

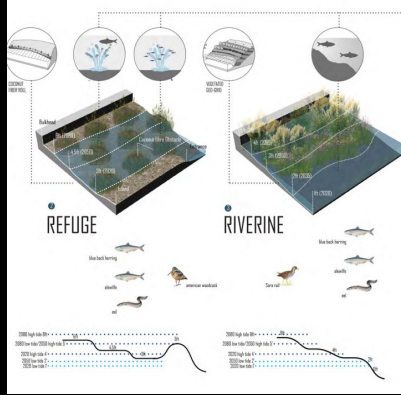


LA 7010 URBAN DESIGN & PLANNING STUDIO
Village of Tarrytown
Climate-Adaptive Design CaD | Assoc. Prof. Josh Cerra

HUDSON RIVER VALLEY SERIES



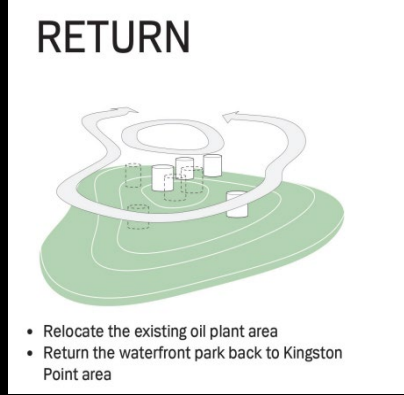
Catskill, NY – Fall 2015



Hudson, NY – Spring 2016



Kingston, NY I – Fall 2016



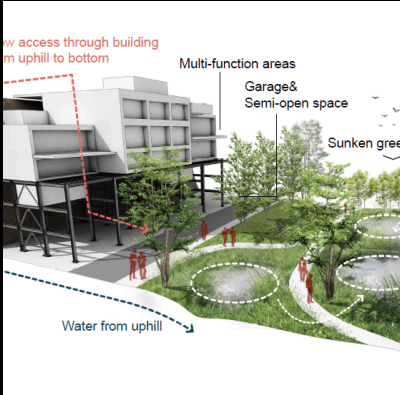
Kingston, NY II – Spring 2017



Piermont, NY- Fall 2017



Kingston, NY III – Spring 2018



Ossining, NY – Fall 2019

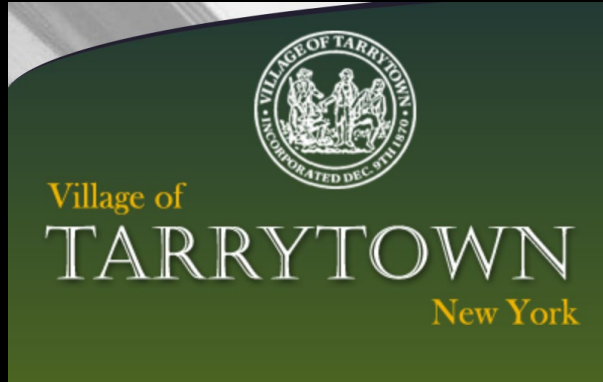


Poughkeepsie, NY – 2021



Developing new climate adaptive design strategies with communities one place at a time

PROJECT COLLABORATORS / PARTNERS





STUDIO OVERVIEW

Climate-adaptive Design Studio DESIGN

Fall 2022

Studio Site:

Tarrytown, New York

Student Roster:

Xiaoyun Ren (M.L.A. '23)

Kiki Yunge Hu (M.L.A. '23)

Sangita Bhattacharjee (M.L.A. '23)

Vanessa Dikuyama (M.L.A. '23)

Xue Xia (M.L.A. '23)

Maren Johnson (M.L.A. '23)

Brandon Wilson (M.L.A. '23)

Gengjiaqi Chang (M.L.A. '23)

Ilana Haimes (M.L.A. '23)

Aishwarya Shankar (M.L.A. '23)

Xiaomeng Cai (M.L.A. '23)

Xinying Zou (M.L.A. '23)

Hilary Mulford (B.L.A. '23)

Hanrui (Freya Fu) (B.L.A. '24)

Joyce Ziyue Hu (M.L.A. '23)

Ying Zhang (M.L.A. '23)

Hang Wang (M.L.A. '23)

Teaching Assistant:

Hanqi Chai (M.L.A. '23)

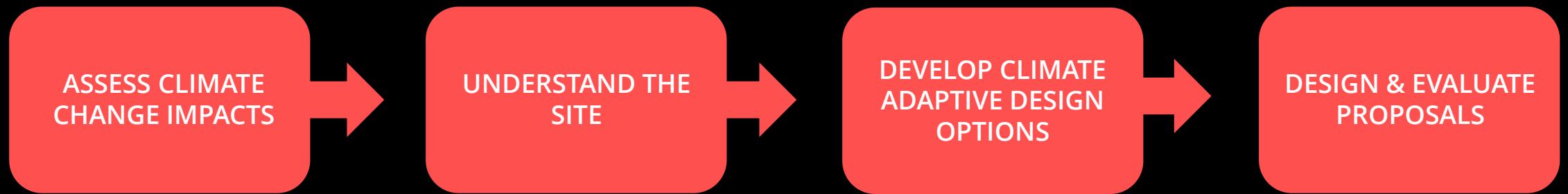
Research Assistants:

Ilana Haimes (M.L.A. '23)

Vanessa Dikuyama (M.L.A. '23)

