



Walker  
Basin  
Conservancy

# Irrigation Design for Native Seed Production

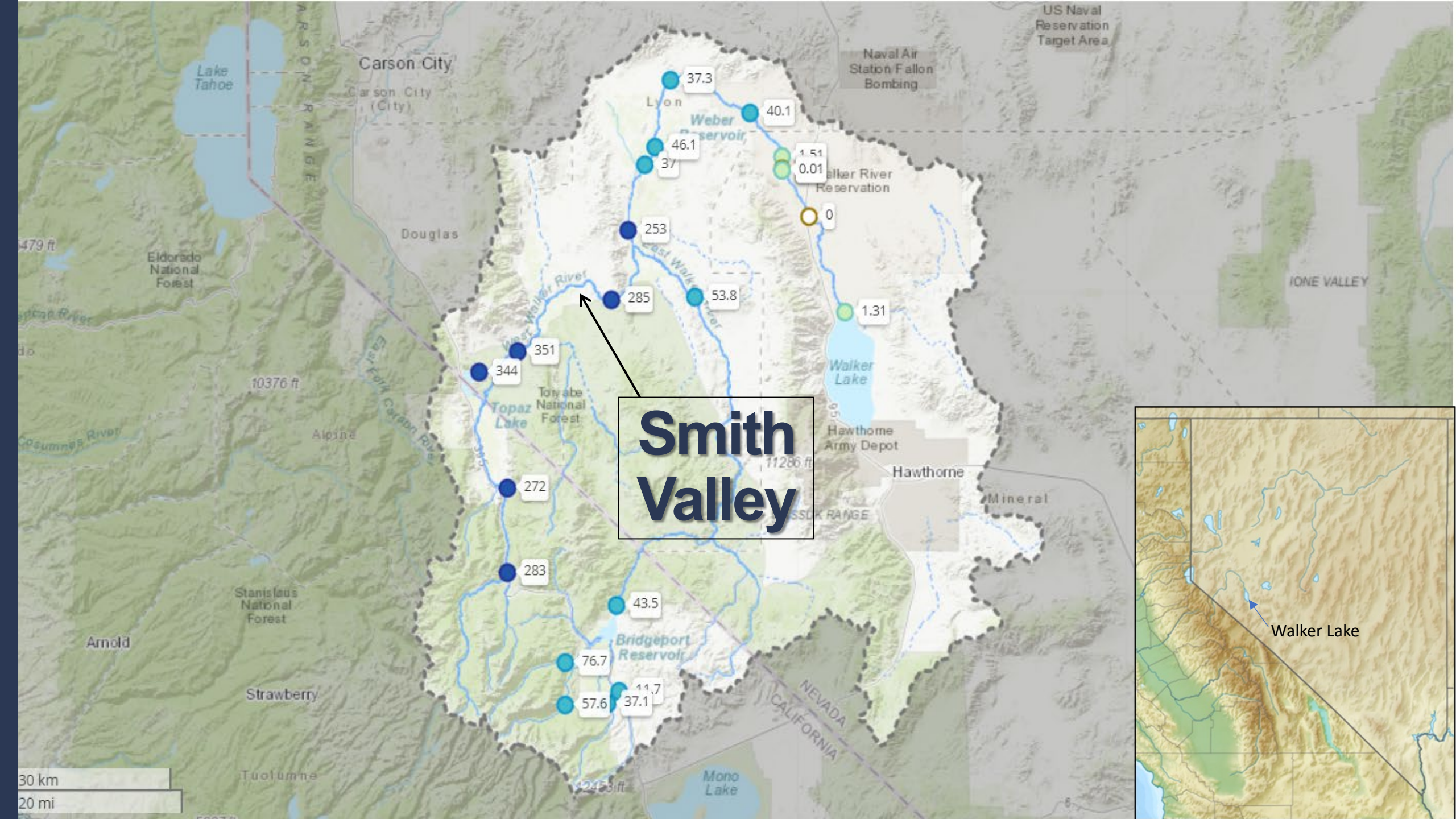
Keith Meise







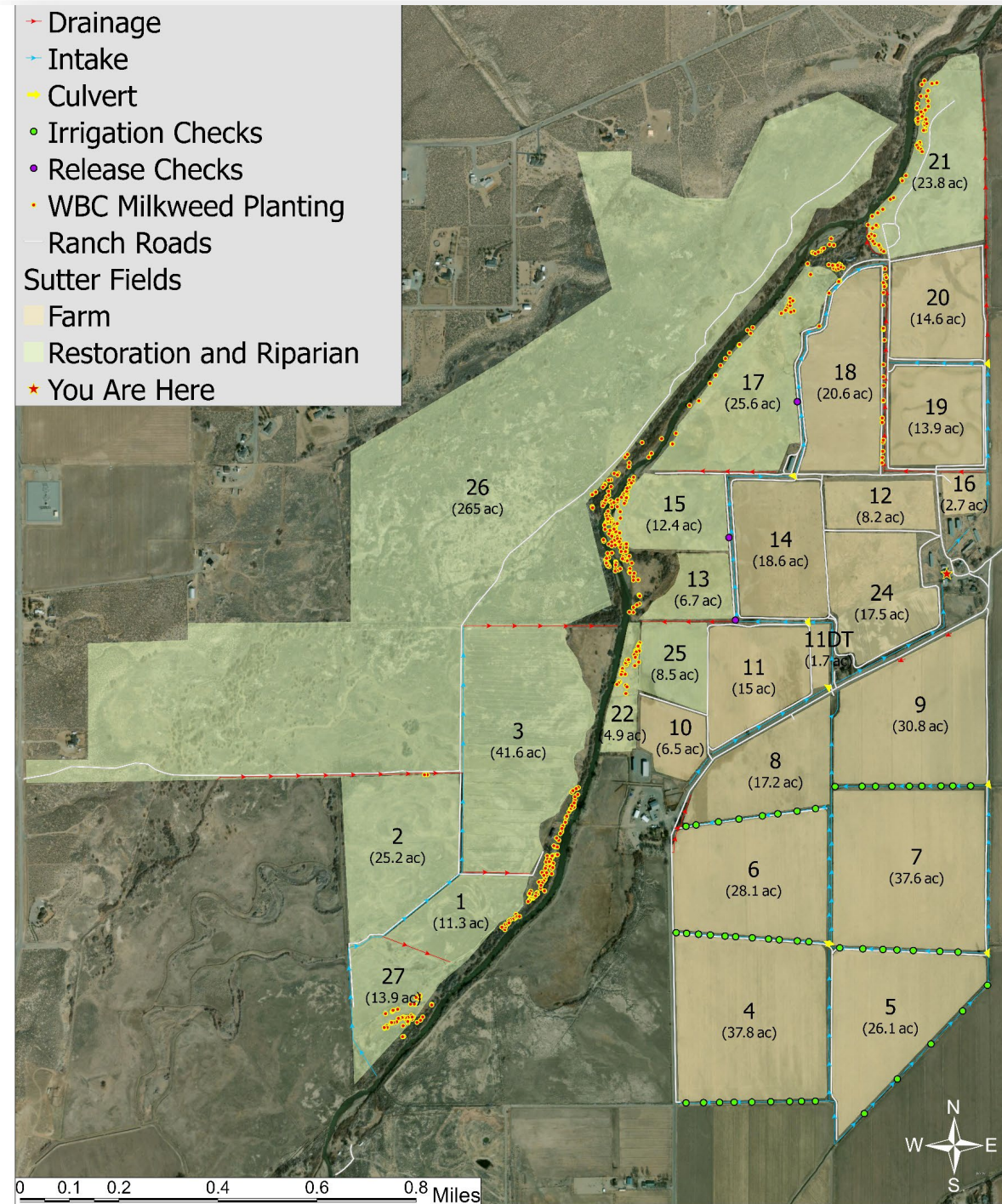






# Sutter Farm

- A proof of concept
  - Build a sustainable operation producing plants and seed in Nevada from source-identified native seed
- 297 acres for production
  - 439 acres set aside for restoration, riparian habitat, and future public access
- Native plant nursery produced 158,000 plants in 2024
  - Using transplants from the nursery to establish seed production beds





An aerial photograph of a vast agricultural landscape. In the foreground and middle ground, there are numerous rectangular fields, some of which are lush green, indicating active crops, while others are brown, suggesting they are fallow or have been recently harvested. A network of dirt roads and irrigation canals crisscrosses the fields. In the background, a large, circular, earthen dam or reservoir is visible, surrounded by a sandy area. Beyond the reservoir, the terrain rises into rolling hills and mountains under a clear sky. The overall scene depicts a large-scale farming operation in a semi-arid region.

