

# eco·laboratory: phase II algae microfarm center

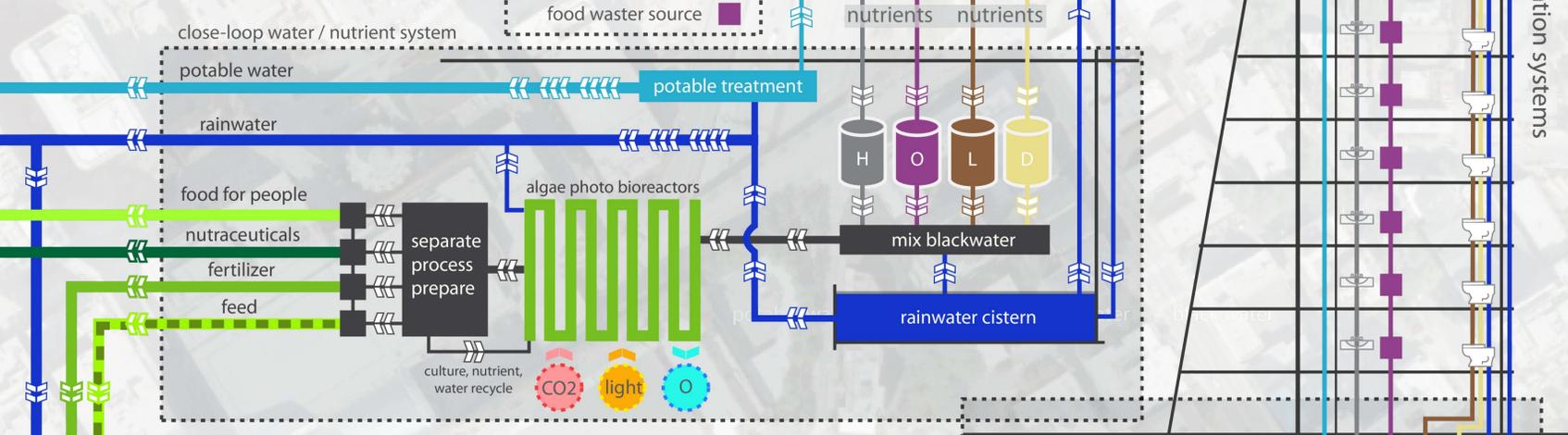
Living Building Challenge 2.0  
2011 International Algae Competition



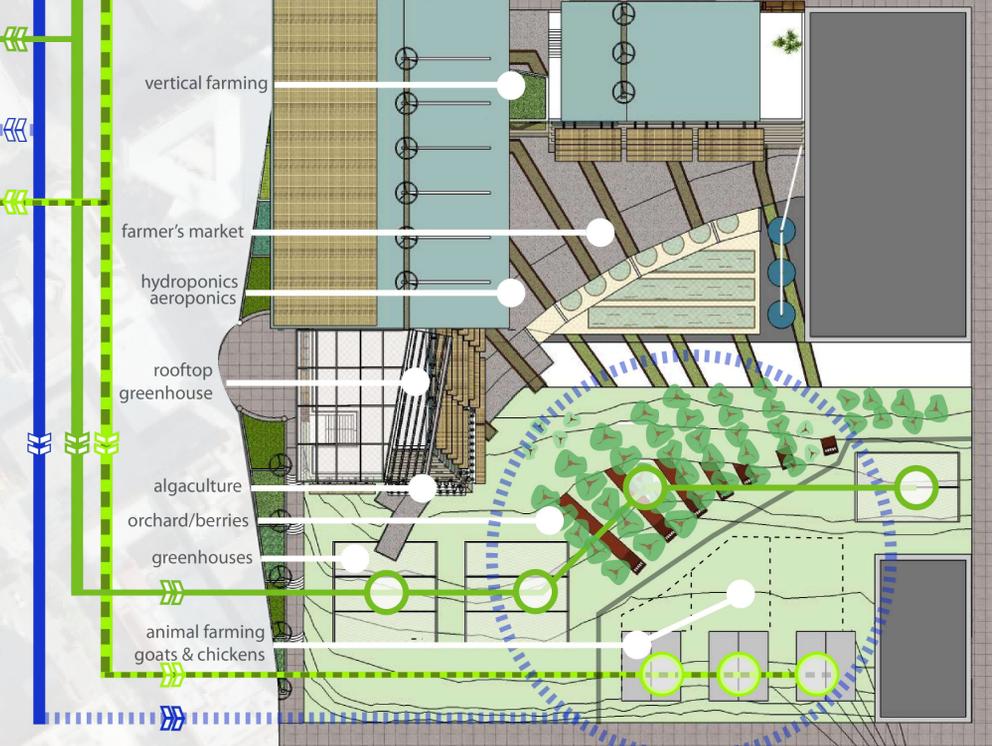
- rooftop greenhouse
- hydroponics aquaponics (vegetables)
- algae bioreactors
- farmer's market
- algae microfarm center
- orchard/berries (soil based crops)
- greenhouses
- animal barns chickens & goats