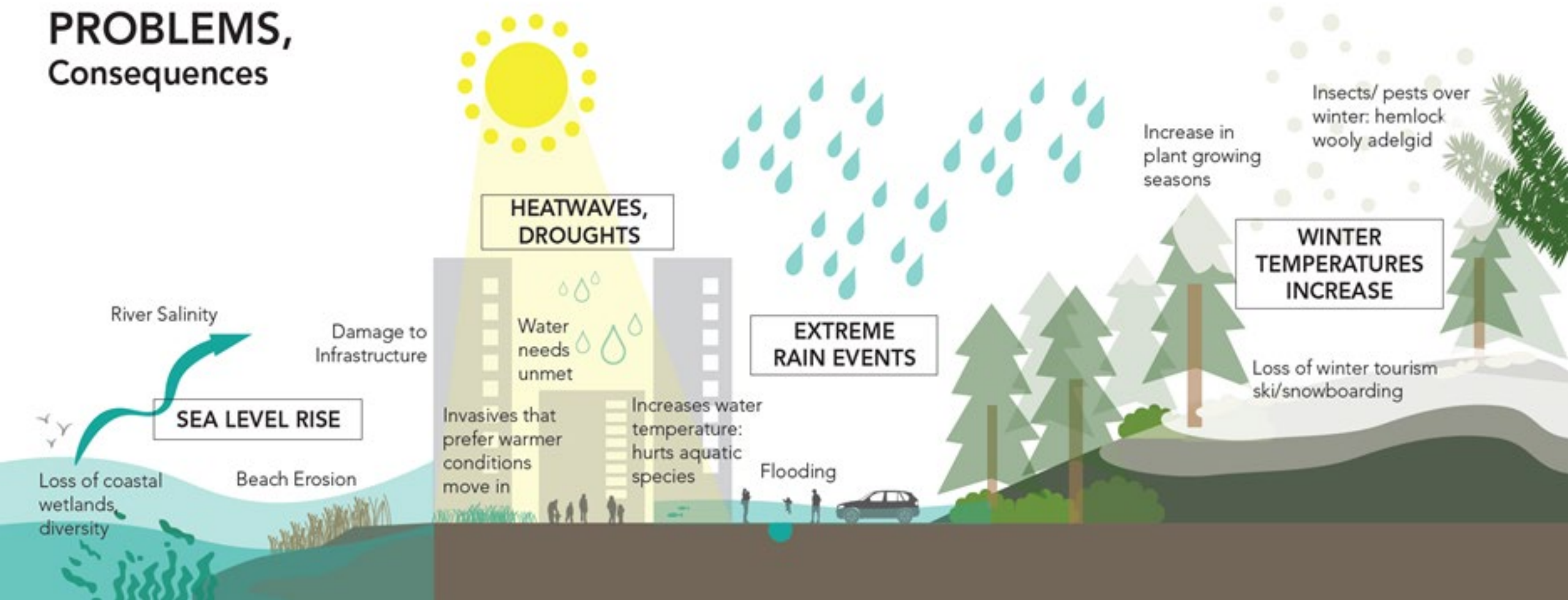
Research Fellow:

YuAng Sun (M.P.S. '22)

