructed because of a high groundwater table (in other words, the groundwater is near the surface of the earth).



DETENTION POND DIAGRAM



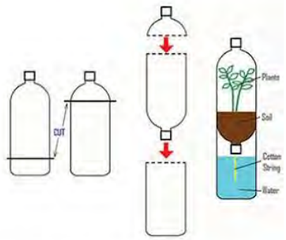
RETENTION POND DIAGRAM



[Small Scale Intervention]

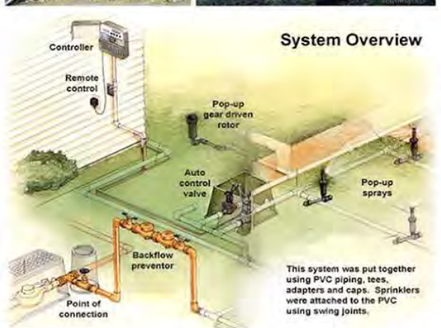
2.IRRIGATION SYSTEM FOR CONTAINERS

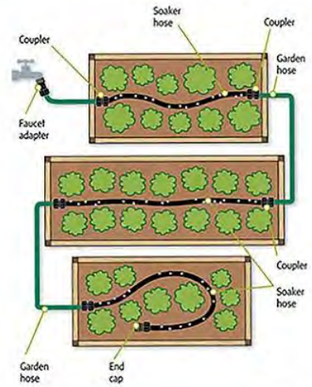
Poor drainage will slowly kill the plants. Usually one watering per day is usually adequate. Self-watering continers is the easier way to keep the soil moist. They have a reservoir at the bottom and the moisture wicks up into the soil. Some of these pots only need watering once a week or even once every two weeks and your plants stay healthy and strong. It is a great solution. Mulches can also be placed on top of the soil mix to reduce water loss.



[Small Intervention]Self-water small containers could be made with recycled bottles. It can be designed as gardening holders or vertical green walls.

3.FOR IN-GROUND FIELD





[Main Approaches]
OPEN TRENCH: is the cheapest way to irrigate the garden, but it will evaporate extremlly and waste too much water.

DRIP IRRIGATION: use pipes and sprinklers to water the vegetation with time control.

UNDERGROUND IRRIGATION: helps deliver water immediately to the depth whrere the plants grow. It's no water loss because all the water reaches the roots.

4.FOR RAISED BEDS

Each bed has the drip irrigation delivered from an in-ground system that was installed for this garden before the soil was added to the beds. For maximum efficiency and to minimize water use, the irrigation is on a solar-powered, locally monitored in real-time, which overrides the programs if conditions don't require supplemental irrigation.

SOURCES
1.http://urbanwater.melbourne.vic.gov.au/tours-videos/take-a-self-guided-tour/self-guided-tour-stormwater-harvesting-at-queen-victoria-and-alexandra-gardens/
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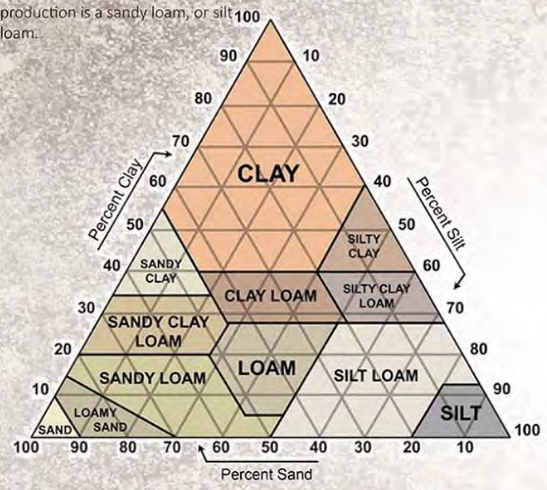
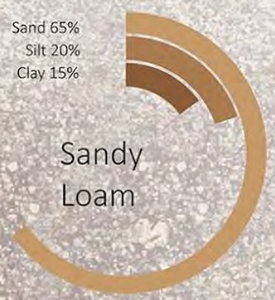
HEALTHY SOILS

Soil is so much more then dirt! The key to happy plants is healthy soil, and a lot more goes into it then you might think. Soil provides plants with stability, it is the source by which most plants get their water, air and nutrients. Different plants have different plants have different soil requirements, for our purposes we will focus on what soil grows the best fruits and vegetables.

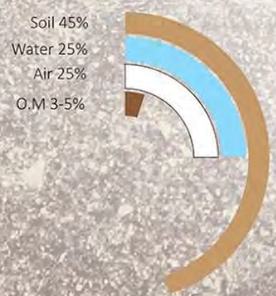
Soil Texture and Composition

The preferred soil texture for food production is a sandy loam, or silt loam.





Crops grow best in soils which are well drained, deep, have a good water and nutrient holding capacity, and are high in organic matter. The soils should also be uniform and free of compaction layers.



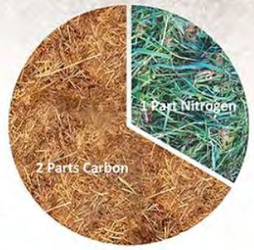
Material Recycling and breakdown

Composting

For best results, there should be 2 parts carbon and one part nitrogen for compost piles.

Carbon Materials: Dried leaves, straw, nut shells, woody materials, newspaper, sawdust.

Nitrogen Materials: Food scarps, grass clippings, coffee grounds, plants, manure, bread



Hot vs. Cold

Hot composting takes a less amount of time and can kill pathogens and diseases, and prevent weed seeds form germinating. It however requires more dedication and expertise.

Cold composting is much easier, you simply collect your waste and put it in a pile. Weed seeds/flowers and plants with diseases should not be compost using this method however because the temperatures do not reach a level to where they will be killed off.

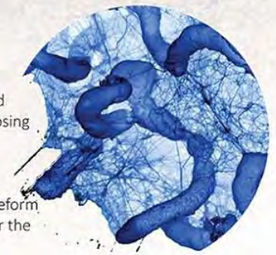
	Clayey	Sandy
Water holding capacity	high	low
Nutrient holding capacity	high	low
Compaction potential	high	lower
Crusts	yes	No/sometimes
Drainage	slow	fast
Salinity build-up	yes	seldom
Warming in spring	slow	fast

Source: Whiting, D., Card, A., Wilson, C., Moravec, C. Reeder, J., October 2014. Colorado State University Extension: CMG Garden Notes #213, Managing Soil Tilth: Texture, Structure and Pore Space

Soil Microbes

Microbes are tiny creatures that live in the ground and are responsible for decomposing organic matter and recycling nutrients.

Some microbes from symbolic relationships with plants and preform functions like fixing nitrogen for the plant.



Worm Bins

Worm bins are essential a living compost bin- and everyone wins. Worms are provided with food via food scraps and we in turn receive nutrient rich soil (vermicompost/vermiculite). When using this method only raw fruits and veggies should be composted, other foods attract pests and take a long time to break down.

Soil Testing

A soil test will determine the pH, lime index, cation (positively charged nutrients) exchange capacity, soluble salts, available phosphorous, exchangeable potassium and the amount of organic matter in the soil.

Soil tests are unreliable when determining the amount of available nitrogen, as levels vary greatly.

Results will show what fertilizers need to be used and may determine which crops should/can be grown.

Nutrients and Fertilizers

Primary Nutrients/ Marconutrients

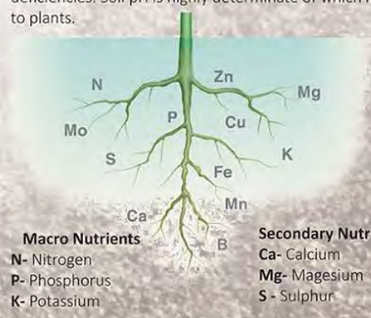
Nitrogen is available to plants in the form nitrate (NO_3^-) and ammonium (NH_4^+). Nitr helps plants with vegetative growth, it is also a vital part of protoplasm, chlorophyll molecules, nucleic acids.

Phosphorus is available to plants in the forms of phosphate (PO_4^{3-}). Phosphorus helps the plant preform function like cellular metabolism, and the storage and transfer of energy, it is vital to the formation of roots. Phosphorus is immobile in the soil and is often applied at the time of planting. This nutrient is especially important for fruit production and flowering plants.

Potassium (K^+) becomes available to plants as soil parent material weathers. It is important in forming and translocating carbohydrates, this nutrient is especially important for root and tuber plants like potatoes. It also helps plants resist disease, in cell division and water relations (open and close stomates). Potassium can increase the size and amount of fruits produced and is important for plants with rigid stems like chard, celery and rhubarb.

Secondary Nutrients and Micronutrients.

Secondary Nutrients include calcium, magnesium and sulfur. Deficients in these nutrients are not as likely as with the primary nutrients. Calcium is normally plentiful in soils, it is responsible in maintaining the structure of membranes and cell walls, very important for plants like tomatoes. Calcium disorders often come when plants are not watered regularly. Magnesium can be deficient in acidic sandy soils with heavy rainfall, Lime can help with magnesium and sulfur deficiencies. Soil pH is highly determinate of which micronutrients are available to plants.



Mirco Nutrients
Fe- Iron
B- Boron
Zn- Zinc
Cu- Copper
Mn- Manganese
Mo- Molybdenum

Macro Nutrients
N- Nitrogen
P- Phosphorus
K- Potassium

Secondary Nutrients
Ca- Calcium
Mg- Magesium
S - Sulphur

Sources:
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PIG IN THE CITY: URBAN ANIMAL HUSBANDRY

UW LARCH 503 COMMUNITY DESIGN STUDIO
URBAN AGRICULTURE TYPOLOGIES | SYSTEMS

SEATTLE REQUIREMENTS

Goats: Only mini, dwarf, or pygmy are allowed.. Goats must be de-horned, and male goats must be neutered (stinky!)

Pigs: In no case is more than 1 mini potbelly pig allowed. Mini potbelly pigs may be no greater than 22 in height at the shoulder or no more than 150 lbs.

Rabbits: Up to three small animals (this includes cats, dogs, rabbits, etc) are allowed accessory to each dwelling unit under 20,000 sq. ft. On lots 20,000 sq. ft. or more, four small animals are allowed. One additional small animal is permitted for every 5,000 sq. ft. of space above 20,000 sq. ft.

HONEY BEES

Angora (fiber)

Flemish Giant (meat)

Fiber (Pygora goats)

Food (Nigerian Dwarf Goats)

Weed Control

Many housing options

GOATS + PIGS + RABBITS

http://www.sustainablebainbridge.org/scotchbroom/goats/

GOATS and CHICKENS can cohabitate well together, with proper accommodations (goats must not access chicken feed).

Goats keep down weeds in the run.

Chicken clean up goat parasites.

http://www.seattlekilth.org/learn/resources-1/city-chickens/citychickensregulations
www.fao.org/docrep/008/y5169e/y5169e05.htm
http://www.backyardchickens.com/products/indian-runner
https://www.theguardian.com/lifeandstyle/gardening-blog/2013/may/08/ducks
http://www.betterhensandgardens.com/intricacies-keeping-goats-chickens-yard/
http://webecoist.momtastic.com/2013/03/08/backyard-beekeeping-12-sweet-hive-designs/

PSBA

HOW CAN I CREATE A FRIENDLY SPACE FOR HONEY BEES?

PESTICIDE FREE ZONE

- Create a water source
- Plant pollinator-friendly plants
- Encourage others to plant bee-friendly and to avoid pesticides

MANY URBAN HIVE DESIGN OPTIONS:

"Elevator B": Glass skyscraper

"BuBees Beehive by Steve Steere": Mimics natural bee habitat; allows for easy viewing

"To Be": Mounts to wall; space efficient

"Sky Hive": Runs up and down poll; keeps out of reach from visitors and is an efficient use of space.

DYI Barrel Beehive: Simple and cheap. Can substitute barrel for straw, or wood top for Plexiglas.

Rowan Dunford's Urban Beehive: Stackable, safe, scalable size.

"Bees in a Bell Jar": Although not a hive, can set up comb foundation inside jar and place on top of existing hive. Bees can inhabit and provide for viewing.

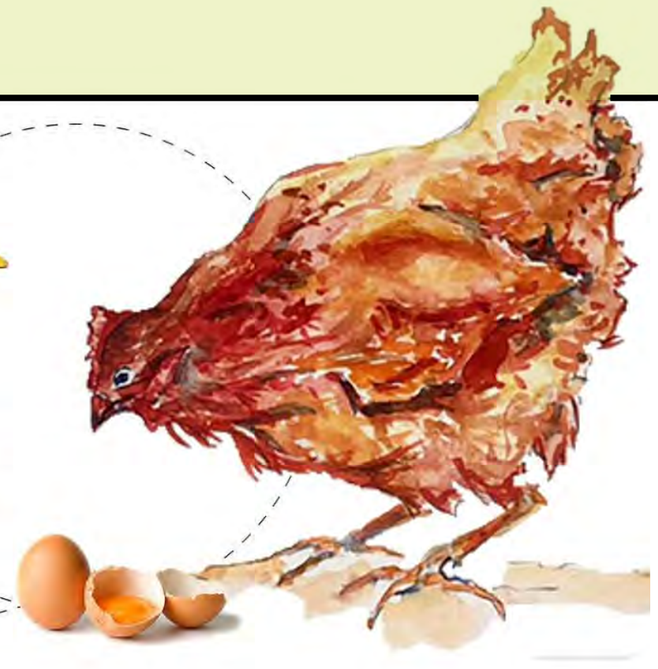
ABOVE IMAGES: http://webecoist.momtastic.com/2013/03/08/backyard-beekeeping-12-sweet-hive-designs/

SEATTLE REQUIREMENTS

Bees are allowed outright when registered with the State Department of Agriculture.

No more than four hives, each with one swarm, are allowed on lots less than 10,000 sq. ft. Hives may not be located within 25 ft. of any lot line, except when hives are 8 ft. or more above or below the grade immediately adjacent to the lot on which they are located

FOWL



DUCKS!

Indian Runner ducks are land ducks that may co-inhabit with chickens.

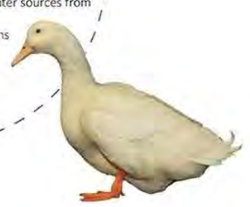
- Egg-celent egg layers
- Flightless
- Good foragers + eat slugs and snails

Keep in Mind...

- Will quickly soil water; require separate water sources from chickens
- Female ducks get along best with chickens

MEAT BREEDS:

- Roens, Pekins, Aylesburys



WHAT DO MY CHICKENS NEED?

- **SPACE (reduces stress, disease, fighting)**
  Floor Space (per bird): 3-4 sq ft. Layer; 4-5 sq ft. Meat
  Outdoor Space (per bird): 10 sq. ft.
- **VENTILATION + LIGHT**
  Adjustable ventilation near ceiling of
  No drafts in cold weather
- **NEST BOXES**
  1 Nest Box per 4 birds
  Must be kept clean, bedded, + easy access from a roost
- **ROOSTS**
  Perch Space (per bird): 15 cm Layer; 25 cm Meat
- **FEED AND WATER**
  Must be kept off the ground to prevent contamination
- **INVADER PROTECTION**
  Metal lining to prevent rodent invasion
  Chicken-wire to prevent opossum, weasel, and bird invasion

http://www.tractorsupply.com/out-here_issues_2008-spring_build-a-chicken-coop

10'

SEATTLE REQUIREMENTS

Up to 8 domestic fowl may be kept on any lot

On lots greater than 10,000 sq. ft. that include a community garden or an urban farm, one additional fowl is permitted for every 1,000 sq. ft. of lot over 10,000 sq. ft.

No roosters! (Noisy)

Structures housing fowl must be located at least 10 feet away from any residential structure on an adjacent lot

POLLINATORS + CLIMATE AND MICROCLIMATE CONSIDERATIONS AND STRATEGIES

UW LARCH 503 COMMUNITY DESIGN STUDIO

Bees

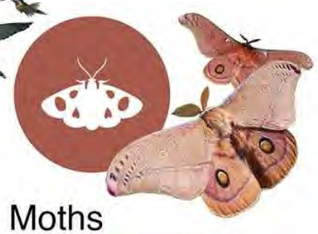
Bees are well documented pollinators in the natural and agricultural systems of the Americ a. A wide range of crops including pumpkins, squash, broccoli, and cabbage are just a few plants that benefit from bee pollinators.

Butterflies

A diverse group of butterflies are present in garden areas and woodland edges. Numerous trees, shrubs, and herbaceous plants support butterfly populations. These insects tend to be eye-catching, as are the flowers that attract them.

Birds

Hummingbirds are the primary birds which play a role in pollination in North America. Their long beaks and tongues draw nectar from tubular flowers.



Moths

Moths, generally less colorful than butterflies, also play a role in pollination. They are attracted to flowers that are strongly sweet smelling, open in late afternoon or night, and are typically white or pale colored.

Bats

The long-nosed bats' head shape and long tongue allows it to delve into flower blossoms and extract both pollen and nectar. Though bats in the Seattle are not pollinators, bats play an important role in pollination in the southwest where they feed on agave and cactus.

Flies

It may be hard to imagine why one would want to attract flies to the garden. However, like beetles, the number of fly species and the fact that flies are generalist pollinators, should encourage us all to leave those flies alone and let them do their job as pollinators.

Beetles

Beetle pollinated plants tend to be large, strong scented flowers with their sexual organs exposed. beetles do play a role in pollination. Some have a bad reputation because they can leave a mess behind, damaging plant parts that they eat.

Wind

Wind actually is one of the pollinators that usually ignore in the categories. Yet many plants do depend on wind to help them pollinate their pollen.

Increase Flower Diversity

- Support native flowers and shrubs that bloom all season.
- Rest areas near the garden or farm can be ideal sites for pollinator gardens.
- Plant wildflower or gardens along boulevard or medians.
- Highlight habitats and gardens with signage.

Provide Nest Sites

- Retain woody shrubs with pithy stems for nesting.
- Retain trees that provide pollen, nectar and shelter for pollinators.
- Provide access to soil surface for nesting.
- Retain some branches or logs for nesting resources.
- Add nesting sites like nesting blocks or bee box.

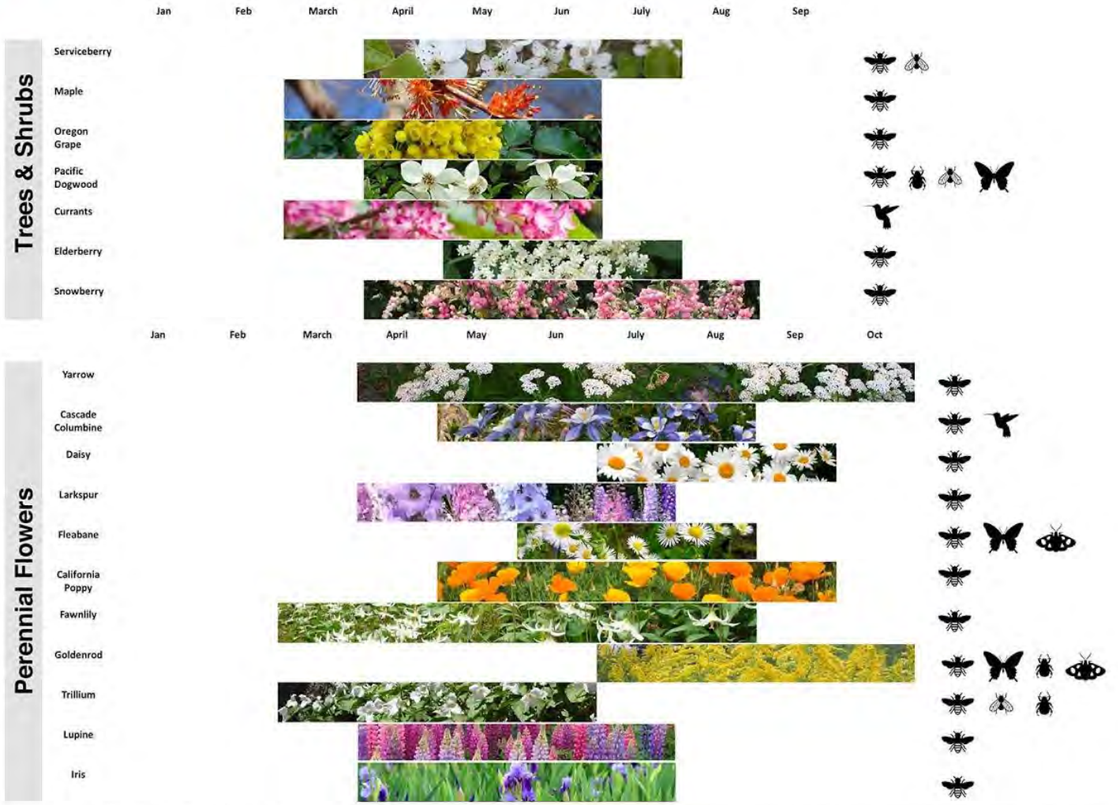
Reduce Impact of Mowing

- Retain woody shrubs with pithy stems for nesting.

Avoid Herbicides and Insecticides

- Minimize herbicide application to enhance floral resources.
- Minimize pesticide use beside pollinator habitats.

http://pollinator.org/discoveryposter2013
http://pollinator.org
https://www.theatlantic.com



PLANTS FOR POLLINATORS

POLLINATORS + CLIMATE AND MICROCLIMATE CONSIDERATIONS AND STRATEGIES

UW LARCH 503 COMMUNITY DESIGN STUDIO
STRUCTURES FOR POLLINATORS

Hummingbird Feeder

Bat Box

Bee Box

Butterfly Feeding Table

Pollinator Patch

Bug Hotel

INFRASTRUCTURES TO EXTEND GROWING SEASON

Rowcover Fabric

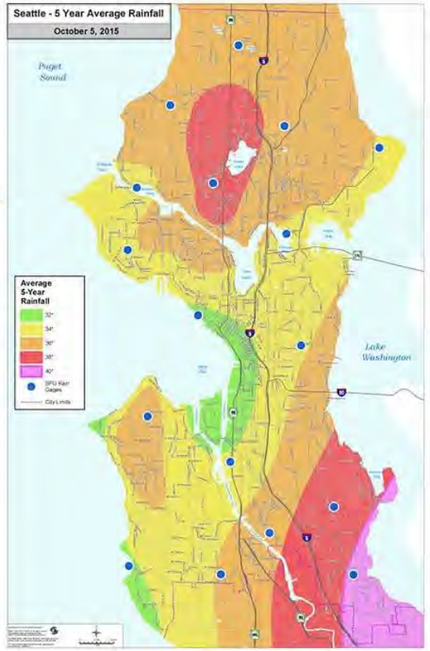
Cloches

Cold Frames

Hoop Houses

Greenhouses

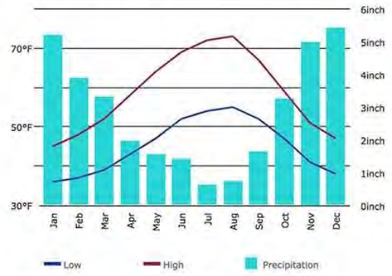
PVC Hoop Tunnels



CLIMATE	Seattle, Washington	United States
Rainfall (in.)	36.7562	39.2
Snowfall (in.)	5.01267	25.8
Precipitation Days	92.1607	102
Sunny Days	152	205
Avg. July High (°F)	74.7614	86.1
Avg. Jan. Low (°F)	36.9824	22.6
UV Index	2.6	4.3

Updated: December, 2016

Washington Climate Chart



The rainiest neighborhood: Rainier Beach (in southern Seattle). 44.9 inches per year over the past 5 years.
The driest neighborhood: Belltown. 37.6 inches a year over the past 5 years.

Washington Hardiness Zones

A fairly mild climate which falls into the hardiness zone, 8b. Hardiness zones are classifications based on average temperatures which tell us what types of plants are capable of surviving in a particular region. Seattle's 8b classification is based on average low temperatures of 15-20 degrees F, meaning that it doesn't get much colder than that in this area. Below is a map of the hardiness zones for Washington State.

http://www.bestplaces.net/climate/city/washington/seattle
http://realestategals.com/rain-rain-come-or-stay/

Soil
Microclimates

- pH
- Soil texture
- Soil composition
- Nutrients
- Drainage

Water
Microclimates

- Soil drainage
- Humidity
- Grading and runoff
- Shelter from (or exposure to) rain
- Exposure to drying wind or sun
- Location of water table, surface water, and streams
- Competing plants that might hog the available water

Besides, berms and raised beds can be used to warm the soil and allow for earlier planting, but they need to be monitored during drought. Windbreaks, shade trees, brick and stonework, and water features all have an impact on the surrounding area and can be incorporated into your garden design not only as decorative features but as a way to grow the plants you want.

Sun & Warmth
Microclimates

- Shade from trees and buildings can reduce light in part of the yard.
- On a sloping lot, higher elevations will be warmer than lower ones.
- The direction of lot is oriented makes a difference, with south-facing yards receiving more intense sunshine than north-facing yards (in the northern hemisphere). Eastern exposures are perfect for plants needing partial sun, while western exposures can be harsh and windy.

Weather
Microclimates

- Cold Traps:Low-lying areas with poor circulation frequently collect cold air and dampness, particularly if the soil is poorly draining. These areas tend to be the first to frost, so the best way to find them is to note patches of frost on fall and spring mornings.
- Heat Sinks: Pavement, stone, and buildings can absorb heat that radiates to surrounding areas. Notice the drier soil, or spindly plants with heat damage. Plantings around heat sinks need to be heat and drought tolerant.
- Seasonal Variations: Deciduous trees can create sunny areas in winter and shady areas in summer. Northern exposures can be shadier during the winter, and southern exposures can be downright ovens in summer.

https://www.todayshomeowner.com

IN-GROUND PLANTING TECHNIQUES | ANNUALS + PERENNIALS

UW LARCH 503 COMMUNITY DESIGN STUDIO
URBAN AGRICULTURE TYPOLOGIES | SYSTEMS

ANNUALS + PERENNIALS | In nature, edible plants are usually found secluded by species. In fact, they thrive when surrounded by a variety of other edible and ornamental plants as well as a healthy mix of insects and animals. Gardening can use these relationships to create more productive and aesthetically pleasing arrangements.

ANNUALS + PERENNIALS BASICS

WHAT IS AN ANNUAL?

Plants that perform their entire life cycle from seed to flower to seed within a single growing season. All roots, stems and leaves of the plant die annually. Only the dormant seed bridges the gap between one generation and the next.

http://www.melsoutdoorservices.com/faqs/

WHAT IS A PERENNIAL?

Plants that persist for many growing seasons. Generally the top portion of the plant dies back each winter and regrows the following spring.

http://www.heirloom-organics.com/guide/ss2/lifecycle.gif

IN GROUND TECHNIQUES

NO-TILL AGRICULTURE

Just like the name suggests, no-till agriculture does not require tilling the soil between harvests. This method increases organic material and water intake while making more resilient, erosion resistant soils.


http://feedingtheworldapes11.weebly.com/no-till-farming.html

INTEGRATED PEST MANAGEMENT (IPM)

Unlike typical practices that rely on pesticides, IPM seeks to remove shelter, food, and water that attracts the pests in the first place. By tracking and using methods to capture or repel pests, this system seeks to greatly reduce the number of pesticides required.

http://www.aspenpitkin.com/Departments/Environmental-Health/Pesticides/Applicator-Information/Integrated-Pest-Mgmt/

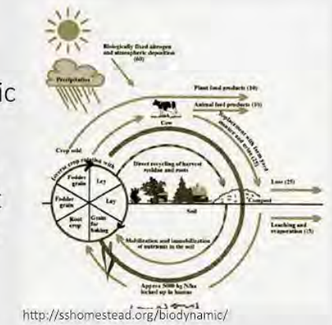
PERMACULTURE

A system that utilizes natural processes and patterns in the local ecosystems. Besides focusing on the natural world, it also pulls from social design principles. Its ideal of working with nature has expanded beyond just growing food.

http://www.kinshipurbanfarm.com

BIODYNAMIC AGRICULTURE

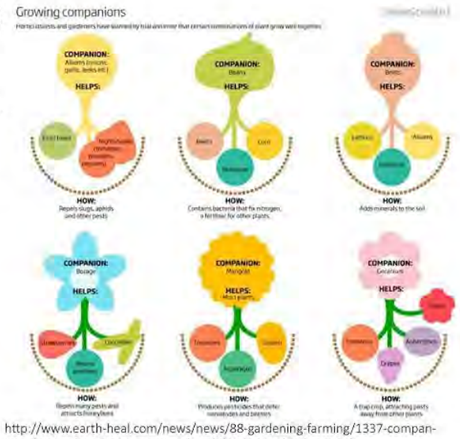
Building off of the permaculture and organic farming techniques, biodynamic agriculture takes it a step further by incorporating solar and lunar patterns to determine best planting methods. It also uses herbal and mineral additives to bolster soil health.


http://sshomestead.org/biodynamic/

COMBINING ANNUALS + PERENNIALS

COMPANION PLANTS

Plants don't live in homogeneous societies, rather they create symbiotic relationships with others around them. Utilizing these benefits can lead to a healthier, more productive garden.

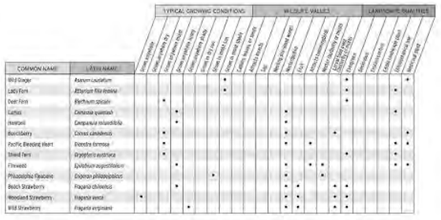


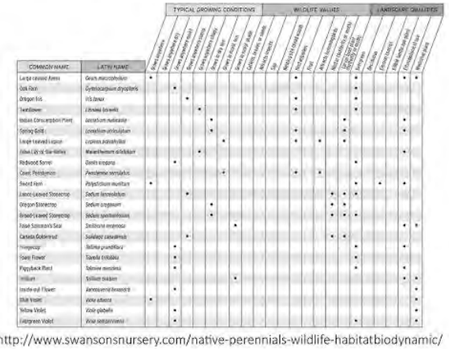
http://www.earth-heal.com/news/news/88-gardening-farming/1337-companion-planting.htmlnative-perennials-wildlife-habitatbiodynamic/

ADDING WILDLIFE AND AESTHETIC VALUES

Production is typically the primary concern of edible gardens but this can and should be layered with plants that create habitat for local wildlife/insects.

Aesthetics is another aspect that shouldn't be ignored. Designing for beauty year around can make a garden into a consistent amenity rather than a dirt patch during winter.





http://www.swansonsnursery.com/native-perennials-wildlife-habitatbiodynamic/

SOURCES:
http://aggie-horticulture.tamu.edu/wildseed/growing/annual.html
http://www.fao.org/docrep/016/ap289e/ap289e00.pdf
https://www.epa.gov/managing-pests-schools/introduction-integrated-pest-management
http://www.mnn.com/eco-glossary/biodynamic

ANDREW BADGETT | SPRING 2017

RAISED BEDS AND CONTAINERS

UW LARCH 503 COMMUNITY DESIGN STUDIO
URBAN AGRICULTURE TYPOLOGIES | SYSTEMS

Raised beds have become very popular and almost all vegetables can be grown in containers. They can work well in urban spaces, especially where soil contamination is a concern, where digging into the ground isn't an option, or where people are especially picky about how a garden looks.
Raised beds are easy to work and often require less maintenance and container choices are limitless.

DESIGN APPROACHES

Height, Depth, Width

Raised beds can mean warmer, less compacted soil and a commensurate increase in soil quality with a just six-inch rise.
It's possible to increase soil depth without building the bed higher, by the technique known as "double digging." This technique lightens and aerates the lower layer of the soil, in essence giving your plants a deeper layer of topsoil in which to grow.
The width of a raised bed is a matter of comfort and preference. Four feet seems to have become the recommended standard, because most people can still weed and tend plants at a two-foot reach, but not much beyond.
Gardening from a wheelchair usually requires a higher but narrower bed.

Material

Used Railway Ties	Half Barrels (Whiskey or food storage)
Wooden Boards	
Concrete Blocks	Storage Containers
Retaining Wall Brick	5-Gallon Pails or Paint Buckets
Stone	Baskets
Bamboo	Wash Tubs
Hay Bales	Clay Pots
Timbers	Plastic Bags

Irrigation and Drainage

Soaker Hoses
Trenches
Enclosed Container
Soda Pop Drip Irrigation System

Site Selection

Considering Sun, Wind, Water, and Drainage of sites.

Path Width

4' wide beds, with paths of twenty to 24'' between them, get the most growing area to navigate.

Soil

Soil depth requirements
While raised beds are commonly 8"-12" tall, some raised beds have sides which are 3' or higher. These taller beds enable deeper rooted crops to be planted even if there is no soil beneath the bed, but drainage must be provided by blocking the bed up 1'' or so, or drilling drain holes near the bottom of the bed sides.

Shallow Rooting 12" - 18"	Medium Rooting 18" - 24"	Deep Rooting 24" - 36"+
Arugula	Beans, dry	Artichokes
Broccoli	Beans, pole	Asparagus
Brussels sprouts	Beans, snap	Beans, lima
Cabbage	Beets	Okra
Cauliflower	Canteloupe	Parsnips
Celery	Carrots	Pumpkins
Chinese cabbage	Chard	Rhubarb
Corn	Cucumber	Squash, winter
Endive	Eggplant	Sweet potatoes
Garlic	Kale	Tomatoes
Kohlrabi, Bok Choy	Peas	Watermelon
Lettuce	Peppers	
Onions, Leeks, Chives	Rutabagas	
Potatoes	Squash, summer	
Radishes	Turnips	

BENEFITS AND LIMITATIONS

Benefits

- The garden looks neater. The walls keep soil in place, and pathways can be kept cleaner.
- They require less bending to work on the plants, but a 12 inch wall does not help much for us tall folk.
- They can be used in areas that have very poor soil, contaminated soil or no soil at all. Containers are small raised beds.
- They warm up quicker in spring, allowing earlier planting.
- They can be great for people with a disability.
- Different beds can hold different types of soil allowing you to match soil to crops.
- Drainage can be better in areas with very poor drainage, but raised beds can also cause drainage problems.
- Bottoms can be screened to keep gophers and voles out.
- Helps keep kids and pets from stepping onto plants.