# Sutter Farm

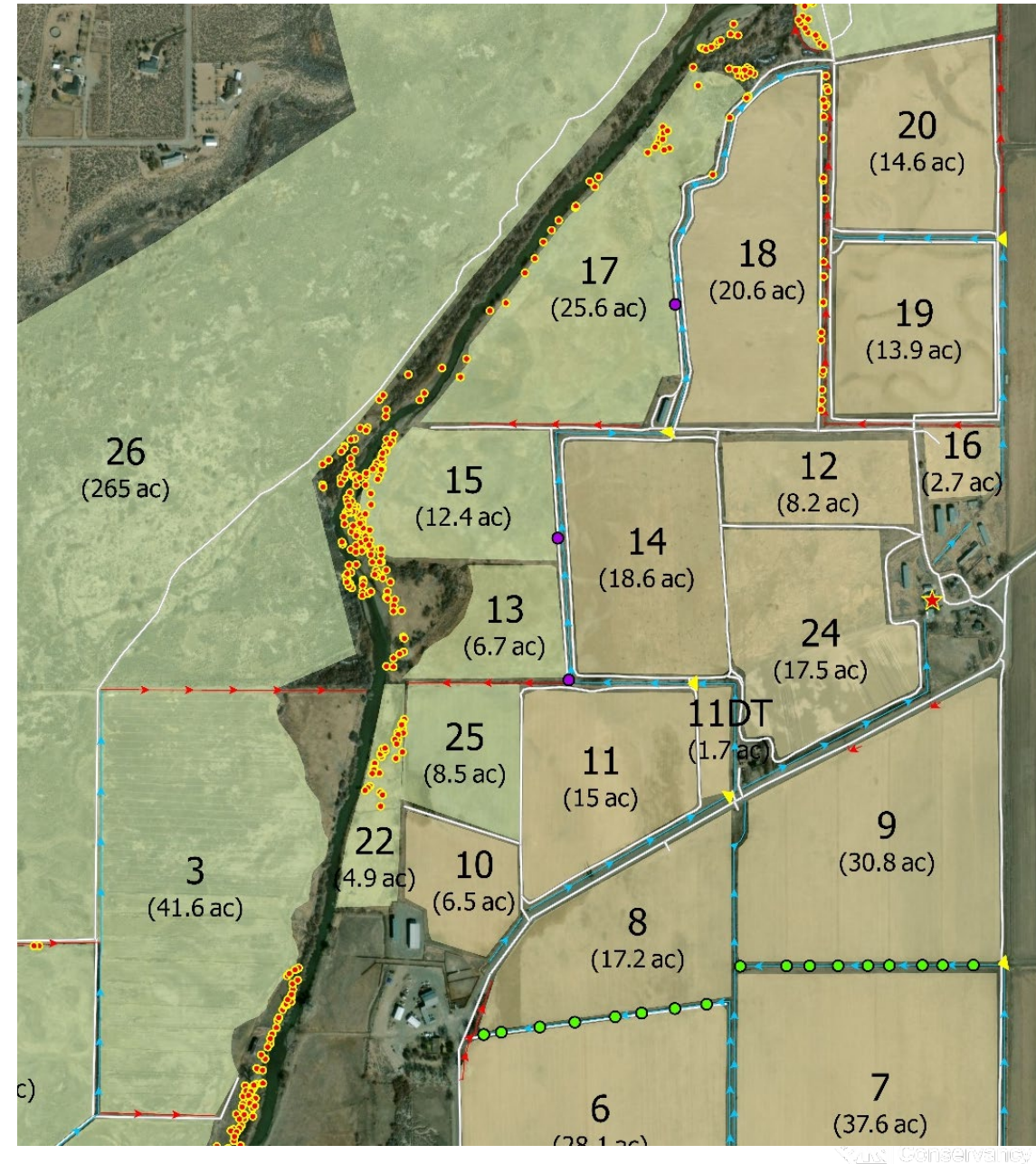
**Design and implement nursery and farm systems that:**

- 1. Conserve water**
- 2. Preserve genetic diversity**
- 3. Increase economic productivity of the farm per acre**



