

Recycled Water and Biosolids Reuse Nexus



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W E S T Y O S T A S S O C I A T E S

Biosolids Production and Land Application in California

- 733,000 dry tons per year used or disposed
- 62 percent land applied or distributed
 - 42 percent Class A
 - 20 percent Class B
- Remainder:
 - Alternative Daily Cover or ADC (20 percent)
 - Landfill disposal (9 percent)
 - Surface disposal (3 percent), or
 - Incinerated (3 percent)



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State Policies Encourage Biosolids Reuse

Diversion of Organics from Landfills (Including Biosolids as ADC)

- 50% organics diversion by 2020
- 75% organics diversion below 2014 by 2025)

California Healthy Soils Initiative

- Biosolids help achieve every goal of Action Plan
- Carbon Sequestration, improved soil tilth, reduced need for irrigation, increased crop yield
- Reduce the use of fossil fuel intense inorganic fertilizer

CASE STUDIES

Existing Facilities

- City of Lodi
- City of Modesto
- City of Galt

Current Evaluations

- Ironhouse Sanitary District
- City of Davis

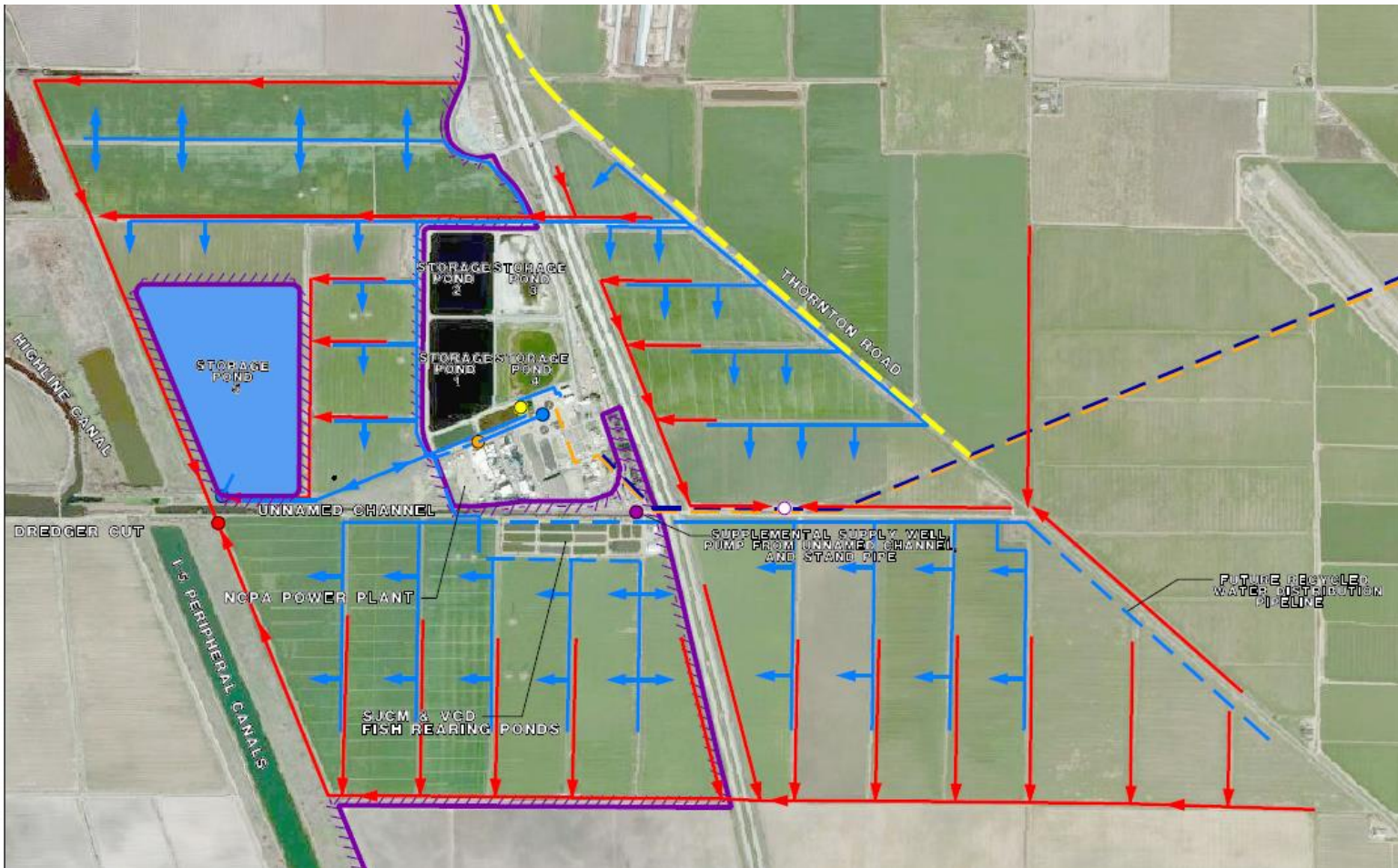