Limitations

- You have to buy soil, unless you have high spots in your yard that you want lower.
- They cost money to build.
- Soil dries out much faster in summer.
- Requires more watering.
- Less sustainable since you need to buy and transport walls and soil.
- There is some concern about chemicals leaching from the material used to build the walls.
- Soil gets warmer, which is not good for roots, except in early spring.
- Perennials need to be hardier since a raised bed gets colder in winter.
- The rows between beds need to be wider if you plan to use a wheelbarrow with taller walls.
- Drip irrigation is more difficult to install.
- Soil cools down quicker in fall.

SOURCES :

http://gardeningsolutions.ifas.ufl.edu/
http://www.gardenfundamentals.com/
http://www.garden-planting-tips.com/
https://www.planetnatural.com/
http://eartheasy.com/
http://veganslivingofftheland.blogspot.com/

AGRICULTURE TYPOLOGY: WALLS

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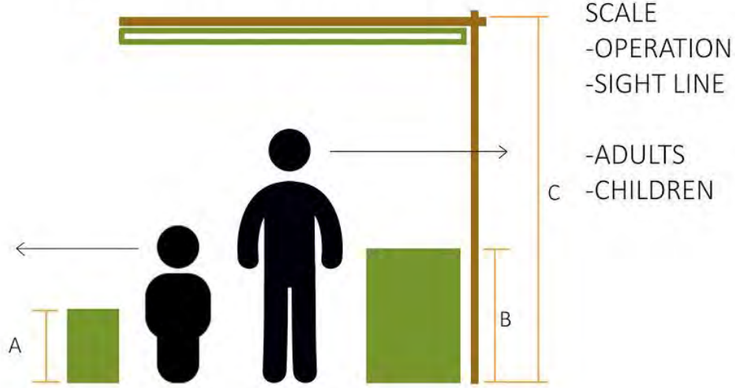
URBAN AGRICULTURE TYPOLOGIES | SYSTEMS



ESPALIER

Image:https://www.orangepippintrees.co.uk/articles/trained-fruit-trees

-DEFINITION
An espalier is a plant that has been trained to grow in a flat plane against a wall,fence, or trellis.
-SPECIES
https://en.wikipedia.org/wiki/Espalier#Species_choices
-TECHNIQUES OF MAKING ESPALIERS
https://deepgreenpermaculture.com/diy-instructions/espalier-supporttrellis/

SUPPORTING STRUCTURES OF VINE& SHRUBS

Arches

Flat Trellises

Privacy

Image:http://www.botanical-journeys-plant-guides.com/clematis-varieties.html

Cages and Ladders

Image:http://www.atlanticavenuegarden.com/tomato-cages-raleigh/

Arbors

Space

Obelisks, Tripods and Teepees

Focal Point

VERTICAL FARMING

DEFINITION
Vertical farming is the practice of producing food in vertically stacked layers, such as in a skyscraper, used warehouse, or shipping container. The modern ideas of vertical farming use indoor farming techniques and controlled-environment agriculture (CEA) technology, where all environmental factors can be controlled.

EXTRA ENERGY NEEDED
During the growing season, the sun shines on a vertical surface at an extreme angle such that much less light is available to crops than when they are planted on flat land. Therefore, supplemental light would be required in order to obtain economically viable yields. (Wikipedia)

-Other Species
-Slopes

SOURCES :
VERTICAL FARMING
https://en.wikipedia.org/wiki/Vertical_farming

VINES(LIGHT HEIGHT)
http://www.bhg.com/gardening/plant-dictionary/vine/
http://www.gardeners.com/how-to/trellis-supports-for-climbing-plants/5600.html

CANOPY: ORCHARD & FOOD FOREST

UW LARCH 503 COMMUNITY DESIGN STUDIO
URBAN AGRICULTURE TYPOLOGIES| SYSTEMS

Definition

An orchard or food forest is a gardening technique or land management system, which mimics a woodland ecosystem by substituting edible trees, shrubs, perennials and annuals. Fruit and nut trees make up the upper level, while berry shrubs, edible perennials and annuals make up the lower levels.

Canopy: In biology, the canopy is the aboveground portion of a plant community or crop, formed by the collection of individual plant crowns. In forest ecology, canopy also refers to the upper layer or habitat zone, formed by mature tree crowns and including other biological organisms (epiphytes, lianas, arboreal animals, etc.).

Central Principles & Feature

A Garden of Perennials

Layers of the Forest

Plants That Work Together

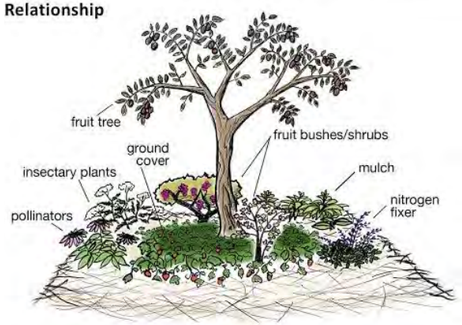
Choose a Forest Garden Strategy

Processes and Relationship

How we got started-----from Beacon Food Forest

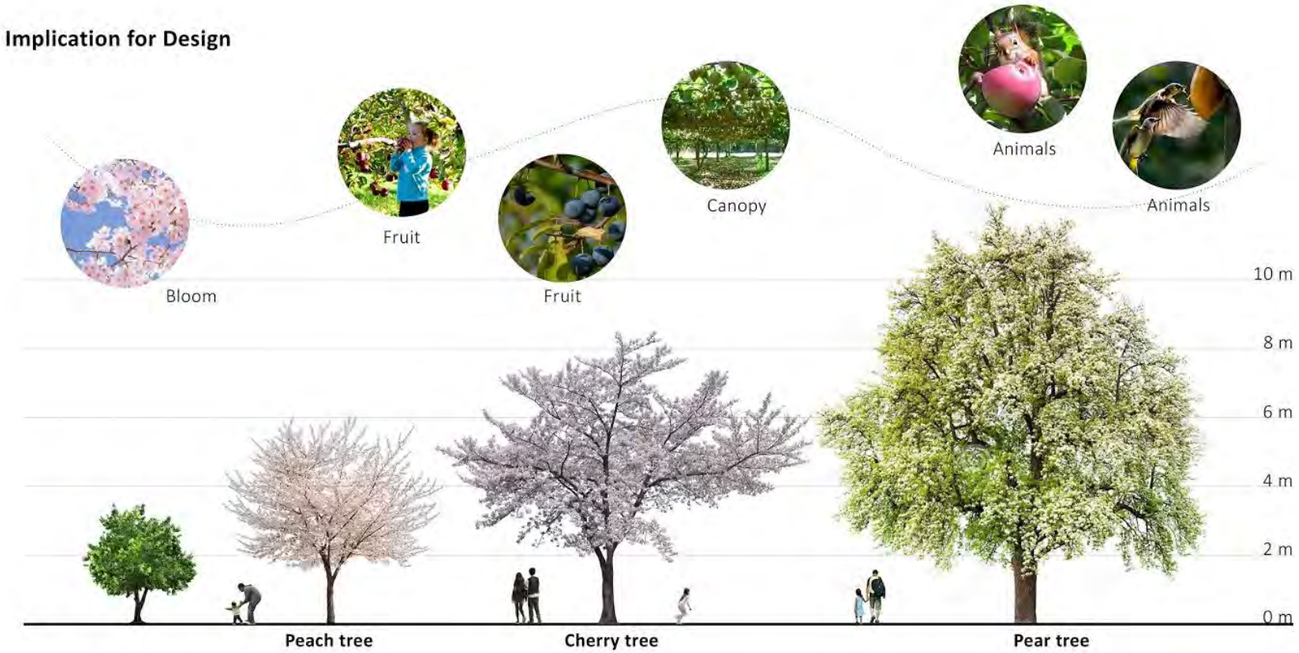
Steps	Permaculture Principles
Step 1: Find the land	Observe and Interact.
Step 2: Find a core group of dedicated believers.	Integrate rather than segregate.
Step 3: Introduce the BFF Concept to the Community.	Use and value diversity.
Step 4: Create a relationship with the landlord and begin negotiations.	Use and value renewable resources and services. Apply self regulation and accept feedback.
Step 5: Create leverage.	Creatively use and respond to change.
Step 6 : Continuous Outreach and Community Engagement.	Use edges and value the marginal.

Relationship



A fruit trees companions or 'guild' as called in permaculture help balance the trees needs, a miniature ecology.

Implication for Design



Precedent: Beacon Food Forest

The goal of the Beacon Food Forest is to bring the richly diverse community together by fostering a Permaculture Tree Guild approach to urban farming and land stewardship. By building a community around sharing food with the public we hope to be inclusive to all in need of food.

The Food Forest is set to include an Edible Arboretum with fruits gathered from regions around the world, a Berry Patch for canning, gleaning and picking, a Nut Grove with trees providing shade and sustenance, a Community Garden using the p-patch model for families to grow their own food, a Gathering Plaza for celebration and education, a Kid's Area for eduction and play and a Living Gateway to connect and serve as portals as you meander through the forest.

The Beacon Food Forest started in 2009 as a final design project for a permaculture design course. The 5+ acre site is located in the Beacon Hill neighborhood to the west of Jefferson Park, 2.5 miles from downtown Seattle. Phase One (1.75 acres) is complete, and we are now planning for Phase Two (1.75 acres).

SOURCES
http://beaconfoodforest.org/
http://www.ecologiadesign.com/
https://en.wikipedia.org/wiki/Canopy_(biology)

URBAN AGRICULTURE PRECEDENTS

Danny Woo Community Garden, located in Seattle's International

Image: Real Change News. http://realchangenews.org/2016/09/07/garden-rooted-history

WHICH URBAN AGRICULTURE PRECEDENTS DID WE STUDY?

1. Nathan Hale Horticulture Gardens and Greenhouse (Jane Addams Middle Schoo

2.Meadowbrook Community Garden and Orchards

3.Tilth Gardens--Good Shepherd Center Community Learning Garden + Children's Garden

4.UW Farm--Seattle Youth Garden Works Urban Farm

5.Alleycat Acres--24th & Main, 26th & Marion planting strips

6.Danny Woo Community Garden

7.Bradner Garden Park

8.Beacon Food Forest

9.Tilth Garden--Rainier Beach Learning Garden

10. Orca K-8 School Garden

11. Rainier Beach Urban Farm and Wetland

1. NATHAN HALE HORTICULTURE GARDENS + GREENHOUSE (JANE ADAMS MIDDLE SCHOOL)

Size: ¼ acre lot, 105’x30’ greenhouse

Type: **Educational Horticulture Garden and Urban Farm**

Harvest from greenhouse production and ground garden plots, and will sell the production to residents and raise money

- Raised garden bed hugelkultur
- Rainwater harvesting
- UW Botanic Garden participates in the Garden-based Restoration and Outreach Workshops

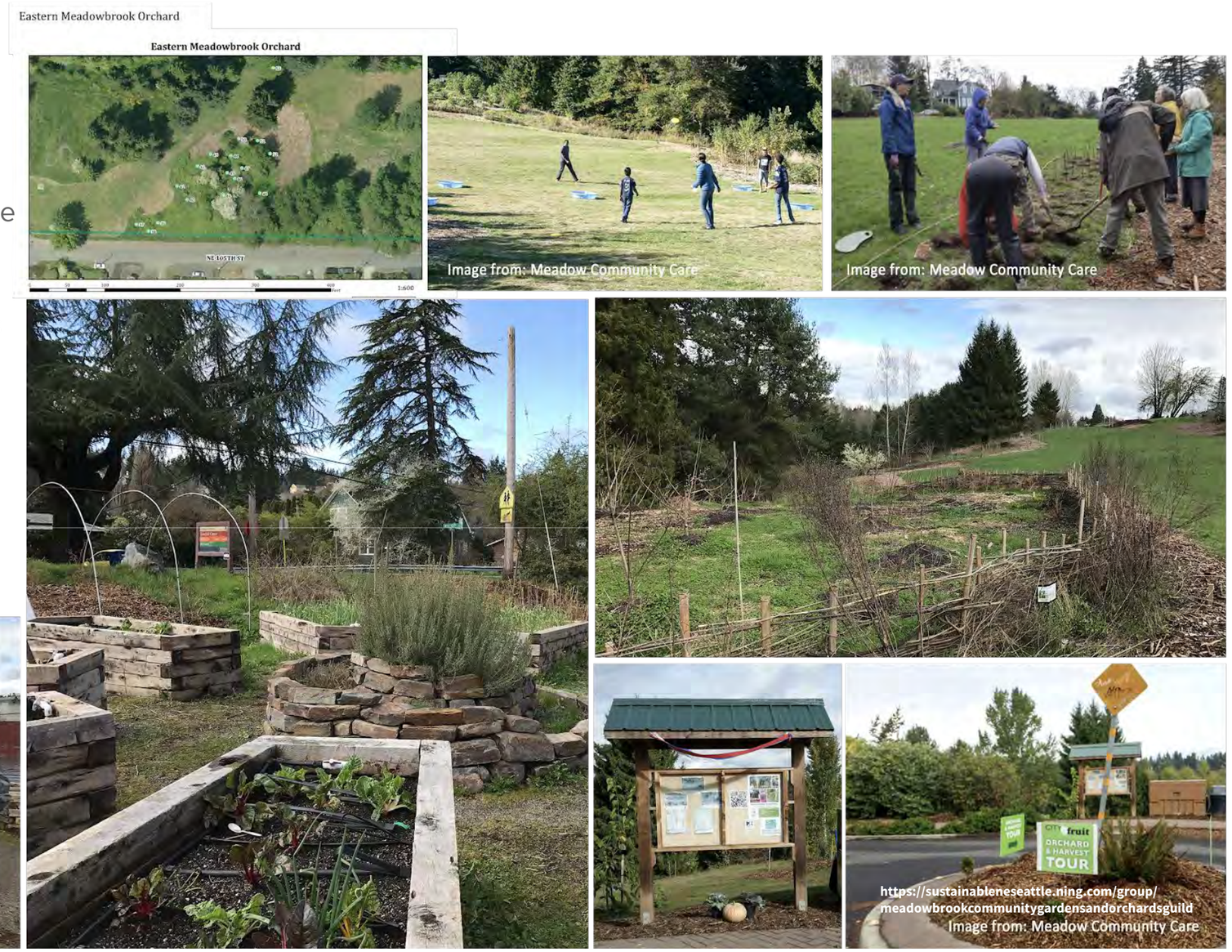
2. MEADOWBROOK COMMUNITY GARDEN + ORCHARDS

Size: 7 acres

Type: **Urban Food Gardening-Community Gardens**

maintenance by volunteers, the harvest will be donated to the Community Shelter Meal when available.

- permaculture practice: using wattle in wet ground as aesthetic fences ,edible hedge
- plant native bulb-blue camas (which was once a diet staple of early Americans, prior to European arrivals) to welcome neighborhood
- checkerboard pattern with donated bamboo posts
- City Fruit organization hosted the city-wide orchard tour



Top row and bottom right images from Meadowbrook Community Care
https://www.mc-care.org/mccare/

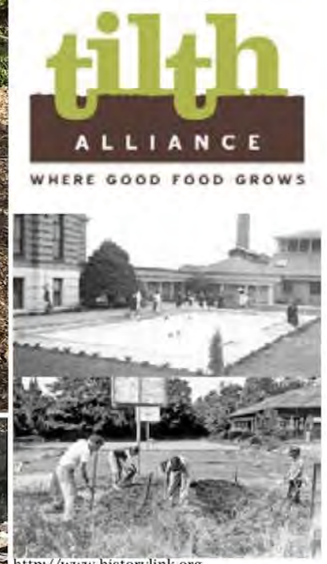
3. TILTH GARDENS: GOOD SHEPHERD CENTER COMMUNITY LEARNING GARDEN + CHILDREN'S GARDEN

Type: **Community Learning Garden & Children's Garden**

The garden is dedicated to teaching organic gardening and sustainable landscape techniques.

- Year-round gardening
- Fruit producing
- Permaculture design and rainwater harvesting
- Composting
- Native plants and soil building techniques

http://www.seattletilth.org/



http://www.historylink.org

http://www.seattletilth.org/

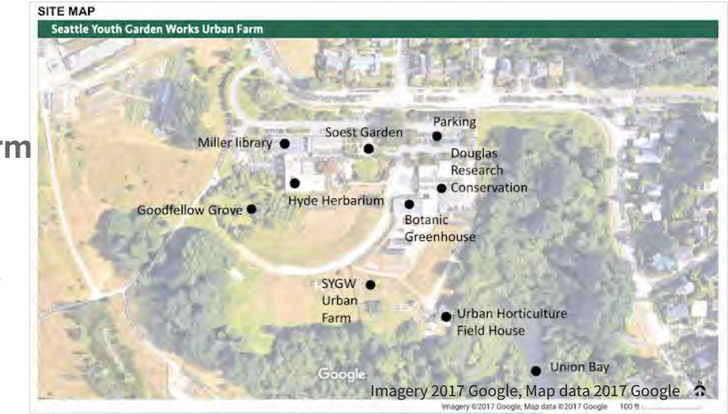
http://www.seattletilth.org/about

4. UW FARM: SEATTLE YOUTH GARDEN WORKS URBAN FARM

Size: 1.5 acre

Type: **Student-powered urban horticulture and urban farm**

The UW Farm Expansion is a project of the UW Student Farm in partnership with Youth Garden Works program by (non-profit organization). Food can be found in kitchens throughout the University of Washington campus



- Seattle Tilth program for homeless and underserved youth, participate in all aspects of a farm-to-market operation.
- ‘Farm to Table Dinner’ workshop on site
- Public art

5. ALLEYCAT ACRES: PLANTING STRIPS ON 24TH + MAIN ST AND 26TH + MARION ST

Type: **Community Garden**

Work with public spaces and private landowners to transform plots of land into community farms. It is a community drive project, no individual plots, serving the community nearby.

- Reconnect people, place, and produce by building a network of community run farms
- Linear raised bed along the street

(Source: https://www.google.com/maps)

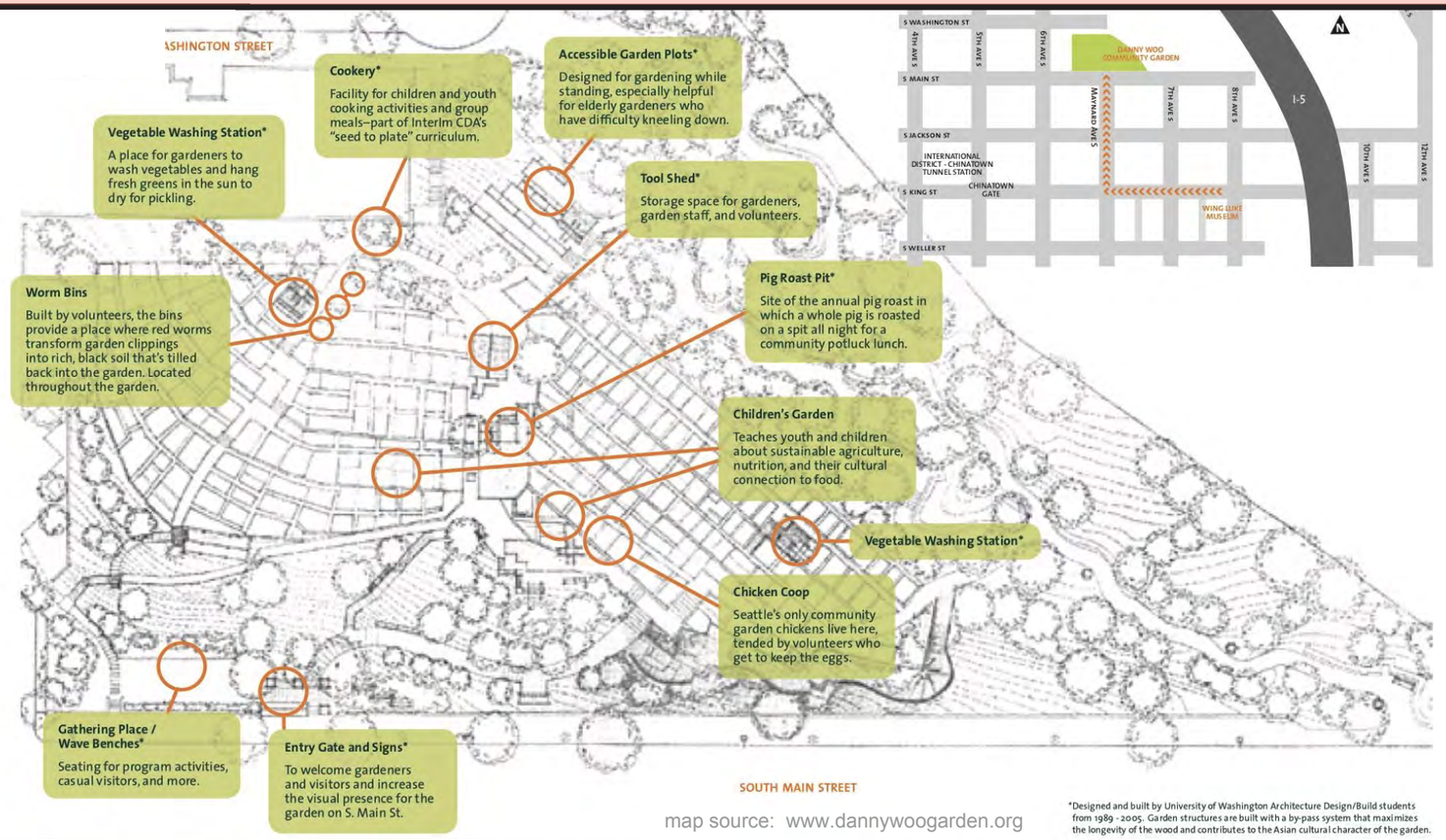
6. DANNY WOO COMMUNITY GARDEN

Size: 1.5 acre

Type: **Community Garden**

Community garden for elders making Chinatown International District as a cultural hub.

- Chicken House
- Fruits and vegetable producing
- Outdoor cookery
- Terrace farm
- Toolshelter
- Gathering space



map source: www.dannywoogarden.org

*Designed and built by University of Washington Architecture Design/Build students from 1989 - 2005. Garden structures are built with a by-pass system that maximizes the longevity of the wood and contributes to the Asian cultural character of the garden.

7. BRADNER GARDENS PARK

Size: 1.5 acre

Type: **: Community Garden P-patch**

The Seattle P-Patch Program established a community garden on the site in 1987 to provide gardening space for Mien immigrants from Laos

- year-round vegetable gardening
- raised beds,
- plants that attract beneficial insects, swale gardening
- soil building techniques, and water-wise drip irrigation.
- a bounty of art, creative arbors,
- a unique and beautiful pavilion,
- a prominent wind vane.

map source: https://www.pinterest.com/pin/391039180125116300/

8. BEACON FOOD FOREST

Size:0.6 acre

Type: **: Permaculture Design Course Final Project**

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.

- Edible fruit and nut trees berry patch, community garden (vegetables, fruits, and flowers)
- bee hives (pollination and honey)
- accessible raised beds,
- demonstration gardens,
- public art.

9. TILTH GARDEN: RAINIER BEACH LEARNING GARDEN

Type: **Community Garden**

The garden offers hands-on and science-based learning chances. People at all ages can join in all stages of growing including preparing soil, harvesting, cooking and eating. Classes are available online as well.

- Raised beds
- Rain garden
- Tool shed
- Perennial edibles Native plant garden

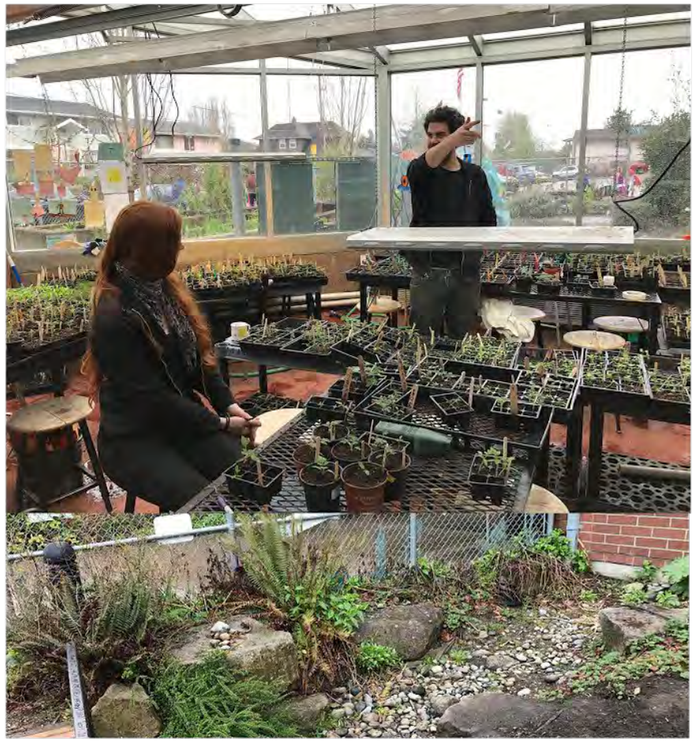
image source: https://rainierbeachlearninggarden.wordpress.com/

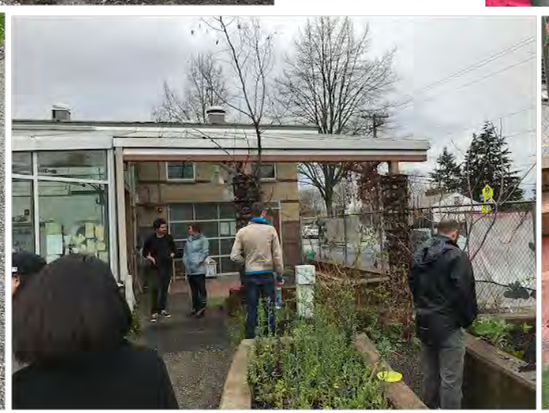
10. ORCA K-8 SCHOOL GARDEN

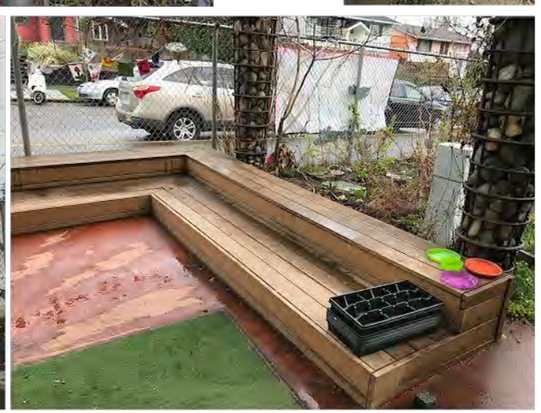
Type: **Educational Garden**

Orca’s longstanding garden and environmental education program that helps kids learn about science while digging in the dirt.

- Raised beds
- Rain garden harvesting
- Vine structure
- Outdoor classroom







11. RAINIER BEACH URBAN FARM AND WETLANDS

Size:8.25 acre

Type: **Urban Farm and Wetland**

Seattle's largest urban farm. Community members of all ages volunteer and participate in the educational programs, learning to grow food organically and restore the natural wetlands habitat that runs down the middle of the farm, while supplying fresh food for the community.

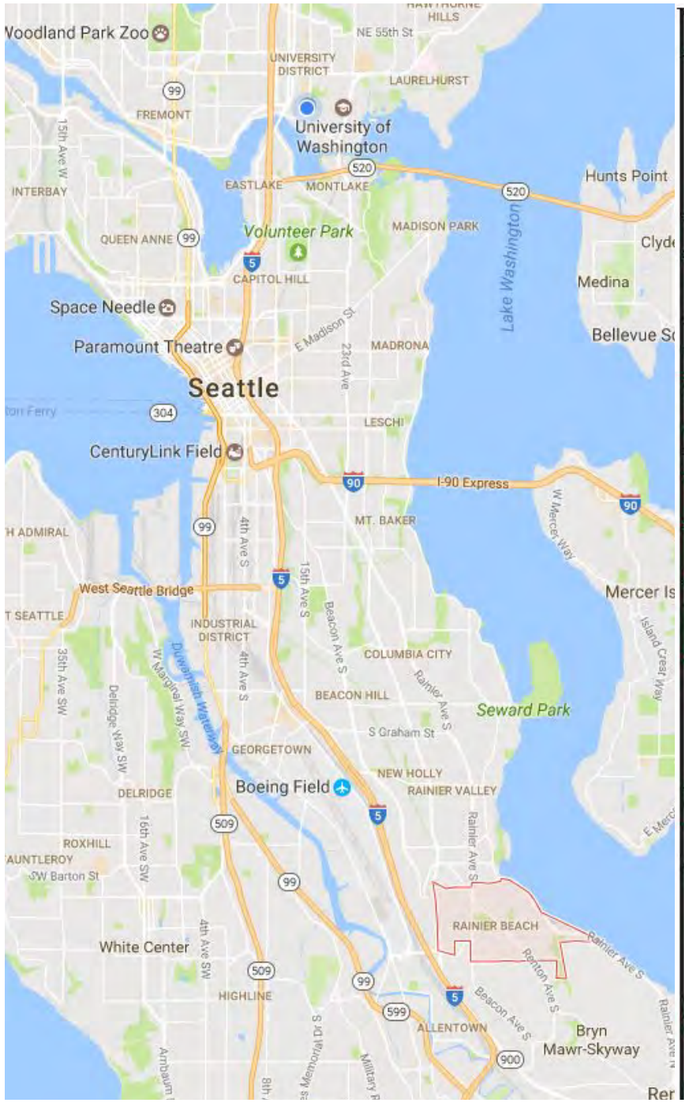
- commercial kitchen
- outdoor classroom
- improved access trails
- Wetland restoration work

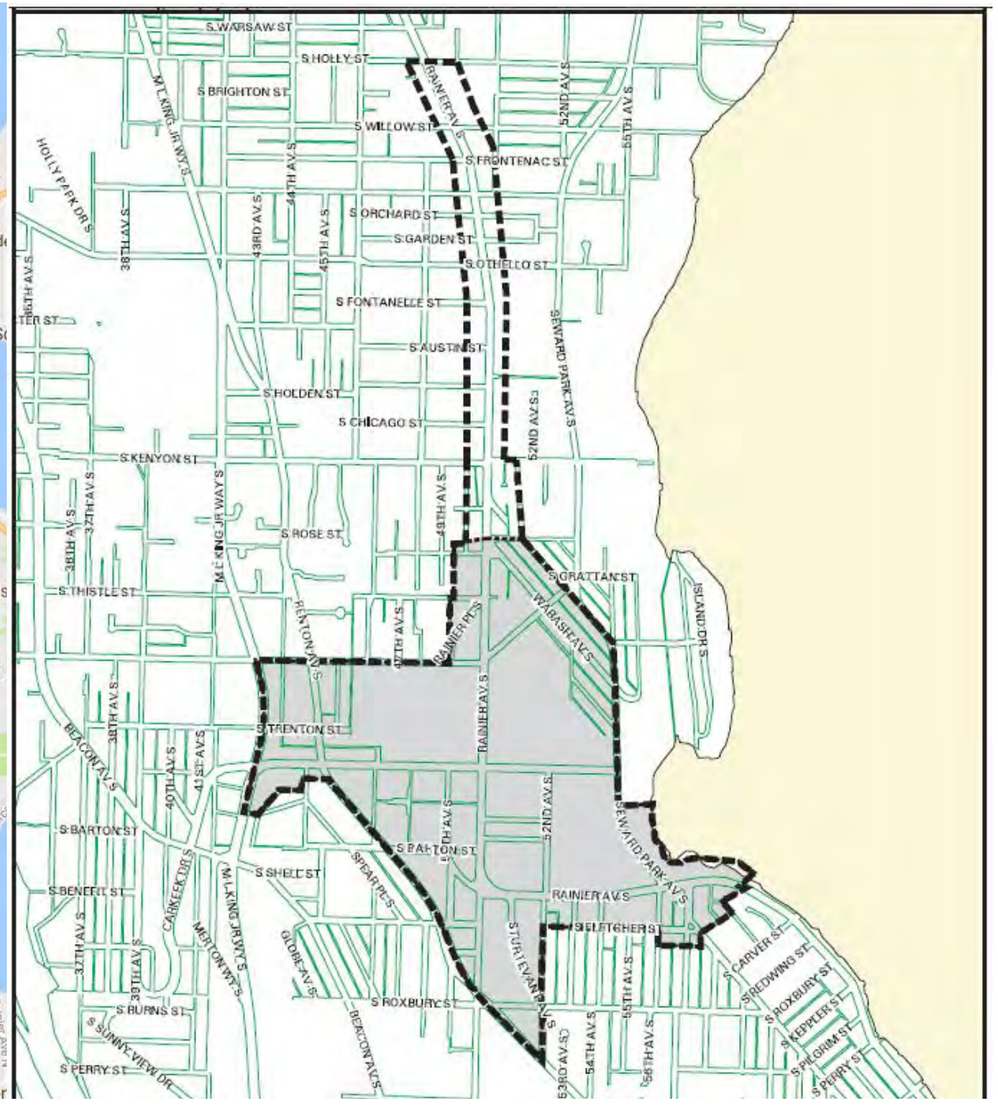
Site Map: http://www.rbcoalition.org/category/action-areas/growing-food-to-develop-healthy-industry/

NEIGHBORHOOD CONTEXT

Image: Tilth Alliance. https://tilthallianceblog.org/farm/rainier-beach-urban-farm-wetlands/

NEIGHBORHOOD BOUNDARY





LEFT: The Rainier Beach neighborhood is designated as an Urban Village in the City of Seattle Comprehensive Plan.

