



11405 NE 120th Street, Okeechobee, Florida 34972
PROJECT GUIDE

STUDIO A+H | BORUCH HOLDING LLC | MAY 2023

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SITE OVERVIEW

Our site and location analysis explores:

- relationship to existing airports and towns
- ecosystem and conservation efforts in the area
- social and economical factors of the region and site surroundings
- population
- agricultural and other productive systems



a.



c.



b.



b.



d.

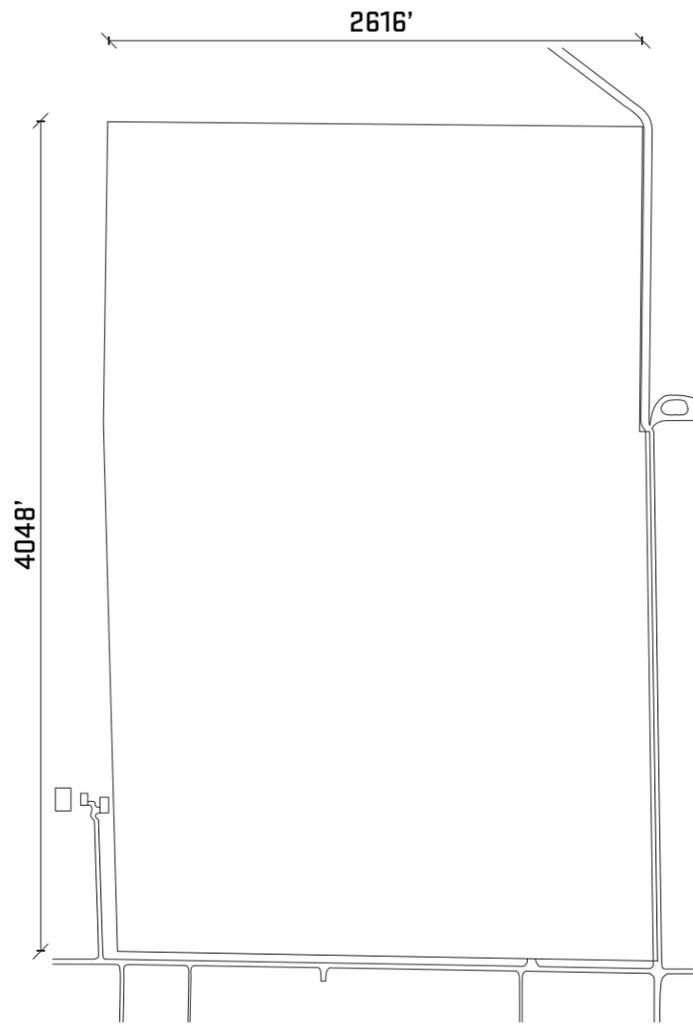


e.

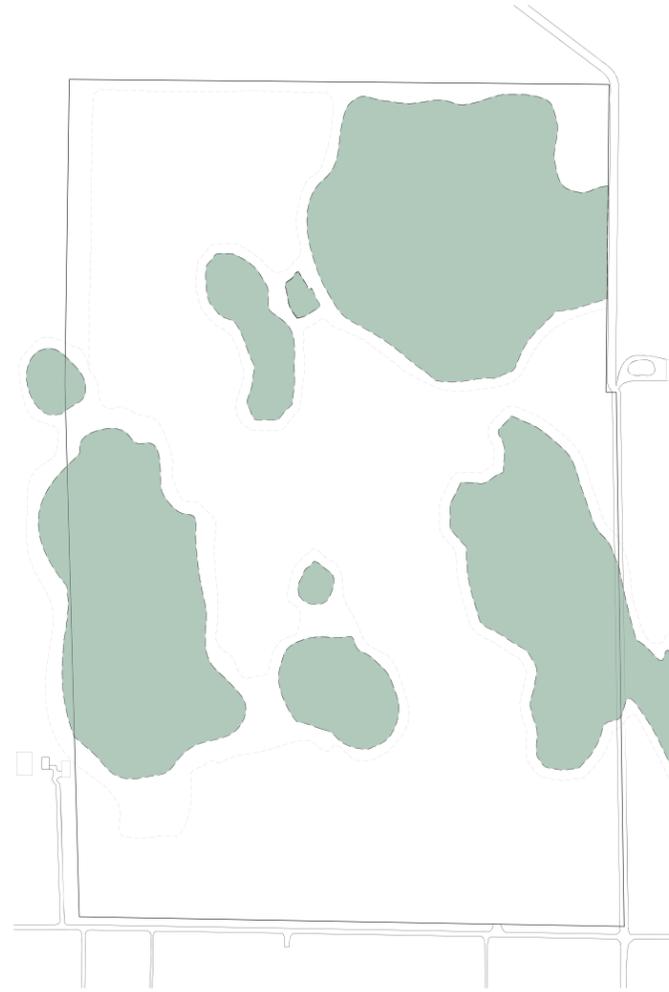
a. Aerial view
b. Interior views of property

c. Northwest water basin
d. Existing sand mine
e. Wetland vegetation

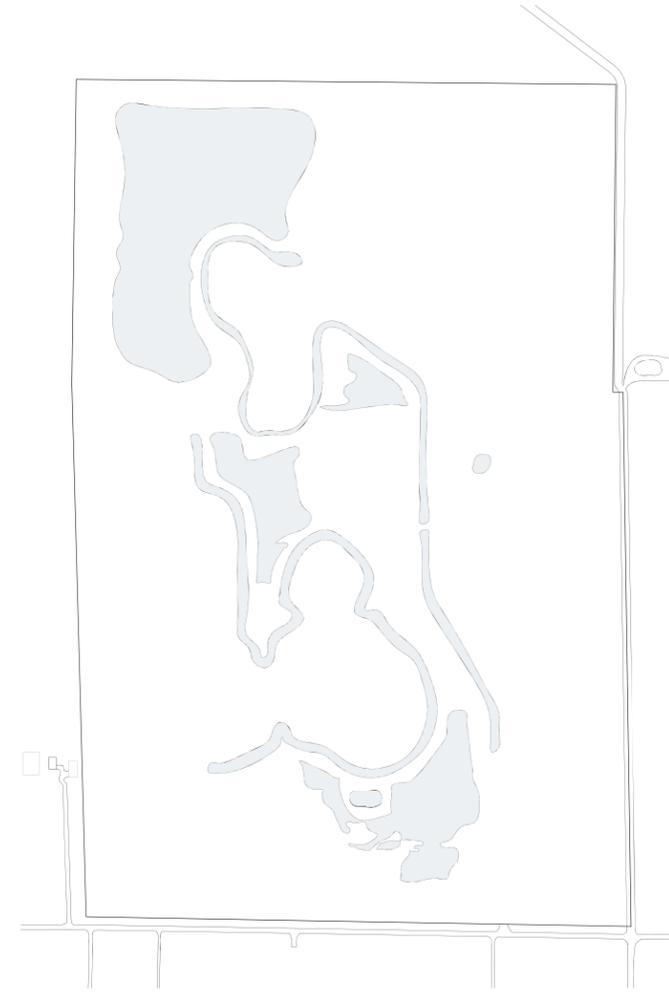
SITE CHARACTERISTICS



PROPERTY: 246 ACRES (10,726,026 ft²)
2616' x 4048' (1/2 MILE x 3/4 MILE)



WETLANDS: 77 ACRES (3,368,862 ft²)
31.4% OF SITE



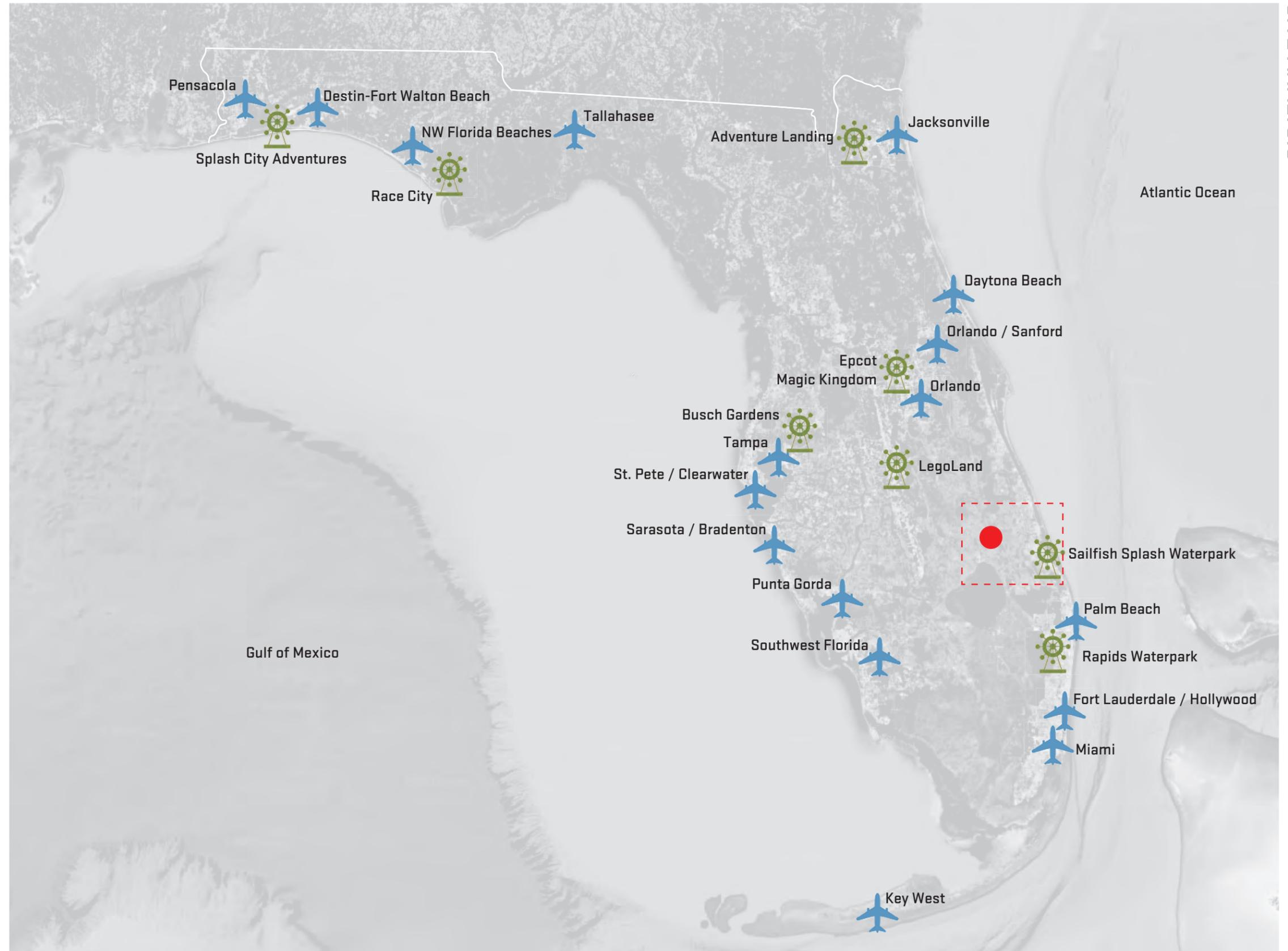
WATER: 36 ACRES (1,574,110 ft²)
14.6% OF SITE



BUILDABLE AREA: 133 ACRES (5,783,054 ft²)
54% OF SITE

REGIONAL AIRPORTS & AMUSEMENT PARKS

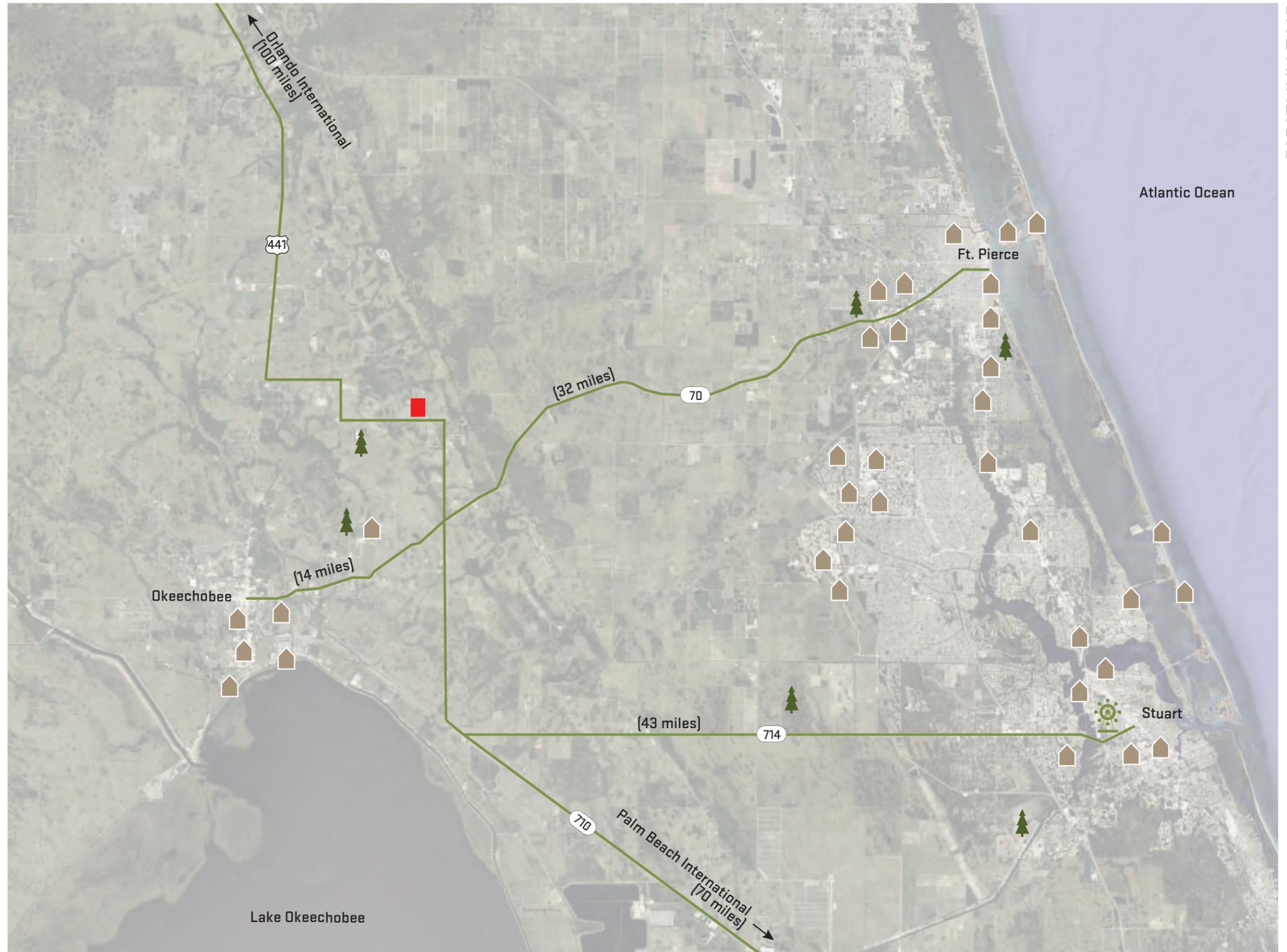
At a regional scale we can observe the distribution of amusement parks in Florida, which are one of the most important social and economical factors of the region, with major national airports located along the coastline.



-  Amusements
-  Airports

LOCAL AMUSEMENT PARKS & HOSPITALITY CENTERS

The site is located a short drive away from Okeechobee and other town centers. Majority of hotels are situated within town perimeters, with only a few camping sites within a 4 mile radius of the property.



CONSERVATION EFFORTS

The site is near a complex network of conservative efforts from both local and government levels, and falls partially under CERP Project: Indian River Lagoon - South.

By also being part of the Cypress Creek/Trail Ridge Complex Natural Storage and Water Quality Area, we see an opportunity of reinforcing the existing conditions of the property.

See Appendix B (p.42) for more information on native flora species.

