San Joaquin Valley Winegrowers Association

March 8, 2023

Wendy Rash, Water Quality Specialist, NRCS

Opportunities for On-Farm Groundwater Recharge

USDA United States Department of Agriculture

Natural Resources Conservation Service

In a big water year…

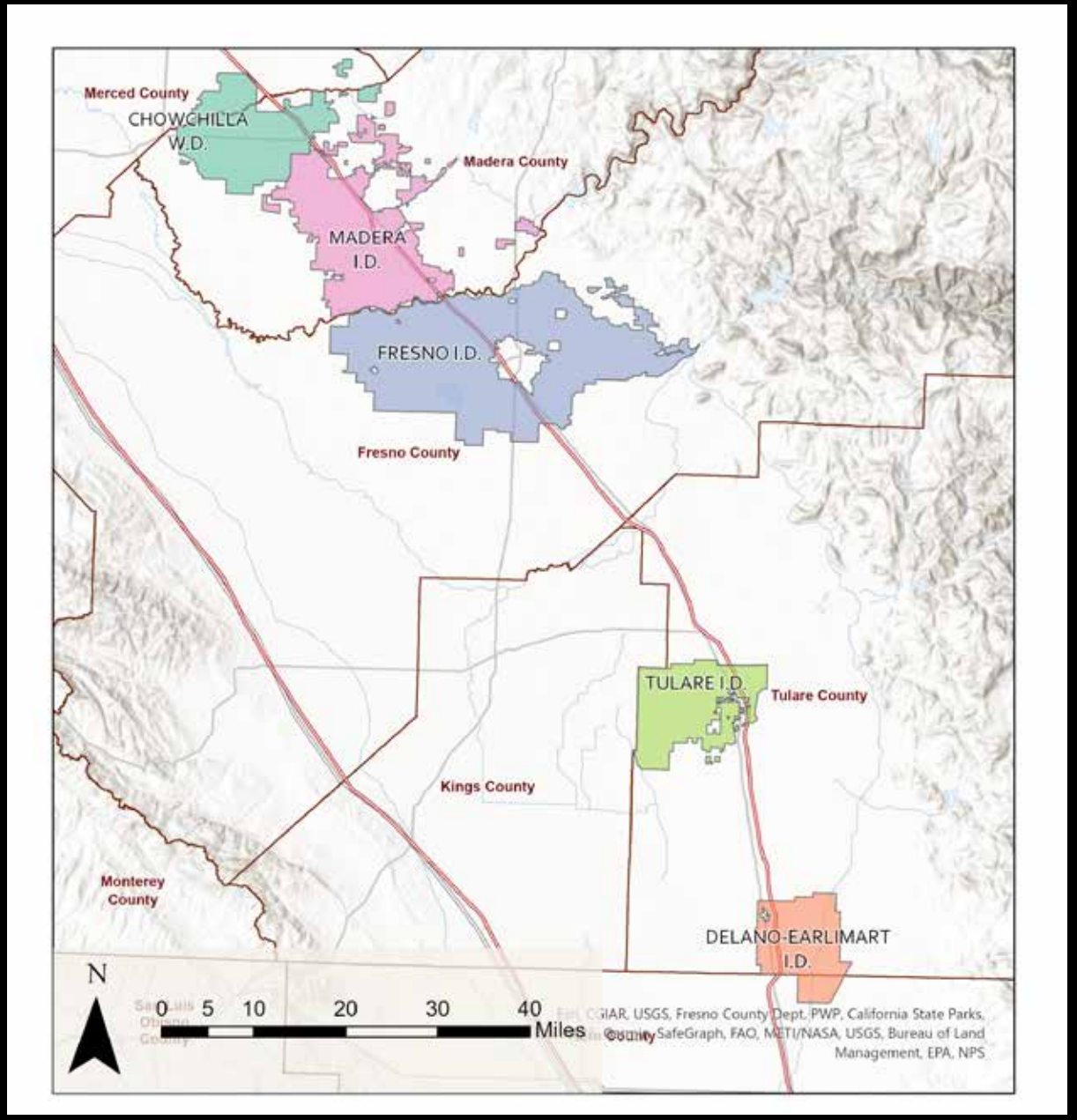
- Can you take additional surface water after your ground is saturated?
- Where can you put it?
- Does your soil infiltrate heavy rains or does it pond and evaporate or run off?
- Can you use more surface water instead of groundwater?

