Rice Cultivation in the Sacramento-San Joaquin Delta

Healthy soils practice to reduce greenhouse gas emissions and slow/stop subsidence in the Delta

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Overview

- Healthy Soils Program and State climate actions
- Delta soils & rice cultivation
- Practice description and quantification methodology
- Next Steps

Credit to Michelle M Leinfelder-Miles 87257_original.jpg (4032×3024) (ucanr.edu)

The Office of Agriculture Resilience and Sustainability & the Healthy Soils Program (HSP)

OARS is committed to building a sustainable and thriving future for California's farmers and ranchers

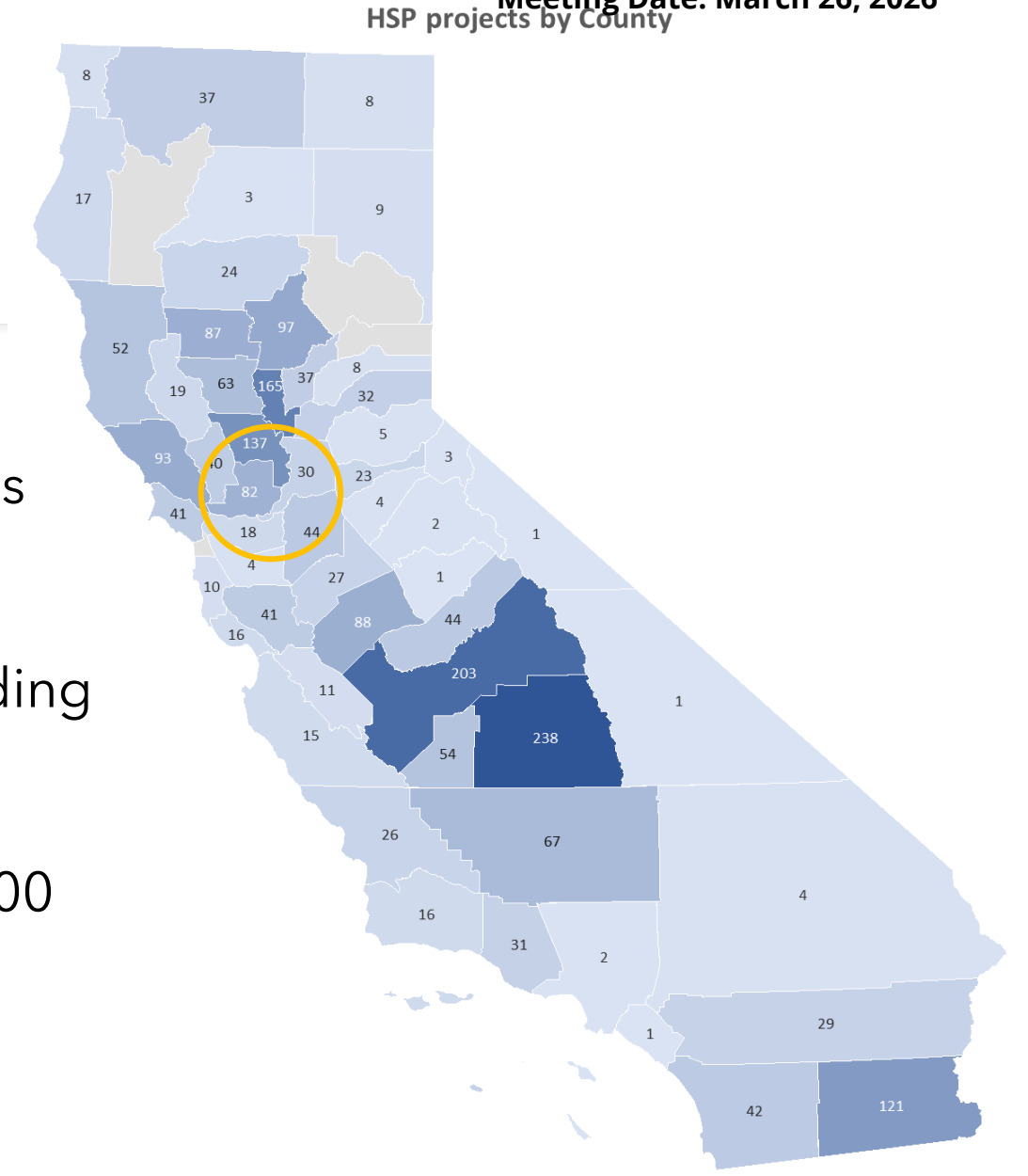
HSP Objectives: Increasing adoption of practices that improve soil health, build soil carbon, and reduce greenhouse gases (GHG) by providing incentives and technical assistance to producers implementing healthy soils practices.