Comprehensive Everglades Restoration Plan (CERP) Project Boundaries

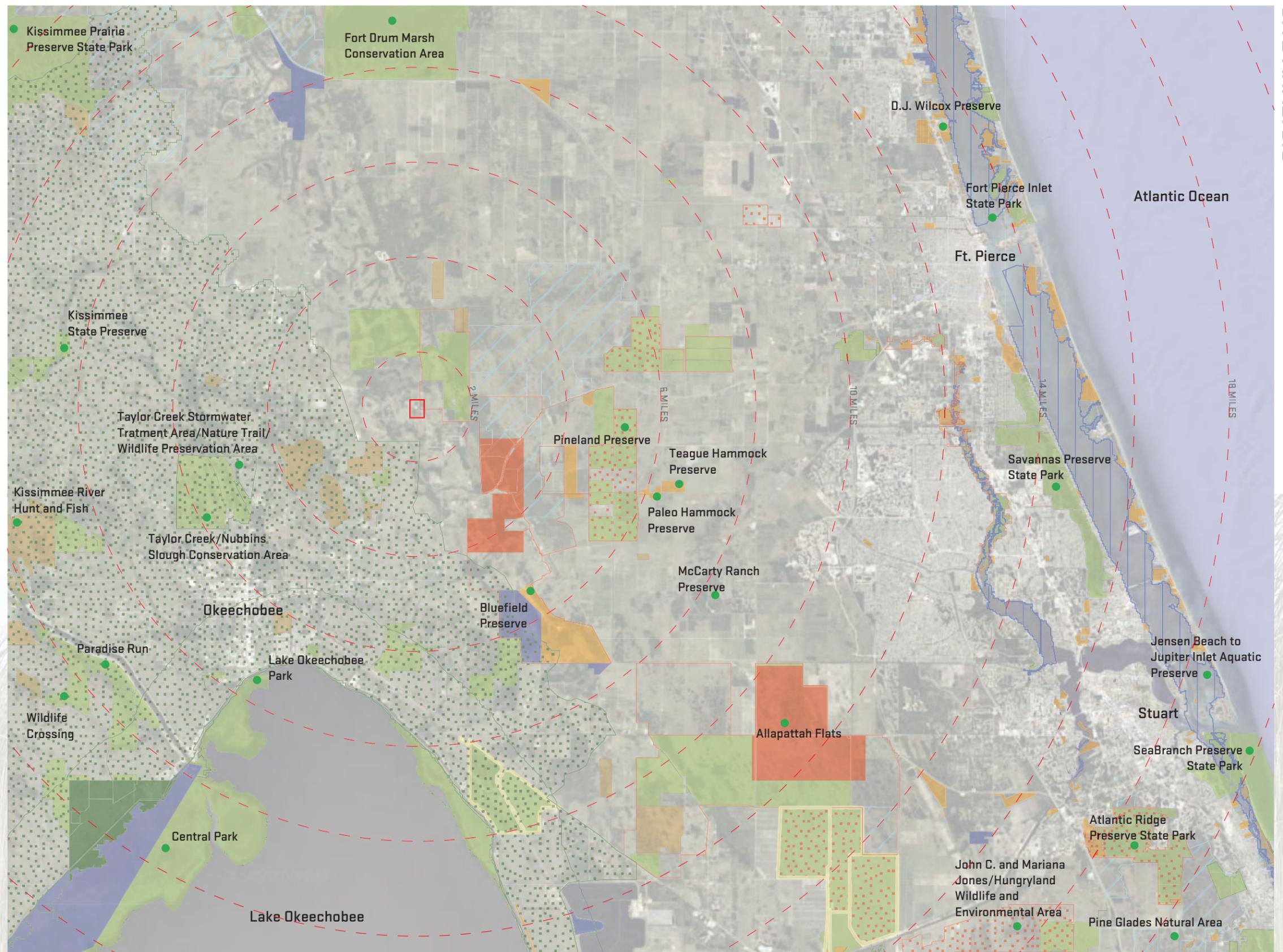
-  Expedited Projects
-  CERP Project
-  CERP Study Area
-  Florida Aquatic Preserves

Florida Conservation Lands

-  Federal
-  State
-  Local
-  Private

Florida Forever BOT Projects

-  Florida Forever BOT Projects
- Florida Forever BOT (Board of Trustees) projects can be used to identify areas with outstanding natural resources, opportunity for natural resource-based recreation, or historical and archaeological resources.



SURROUNDING ECOSYSTEM



Present eagle nesting and wading bird rookeries just north of the property integrate it into the migrating corridor of the Everglades native ecosystem, offering a bird-watching experience linking the site to the surrounding preserves.

See Appendix C (p.43) for information on bird habitats and species.

Conservation Area

Strategic Habitat Conservation Area

Seagrass Statewide

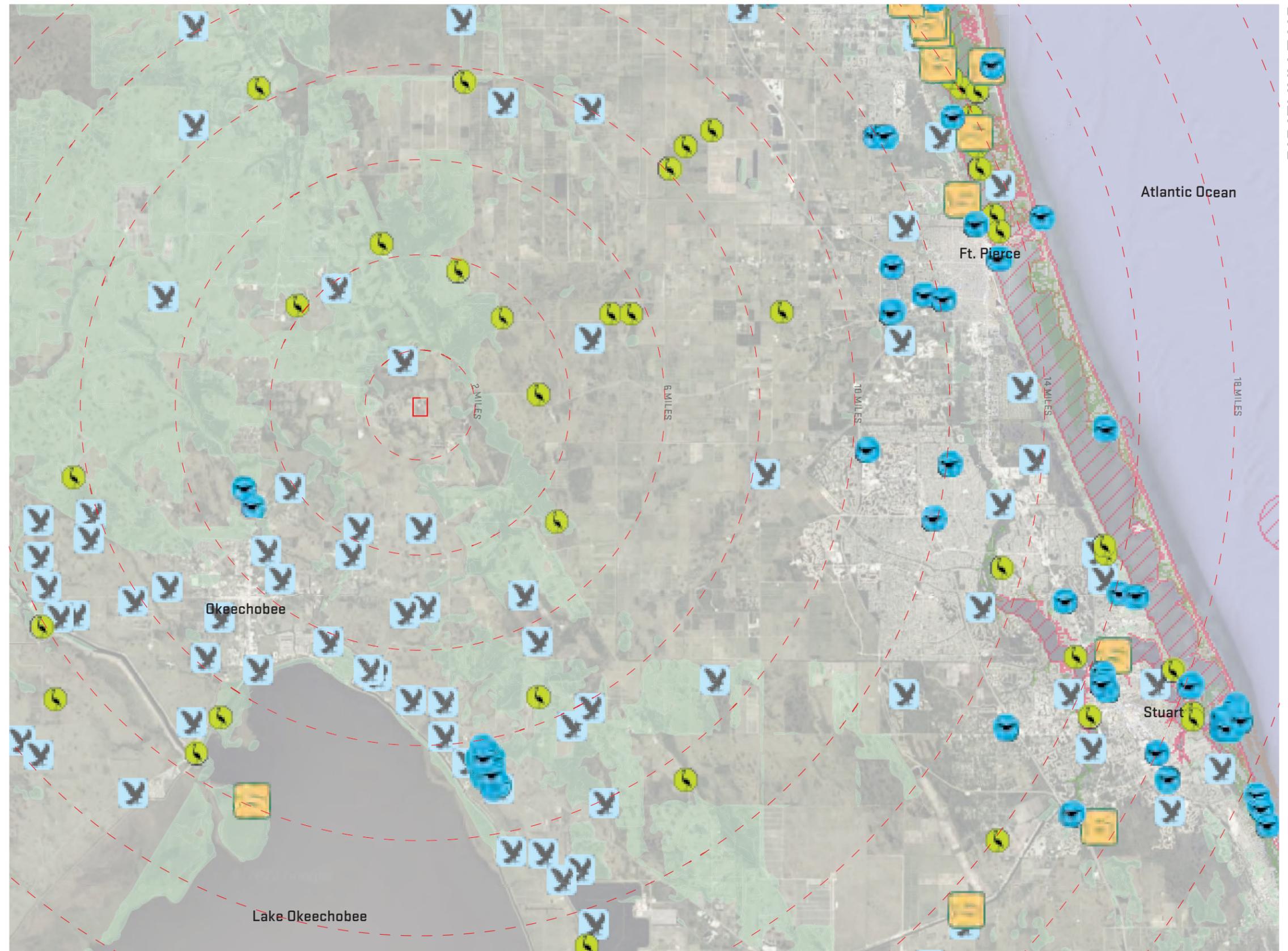
- Continuous Seagrass
- Patchy (Discontinuous) Seagrass
- Salt Marshes
- Tidal Flats
- Mangroves

Coral and Hard Bottom Habitats Statewide

- Coral Reef
- Probable Hardbottom
- Hardbottom
- Hardbottom with Seagrass

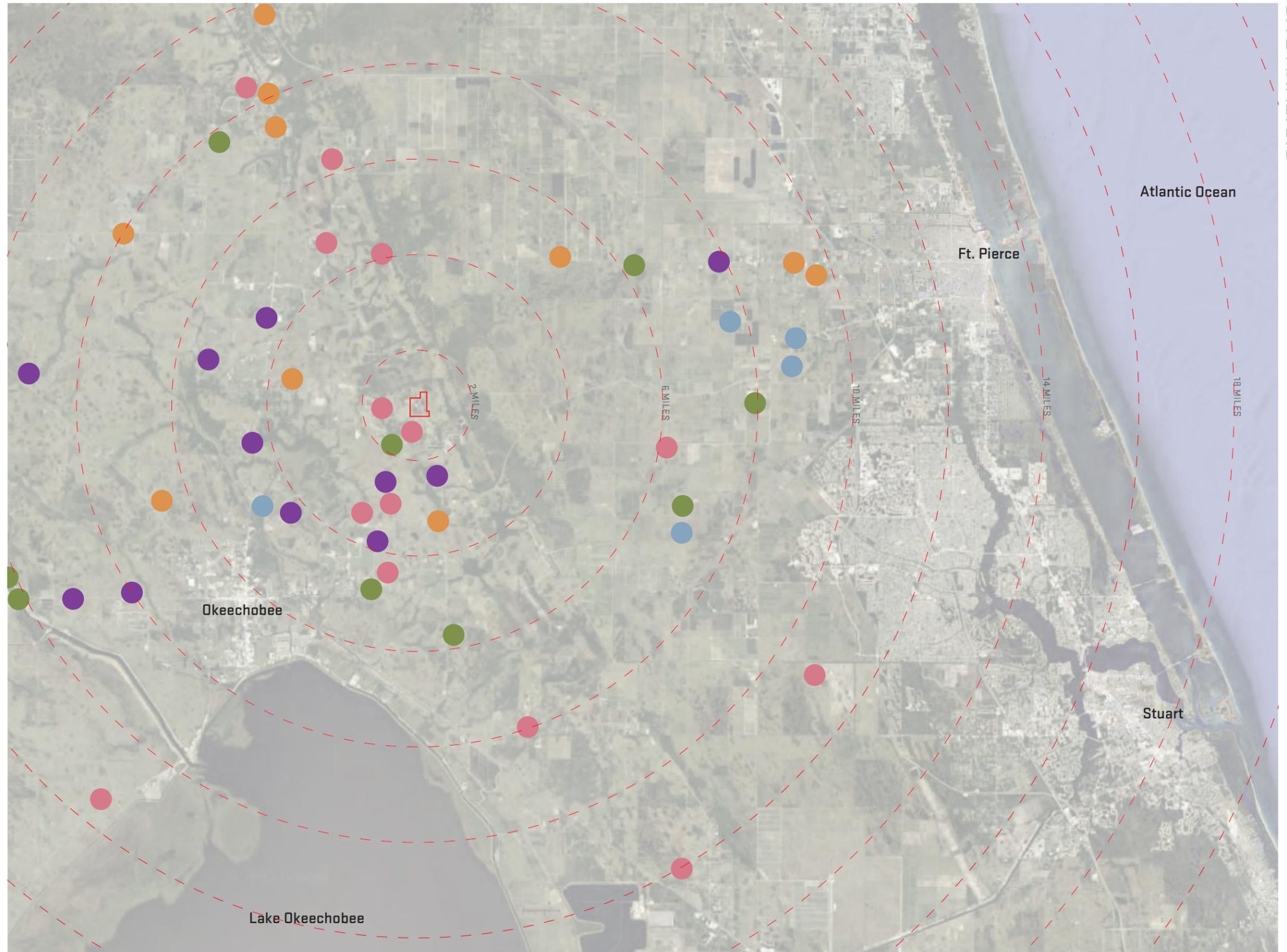
Fauna

- Eagle Nesting
- Wading Bird Rookeries
- Rare and Imperiled Fish
- Florida Shorebird Nesting
- Loggerhead Sea Turtle



ACTIVITIES

From researching the surrounding of the site, we see an opportunity to fill in the gap of both entertainment and other communal activities outside the city of Okeechobee and Ft. Pierce.



POPULATION

The county density is 50.9 people / sq. mile, with bigger communities being within 6 miles southwest of the site, and residential airparks further out.



- County line
- Community
- Residential Airpark

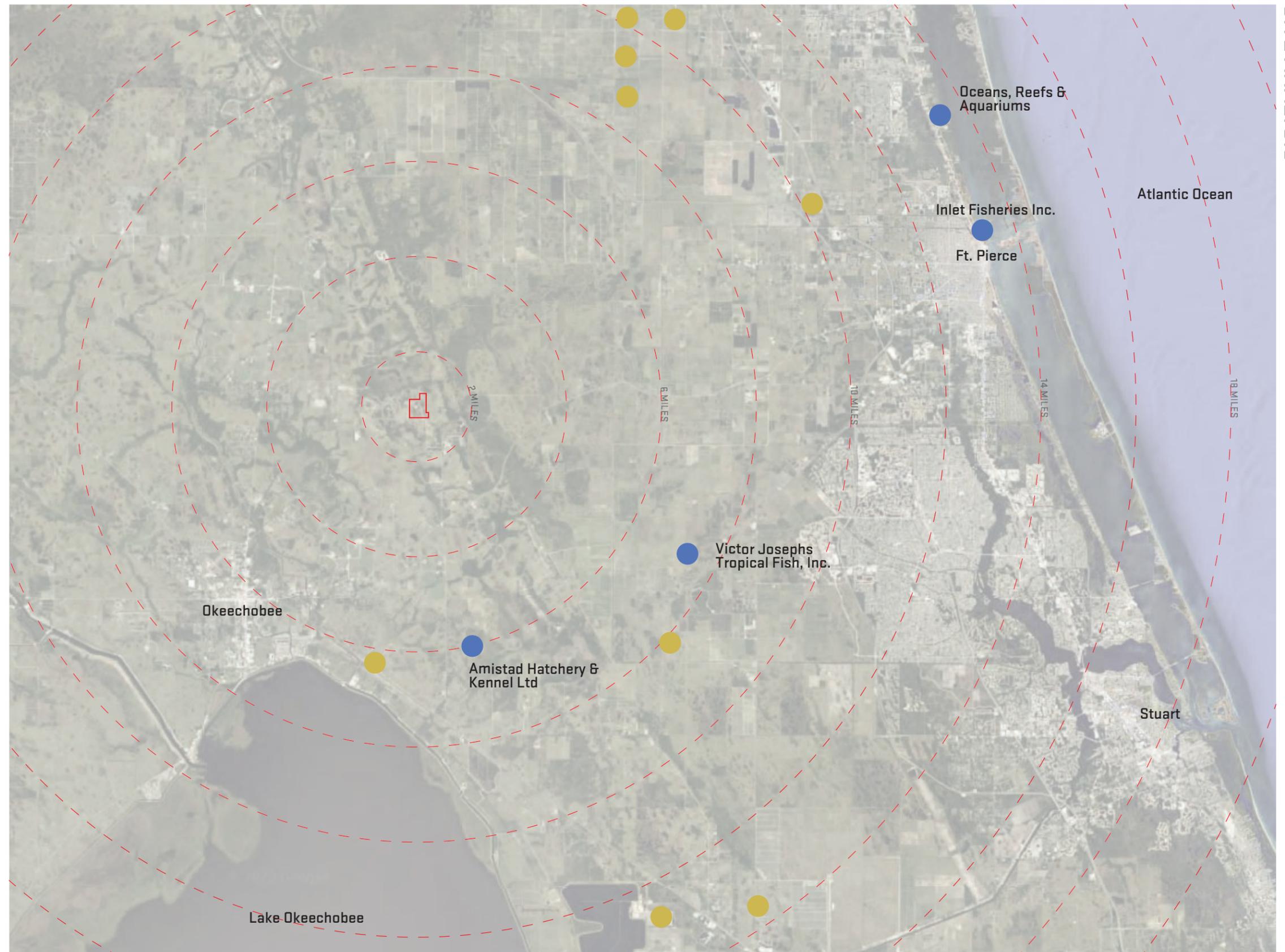
SOURCE: Google Maps
Florida Office of Economic and Demographic Research

AQUAPONICS & PHOTOVOLTAIC FARMS



Fish farms are concentrated along the coastline of Ft. Pierce, while solar energy are dotted in the countryside between the towns and the natural preserves.

See Appendix A (p.41) for more information on climate.

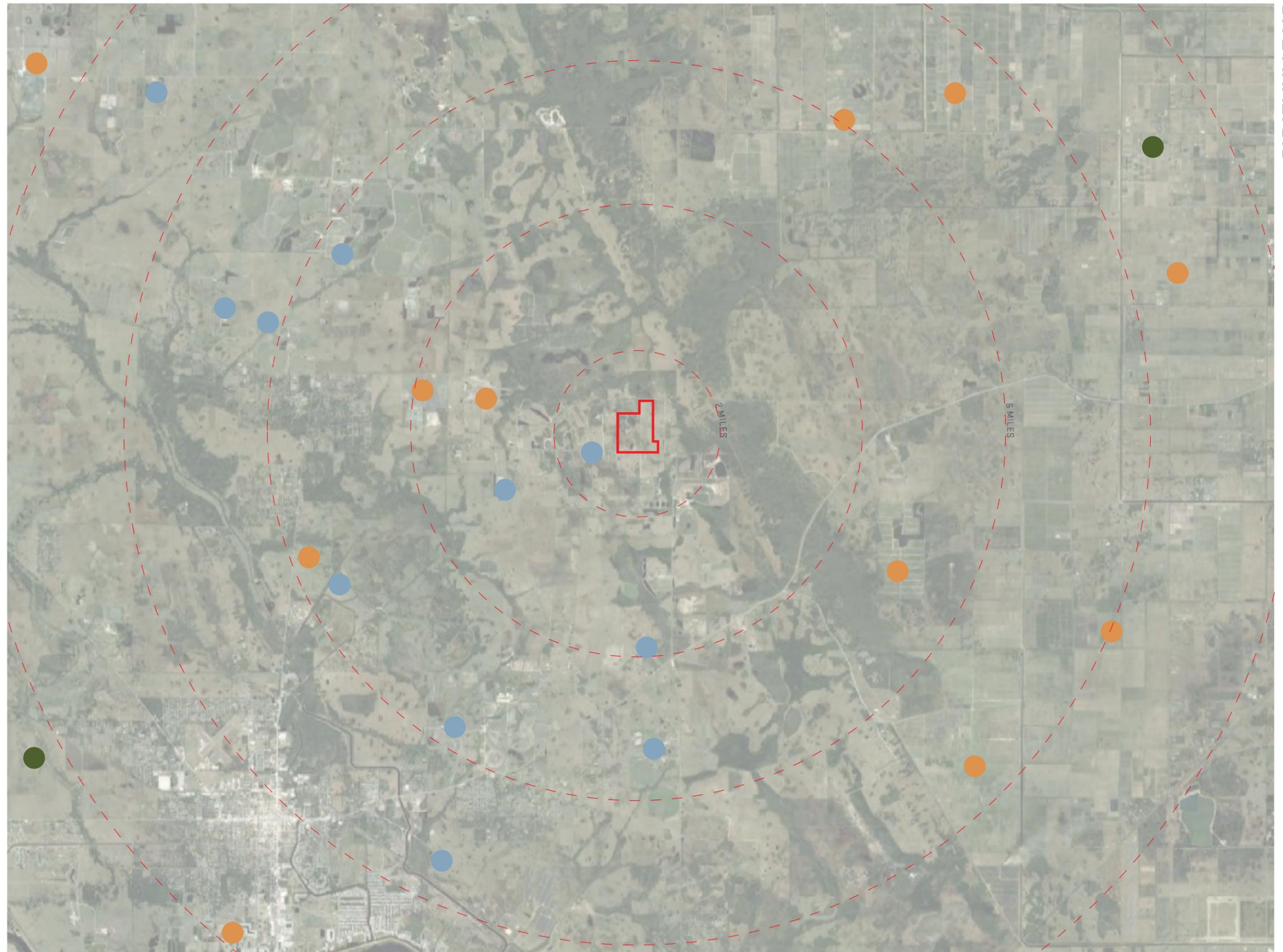


- Fish Farms
- Solar Farms

AGRICULTURE



The majority of the land in proximity of the site is used as farm land, with many cattle ranches scattered between the property and the town of Okeechobee.