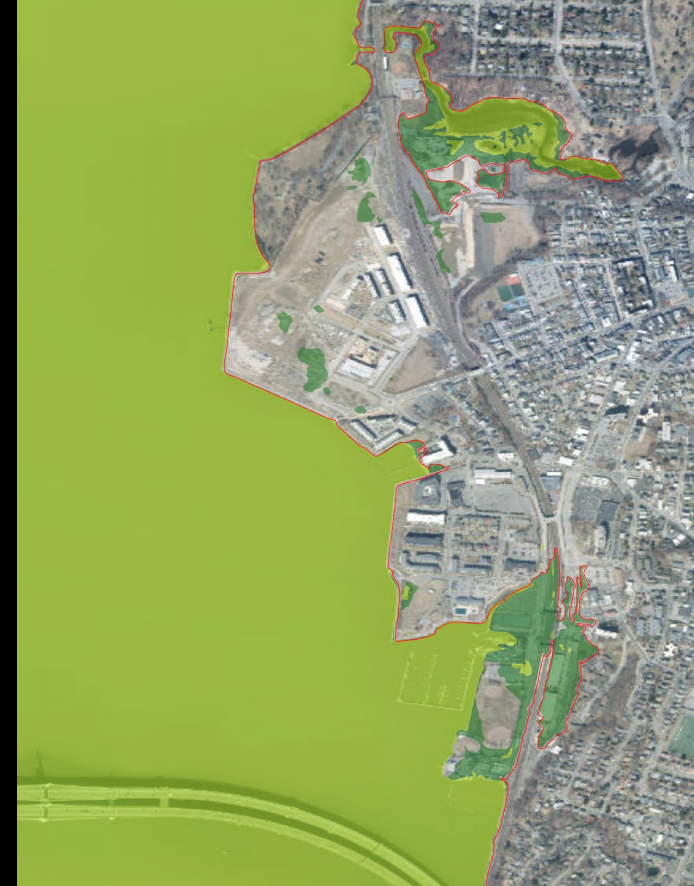


Four-step process for climate-adaptive design response

PROBLEMS, Consequences



ASSESS CLIMATE CHANGE IMPACTS



Baseline 20yr Flood



2050's 20yr Flood

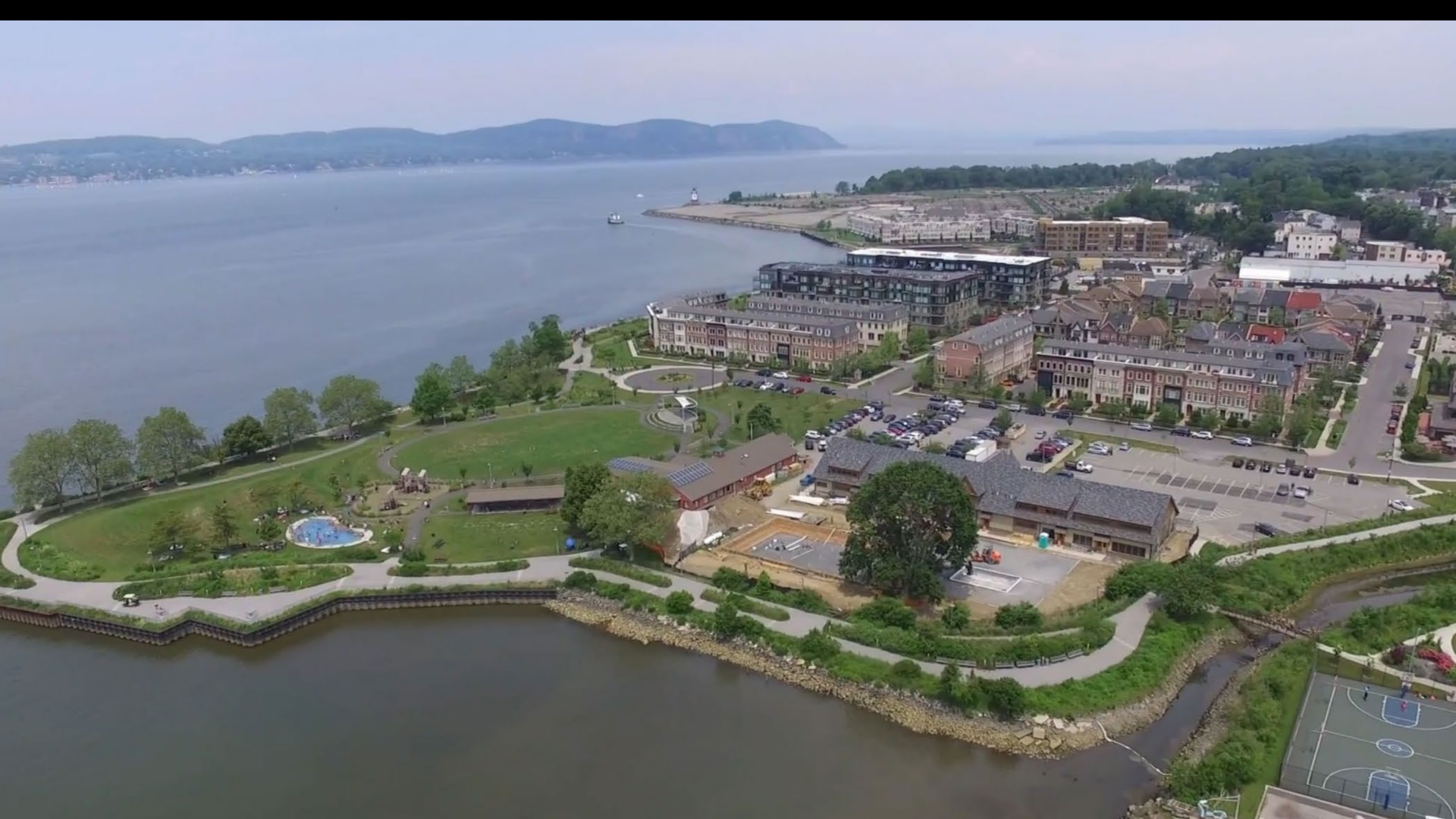


2080's 20yr Flood

CURRENT AND FUTURE FLOOD RISK



UNDERSTAND THE SITE

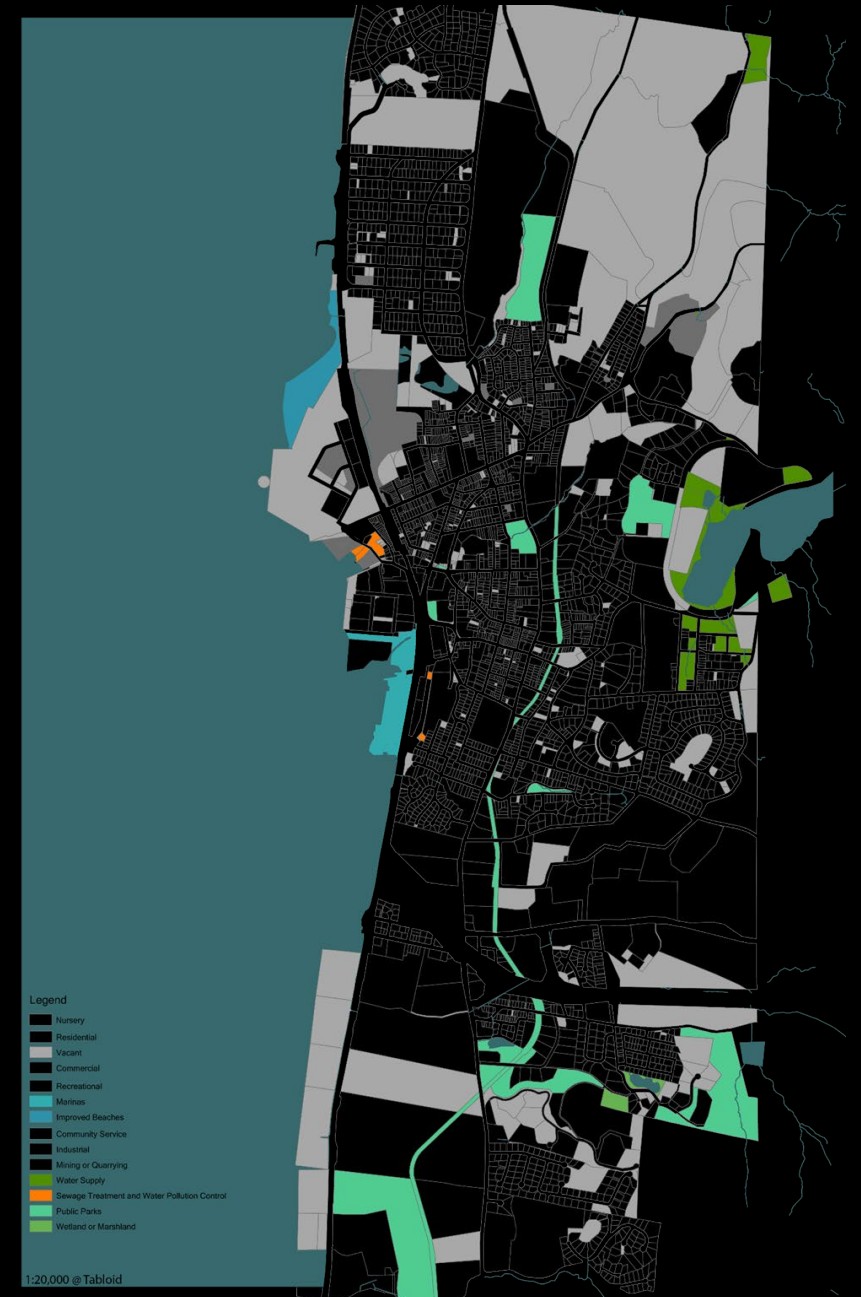
