Envisioning the Fairfield-Suisun Community's New Wetland Project

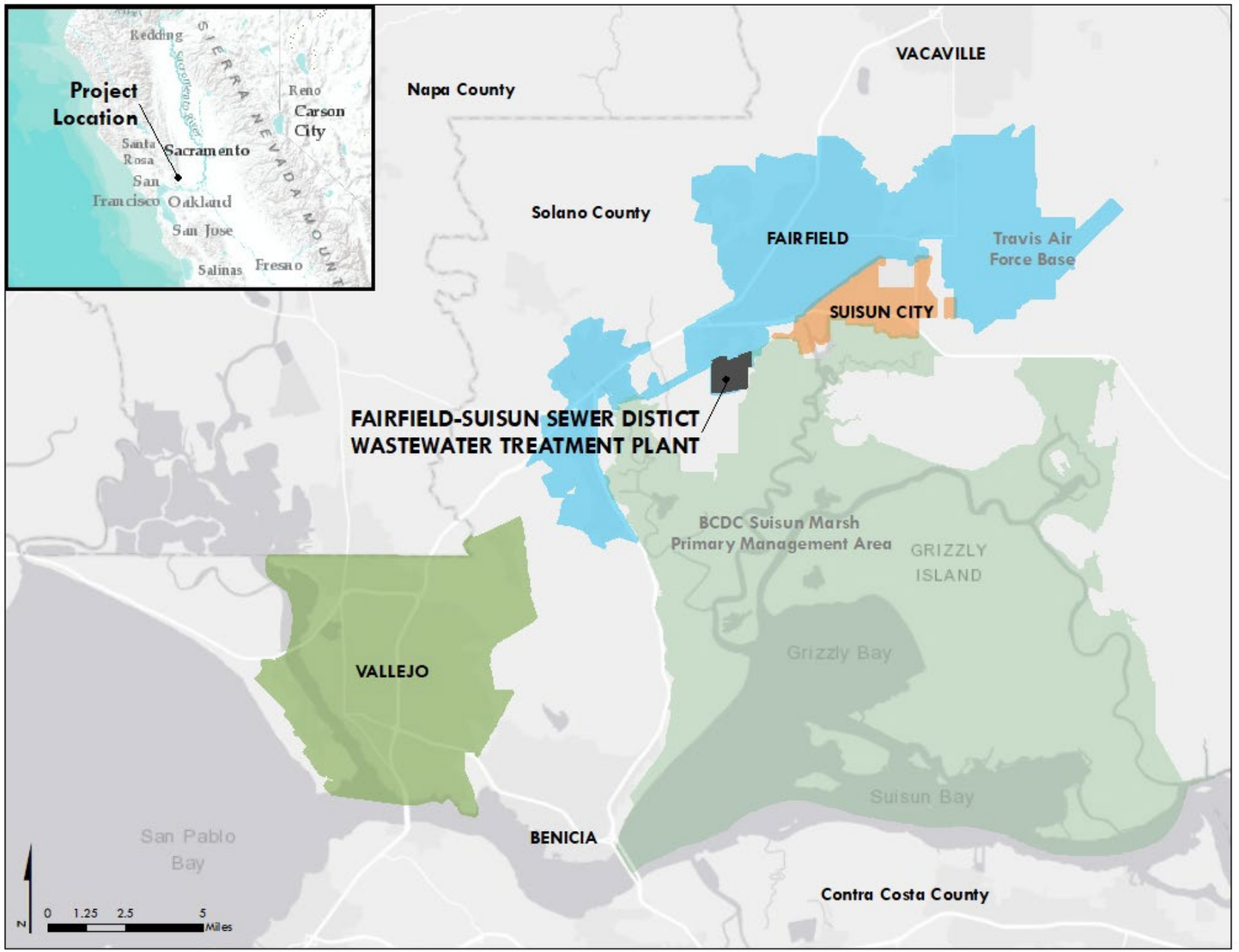
Emily Corwin, P.E., M.S.
Senior Environmental Engineer
ecorwin@fssd.com

May 29, 2024

State of the Estuary Conference

WHO ARE WE

Solano Stormwater Alliance



Fairfield -Suisun Sewer District

WHO ARE WE

PURPOSE

Protect the public health and the environment for the communities we serve in an efficient, responsible and sustainable manner.

VISION

Be a recognized leader in our industry.

MISSION

Achieve our purpose by excelling individually and organizationally.

CORE VALUES

As we strive to realize our vision of the future, our actions and efforts will be guided by a certain set of values. These core values are our pledge to each other and to the community as to how we will conduct business.

Core Values

Global Thinking

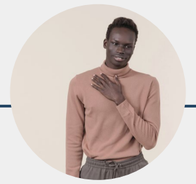
We strive to consider the broadest consequences of our actions.

Positive Working Relationships

We value strong working relationships - both internally and externally.

Proactivity

We are future driven. We anticipate challenges and prepare for them.



Honesty and Integrity

We practice honesty and integrity in all that we do.

Creativity

We value innovation and look for new and unique ways to conduct business.

Ownership

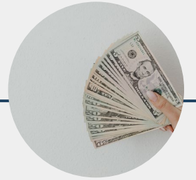
Each of us is responsible for the District's success.

Fun

We appreciate the importance of fun in a productive workplace.

Solution Driven

Finding solutions is just as important as identifying problems. When we see a problem, we provide a solution.



Fiscally Prudent

We take our fiduciary responsibility seriously. Our decision process balances cost and results.

Quality

We take pride in our work and strive for excellence.

WHO ARE WE

Our Community

DEMOGRAPHICS

City Population

94533 → 79,665
94534 → 39,318
94585 → 29,560

TOTAL CITY POPULATION

148,543

Median Household Income

94533 → $79,259 USD
94534 → $121,478 USD
94585 → $86,000 USD

BAY AREA MEDIAN HOUSEHOLD INCOME

$128,151

Fairfield (94533)
Fairfield (94534)
Suisun City (94585)

Disconnected Youth

94533 → 10%
94585 → 10%

Income below poverty level

94533	94534	94585
10.9%	4.01%	9.72%

sources: American Community Survey, Census Bureau, accessed September 2023, Bay Area Equity Atlas

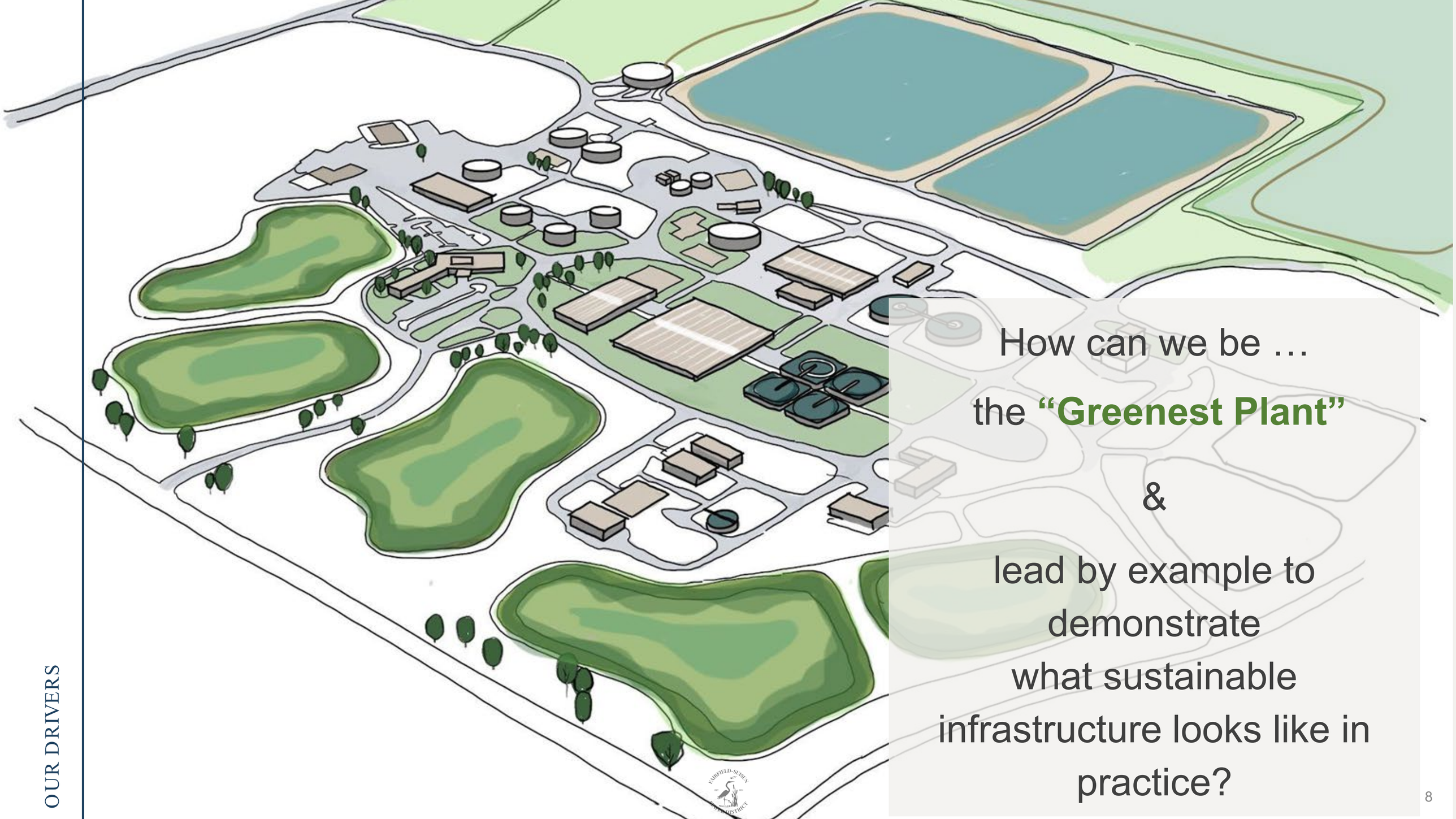
Land Acknowledgement

For thousands of years, this land has been the home of Patwin people. Today, there are three federally recognized Patwin tribes: Cachil DeHe Band of Wintun Indians of the Colusa Indian Community, Kletsel Dehe Wintun Nation, and Yocha Dehe Wintun Nation.