Source: Rainier Beach Action Coalition. http://www.rbcoalition.org/downloads/download-library/download-info/rainier-beach-neighborhood-plan-area-map/

HISTORICAL HIGHLIGHTS








8,000 BC – 10,000 years ago
FIRST HABITAT

What is now Rainier Beach neighborhood has been inhabited since the end of the last glacial period.

1870
TRAIL

-There is a trial throught the valley that led to the villages on salt water at Elliott Bay and the estuarial Duwamish River.
-The trail became the route for driving livestock to the town of Seattle.

1890
ATLANTIC CITY PLAN

-Clarence D. Hillman (1870-1935), who developed much of the area, named'Atlantic City'.
-He included a park area on the cove, built a pier, bath house, boat house, picnic facilities.

1894
REAL ESTATE BOOM+RAILWAY

-Real estate boom
-The trail became the route of the Seattle and Rainier Beach Railway

1937
TROLLEY ENDED+BOOM

-Trolley service ended in
-the neighborhood boomed again during and after World War II.
-The route became Rainier Avenue S.

1950s
WATER POLLUTION

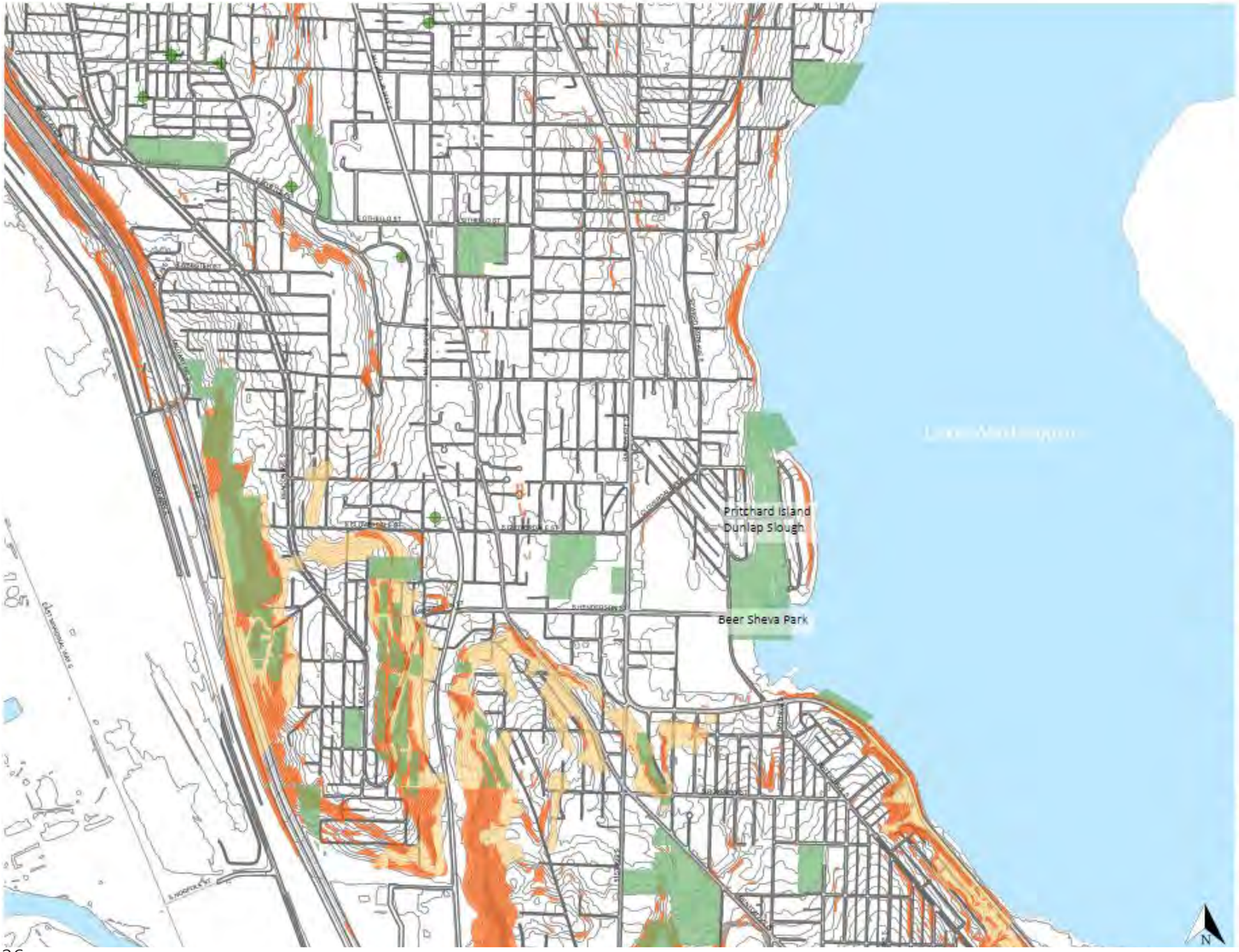
-With a sewer outfall near the beaches of Atlantic City Park and dramatic collapses in water quality.

1960s
CLEANUP WATER

-the neighborhood benefited greatly with the Metro clean-up of Lake Washington.
-Rainier Beach community is a wide range of ethnic groups and nationalities.

SOURCES:
http://www.rainiervalleyhistory.org/stories/articles/rainier-beach-station
http://www.rainiervalleyhistory.org/stories/exhibits/hillman-city-where-they-do-things
http://www.historylink.org/File/3116
https://en.wikipedia.org/wiki/Rainier_Beach,_Seattle
http://www.rainiervalleyhistory.org/stories/exhibits/hillman-city-where-they-do-things
http://www.rainiervalleyhistory.org/stories/articles/rainier-beach-station
http://www.historylink.org/File/3116

TOPOGRAPHY



IMPORTANT EVENTS:

Pritchard Island:
Prior to the lowering of Lake Washington, Pritchard Island was seen as highly important by the Olmsted Brothers, who were designing a parks and boulevards plan for the city.
In 19 17 the lowering of Lake Washington connected Pritchard Island to Seattle Lands. In 1927 Dunlap Slough was drained expanding the land further.
The land was owned by Alfred J. Pritchard between 1900 and 1934, when the city acquired the land for a Park.

Legend
- Steep Slopes
- Potential Landslides
- Streets
- P-Patchs
- Parks
- Water

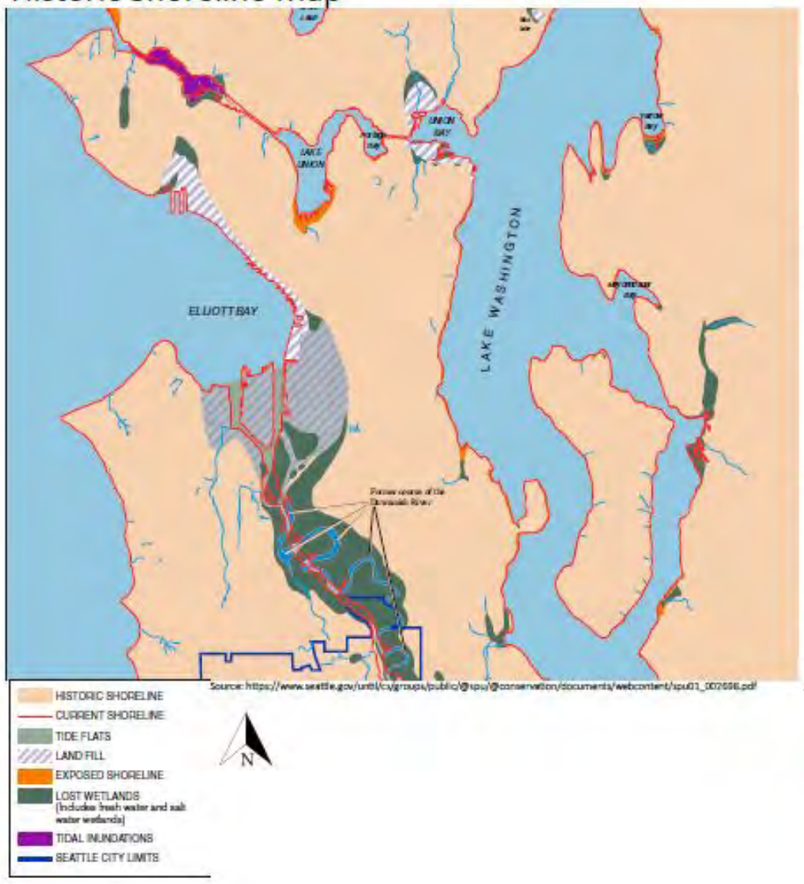
0 0.3 0.6 1.2 Miles

Sources:

1. Ott, Jennifer. "Due To Construction Of Lake Washington Ship Canal, Lake Washington Is Lowered 9 Feet Beginning On August 28, 1916, And The Black River Disappears.- Historylink.Org". Historylink.org. N.p., 2012 Web. 4 Apr. 2017.
2. Wilma, David. "Pritchard Island- Historylink.Org". Historylink.org. N.p., 2001. Web. 6 Apr. 2017.
3. http://www.svrdesign.com/mapes-creek/

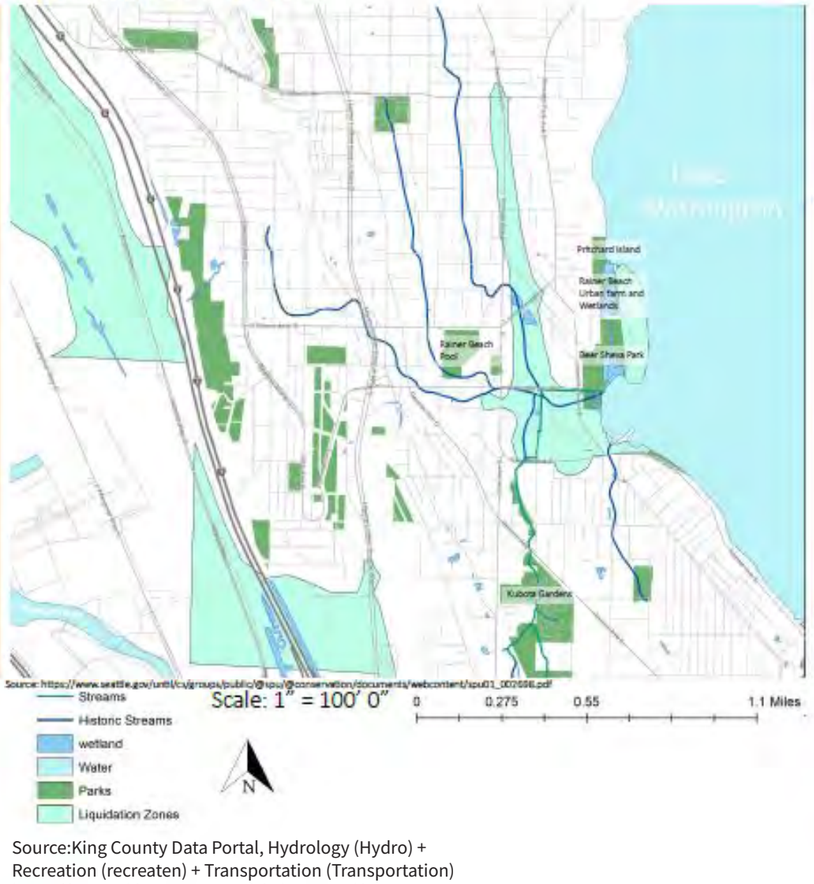
HYDROLOGY

Historic Shoreline Map



Data from: King County Data Portal, Planning (Planning) + Recreation (recreaten) +Property (Property)+ Transportation (Transportation) + https://www5.kingcounty.gov/gisdataportal/

Hydrological Features

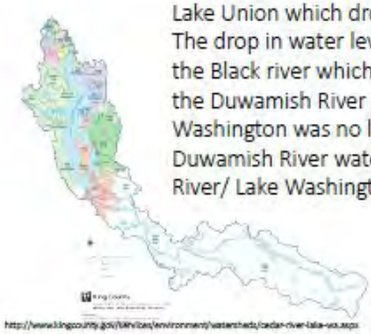


Source:King County Data Portal, Hydrology (Hydro) + Recreation (recreaten) + Transportation (Transportation) https://www5.kingcounty.gov/gisdataportal/

IMPORTANT EVENTS:

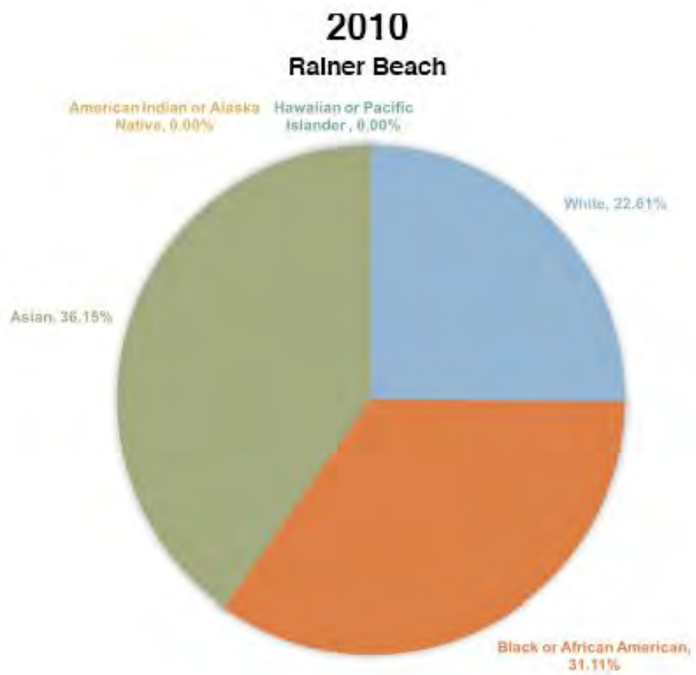
Mapes Creek Restoration:
In 2012 work began to restore 400 feet of Mapes Creek in the Rainer Beach Neighborhood. The goal was to restore habitat for juvenile Chinook salmon. The project was designed by Landscape Architecture Firm SvR and was completed in 2014.

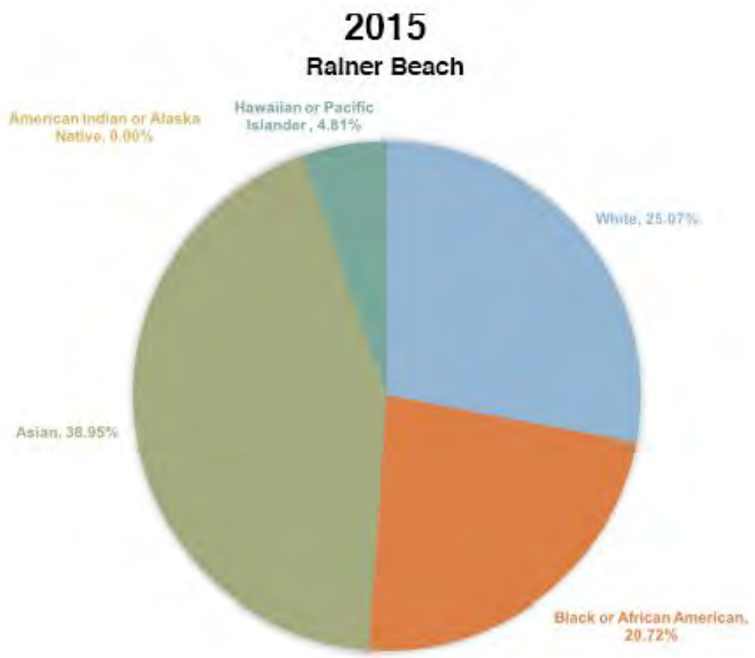
Lake Washington:
In an effort to connect Lake Washington to the Puget sound the Hiram M. Chittenden locks (Ballard Locks) and the Montlake cut were constructed. Work on the Montlake cut began in 1909, it was this connection with Lake Union which dropped Lake Washington by 9 ft. The drop in water levels cut off the water supply to the Black river which connected Lake Washington to the Duwamish River and the Black River dried up. Lake Washington was no longer a part of the Green River/ Duwamish River watershed and is now a part of the Cedar River/ Lake Washington watershed.

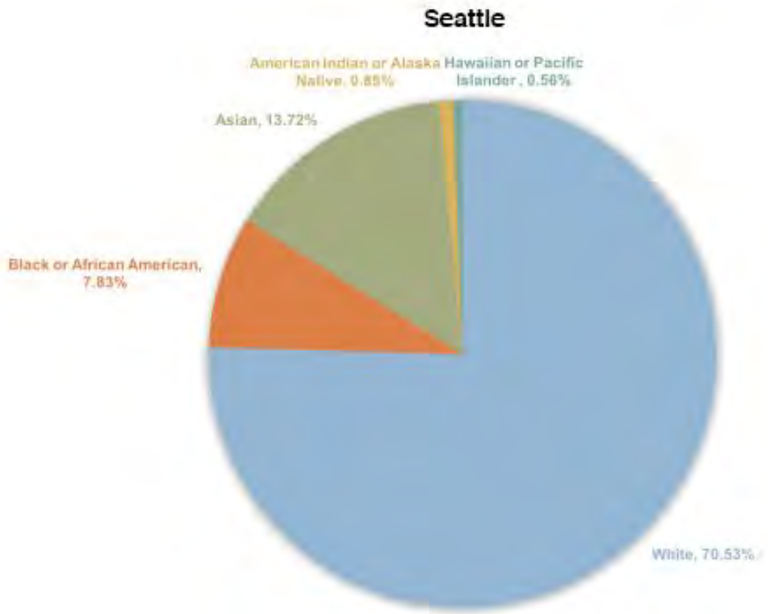


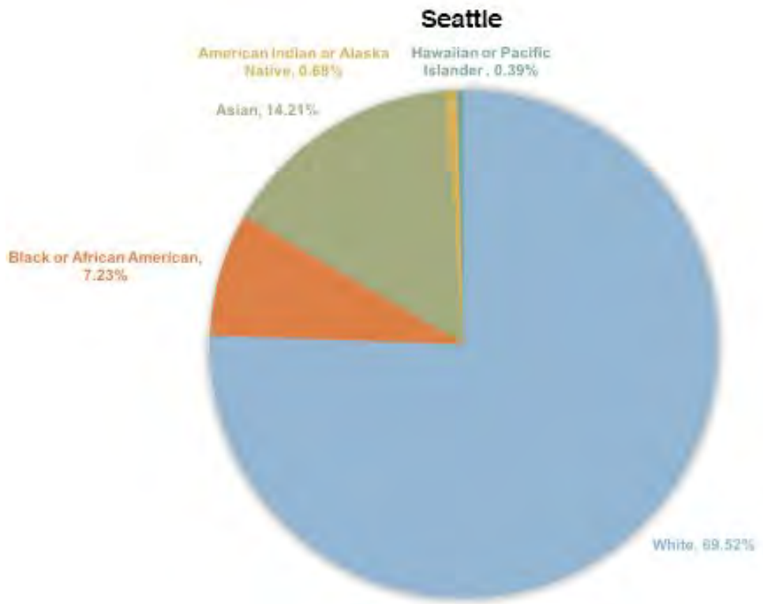
Sources:
1. Ott, Jennifer. "Due To Construction Of Lake Washington Ship Canal, Lake Washington Is Lowered 9 Feet Beginning On August 28, 1916, And The Black River Disappears.- Historylink.Org". Historylink.org. N.p., 2012 Web. 4 Apr. 2017.
2. Wilma, David. "Pritchard Island- Historylink.Org". Historylink.org. N.p., 2001. Web. 6 Apr. 2017.
3. http://www.svrdesign.com/mapes-creek/

DEMOGRAPHICS: ETHNICITIES





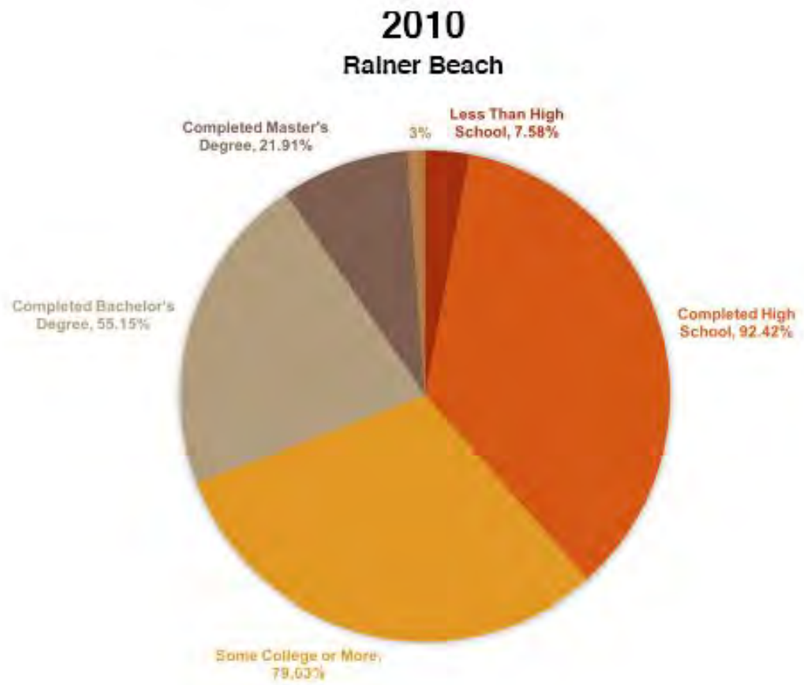


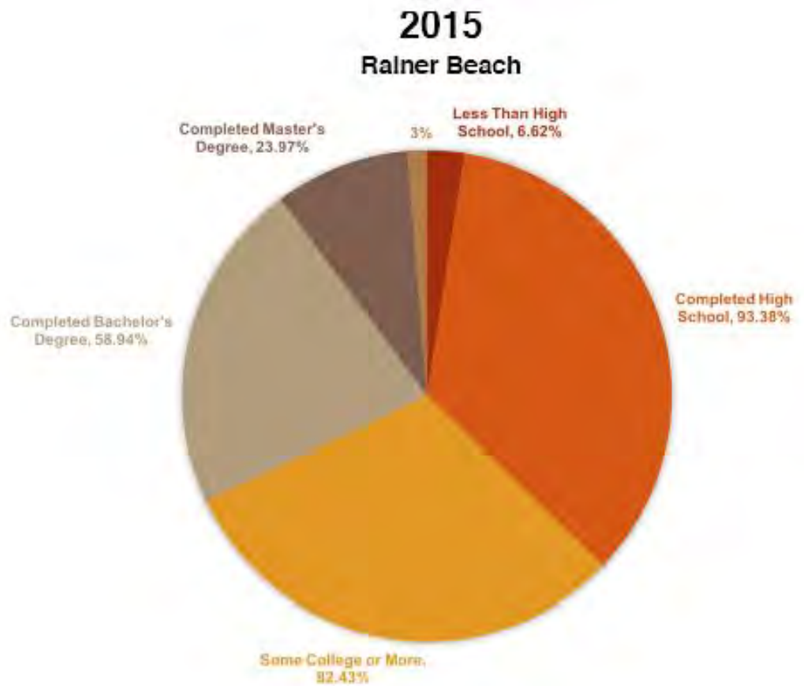


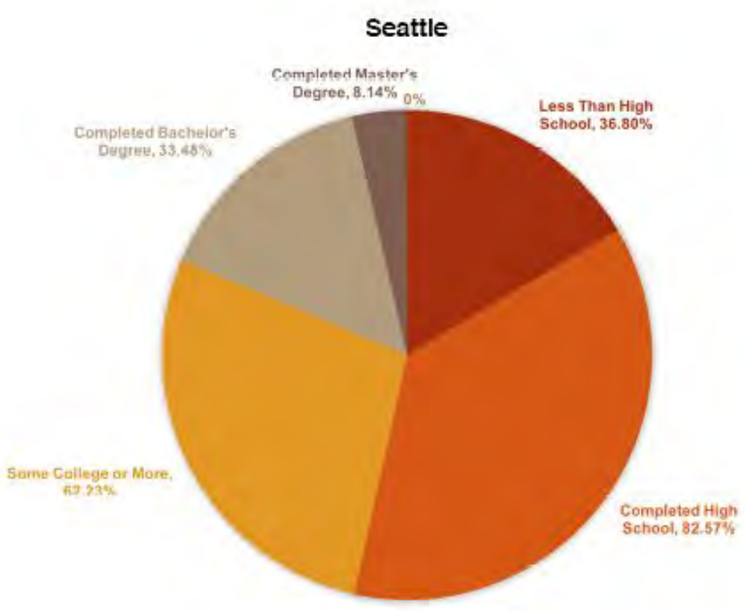
SOURCES:

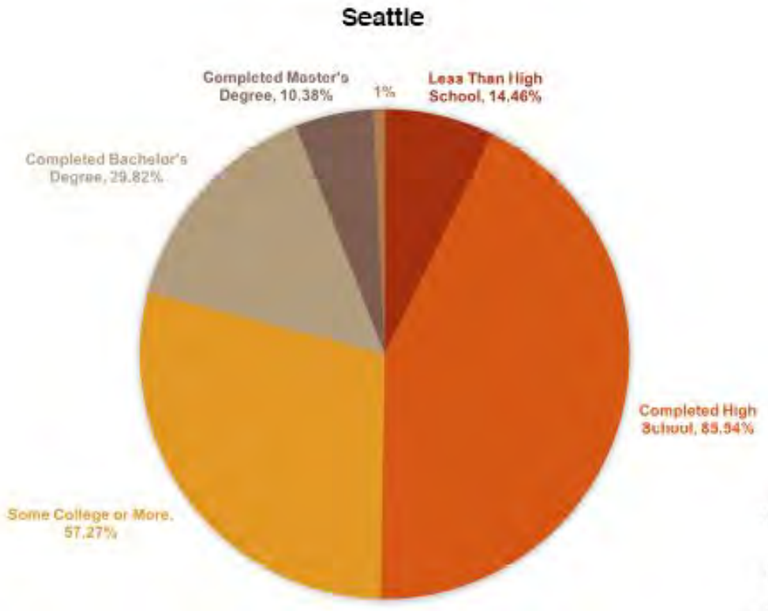
http://www.socialexplorer.com/

DEMOGRAPHICS: EDUCATION









Less Than High School

Completed High School

Some College or More

Completed Bachelor's Degree

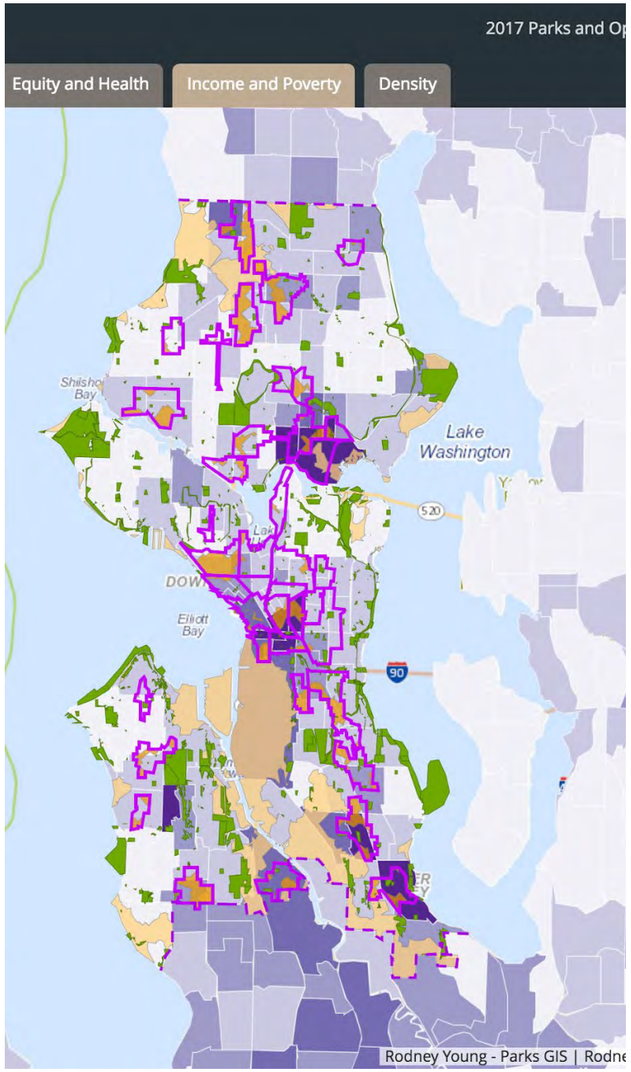
Completed Master's Degree

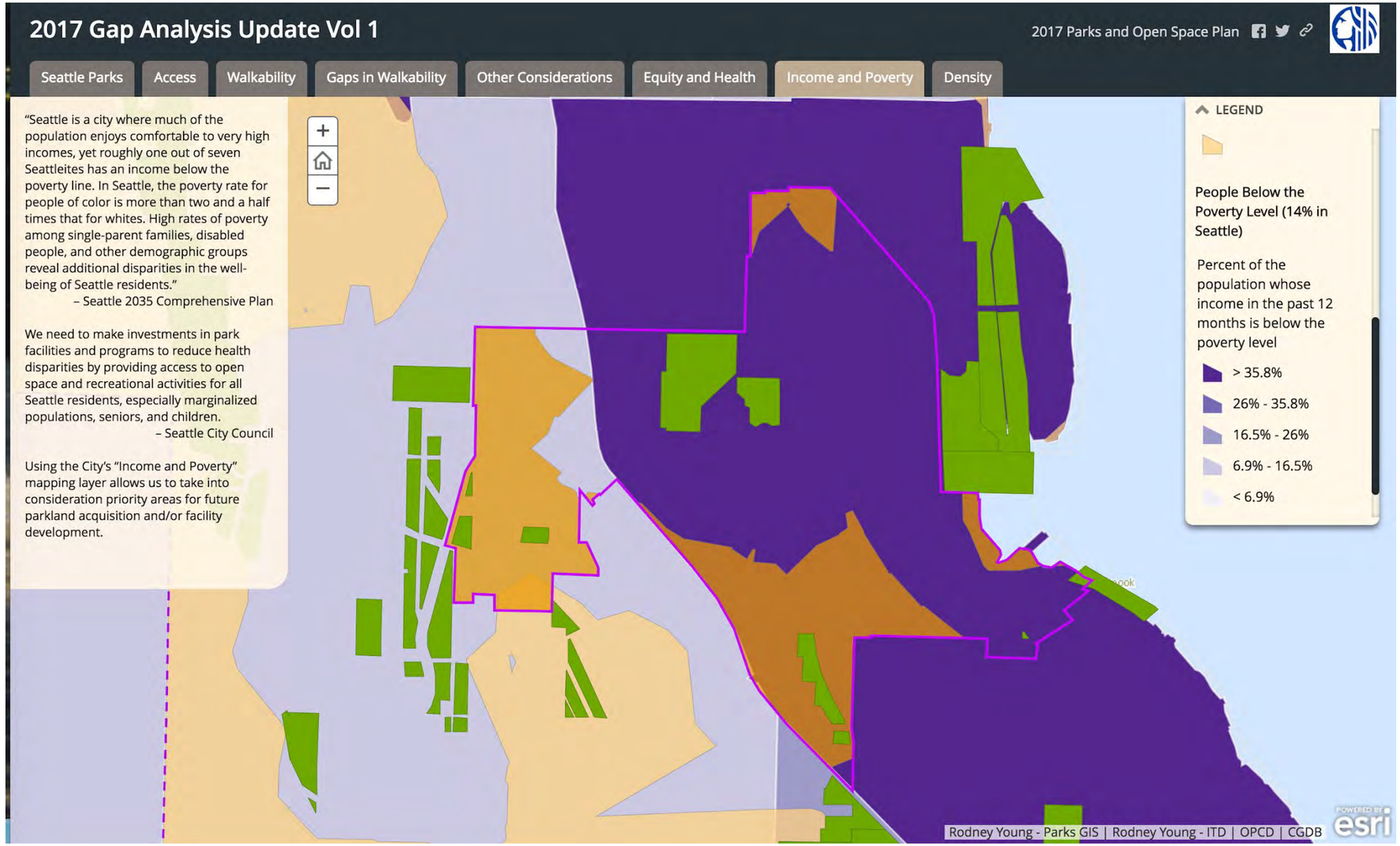
Completed Doctorate Degree

SOURCES:

http://www.socialexplorer.com/

DEMOGRAPHICS: POVERTY

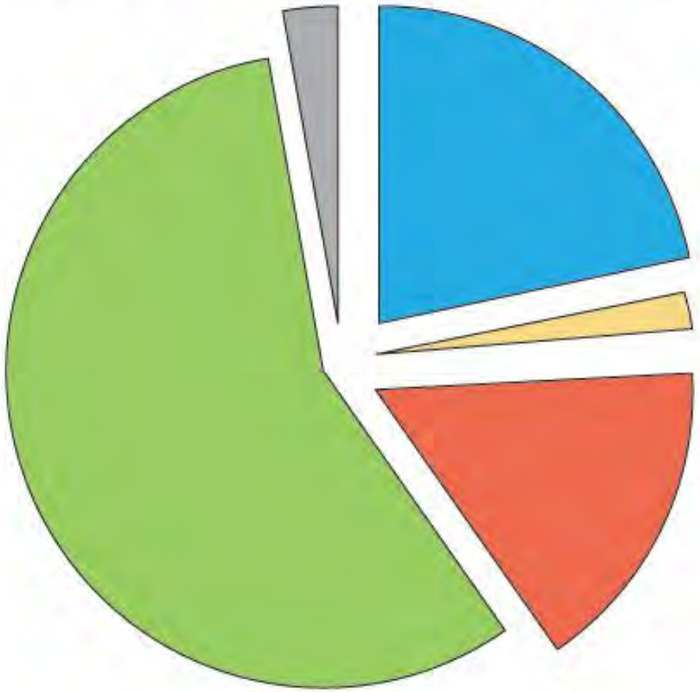




MAP AND DATA SOURCES:
http://www.seattle.gov/ArcGIS/SMSeries_GapAnalysisUpdate2017/index.html
Created by Rodney Young, City of Seattle Department of Parks and Recreation
Viewed on the Urbanist: https://www.theurbanist.org/2016/12/15/open-space-gap-map/

DEMOGRAPHICS: CRIME

UW LARCH 503 COMMUNITY DESIGN STUDIO



PROPERTY CRIME/THEFT

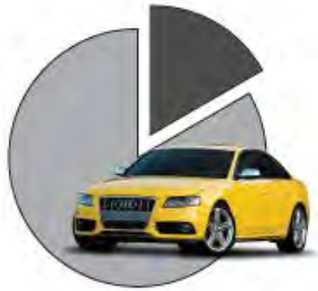
TRANSPORTATION

MISCELLANEOUS

DRUGS AND VICE

CRIMES AGAINST PERSONS

NARCOTICS (METH)



TRAFFIC

DUI

ARREST

DISTURBANCE

ANIMAL

WEAPON

LOITERING/TRESPASSING

ASSAULT

THREATS

DRIVE-BY

ROBBERY

SHOPLIFT

PICK-POCKET

VEHICLE THEFT

CAR PROWL

PROPERTY DAMAGE

OTHER PROPERTY

FRAUD/FINANCIAL

BURGLARY

SOURCES:
Crime data: "Seattle My Neighborhood Map." Seattle My Neighborhood Map. Seattle.gov, 06 Apr. 2017. Web. 06 Apr. 2017. <http://web6.seattle.gov/mnm/policereports.aspx>.

