

# Integrated One Water Framework for Water Master Plan – Unincorporated Solano County

## **WESTERN COUNTY REGIONAL ISSUES AND CHALLENGES**

June 28, 2023

 Kennedy Jenks

# Meeting Agenda

1

## INTRODUCTIONS

Purpose of the Solano One Water Framework

2

## MEETING PURPOSE AND OUTCOMES

Solano One Water Recap  
Meeting Purpose  
Meeting Outcomes

3

## EXISTING CHALLENGES DISCUSSION

Rural PWS and Domestic Wells  
Drainage  
Wastewater Treatment/ Recycled Water/Water Reuse/Disposal  
Attracting and Maintaining Ag-Related Business/Industry  
Other

4

## SUMMARY

Summary  
Next Steps

# Purpose of the Solano One Water Framework

- One Water Framework Objective
  - Focus on water resources in unincorporated County
  - Support and align with implementation of Solano County General Plan
  - Identify water-related challenges and opportunities through a stakeholder process
  - Develop One Water concepts and guiding principles collaboratively with goals, objectives, and strategies
  - Establish a process to develop regional, multi-benefit projects that leverage regional cooperation and coordination
- One Water Framework Outcome:
  - Vision, goals, and strategies as a roadmap to future Solano County Utilities Master Plan

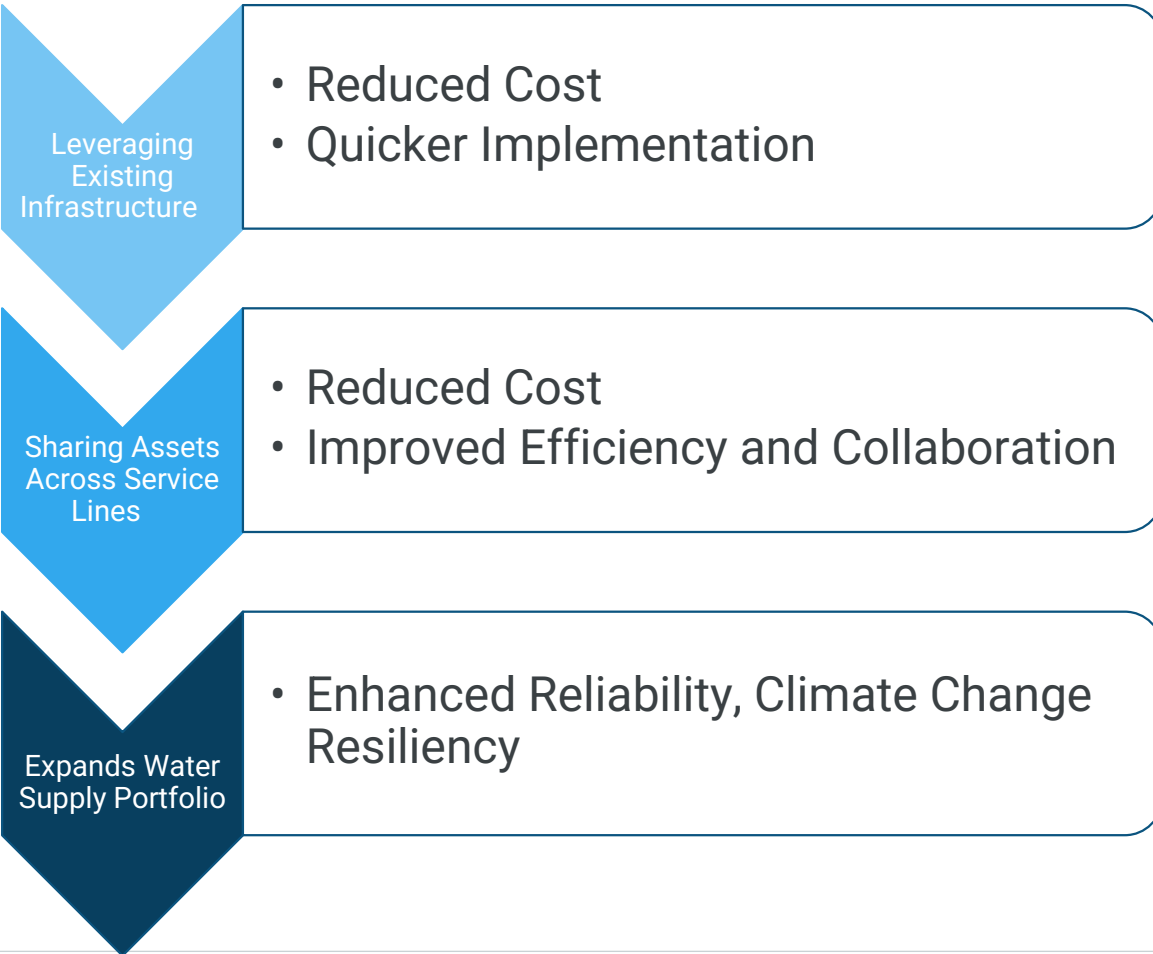
# Purpose of the Solano One Water Framework

- What is One Water?
  - A holistic view of a community's multiple water resources, integrating each piece of the water cycle into one system
  - Looks to build a portfolio
  - Integration by design rather than accident
  - Looks to incorporate natural systems

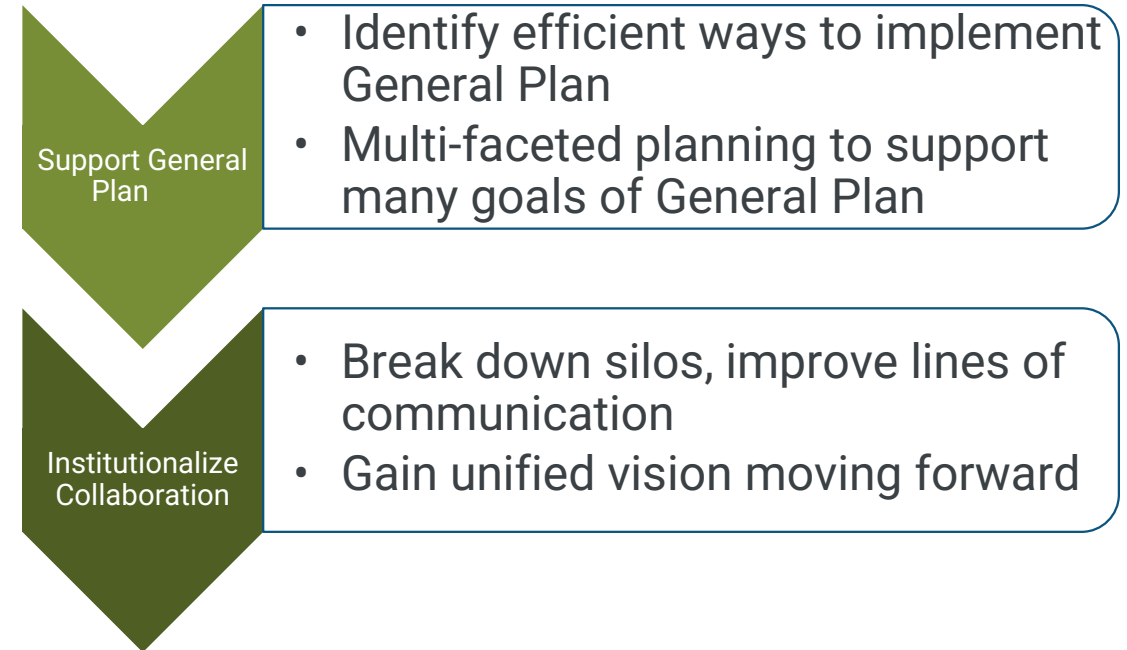


# Benefits of One Water Approach

## *Benefits of One Water Approach*



## *Benefits in Unincorporated County*



# Introductions

Solano County\*

Misty Kaltreider

Dick Tzou

James Bezek

Department of Resource  
Management

Cal Water – Dixon\*

City of Benicia

City of Dixon\*

City of Fairfield

City of Rio Vista\*

City of Suisun City

City of Vacaville/Vacaville GSA

City of Vallejo Water Department

Dixon RCD\*

Fairfield Suisun Sewer District

Maine Prairie Water District\*

RD 2068\*

Rural North Vacaville Water District

Solano County Agricultural Commissioner\*

Solano County Farm Bureau\*

Solano County Water Agency\*

Solano Irrigation District/SID GSA

Solano RCD\*

Vallejo Flood and Wastewater District

\*Solano GSA Member

Steering  
Committee  
Participants



Kennedy Jenks



**Luhdorff &  
Scalmanini**  
Consulting Engineers

**Sachi Itagaki**  
Project Manager

**Meredith Clement**  
Deputy Project Manager

**Jennifer Larsen**  
Technical Lead

**Nick Watterson**, Hydrogeologist/  
Groundwater Sustainability Planning

Kennedy  
Jenks  
&  
LSCE

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Summary of Eastside County Challenges

Overview of Westside County

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Attracting and Maintaining Ag-Related Business/Industry

Other

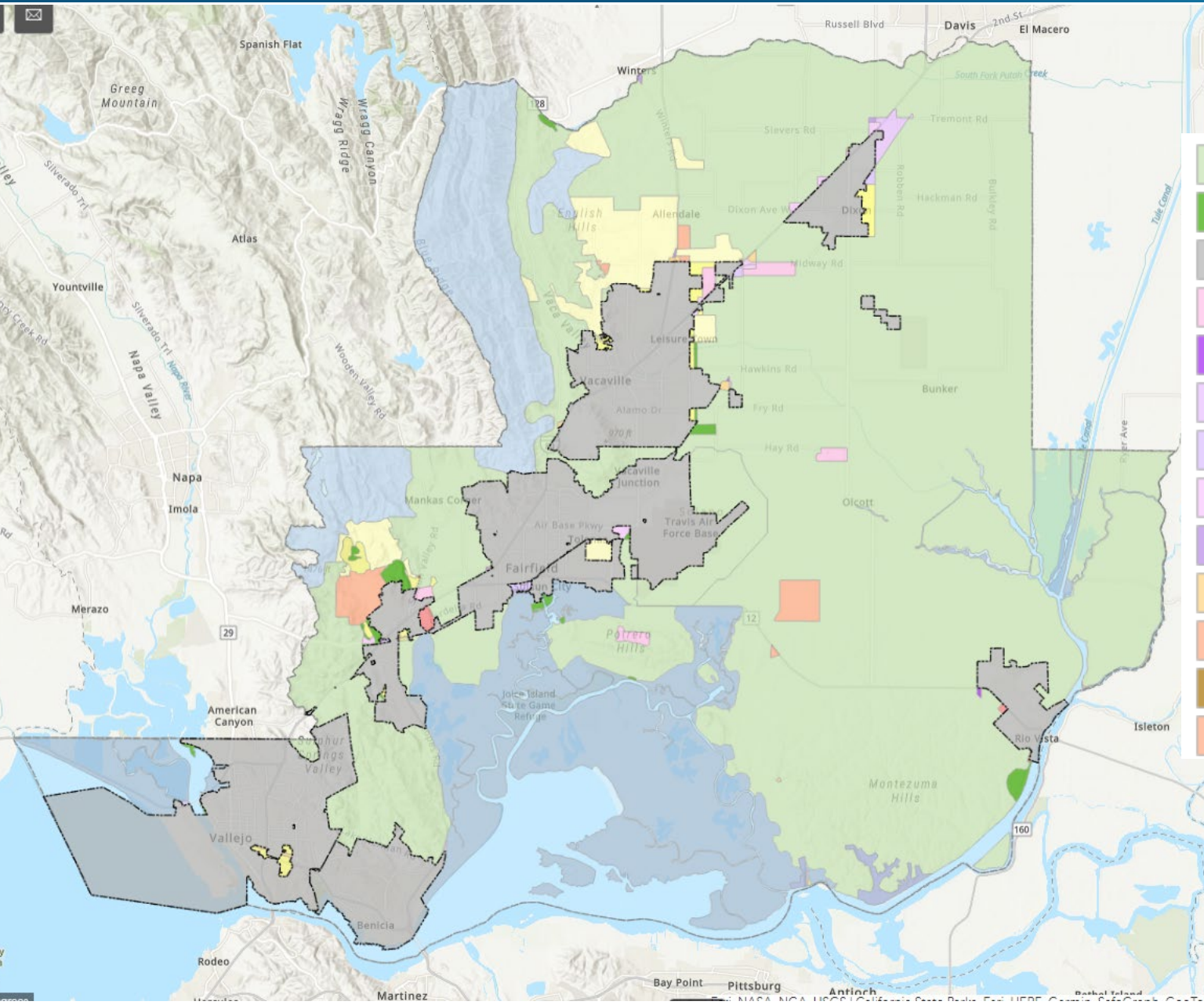
4

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# Solano One Water – Supporting General Plan Implementation