The Patwin people have remained committed to the stewardship of this land over many centuries. It has been cherished and protected, as elders have instructed the young through generations. We are honored and grateful to be here today on their traditional lands.

California Water Environment Association

2022-23 Large Plant of the Year



How can we be …

the **“Greenest Plant”**

&

lead by example to demonstrate what sustainable infrastructure looks like in practice?

NATURE-BASED SOLUTIONS

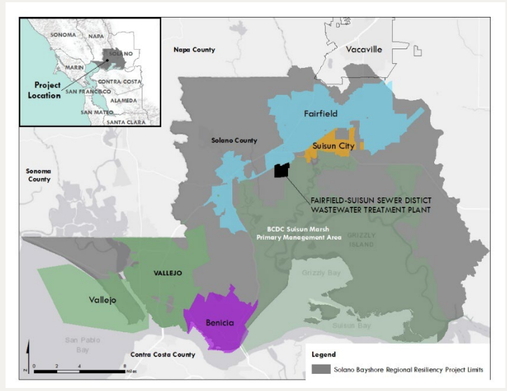
FSSD Nature -based Solutions Initiative

On Our Property...

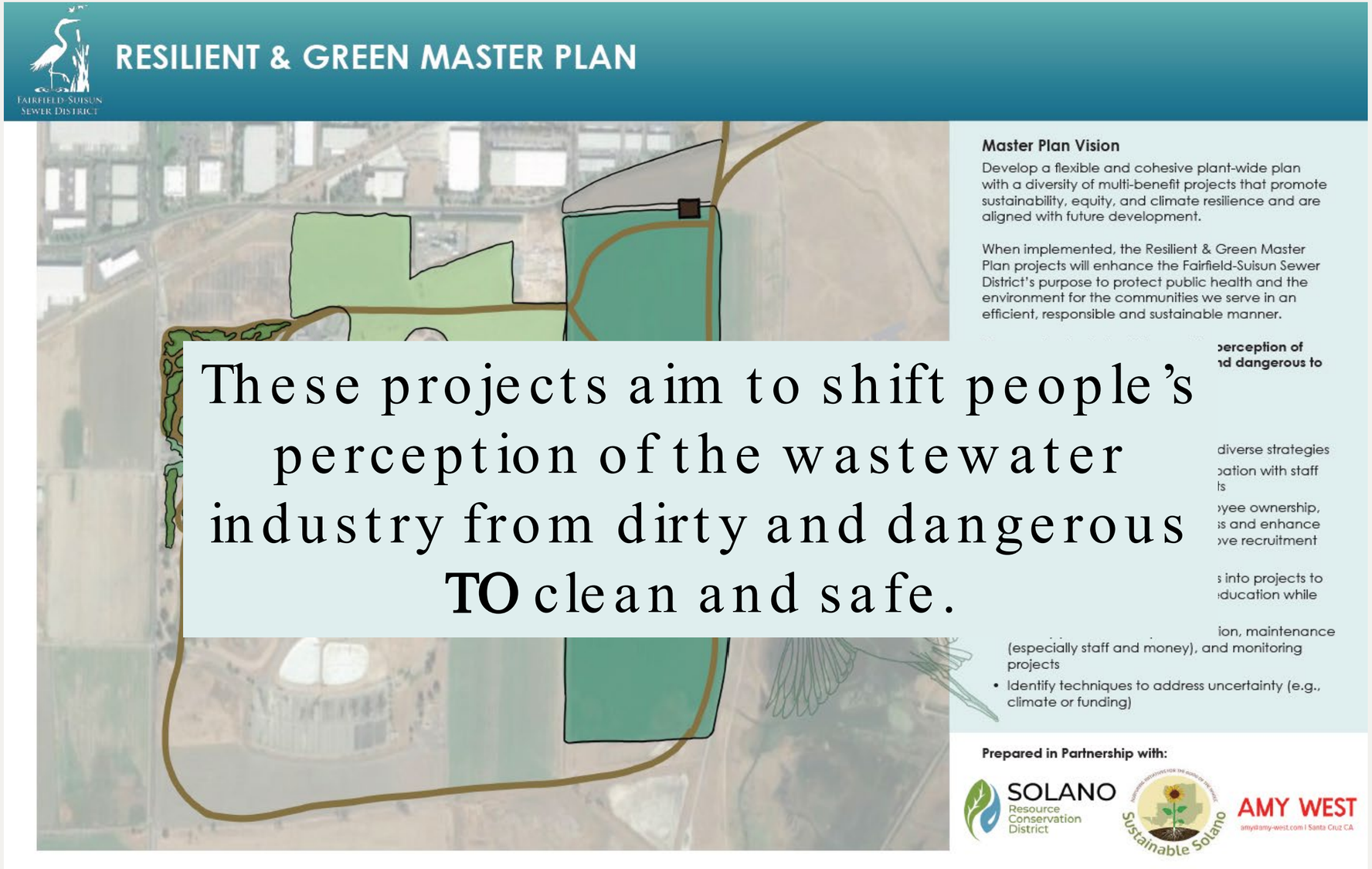
With Our Community...

In Our Projects...

Collaborate Regionally...