- Vegetable
- Produce
- Animals

SITE PLANS

Three site plans options were formed in respect of the site understanding and our conclusions. These plans explore:

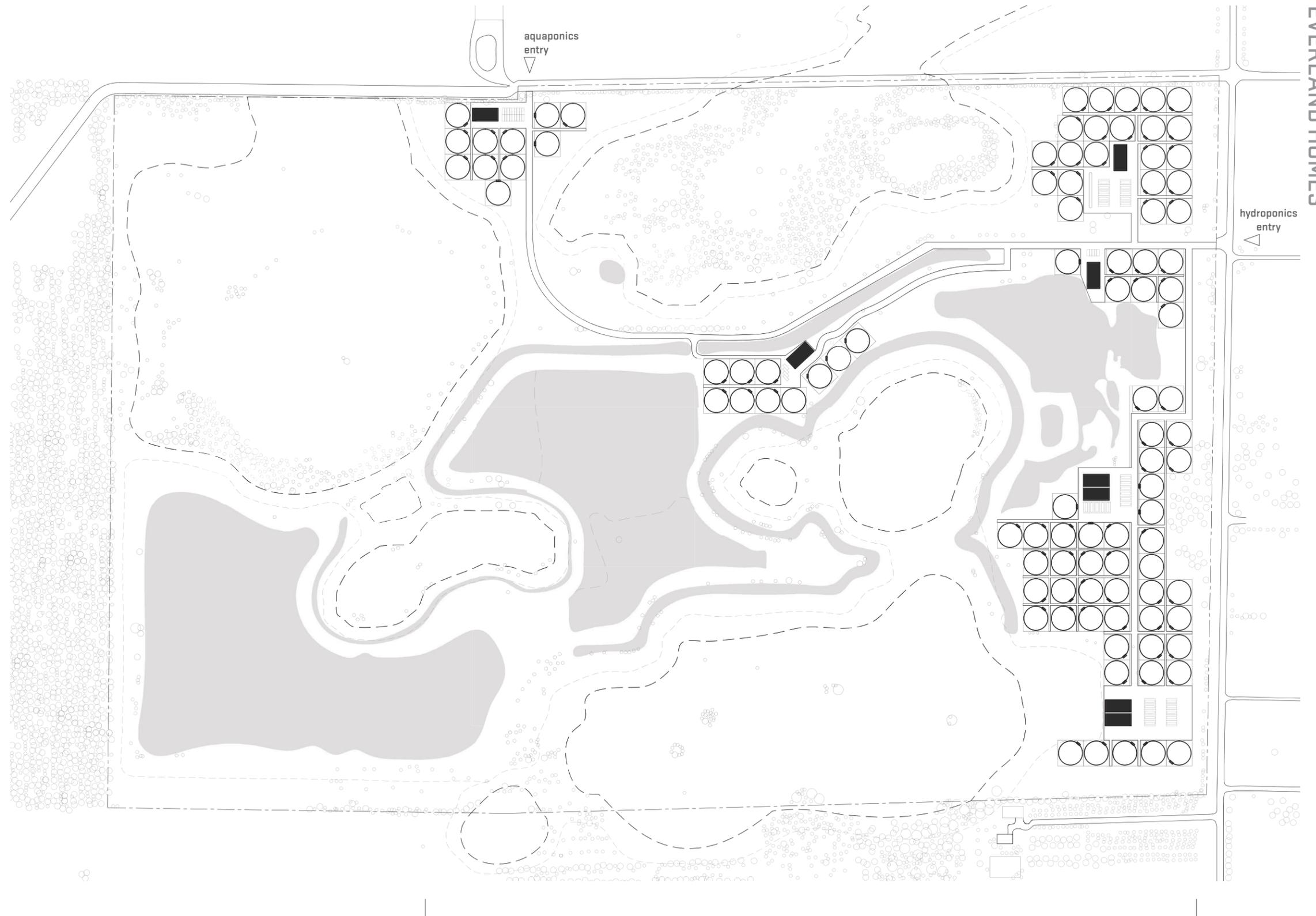
- Maximizing land use for agricultural hydroponic systems
- Dividing use between hydroponics and an ecological preserve
- Integrating hydroponic systems with an ecological resort

HYDROPONICS

To maximize the agricultural potential of the site, 95 high productivity domes designed for hydroponic agriculture are installed near the south and east access roads, using approximately 12.3% of the property. A 4,530ft² facility handles the crops germination and packaging of 12 domes.

Each dome can efficiently produce 18.1 tons of vegetables, such as lettuce, celery, and herbs. Up to 15,000 plants are ready to harvest and ship directly to clients in about 30 days.

See Appendix D (p.44) for more information on hydroponic domes.



HYDROPONICS



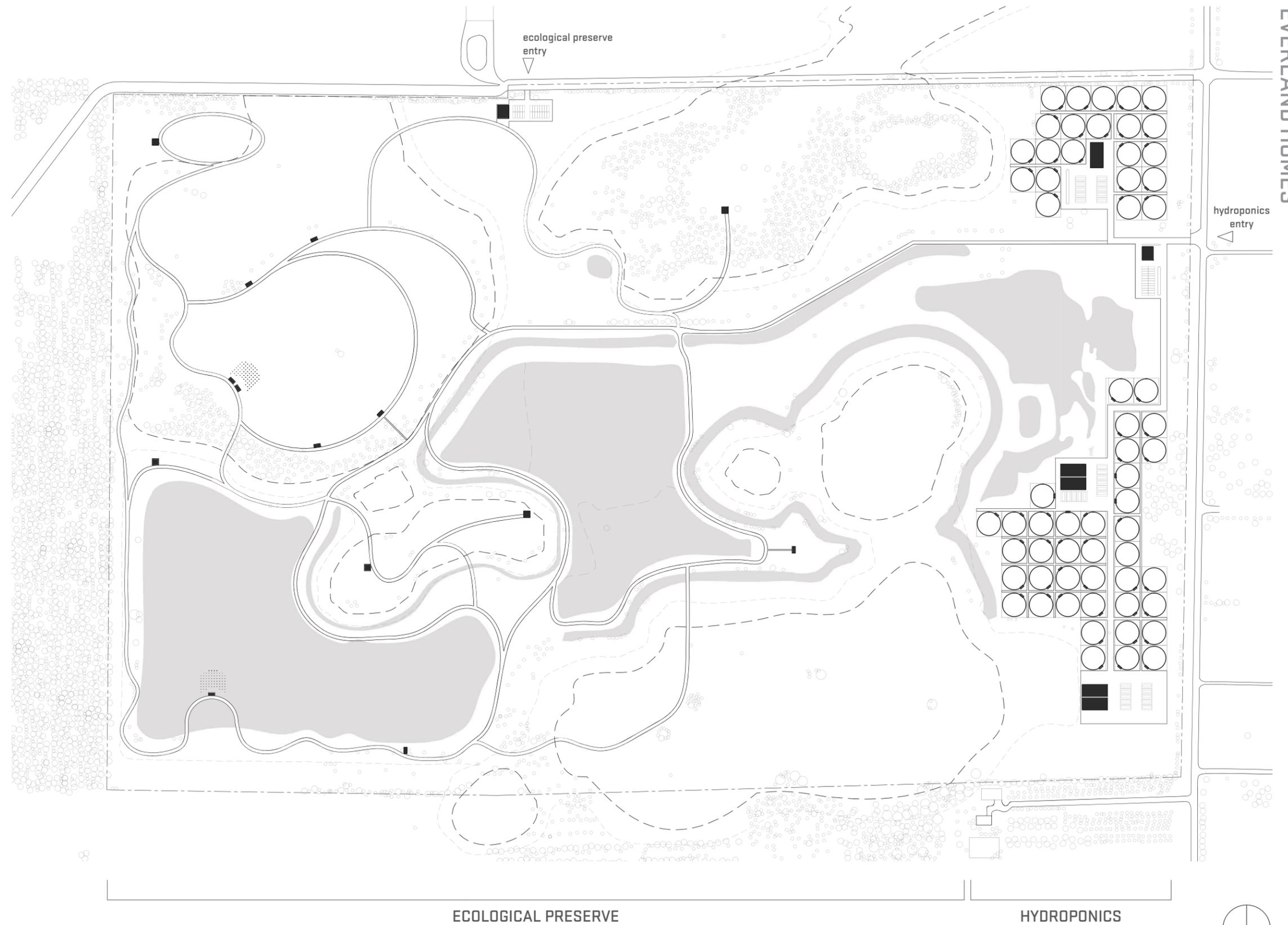
ECOLOGICAL PRESERVE & HYDROPONICS

Mixing together production and ecological sensibility, the site is divided in two to create an ecological preserve and an innovative agricultural landscape of 60 hydroponic domes.

The preserve would encourage thriving native species and establish long-term bird colonies characteristics of these wetlands, such as egrets, herons and white ibis.

Inside guests can loop around the lakes and use elevated walkways to meander between the wetlands, while the many bird-watching outlooks and 4 towers scattered throughout the site offer vantage points to observe the surrounding flora and fauna.

See Appendix C (p.43) for more information on bird habitats and species.

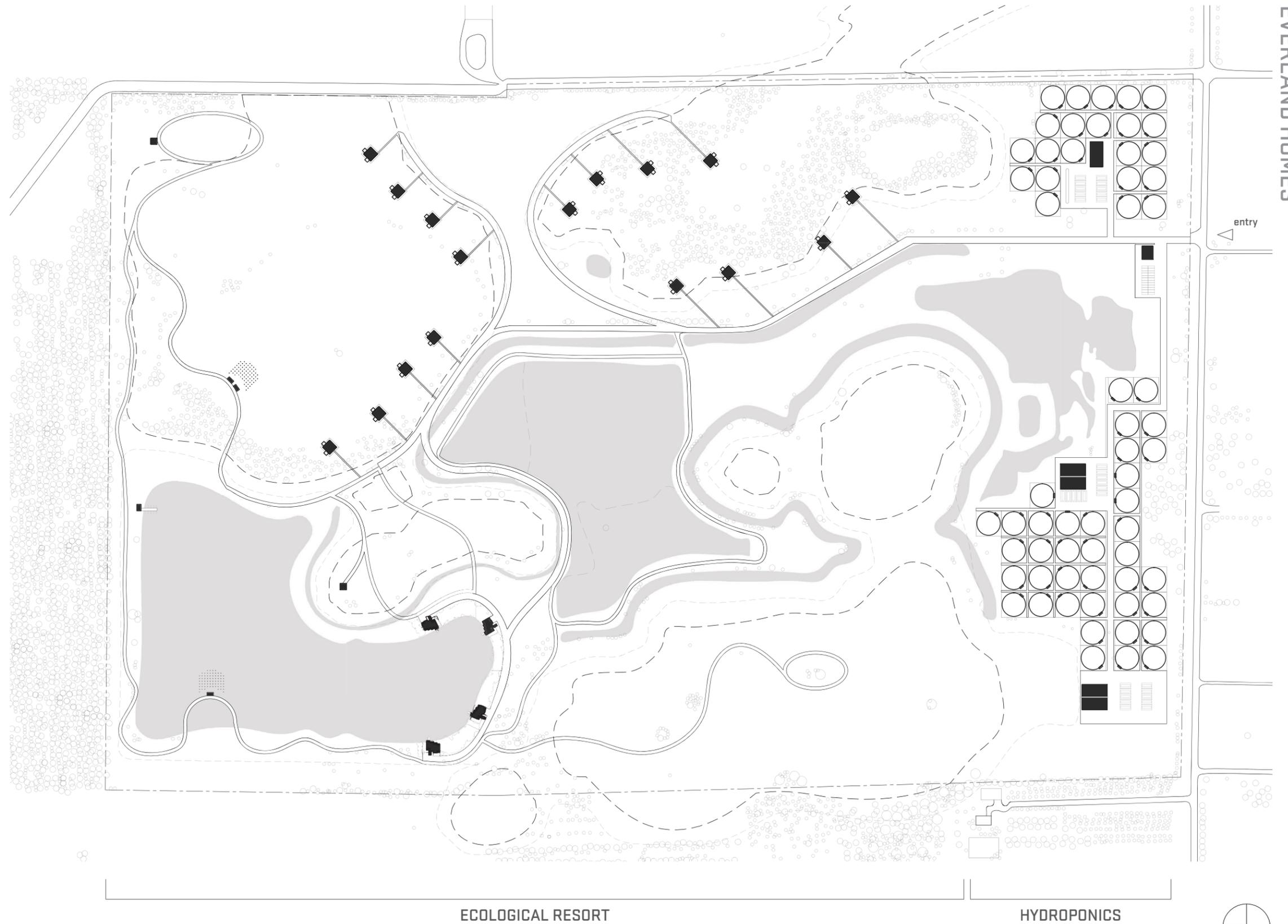


ECOLOGICAL RESORT & HYDROPONICS

In contrast to the preserve, the ecological resorts explores long term stays inside the Kissamee ecosystem, and agricultural production.

Housing units and glamping houses create unique zones inside the property, with trails looping around main water bodies.

The 16 glamping houses set between the lush wetlands offer guests unique bird-watching locations, while 4 lake front residences provide direct access to the lake through private fishing and boating docks.



EVERLAND HOMES

entry

ECOLOGICAL RESORT

HYDROPONICS



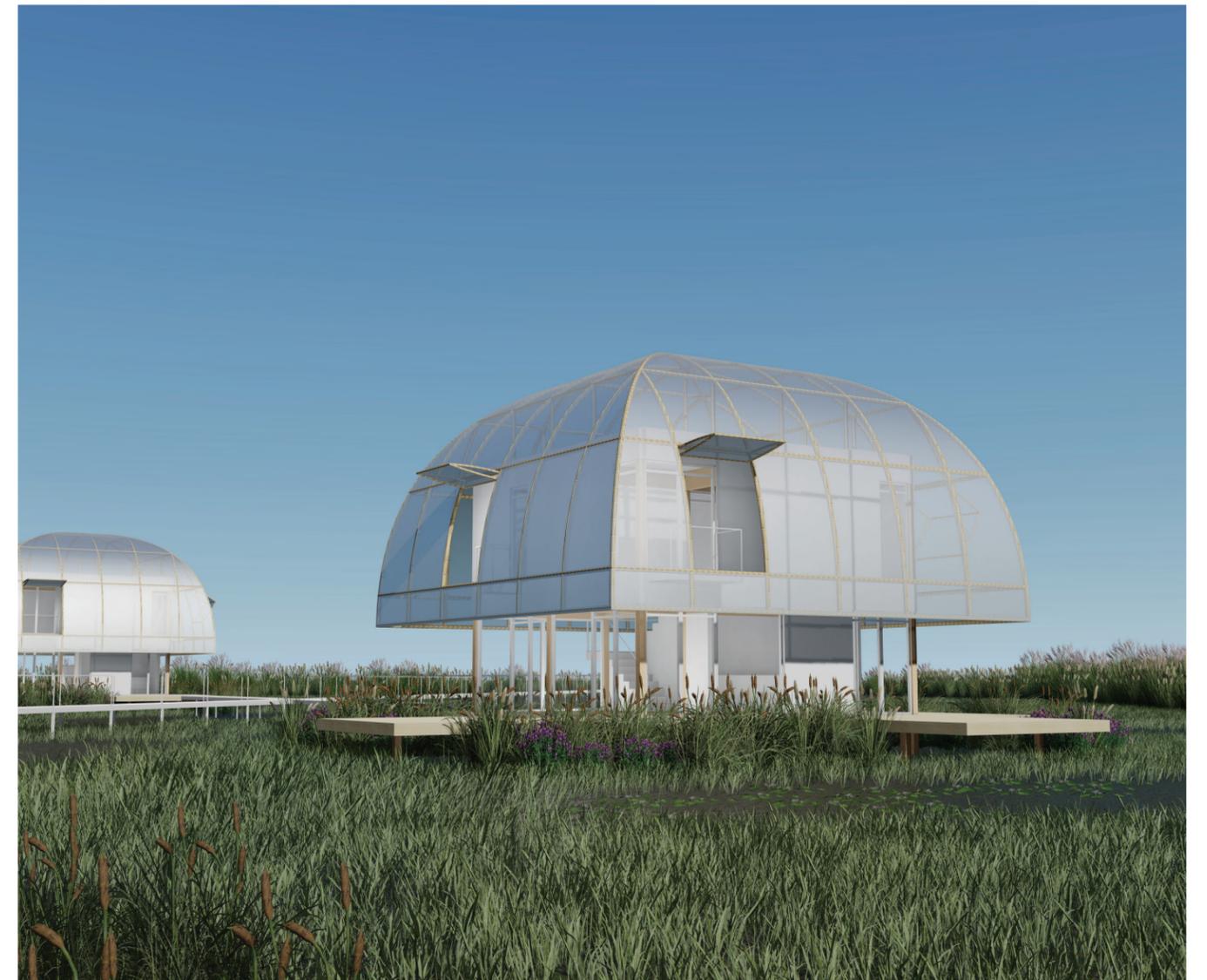
ECOLOGICAL RESORT HOMES

Within a short drive from of a number of well-known towns and communities, a new ecological resort offers users the opportunity of choosing picturesque and unique retreats which align with the various activities on the site, such as water, bird-watching, and relaxation.