Types of farm recharge practices

- Developing soil that can absorb and infiltrate water
  - Capturing rainfall
- Intentional flooding of fields for infiltration
  - On-Farm Recharge or Managed Aquifer Recharge
- Utilize surface water instead of groundwater
  - “In-lieu” recharge
- Put flood flows in dedicated or temporary areas to recharge
  - Groundwater Recharge Basin or Trench

USDA-NRCS Recharge Pilot

Part of the Environmental Quality Incentives Program



Two recharge interim practice options

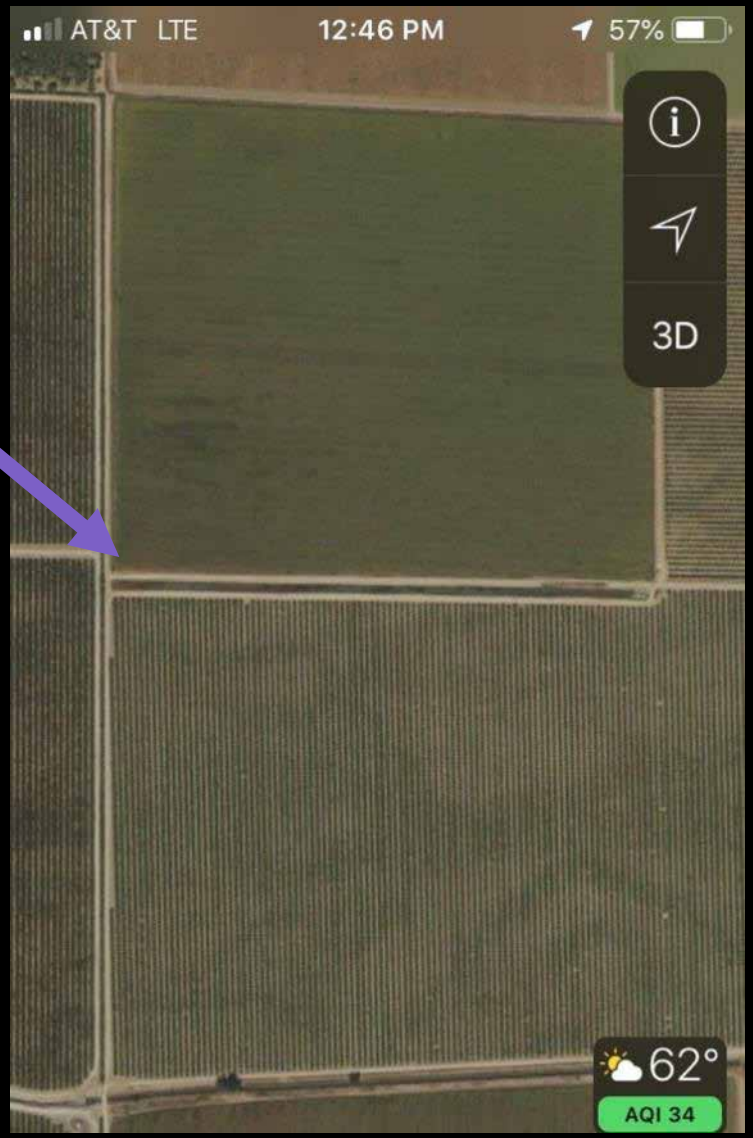
Recharge trench or basin

- Permanent feature (15 years) – land dedicated to recharge

On-farm recharge

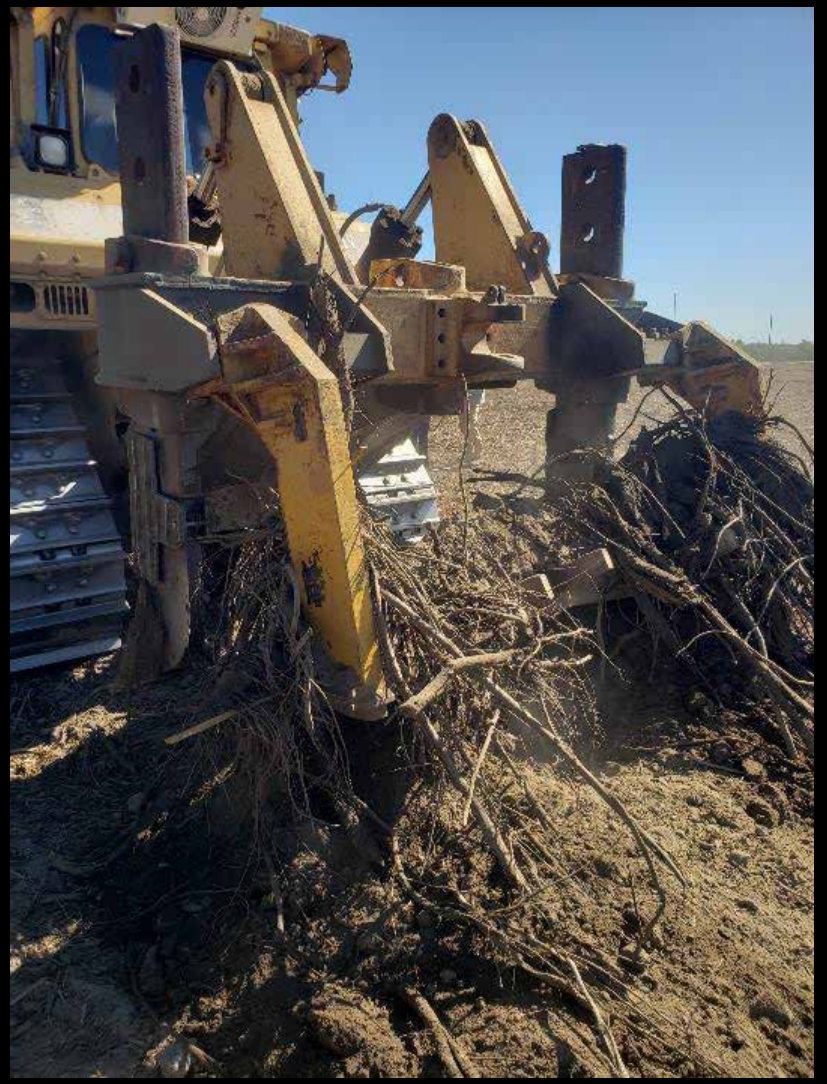
- Management practice in tandem with agriculture

Narrow Recharge Trench (Irrigation reservoir)



On-Farm Recharge: Walnut replant example

- Before: Walnut orchard, could not flood irrigate effectively
- Plan: Keep open 2+ years before replanting, design for recharge
- Orchard removal; land leveling, gated pipe, pipe, pump; cover crop.
- Can take on-farm recharge water during fallow and after re-planting



Photos courtesy of Mark Hutson

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- Barley and cover crop planted
- Applied recharge water Jan-Feb 2023

Photo by Wendy Rash, USDA