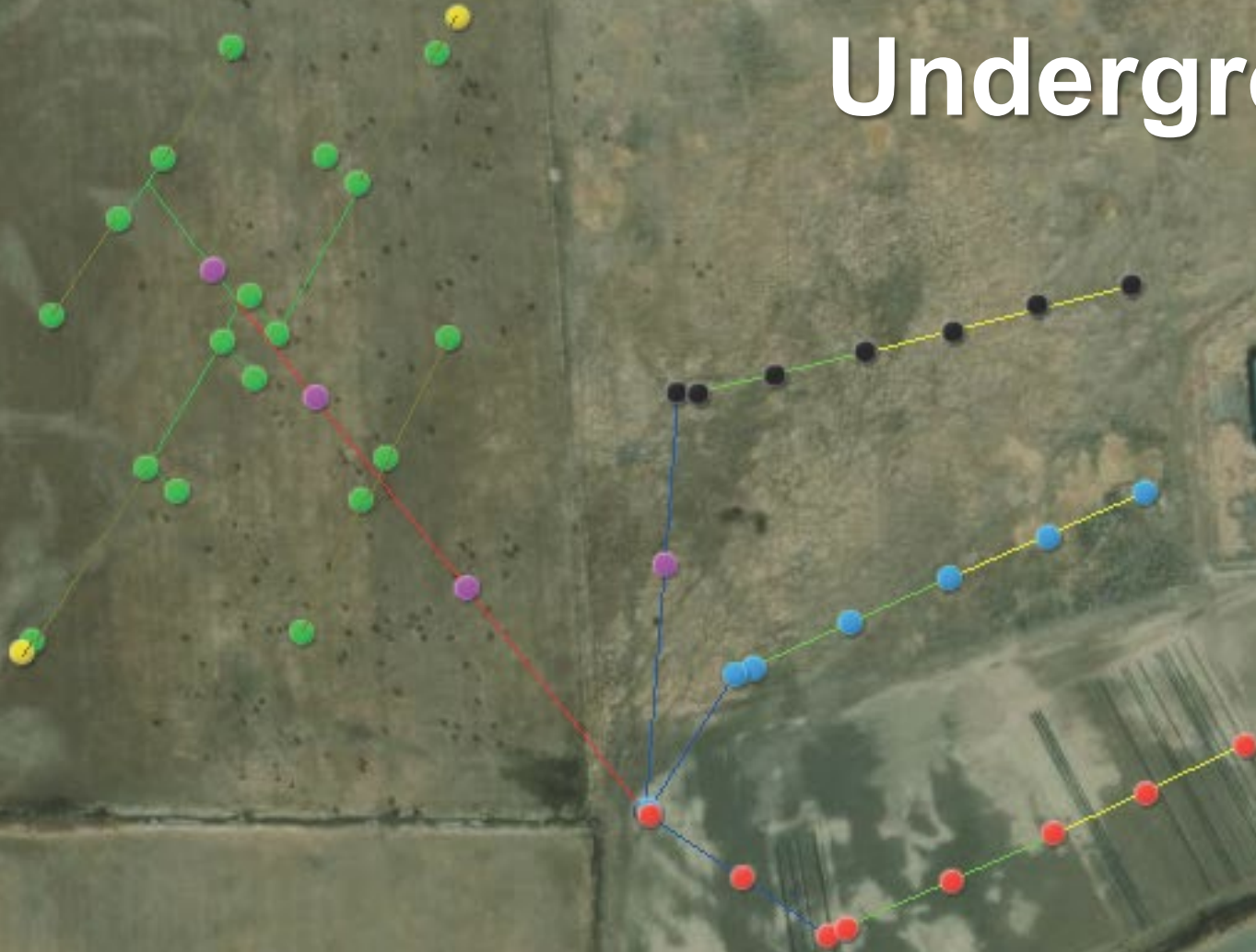
# Sutter Production Fields

- Mixture of drip and overhead systems
- Beds go in direction of prevailing wind
- Multiple sections for different water requirements
- Media filters
- Water reserve storage tanks





# Underground Pipe





# Planning Considerations

- Water source
  - Surface water versus groundwater
- Soil type of production field
  - Clay, loam, or sand
- Plant needs
  - Where does the plant grow naturally?
- Labor