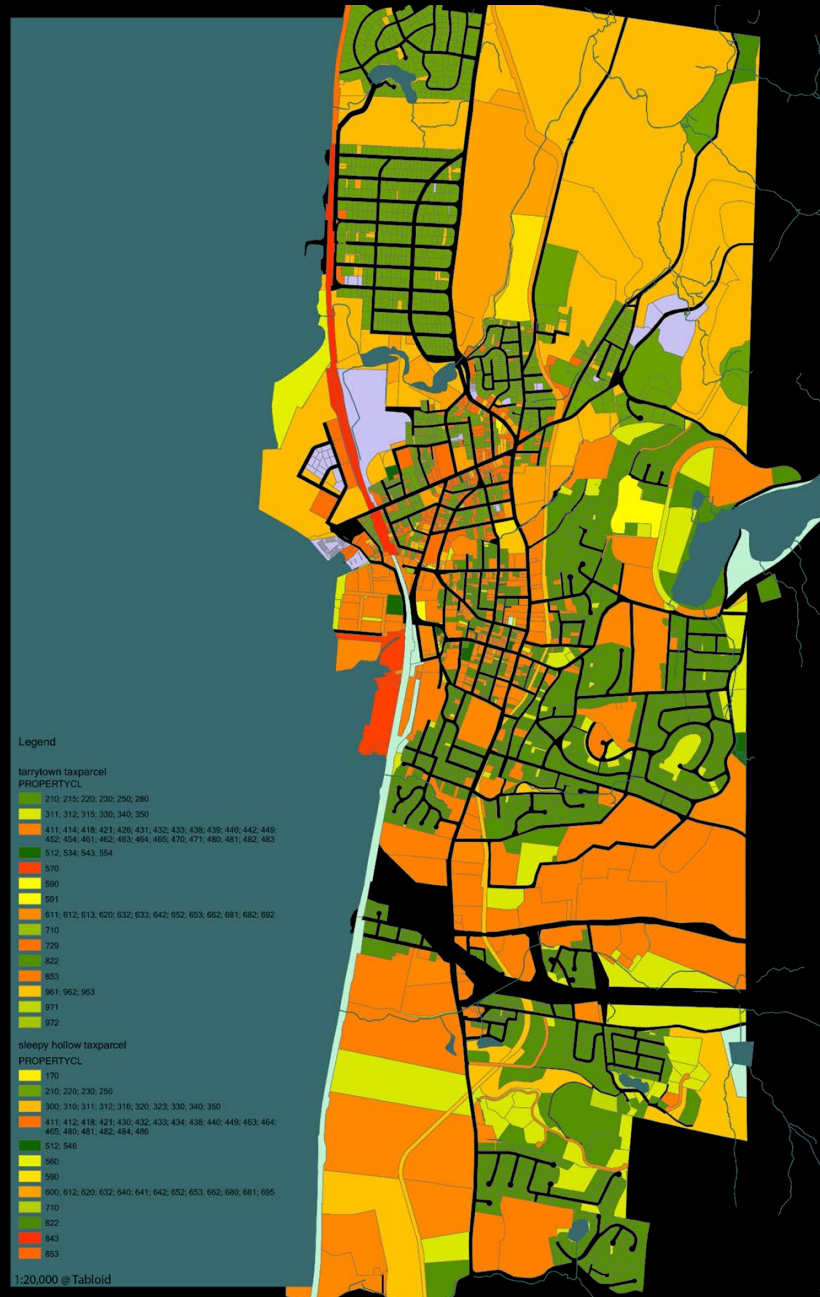




With large tract of vacant land at city periphery, most parcels are privately owned and serving as residential, commercial and community service. A few parcels are parks or wetland go through the city. In terms of water front, not much blue-green infrastructure can be found on site.