CRIME IN RAINIER BEACH NEIGHBORHOOD

KEY

PROPERTY CRIME/THEFT

- OTHER PROPERTY
- CAR PROWL
- PROPERTY DAMAGE
- VEHICLE THEFT
- BURGLARY
- FRAUD AND FINANCIAL
- SHOPLIFTING
- PICK-POCKETING

CRIMES AGAINST PERSONS

- ASSAULT
- DRIVE-BY
- ROBBERY
- THREATS

DRUGS AND VICE

- NARCOTICS

TRANSPORTATION

- TRAFFIC

MISCELLANEOUS

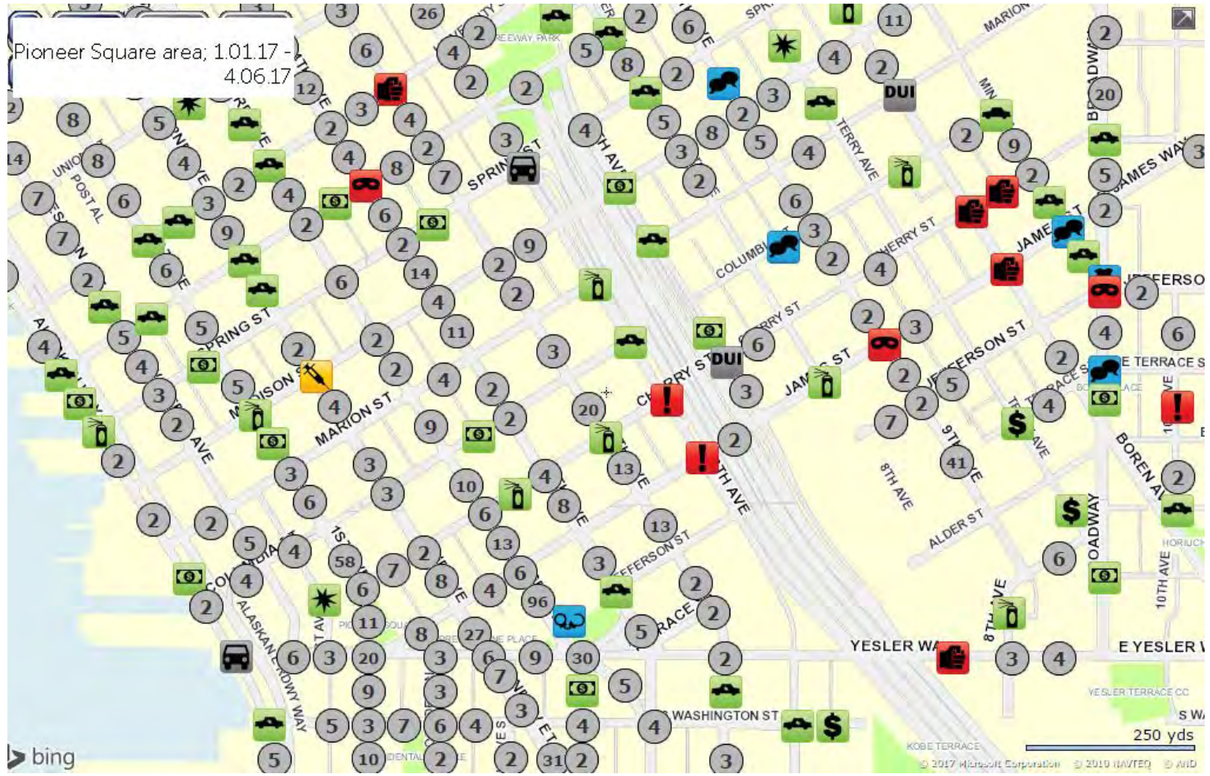
- DISTURBANCE
- ANIMAL COMPLAINT
- ARREST
- TRESPASS/LOITERING
- WEAPON VIOLATION

SOURCES:
Crime data: "Seattle My Neighborhood Map." Seattle My Neighborhood Map. Seattle.gov, 06 Apr. 2017. Web. 06 Apr. 2017. <http://web6.seattle.gov/mnm/policereports.aspx>.

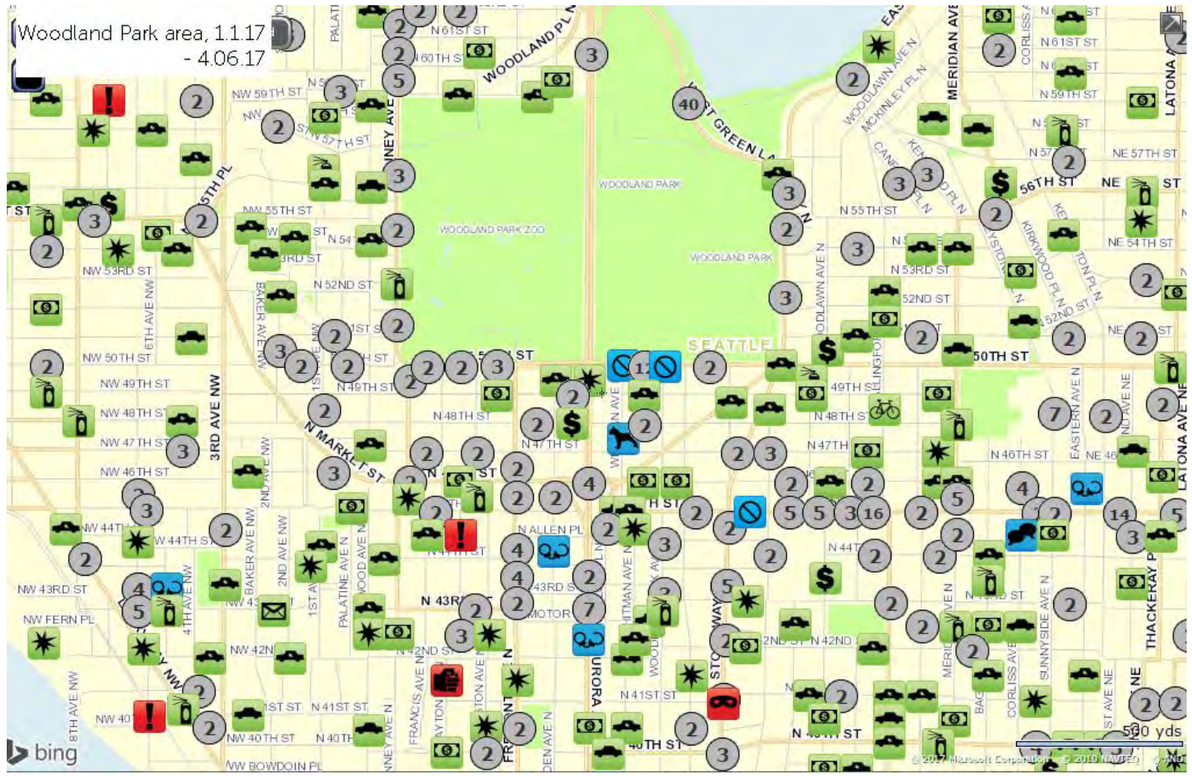
Map: maps.google.com

1/1/2017 - 4/6/2017

CRIME IN SEATTLE NEIGHBORHOODS



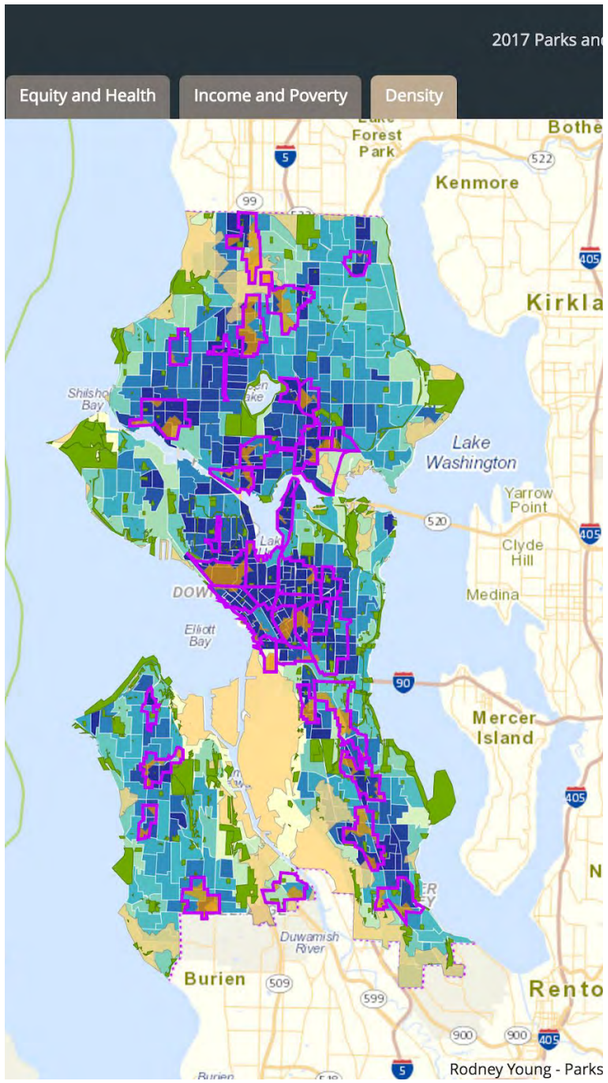
Pioneer Square Area 1/1/2017 - 4/6/2017

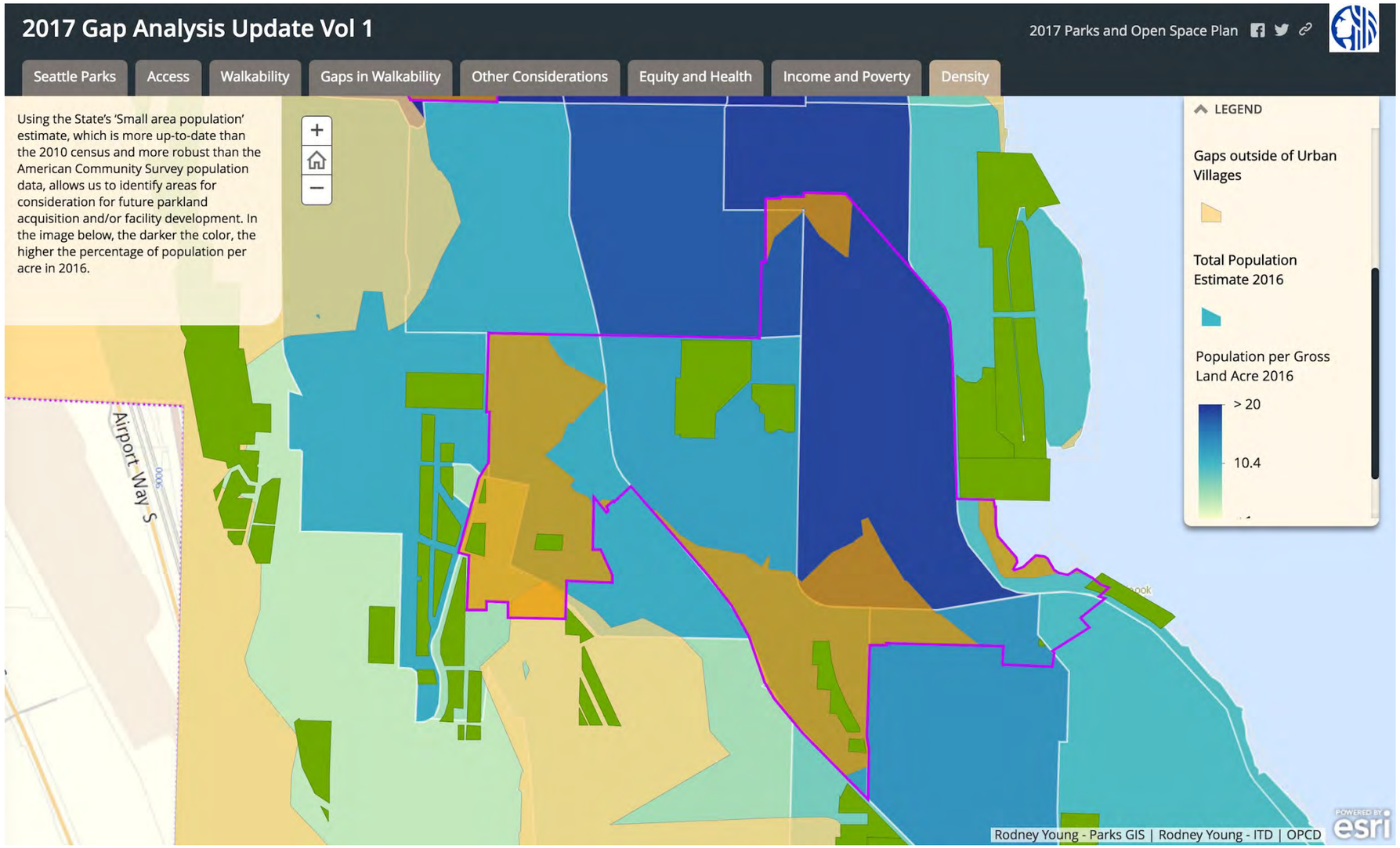


Woodland Park Area 1/1/2017 - 4/6/2017

MAP SOURCES: Crime data: “Seattle My Neighborhood Map”. Seattle My Neighborhood Map. Seattle.gov, 06 Apr. 2017. Web. 06 Apr. 2017. <http:/web6.seattle.gov/mnm/policereports.aspx>.

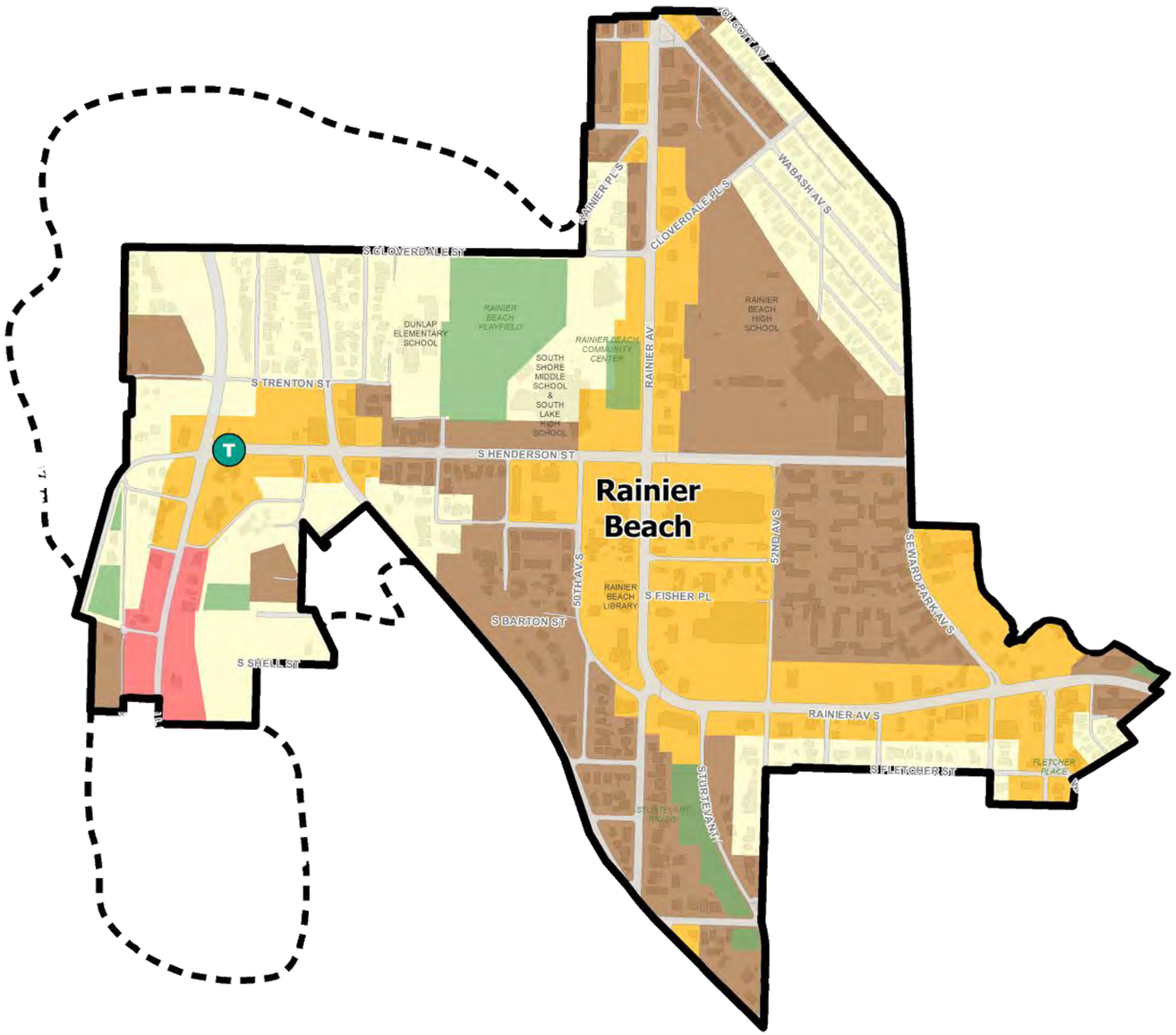
DEMOGRAPHICS: DENSITY





MAP AND DATA SOURCES:
Seattle.gov: Seattle Parks and Recreation
Found on: http://www.seattle.gov/ArcGIS/SMSeries_GapAnalysisUpdate2017/index.html
Created by Rodney Young, City of Seattle Department of Parks and Recreation
http://www.seattle.gov/parks/about-us/policies-and-plans/2017-parks-and-open-space-plan

ZONING



City-owned Open Space

NC1; NC2; NC3

LR1; LR2; LR3

SF 5000 / 7200 / 9600

C1; C2

Source: City of Seattle
http://www.seattle.gov/dpd/Research/gis/webplots/smallzonemap.pdf

NEIGHBORHOOD PLAN: WALKABLE STREETS

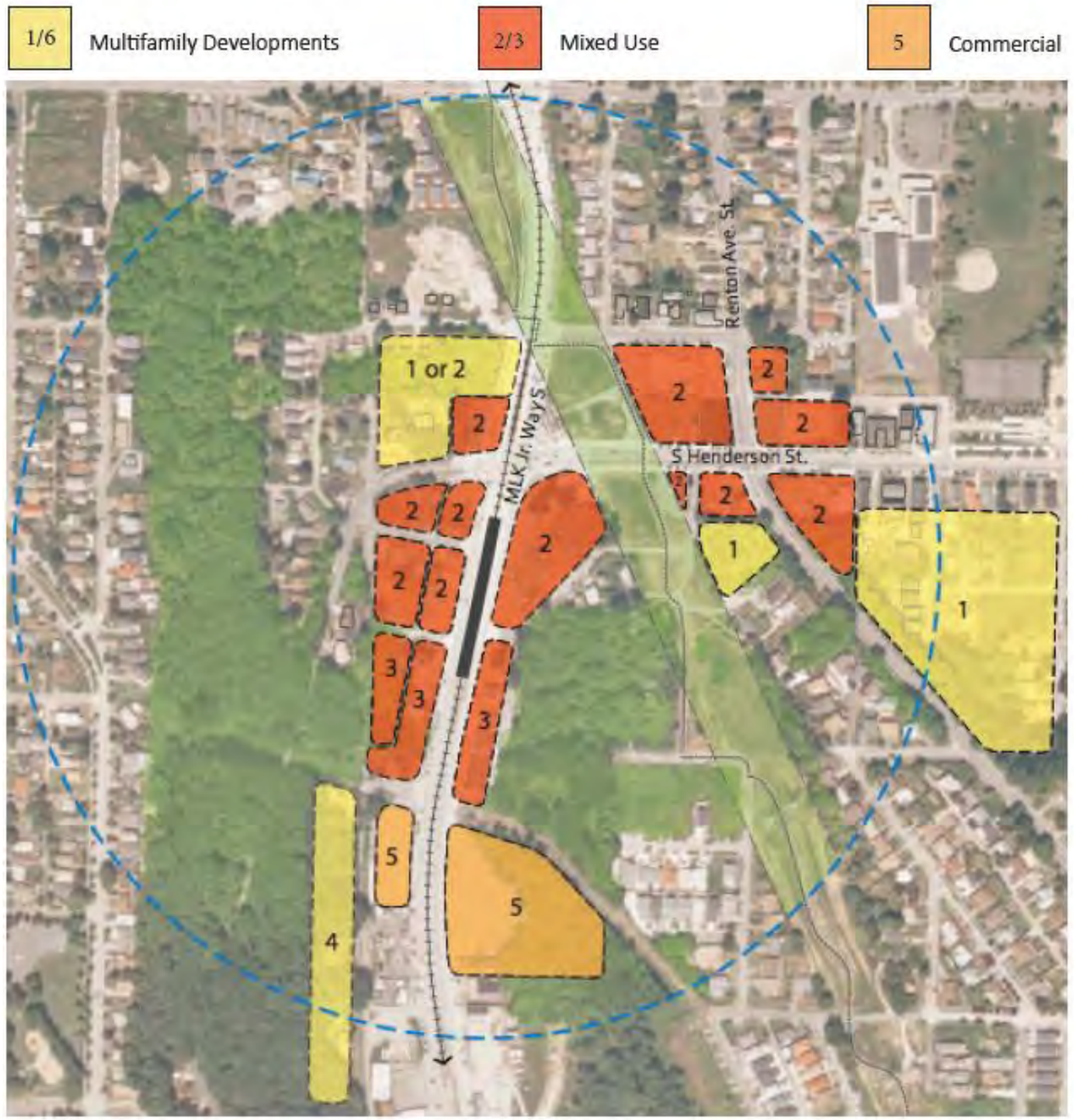
Legend

- Light Rail
- Light Rail Station
- Existing Trail
- City of Seattle Owned Properties
- Superblocks
- Existing Pedestrian Linkages
- Future Pedestrian Linkages
- Signature Mini Light Tower
- Major Light Feature
- Existing Building
- Key Intersection
- Existing Tree
- Physical Gateways to Key Future Pedestrian Gateways
- Transit
- Soften and Open Edge of School Property

Plans are underway to address the connections West to East, from the light rail station to Beer Sheva Park. This street crosses four main neighborhood "Pearls"; Station Area, Beach Square, Rose Street, and the Historic District (next to the marina). (theurbanist.org) The plan is to celebrate major intersections and make safe the pedestrian experience while promoting the culture and character of the neighborhood.

SOURCE:
https://www.theurbanist.org/wp-content/uploads/2016/09/Screen-Shot-2016-09-28-at-6.55.20-PM.png

LIGHT RAIL DEVELOPMENT PLAN



The station area is also a focus for the community's hopes for development: "Amend development regulations to enable higher density residential and mixed-use development within 1/4 to 1/2 mile of the light rail station. The objectives are to: encourage development that is beneficial for the community by creating employment opportunities; offering housing affordable across a range of incomes; and creating a destination "entry" to Rainier Beach. Ideas of desired development include: apartments; community college; incubator businesses potentially linked to the Urban Farm; and live/work spaces." The plan recommends an 85-foot height limit in mixed-use and commercial areas, raising the C-65, NC-40, and LR3 zones that predominate in the station area today. (theurbanist.org)

http://citytank.org/2014/07/17/we-need-housing-and-jobs-near-transit-stations/ (via architecture)

SOURCE:
https://www.theurbanist.org/2016/10/07/
rainier-beach-updates-its-neighborhood-plan/

FOOD INNOVATION DISTRICT

EXISTING ASSETS:

Community has collaborated with Seattle Tilth to establish Rainier Beach Urban Farm and Wetlands.

Southeast Effective Development (SEED) has released 5000 sq ft building nearby (S Director Street), that is being converted into the Rainier Beach Farm and Food Hub to house a number of local food production and distribution operations (Seattle Tilth, Jucebox, Seattle food Co-op, Seattle Farm Co-op, and Rainier Beach Action Coalition).

The light rail is at a nexus of several regional manufacturing and industrial areas.

Multi-ethnic Rainier Beach provides a valuable and untapped resource to establish international food culture and trade in the neighborhood. A range of trades could be established with Seattle's vibrant restaurant and mobile food vendors.

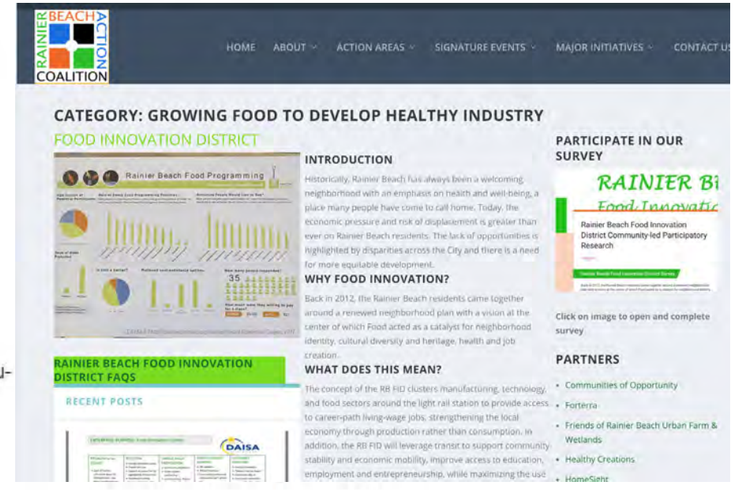
Rainier Beach has excellent access to the regional transportation infrastructure

LOOKING FORWARD:

Proposed program spaces providing a full range of employment and business development opportunities for Rainier Beach residents in a 104,550 sq ft multipurpose facility consisting of two structures near the light rail station.

The building(s) will be a hub for
- Distribution
- Aggregation
- Value-added Production
- Education/training
- Business Incubation
- Co-packing
- Testing
- Research and Development

SOURCES:
http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/p2363100.pdf



http://www.rbcoalition.org/category/action-areas/growing-food-to-develop-healthy-industry/

BIKE TRANSIT

BICYCLE MAP LEGEND

- Separated Bikeway (includes trails and protected bike lanes)
- Neighborhood Greenway
- Sidewalk/Path
- Bicycle Lane (includes buffered bike lanes and uphill-only lanes)
- Sharrows (streets with shared-lane markings)
- Arterial Street
- Non-Arterial Street
- Steep Uphill Route
- Moderate Uphill Route
- One Way

DESTINATIONS

- Public School
- Library
- Bike Shop
- Light Rail or Streetcar Station
- Pronto Cycle Share Station (Pronto station locations subject to change. Visit www.prontocycleshare.com or download the Seattlecycle app for real-time information.)

Map Source: Seattle Department of Transportation https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/online-bike-map

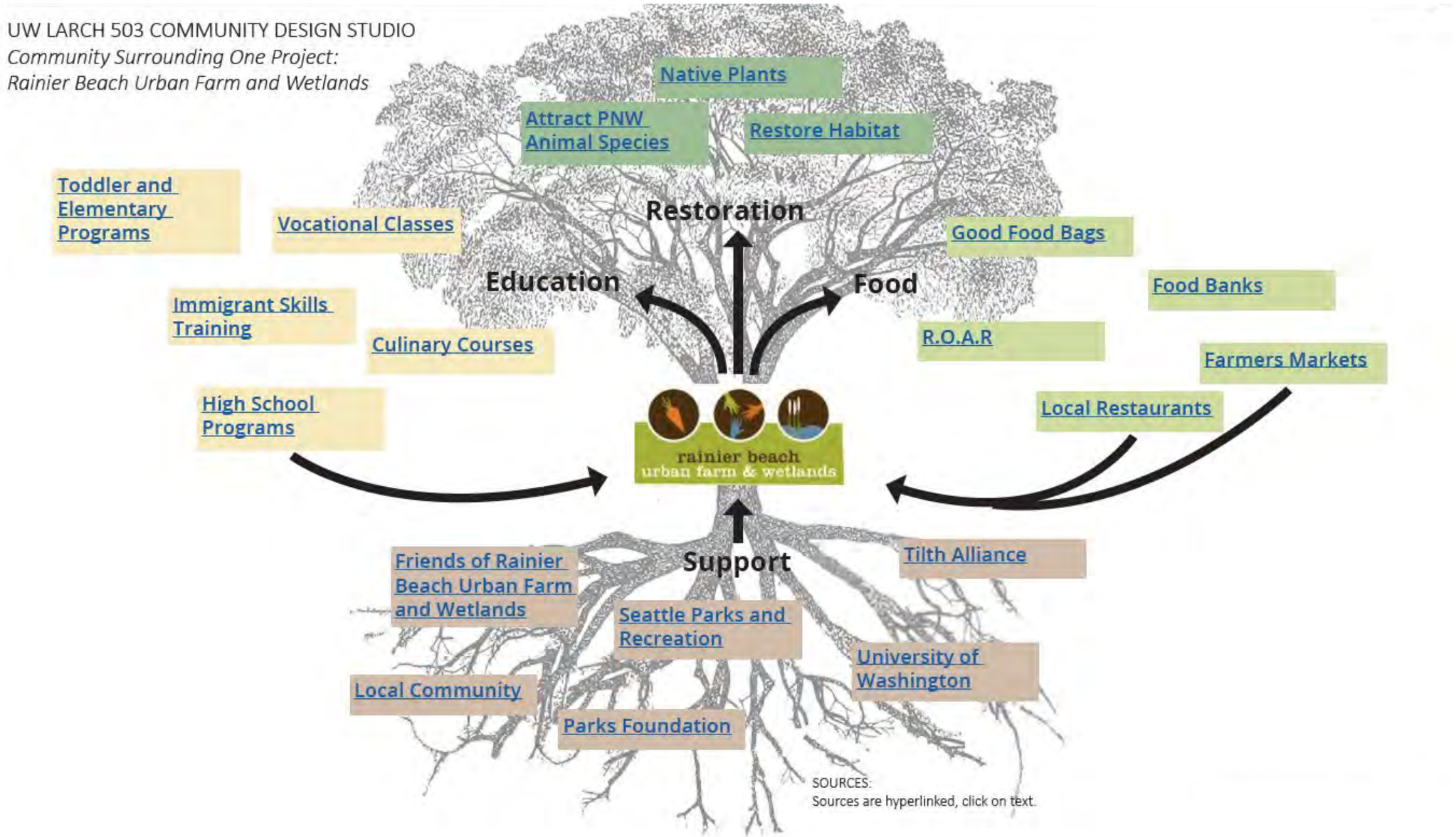
FOOD ACCESS AND TRANSIT

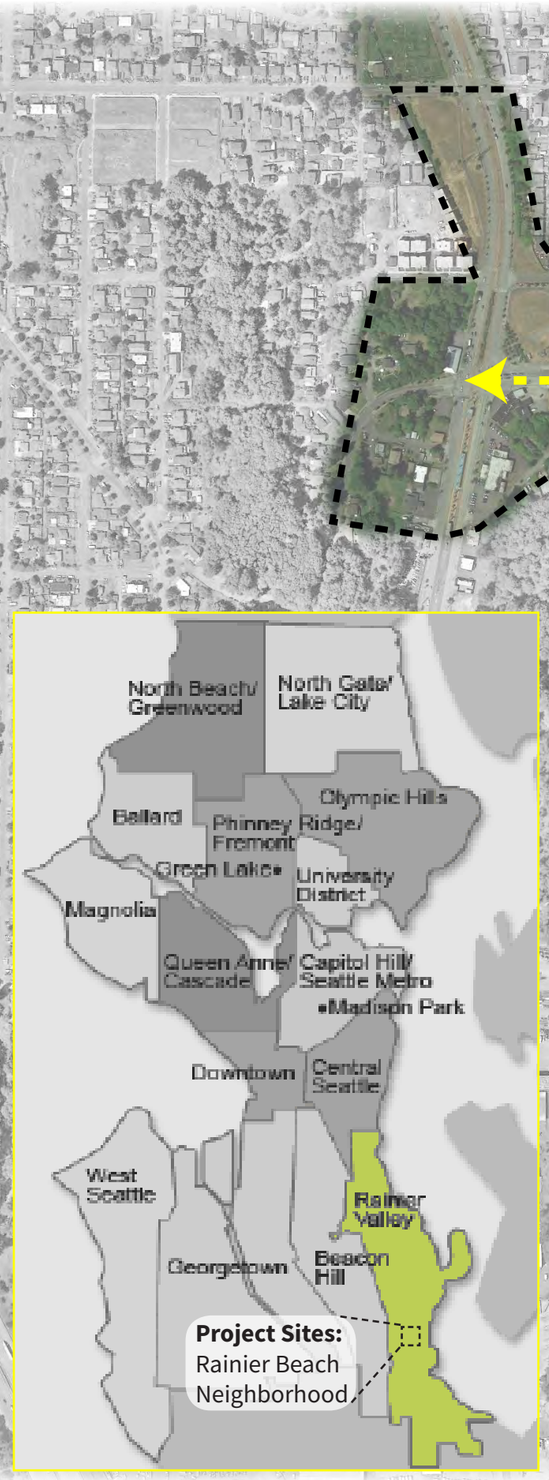
LEGEND

- Bus Stop
- Light Rail Station
- Farmers Market
- Mini-Mart
- Public Gardenin
- Grocery Store
- 5 Minute Walk From Bus
- 5 Minute Walk From Light Rail
- Public Green Space
- Utility Corridor Green Space
- Light Rail Line
- Bus Route