- **Incentive Grants**
- **Block Grants**
- **Demonstration Grants**

State Climate Goals – By 2045: Carbon Neutrality, GHG emissions reduced at least 85 percent below 1990 levels, and 3+ million new acres of Healthy Soils practices

Healthy Soils Program Impact

- Incentives – 2017-2024 funded more than 1,600 projects on almost 140k acres, for 1.1 million tons GHG emissions reductions
- Block Grants – pilot program in 2023, funded 14 regional block grants that coordinated the awarding of 640 local HSP projects on 48k acres for 139 thousand tons of GHG emissions reductions
- Demonstration Projects – reached more than 7,000 farmers and ranchers through outreach events, enabled new practices to be eligible for program

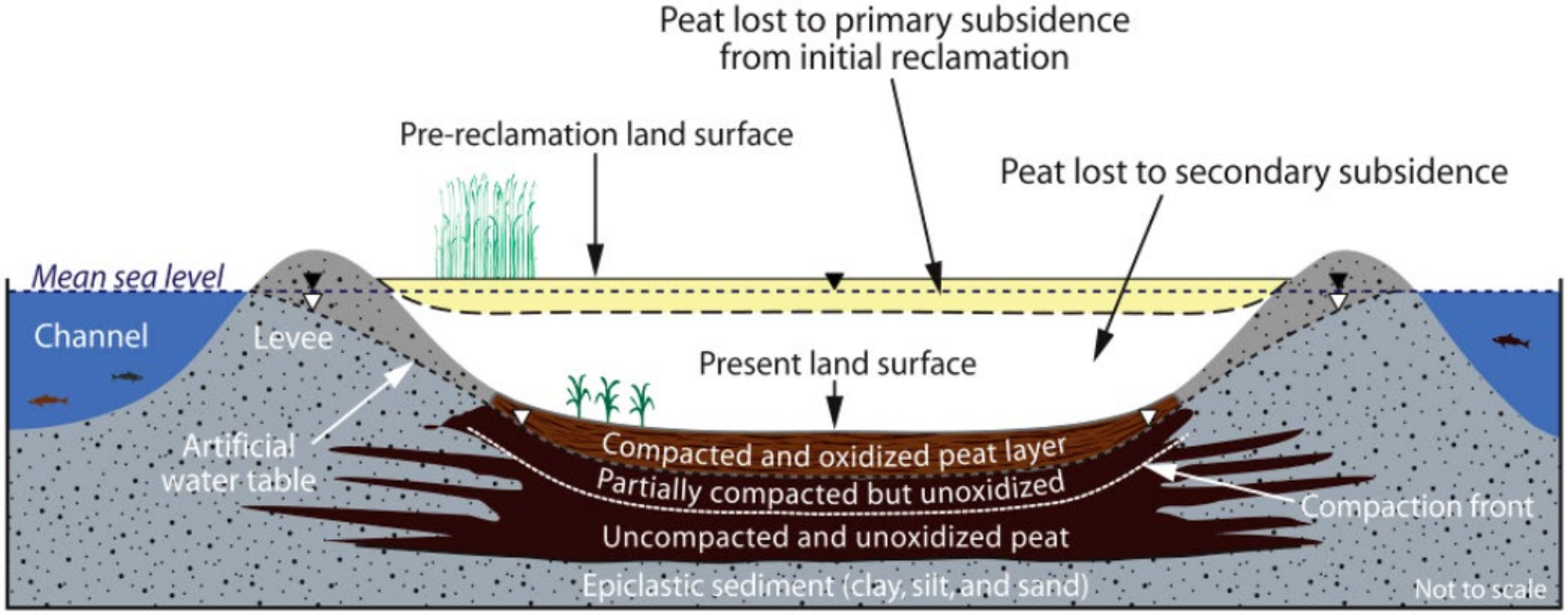


Healthy Soils Program – New Practices

- HSP periodically holds requests for proposals for new practices
- Evaluate new practice proposals on:
  - Currently available scientific research with field trials, preferably in CA or similar climate
  - Improvement in soil health and carbon sequestration
  - Benefits in GHG emission reductions
  - Benefits in crop production
  - Co-benefits
  - Applicability to California climate and agricultural systems
  - Limitations, restrictions and/or adverse environmental impacts
- Most recent round of new practices introduced Biochar Application, Prescribed Indigenous Burning, and **Re-saturating Delta Peat Soils through Rice Cultivation** to the HSP Incentives