The unique form of the homes is derived from environmental concepts that support ideas of communal vacation living and maintenance of water bodies and wetland areas as they exist.



Terraced House

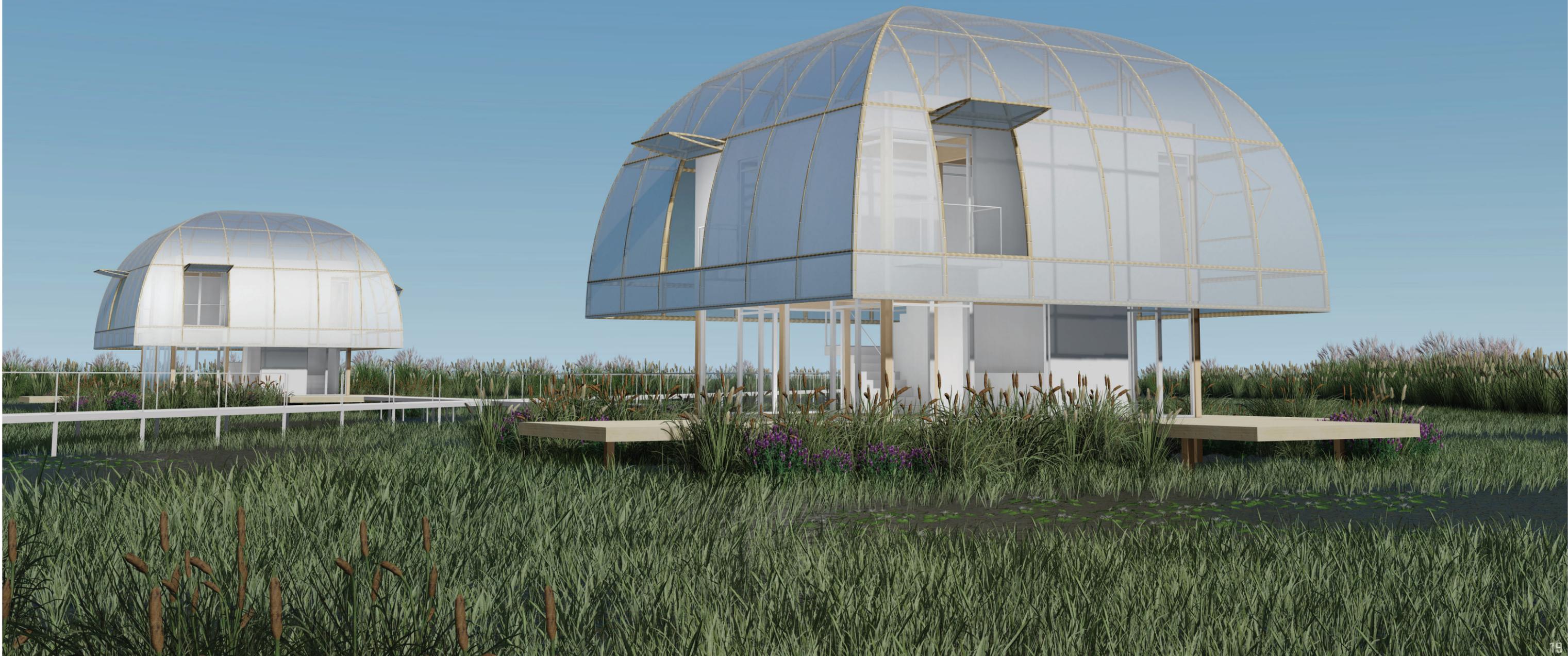


Umbrella House

UMBRELLA HOUSE

Like many areas across Florida, the property is covered by extensive patches of marshes. The existing networks of vegetation in the wetlands offers a rare opportunity for developing projects engaging with their unique surroundings.

The Umbrella House integrates this vision into all aspects of the planning, offering visitors a new glamping experience in the Kissimmee-Okeechobee-Everglades Ecosystem.

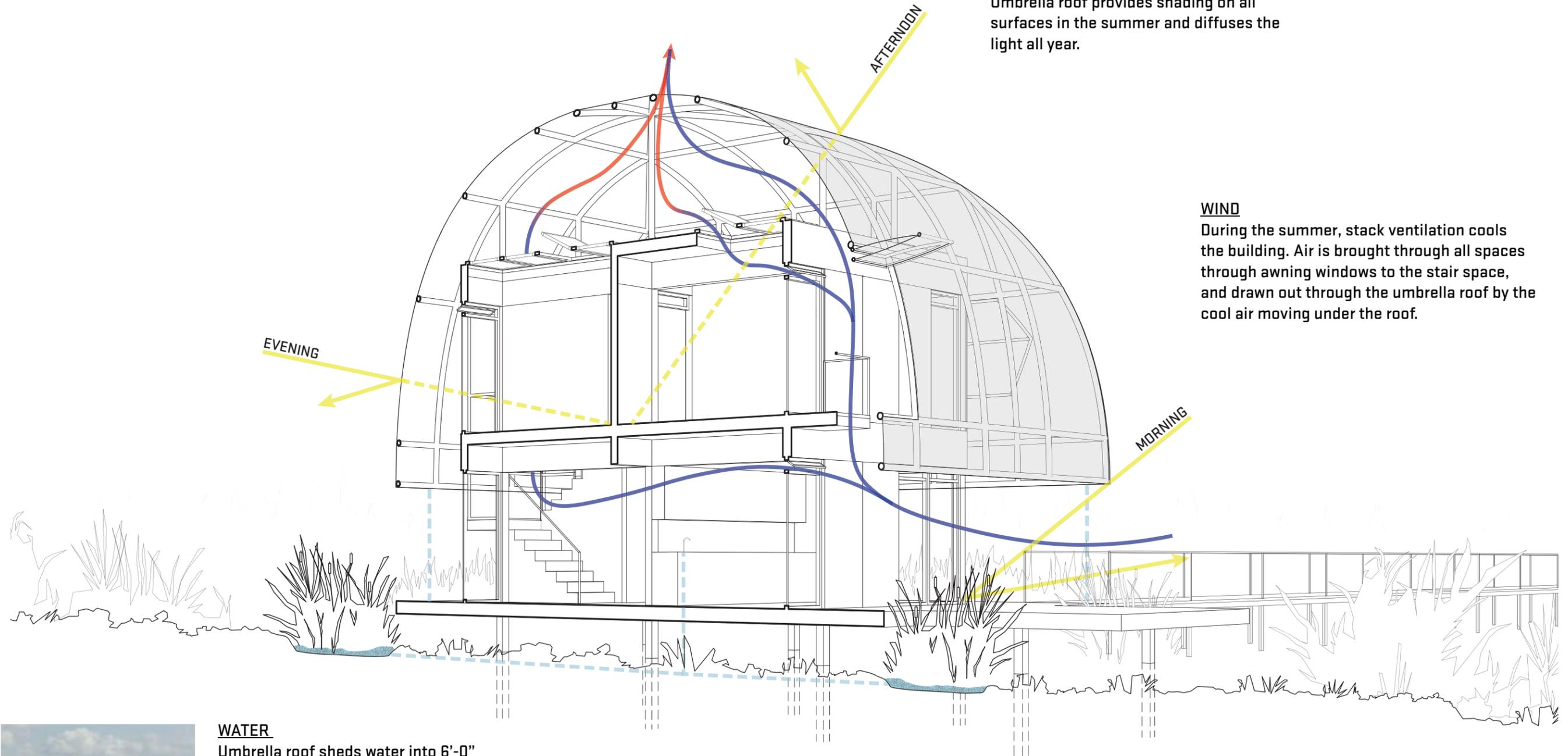


SYSTEMS DIAGRAM

UMBRELLA HOUSE

SUN
Umbrella roof provides shading on all surfaces in the summer and diffuses the light all year.

WIND
During the summer, stack ventilation cools the building. Air is brought through all spaces through awning windows to the stair space, and drawn out through the umbrella roof by the cool air moving under the roof.



WATER
Umbrella roof sheds water into 6'-0" perimeter constructed wetland. The wetland filters and stores water for use in the building.

WETLANDS

UMBRELLA HOUSE

Native vegetation helps collect and filter the rainwater for reuse in the building, while the ETFE membrane diffuses light inside the house.