## 05 Net Zero Water

Microfarm Facilities  
-water and nutrient storage / treatment  
-algae production and processing  
-laboratory and control center



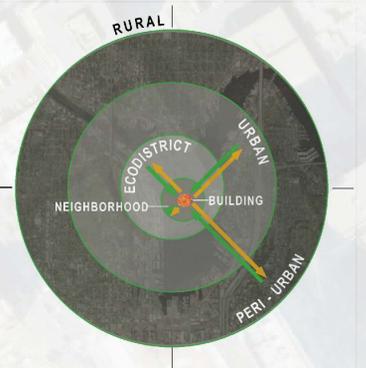
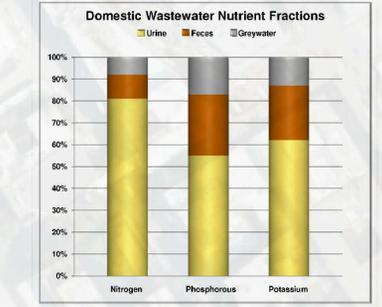
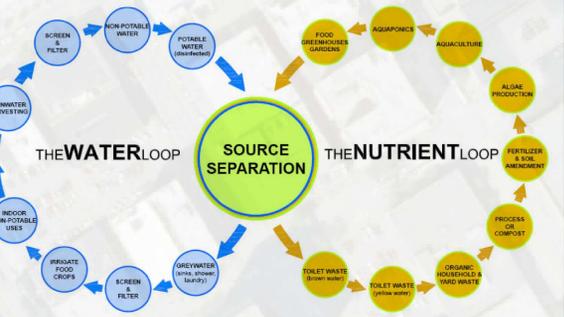
## Site Plan



## Sustainable Water Source Definitions

- potable water: drinking water, filtered & disinfected
- rainwater: collected on site
- blackwater: combined human waste
- brownwater: feces w/o urine; nutrients
- yellowwater: urine: nutrient rich
- greywater: sinks, showers, laundry
- greenwater: algae production, food waste, organic biomass

## 02 Urban Agriculture



- complex commercial scale**
  - VERTICAL FARMING: growing crops efficiently in vertical systems
  - AEROPONICS: growing plants in an air culture w/ water nutrient mist
  - AQUAPONICS: farming fish/plants in a symbiotic closed loop system
  - AQUACULTURE: fish/shrimp farming in controlled tank environment
  - HYDROPONICS: growing plants in a water nutrient solution (no soil)
  - ALGACULTURE: algae hydroponics: food, fuel, feed, fertilizer, medicine
  - PERMACULTURE: integrated food systems: crops and animals
- simple community scale**
  - ORCHARDS & VINEYARDS: using public/private open space to grow fruit crops
  - COMMUNITY GARDENS: collectively managed gardens on common land
  - ROOFTOP GARDENS: gardens located on top of building roofs
  - KITCHEN BACK YARD GARDENS: a localized garden growing house hold food
  - CONTAINER GARDEN: growing plants in containers



Algaculture: growing food, fuel, feed, fertilizer & medicine  
Hydroponics: growing plants in water nutrient solution  
Aquaculture: fish/shrimp farming in controlled tank environment  
Aeroponics: growing plants in an air culture with water nutrient mist  
Aquaponics: Farming plants/fish in a closed-loop symbiotic systems  
Vertical Farming: growing crops efficiently in vertical systems