**Riparian (layered sediments, organic matter, high water table)**

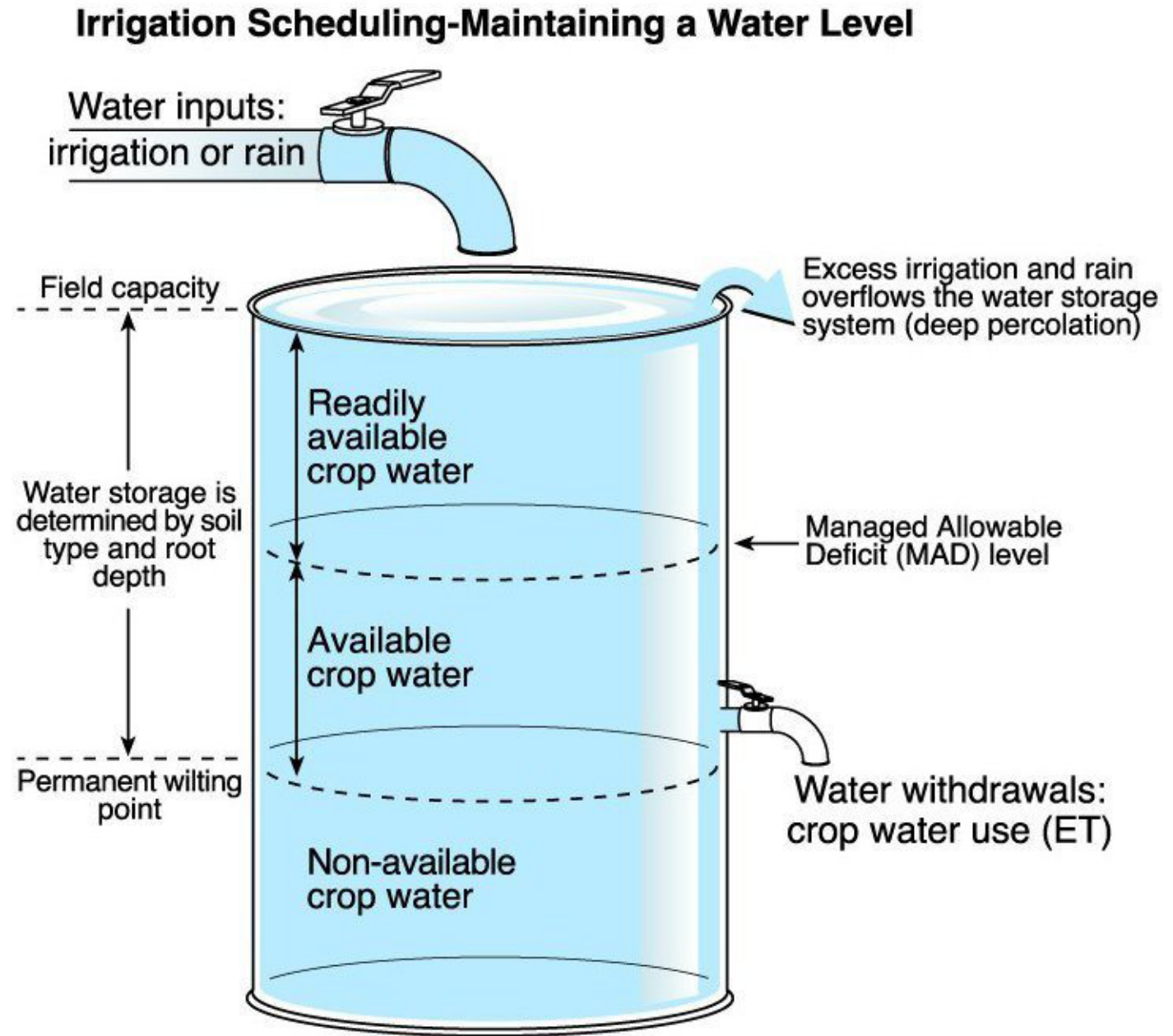


**Pinyon juniper (shallow, well-drained, rocky/sandy)**



# Understanding When to Irrigate and How Much

- Evapotranspiration (ET)
- Soil Moisture Deficit
  - ribbon test
- Moisture probes
- Managed Allowable Deficit
- Record





# Mistakes

- Over-irrigation
- Applicator failure
- Frequency
- Compaction





# Optimizing Systems

- Starts with operators
- Redesign and plan for what you can afford







Drip tape doesn't always  
mean efficiency



Surface water application can  
be made efficient







# Overhead

Wind is your enemy



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Questions?