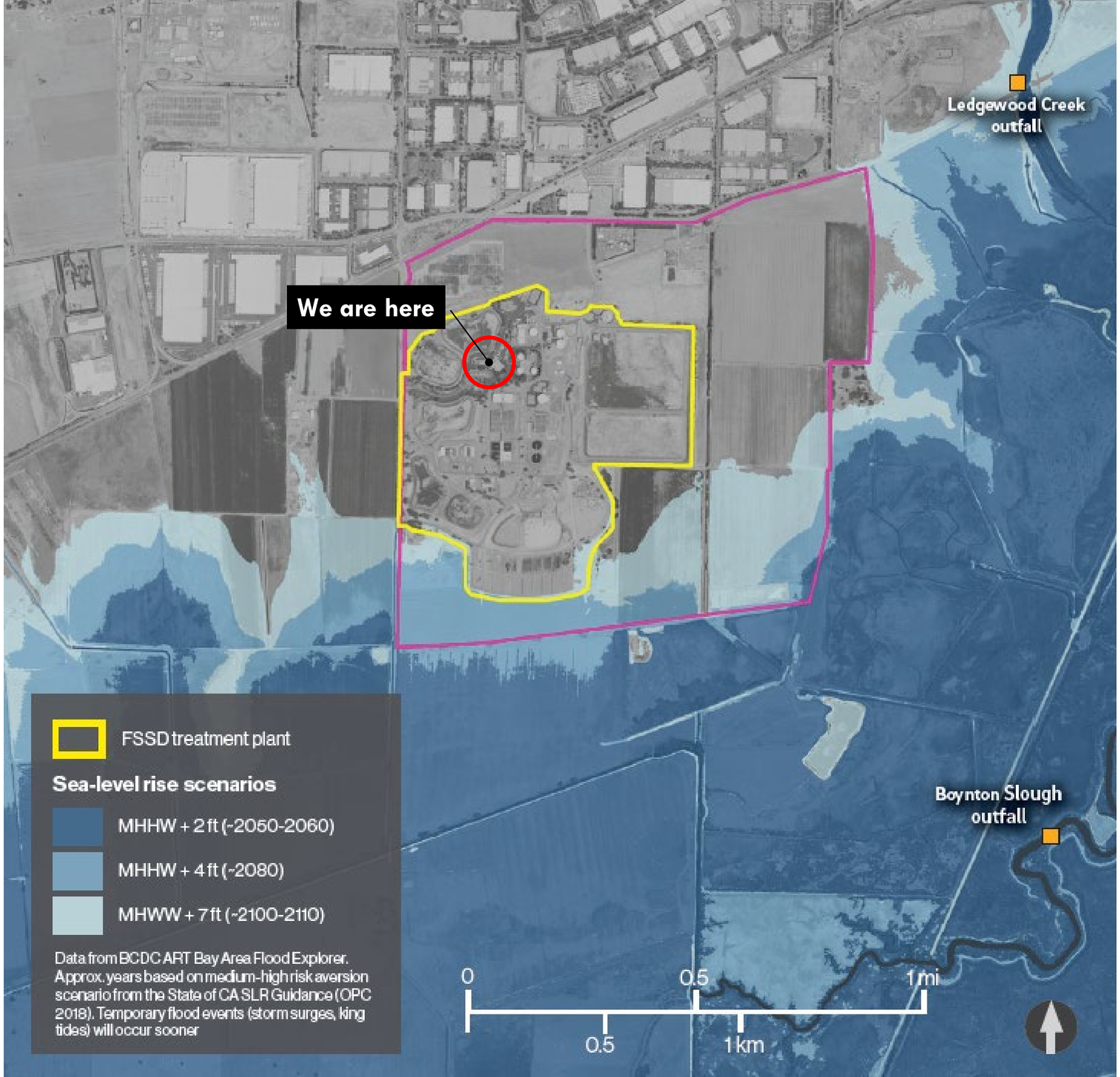
On FSSD property



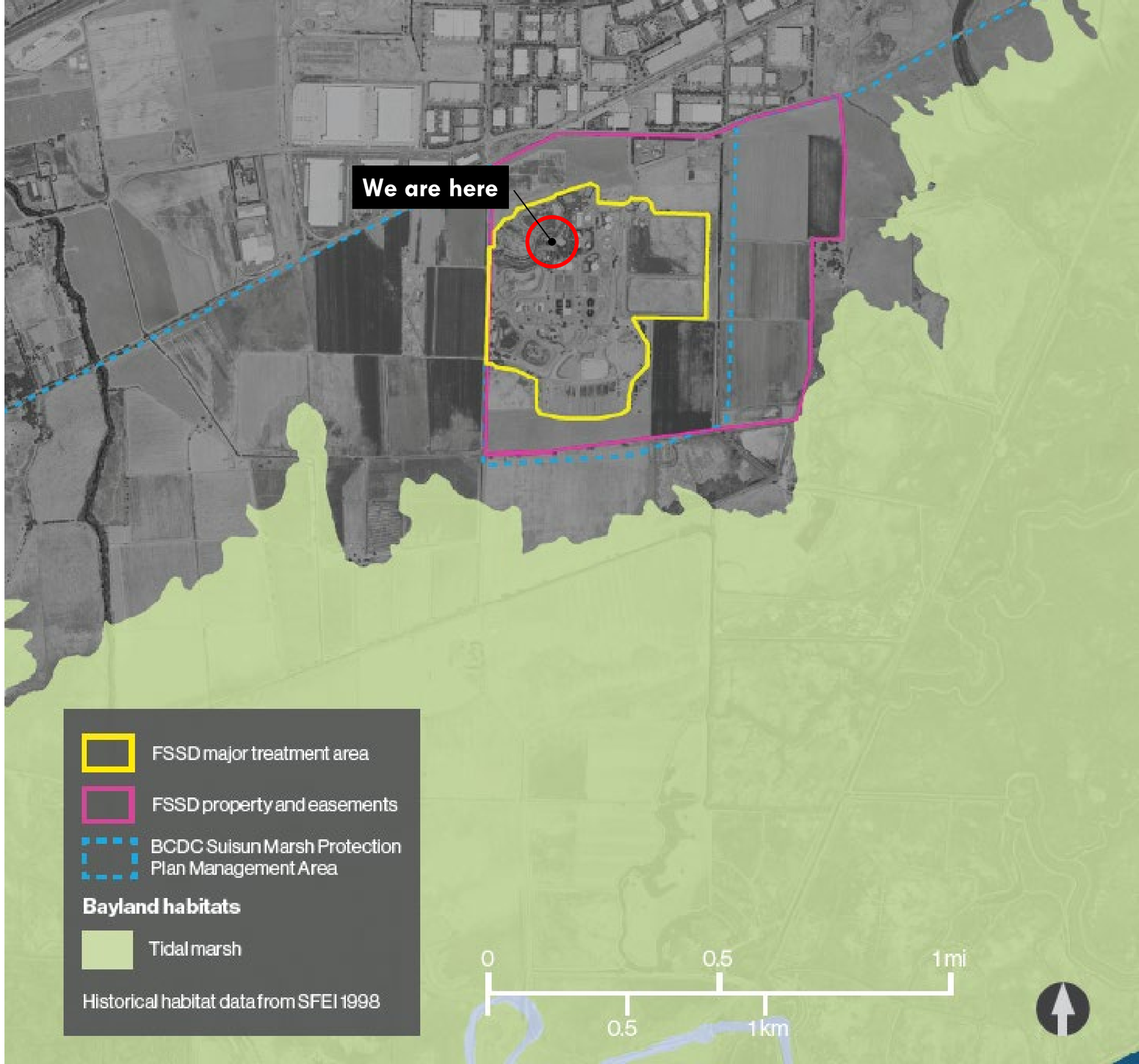
These projects aim to shift people's perception of the wastewater industry from dirty and dangerous **TO** clean and safe.