Recharge Pilot program

- Goal: Field test the interim practices
- $1.4 million in Fiscal Year 2022
- Limited area
- Extra requirements on pilot projects
  - Monitoring well
  - Assured water source

Plans can include supporting practices like:

Basin or Trench

- Structures for Water Control
  - Inlets, outlets
  - Flow meters
- Pre-treatment of water
  - Sediment basin
  - Coagulants (PAM)
  - Denitrifying Bioreactor

On-Farm Recharge

- Water conveyance
  - Pipeline
  - Field ditch
  - Pump
- Water control
  - Diversion/Dike
- Land shaping

These are conservation practices that can be paid for as part of an EQIP contract!

Financial assistance

Costs reimbursed AFTER contract is signed and design criteria are met

Recharge trench or basin (815): one-time payment after construction	
Trench: $3.59 per cubic yard excavated	
Basin: $4,232.47 per AF storage capacity <10 ac ft	5 ac ft basin = $21,162
Basin: $4,032.75 per AF storage capacity >=10 ac ft	20 ac ft basin = $80,655
On farm recharge (817): annual payment each year field is inundated with water	
$103.93 per acre inundated* <60 acres	20 acres = $2,078
$98.46 per acre inundated* >=60 acres	80 acres = $7,876

*If weather conditions prevent inundation, this practice can’t be performed or reimbursed