Duck Potato



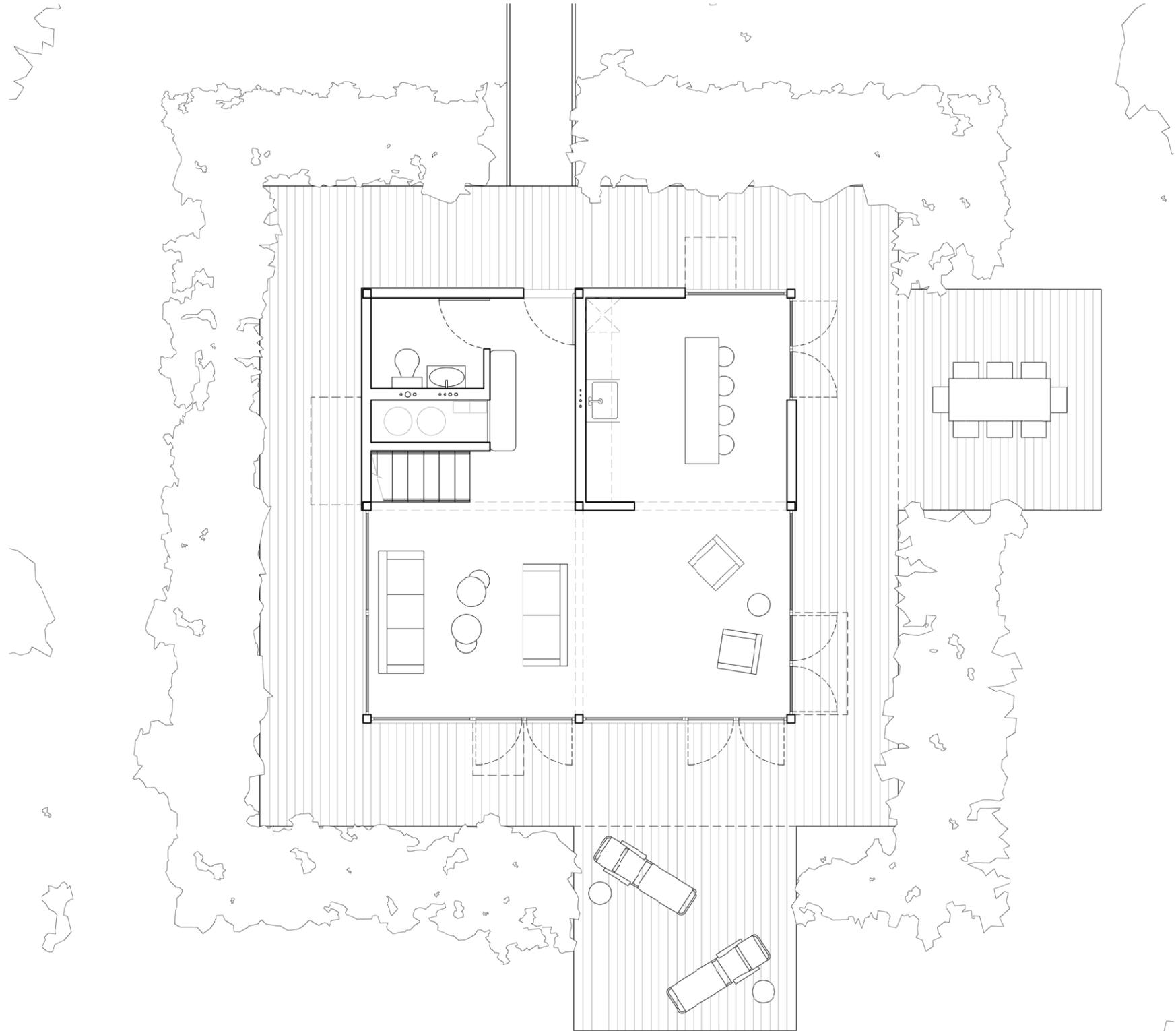
Sawgrass



Pickerel Weed



Cattails



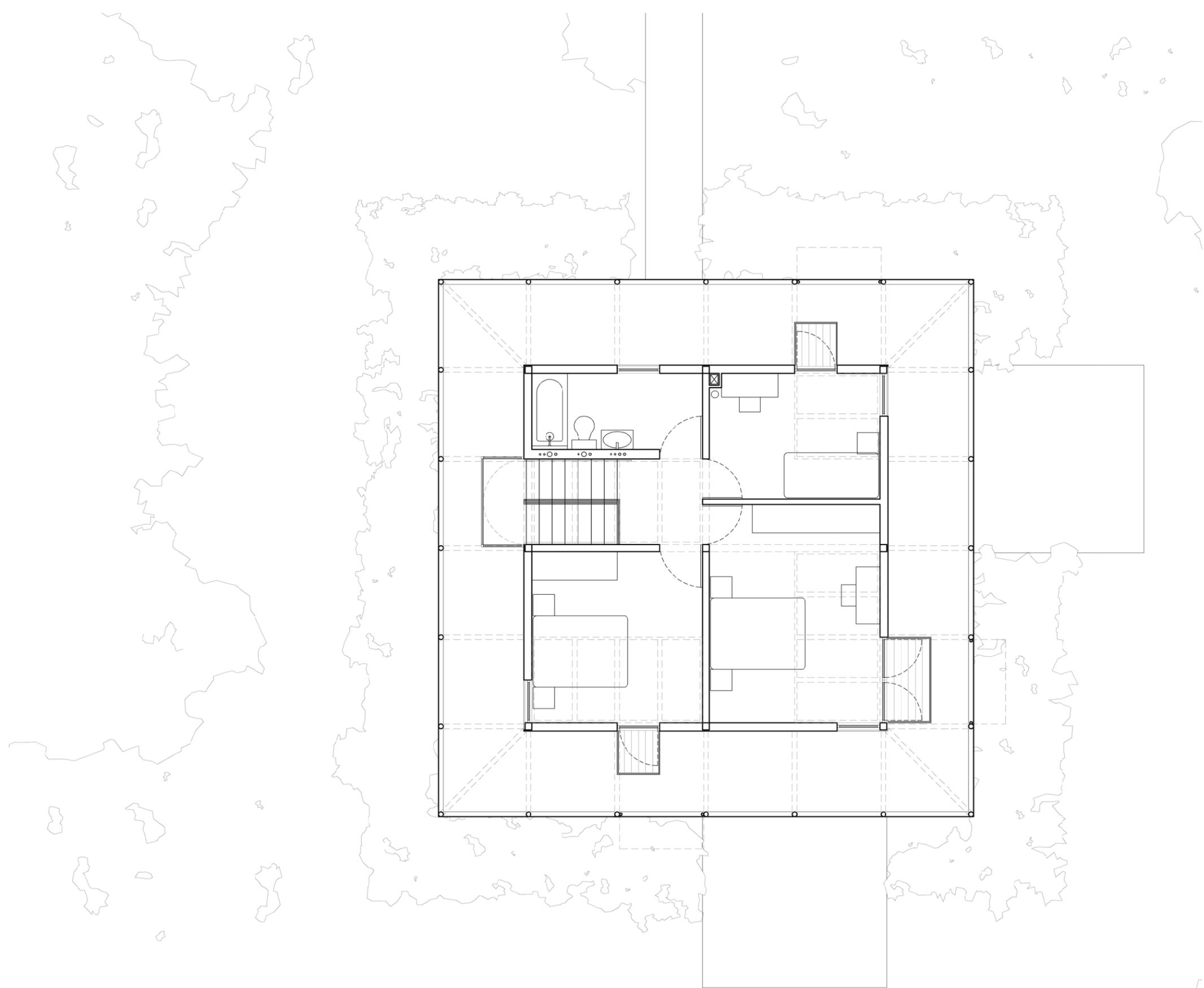
1st Floor Plan



South-East balcony



Details at South-East balcony

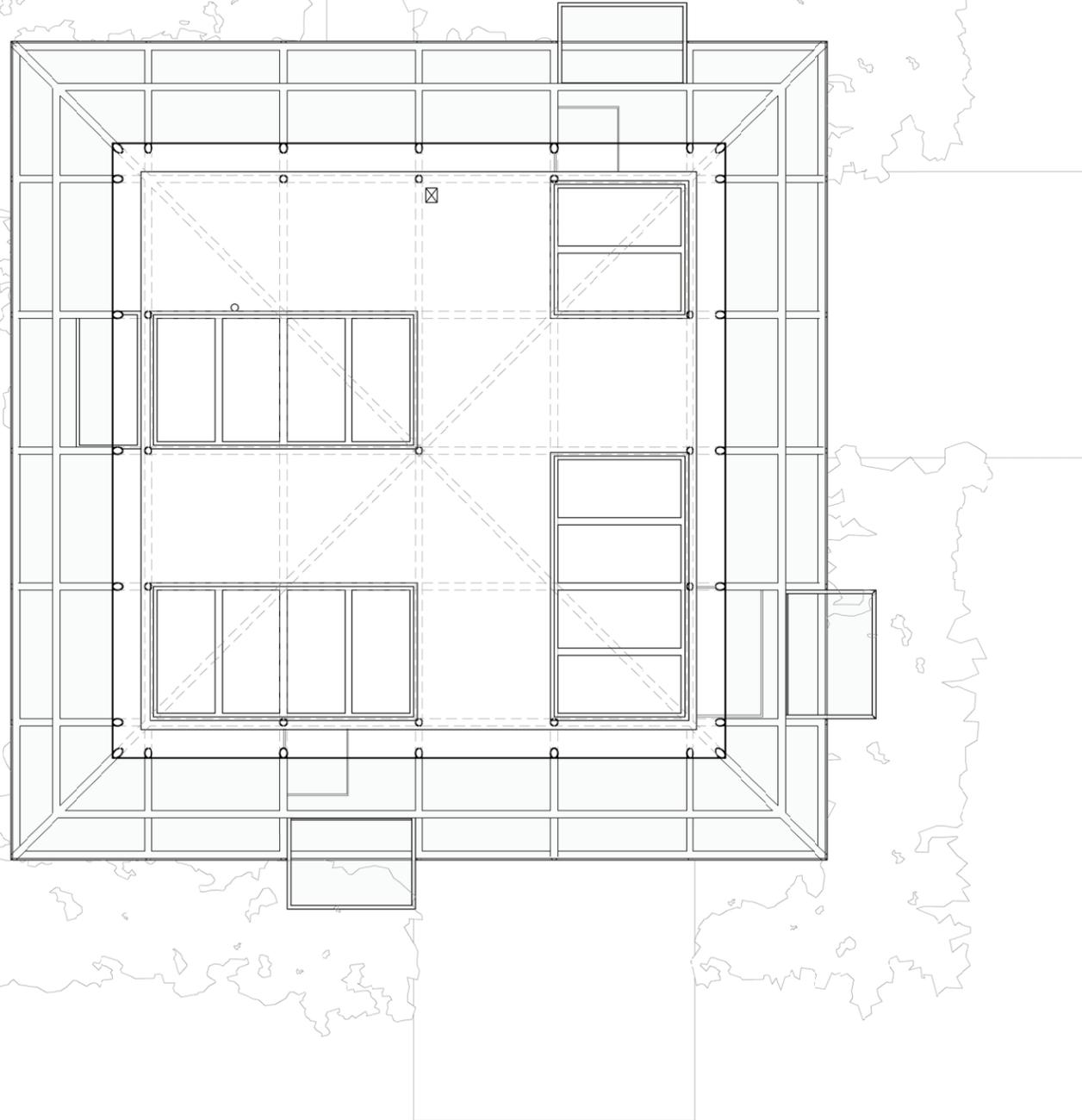


2nd Floor Plan

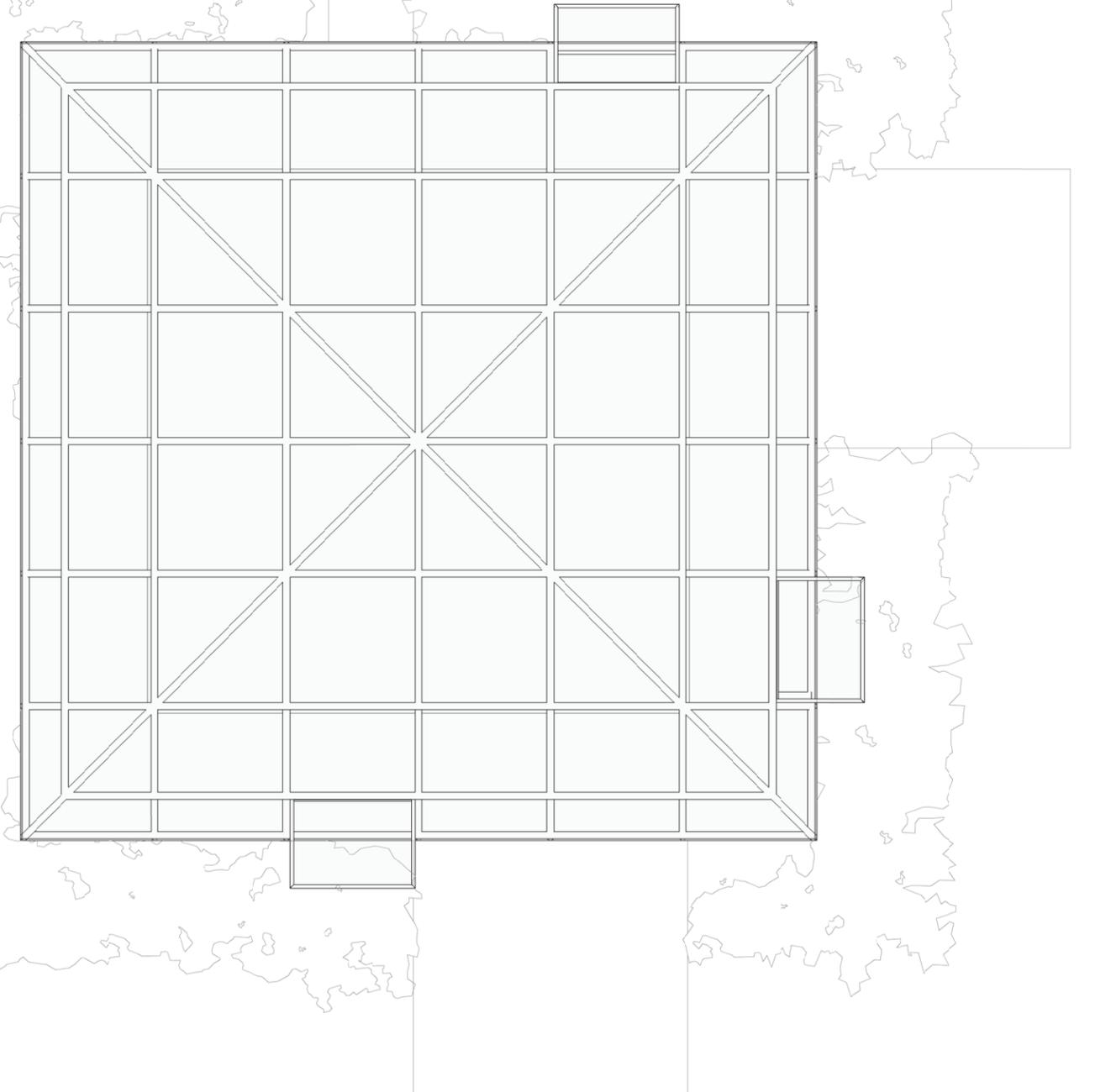
4" bamboo members support the ETFE umbrella dome, suspending it over the house roof.

Rows of skylights allow the diffused light inside the bedrooms and stair space below.

UMBRELLAHOUSE

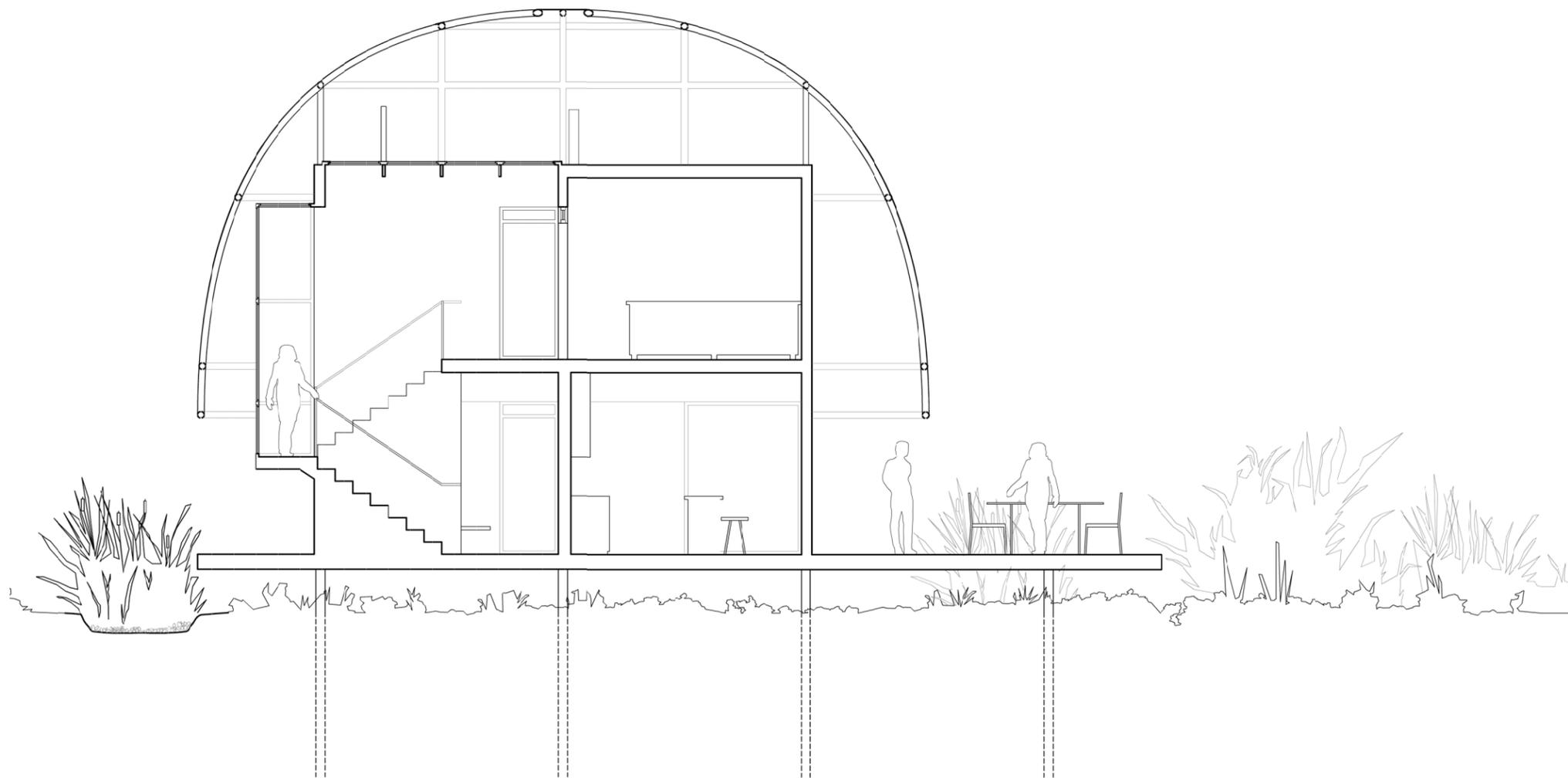


Lower Roof Plan



Upper Roof Plan

The stair connects the active living space and deck to the bedrooms.

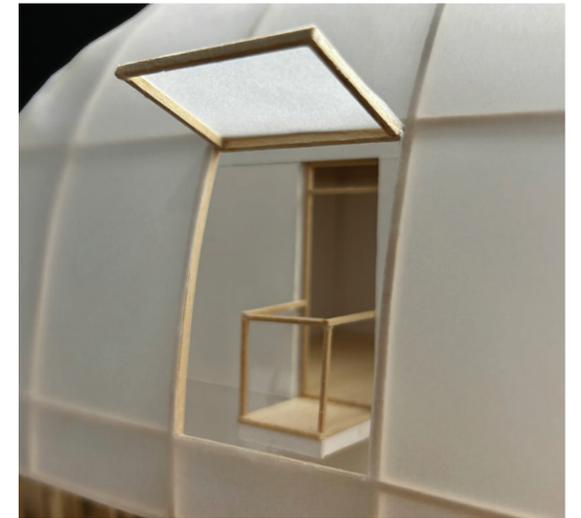


Southeast -Northwest section through stair-kitchen



Outdoor Stair View

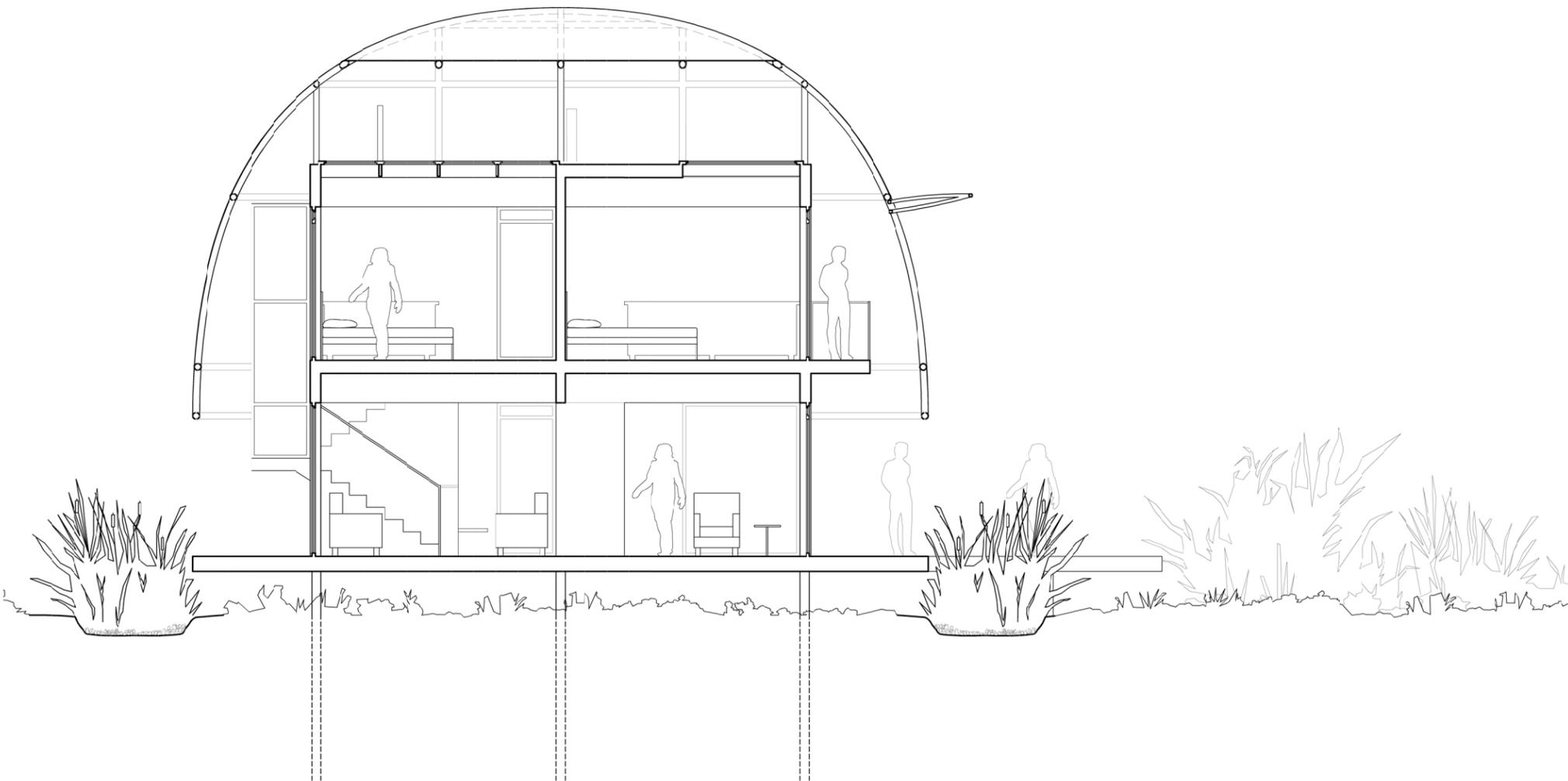
Every bedroom has its own private balcony - operable shading devices open up the umbrella facade to let light penetrate inside the space and allow residents to overlook the surrounding marshes.