## GENERAL PLAN LAND USE DESIGNATIONS – UNINCORPORATED COUNTY

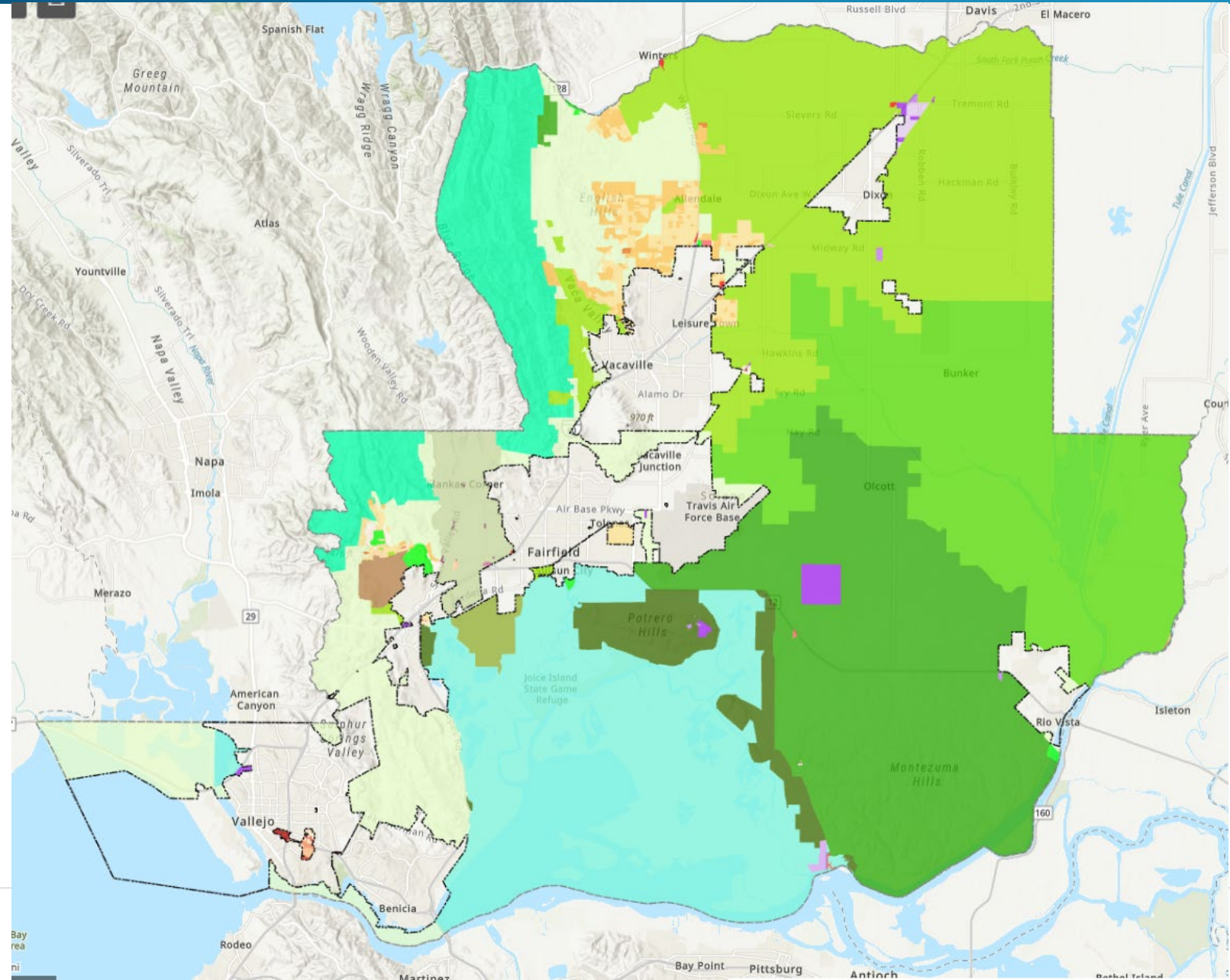
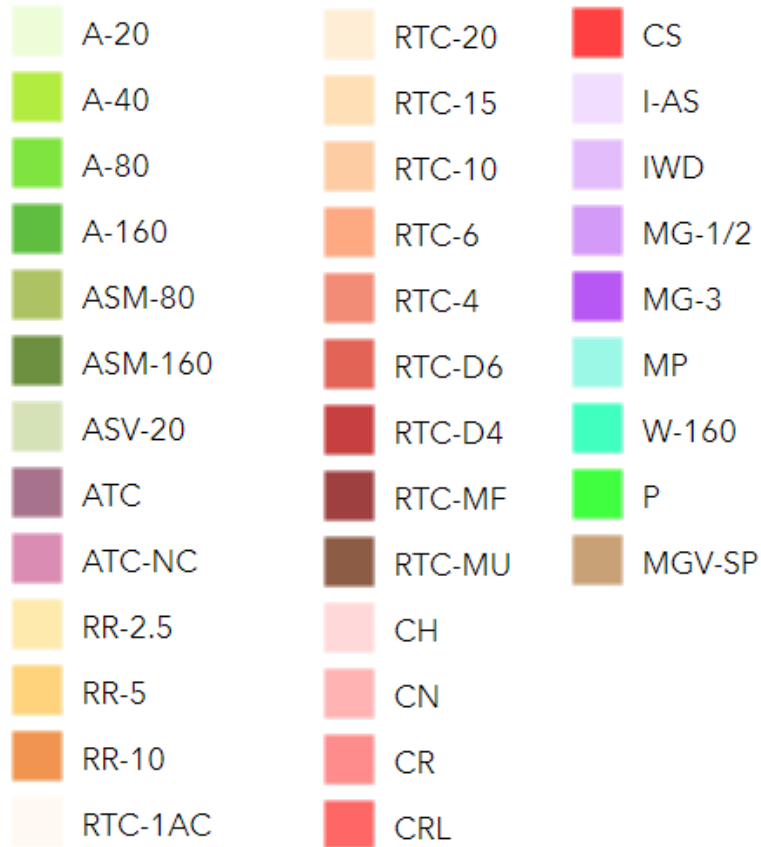
- |   |                         |   |                                     |
|---|-------------------------|---|-------------------------------------|
|    | Agriculture             |  | Urban Project Area                  |
|    | Park and Recreation     |  | Urban Residential                   |
|    | Incorporated Area       |  | Rural Residential                   |
|    | Public/Quasi-Public     |  | Traditional Community - Residential |
|    | General Industrial      |  | Traditional Community - Mixed Use   |
|    | Limited Industrial      |  | Marsh                               |
|    | Urban Industrial        |  | Water Bodies and Courses            |
|    | Urban Commercial        |  | Water Dependent Industrial          |
|    | Service Commercial      |  | Watershed                           |
|   | Highway Commercial      |   |                                     |
|  | Commercial Recreation   |   |                                     |
|  | Neighborhood Commercial |   |                                     |
|  | Specific Project Area   |   |                                     |

Source: Solano County Resource Management Viewer.  
 "Solano\_County\_Unincorporated\_General\_Plan\_2008\_Updated"



# Solano One Water – Unincorporated County Zoning

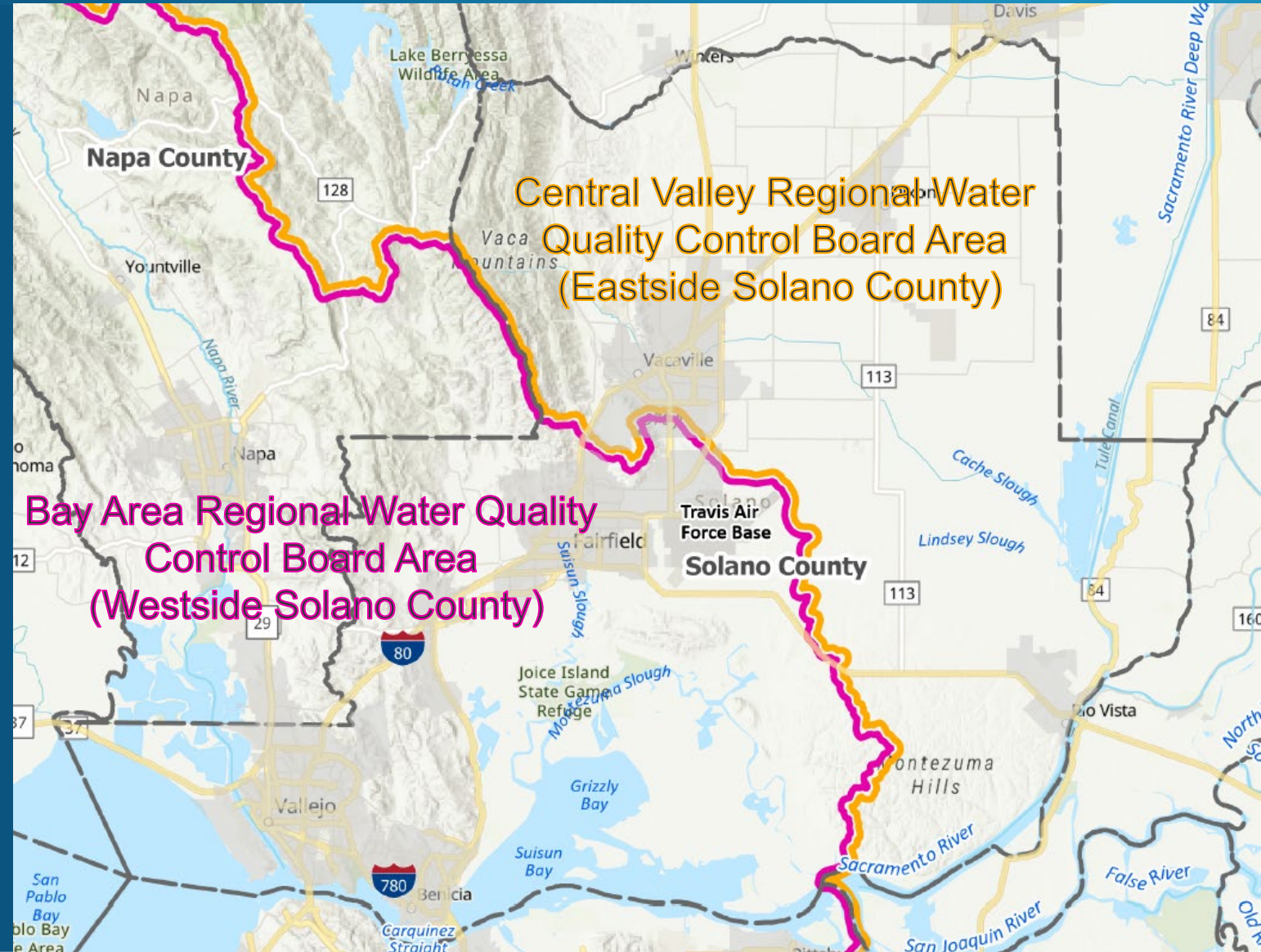
## UNINCORPORATED COUNTY ZONING



Source: Solano County Resource Management Viewer.  
 “Solano County Unincorporated Zoning.”

# PURPOSE AND OUTCOMES OF TODAY'S MEETING

- Review existing conditions and sources of information
- Collect new information
- Discuss Westside challenges
  - Eastside challenges discussed at a previous meeting
- Future meeting reserved for opportunities discussion



# Solano One Water – Summary of Eastside Challenges

Rural Public Water Systems and Domestic Wells	Drainage
<p>Documented groundwater decline in Northwest Focus Area and other local areas (7 dry wells early 2023)</p> <p>Per State’s SAFER database 2 failing water systems, 1 at risk system, and one potentially at risk system</p> <p>Groundwater under direct influence of surface water</p> <p>Poor well construction, risk of contamination</p> <p>Lack of redundancy in water systems</p> <p>Cost of running sophisticated water system with small customer base</p>	<p>Issue with flooding when Yolo Bypass full</p> <p>Poorly draining soils unsuitable for groundwater recharge</p> <p>Development in northern area directs water to undersized ag drainage facilities, spillover</p> <p>Lack of infrastructure for retaining flood waters, desire to put in retention ponds conflicts with preserving ag lands</p> <p>Getting permits to do creek cleaning daunting</p>