20 projects through NRCS Pilot for 2022-23

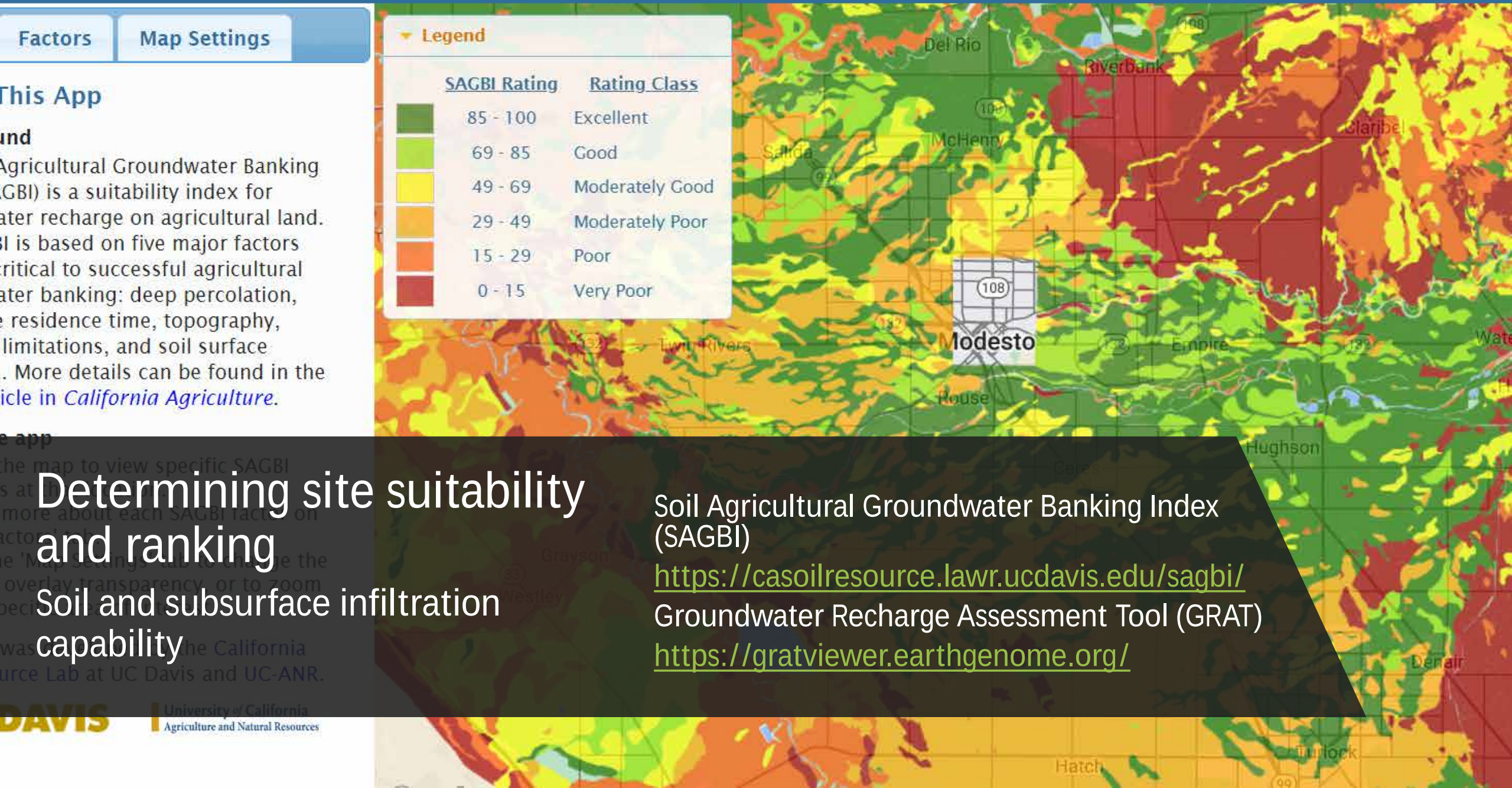
Basins or Trenches

- Storage capacity range from 1 to 30 ac-ft
- NRCS funds excavation plus needed items like:
  - Flow meter
  - pipe
  - valves
  - berms
  - rip rap

On-farm recharge projects

- Over 3,000 acres
- NRCS funds flooding management plus needed items like:
  - Flow meter
  - pipe
  - valves
  - berms