Map from Apple Maps

COMMUNITY GROUPS: RAINIER BEACH URBAN FARM AND WETLANDS





STUDENT PROPOSALS

RAINIER BEACH NEIGHBORHOOD, SEATTLE

Neighborhood Map (left): Healthy Laps
https://healthylaps.com/2010/09/10/tour-of-seattle-wa/
Base Image Map: Google Maps

Sujing Sun

Aqua-Cultivation

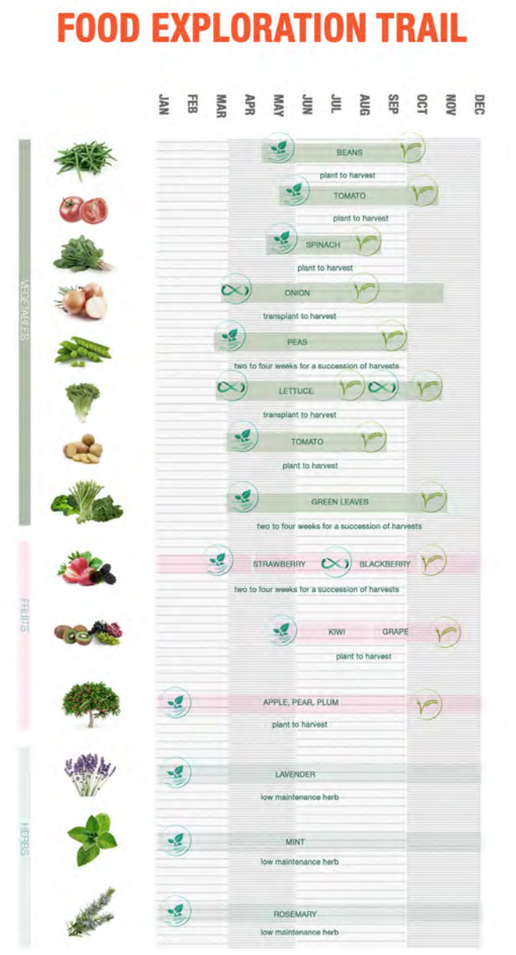
Rainier Beach Urban Farm Improvements

SOURCE
https://www.seattle.gov/parks
http://www.seattletilth.org/about/rainier-beach-urban-farm-wetlands
http://www.bergerpartnership.com/work/rainier-beach-urban-farm-wetland
http://www.castarchitecture.com/public/rainier-beach-urban-farm/

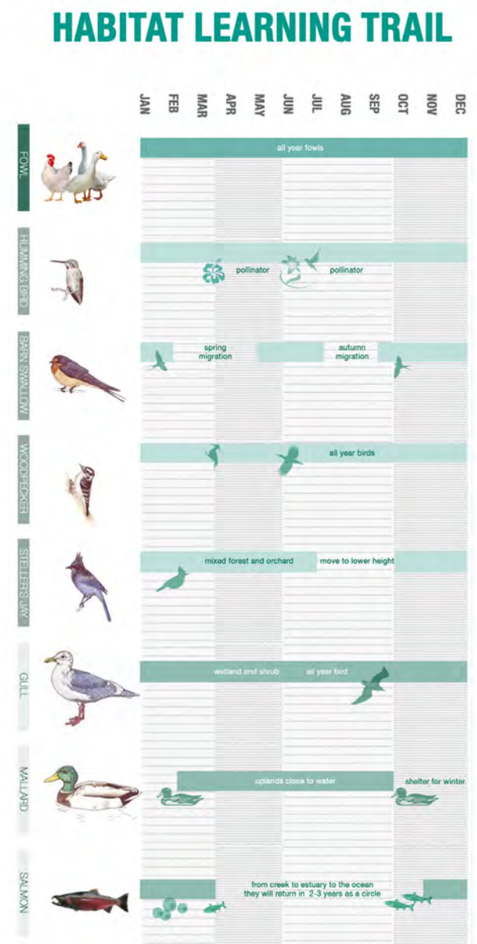
+ RAINIER BEACH URBAN FARM AND WETLAND
+ BEER SHEVA PARK
+ RAINIER BEACH HIGH SCHOOL

To design a new urban agriculture public space involving more neighborhood nearby, this site includes the resources from Rainier Beach Urban Farm and Wetland, Beer Sheva Pak and the open space in front of the Rainier Beach High School. The vision of this design is to create a productive and educational place for the community nearby, relieving their environmental and food justice issues, upgrading their living standard and awareness of nature.

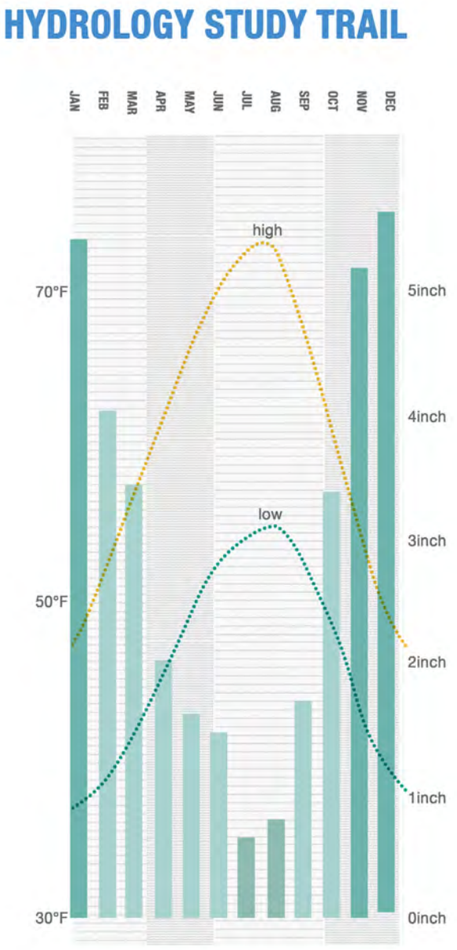
This public destination around Lake Washington is designed as three overlapped trails in themes of FOOD EXPLORATION, HABITAT LEARNING, AND HYDROLOGY STUDY. Through the aqua-cultivation experiences derived from the green and blue resources on the site, the public space is activated to involve the Rainier Community nearby as an outdoor classroom, an observation platform of nature, and an exploration toolkit to study smart water use.



• **THE FOOD EXPLORATION TRAIL** embraces the land use of Rainier Urban Farm and Wetland, developing several types of urban agriculture, such as TERRACE GARDEN, POLLINATOR HEDGE, OPEN TRENCH IRRIGATION, VINE STRUCTURE, FRUIT FOREST. Uniquely, the AQUAPONICS HOUSE is a new threshold of future agriculture with self-sufficient technology. The TERRACE GARDEN with a GATEWAY OVERLOOK enhances the connection between the farm and the community. (This design physically includes the work from 2017 MLA Capstone Studio of maker space, ADA raised beds and outdoor classroom with asterisk* reference.)



• **THE HABITAT LEARNING TRAIL** keeps a natural wetland area continuing the wetland system to the Pritchard Island Beach wetland, connecting the natural protective water shed with Lake Washington. Along the boardwalk to experience the wetland system, there are several rest spots to observe the nature and wild species, such as the DUCK HOUSE, BIRD OBSERVATION, SALMON HABITAT. From woodland to grassland to wetland, many native animals will attract students, tourists and photographers, etc. Especially, the ECO-KAYAK-TOUR is proposed in the future to have fun in such an ecosystem.



• **THE HYDROLOGY STUDY TRAIL** links the community to harvest with water and save extra runoff to recharge in the dry seasons. Hopefully in the future, this public space will be as an outdoor classroom for the students and communities to learn about the storm water management skills and different kinds of irrigation techniques, such as AQUAPONICS, OPEN TRENCH IRRIGATION, DRIP IRRIGATION, and permeable pavements, bioswale, low-impact parking lots, etc. From the experiences, the community will understand the importance of smart use water and be aware to reuse for irrigation to encourter with the climate change.

TERRACE FARM

VINE STRUCTURE

FLOATING WETLAND
FLOATING WETLAND
SEMINAR: DESIGNED BY
SUJING,YUCHIA,AUDREY

PRITCHARD
ISLAND BEACH

RAINIER BEACH
HIGH SCHOOL

BEER SHEVA PARK

RAINIER BEACH URBAN
FARM AND WETLAND

55TH AVE S

SEWARD PARK AVE S

S HENDERSON ST

E S CLOVERDALE ST

LEGEND

1. Aquaponics House
2. Tools Shelter
3. Open Trench Irrigation
4. Duck House
5. Bee Hive
6. Vine Garden
7. Washing Area
8. Bird Observation
9. Fruit Forest
10. Terrace Garden/ADA Entrance
11. Pollinator Hedge
12. Gateway Overlook
13. Wetland Boardwalk
14. Eco-Kayak Tour Area
15. Floating Wetland
16. Educational Garden
17. Temporary Market
18. Stormwater Management Parking
19. Raised Bed/ADA Farm*
20. Maker Space*
21. Outdoor Classroom*
22. Aesthetic Gate
23. Seasonal Greenhouse
24. In-Ground Crop
25. Playing Area
26. Mapes Creek Daylight

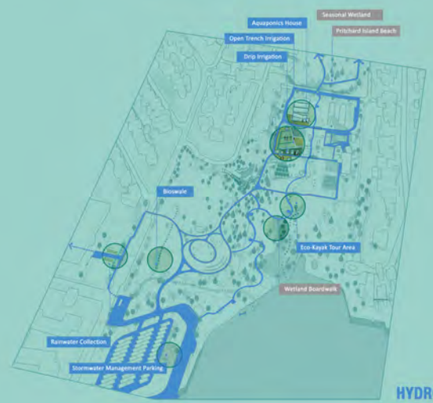
P.S The asterisk* refers to the 2017 MLA Capstone Design and the gray indicates the existing spots.

N

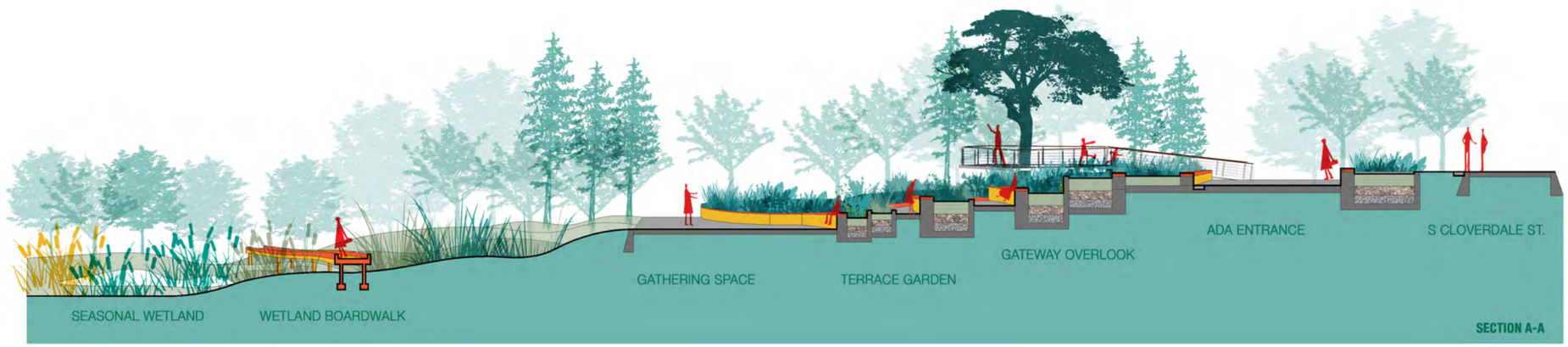
0 50 100 200 ft

FOOD EXPLORATION TRAIL

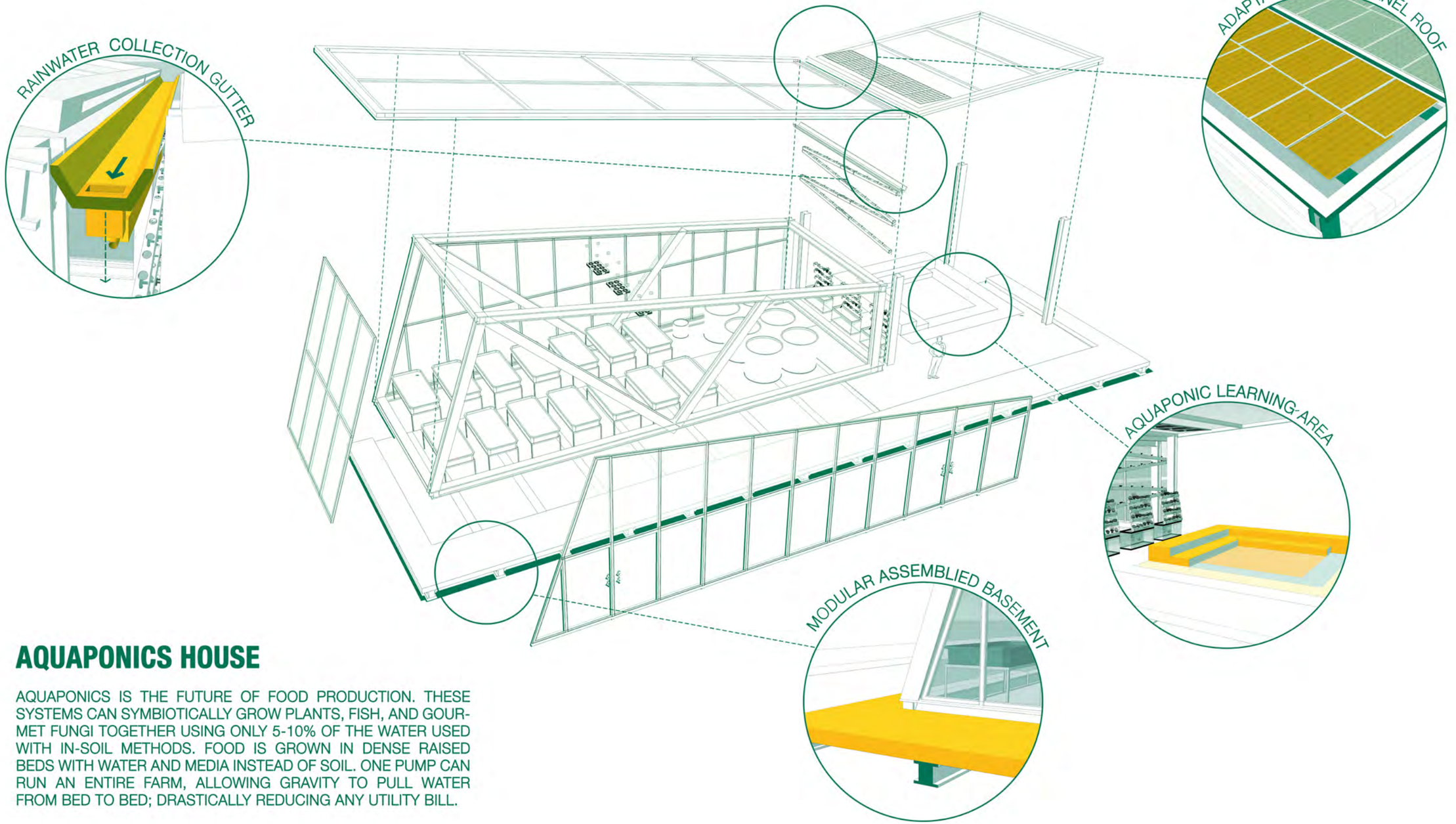
HABITAT LEARNING TRAIL



HYDROLOGY STUDY TRAIL

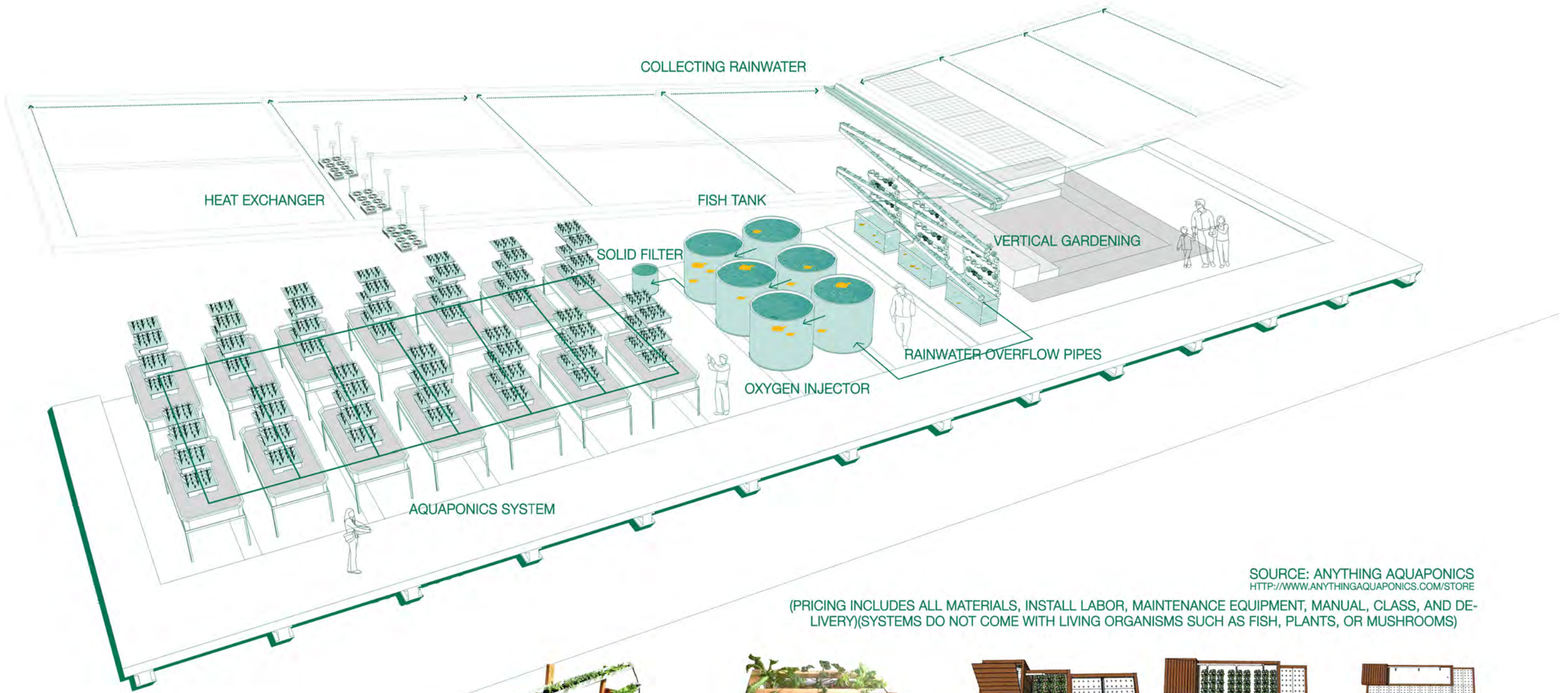

SEASONAL WETLAND
WETLAND BOARDWALK
GATHERING SPACE
TERRACE GARDEN
GATEWAY OVERLOOK
ADA ENTRANCE
S CLOVERDALE ST.
SECTION A-A


55TH AVE.S
AQUAPONICS HOUSE
LEARNING AREA
WETLAND BOARDWALK
SEASONAL DRYLAND
SEASONAL GREENHOUSE
PATH
SECTION B-B



AQUAPONICS HOUSE

AQUAPONICS IS THE FUTURE OF FOOD PRODUCTION. THESE SYSTEMS CAN SYMBIOTICALLY GROW PLANTS, FISH, AND GOURMET FUNGI TOGETHER USING ONLY 5-10% OF THE WATER USED WITH IN-SOIL METHODS. FOOD IS GROWN IN DENSE RAISED BEDS WITH WATER AND MEDIA INSTEAD OF SOIL. ONE PUMP CAN RUN AN ENTIRE FARM, ALLOWING GRAVITY TO PULL WATER FROM BED TO BED; DRASTICALLY REDUCING ANY UTILITY BILL.



SOURCE: ANYTHING AQUAPONICS
HTTP://WWW.ANYTHINGAQUAPONICS.COM/STORE

(PRICING INCLUDES ALL MATERIALS, INSTALL LABOR, MAINTENANCE EQUIPMENT, MANUAL, CLASS, AND DE-LIVERY)(SYSTEMS DO NOT COME WITH LIVING ORGANISMS SUCH AS FISH, PLANTS, OR MUSHROOMS)

USA AQUAPONIC FARM LIST
OCTOBER 1, 2016 | SETH CONNELL

WASHINGTON
- SEATTLE - ANYTHING AQUAPONICS
- PT. ANGELES - HOW ODD, AN URBAN FARM

SELF-WATERING11.5 X 1.5 FT
$168.59

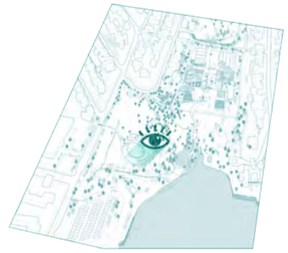
SMALL SCALE
2 SQ. FT. $450

64 SQ.FT. (4' X 16')
$4400 ($660 DEPOSIT)

160 SQ.FT. (8'X20')
$6000 ($900 DEPOSIT)

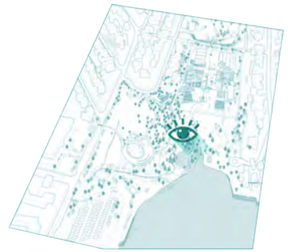
320 SQ.FT. (16' X 20')
$7,400 ($1110 DEPOSIT)

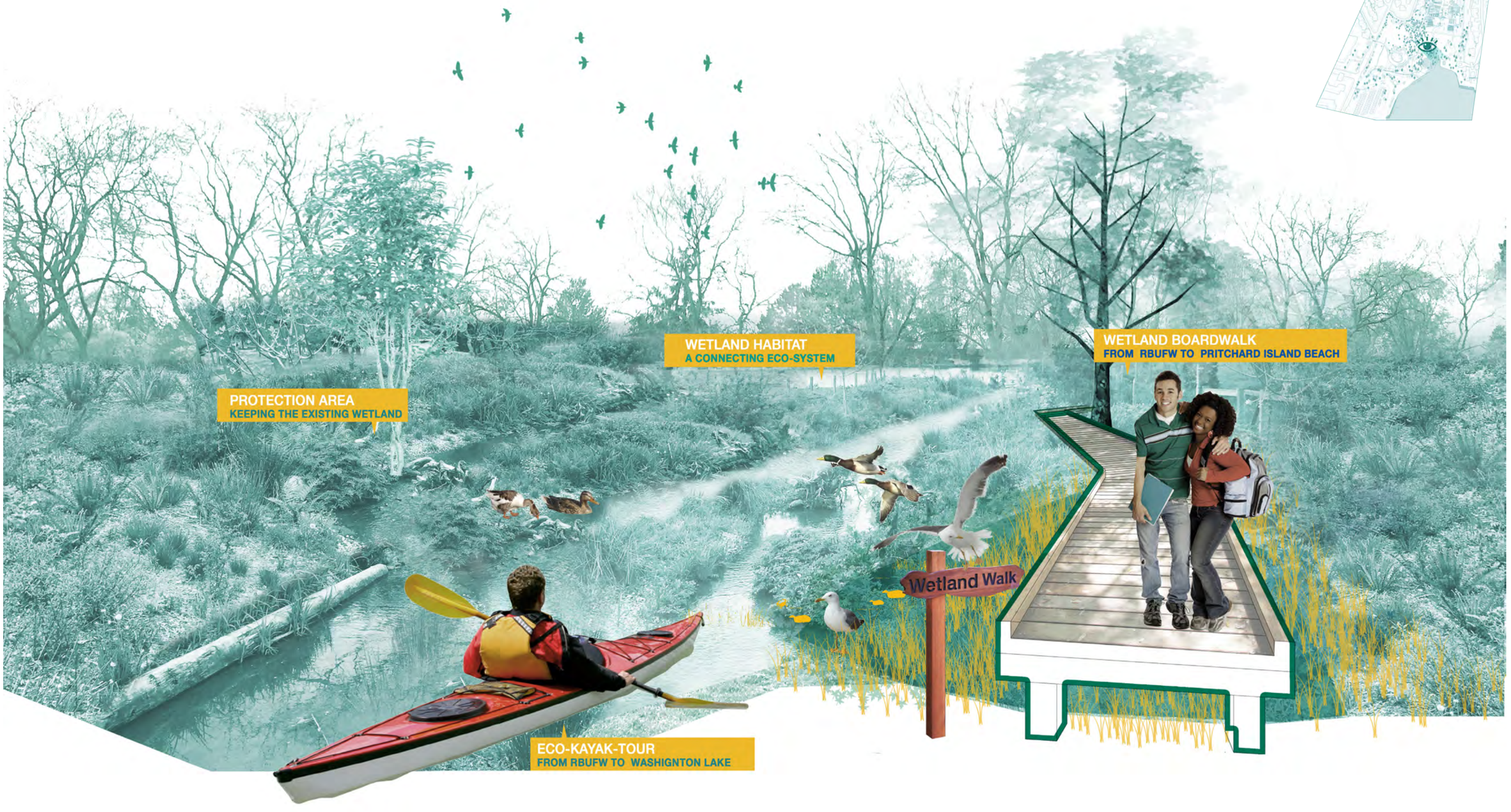

RAISED BEDS
LOW MAINTANCE HERB
TERRACE GARDEN
ADA FRIENDLY ENTRANCE
GATEWAY OVERLOOK
OBSERVATION AND LOOKOUT
GATHERING SPACE
FROM COMMUNITY TO RBUFW




TEMPORARY MARKET
FROM THE FARM TO TABLE
LAKE WASHINGTON
FROM COMMUNITY TO LAKE
PLAYING AREA
KEEPING THE EXISTING
JOIN US @ THE FARMERS MARKET
Tilth Alliance
MAIN ENTRANCE
FROM BEER SHEVA PARK TO RBUFW


AQUAPONICS HOUSE
SELF-SUFFICIENT SYSTEM
SEASONAL GREENHOUSE
KEEPING THE EXISTING
DUCK HOUSE
DUCK HOUSE
RAISING NATIVE FOWLS
WETLAND BRIDGE
FROM RBUFW TO PRITCHARD ISLAND BEACH




WETLAND HABITAT
A CONNECTING ECO-SYSTEM
WETLAND BOARDWALK
FROM RBUFW TO PRITCHARD ISLAND BEACH
PROTECTION AREA
KEEPING THE EXISTING WETLAND
Wetland Walk
ECO-KAYAK-TOUR
FROM RBUFW TO WASHIGNTON LAKE

Andrew Badgett

Daylighting Rainier Beach

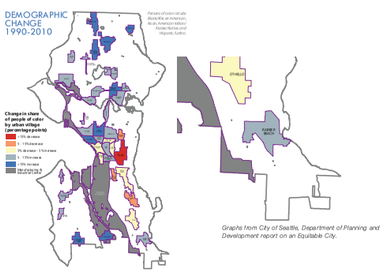
DISCOVERING WHAT'S THERE

The People

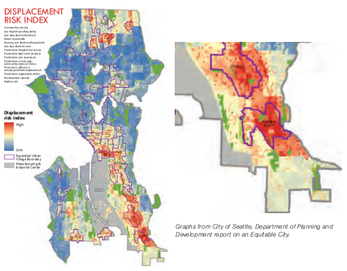
Rainier Valley was named the most diverse neighborhood in the country in 2010 by the US Census. It's still the most diverse place in Seattle.

Over **60 LANGUAGES** spoken in **ONE NEIGHBORHOOD.**

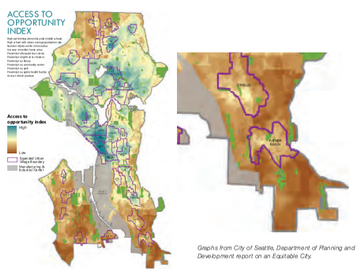
One of the few neighborhoods where diversity continues to grow.



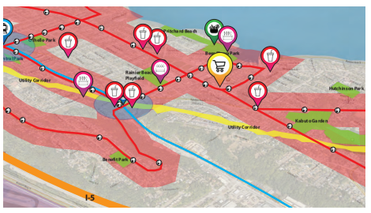
But there are challenges...



The people who have lived here for years are at a higher risk of **displacement**.



hey also have **less access** o the opportunities afforded o wealthier neighborhoods.

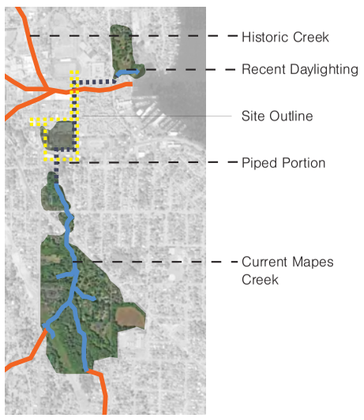


While there are many food options, there's only **one grocery store**. Fast food and quick marts are plentiful.

The Land

Historically, Rainier Beach was a trading ground for native tribes. A **gathering place** for different people to come together.

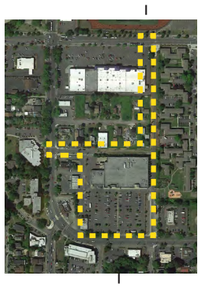
Mapes Creek is the last of a half dozen creeks that used to flow through the neighborhood. Gathering through Kabuto Gardens before being piped out to Beer Sheva park, Mapes Creek is an unique amenity.



Why choose this site?

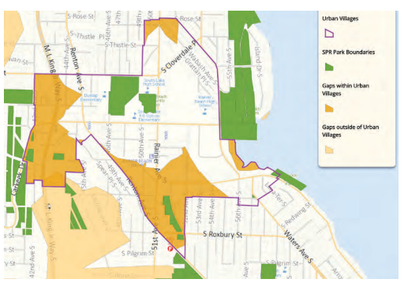
Piped **Creek** Below

Pedestrian **Path**



Underutilized **Space**

What needs can this fill?



This site is located in a gap in park access within the urban village.

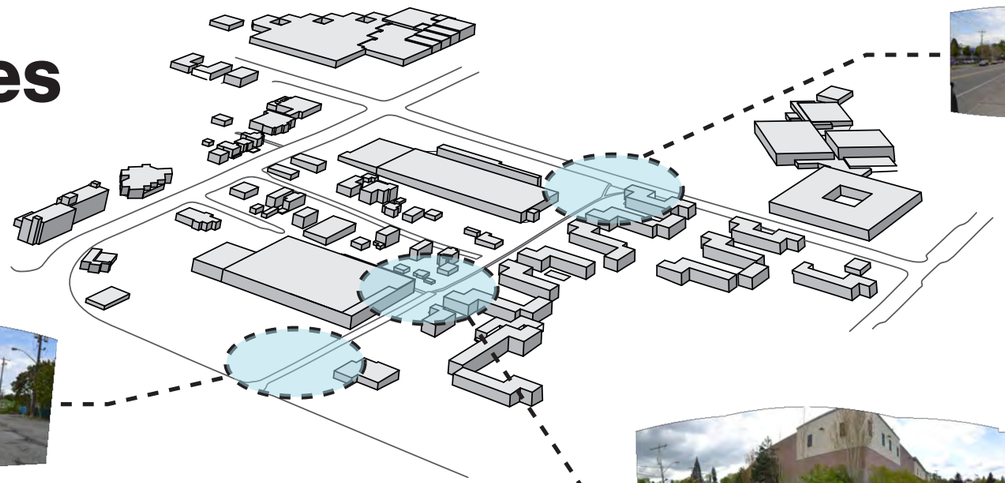
The Goals

- Provide economic opportunities that allows existing community to remain in the neighborhood.
- Create a resilient food system providing education, training, and healthy food s grown and sold locally
- Reveal natural amenities to strengthen local identity and improve neighborhood aesthetic.
- Pedestrian network becomes a productive and educational landscape for residents of all ages.

Highlighting Existing Nodes

Currently on site there are three main intersections where pedestrian traffic changes direction, enters the space, or stops and rests.

Nodes



Henderson St.

Rainier Ave S.