# Solano One Water – Summary of Eastside Challenges

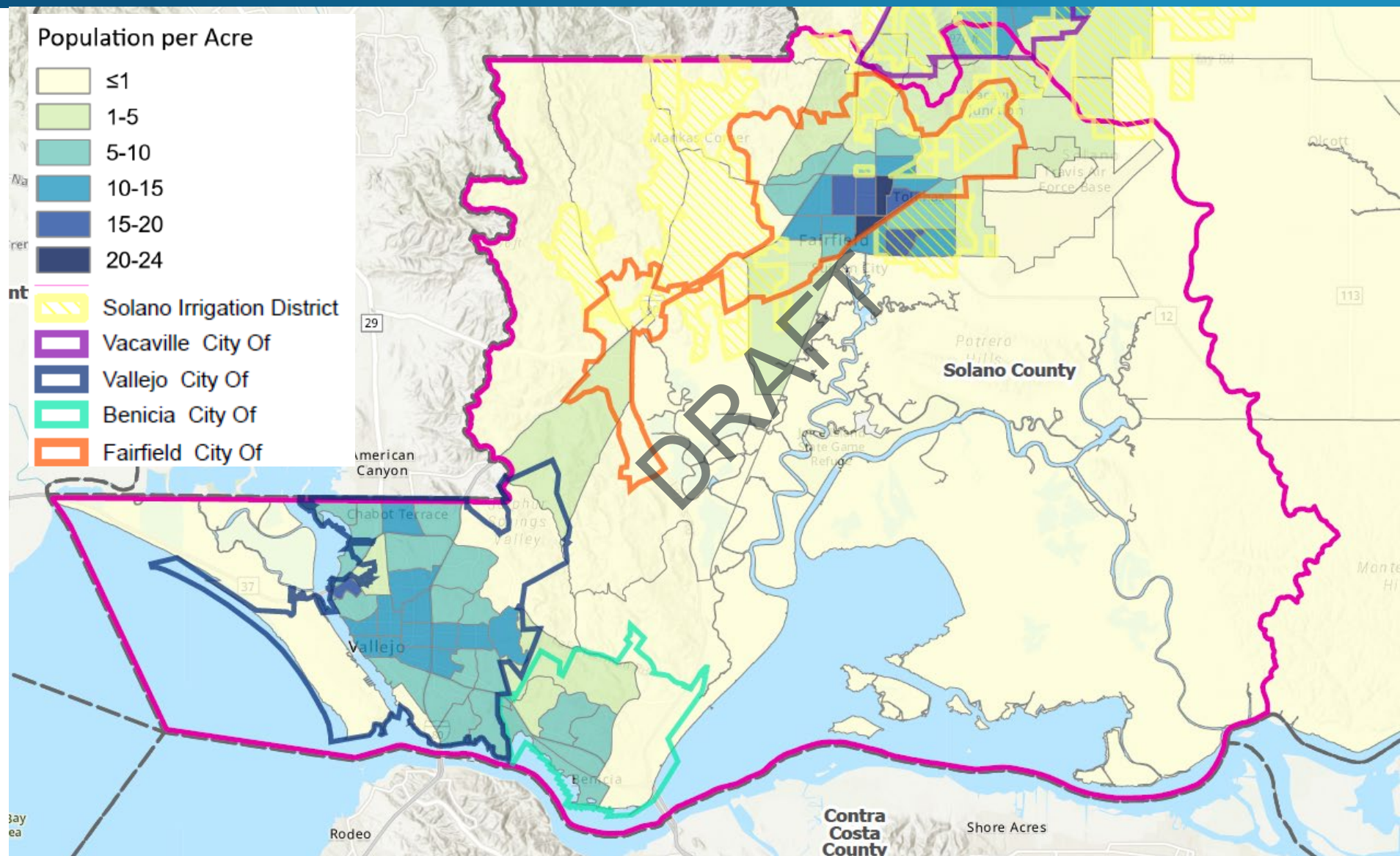
Wastewater/Reuse	Attracting and Maintaining Ag Supporting Businesses
<p>Public perception can discourage farmers from accepting recycled water</p> <p>High strength waste shipped out of Solano County to EBMUD; to limit nitrogen discharge EBMUD may stop accepting food waste</p> <p>Areas where soils unsuitable for septic systems</p>	<p>Uncertainty in water rights discourages some businesses including ag</p> <p>Drainage issues concern for ag supporting businesses</p> <p>Unclear if need to provide on-site wastewater disposal discouraging businesses</p>

# Westside County Population Density


Over 67% of the County's population is concentrated in the Westside County cities

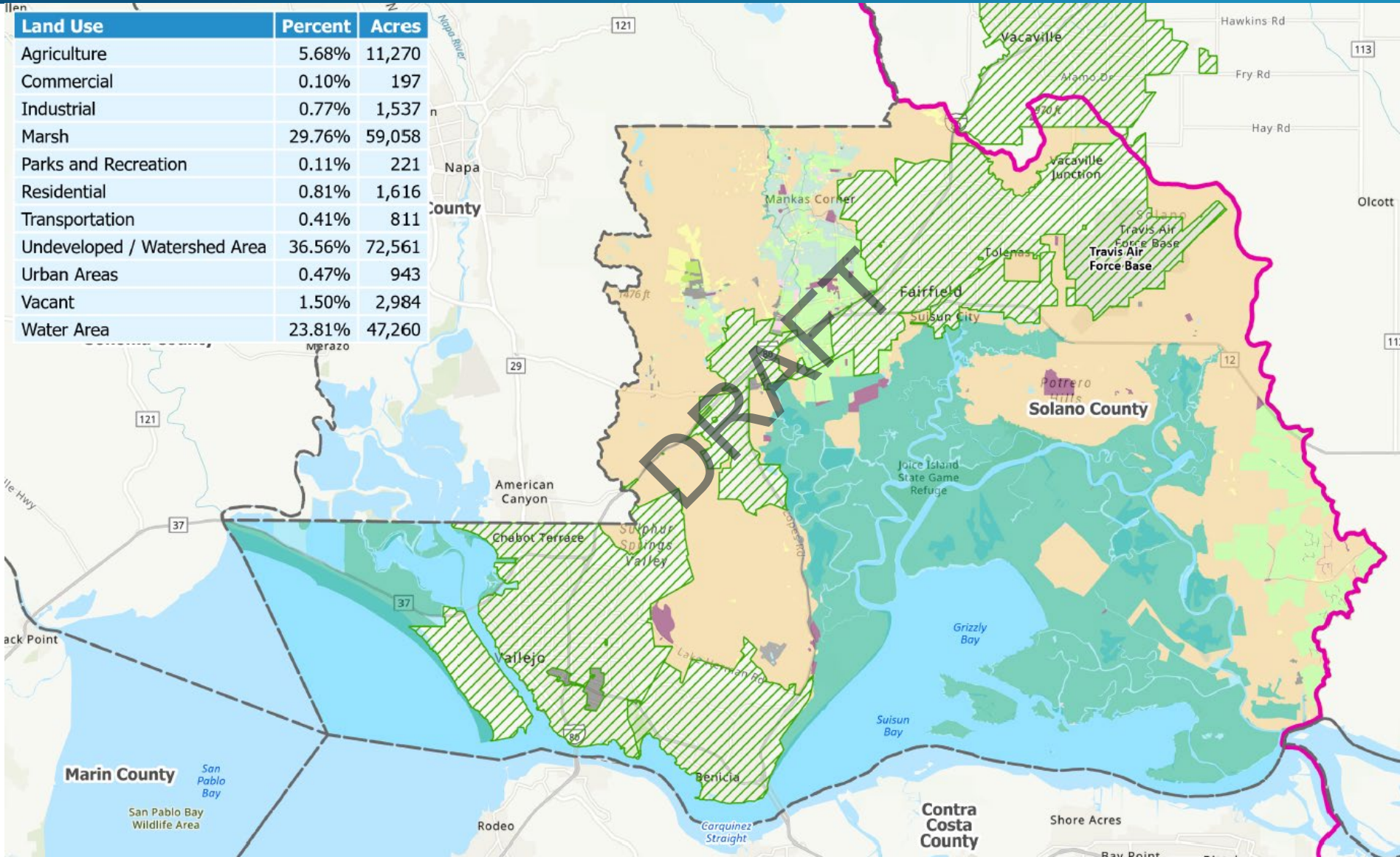
Population Jan 2022		
Rio Vista	9,925	2%
Unincorporated	18,337	4%
Dixon	19,083	4%
Benicia	26,656	6%
Suisun City	28,896	6%
Vacaville	101,257	23%
Fairfield	119,897	27%
Vallejo	123,190	28%
<b>County Total</b>	<b>447,241</b>	

Data from California Department of Finance



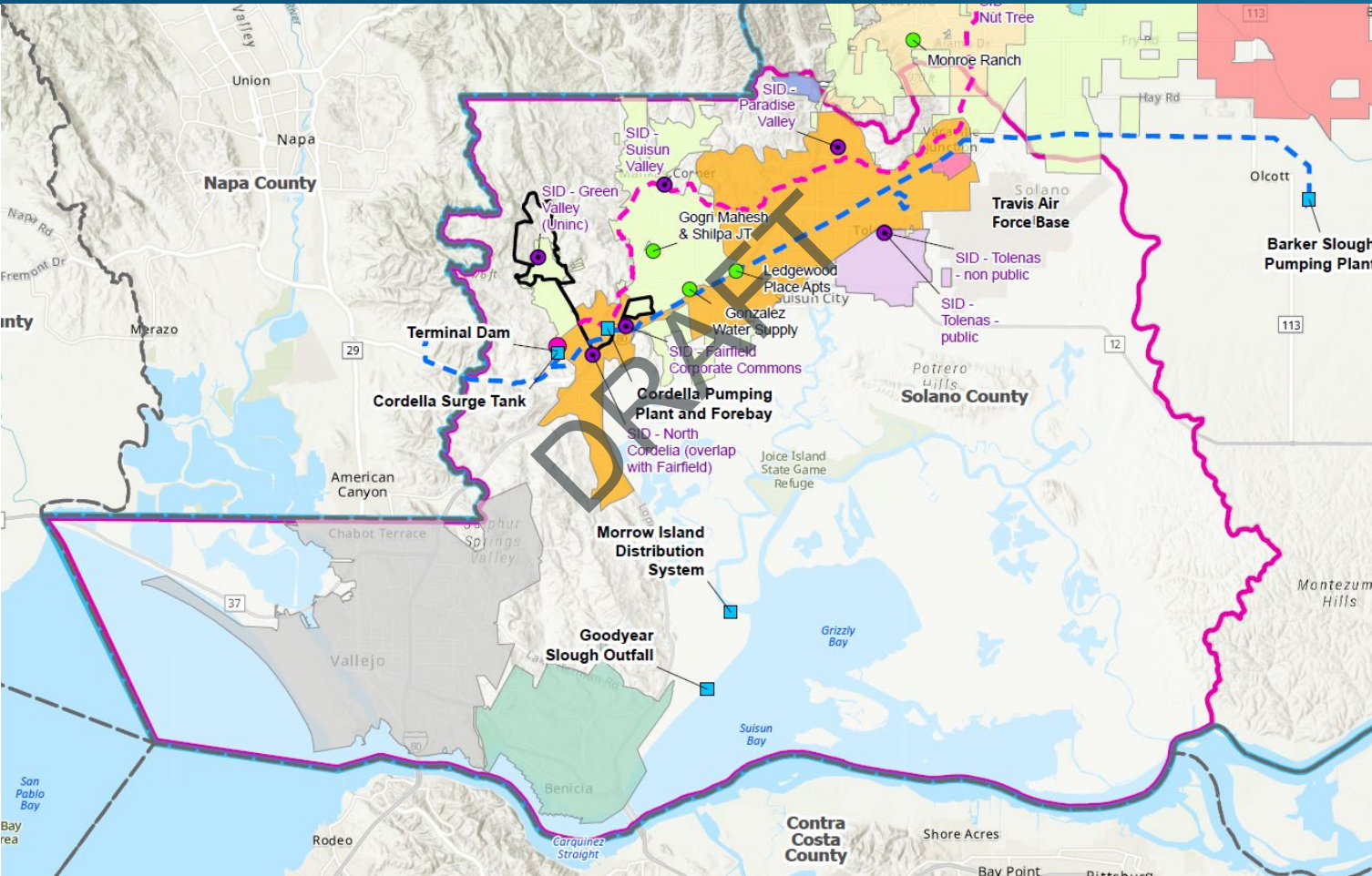
# Westside Land Use by Area

-  San Francisco Bay Regional Board
-  Incorporated Cities
-  Agriculture
-  Commercial
-  Industrial
-  Marsh
-  Parks and Recreation
-  Residential
-  Transportation
-  Undeveloped / Watershed Area
-  Urban Areas
-  Vacant
-  Water Area



# Water Source Areas – Western County

Lakes WS GIS – update pending



- SID Non-Public Water Systems
- County Regulated State Small Water Systems
- State Water Project Facility
- Solano Project Facility
- Putah South Canal
- North Bay Aquaduct
- San Francisco Bay Regional Board
- City Of Benicia
- City Of Fairfield
- City Of Vacaville
- City Of Vallejo
- Maine Prairie Water District
- Solano County Water Agency
- Solano Irrigation District
- Reclamation District No 2068
- Reclamation District No 2098
- Reclamation District No 501
- SID - Blue Ridge Oaks
- SID - Elmira
- SID - Gibson Canyon
- SID - Peabody

- Surface Water:
  - Solano Project
  - State Water Project
  - Diversions
- Groundwater is not used in municipal supplies
  - Napa Sonoma Lowlands Basin – provides about 32% of supply very west side of County
  - Suisun-Fairfield Valley Basin has poor water quality and is used by few

- SID - Pleasant Hills Ranch
  - SID - Quail Canyon
  - SID - Suisun Solano Water Authority
  - Lakes System Boundary
- OR WATER MASTER PLAN –  
CORPORATED SOLANO COUNTY