BI | Soil Agricultural Groundwater Banking Index



Determining site suitability and ranking

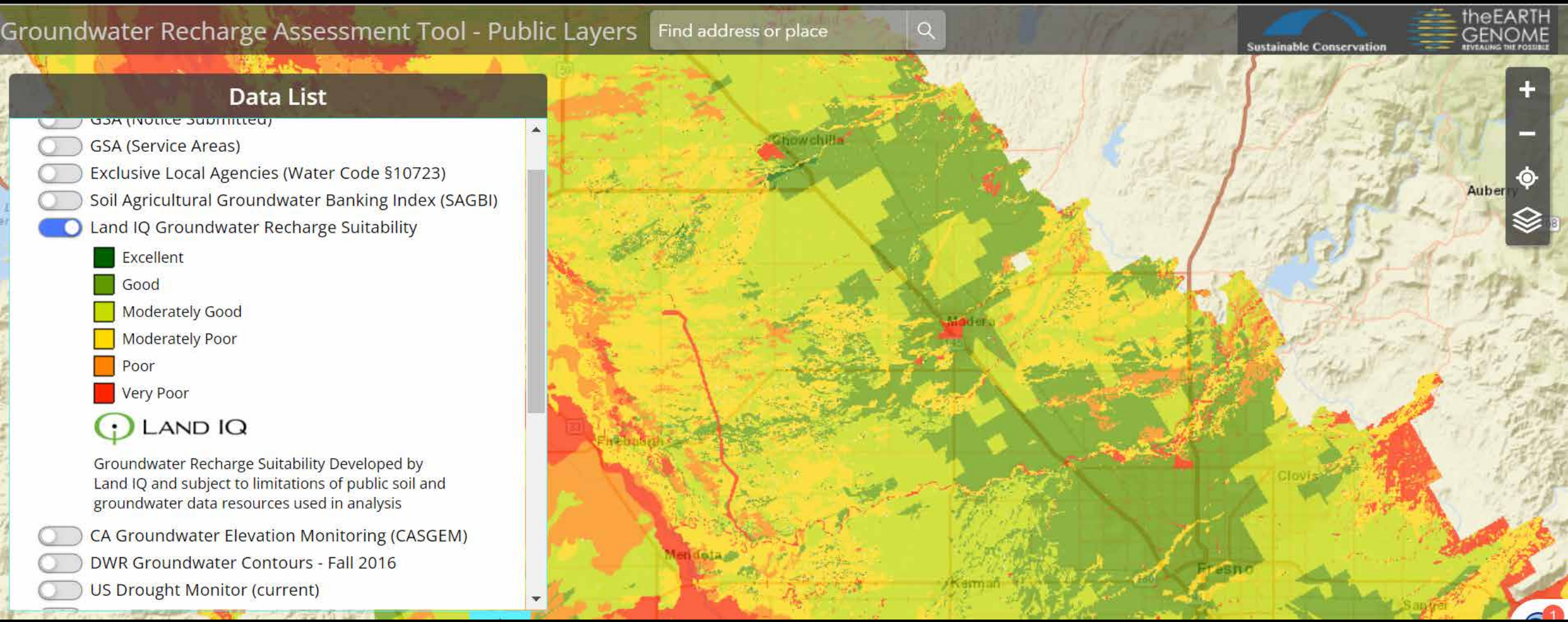
Soil and subsurface infiltration capability

Soil Agricultural Groundwater Banking Index (SAGBI)

https://casoilresource.lawr.ucdavis.edu/sagbi/

Groundwater Recharge Assessment Tool (GRAT)

https://gratviewer.earthgenome.org/


Groundwater Recharge Assessment Tool - Public Layers
Find address or place
Sustainable Conservation
theEARTH GENOME
Data List
GSA (Service Areas)
Exclusive Local Agencies (Water Code §10723)
Soil Agricultural Groundwater Banking Index (SAGBI)
Land IQ Groundwater Recharge Suitability
Excellent
Good
Moderately Good
Moderately Poor
Poor
Very Poor
LAND IQ
Groundwater Recharge Suitability Developed by Land IQ and subject to limitations of public soil and groundwater data resources used in analysis
CA Groundwater Elevation Monitoring (CASGEM)
DWR Groundwater Contours - Fall 2016
US Drought Monitor (current)
Chowchilla
Auberry
Madera
Fresno
Clovis
Kerman
Mendota

What did producers do for on-farm recharge?

- Nutrient management plan review
- Pesticide Use Reports for risk assessment
- Field setup plan for flood
- Consider: flood impacts to crops, cultural practices
- Put water on at least once a year when available:
  1 or 2 years in a 3-year contract

What did producers do for basins?

- Review site history
- Need appropriative water rights or recharge water right
- Only Cropland and Associated land, no pasture or range
- Discuss how water would get to the field- do they need pipe/turnout or flow meters?
- Basins are paid per ac/ft of storage capacity.