EX02B Analysis by Silvia, Freya, Brandon, Aishwarya

BUILDINGS & LAND USE



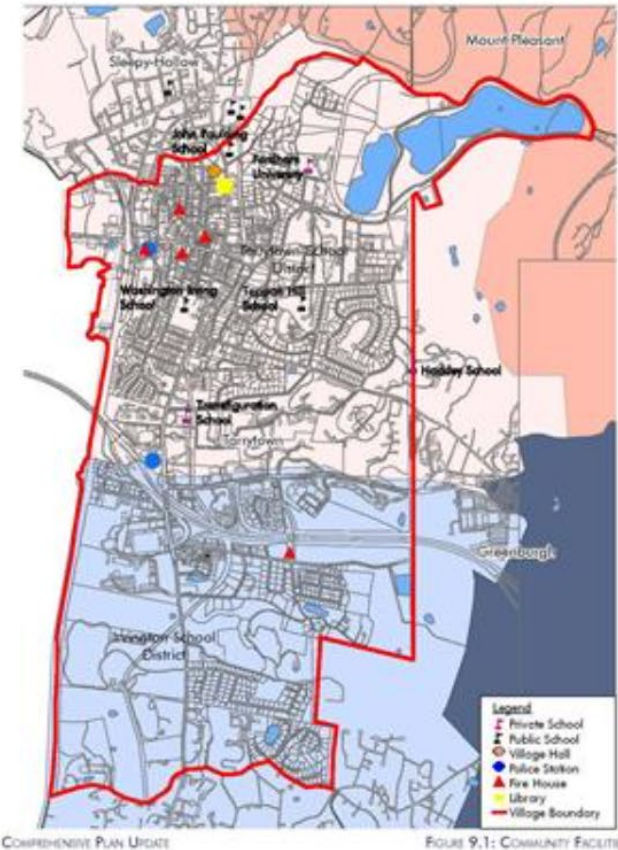
Important Nodes



Transportation



Park System



Public Services

CIRCULATION & TRANSPORTATION

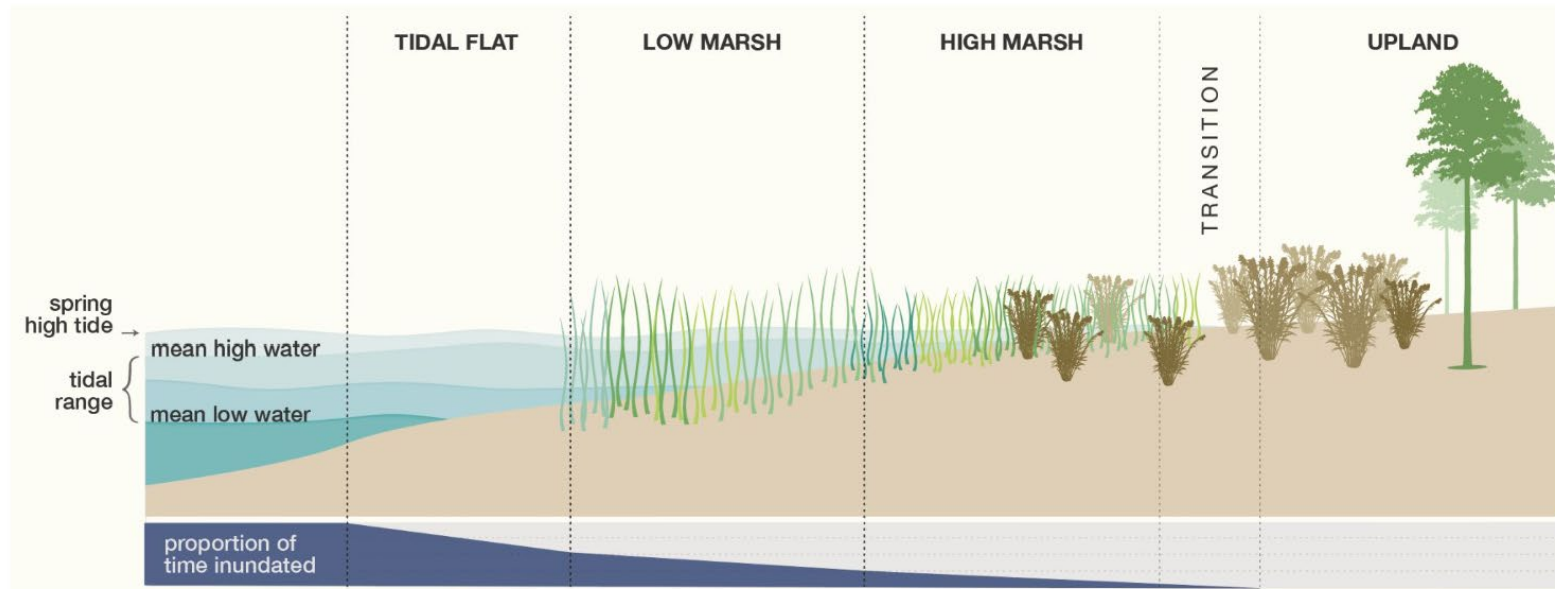
Zoom into waterfront Sidewalk



CIRCULATION & TRANSPORTATION

EX02B Analysis by Xiaomeng, Keiki, Hilary

Between the Tides



TIDAL FLATS occur below mean tide level and thus are only exposed at low tide. Tidal flats can be vegetated or unvegetated.

LOW MARSHES are found above mean tide level and are flooded during most high tides.

HIGH MARSHES flood completely only during the highest of tides.

Plants List (Scenic Hudson Riverwalk Park)

Tree



Amelanchier canadensis
Shadbowl Serviceberry
existing

HEIGHT: 25' to 35'
TYPE: Deciduous Tree
HARDINESS: Zone 4 to 8
BLOOM COLOR: White
BLOOM PERIOD: April to May
FALL LEAF COLOR: Orange
NATIVE: Yes



Betula nigra
River Birch
existing

HEIGHT: 50' to 75'
TYPE: Deciduous Tree
HARDINESS: Zone 4 to 9
BLOOM COLOR: Yellow Green
BLOOM PERIOD: April to May
FALL LEAF COLOR: Yellow
NATIVE: Yes



Cercis canadensis
Eastern Redbud
existing

HEIGHT: 20' to 30'
TYPE: Deciduous Tree
HARDINESS: Zone 4 to 8
BLOOM COLOR: Pink
BLOOM PERIOD: April to May
FALL LEAF COLOR: Orange
NATIVE: Yes
ATTRIBUTES: Flowers before Leaf Out