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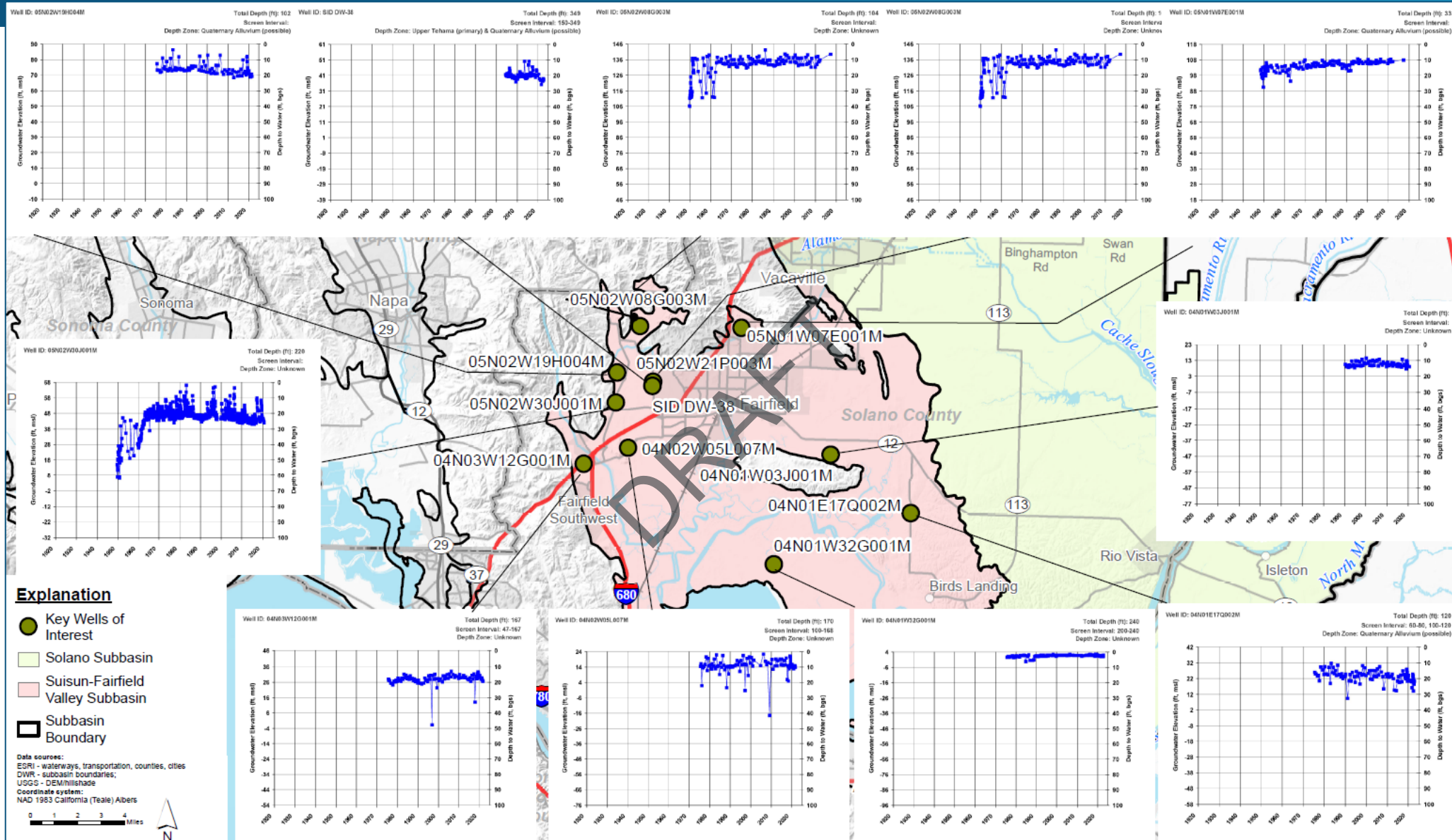
Summary  
Next Steps



# Existing Challenges: Rural Public Water Systems and Domestic Wells

# Westside Groundwater Conditions

- Stable levels
- Higher salinity
- Limited public water supply wells



# Public Water System Classification

- Public Water System (PWS) = 15 or more connections or serves at least 25 individuals daily at least 60 days of the year
- PWS with < 200 service connections can be regulated by County as local primacy agency (Solano Co has none)

Type of PWS	# of connection/residents	Regulated by
Community Water System	At least 15 service connections of year long residents* OR Regularly serves at least 25 year long residents*	State Water Resources Control Board – Division of Drinking Water
Non community water system	PWS that is not a community water system	
a. Nontransient non community water system	Regularly serves 25 or more of the same persons over six months per year	
b. Transient non community water system	Does not regularly serve 25 or more of the same persons over six months per year	

\* Resident = a person who physically occupies the same dwelling for at least 60 days of the year

# Other Water System Classifications





Type of WS	# of connection/residents	Regulated by
State Small Water Systems	Not a PWS Serves 5 – 14 service connections at least 60 days per year	Solano County – Env. Health (Dept. Of Resource Mgmt.)
Other	Serves < 5 service connections	System not regulated by State nor County, Solano County regulates well construction permitting for all wells County-wide
Private	for private residence	Solano County regulates well construction permitting, needs 3 gallons/minute per County Building Code

# Existing Activities/Resources for Rural PWS/Domestic Wells



- County Drought Contingency Plan (SB552)
  - In process
  - To coordinate with S1W Effort
- DWR Dry Well Reports
- State Water Resources Control Board Safe and Affordable Funding for Equity and Resilience Program (SAFER Program: <https://www.waterboards.ca.gov/safer/>)
- Local Hazard Mitigation Plan

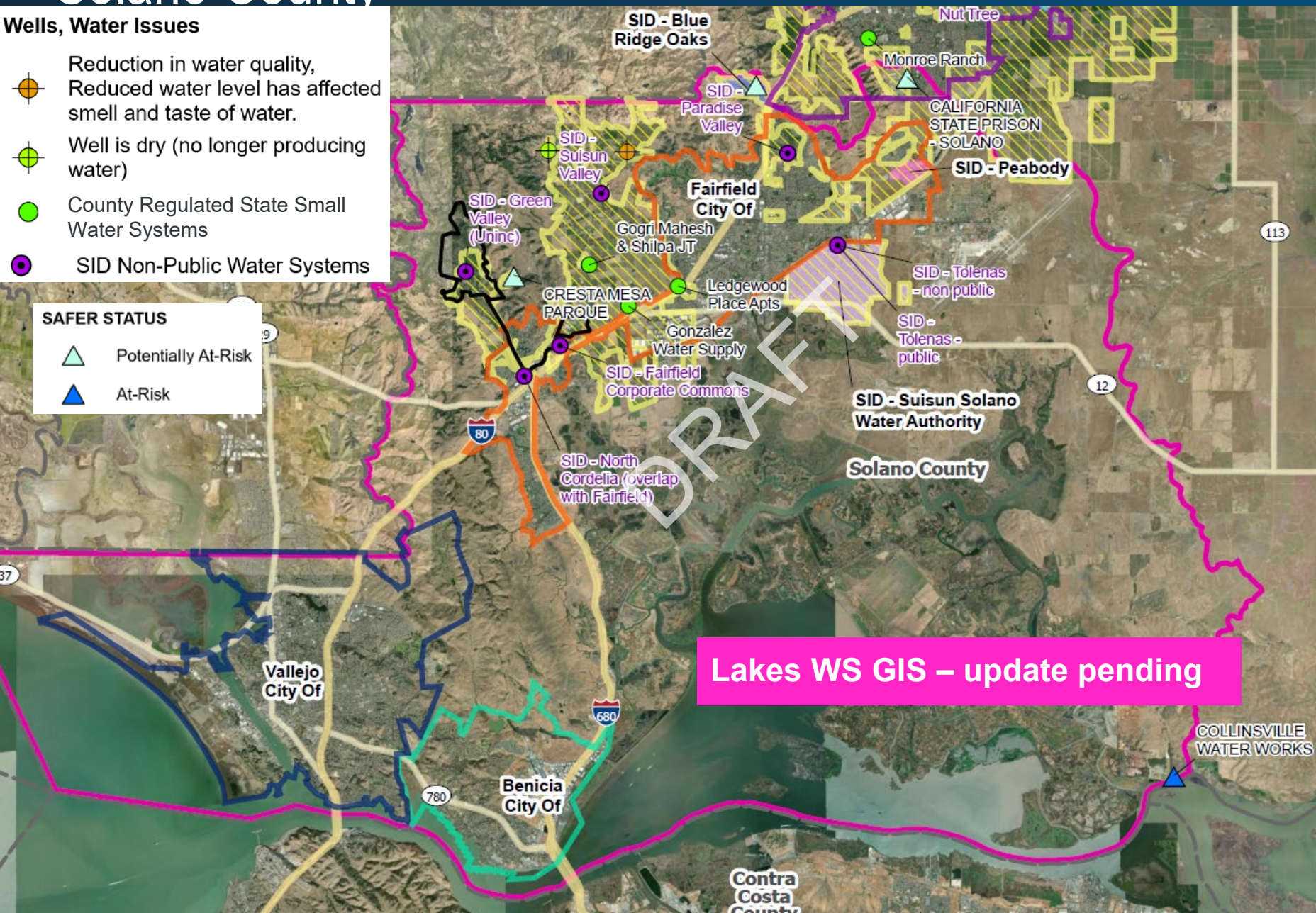
# Rural PWS, Domestic Wells, and Non-Public Water Systems in Western Solano County

## Wells, Water Issues

-  Reduction in water quality, Reduced water level has affected smell and taste of water.
-  Well is dry (no longer producing water)
-  County Regulated State Small Water Systems
-  SID Non-Public Water Systems

## SAFER STATUS

-  Potentially At-Risk
-  At-Risk

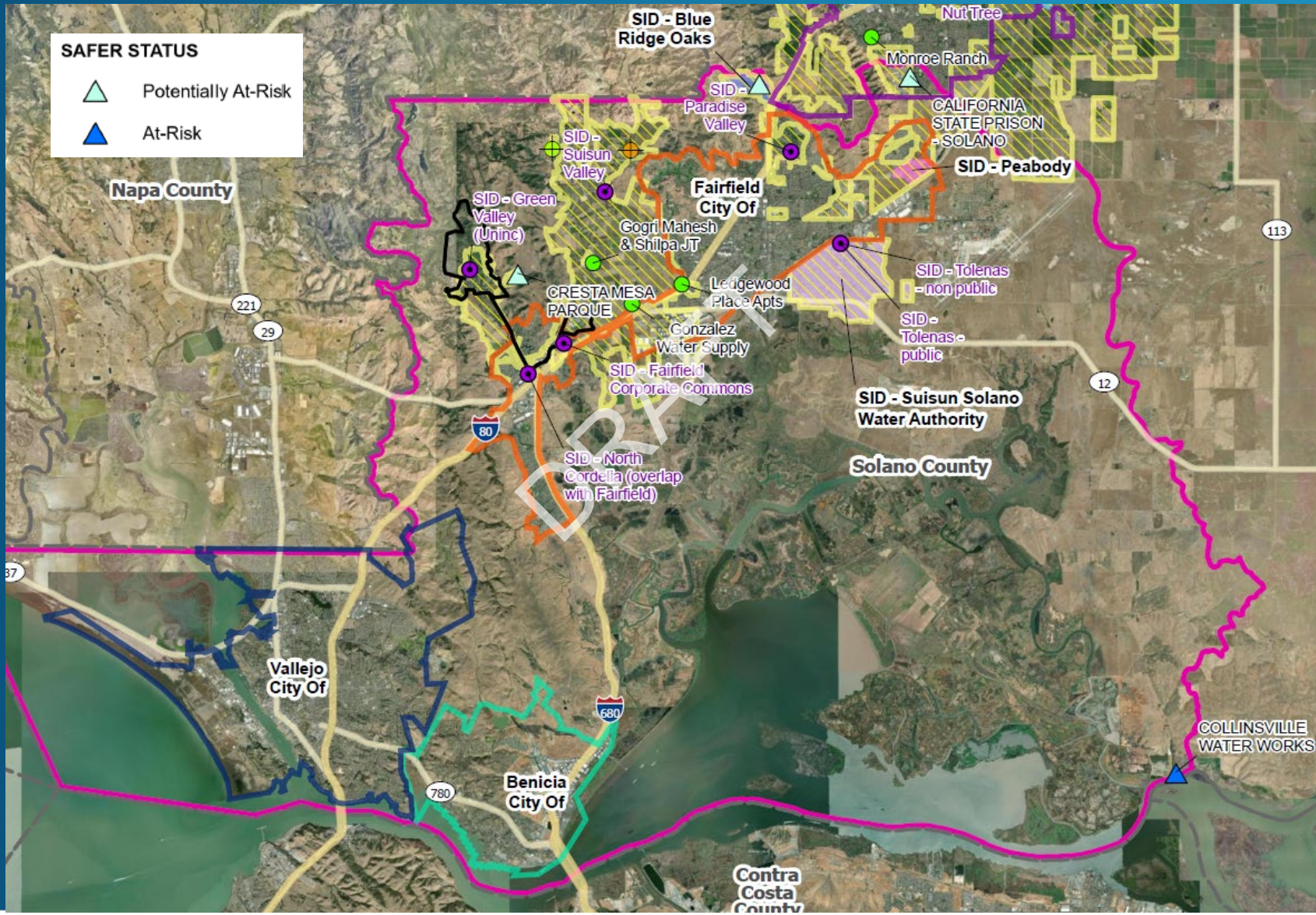


- 4 “Larger” PWS in and adjacent to the urbanized areas, including the Suisun Solano Water Authority
- Rural(ish) PWS include
  - SID Peabody System (Fairfield)
  - SID Blue Ridge Oaks (adjacent to Fairfield and Vacaville)
  - Lakes Water System
- SID Non-Public Water Systems (6)
- Solano Co regulates 3 State Small Water Systems
- Private wells – some of which have identified issues