NATURE-BASED SOLUTIONS

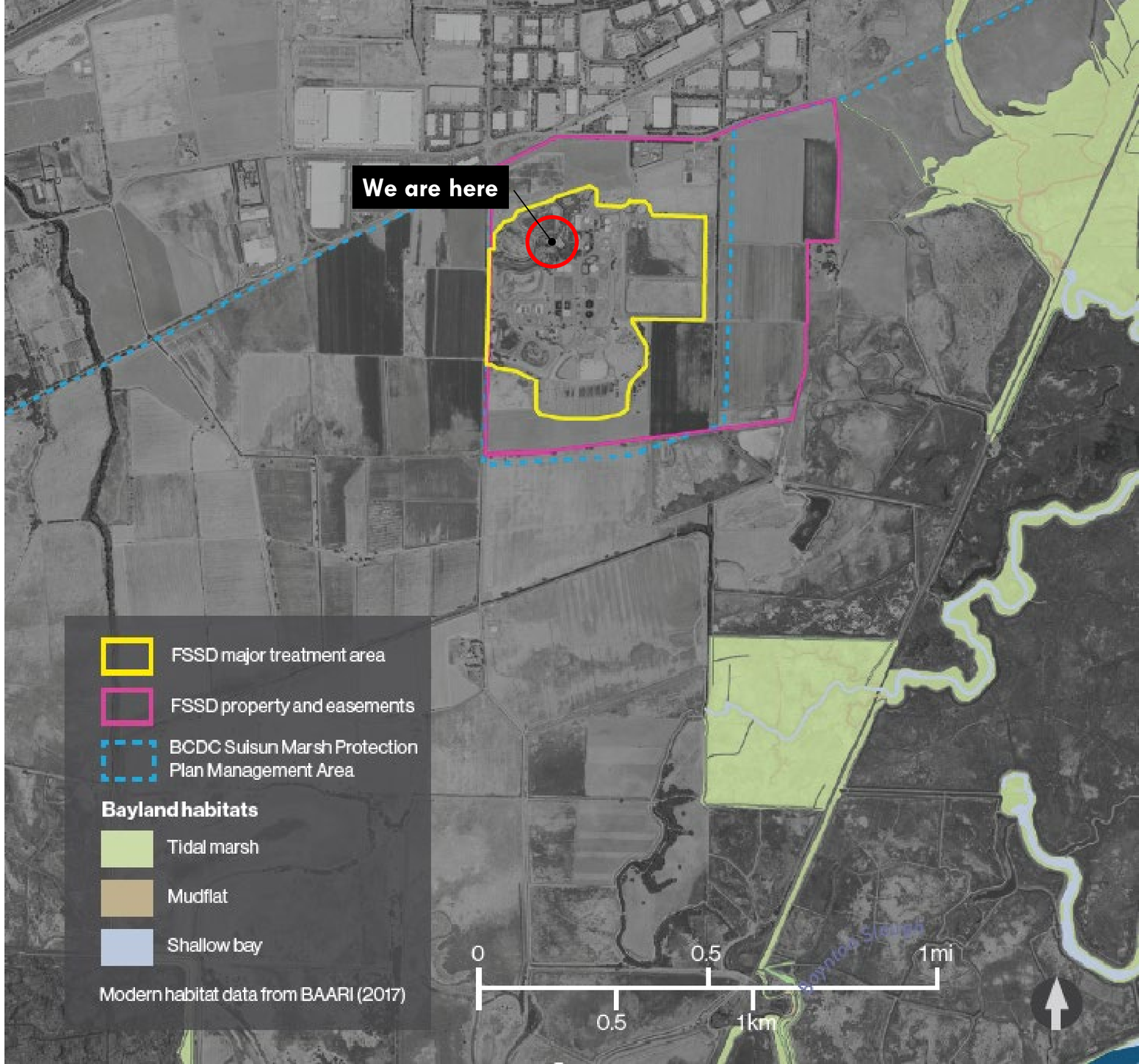
Sea Level Rise



HISTORICAL Baylands Habitat

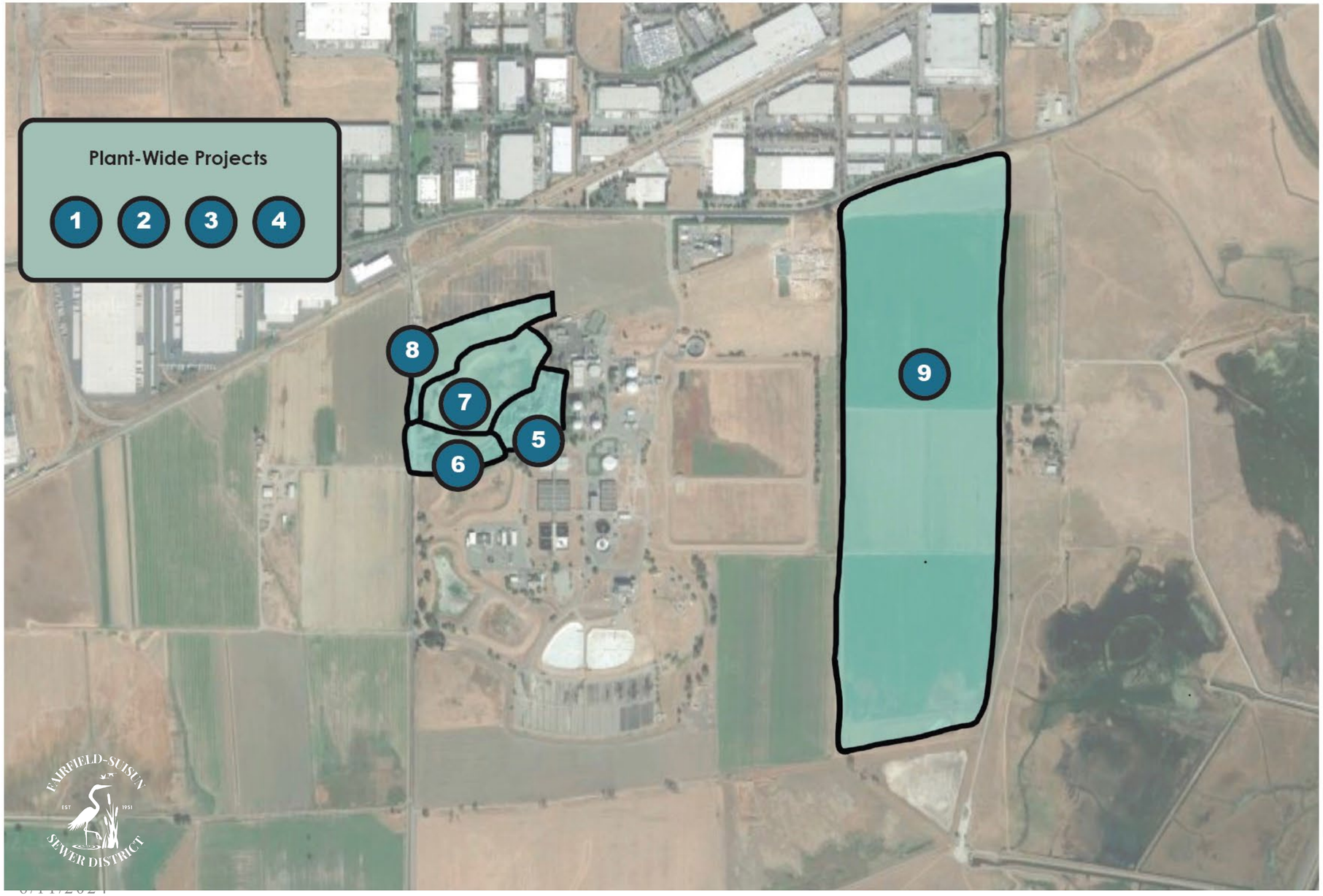


MODERN Baylands Habitat



Resilient & Green Master Plan Site Key

This Resilient & Green Master Plan identifies four (4) overarching planning programs that integrate into five (5) implementation projects. These programs are essential building blocks to integrate into individual projects, which then cohesively link all the projects together.



Plant-wide Resilient & Green Programs

1. Resilient & Green Maintenance
2. Clean Energy & Zero Carbon Vision
3. Interpretive Education & Outreach Plan
4. Arts, Science & Culture Initiative

Near Term Projects (1-2 years)

5. Front Entry Gardens
6. Ice Plant Replacement

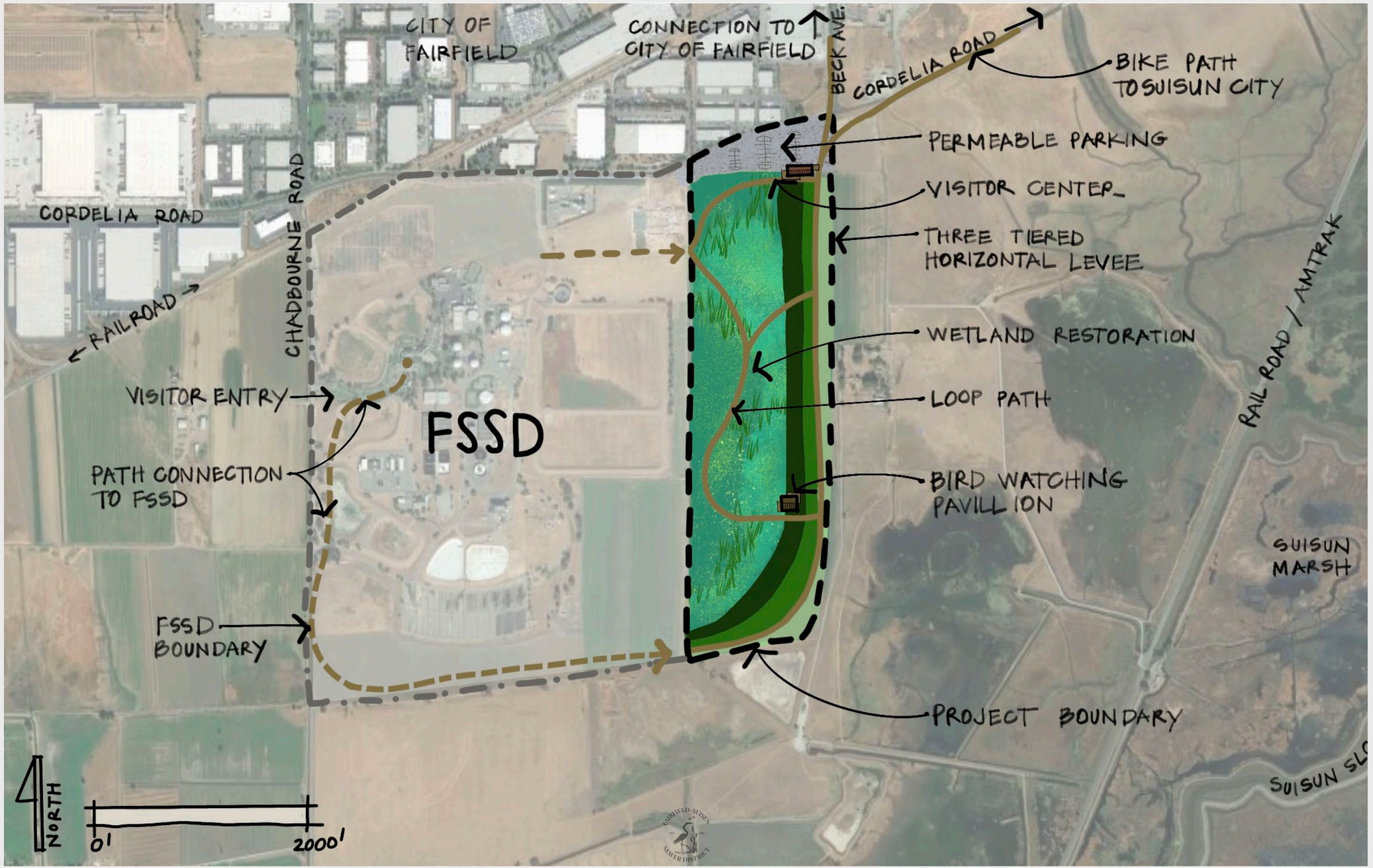
Medium Term Projects (3-5 years)