Monitoring for pilot projects

- Nearby well to monitor for response
- Well Monitoring:
  - NRCS and Sustainable Conservation staff
  - Nov – Dec 2022 pre-recharge
  - March 2023 post-recharge
  - water level measurements
  - water analysis for N and TDS

Pilot program opened again for 2023-2024

- Talk to your local NRCS Field Office
- Fresno area added
- Confirm with irrigation district

Photo: USDA

Timeline

March 2023

Application period OPENS

Application DUE (Form 1200)

April 3, 2023

April – mid-June

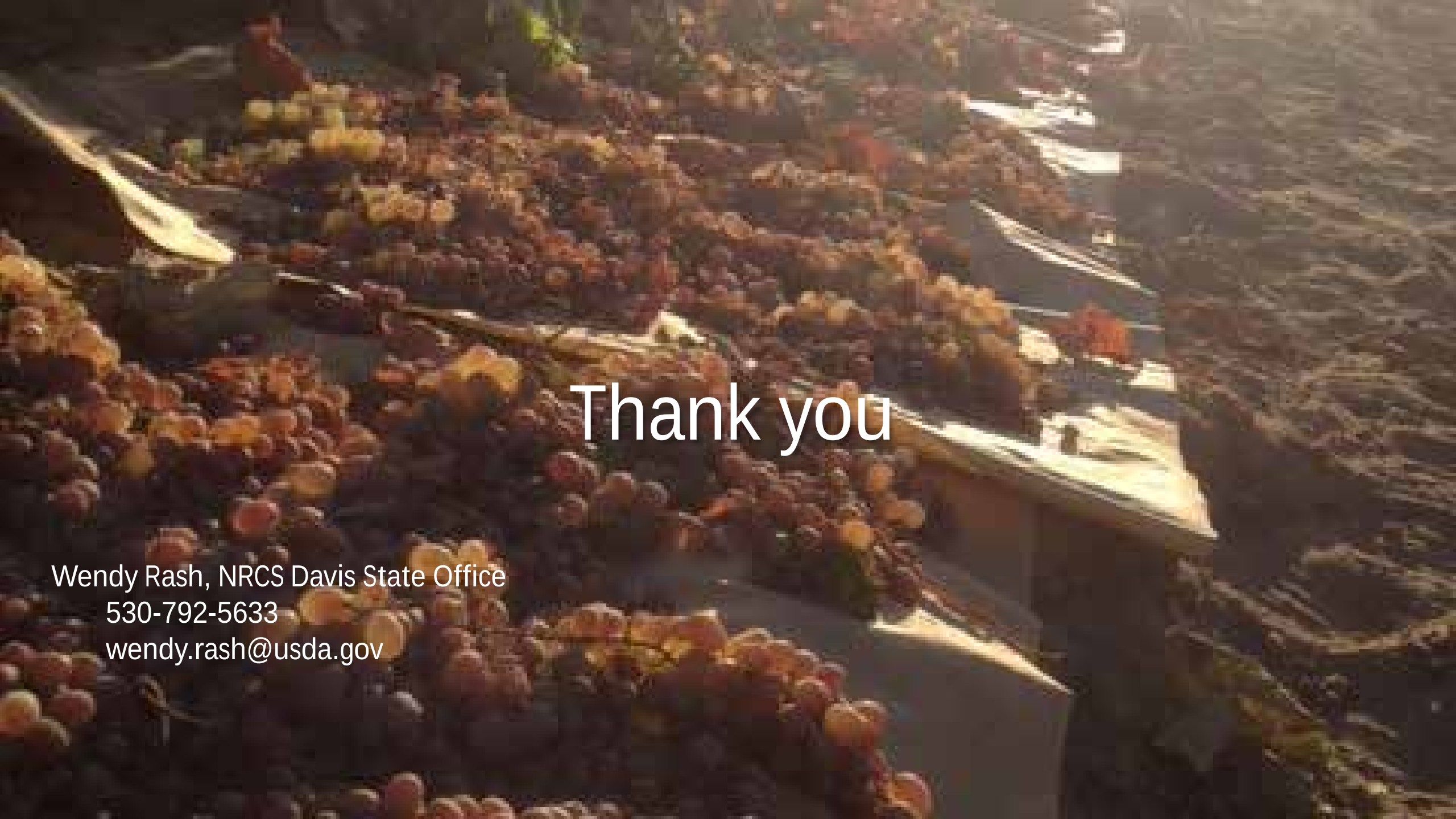
Applicant works with NRCS to develop plan

NRCS ranks the plans

June

After July 1, 2023

Highest scoring projects will be awarded funding



Thank you

Wendy Rash, NRCS Davis State Office
530-792-5633
wendy.rash@usda.gov