# SAFER 2023 Drinking Water Needs Assessment

Lakes WS GIS – update pending

- Vulnerability status based on:
  - # of system connections
  - # of sources
  - Lack of intertie
  - Cost of Service
  - Fractured rock
  - Water quality
- Of the 26 PWS regulated by DDW in the County:
  - Failing: 2 on Eastside (population 214)
  - At-Risk: 1 (population 25)
  - Potentially At-Risk: 6 (population 17,246)
  - None have received state funding since 2017)
- State Small WS (not in SAFER):
  - Water quality issues re septic and arsenic



# Summary of Initial Needs/Challenges: Rural PWS and Domestic Wells

- To what degree is providing water-related support to rural PWSs and domestic wells a challenge in this part of the County?
- Poor groundwater quality, particularly in Suisun Fairfield Valley Groundwater Basin
- Localized rural areas having issues with lowered groundwater levels
- Groundwater under the direct influence of surface water/seawater intrusion near Suisun Marsh
- Besides list above, what other needs and challenges for rural PWS and domestic wells?

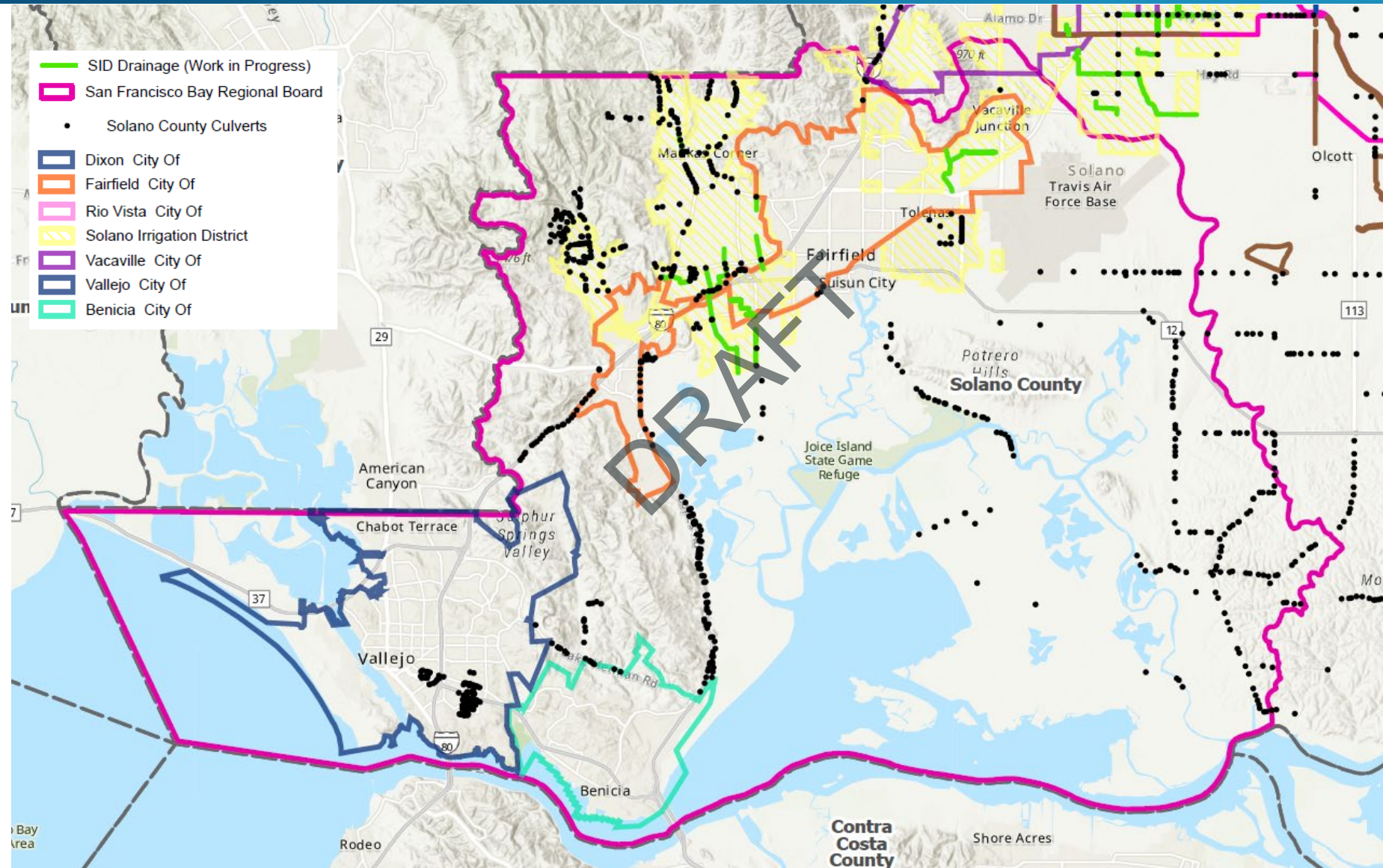




# Existing Challenges: Drainage

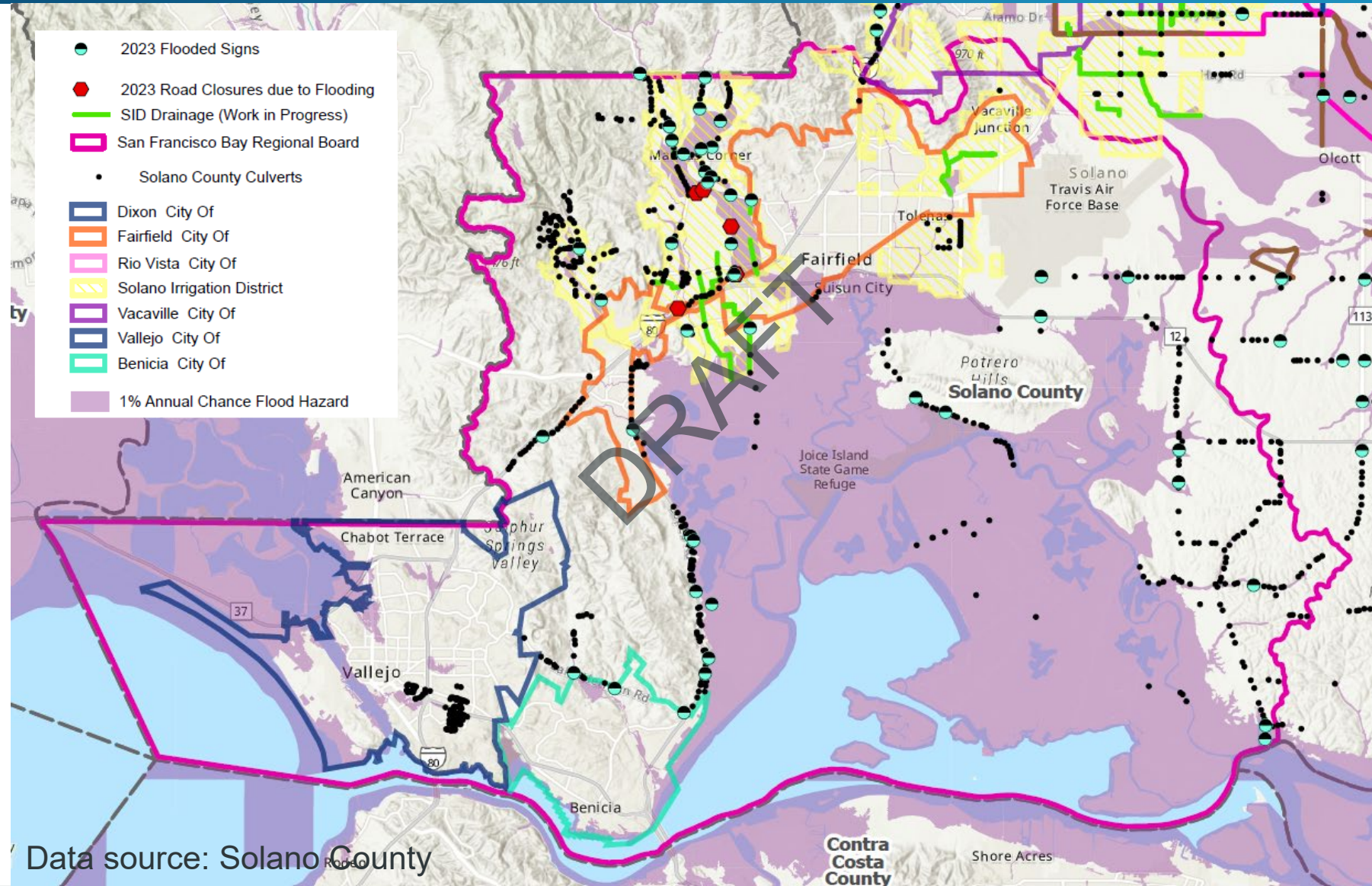
# Existing Drainage Facilities

- SID
  - County Culverts
- For Discussion:
- Any others?
  - How do these facilities perform?
  - Are they candidates for Managed Aquifer Recovery?

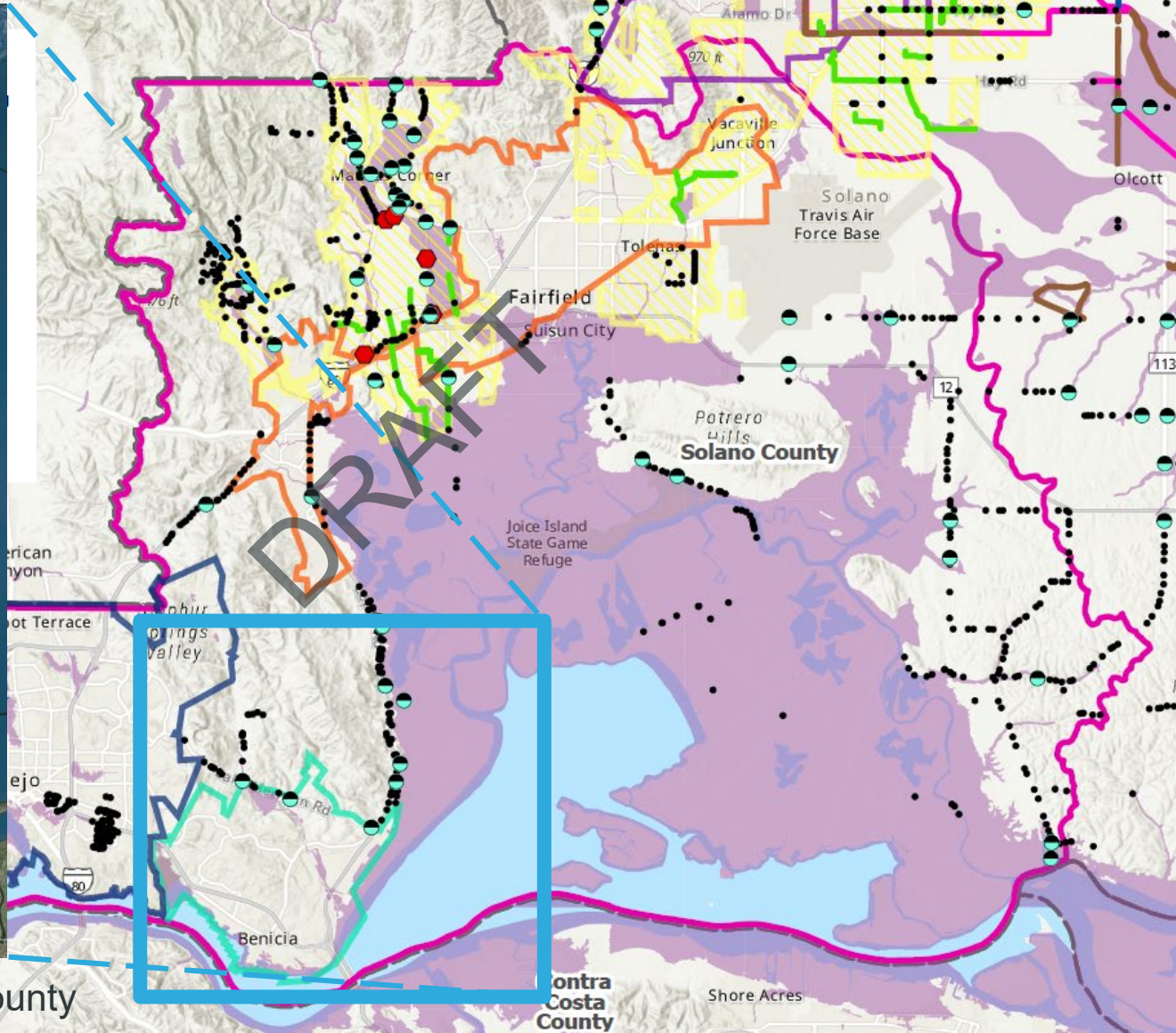


# Areas Prone to Flooding

- Did these areas flood Dec 2022 – March 2023?
- For how long did the flooding last?
- Why did the flooding occur?
  - Vegetated channels
  - Blocked culverts?
  - Other?
- Who do these flooded areas impact the most?
- Next step – update with infrastructure
  - Are channels/ detention undersized?
  - Are they near flood channel systems?