7. Freshwater Wetlands
8. The Grove + Hedgerow Perimeter

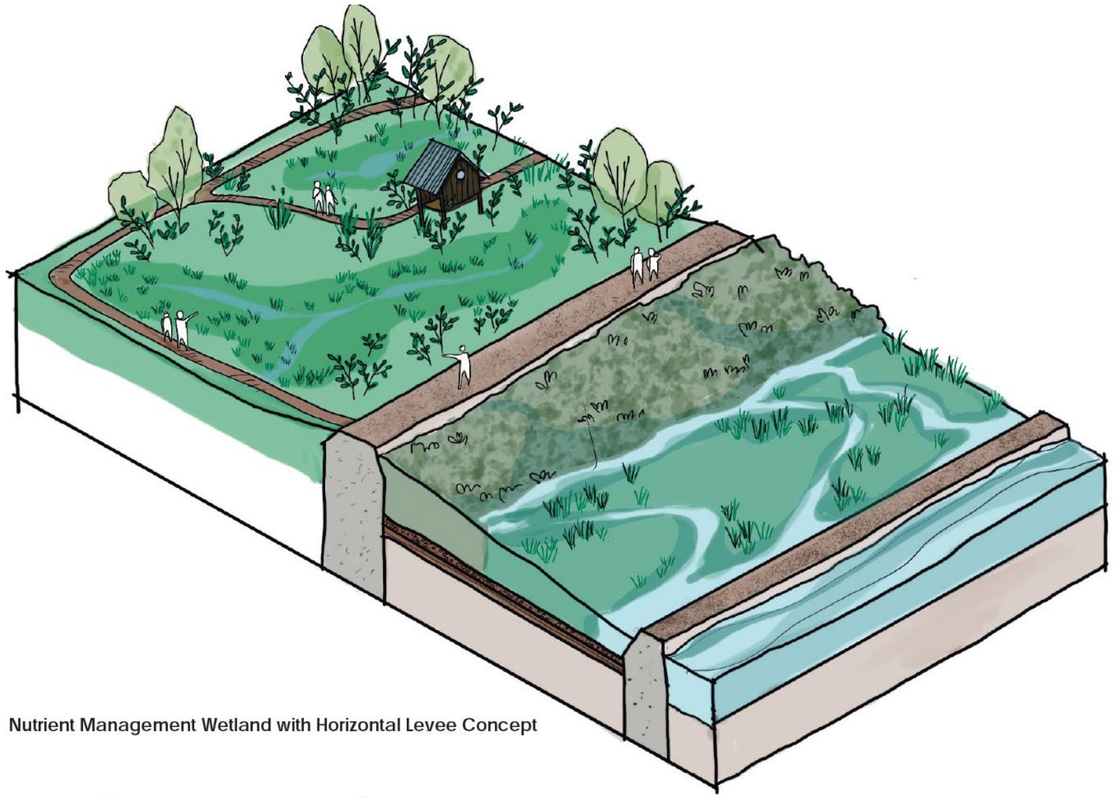
Long Term Projects (5-10 years)

9. Community Treatment Wetland & Climate Resiliency

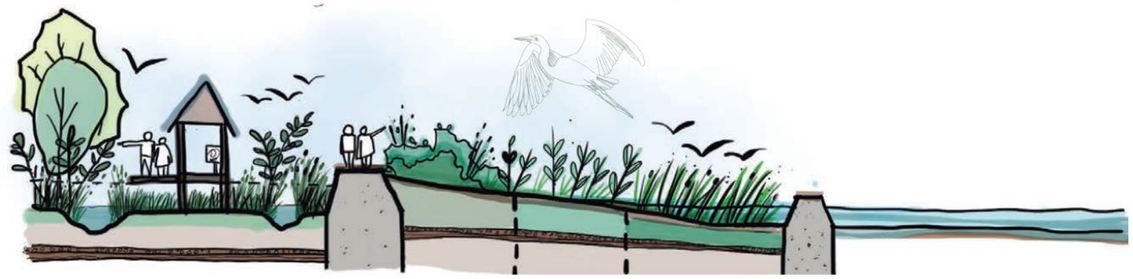
Community Treatment Wetlands



Community Treatment Wetlands



Nutrient Management Wetland with Horizontal Levee Concept



Site Section - NTS

Initial Vision …

- Reduce nutrients reaching the San Francisco Bay
- Sea-level rise adaptation and resilience for FSSD and surrounding properties
- Equitable access to open space and walking trails

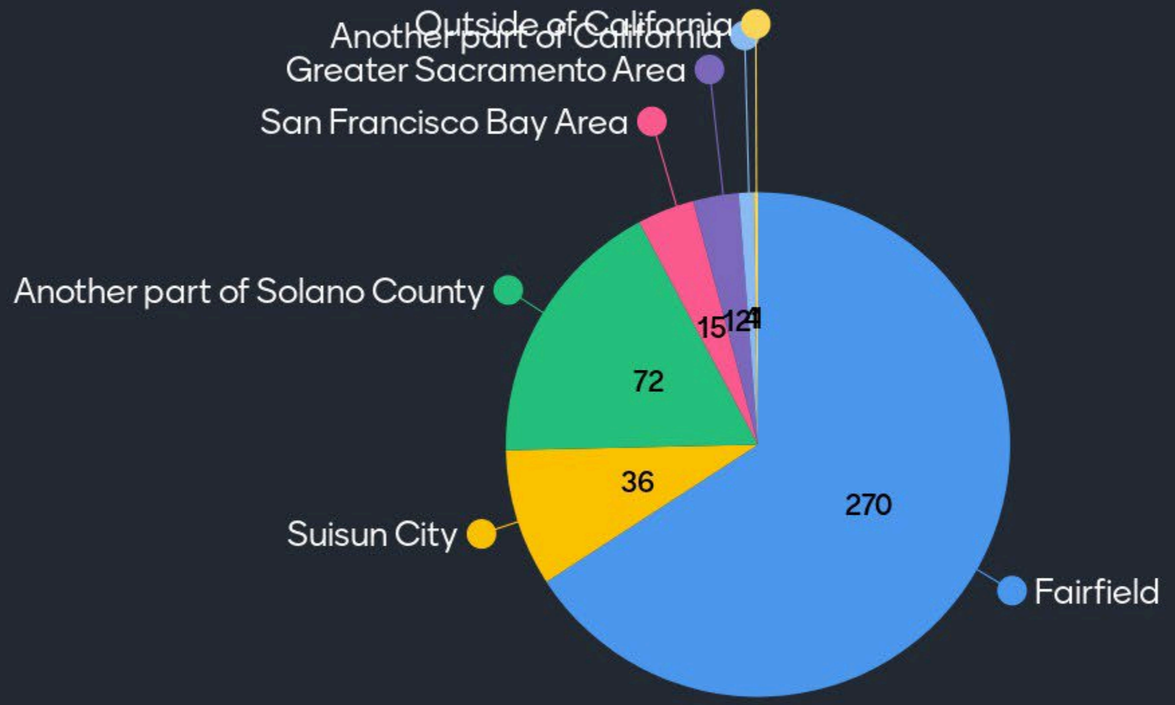
Project Timeline & Funding

October 2023	Executed $300,000 Environmental Protection Agency, Water Quality Improvement Fund Sub-grant Agreement with Association of Bay Area Governments (ABAG) with the San Francisco Estuary Partnership
January 2024	Launch Community Survey
Today	Collect Feedback on Initial Project Alternatives (10% Design)
December 2024	Draft 30% Project Design Documents

Next Phase?

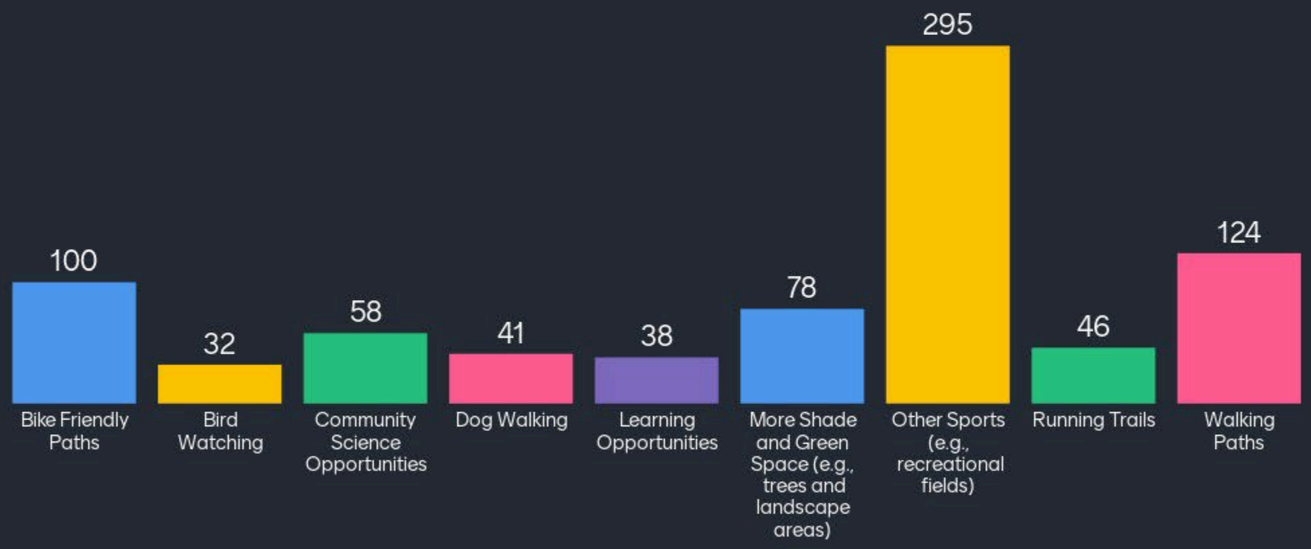
What we've heard from the Community, so far…

Do you live in...