Crataegus viridis 'Winter King'
Green Hawthorn
existing

HEIGHT: 25' to 30'
TYPE: Deciduous Tree
HARDINESS: Zone 4 to 7
BLOOM COLOR: White
BLOOM PERIOD: May to June
FALL LEAF COLOR: Orange Red
NATIVE: Native Cultivar



Prunus Serotina
Black Cherry
existing

HEIGHT: 35' to 50'
TYPE: Deciduous Tree
HARDINESS: Zone 3 to 9
BLOOM COLOR: White
BLOOM PERIOD: May to June
FALL LEAF COLOR: Orange Red
NATIVE: Yes
ATTRIBUTES: Dark Purple Berries in Fall



Quercus bicolor
Swamp White Oak
existing

HEIGHT: 75' to 100'
TYPE: Deciduous Tree
HARDINESS: Zone 3 to 8
BLOOM COLOR: Yellow
BLOOM PERIOD: May
FALL LEAF COLOR: Yellow Orange
NATIVE: Yes



Gymnocladus dioica 'Espresso'
Sandwich Kentucky Coffee Tree
existing

HEIGHT: 75' to 100'
TYPE: Deciduous Tree
HARDINESS: Zone 3 to 8
BLOOM COLOR: White
BLOOM PERIOD: June
FALL LEAF COLOR: Yellow
NATIVE: Native Cultivar



Juniperus virginiana 'Concertii'
Eastern Red Cedar
existing

HEIGHT: 15' to 20'
TYPE: Evergreen Tree
HARDINESS: Zone 3 to 9
BLOOM COLOR: Non-Flowering
BLOOM PERIOD: Non-Flowering
FALL LEAF COLOR: Green
NATIVE: Native Cultivar
ATTRIBUTES: Blue Berries in Fall



Ostrya virginiana
American Hophornbeam
existing

HEIGHT: 35' to 50'
TYPE: Deciduous Tree
HARDINESS: Zone 3 to 9
BLOOM COLOR: Red Brown
BLOOM PERIOD: May
FALL LEAF COLOR: Yellow Orange
NATIVE: Yes
ATTRIBUTES: Exfoliating Bark



Pinus rigida
Pitch Pine
existing

HEIGHT: 50' to 70'
TYPE: Needled Evergreen Tree
HARDINESS: Zone 4 to 8
BLOOM COLOR: Non-Flowering
BLOOM PERIOD: Non-Flowering
FALL LEAF COLOR: Green
NATIVE: Yes
ATTRIBUTES: Cones



Rhus typhina
Staghorn Sumac
existing

HEIGHT: 35' to 50'
TYPE: Deciduous Tree
HARDINESS: Zone 3 to 8
BLOOM COLOR: Yellow
BLOOM PERIOD: June to July
FALL LEAF COLOR: Orange Red
NATIVE: Yes
ATTRIBUTES: Red Fuzzy Berries in Fall

Shrub



Cornus amomum
Silky Dogwood
existing

HEIGHT: 6' to 12'
TYPE: Deciduous Shrub
HARDINESS: Zone 4 to 8
BLOOM COLOR: White
BLOOM PERIOD: June
FALL LEAF COLOR: Purple
NATIVE: Yes
ATTRIBUTES: Blue Berries in August



Cornus racemosa
Gray Dogwood
existing

HEIGHT: 6' to 12'
TYPE: Deciduous Shrub
HARDINESS: Zone 4 to 8
BLOOM COLOR: White
BLOOM PERIOD: May to June
FALL LEAF COLOR: Purple
NATIVE: Yes
ATTRIBUTES: White Berries & Red Stems



Cornus sericea 'Cardinal'
Red Osier Dogwood
existing

HEIGHT: 6' to 12'
TYPE: Deciduous Shrub
HARDINESS: Zone 3 to 8
BLOOM COLOR: White
BLOOM PERIOD: May to June
FALL LEAF COLOR: Red
NATIVE: Native Cultivar
ATTRIBUTES: Red Twigs in Winter



Juniperus virginiana 'Grey Owl'
Dwarf Eastern Red Cedar
existing

HEIGHT: 5' to 6'
TYPE: Evergreen Shrub
HARDINESS: Zone 2 to 9
BLOOM COLOR: Non-Flowering
BLOOM PERIOD: Non-Flowering
FALL LEAF COLOR: Bluish/Green
NATIVE: Native Cultivar
ATTRIBUTES: Light Blue Berries in Fall



Rosa carolina
Fragrant Sumac
existing

HEIGHT: 5'
TYPE: Deciduous Shrub
HARDINESS: Zone 4 to 9
BLOOM COLOR: Pink
BLOOM PERIOD: June to July
FALL LEAF COLOR: Orange Red
NATIVE: Yes



Myrica pensylvanica
Northern Raspberry
existing

HEIGHT: 6' to 12'
TYPE: Deciduous Shrub
HARDINESS: Zone 3 to 7
BLOOM COLOR: Yellow Green
BLOOM PERIOD: March to April
FALL LEAF COLOR: Green
NATIVE: Yes
ATTRIBUTE: Blue Berries in Fall



Potentilla fruticosa
Shrubby Cinquefoil
existing

HEIGHT: 3'
TYPE: Deciduous Shrub
HARDINESS: Zone 3 to 7
BLOOM COLOR: Yellow
BLOOM PERIOD: June to September
FALL LEAF COLOR: Green
NATIVE: Yes



Prunus maritima
Beach Plum
existing

HEIGHT: 3' to 6'
TYPE: Deciduous Shrub
HARDINESS: Zone 3 to 7
BLOOM COLOR: White
BLOOM PERIOD: May
FALL LEAF COLOR: Orange Red
NATIVE: Yes
ATTRIBUTE: Purple Fruit