Pedestrian T Behind Safeway

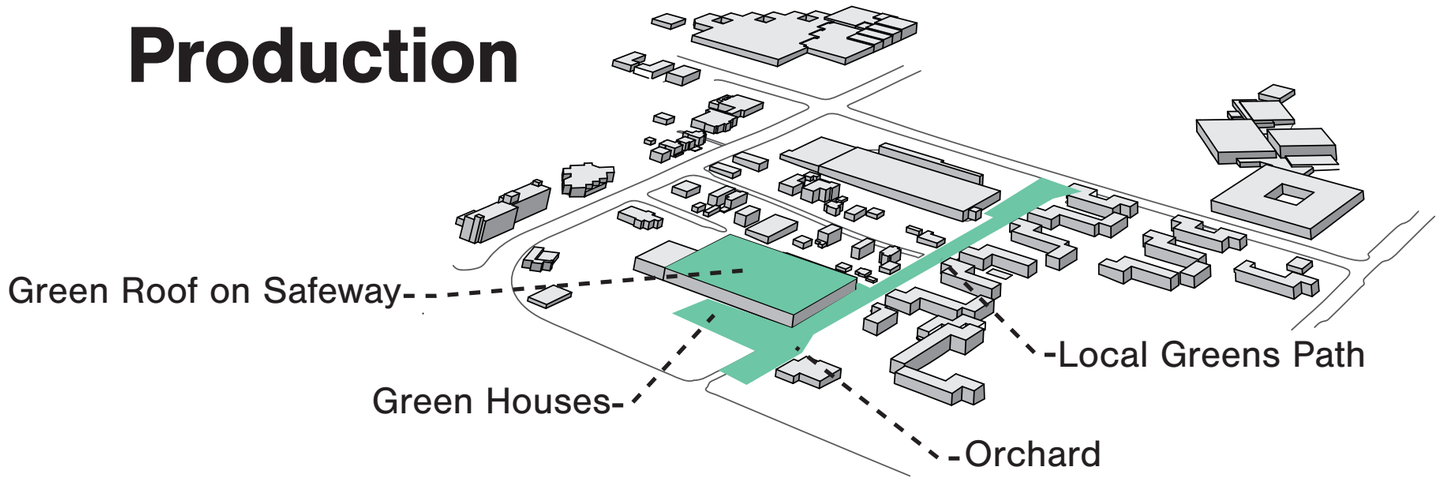
Discovering Productive Areas

The most promising spaces for urban agriculture are the roof of the Safeway, 52nd Ave north of Rainier Ave S., and the pedestrian path connecting Henderson and Rainier Ave.

Discovering Productive Areas

The most promising spaces for urban agriculture are the roof of the safeway, 52nd Ave north of Rainier Ave S., and the pedestrian path connecting Henderson and Rainier Ave.

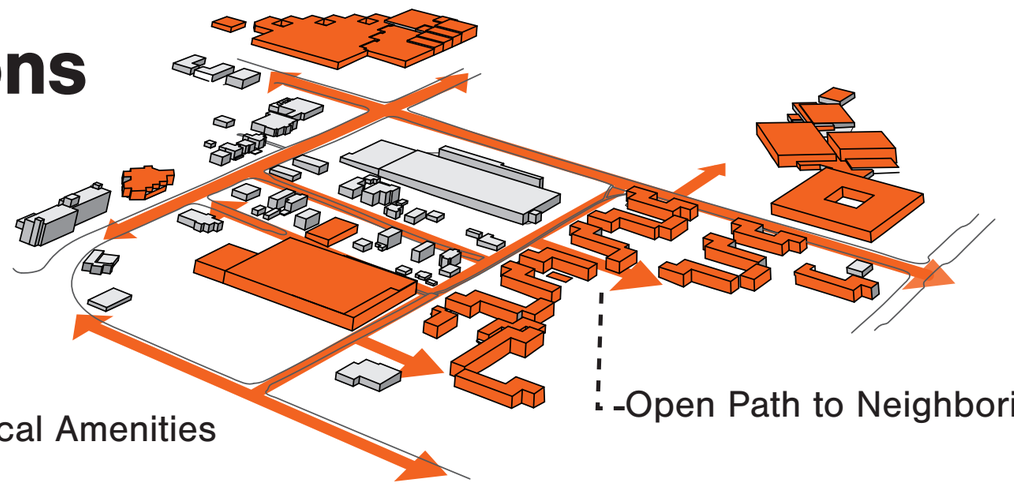
Production



Linking Routes and Destinations

This site is at the heart of the area's local amenities. By creating a network of pedestrian friendly paths, the right of way is given back to the residents and becomes an amenity itself.

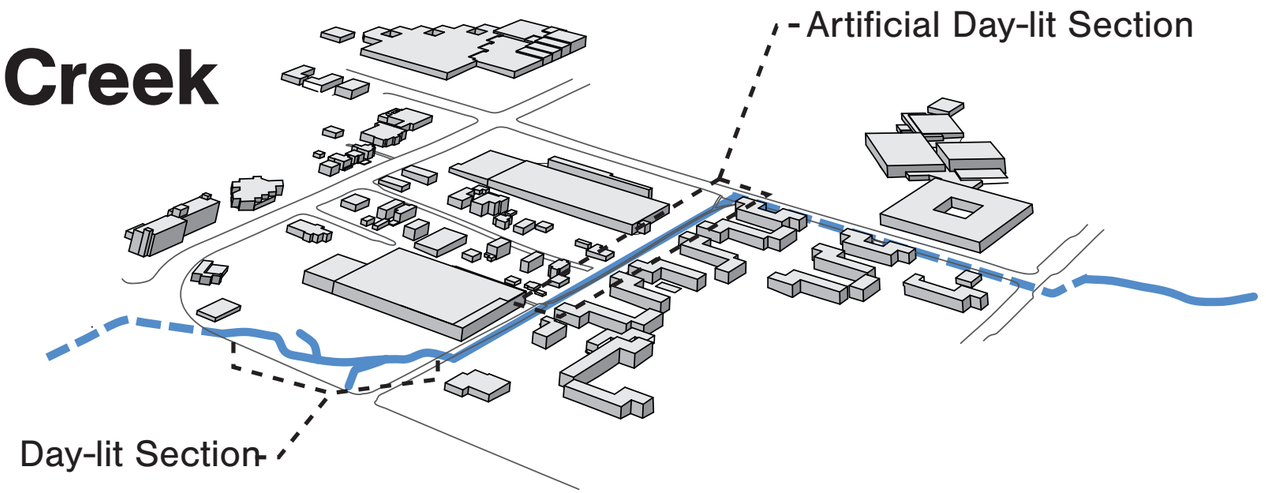
Connections

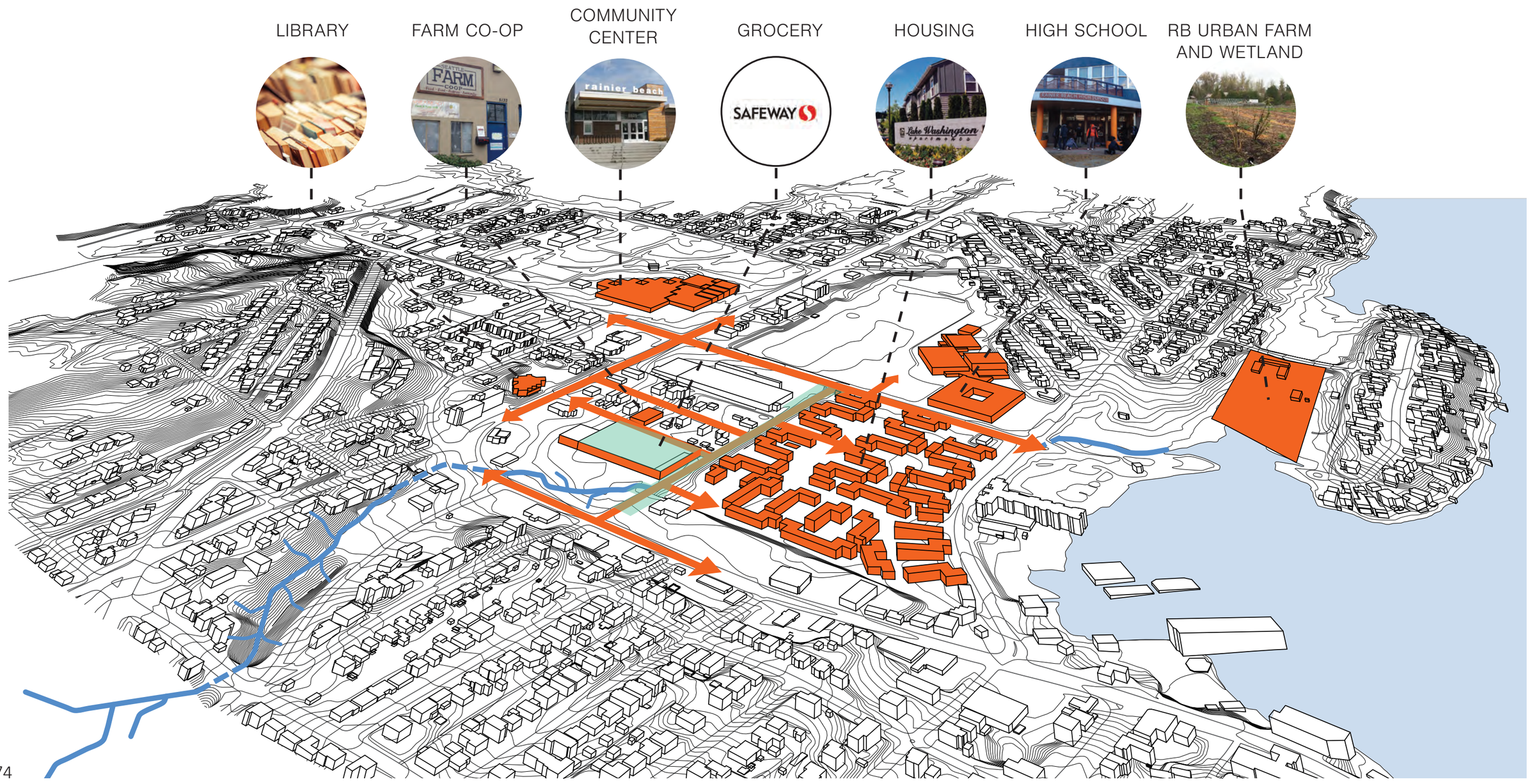


Restoring Water

Many creeks used to flow through Rainier Beach but there is only one that remains and it flows through pipes underneath the pedestrian path and parking lot. By revealing the creek in the parking lot and paying homage to the flow of water through the pedestrian path, this natural amenity comes to the surface.

Mapes Creek




LIBRARY
FARM CO-OP
COMMUNITY CENTER
GROCERY
HOUSING
HIGH SCHOOL
RB URBAN FARM AND WETLAND
FARM
COOP
rainier beach
SAFEWAY
Lake Washington

Phase 1

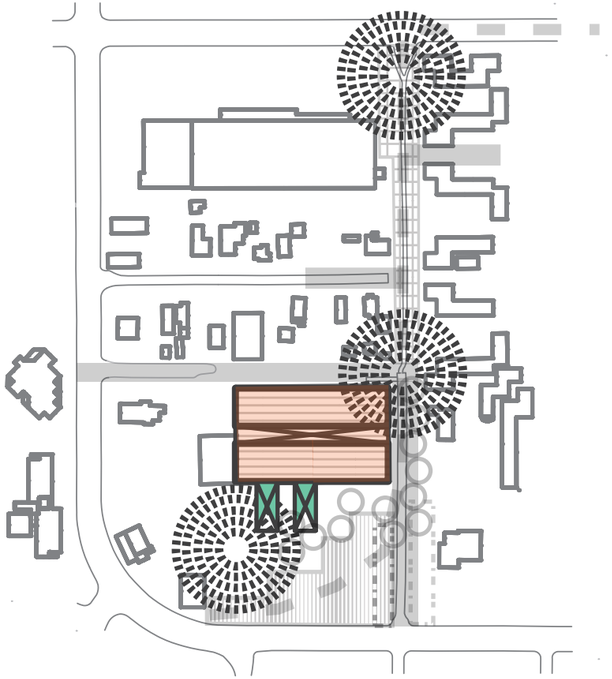
- Small-scale green roof
- Woonerf street design
- Bio-swales off Rainier Ave.
- Visual representation of Mapes Creek
- Small orchard planted

Phase 2

- Expanded green roof
- Expanded orchard
- Open pedestrian path to apartments and Director St.
- Daylight Mapes Creek in parking lot

Phase 3

- Transform Safeway into Food Innovation Hub
- Green houses on roof and parking lot
- Social/Flexible spaces located on pedestrian nodes




Flexible Social Spaces
VA Learning Gardens Image
Garden Workshops
Edible Path in Chicago
Edible Pedestrian Trail
Chicago Urban Horticulture Green Roof on McCormick Building
Productive Green Roof
Public Orchard
Sausals Creek Restoration in Oakland, CA
Daylight Mapes Creek
Clean Stormwater

Shan Huang

Food Forest Library in Rainier Beach

Urban Scale Contexts

Green Space & Topography

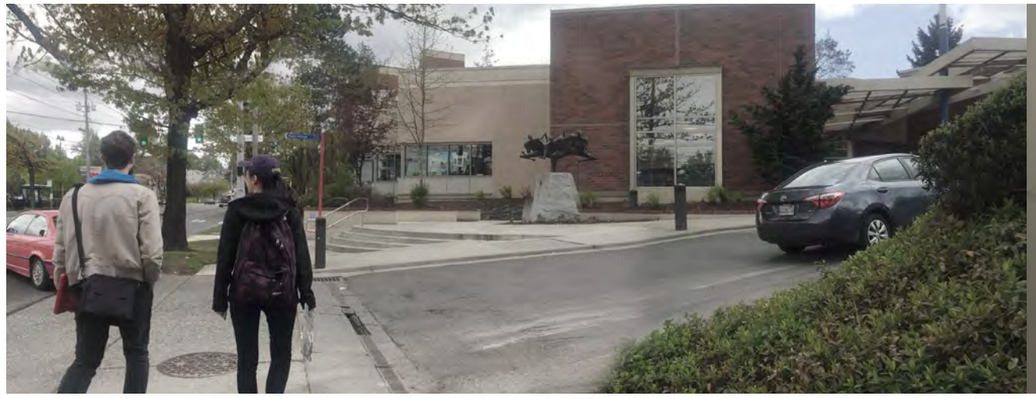
Civic and Commercial Facilities

- Civic Facilities
- Commercial Facilities

Vision

Site Scale | Connection to the surroundings

Existing Conditions



Master Plan

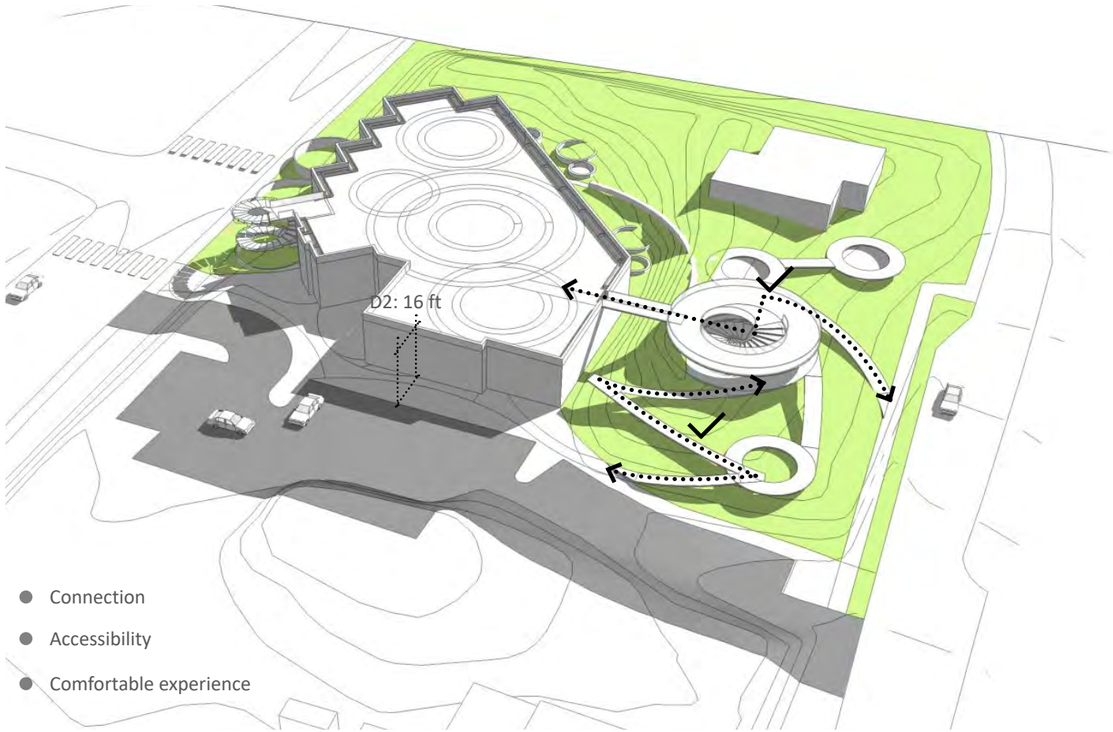
Legend
1. Feature paving
2. Entrance spiral stairs
3. Roof garden
4. Feature play structure
5. Roof garden planter
6. Food forest
7. ADA ramp
8. Tree house
9. Backyard
10. Feature slide
11. Parking lot

Problems & Solutions

Before

- Disconnection
- Inaccessibility
- Uncomfortable experience

After



- Connection
- Accessibility
- Comfortable experience

Main Nodes

Entrance Feature Planter

Roof Garden

Backyard

Tree House

Food Forest

Main Nodes | Entrance Spiral Stairs

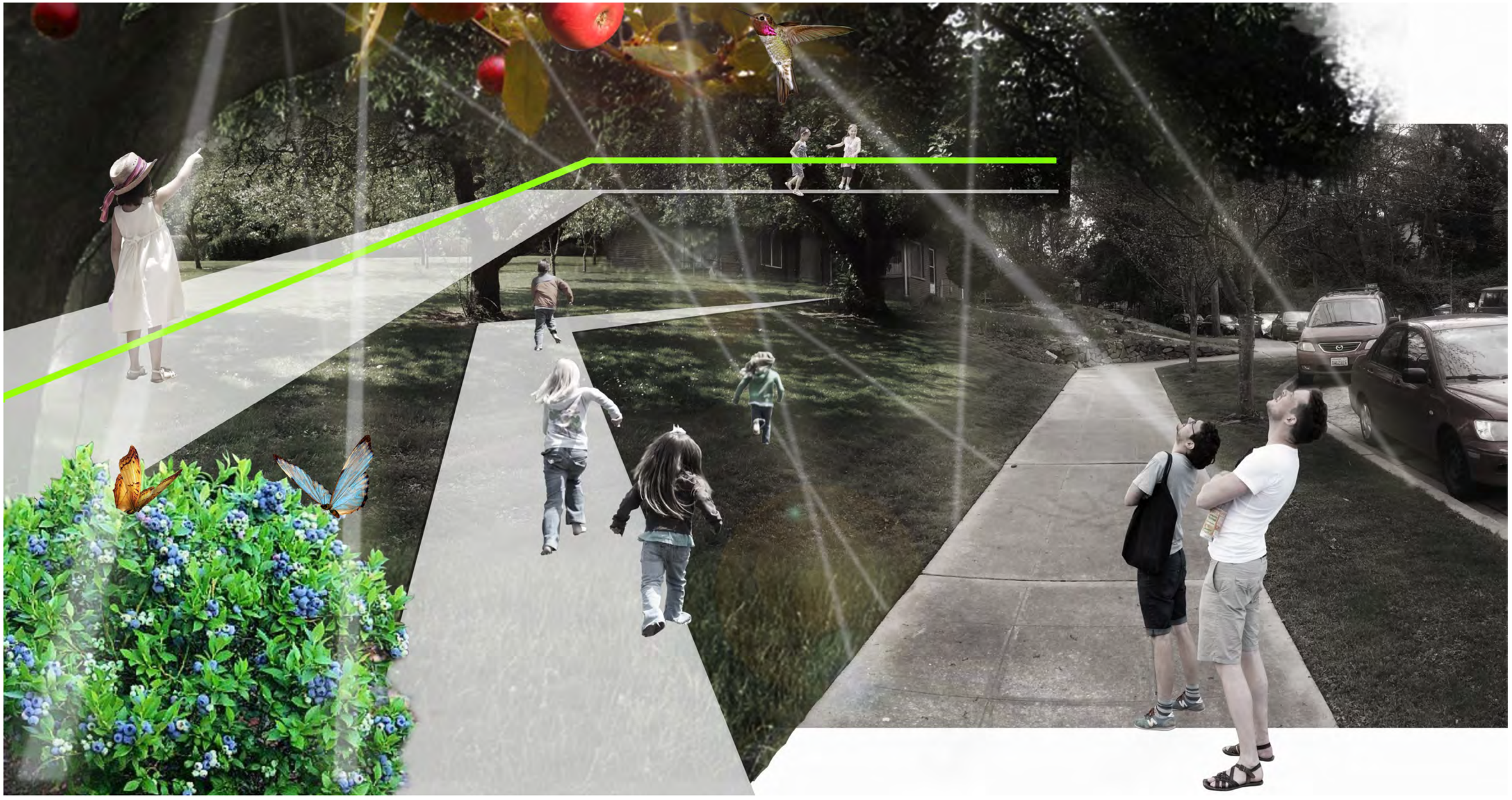
Main Nodes|Roof Garden

Main Nodes|Food Forest

Main Nodes|Roof Garden

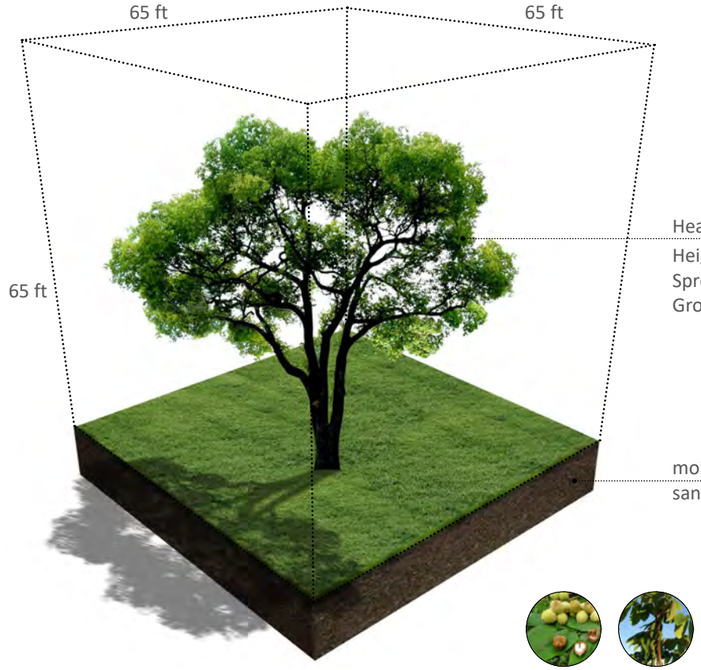
Main Nodes | Tree House

Main Nodes|Food Forest



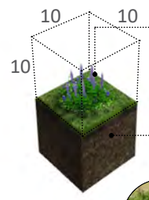
Main Nodes|Food Forest

Planting Design | Species research



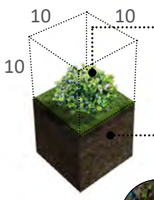
Heartnuts (Juglans ailantifolia)
Height: 45-65 feet
Spread: 45-65 feet
Growth: fast

moist, well drained soils,
sand and clay loam



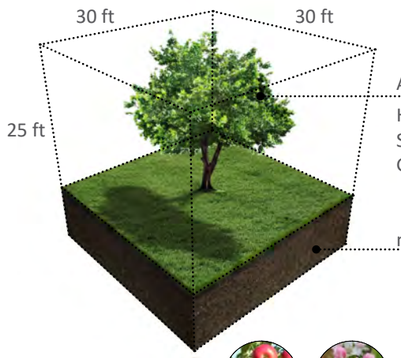
Big-leaved lupin
(Lupinus polyphyllus)
Height: 4 feet

light soil, low alkaloidal
or sweet cultivars



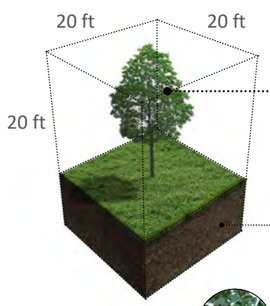
Blueberries (Vaccinium spp.)
Height: 4-6 feet
Spread: 3-4 feet
Growth: slow to medium

acidic,
drought toleratn soil



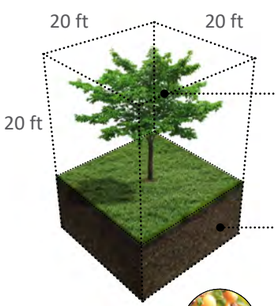
Apple tree (Malus spp.)
Height: 10-25 feet
Spread: 10-15 feet
Growth: fast

moist, well drained soils



Pear tree (Pyrus spp.)
Height: 12-20 feet
Spread: 10-20 feet
Growth: fast

acidic, moist,
well drained soils



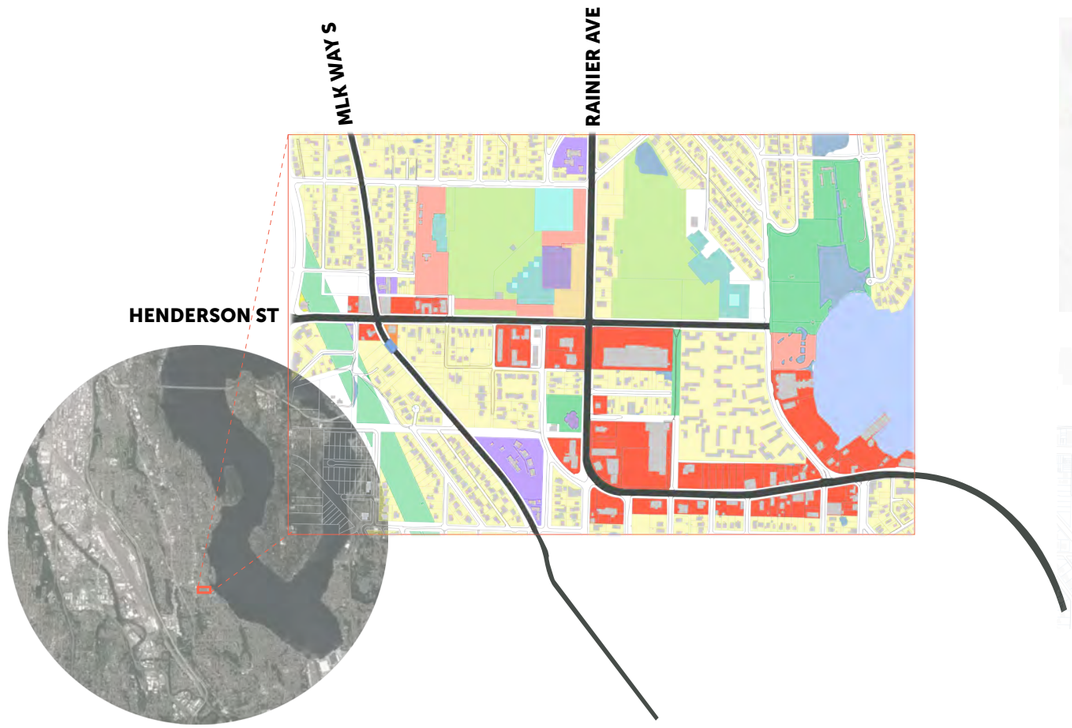
Plum tree (Prunus spp.)
Height: 10-35 feet
Spread: 10-20 feet
Growth: medium

acidic, alkaline, loamy,
well drained,
wide range soils

Planting Design | Section

Margot Chalmers

Urban Agri-Suture: Revitalizing a Concrete Desert

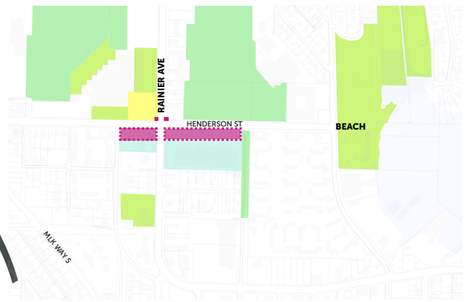


SITE ANALYSIS: CURRENT LAND USE

- COMMERCIAL
- PAVED AREA
- OPEN SPACE: SPORTS
- WETLAND
- COMMUNITY SPACE
- SCHOOL
- OPEN SPACE: UNPROGRAMMED

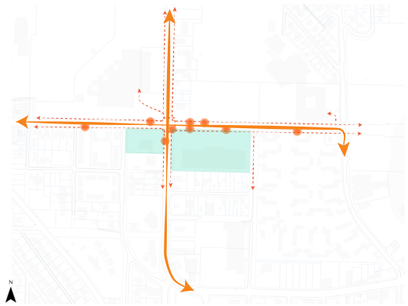
CURRENT LACK OF PRODUCTIVE SPACE

- UNPROGRAMMED SPACE
- COMMUNITY SPACE
- SPORTS/ACTIVE SPACE
- AG PRODUCTION
- SITE: PAVEMENT



PROPOSED PRODUCTIVE SPACE

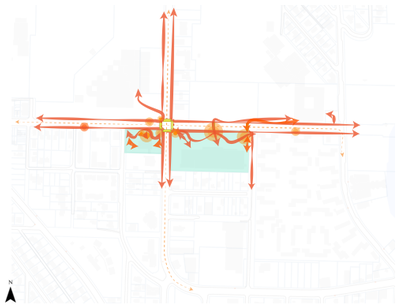
The neighborhood provides ample opportunities to recreate, yet lacks food production space. The proposed plan responds to this need by creating multifunctional space for a high level of food production.



VEHICULAR TRAFFIC DOMINATES

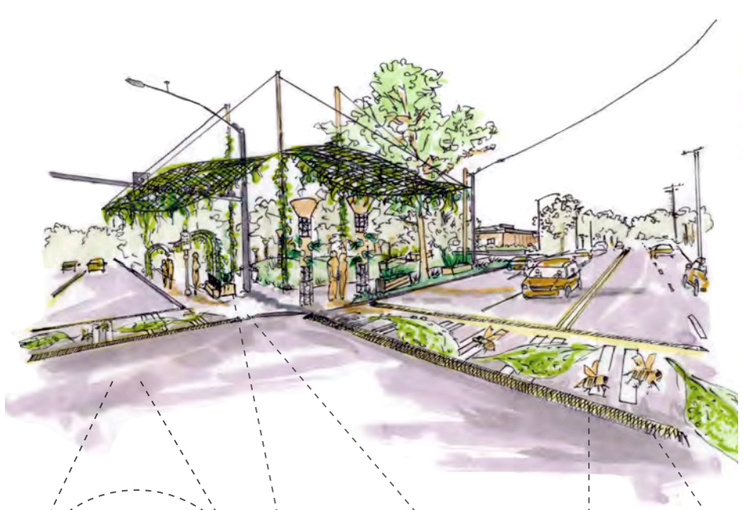
- VEHICULAR FLOW
- BUS STOP
- PEDESTRIAN FLOW

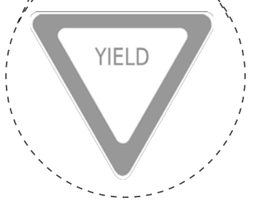
Currently, fast vehicular traffic dominates the site making pedestrian travel unpleasant and potential dangerous. The proposed plan slows traffic through the insertion of raised crosswalks and vegetation, and creates pleasant and alternative pedestrian throughways.