Please rate your level of interest in the District creating this type of project:

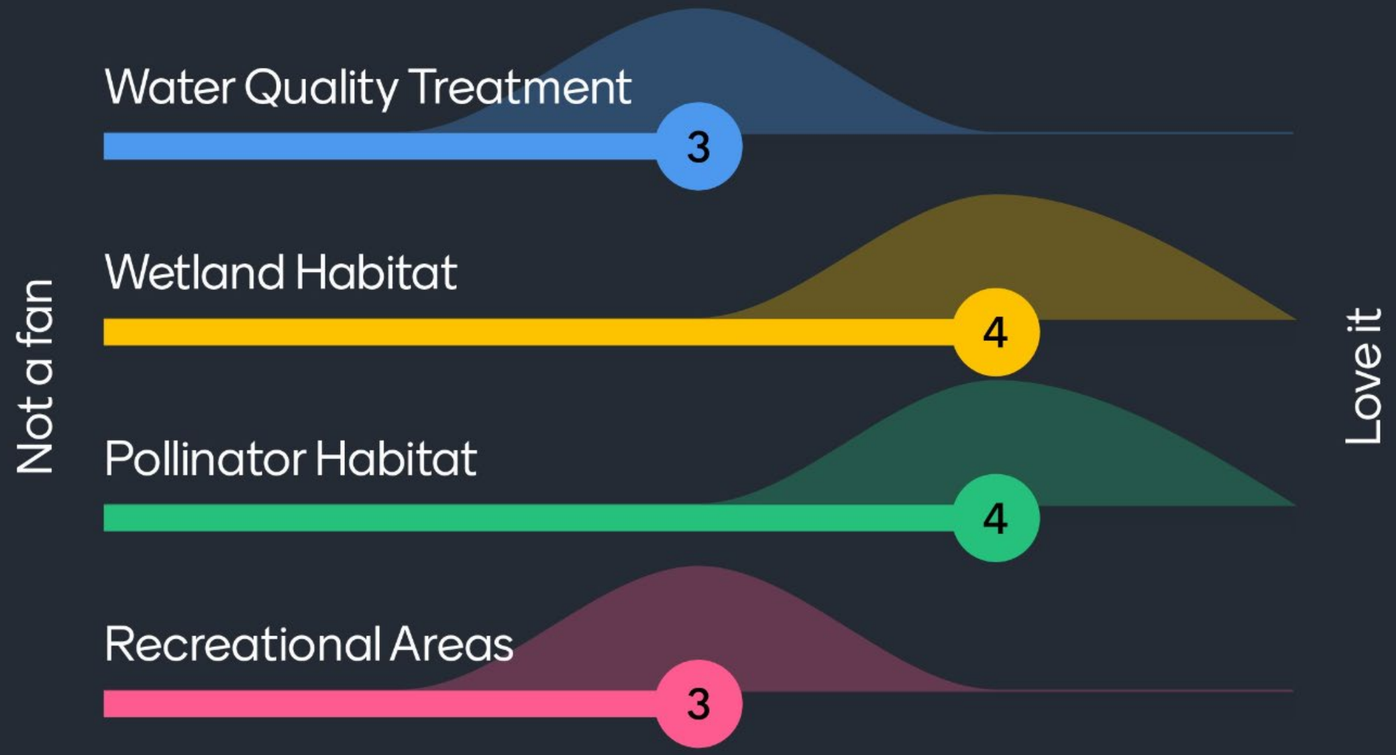
What type of community resources would you like to see included in the Community Treatment Wetland Project?



7th Graders voting on what they want to see in a Community Wetlands Project (February 2024)

From 250 students ...

What type of community resources would you like to see included in the Community Treatment Wetland Project?



Fairfield-Suisun Sewer District

Initial Project Alternatives

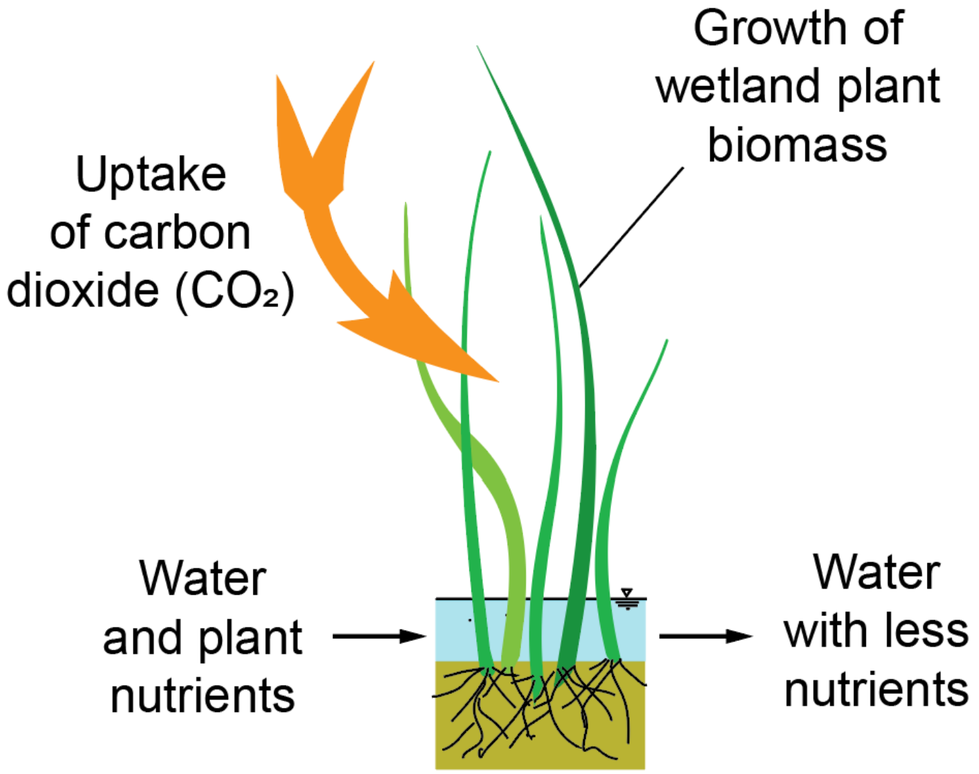
Which of the design alternatives would be your FIRST, SECOND, and THIRD choice?

Design Principles

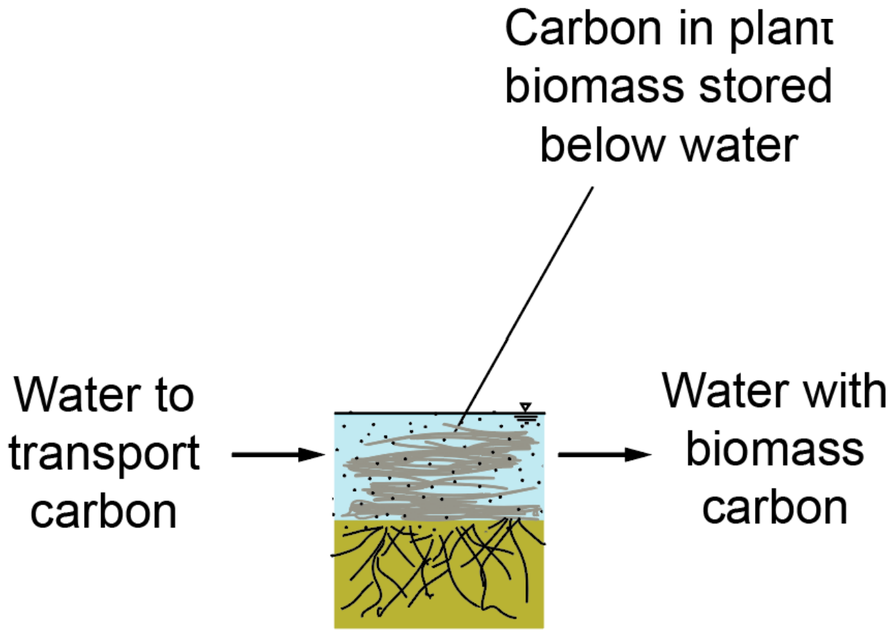
1. Adaptive management with **simplified operation & maintenance**
2. Carbon fixation and **nutrient uptake** for biomass production and denitrification
3. Sediment transport and accretion for **flood resilience**
4. Optimization of **habitat benefits**
5. Integrated facilities for community **access for ALL**

FAIRFIELD-SUISUN SEWER DISTRICT

What is a Carbon Capture Wetland?