South-West balcony



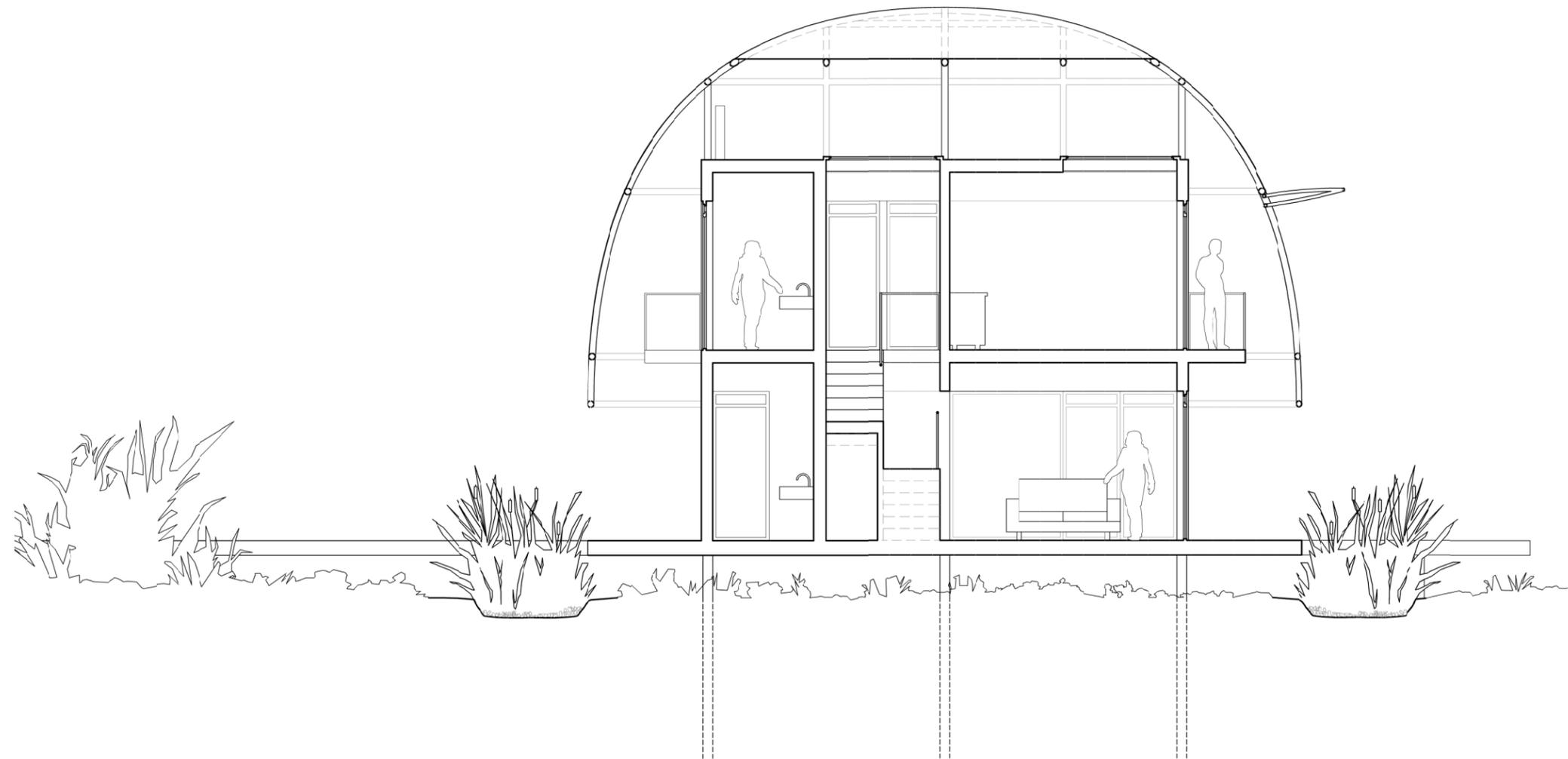
South-East balcony



Southeast -Northwest section through bedrooms-living area

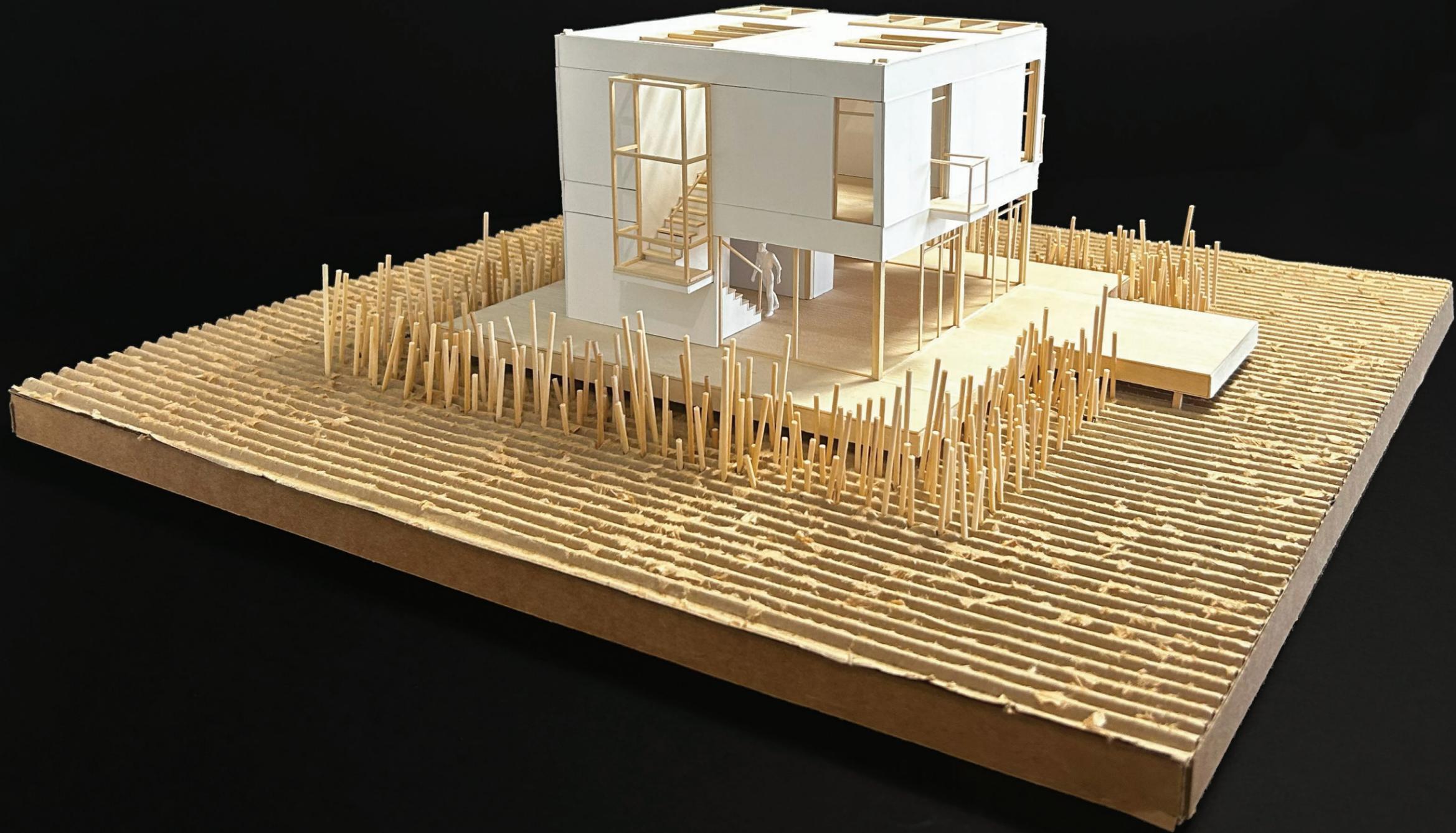


Balcony and living room view



Southwest -Northeast section through bathrooms-bedrooms







TERRACE HOUSE

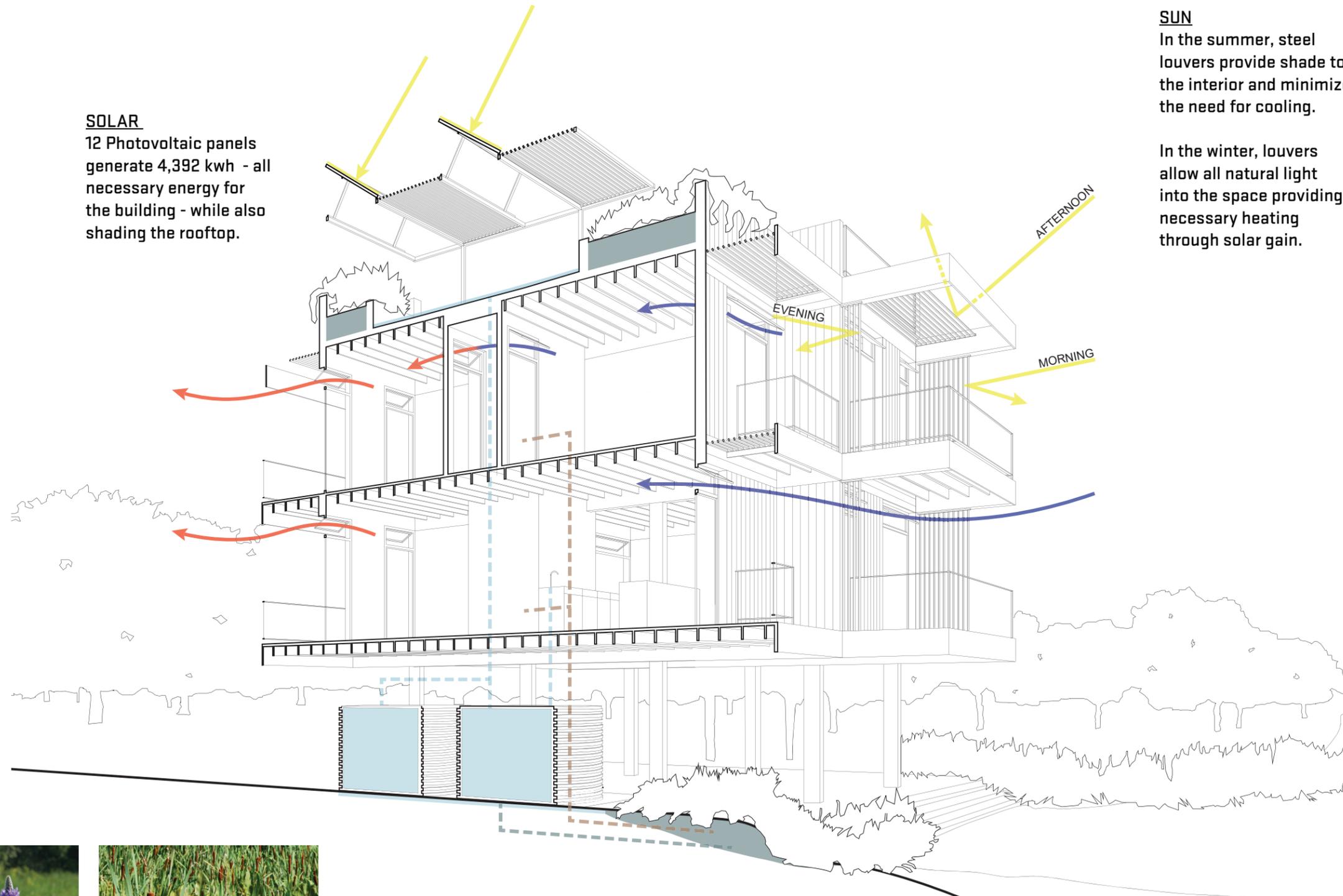
Shaded terraces, and broad open spaces open up the floor plan, allowing passive ventilation for cooling breezes. The Terraced House complex offers spacious units to overlook the surrounding landscape, direct access to docks, and a year-

round access to its rooftop by incorporating elements to provide proper sun control as needed seasonally.



SYSTEMS DIAGRAM

TERRACE HOUSE



SOLAR
12 Photovoltaic panels generate 4,392 kwh - all necessary energy for the building - while also shading the rooftop.

SUN
In the summer, steel louvers provide shade to the interior and minimize the need for cooling.

In the winter, louvers allow all natural light into the space providing necessary heating through solar gain.

WIND
Clerestory windows at ceiling height provide cross ventilation, lowering the temperature 5-7 degrees in the summer.



WATER
All rainwater is collected on roof, slowly filtered through planters, and stored in two 2,700 gallon cisterns.

A living machine landscaped with native flood-resistant plants (cattails + pickerel weed.) Slowly filters the waste water run off and is reused as grey water.



LAKESIDE

TERRACE HOUSE

Floor-to-ceiling windows and spacious balconies overlook the lake, jutting above the coastal marshes.

Sabal palms and other native flora surround the building, their canopies filtering the harsh summer light.