Why rice cultivation? - Delta Background pt. 1

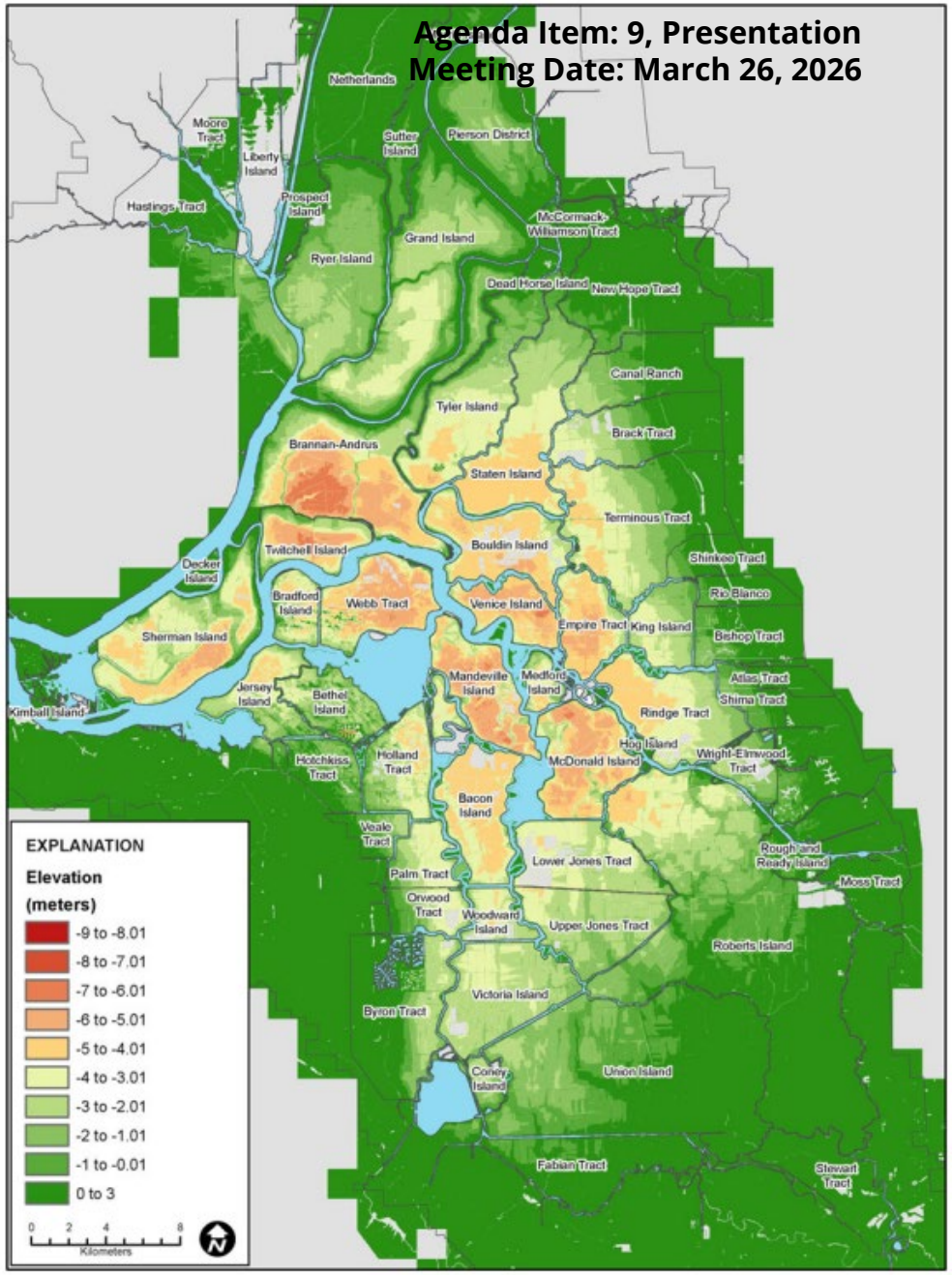
- Constructed levees allow the land to be drained, exposing organic-rich soils to air and leading to the breakdown of organic matter
- Carbon loss to the atmosphere, land subsidence



https://www.usgs.gov/media/images/land-subsidence-due-decomposition-organic-soils

Why rice cultivation? - Delta Background pt. 2

- Varying organic matter content and depth of the peat, land management, and timing of initial draining of the land lead to variation in subsidence across the Delta region



Deverel et al., 2016 - [10040_2016_1391_Article 569..586]

Why rice cultivation? - Solutions to Work With People and Land

- Resaturating the land can help slow down organic matter oxidation, decreasing GHG emissions and land subsidence
- Agriculture is the prevailing land use in the Delta and cultural backbone – need resaturating solutions that work for the people and the land
- Convert from row crops to rice!

Needed Information for a New HSP Practice

- HSP eligible practices need GHG emissions reductions quantification methodologies, implementation guidance, and reimbursement rates
- CARB and CDFA staff performed a literature review to determine average net GHG emissions from different row crow systems and rice
- CARB and CDFA staff looked at existing Delta Rice Conversion Incentive Program implementation guidance and reimbursement rates
- Process was informed by other state Departments and Conservancies, Subject Matter Experts, Growers

Greenhouse Gas Emissions Reductions

- Average ag. baseline GHG emissions: 18.2 tons CO2eqv per hectare per year
- Rice GHG emissions: 11.9 tons CO2eqv per hectare per year
- Emissions reductions of just over 6 tons CO2eqv per hectare per year
- Highest emission reductions come from replacing corn and other high-emission crops (crops that may require high fertilizer inputs, frequent irrigation, and land disturbance)

Management Guidelines Overview

- Field to be flooded for ~8 months of the year
- Rice straw is chopped, rolled and crimped, or stomped down flat
- Rice cultivation maintained for a minimum of 5 years
- $800/acre reimbursement

Image from Microsoft Word - RiceDeltaCont2007.doc

What is Next for HSP and this New Practice?

- HSP is preparing a new solicitation utilizing 2024 Climate Bond funds
  - Recently concluded public comment
  - Block grant format
  - Released updated practice guidelines

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