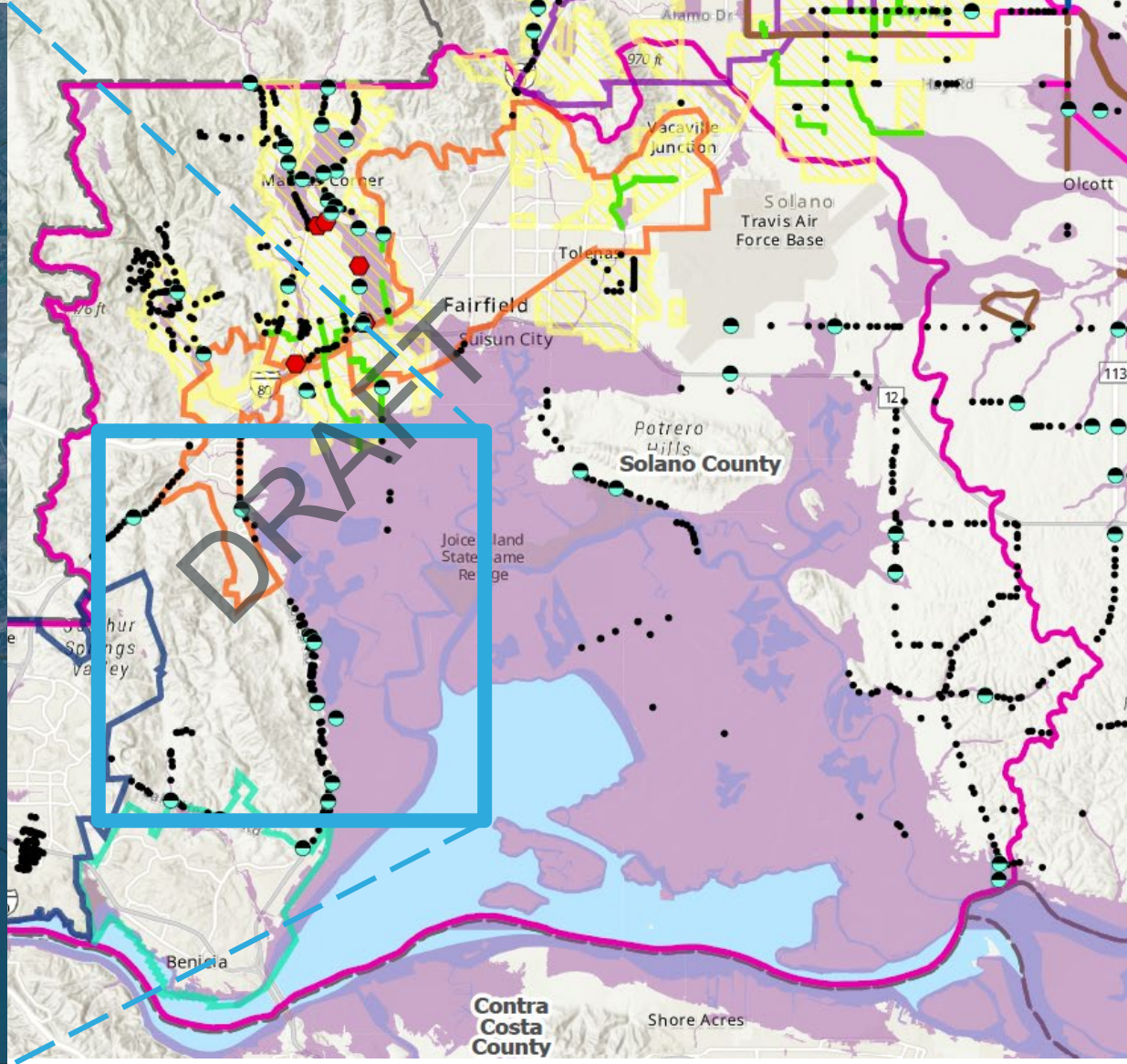


# Areas Prone to Flooding – Impacts to Developments

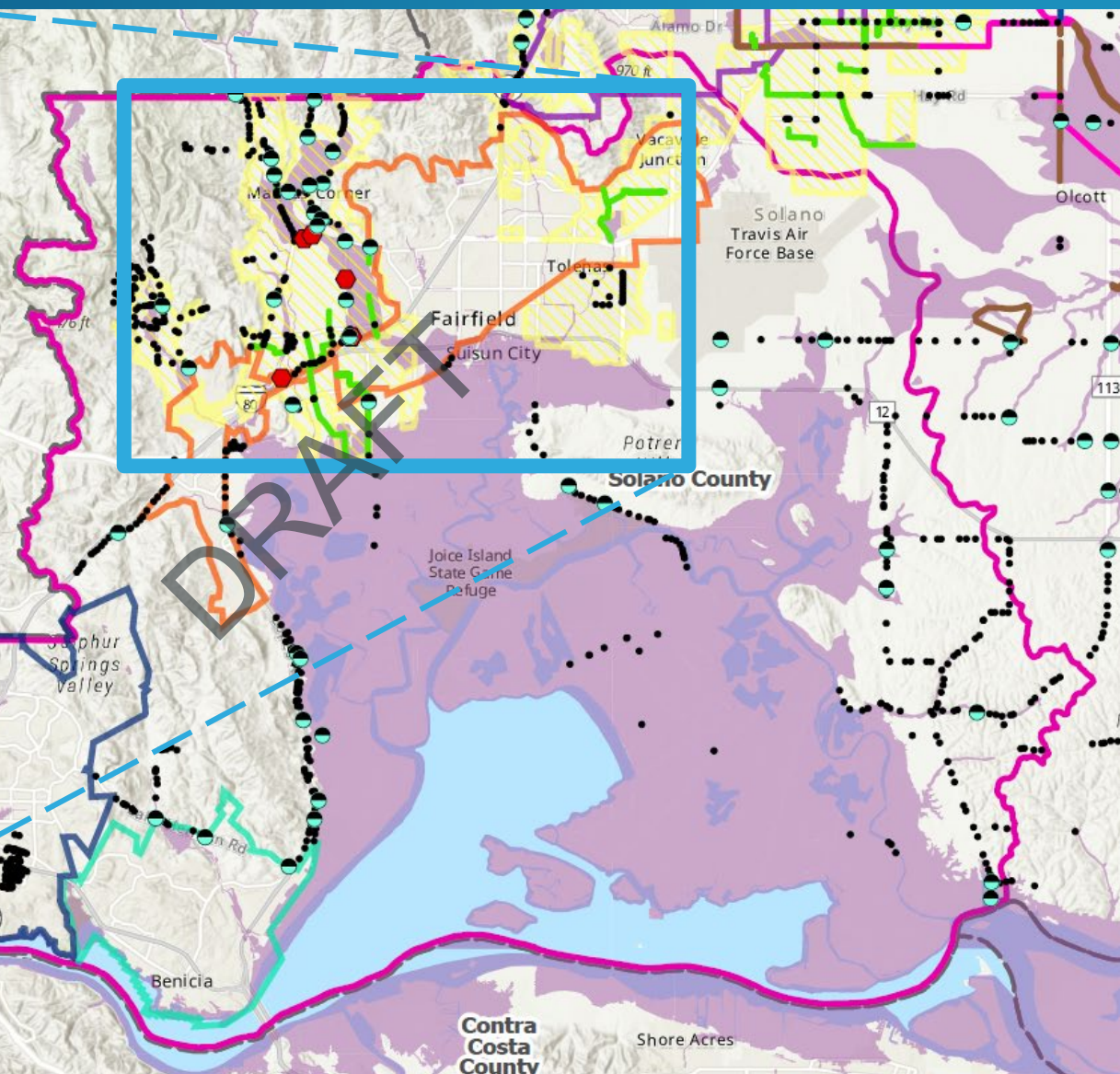
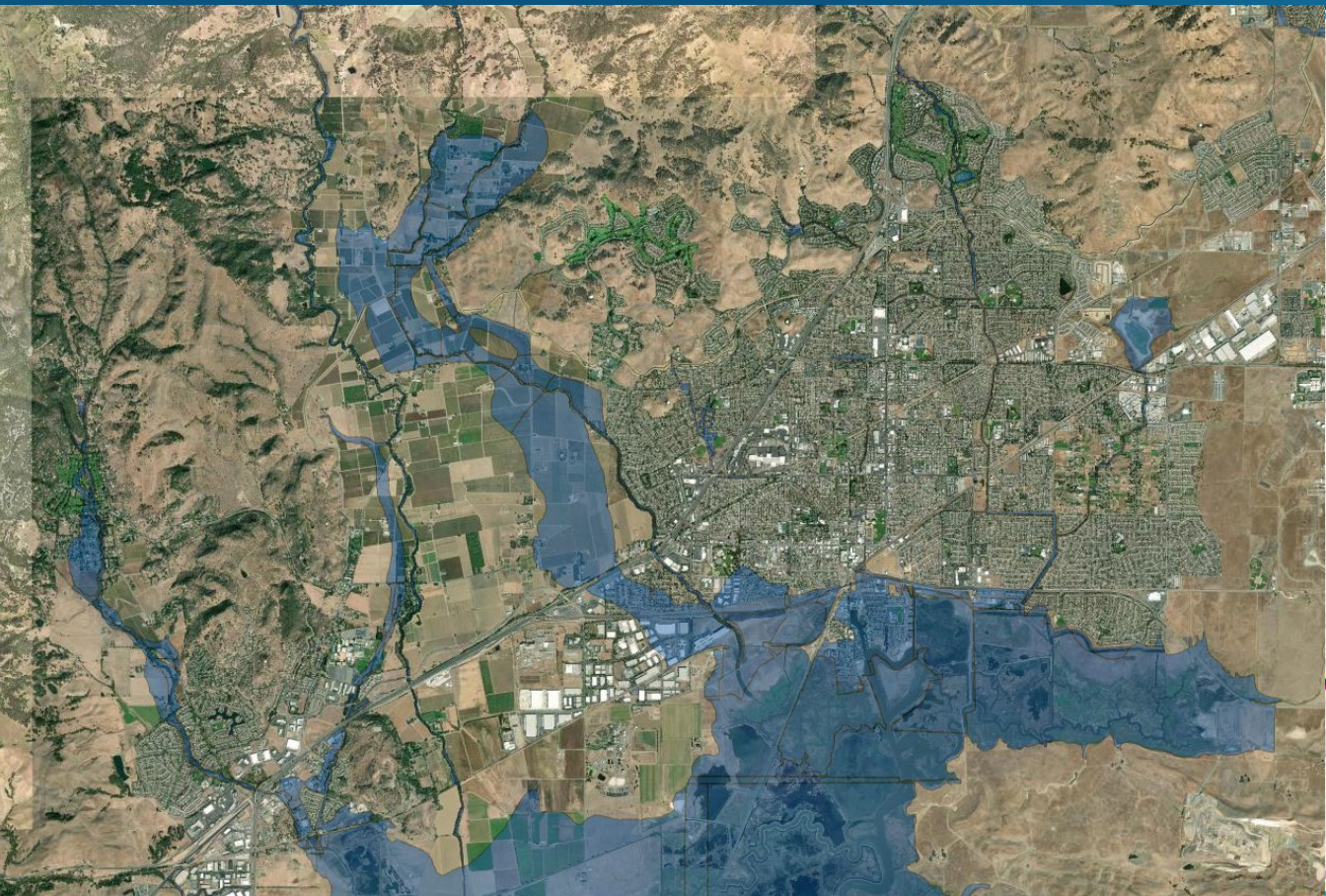