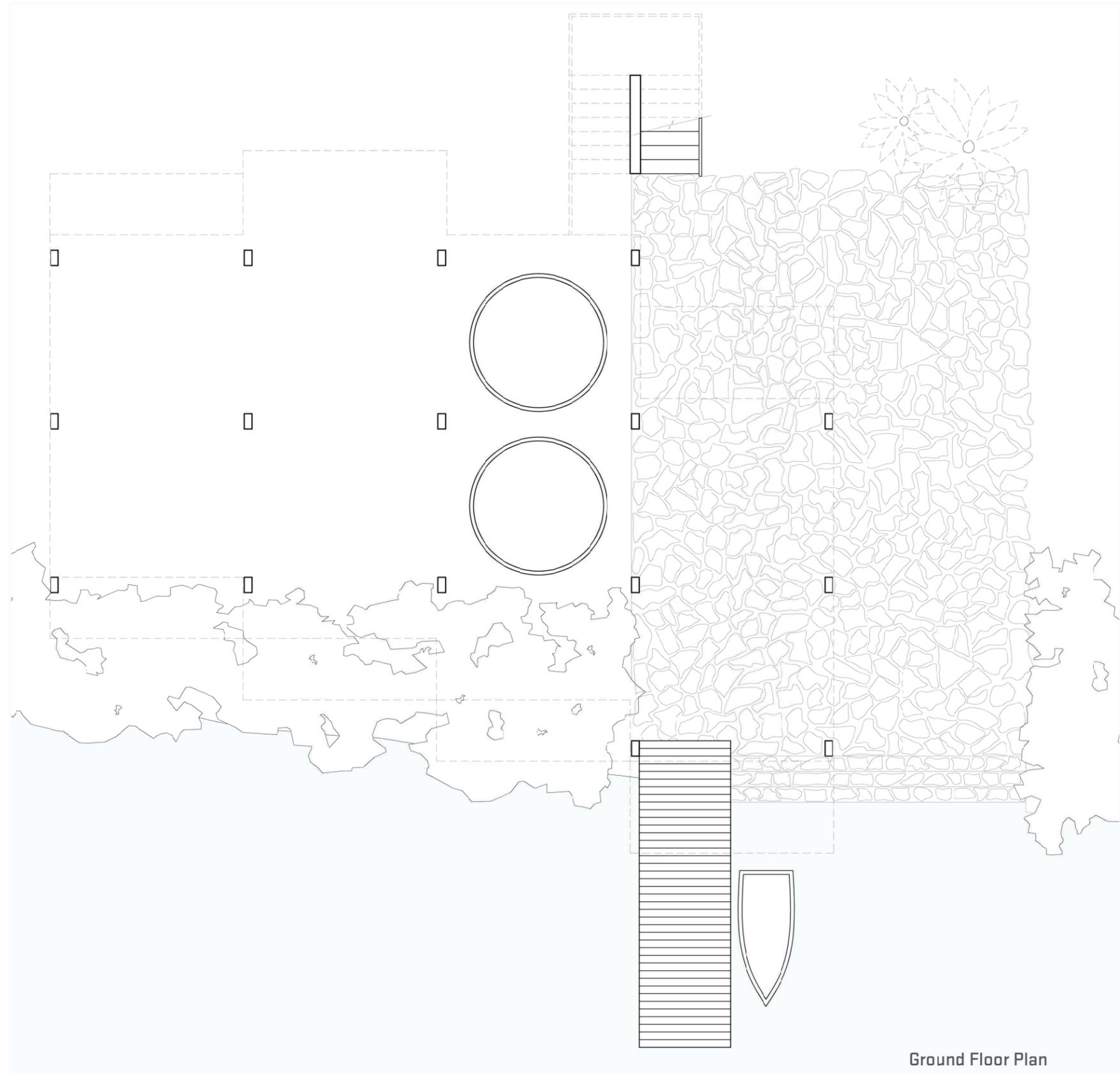
Water-Hemlock



Pickerel Weed

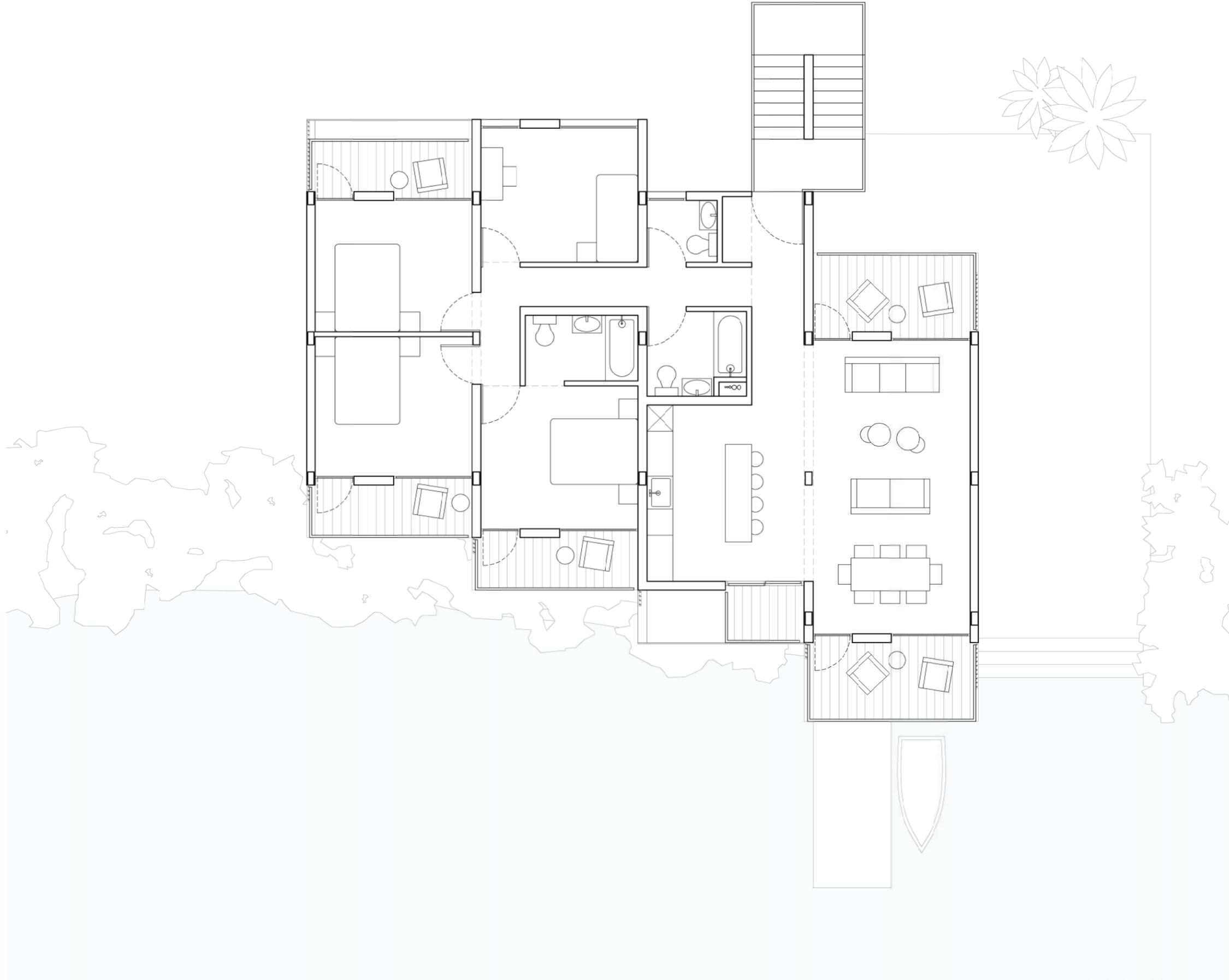


Sabal Palms



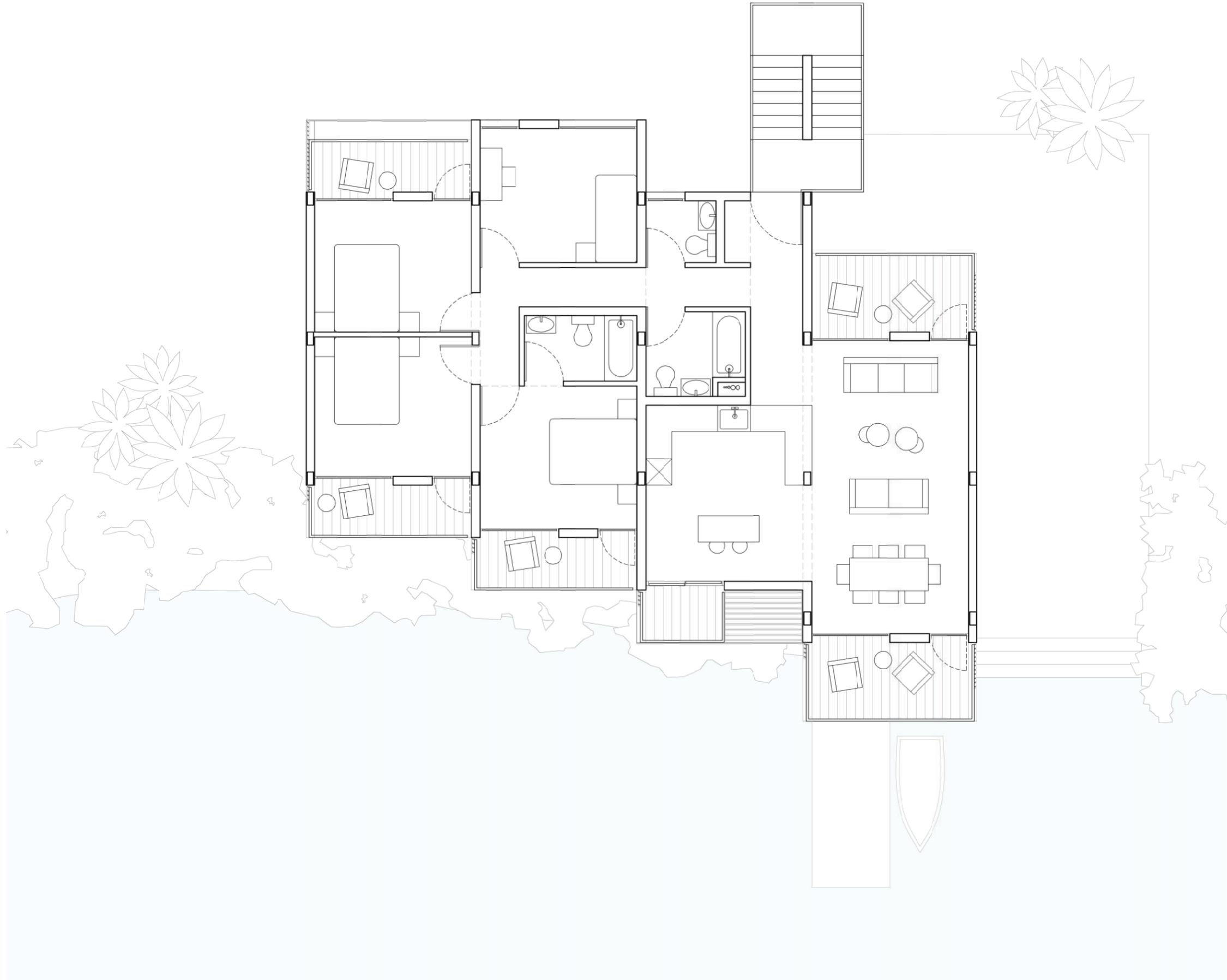
Ground Floor Plan

TERRACE HOUSE



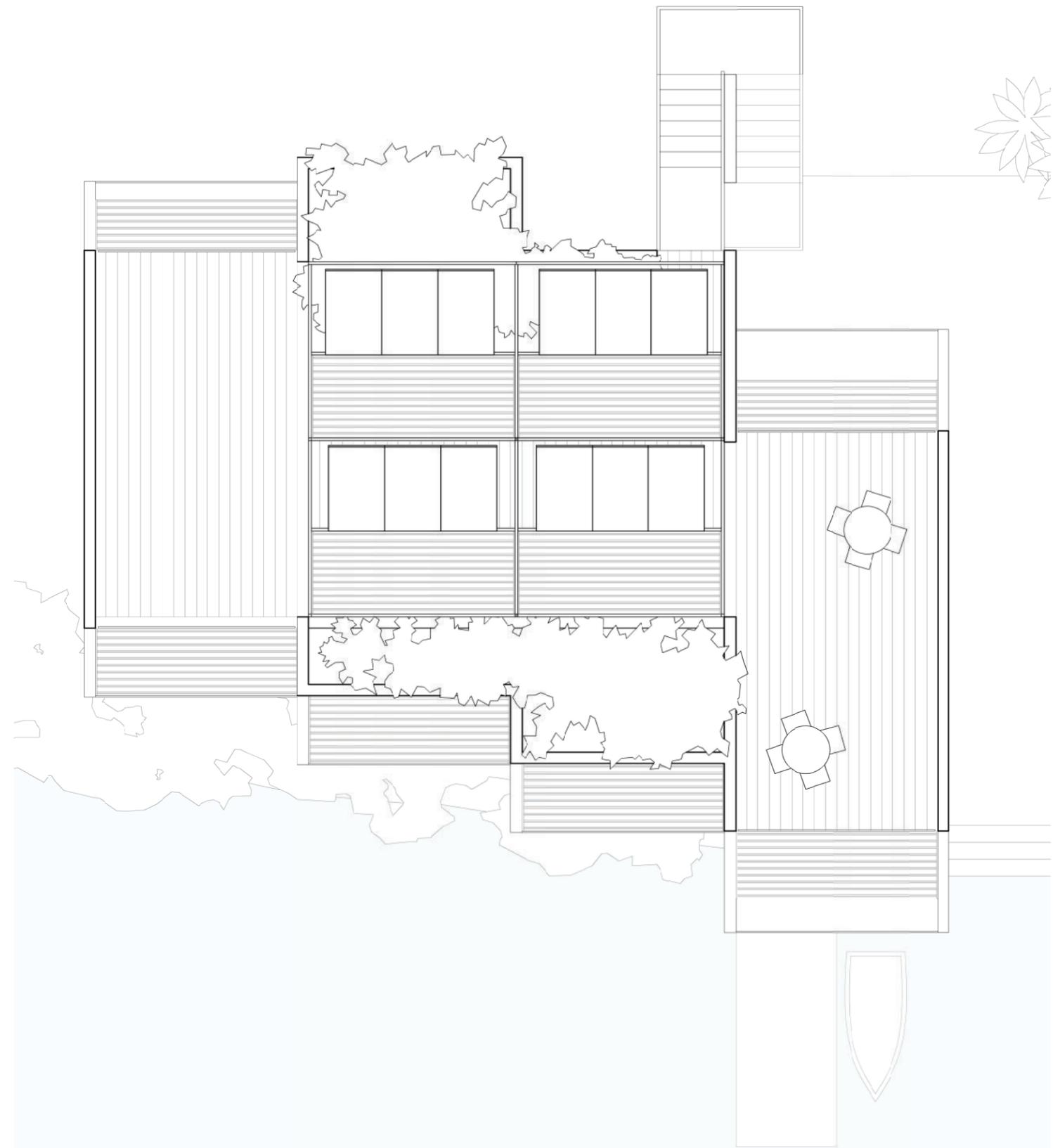
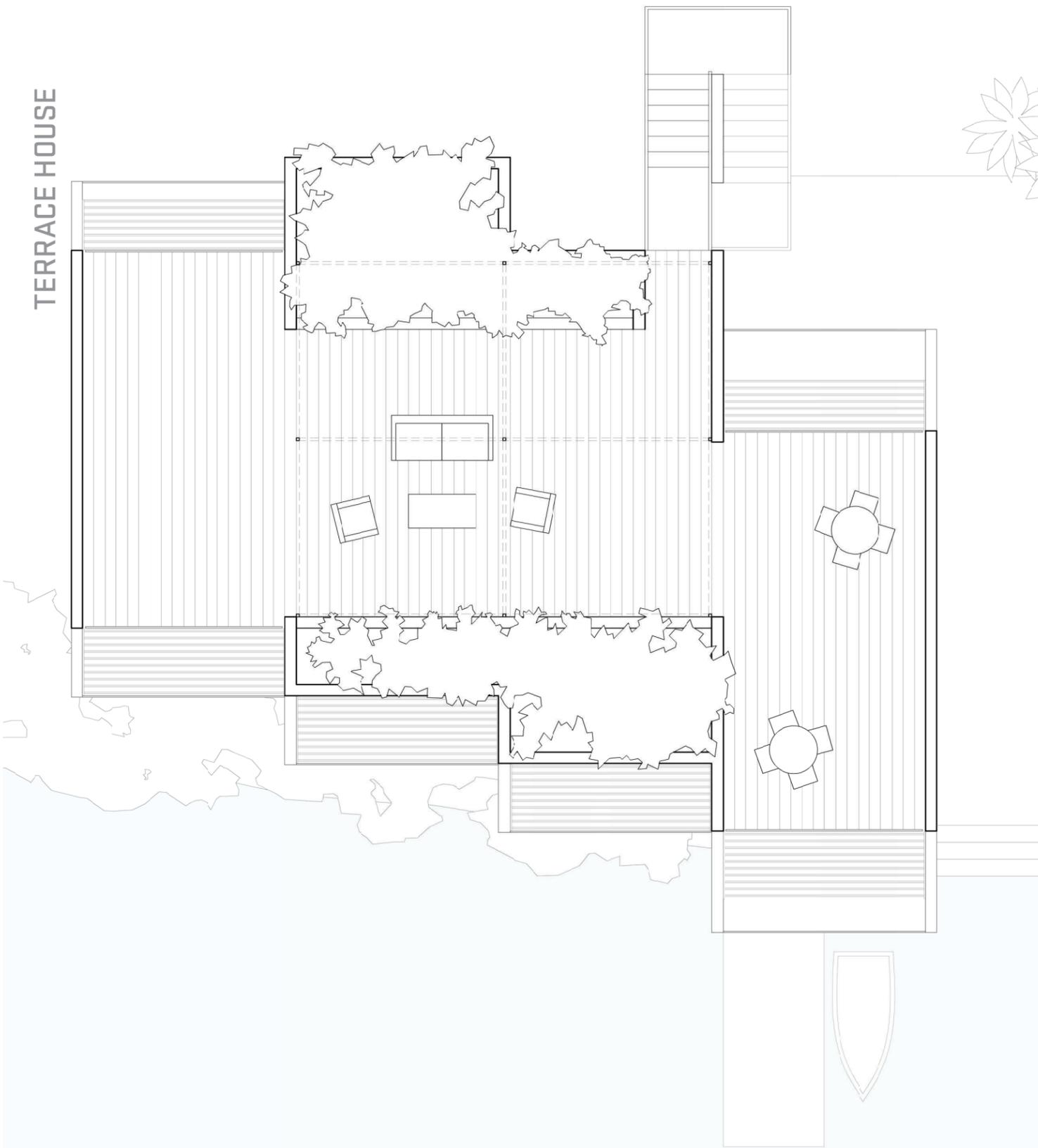
2nd Floor Plan

TERRACE HOUSE



3rd Floor Plan

TERRACE HOUSE



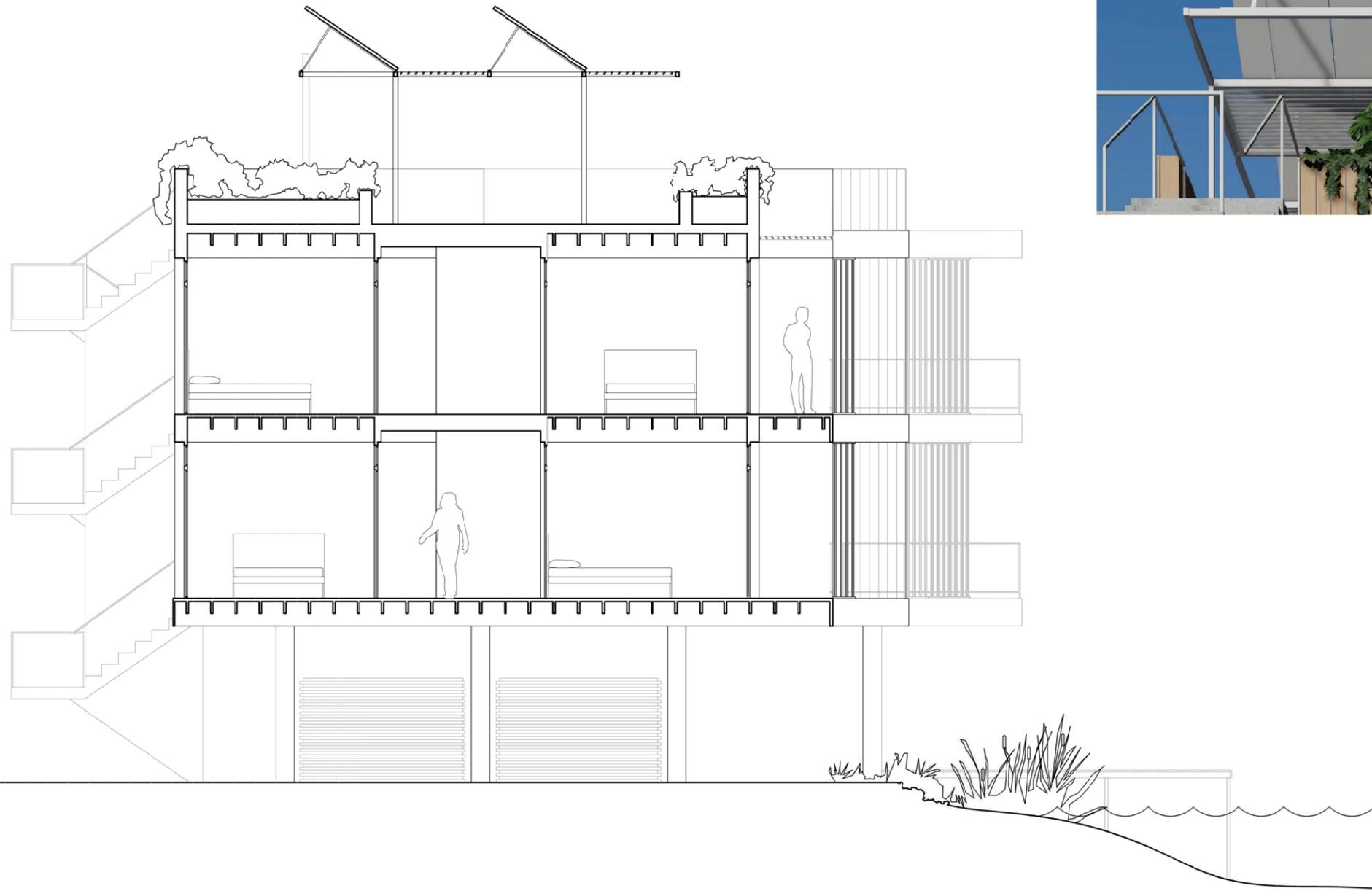
The rooftop is transformed in a relaxing lounge, with perimeter planters and shading louvers to let guest enjoy their stay day-long.

Lower Roof Plan

Upper Roof Plan



TERRACE HOUSE



On the rooftop solar panels supply electricity to the building - while also providing a shaded canopy for tables and chairs.