Rhus aromatica
Fragrant Sumac
existing

HEIGHT: 6' to 12'
TYPE: Deciduous Shrub
HARDINESS: Zone 3 to 9
BLOOM COLOR: Yellow
BLOOM PERIOD: March to April
FALL LEAF COLOR: Red
NATIVE: Yes

<http://www.frw-ttwn.org/aboutplants.html>

Sources: Westchester County GIS, NYS GIS Data Clearinghouse



HYDROLOGIC CONTEXT

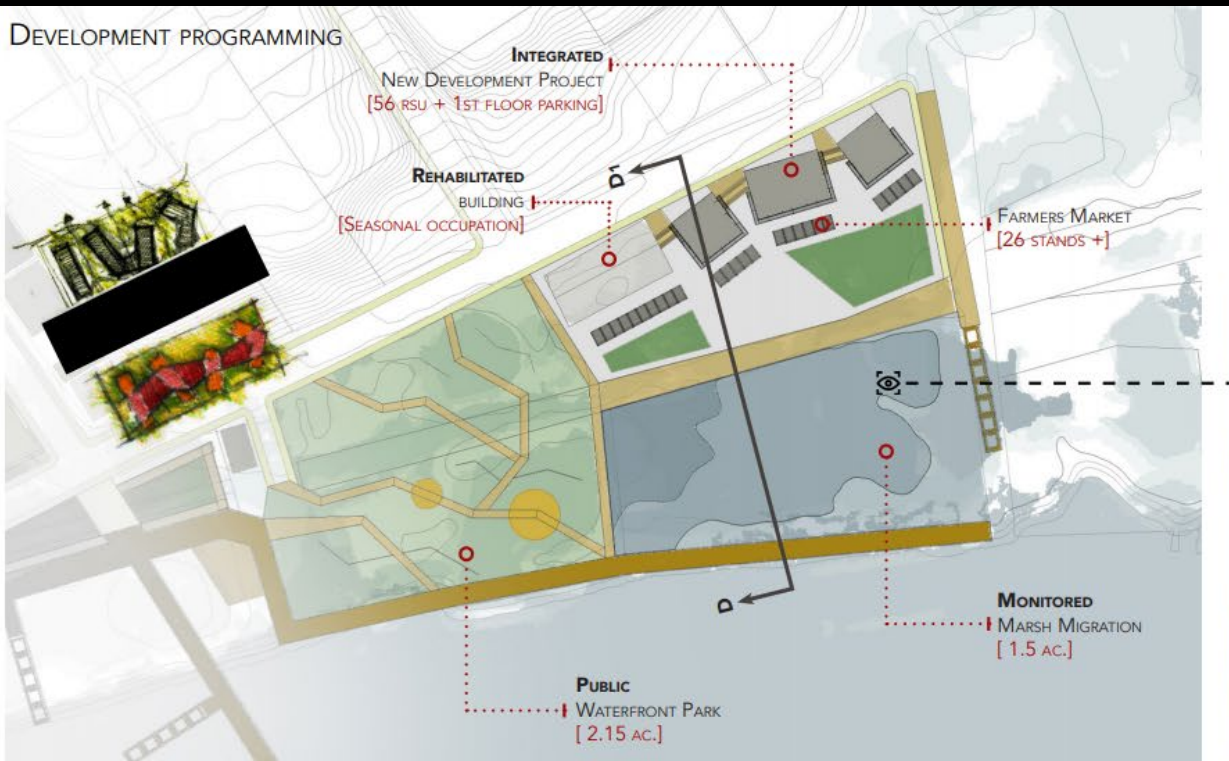
CASE STUDY



Major habitats and species of concern for the Jamaica Bay Living Shoreline project. Plan by Dirtworks Landscape Architecture