City of Lodi



- **Current ADWF = 4.8 mgd**
- **Reuse Projects**
 - **Agricultural Reuse on City-owned land**
 - **Cooling Water for Power Plant**
 - **Water Supply for Fish Rearing Ponds**
- **Approximately 70 percent of flow is recycled**



City of Lodi



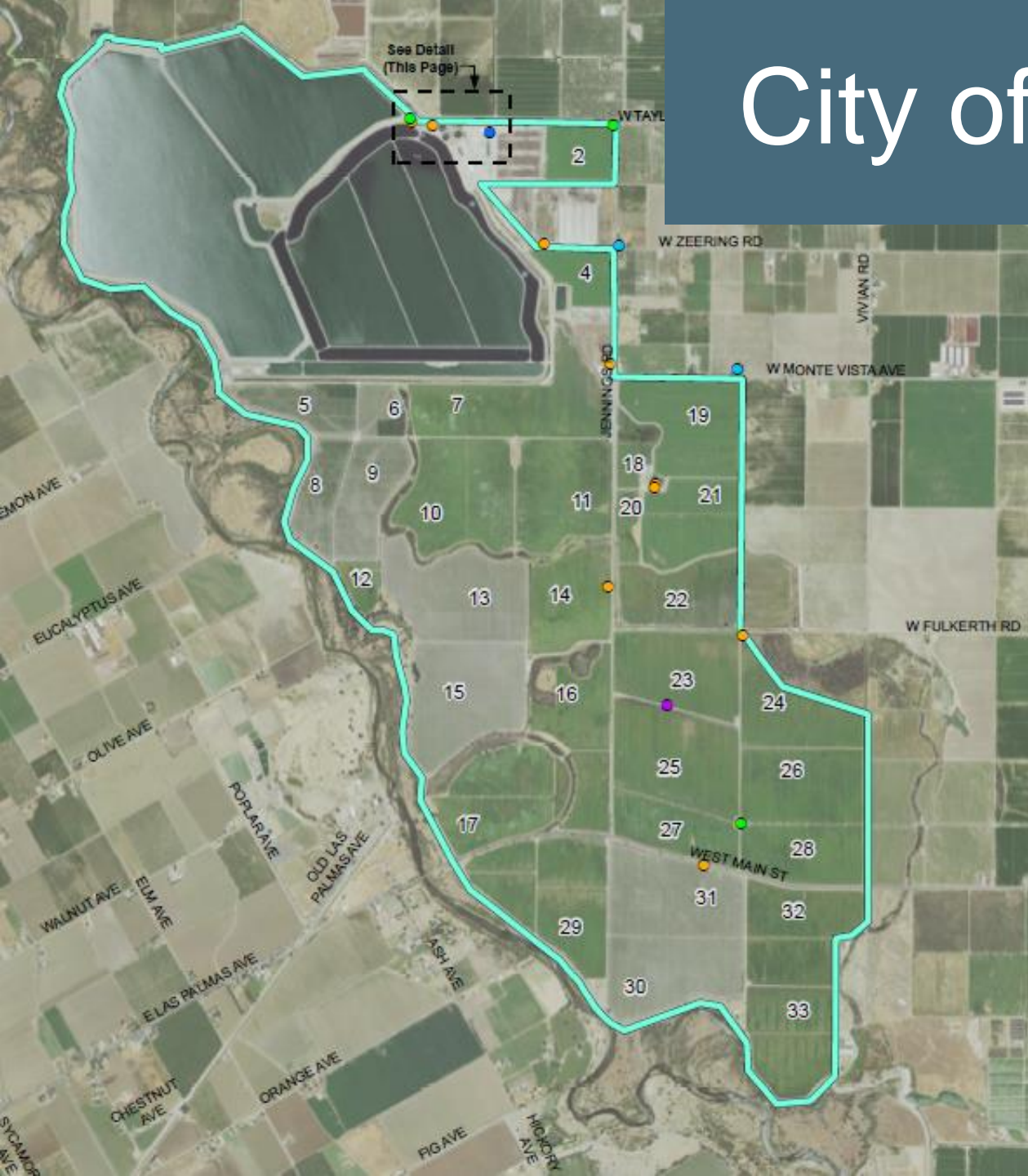
- **790 Acre Land Application Area**
- **~350 Million Gallons per year of recycled water applied**
- **Irrigation water also includes groundwater and fruit processing flows**
- **~1,000 dry tons per year of biosolids applied**
- **Typical Application Area ~ 250 acres**