Data source: Solano County

# Areas Prone to Flooding – Impacts to Developments



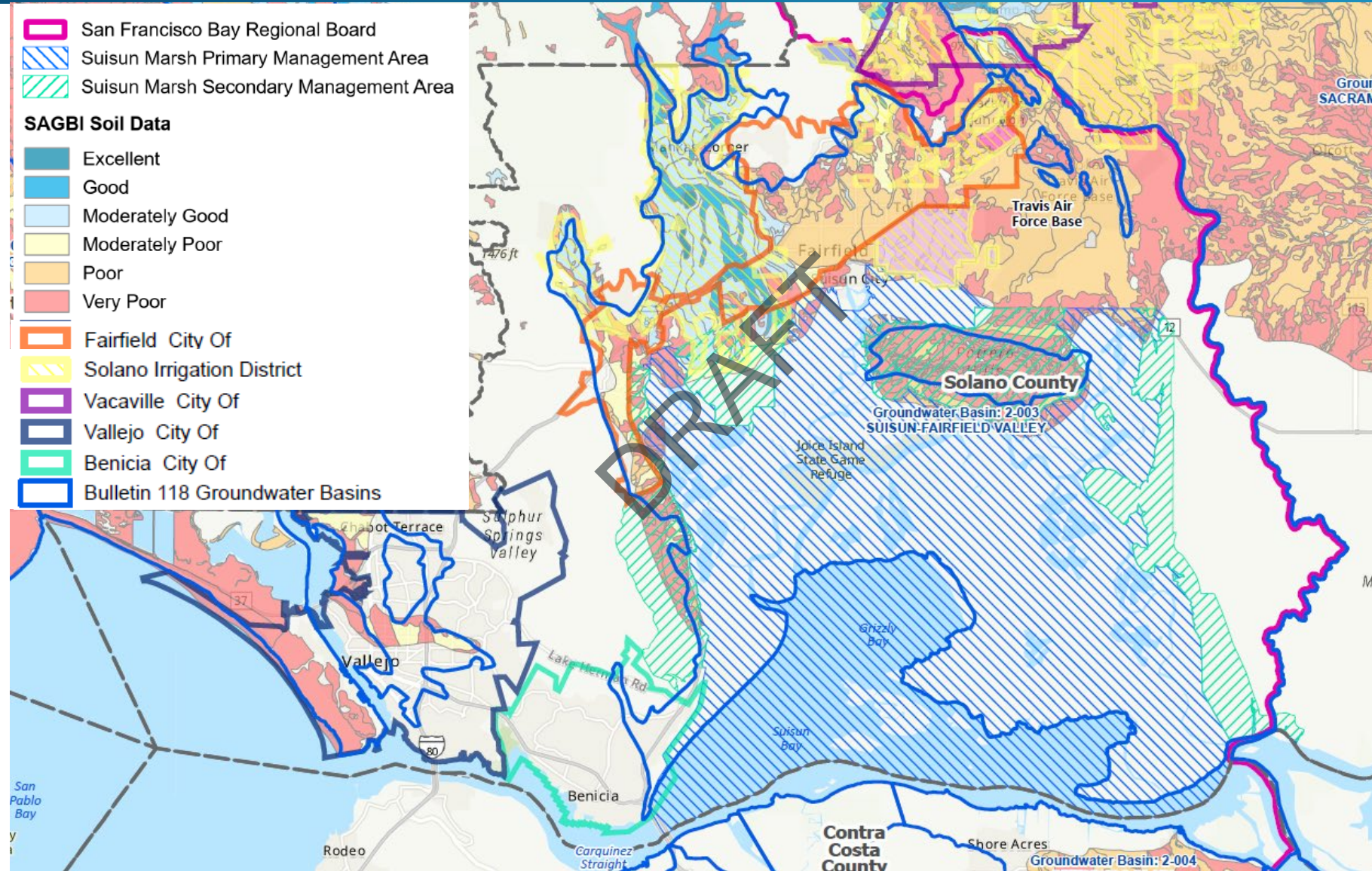
# Areas Prone to Flooding – Impacts to Developments



Data source: Solano County

# Areas Conducive to Recharge (for reducing flood impacts)

- Existing efforts to develop multi-benefit recharge projects and locations:
  - High GW recharge potential
  - Environmental benefits
  - Practical recharge methods depending on individual site conditions
- Needs and challenges include:
  - Field verification to verify recharge rate
  - Willing landowner/ access areas and land use/crop alignment
  - Infrastructure needs
  - Permits/approvals



# Summary of Initial Needs/Challenges: Drainage

- Loss of conveyance capacity due to aquatic nuisance vegetation
- Lack of adequate flood control infrastructure (storage?) in low density rural areas
- Lack of region-wide sponsors for flood control infrastructure and maintenance
- Lack of comprehensive, up to date, geospatial mapping of areas with flood and drainage issues
- Runoff water quality
- Return flow vs storm drainage water for supply and reuse
- Coordination with Marsh Plan and related entities
- Shallow groundwater



# Discussion: Drainage Needs and Challenges

- To what degree is drainage an issue in this part of the County?
- What is the major factor(s) in drainage issues?
  - Are they localized or more widespread?
  - Are they only during large storms or during small storms as well?
- Are there areas we have not identified that have drainage issues?
- What are the group's thoughts on Managed Aquifer Recharge?

# Existing Challenges: Wastewater Treatment/Recycled Water/Water Reuse/Disposal

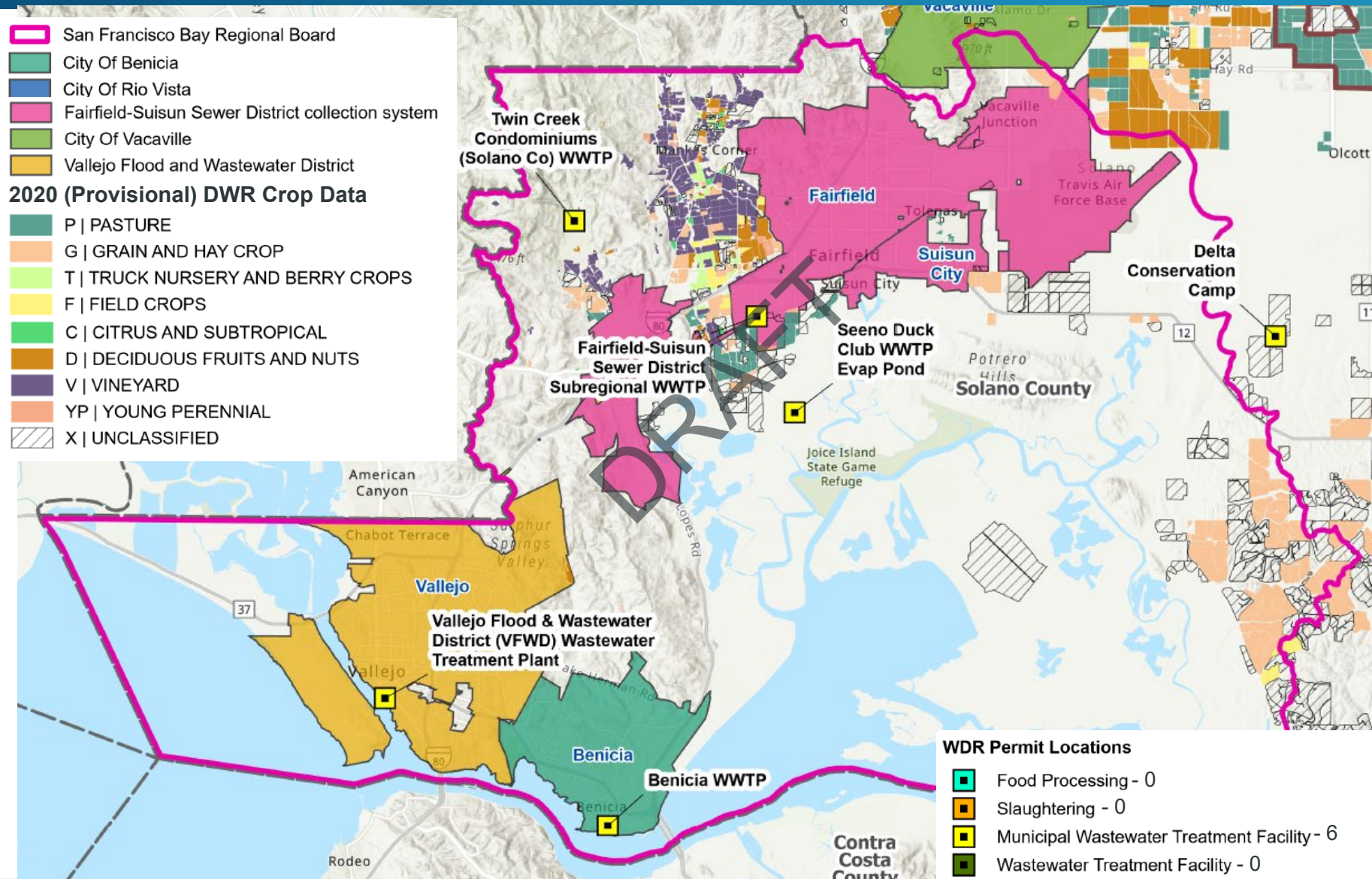
# Wastewater Treatment/Recycled Water/Water Reuse/Disposal

16 Other Regulated Facilities – Industrial Stormwater (14) and Waivers for WDR (2) (not mapped):

- Cannabis Sites – 2
- Industrial Food Preparations and others – 7
- Industrial Malt Beverages – 3
- Wineries – 4

-WDR Waivers are issued for discharges of <1,000,000 gallons/year to land

-WDRs are issued for disposal to land



# Summary of Initial Needs/Challenges: Wastewater Treatment/Recycled Water/Water Reuse/Disposal

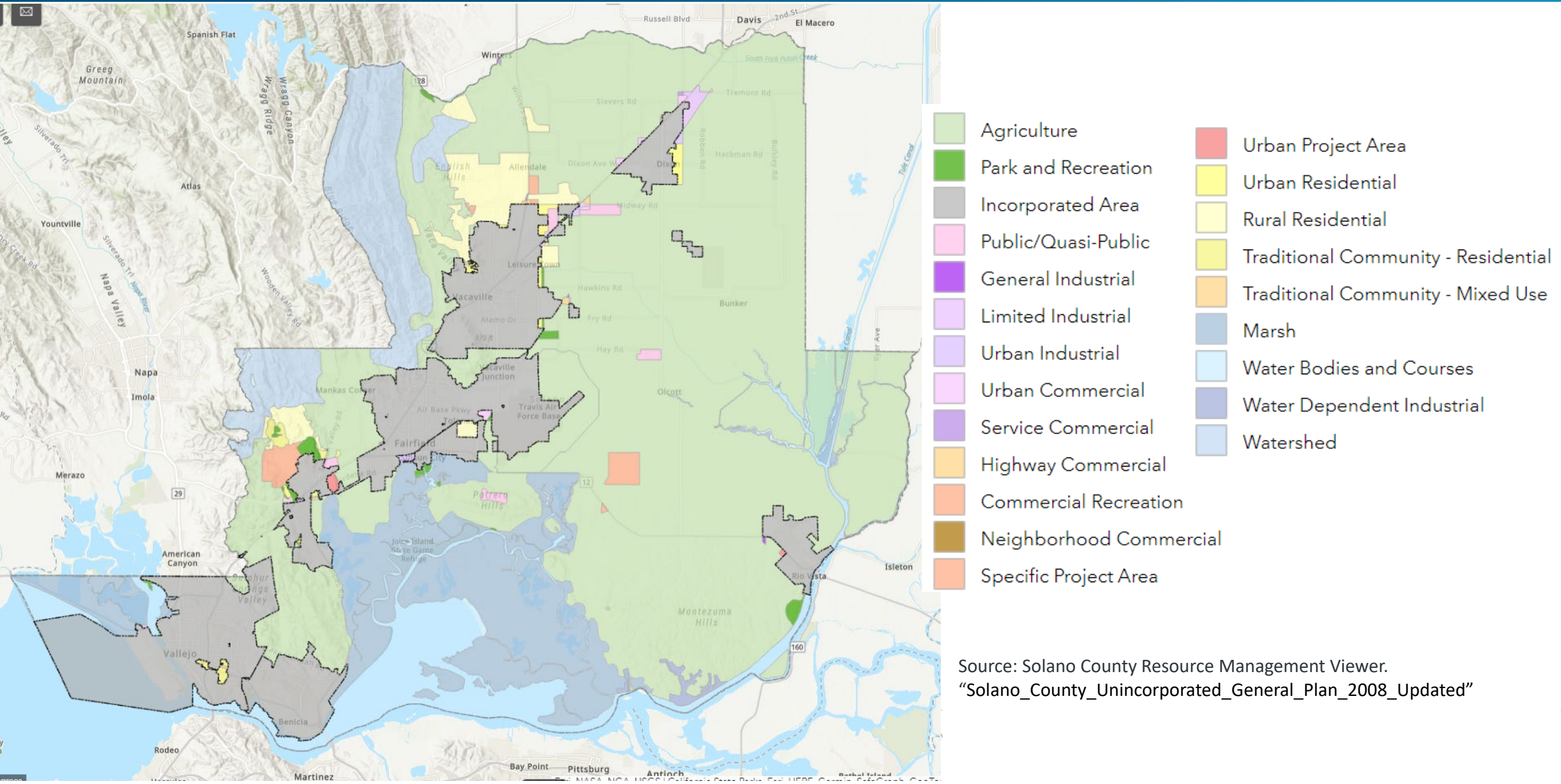
- Historical problem areas limiting recharge for disposal
- Municipal WWTPs facing potential nutrient discharge limits to SF Bay

# Discussion: Wastewater Treatment/Recycled Water/Water Reuse/Disposal Needs and Challenges

- To what degree is wastewater treatment/recycled water/water reuse/disposal a challenge in this part of the County?
- Are growers or municipal treatment facilities willing to accept nutrient-rich water or processed high-strength waste?
- Is the need to run onsite wastewater treatment systems discouraging ag supporting businesses?
  - Do connection requests to consolidated wastewater service providers come from potential businesses that are located outside of service area?
- Is there any evidence of failing septic?
- Are there issues with poor soils limiting septic system performance?