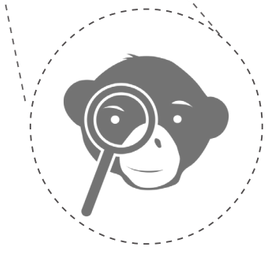
DESIGN FOR THE PEDESTRIAN

- SITE
- BUS STOP
- VEHICULAR FLOW
- PEDESTRIAN FLOW



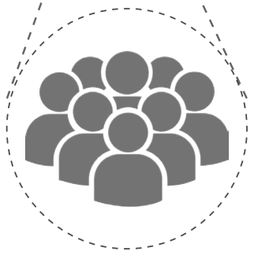


SLOW TRAFFIC

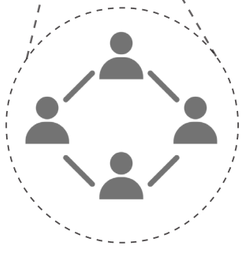


PROVIDE SIDEWALK INTEREST

INCREASE PEDESTRIAN ACCESS AND SAFETY



GATHER PEOPLE TOGETHER

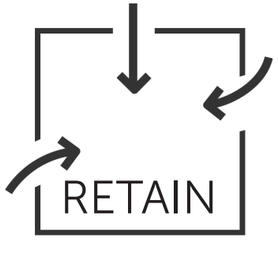


PROVIDE SPACE TO GROW SOCIAL CONNECTIONS

REPLACE PAVEMENT WITH VEGETATION

CREATE AN INVITING SPACE

PRODUCE CULTURALLY RELEVANT FOODS



FRACTURE

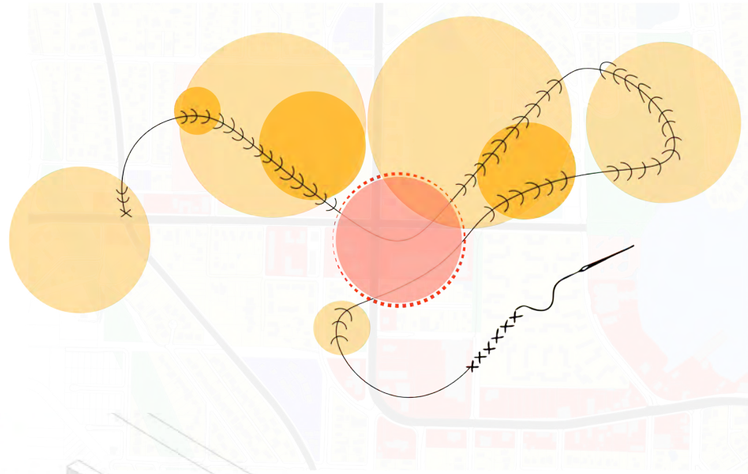
CONCEPT: SUTURE

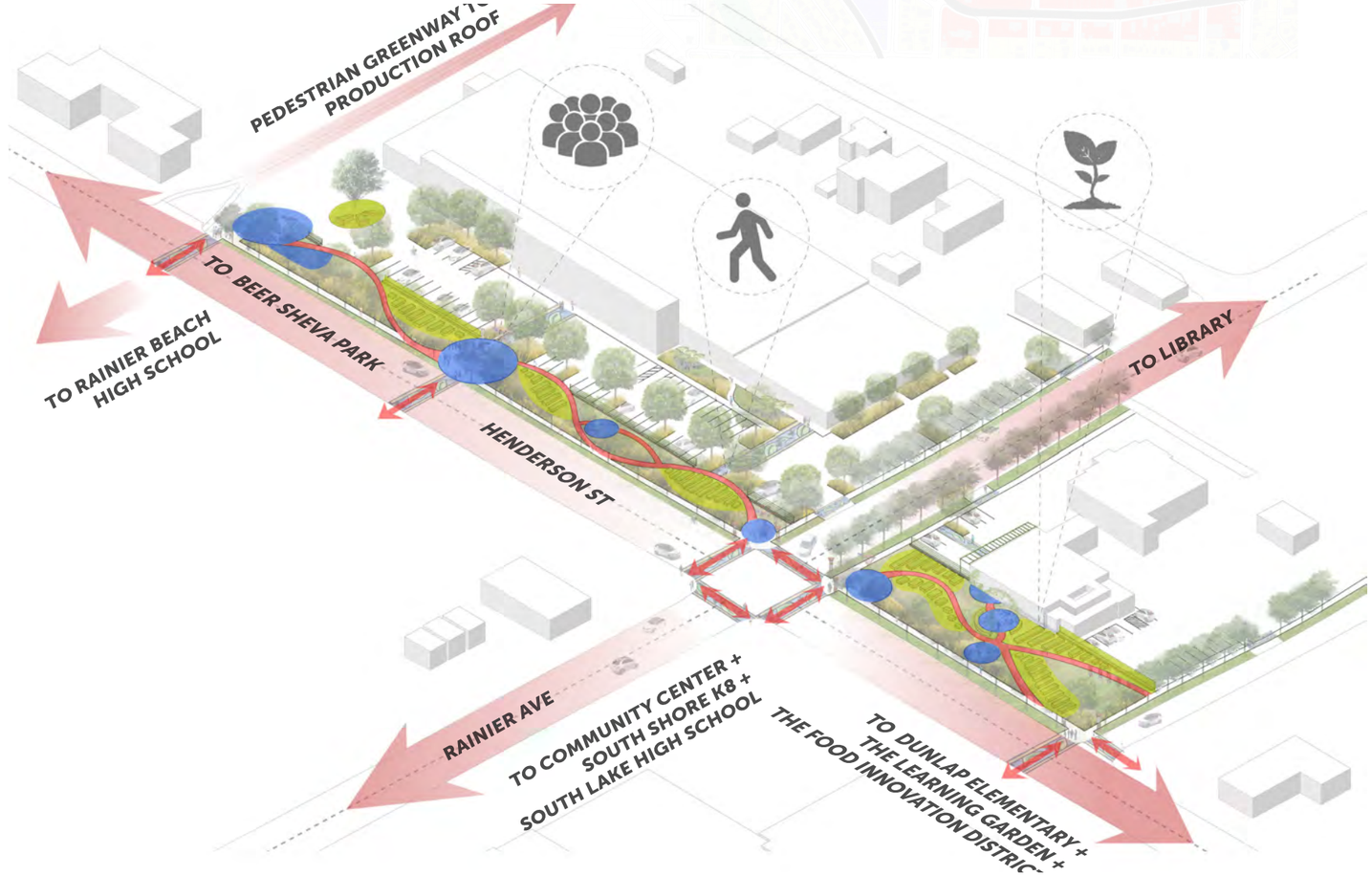
This design transforms semi-vacant commercial space into a public-private hybrid landscape. It brings together the diverse populations that reside in the Rainier Beach neighborhood through a productive, multi-functional landscape that functions on a human scale.

Provide a unifying factor for Henderson Street. Link communities, spaces, and individuals together

Insert life and activity into the paved monotony of the site's urban framework to create a more viable and livable space.

Bring Henderson street down to the pedestrian scale by slowing traffic and providing interest and purpose to the site. Transform unused private space into a destination for the public.



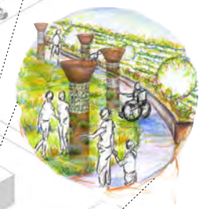


LAYERED CANOPIES
Flexible seating patio sits underneath hops production and provides dining space for food truck and farmers' market customers.

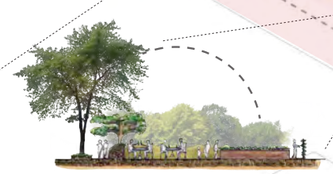
SHIFTING VIEWS
Pedestrians stroll between a buffer of fruit trees on a rolling berm and productive beds; the meandering path shifts one's focal point from the busy street to site details.

STREET INTEREST
Chickens, visible from the street, offer a bridge between the site and the street. Poultry provide dynamic, year-round interest and an opportunity to draw a diversity of families into the site.

PAUSE, TRANSITION AND SHELTER
Sheltered bus stop and market space allow for rest, socialization, rain water reuse and food production.

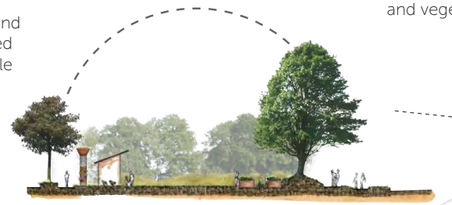


C: PRODUCTIVE ART
Gabion herb pillars collect water and utilize tree irrigation bags to provide drip irrigation for herbs. Vertical plantings provide olfactory and tactile experiences for visitors of all heights.



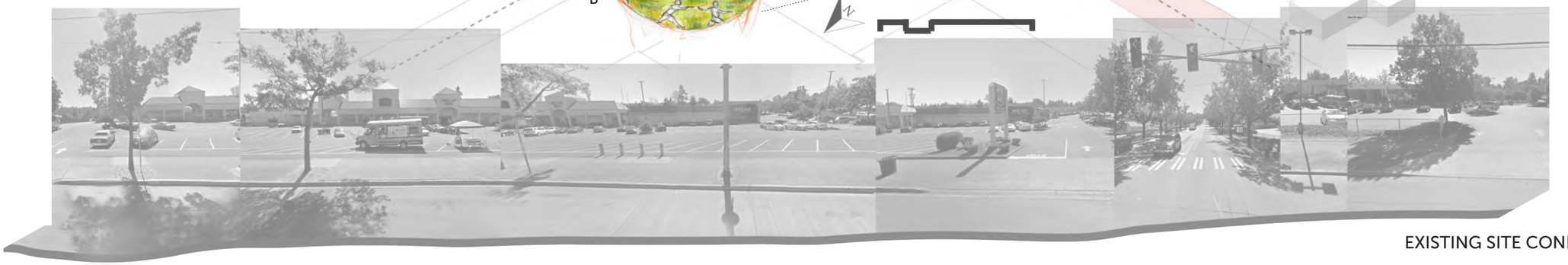
PRODUCTION NOOK
Seating is nestled between espalier fruit trees and vegetable beds for a more private feel.

A + B: OPEN SPACES
An open lawn is sheltered by berms and surrounded by vegetable, fruit and livestock production. Unprogrammed yet buffered spaces allow for multiple simultaneous uses of the space.



A

B



EXISTING SITE CONDITIONS

A SHADY RESTING SPOT

In the summertime, the “Production Dining Nook” receives soft, dappled light through leafy hops that grow over the structure. This semi-private space allows for visitors to bring their own snacks or dine on meals produced by the adjacent tapas restaurant made from the surrounding vegetable planter boxes.

LIGHT IT UP!

At night and during the cooler months, lights line the structure to provide a cozy and safe space to socialize and relax.

Visitors enjoy a winding path through berms that separate the busy street from the space, allowing pedestrians to focus on site details. Structures allow hops vines form a thick canopy over flexible seating. Visitors may utilize the space to eat lunch from the neighboring food trucks, weekly farmers markets, and locally-run restaurant. At night and in the winter, these structures would feature strings of lights to enliven the space and provide a sense of safety. During the summer, weekend concerts could be held in the neighboring parking lot.

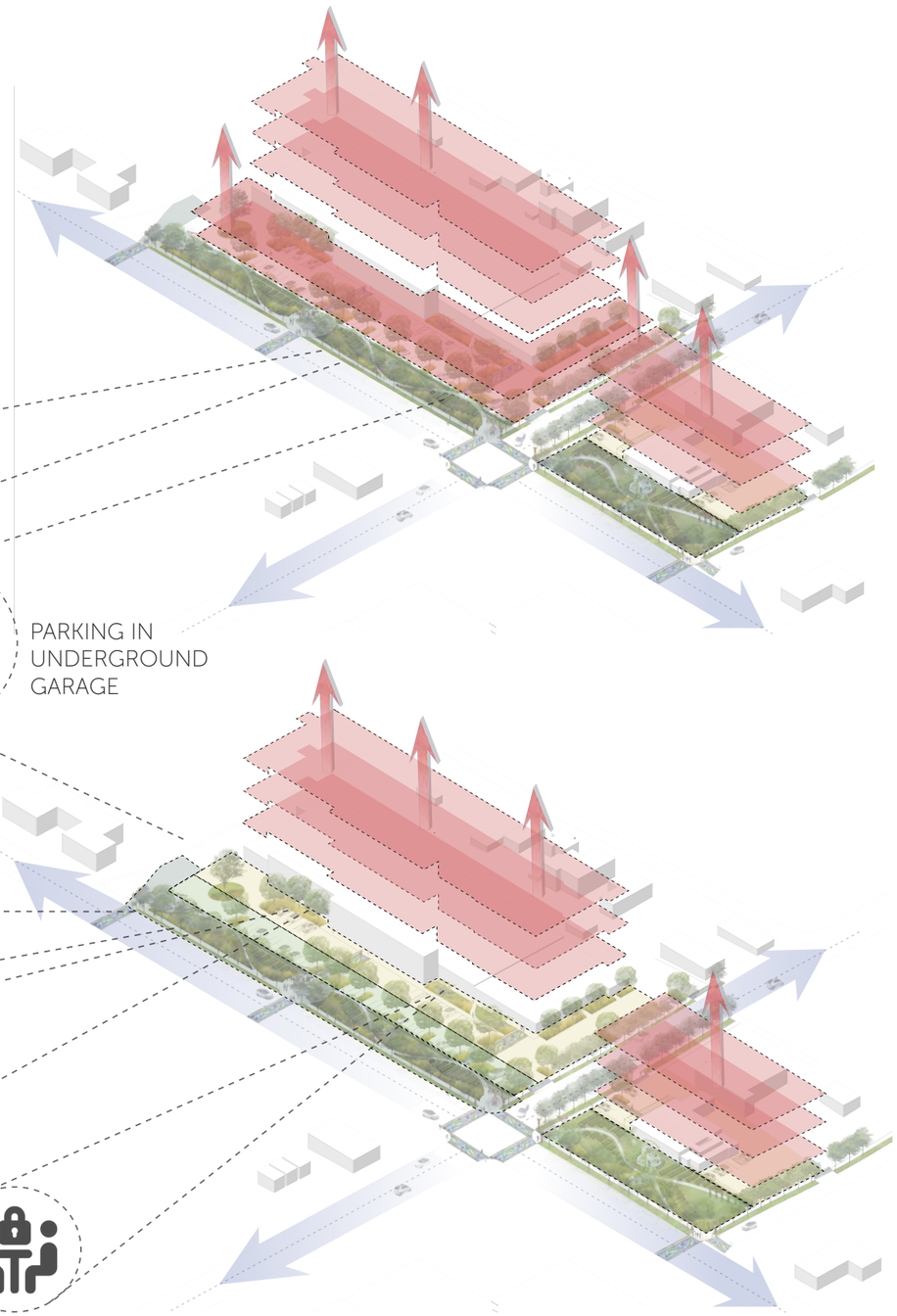
FUTURE EXPANSION

ZONED FOR MIXED USE:

Potential conversion to apartment buildings to capitalize on lake and mountain views

SITE REMAINS COMPLETELY PUBLIC AND ABUTS APARTMENT BUILDING

PARKING IN UNDERGROUND GARAGE



SCENARIO A: BUILDING EXPANSION

FACILITATE CONNECTIONS BETWEEN PUBLIC, SEMI-PUBLIC, AND PRIVATE OPEN SPACE

ORIGINAL SITE REMAINS PUBLIC

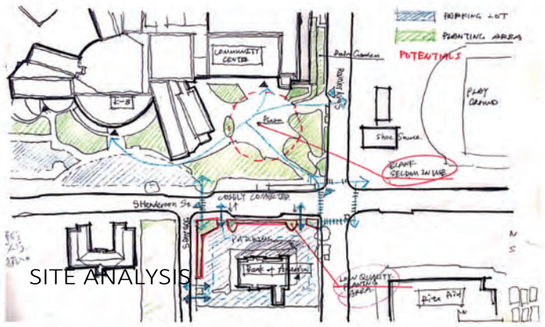
SEMI-PUBLIC COMMUNITY + INDIVIDUAL GARDENING PLOTS FORM A BUFFER BETWEEN PRIVATE AND PUBLIC SPACE

PRIVATE OUTDOOR SPACE SURROUNDS THE BUILDING. THIS MAY TAKE ON RECREATION OR RELAXATION PROGRAMMING

Anran Liu

Be the Driver

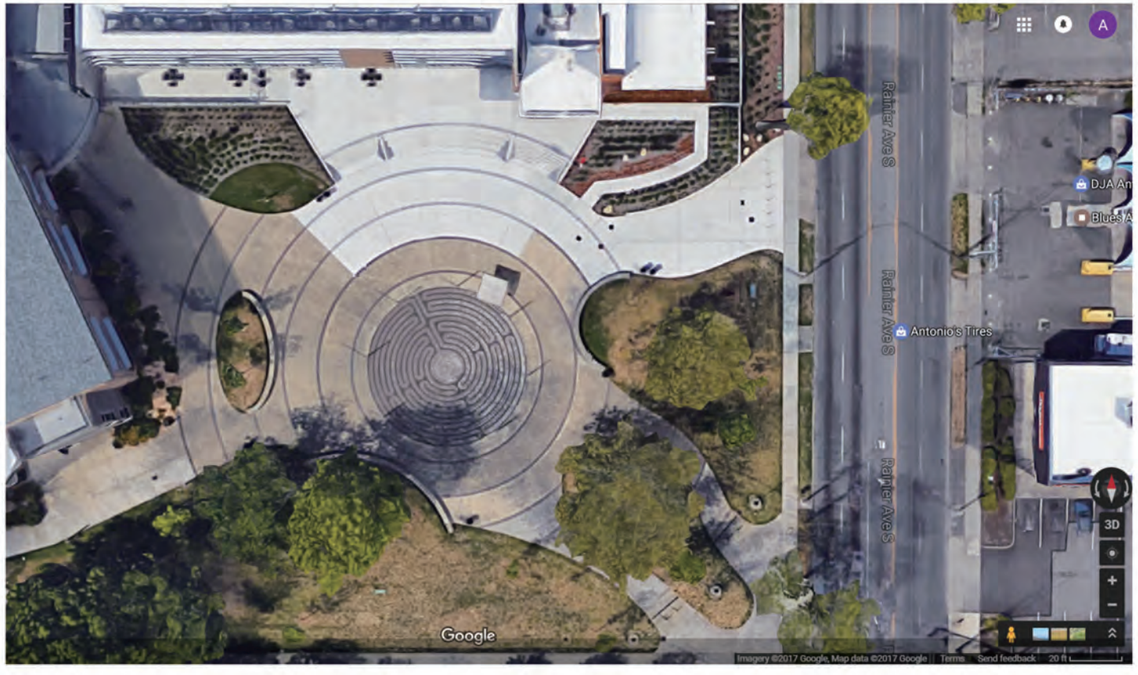
RESOURCES



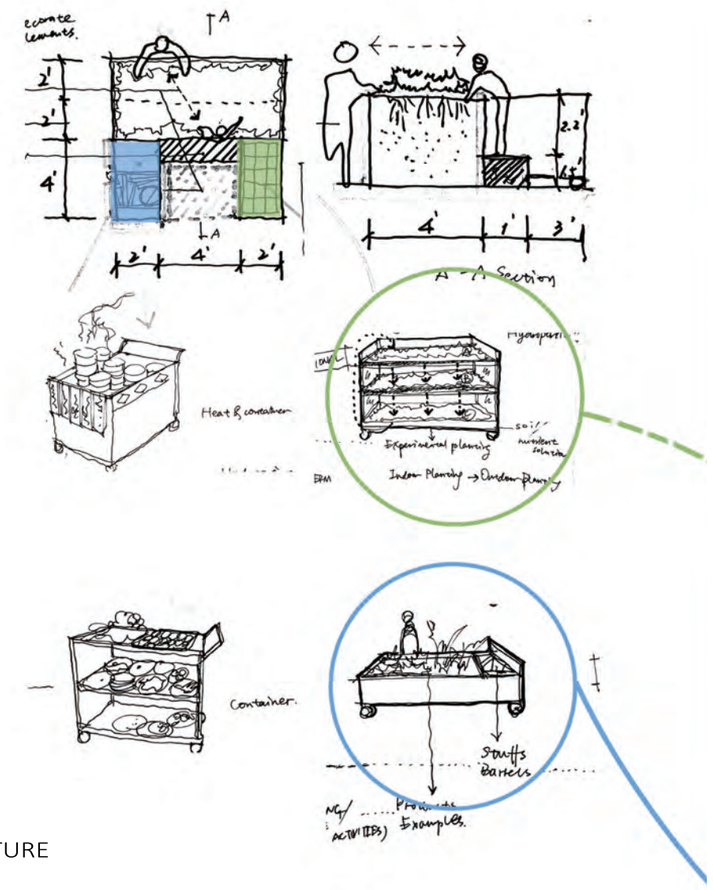
SITE ANALYSIS

LONG TERM

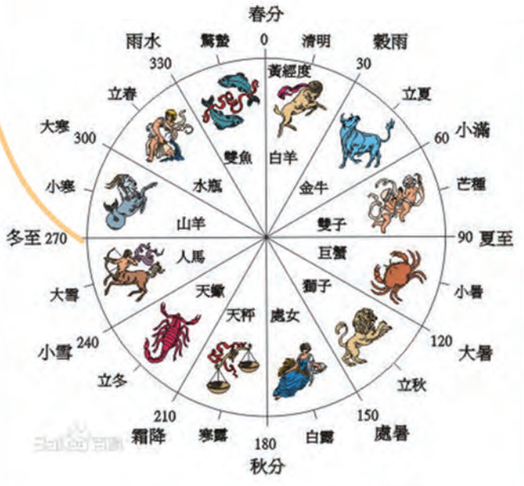
SITE PLAN



INTERACTION



CULTURE



CULTURAL ELEMENTS

INDOOR PLANTING
TO OUTDOOR
PLANTING

MARKET

SHARING MEALS

FLEXIBILITY

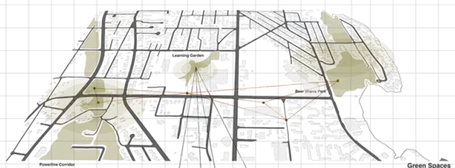
CULTURAL ELEMENTS

WATER TOWER

Yuchia Jan

Pollinator Network System in Rainier Beach

The project site is located behind the Rainier Beach Community Center and next to the South Lake High School which can be the important educational space for the urban agriculture and learning garden of the pollinators to the resident in this community.



Green Spaces

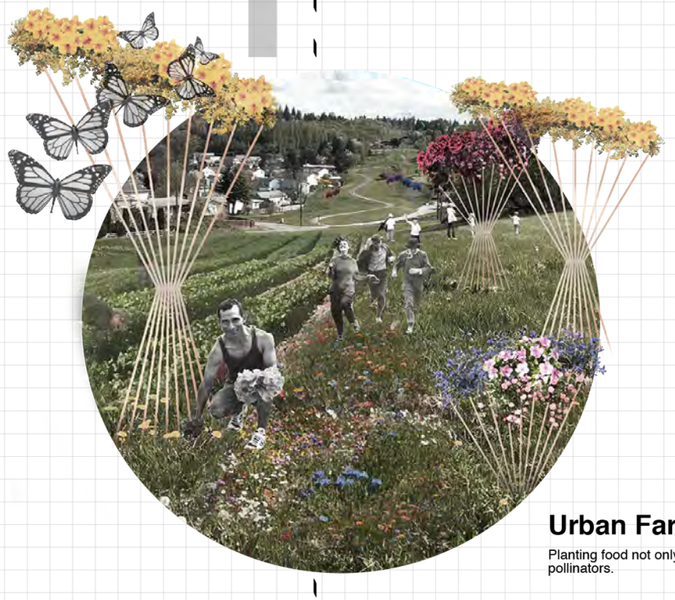
Schools

Pollinaror's Forage Distance

Connecting the three different nodes which are the Powerline Corridor, Learning Garden and Beer Sheva Park to form the pollinator network system in the Rainier Beach Community. These nodes are all in the I mile radius circle of the pollinator flight distance which meanes it can provide the comprehensive migrate system for the pollinators in the Rainier Beach.

1

Without the actions of pollinators, agricultural economies, our food supply, and surrounding landscapes would collapse.



Urban Farming

Planting food not only for human but also pollinators.

2

Learning Garden

Educate the public why essential about the pollinators and how to protect them.

Without the actions of pollinators, agricultural economies, our food supply, and surrounding landscapes would collapse.

3

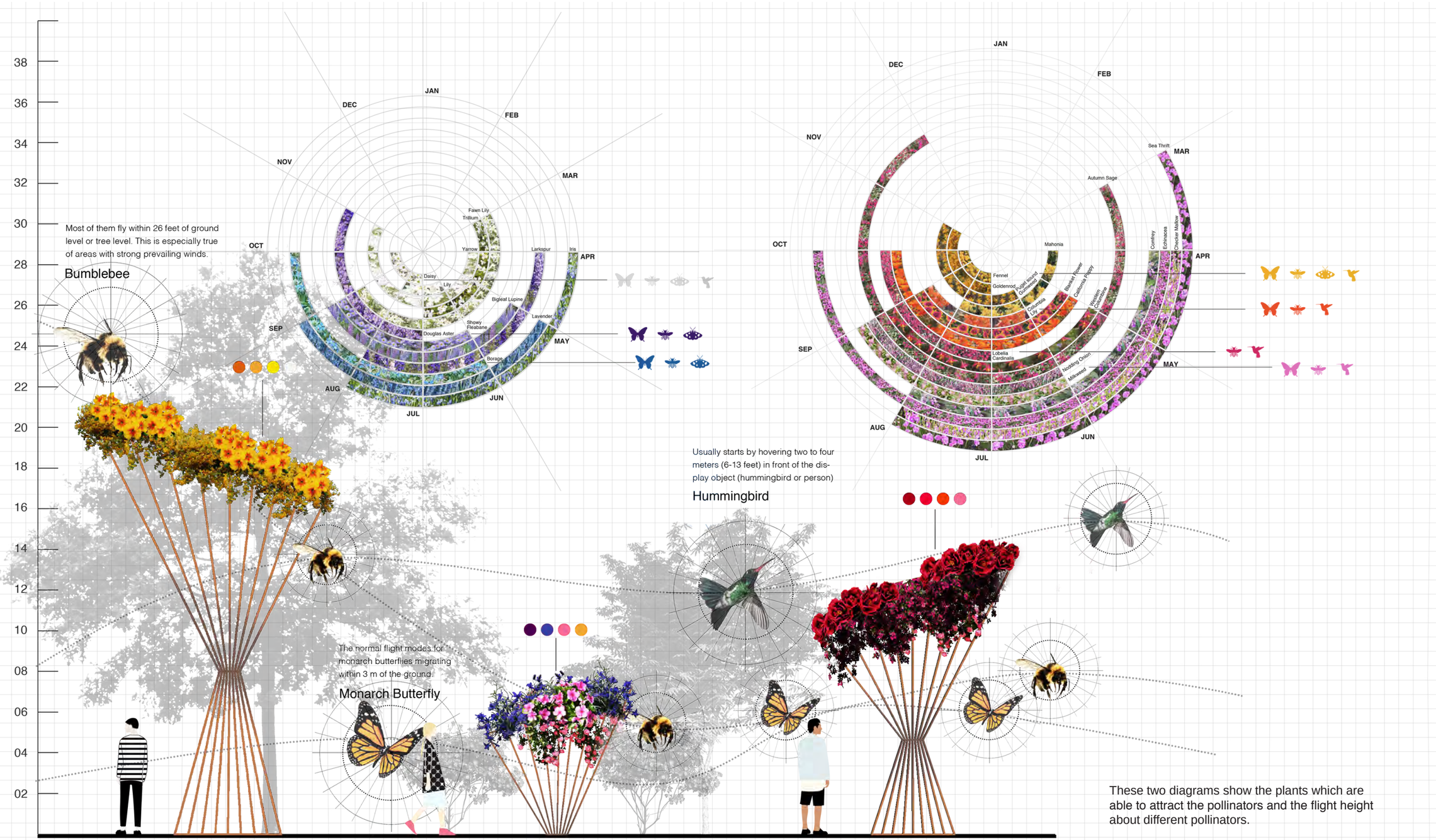
Community Engagement

The residents in the community can share part of their front yard or garden as the pollinator habitats.

Pollinator Sanctuary

Create a core pollinator habitat form the human disturbance.

4



These two diagrams show the plants which are able to attract the pollinators and the flight height about different pollinators.

Class room & Pavilion:

These two pavilions provide multifunction in the community, they can use as the gathering space, exhibition area, tool storage space or even the office for the community group. Moreover, there walkable green roof enable people to observe the pollinators in the canopy layer.

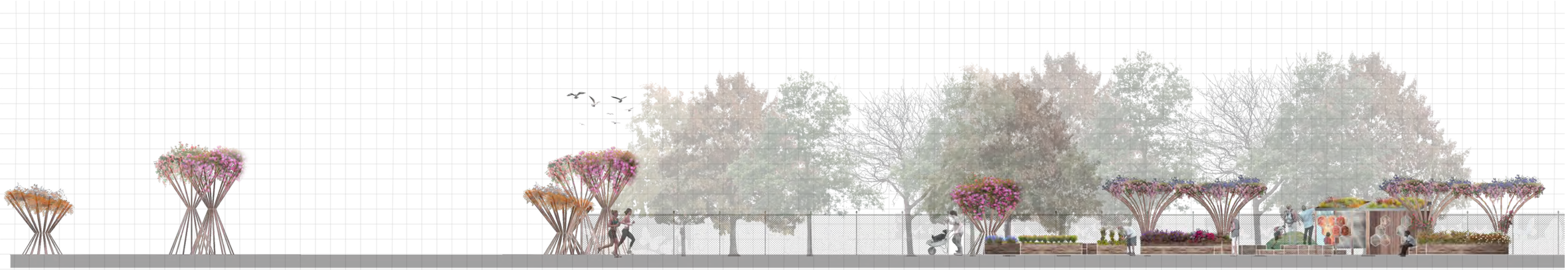
Learning Garden:

The planting bed can not only plant the vegetables and crops on it but also be the multifunctional outdoor classroom, each planting bed have the sitting space so that children can sitting or kneel on it and observe the plants and pollinators from the planting area as well as adults are able to plant the crops from the outside of the planting bed.

The learning garden is the educational community garden to teach people the knowledge about the pollinator species, habitats, lifecycle... etc. Besides, people can learn which plants are the pollinator attractive plants to attract the pollinators so that they can plant this speciese of the plants in their private yard or garden.

Raising Table:

The colourful pavement and the raising table can not only slow down the speed of the cars but also provide a significant and attractive hint of the entrance for people to find the learning garden.

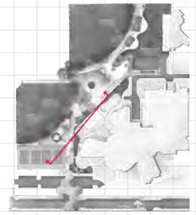


Entrance

The structures which planting the flower to attract the pollinator become to the significant hint to remind people here is the learning garden. Follow these gigantic structures, you can find the home of the pollinators!

Learning Garden

Children and adult can all learn about the knowledge of the pollinators in this learning garden. With different scales of the facilities, they are able to learn from the food resources to the ideal habitats for the pollinators.



ADA Ramp

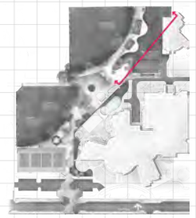
Go through the ramp, people can go to the green roof garden and observe the pollinators in the canopy layer. There are also have three structures erect around the ramp, which provides the different perspective when people walking through the ramp.

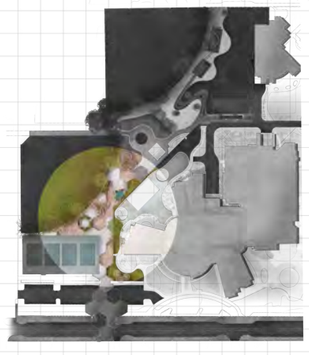
Exhibition Area

This pavilion can be the exhibition area to display the data, photos and all kinds of the information associated with the pollinators. People in this area are able to further understand about what kind of the lovely creatures live in their community garden and yard!

Office & Gathering Ar

The bigger pavilion can be the office for the community group or organization, such as “Good Food.” It can also open to be the place to hold the community event or activities.





Learning Garden

There are several kinds of the facilities in the learning garden provides people with a wonderful chance to not only get close to the pollinator habitat but also learn about the urban agriculture. Even the pattern on the paving also represents the flight path of different pollinators so that when children in the learning garden, they can mimic themselves as the pollinator to learn about these creature's habit!

Pavilions

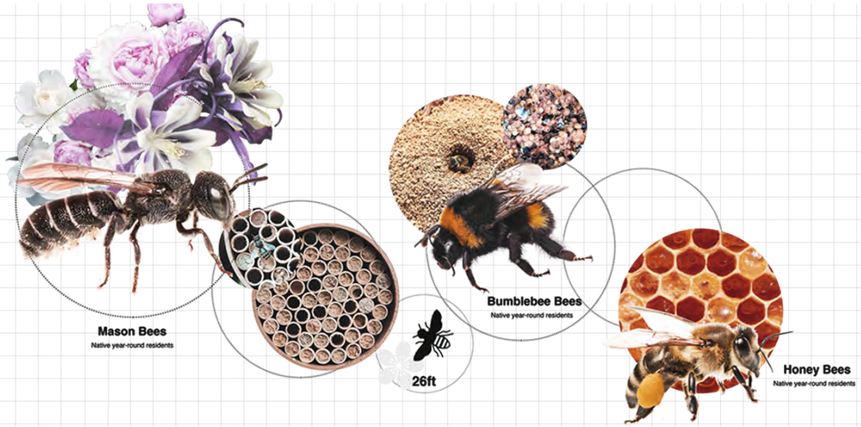
The pavilions, walkable green roof and the wide green lawn create a totally different space with the learning garden. These pavilions can be the gathering space to host the community events, working office or the outdoor classroom. People are able to observe the pollinator habitat in the canopy layer so that they can have a chance to experience the different learning environment.

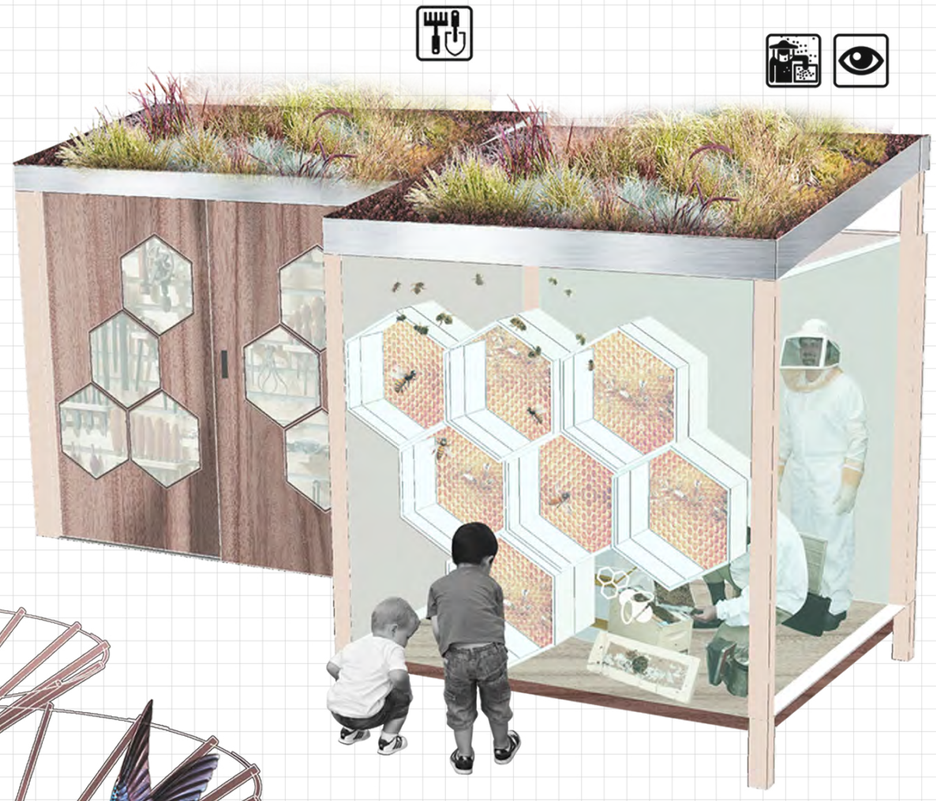
Planting Bed

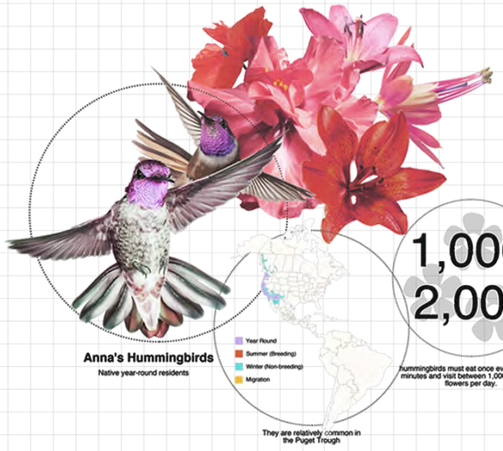
The planting bed provide multiple functions in the learning garden. It can be the outdoor classroom for children or adults to learn about the knowledge of the pollinators. Moreover, the step around the planting bed can be not only the platform for kids to easily access the planting but also for people to sit. Last but not least, the flower-shaped pavilions are able to be the shelter when people need to work during the raining time.