City of Modesto



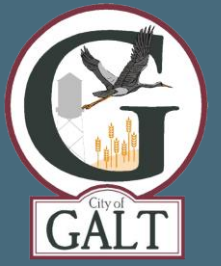
- **Current ADWF = 20 mgd**
- **Reuse Projects**
 - **Agricultural Reuse on City-owned land**
 - **Discharge to Delta Mendota Canal**
- **100 percent of flow is recycled**

City of Modesto



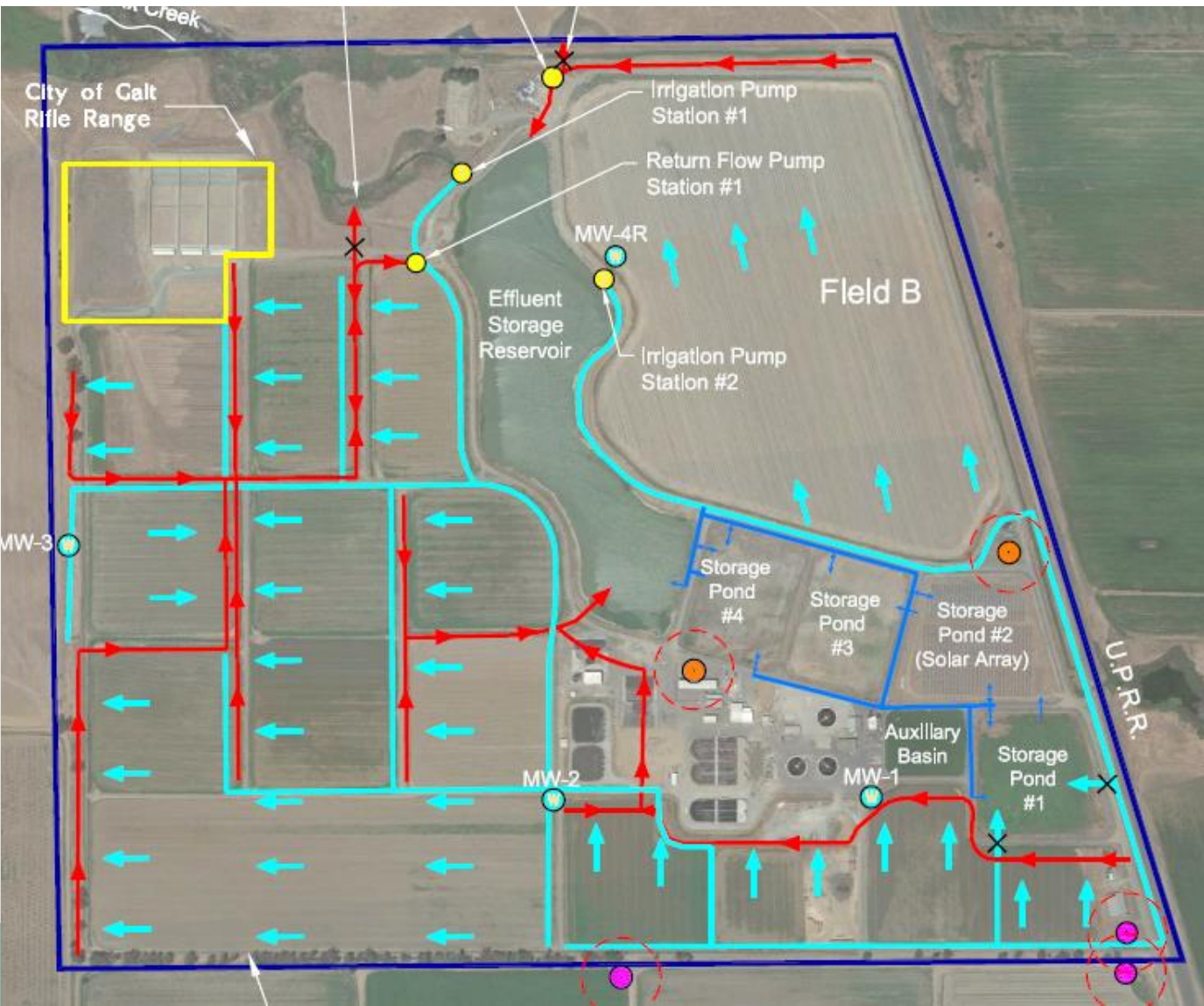
- **2,460 acre land application area**
- **~2,000 million gallons per year of recycled water applied**
- **Irrigation water also includes fruit/vegetable processing flows**
- **~3,200 dry tons per year of biosolids applied**
- **Typical application area ~ 500 acres**

City of Galt



- **Current ADWF = 1.8 mgd**
- **Reuse is limited to agricultural reuse on City-owned land**
- **30 percent of flow is recycled**

City of Galt



- **~160-acre land application area**
- **~ 200 million gallons per year of recycled water applied**
- **~600 dry tons per year of biosolids applied**
- **Biosolids applied to ~50 acres**

Ironhouse Sanitary District



- **Current ADWF = 2.2 mgd**
- **Recycled water applied to 340 acres on Jersey Island**
- **Total Jersey Island Acreage 3,500 acres**
- **Approximately 30 percent of effluent is recycled**
- **Biosolids hauled to commercial land application site**