EX02A Analysis by Vanessa Dikuyama Zapata Xue Xia Maren Louttit

DEVELOP CLIMATE ADAPTIVE DESIGN OPTIONS



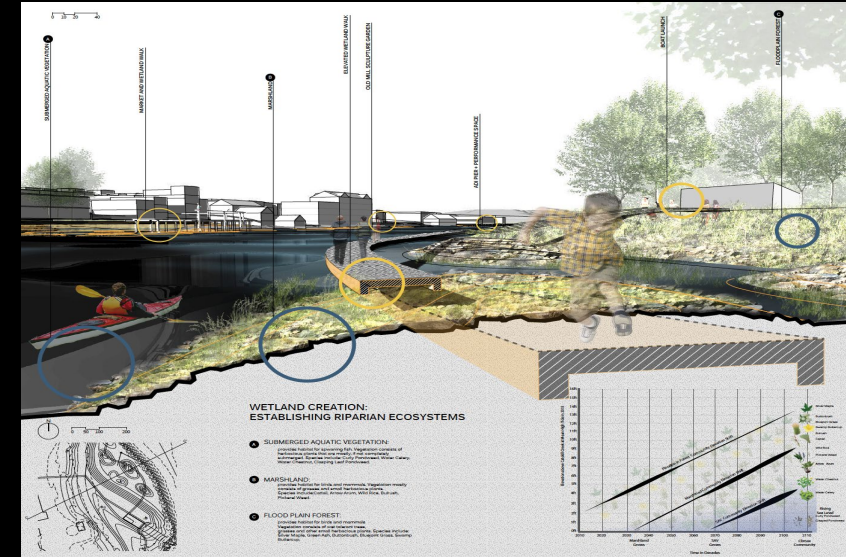
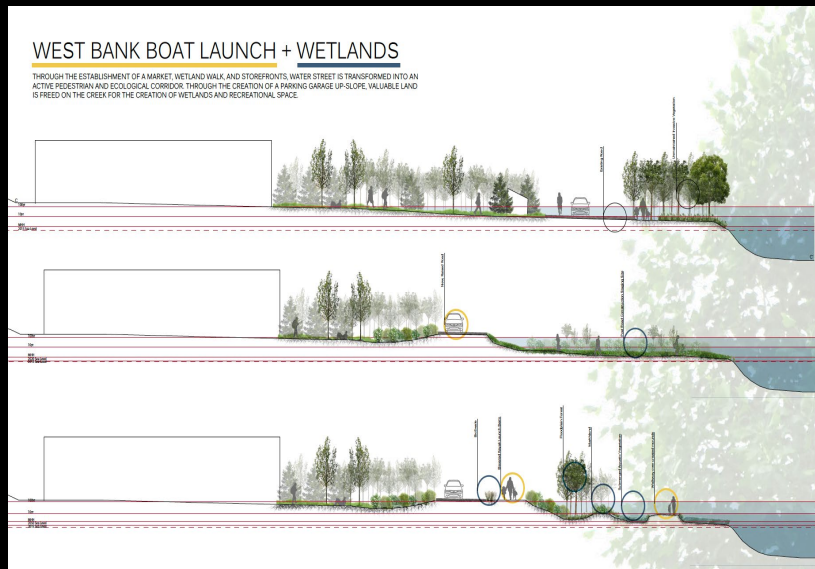
Revealing the Waterfront of Kingston to its Inhabitants, by Sarah Boutata (M.L.A. '19) & Kayla Mosebrook (M.L.A. '19), LA6020 Studio Spring 2018

DESIGN & EVALUATE PROPOSALS

The Designs in the Open House

What they are:

- Reflect the current climate projections
- A learning and discussion opportunity for imagining the future of Tarrytown and its waterfront

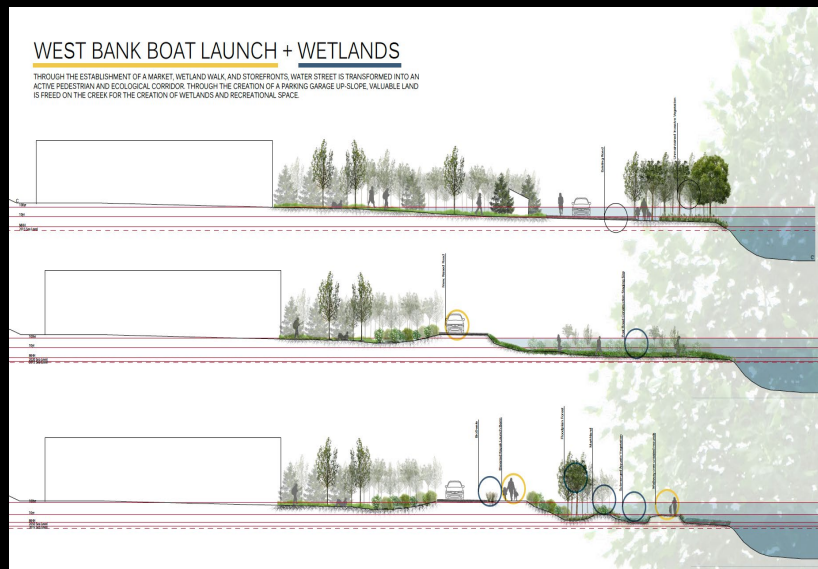
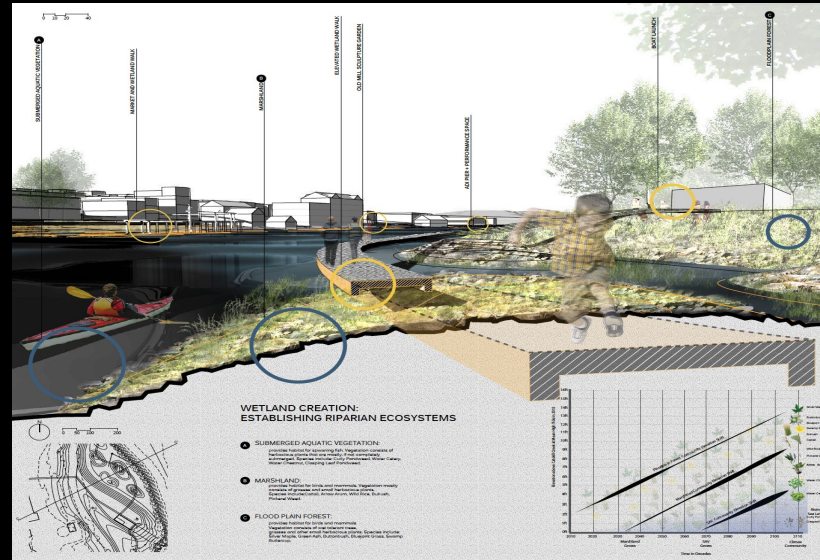


What they're not:

- New urban policy or decisions
- Binding or required

The Designs in the Open House

- Both visionary and practical
- Access and recreation
- Destination and character
- Economic and ecosystem
- Flooding and inundation



- A strong, unifying concept
- Reinforce, adapt, relocate
- Complex and at times competing issues
- Water-dependent and water-enhanced
- Phasing over time

The Designs in the Open House



Past CaD studio workshop with stakeholders

- **Listening to ideas**
- **Asking questions**
- **Sharing what's important to you and local knowledge**
- **Discussing futures you envision for the waterfront**



*Image by Dominic Malacaman,
BSLA '22*

TARRYTOWN CLIMATE-ADAPTIVE DESIGN STUDIO

<https://trophic.design/cad>