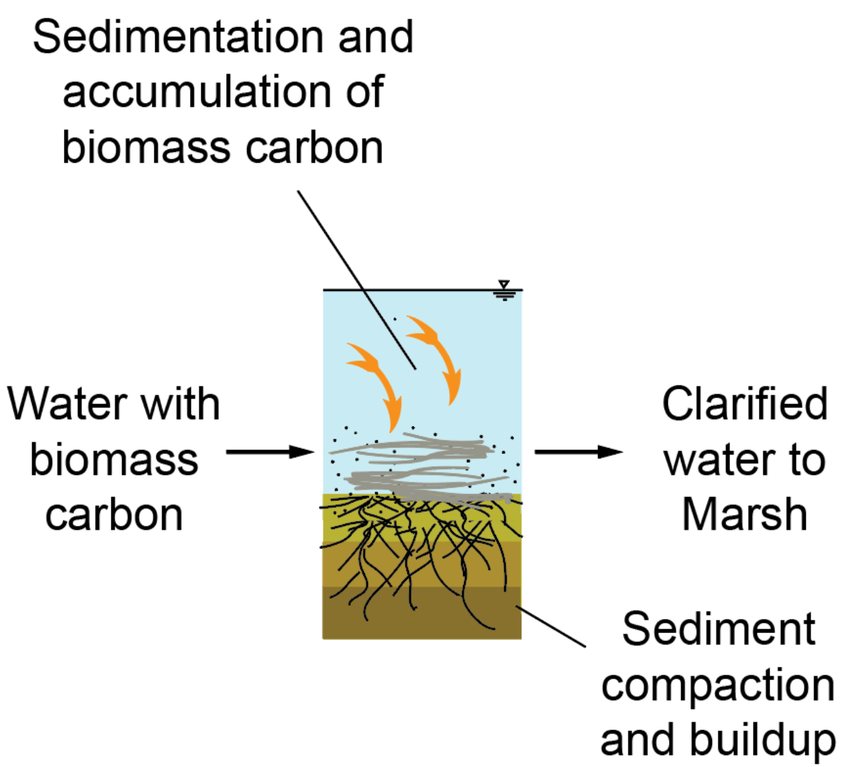


Summer season plant growth and carbon uptake

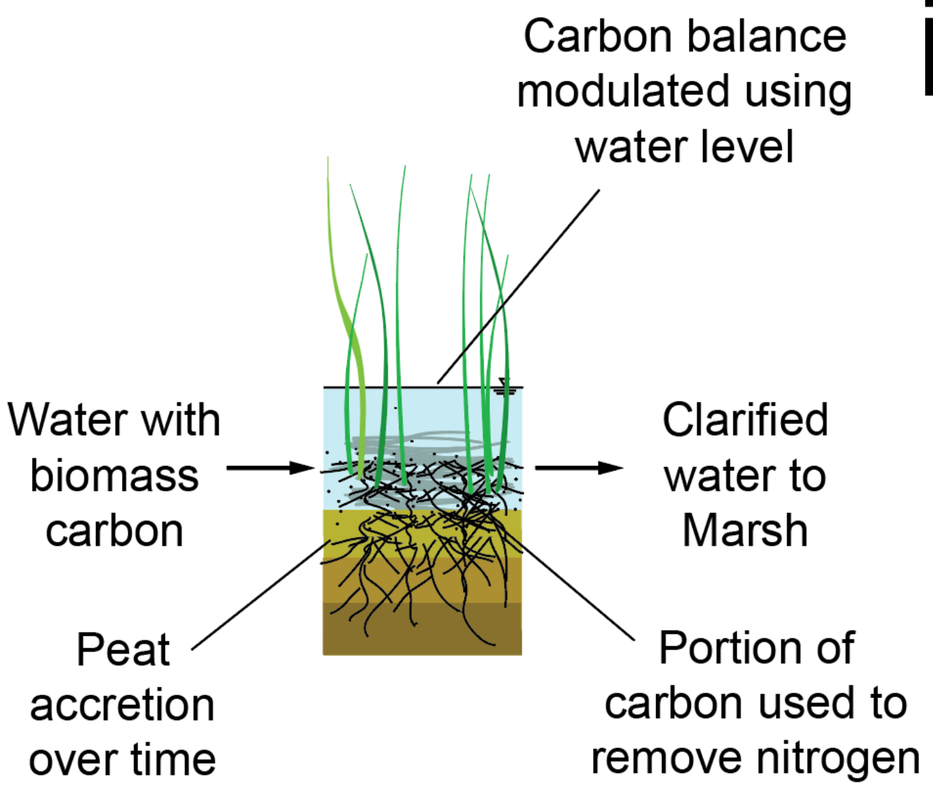


Winter season plant decay and carbon transport to peat building

What is an Engineered Peatland?



Winter season carbon storage and accumulation as peat



Summer season biodegradable carbon used for nitrate removal

Alternative 1: Maximize Resilience

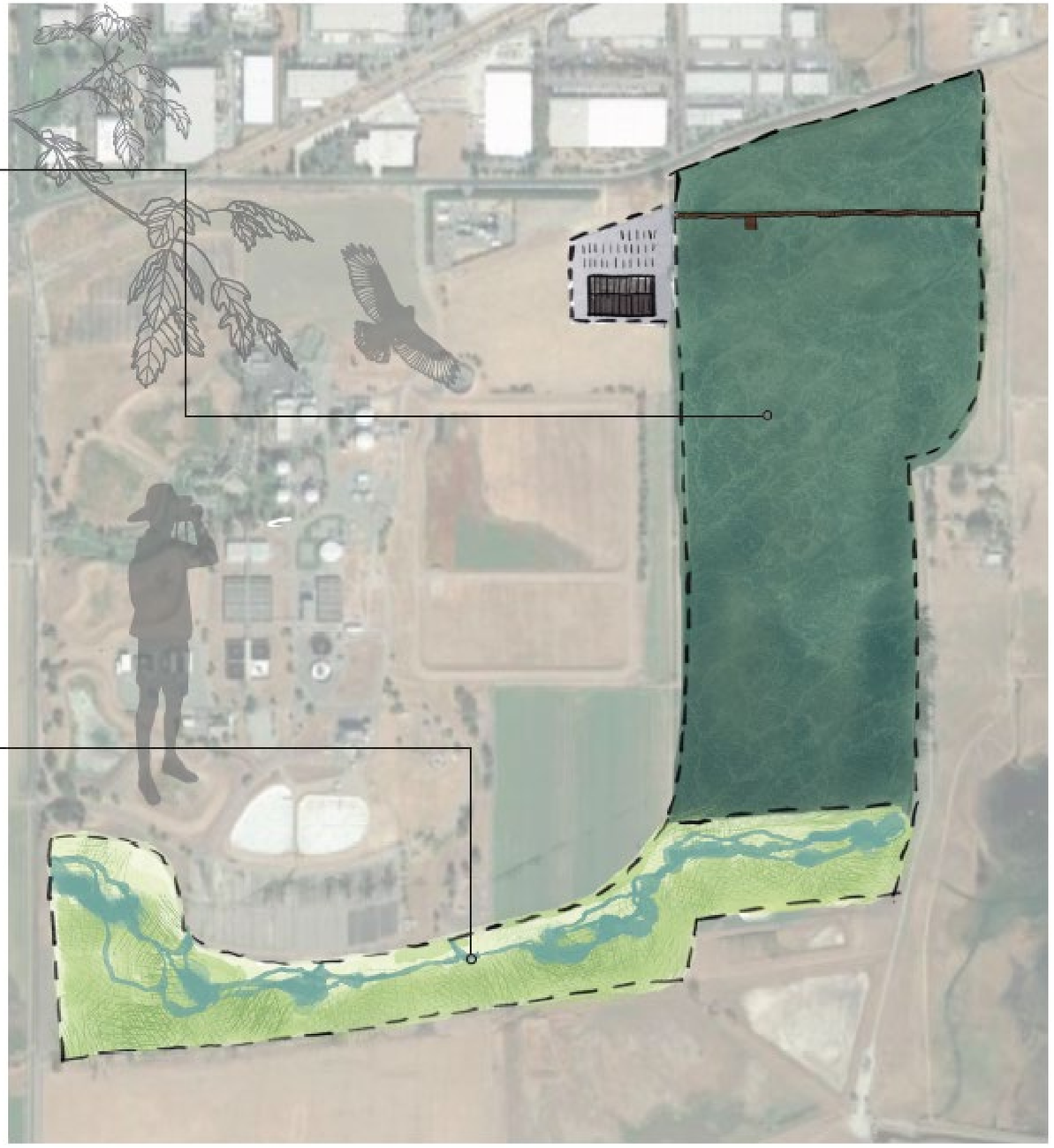
Fairfield-Suisun Sewer District Community Treatment Wetland

NITROGEN REMOVAL AND CARBON CAPTURE IN TREATMENT WETLAND

The nutrients contained in wastewater effluent will be used to capture atmospheric CO_2 in the form of native wetland plant biomass

CARBON STORAGE IN ENGINEERED PEATLAND

The carbon captured in-situ and in the upstream wetlands will accumulate in peat building wetlands and over many years will result in elevation gain.