Ironhouse Sanitary District

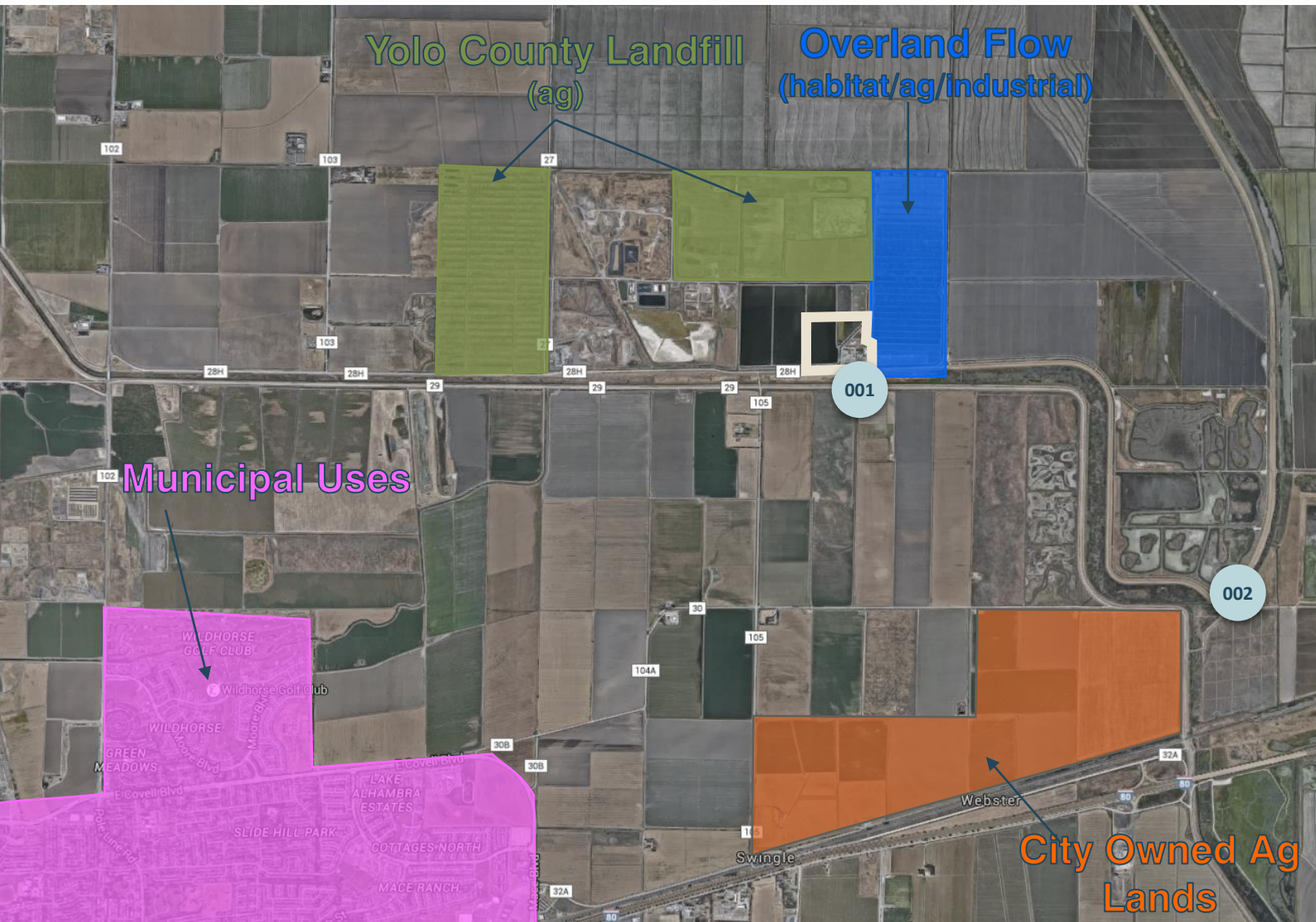


- ~500 dry tons per year of biosolids
- 150 to 200 acres required for land application
- Requires District investment in new storage facility
- Approximately \$2 million in saving over a 20-year period (30 percent savings)



- **Current ADWF = 4.2 mgd**
- **Upgraded WWTP has reduces water losses by ~2 mgd**
- **Planned Reuse**
 - **Wetland habitat**
 - **Adjacent landfill**
- **Biosolids currently hauled to adjacent landfill**
- **Future reuse projects being evaluated in Master Plan**

City of Davis



- City owns ~900 acres of agricultural land
- ~1,300 dry tons per year of biosolids @ 6 mgd design capacity
- ~300 acres of land required for biosolids
- WWTP includes storage, so cost savings will be realized with land application

Recycled Water/Biosolids Reuse Nexus

- Recycled water serves as a water supply
- Fodder crops grown, does not require advanced treated water
- Must consider nitrogen loading from recycled water
- Land is leased to third party for operations (except semi-annual biosolids application)
- Farmers get: Free water and nutrients
- Agencies get: Low cost biosolids disposal, revenue from farming operations



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Questions?



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