North - South section through bedrooms

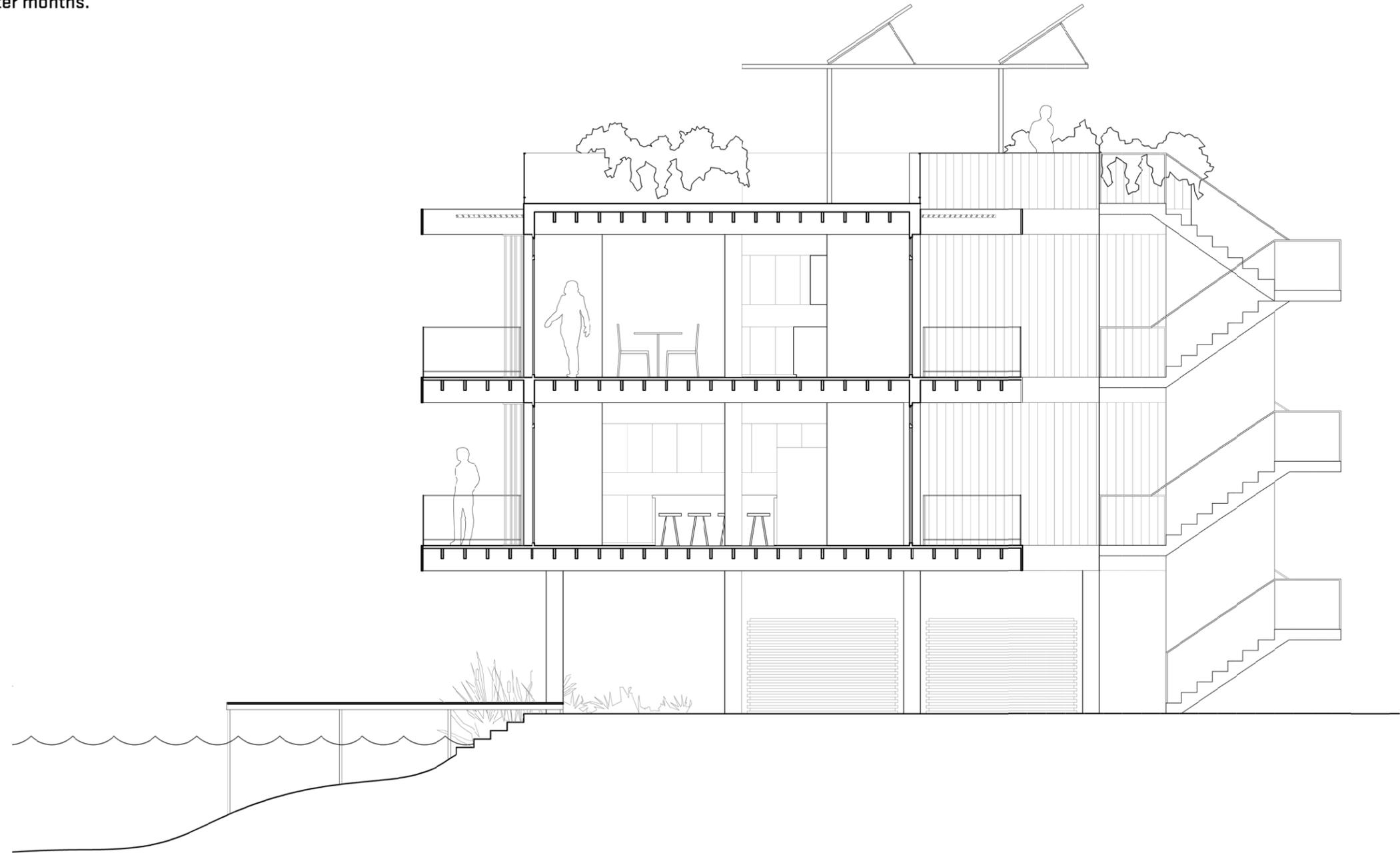
SOUTH VIEW





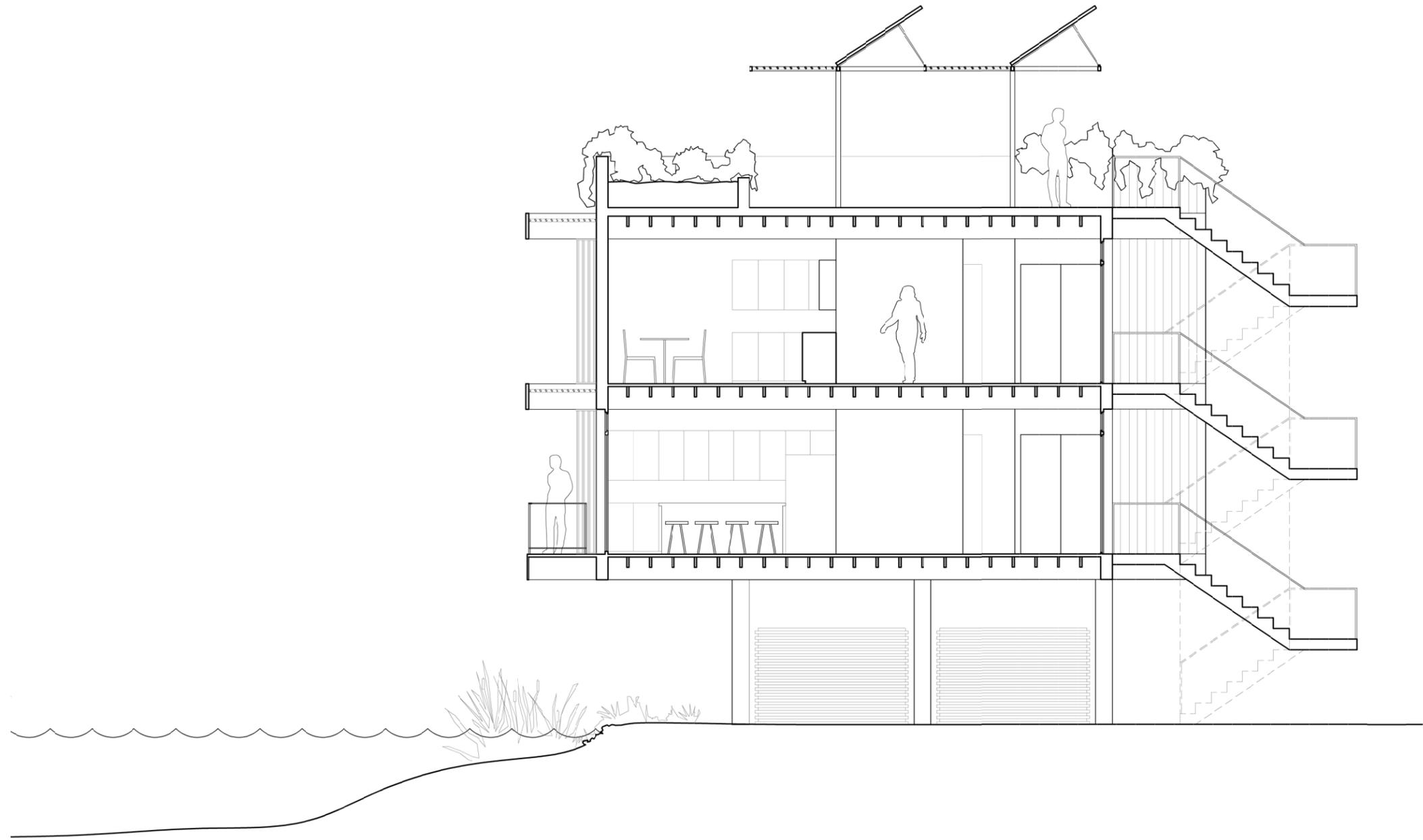
Steel louvers are designed to provide shade during to the interior during summer, while allowing all natural light during the winter.

At the roof, white twinevine planters creep downwards to offer more cover during the hotter months.



South - North section through living area

TERRACE HOUSE



South - North section through kitchen-entry

NORTH VIEW



RESEARCH APPENDIX

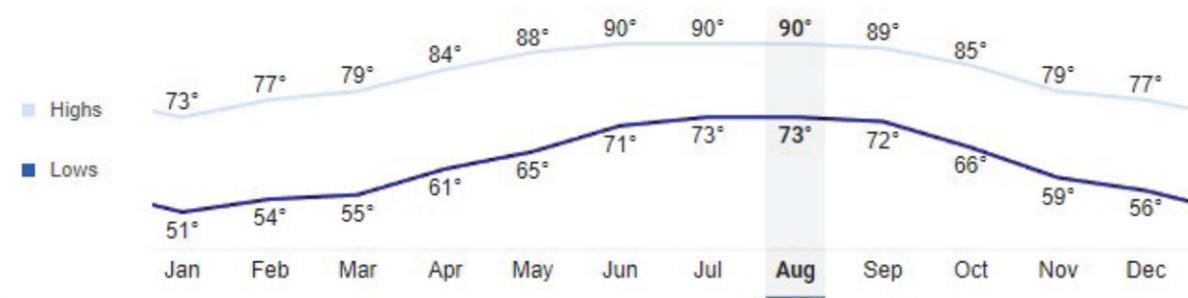
The Appendix explores our site and location analysis regarding existing site conditions and development possibility. It delves into:

- climate and ecosystem characteristics
- native flora of the site and surroundings
- native bird habitats and species
- innovative agricultural productive systems

APPENDIX A - ENVIRONMENTAL PARAMETERS

Climate Data

Temperatures (°F)

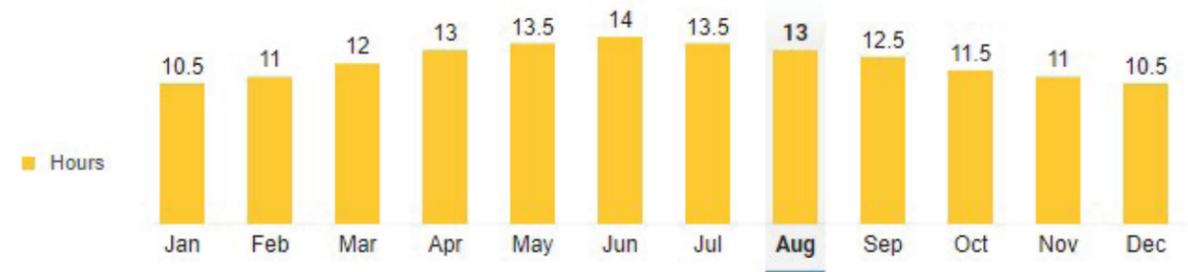


Rainfall (inches)



There is significant rainfall even in the winter/bridge seasons. There is plenty of water to be collected for building use. The heavy rainfall suggests maintaining wetlands as they exist and reinforcing them with proper vegetation.

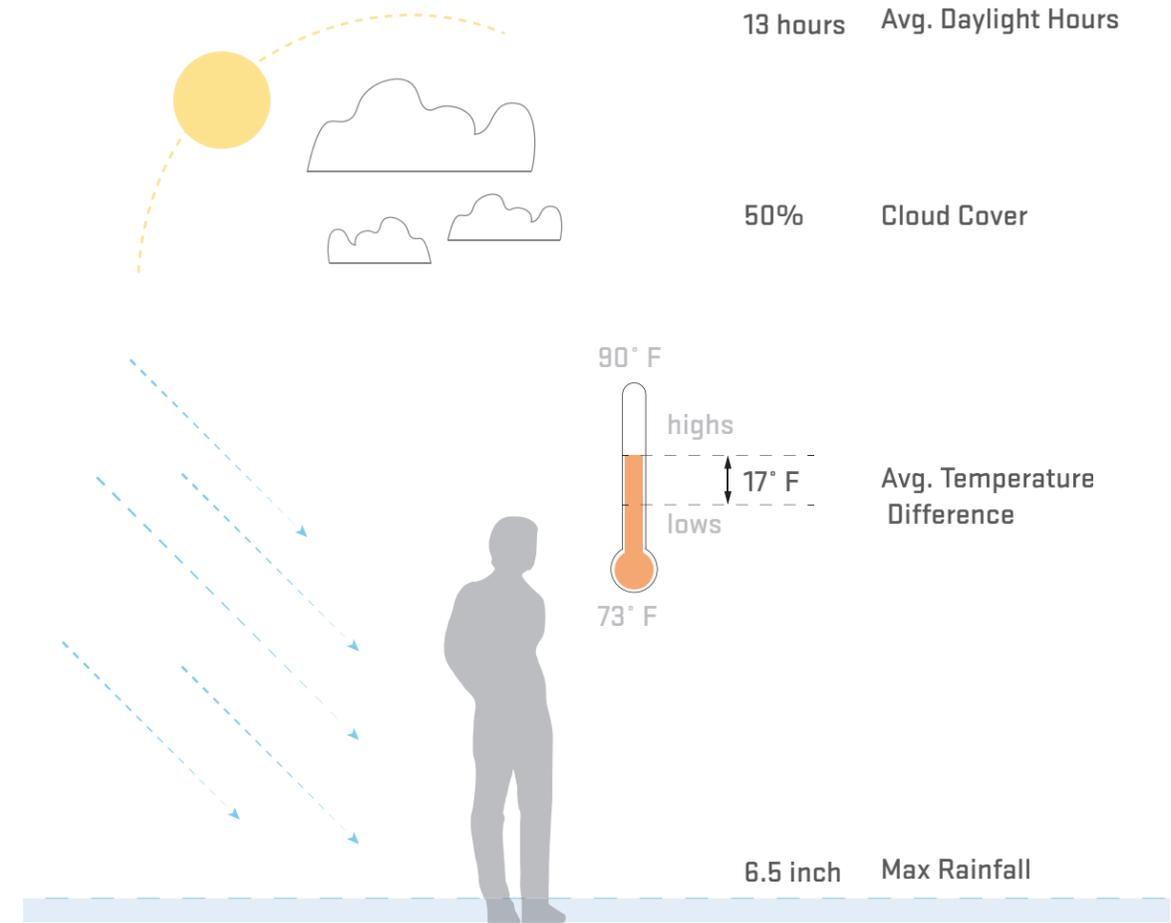
Daylight



Source: NOAA

Daylight hours are long but cloud cover is present about 50% of the time.

Climate Schematics



APPENDIX B - NATIVE FLORA

Flora and Wildlife

The maintenance of the native flora is critical to protect the biodiversity of the ecosystems, as much of its wildlife depend of it as source of food and nesting.



Carolina Willow

Carolina Willow:

- small to medium tree or large shrub with a spreading, open, irregular crown.
- only native larval host plant for the viceroy butterfly; also larval host for (Automeris io) moths.



Wax Myrtle

Wax Myrtle:

- an evergreen shrub or small tree that can grow up to 40 feet.
- the berries and aromatic leaves were used for its waxy substances by settlers to make candles.
- the fruit is a food source for many birds.



Soft Rush

Soft Rush:

- the native soft rush may be found as a single clump, or as a colony of either clumps or of single stems several feet tall.
- can be found in in water or on "dry" ground, and its stems reach between 2 to 5 feet tall.
- provides food and nesting to birds and other wildlife.



Pickerelweed

• Pickerelweed:

- a very common emergent plant.
- ducks will consume the seeds of pickerelweed while muskrats and nutria will consume the rhizomes and base

Native Vegetation of the Ecosystem

These are a few of the trees and grasses native to the Kissimee-Okeechobee-Everglades Ecosystem. They are both flood resistant and supportive of animal life in the ecosystem.



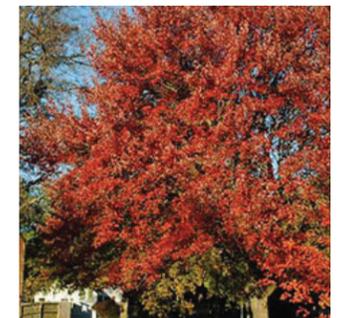
Live Oak



Carolina Willow



Sabal Palm



Red Maple



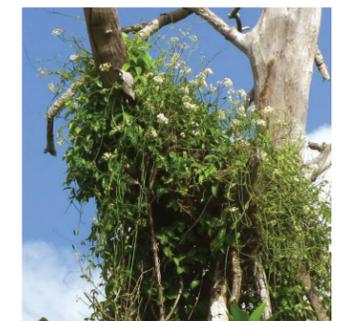
Pond Apple



Elderberry



Wax Myrtle



White Twinevine



Soft Rush



Sawgrass



Water-Hemlock



Cattails



Duck Potato



Arrowhead



Pickerel Weed



Spatterdock (Cow Lily)

APPENDIX C - BIRD HABITATS & SPECIES

Reported Endangered Bird Species

These are some of the reported endangered species native to the Kissimmee-Okeechobee-Everglades Ecosystem which are also found in close proximity to the site.



Bald Eagle

Bald Eagles:

- 660ft nest range
- 1 nest located just north of property.
- nests are usually built in tall pine trees near lakes, marshes or coastlines.
- though the bird was removed from the endangered species list in 2007, it continues to face a variety of threats such as habitat loss.



Wood Stork

Wood Stork:

- 2500 ft colony habitat range
- colonies located north-east of property.
- due to degradation of nesting and feeding habitat, they have declined in numbers, and are now federally listed as Threatened.
- its very specialized way of living makes this bird one of the most incisive indicators of how well the Everglades is functioning.



Red Headed Woodpecker

Red Headed Woodpecker:

- habitat loss caused by development of bottomland forest and suppression of fires found naturally in some forest ecosystems.
- listed as a Watch List Species for the United State.



White Ibis

• White Ibis:

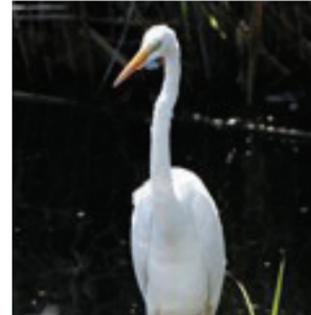
- Florida population is much lower than historical levels, and has continued to decline in recent decades.
- the species bred mostly within the Everglades.
- The longest-lasting colonies are associated with wetlands over 310 sq mi in size.

Native Birds Habitats

WETLANDS



Black Necked Stilt



Great Egret



Snail Kite



Glossy Ibis

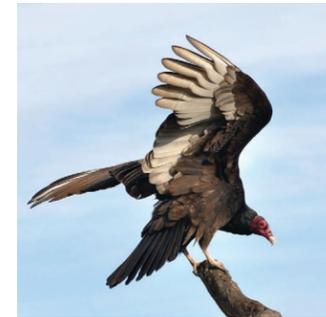
OPEN PRAIRIE



Cattle Egret



Eastern Meadowlark



Turkey Vulture



Crested Caracara

PONDS



Least Bittern



Roseate Spoonbill



Mottled Duck



Little Blue Heron

WOODLANDS



Osprey



Swallow-tailed Kite



Belted Kingfisher



Red-shouldered Hawk

APPENDIX D - HYDROPONIC DOME

Proposal for hydroponic systems and design was based on the Granpa Domes, which consist of pneumatic (air-supported) circular domes, which house mechanized, rotating growing systems. These facilities use space more efficiently and require less labor and fewer resources than conventional greenhouses.



Characteristics

FACILITY STATS	LOADS WITHSTOOD	CROPS & OUTPUT
-Category: Sunlight-type air dome plant factory -Structure: Air supported structure (ETFE) -Actual Land Area: 7,104.18 ft ² /unit (660 m ² /unit) -Planted Area: 3,336.81 ft ² /unit (310 m ² /unit) -Dome Diameter: 88 ft + 3ft perimeter -Dome Height: 21 ft (6.5m) -Installation time: approx. 2 weeks -Employees required for cultivation: 1 employee/unit	WIND -Maximum wind speed withstood: 100mph (45m/s) <i>Note for Lake Okeechobee:</i> - Hurricane Wilma max sustained wind speed: 103 mph - Hurricane Wilma max peak wind speed: 112 mph SNOW -Maximum snow load withstood: 17.7 inch (45cm)	CULTIVARS -Upright foliage plants -Numerous types of lettuce (Lollo Rosso, Curly lettuce) -Celery -Herbs TIME -Around 500 plants per day per dome -Up to 15,000 plants in about 30 days. OUTPUT -1 dome = 18.1 tons per year -60 domes = 1,086 tons per year -95 domes = 1,719.5 tons per year

Features and Selling Points

- **Crop Output:** the domes are twice as productive as conventional greenhouses while using 40% less energy.
- **Location Flexibility:** It is adaptable to either urban or rural agriculture, since it can be also installed in limited spaces.
- **Entrepreneurship:** As agricultural knowledge necessary to operate a dome farm can be acquired in 50 days, the system is attractive to potential entrepreneurs.
- **Education:** People without prior agricultural experience can easily learn how to operate them in only a short period of time as the environmental controls are automated.
- **Workload:** Fewer workers are needed to maintain the operation and package produce. Heavy labor common to field operations is eliminated.
- **Social Employment:** It is also expected to play a role as an employment measure for the elderly and disabled people since operations are simple and easy.
- **Design:** Reduced interior shading to only 2%, compared to the average 17% of conventional greenhouses, while the ETFE cover has a very light transmission efficiency.

Structure