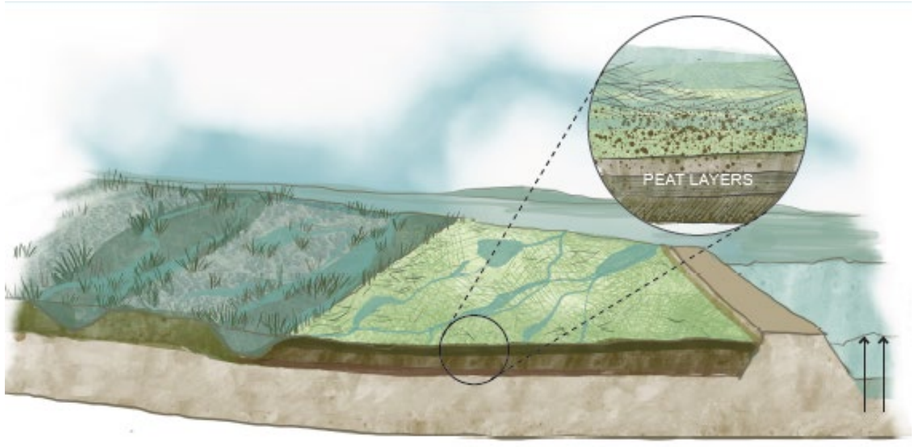


MOST

- treatment wetland area
- carbon capture
- nutrient uptake
- elevation building
- flood protection and sea level rise resilience

LESS

- habitat diversity
- public access
- operations & maintenance complexity
- expensive



Alternative 2: Maximize Community Access and Recreation

Fairfield-Suisun Sewer District Community Treatment Wetland

NITROGEN REMOVAL AND CARBON CAPTURE IN TREATMENT WETLAND

The nutrients contained in wastewater effluent will be used to capture atmospheric CO_2 in the form of native wetland plant biomass

PUBLIC ACCESS TO WALKING TRAILS

A network of trails provides community access through wetland and riparian areas. Educational opportunities are integrated into the site using kiosks, outdoor classrooms, and community science initiatives.

RIPARIAN ZONE

Constructed habitat that provides access to food, water, nesting areas, and migration corridor for various local wildlife. Riparian zones do not specifically contribute to meeting water quality objectives for the project.

CARBON STORAGE IN ENGINEERED PEATLAND

The carbon captured in-situ and in the upstream wetlands will accumulate in peat building wetlands and over many years will result in elevation gain.

MOST

- public access
- expensive
- operations and maintenance complexity
- recreational and educational opportunities

LESS

- habitat diversity
- treatment wetland area
- carbon capture
- nutrient uptake
- elevation building

PUBLIC ACCESS TO WETLAND AND RIPARIAN AREA VIA BOARDWALK AND TRAILS

Alternative 3: Maximize Habitat

Fairfield-Suisun Sewer District Community Treatment Wetland

NITROGEN REMOVAL AND CARBON CAPTURE IN TREATMENT WETLAND

The nutrients contained in wastewater effluent will be used to capture atmospheric CO_2 in the form of native wetland plant biomass.

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CARBON STORAGE IN ENGINEERED PEATLAND

A network of trails provides community access through wetland and riparian areas. Educational opportunities are integrated into the site using kiosks, outdoor classrooms, and community science initiatives.

MOST

- habitat diversity
- wetland migration area

LESS

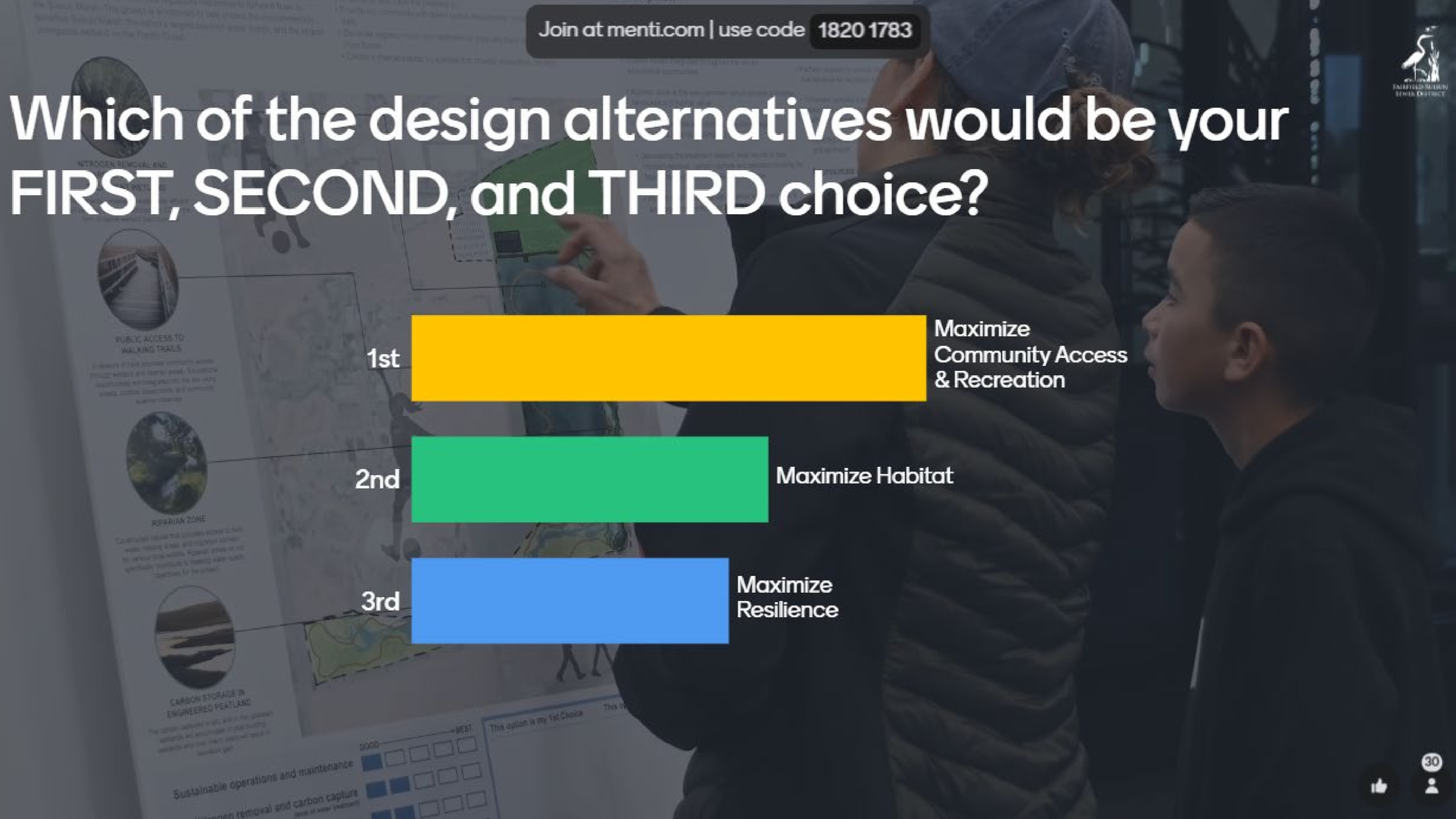
- public access
- treatment wetland area
- carbon capture
- nutrient uptake
- elevation building
- expensive (mid-level)

Which of the design alternatives would be your FIRST, SECOND, and THIRD choice?

April 27 Community Meeting…

Join at menti.com | use code 1820 1783

Which of the design alternatives would be your FIRST, SECOND, and THIRD choice?



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Join at menti.com | use code 68 70 76 7

Which of the design alternatives would be your FIRST, SECOND, and THIRD choice?

33

Next Steps

Thinking holistically …

PILOT Freshwater Wetlands

SFEI
San Francisco Estuary Institute

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

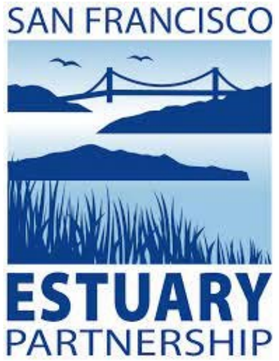
BENEFICIAL BAYLANDS

How might we optimize wetland maintenance, operation, design to …

- Remove nutrients?
- Remove CECs? (e.g., PFAS)
- Sequester Carbon?
- Build Elevation?
- Benefit / Engage our community?

Thank you!


UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY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ESTUARY
PARTNERSHIP


Association of
Bay Area Governments


SOLANO
Resource
Conservation
District


BACWA
BAY AREA
CLEAN WATER
AGENCIES


GREENBELT ALLIANCE


NURTURING INITIATIVES FOR THE GOOD OF THE WHOLE
Sustainable Solano


SFEI
San Francisco Estuary Institute


AMY WEST
amy@amy-west.com | Santa Cruz CA


Solano
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SHERWOOD
DESIGN ENGINEERS


Biohabitats


M I G


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