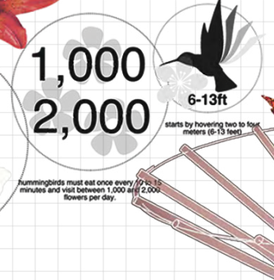
Pollinator Structure

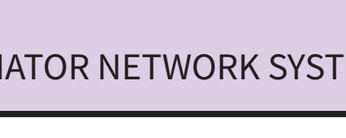
With the different high of the design, these structures can attract different kinds of the pollinators depend on their flying height and pattern. Besides, these structures can not only planting or hanging the plants on them to attract the pollinators but also can be as the art installations in the Rainier Beach community.









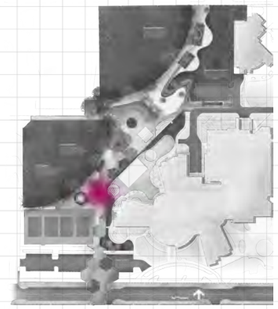


Planting Bed

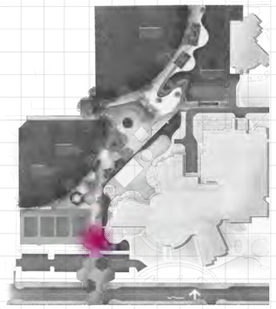
This planting bed has the blossom-shaped of the structures which enable the vines or other plants to climb on it in order to attract the pollinators in the different layers. Besides, the funnel-shaped design of the structures can also have the irrigation system to collect the rain water for the planting bed.

Bee Box & Tool Storage

The transparent Bee box lets people who come to the learning garden have a wonderful chance to observe the honey bee's nest closely and easily. On the other hand, the green roof also plants some flowers which are able to attract the honey bees, mason bees and bumble bees.



Learning Garden for the kids and adult to learn about the urban agriculture and pollinator's habitat.



The nigh view of the entrance to the learning garden, the structures can also have the illumination system.

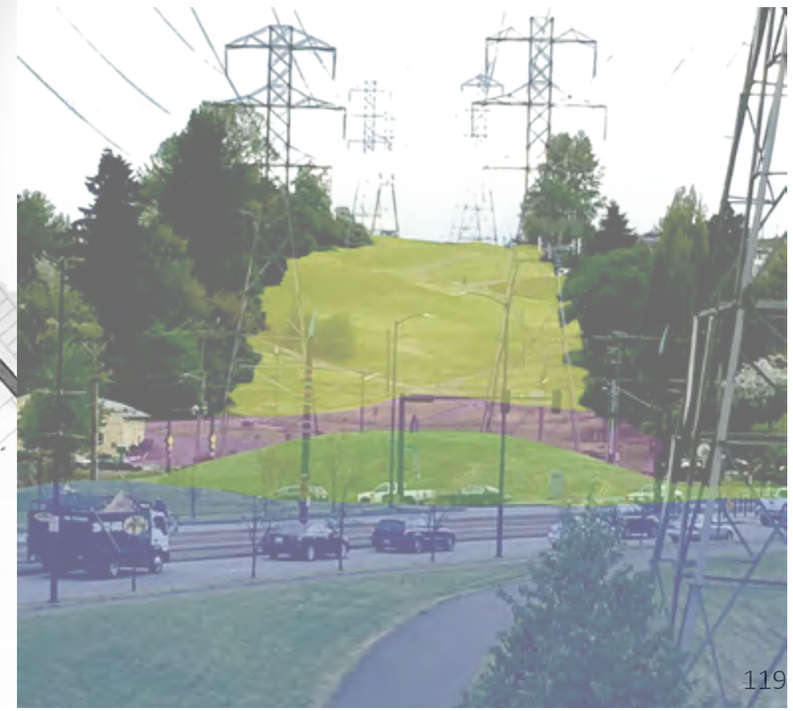
Aaron Parker

Productive Pathways

PRODUCTIVE PATHWAYS

AARON PARKER | 6/8/2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO

1. Food Innovation District
2. City Light Transmission Corridor
3. Thistle P-Patch
4. Paradise Baptist Church
5. Somali Community Center
6. Rainier Beach Library
7. Dunlap Elementary
8. South-Shore K-8 / Rainier Beach
9. Seattle Farm Co-op
10. Rainier Beach High
11. Beer Sheva Park
12. Rainier Beach Urban Farm and Wetland



PRODUCTIVE PATHWAYS

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ORCHARD AND CHICKEN PASTURE

- Companion planting with trees
- Integrated pest management
- Chickens for fertilizing
- Chickens for food production


thepoultryguide.com


goodfruit.com- Geraldine Warner

RAINIER BEACH URBAN GARDEN "BUG" HUB

- Focusing on community gardening
- Utilizing existing mound for beds
- Providing a structure for communal use and meal prep.
- Integrating companion planting and using pollinator attractors
- Establishing more than 50 beds
- Using the structure to capture water to be used in beds and wetland production
- Future solar installation
- Wind harvesting for power


Danny Woo Gardens


Mandala Landscapes


myaustinelite.com


Bradner Gardens, Seattle

TERRACED OPEN SPACE GATHERING

- Large open turf area
- Terracing to optimize space
- Adjacent parking lots for trucks
- Community gathering and markets


Hiram H. Chittenden Park


Wallingford Farmers Market

FOREST AND FOOD LEARNING AREA

- Using the hillside to layer pants
- Permaculture companion planting
- Schools and group education
- Integrating Hugelkultur swales


Queenstown, NZ


Beacon Hill Food Forest

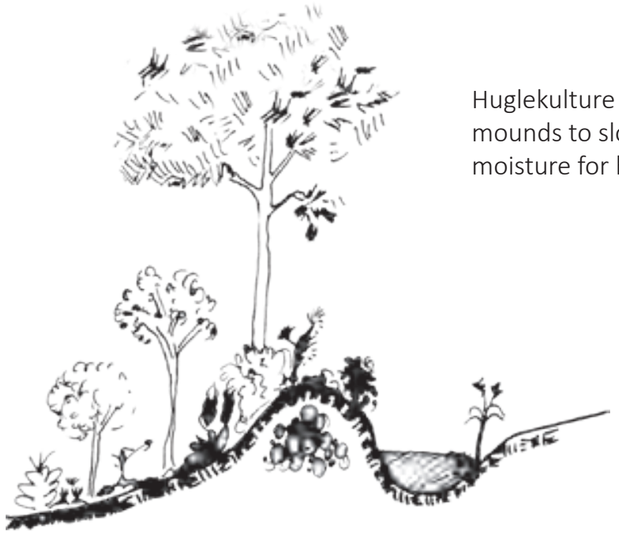

MARTIN LUTHER KING JR. WAY S
SOUTH HENDERSON STREET
0 20 40 80
N

PRODUCTIVE PATHWAYS

AARON PARKER |6/7/2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO

PRODUCTIVE PATHWAYS

AARON PARKER | 6.7.2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO



Huglekulture utilizes woody materials buried in mounds to slowly release nutrients and retain moisture for healthy forest growth.

The ‘forest and food learning area’ focuses on permaculture practices and integrates youth play throughout the site promoting food literacy.

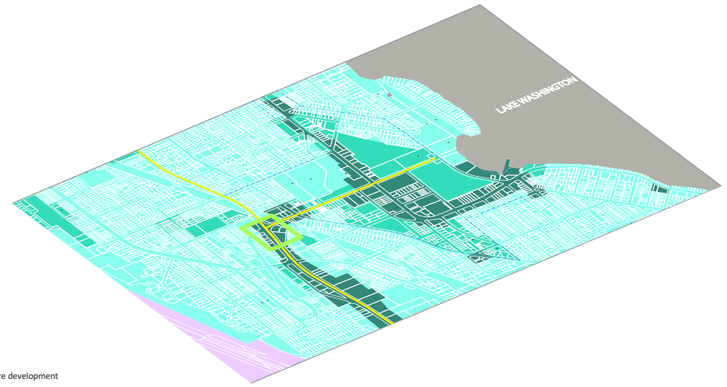
Gina Christofanelli

From the Ground Up

ZONING

- Manufacturing Industrial
- Multi-Family
- Neighborhood commercial
- Single Family
- Urban Village Boundary

The Urban Village development area is planned to become much more dense then the existing neighborhood. Rainier Beach station will be a major landing point in the community and initiatives here could branch off and inspire development practices for the rest of the community.



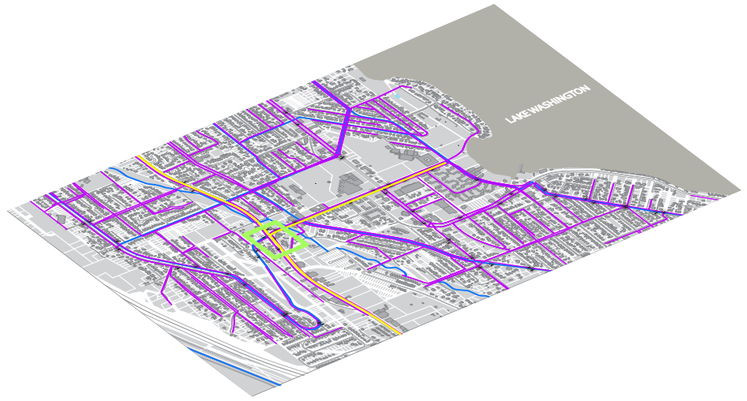
OPEN SPACE

- P- Patch
  - Thistle P-Patch
- Parks
- Existing Urban Agriculture
  - Nathan Hale High school
    New School
  - Rainier Beach Urban Farm and
  - wetlands
    Rainier Beach High school
  -

TRANSPORTATION

- Bus Stops
- Routes to School
- Bike Routes
- Sidewalks
- Site/ Rainier Beach light rail Station

The current site feels oriented towards vehicular traffic, with denser development being planed pedestrians need to be considered so they feel comfortable in the space.



SITE LOCATION

- Site Boundary

Existing Site Conditions

Copious amounts of paving

Source: Gina Christofanelli

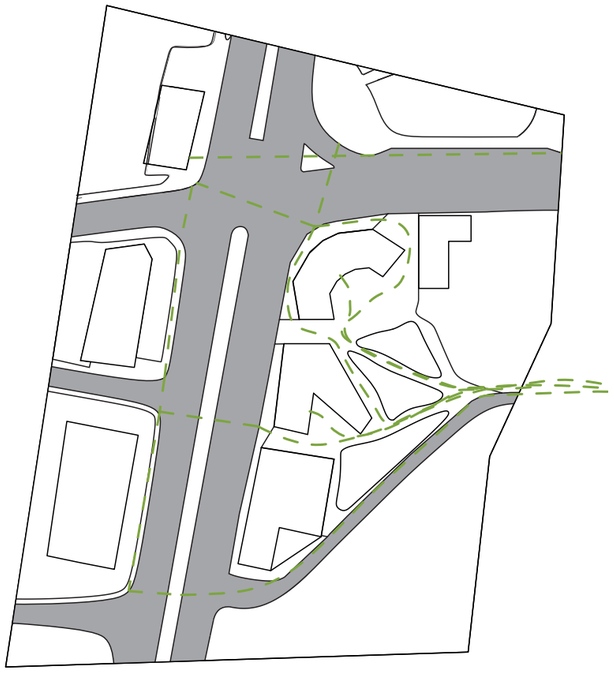
Empty and unused lots
Source: Gina Christofanelli

Single Story buildings- Lots of buildings for sale
Source: Gina Christofanelli

Large amount of canopy cover
on steep slopes, but not easily accessible
Source: Google Maps. http://maps.google.com

Roof Top connections

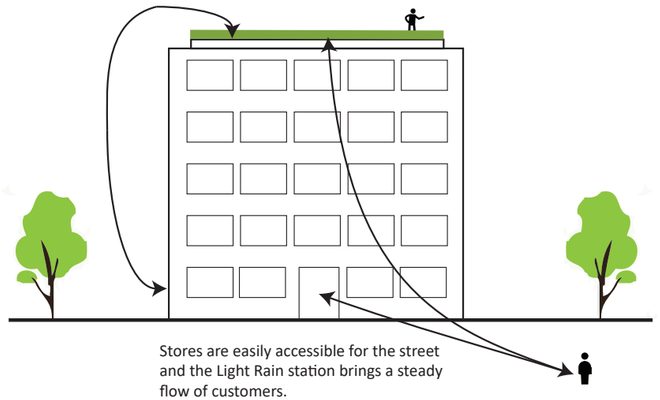
Ground Connections



Building Connections

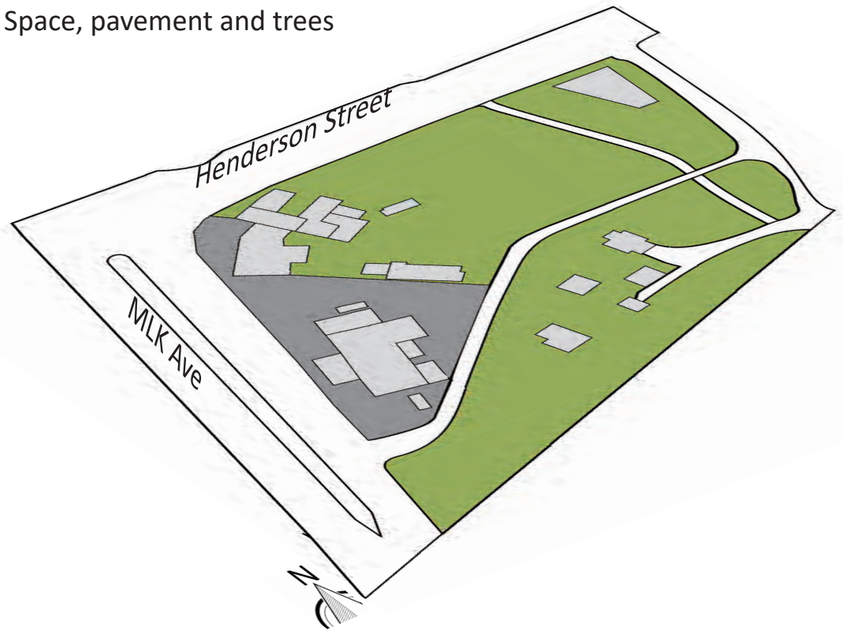
Roof tops yields support street level venues

The productive rooftops can been seen from street activating as advertisement for the shops.

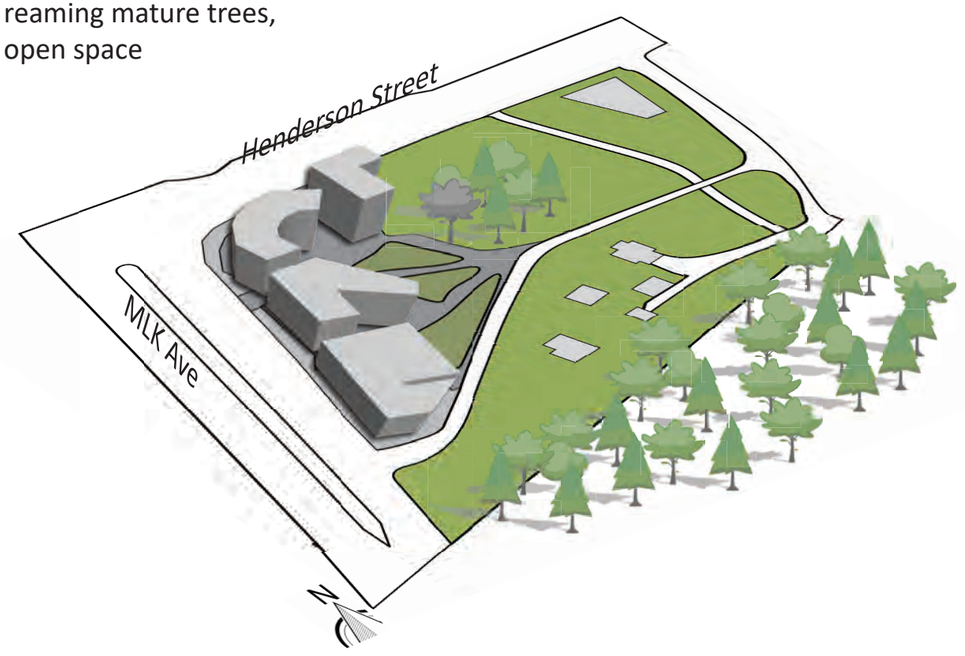


Stores are easily accessible for the street and the Light Rain station brings a steady flow of customers.

Existing Buildings, Green Space, pavement and trees

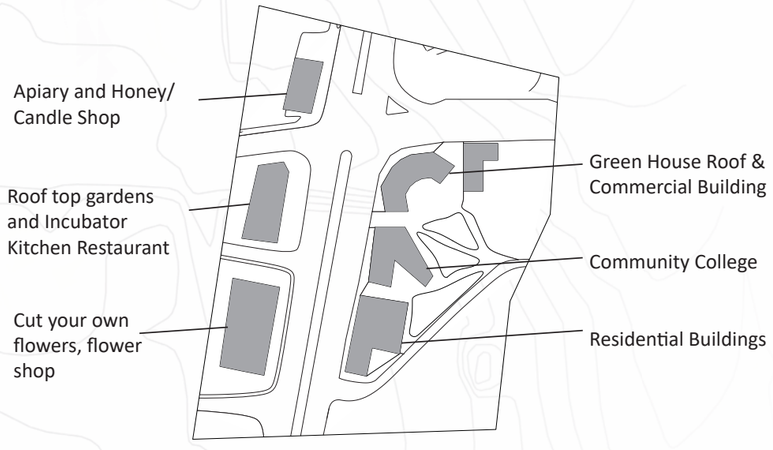


Proposed Buildings, Paving, and reaming mature trees, and open space



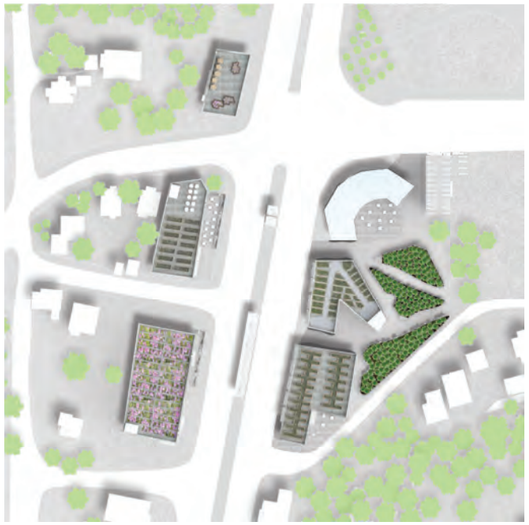

MLK JR. WAY
Henderson St.

Program Key


Apiary and Honey/
Candle Shop
Roof top gardens
and Incubator
Kitchen Restaurant
Cut your own
flowers, flower
shop
Green House Roof &
Commercial Building
Community College
Residential Buildings


N

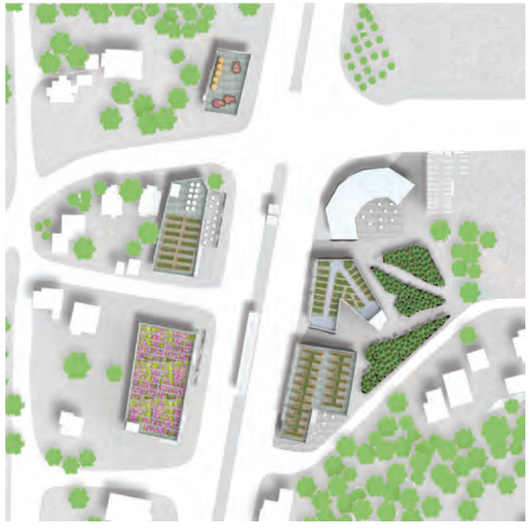
SPRING



In spring the roof top gardens will prepped and seeded for the productive season.

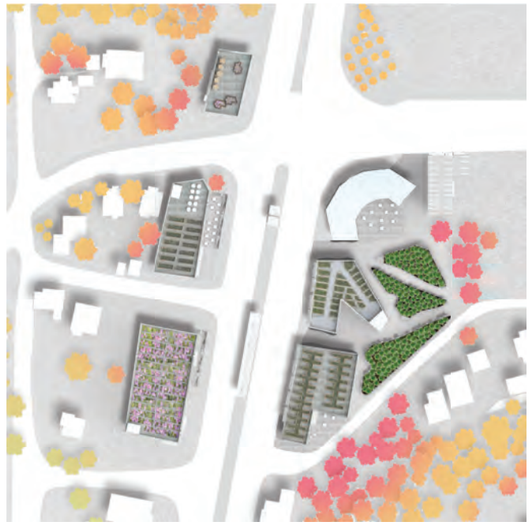
The bamboo will be harvested on a 3-5 year cycle in the spring.

SUMMER



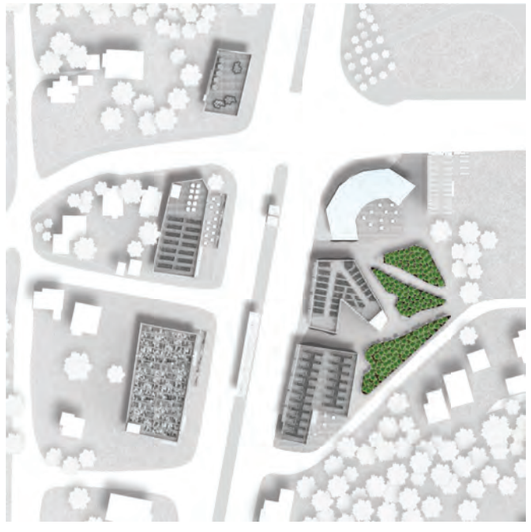
Things are in full Force in the summer, The roof tops will be activated while the weather is desirable to be outdoors.

FALL



Fall is the time to harvest and begin to get the roof tops ready for winter. It is also a great time for seed harvesting.

WINTER



In the winter the bamboo stays green and continues to be attractive to on lookers passing by or from inside.
The unproductive gardens will not be visible as this is the period when these gardens will be most unsightly.

FROM THE GROUND UP | Productive Bamboo gardens with planter benches.

GINA CHRISTOFANELLI | 6.5.2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO

FROM THE GROUND UP | Roof Top Apiary

GINA CHRISTOFANELLI | 6.5.2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO

FROM THE GROUND UP | On the roof top of the cut your own flowers, flower shop

GINA CHRISTOFANELLI | 6.5.2017
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Yuxi Jin

Agricultural Ribbon

Basemap source: Google Maps

AGRICULTURAL RIBBON

YUXI JIN | 6.5.2017
UW LANDSCAPE ARCHITECTURE 503 STUDIO

Nowadays, there are more and more buildings in the modern cities. Citizens living in the city have less opportunities to have their own land to farm or plant, especially living in the multi-family apartments.
Based on the needs of farming and planting of residents and planning of local government, I designed a “Agricultural Ribbon” in Rainier Beach Community for residents to farm, plant, raise livestocks and bees and to provide chances for them to touch the nature and learn from agriculture.

Basemap sources: Google Maps + WAGDA

GREEN SPACE

STEEP WOODY SLOPES

PARKS

LAND USE

COMMERCIAL

MULTI-FAMILY

CITY-OWNED OPEN SPACE

SINGLE FAMILY

SEATTLE 2030 LAND USE MAP

FOOD DESTINATION

RESTAURANT

MARKET

SCHOOL&COMMUNITY

ORGANIZATION

SEATTLE FARM COOP

TILTH ALLIANCE

ROUTES

WALKAWAY

BIKEWAY

BUSWAY

WALKING ROUTES

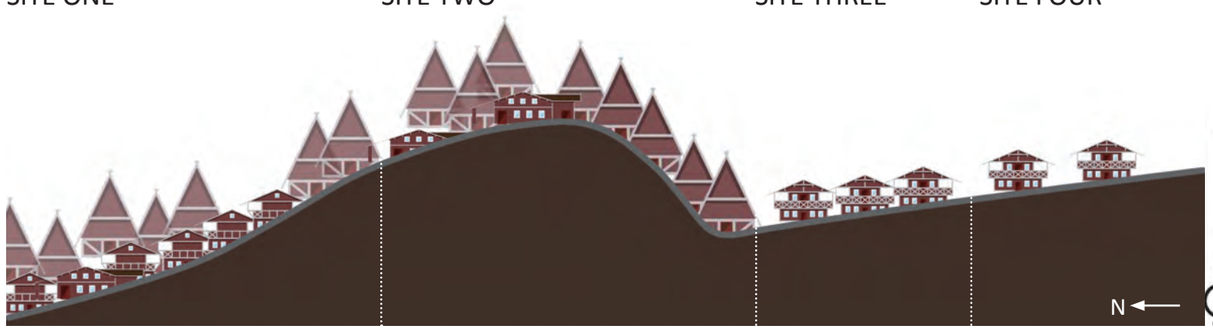
CYCLING ROUTES

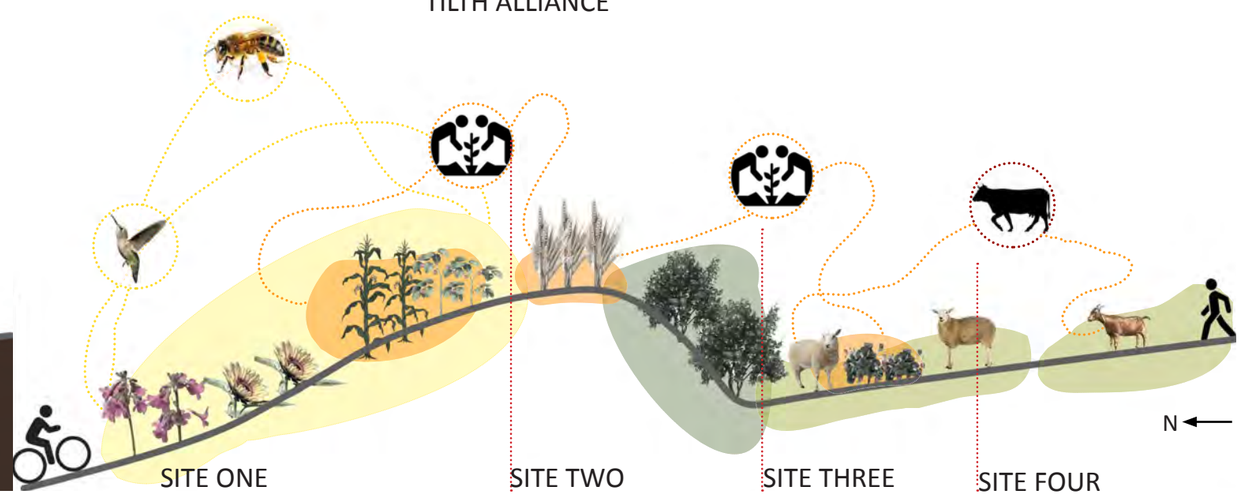
TRANSIT ROUTES

BUS STOP

SECTION

SITE ONE SITE TWO SITE THREE SITE FOUR





AGRICULTURAL RIBBON | OVERALL

MASTER PLAN

SITE ONE
POLLINATOR GARDEN

COMMUNITY GARDEN

COMMUNITY GARDEN

SITE TWO
ORCHARD

COMMUNITY GARDEN

SITE THREE
PASTURE

SITE FOUR
PASTURE

GATEWAY

Basemap source: WAGDA

TYPES

POLLINATOR GARDEN

COMMUNITY GARDEN

Harvey Community Garden

ORCHARD

PASTURE

NEEDS

http://lucyarnold.com

FLOWERS

PATHS

http://ucanr.edu

BEES

SHED

PATHS

TOOLS

IRRIGATION

PARKING LOTS

PATHS

TOOLS

IRRIGATION

PARKING LOTS

PATHS

SHED

BY-PRODUCTS

COMMUNITY GARDEN

SHED

TOOLS

IRRIGATION

The Kwanzaa Community Garden Tool Shed, north Minneapolis, 2013 | by Daniel Kerkhoff

http://nacgarden.tumblr.com

http://www.missginsu.com/labels/queens.html

PATHS

RAISED BEDS

http://squamishcan.net/squamish-can-grow-community-garden/

Six hidden gardens where weary city dwellers and visitors can slip in for a quick sip of nature, or linger through an afternoon

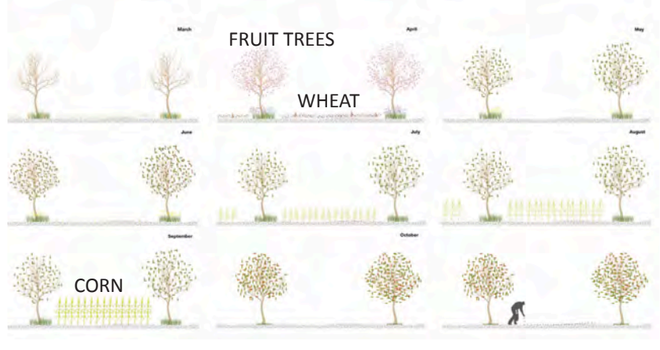
ORCHARD

PARKING LOTS

PATHS

TOOLS IRRIGATION

http://www.soleburyorchards.com



FLOWERS

SHED

BY-PRODUCTS

PARKING LOTS

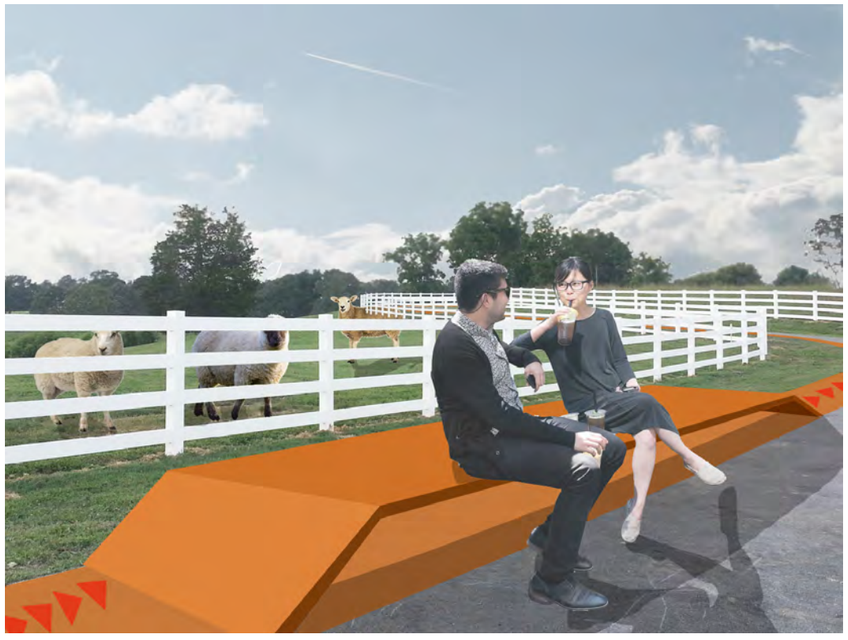
PATHS

SHED

FENCE

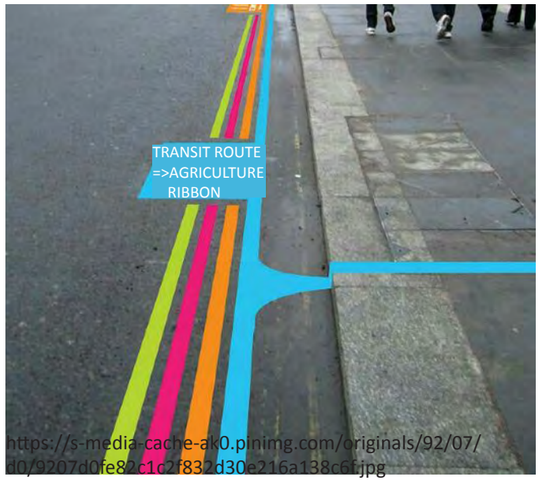
IRRIGATION

BENCH



SIGN

CROSSING PATH



THANK YOU!

- From the LARCH 503 Urban Agriculture Studio

Aran Liu, Sujing Sun, Yuchia Jan, Shan Huang, Aaron Parker, Gina Christofanelli, Margot Chalmers, Drew Badgett, Yuxi Jin, Julie Johnson, and our Studio Mascot, Fezzik