# Existing Challenges: Attracting and Maintaining Ag Supporting Services

# General Plan Land Use - Unincorporated County



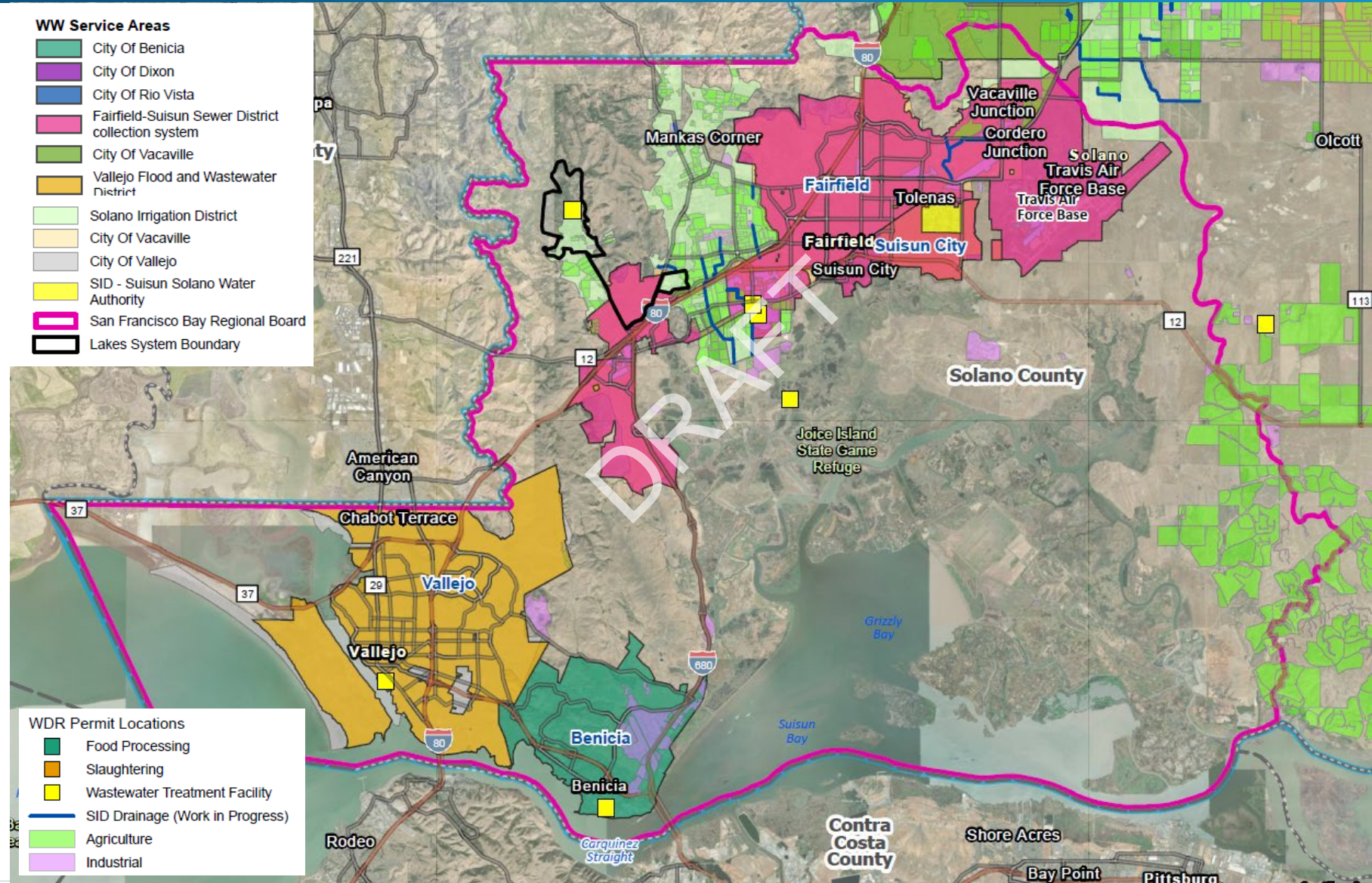
# Ag-Support Areas

Lakes WS GIS – update pending

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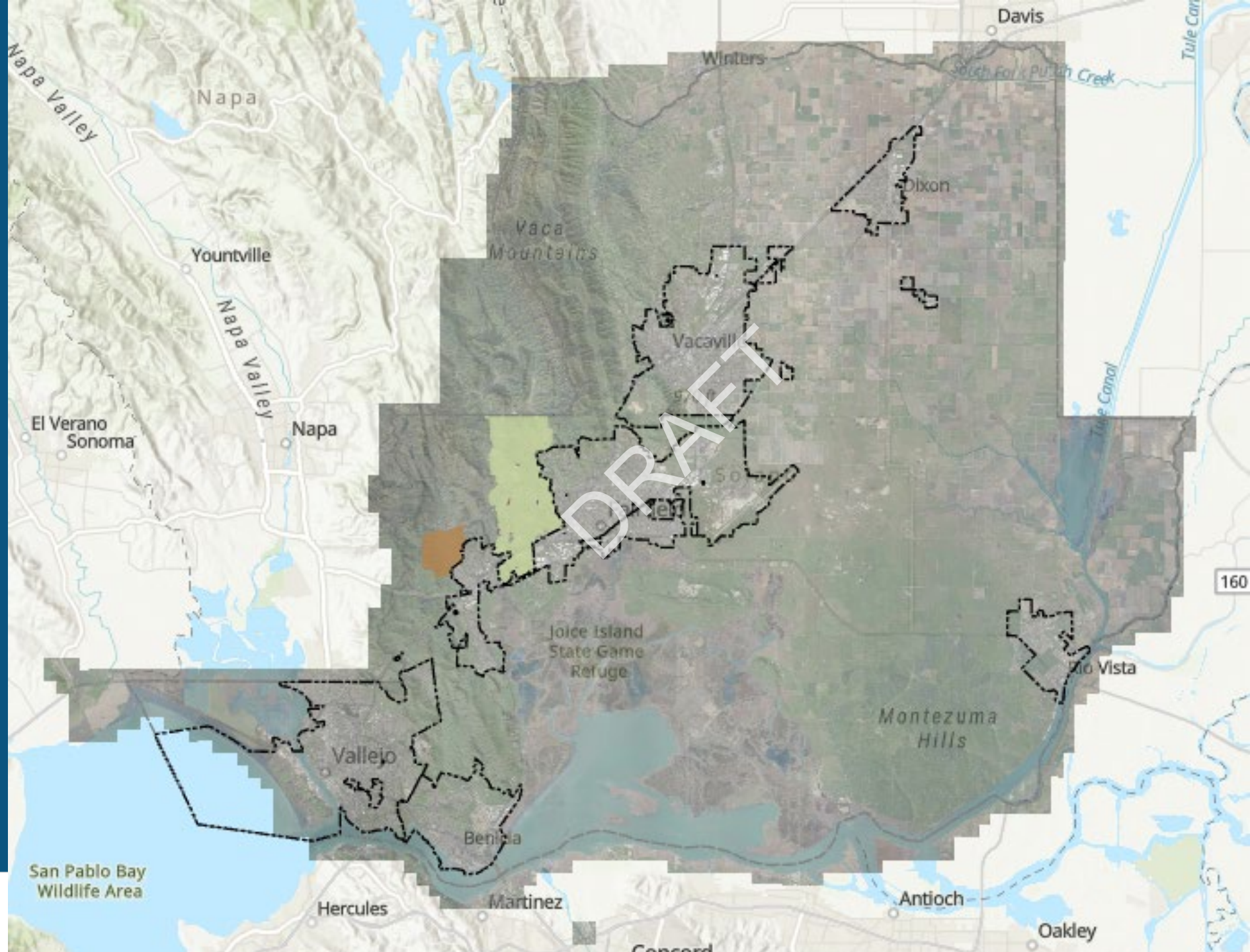
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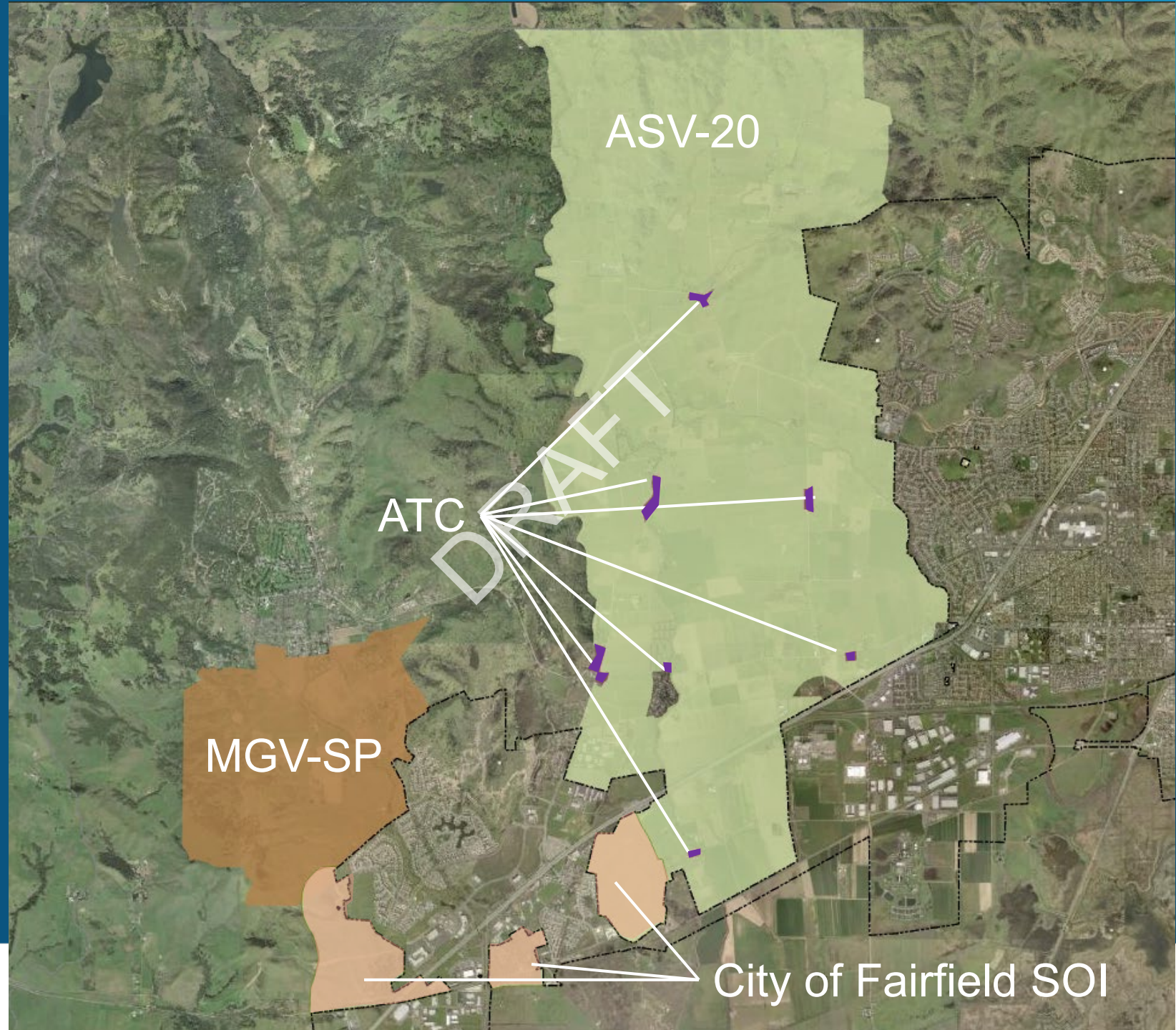
# Ag Tourism Areas

- ASV-20: Suisun Valley Agriculture
- ATC: Agricultural Tourist Center
- MGVS-SP: Middle Green Valley Specific Plan



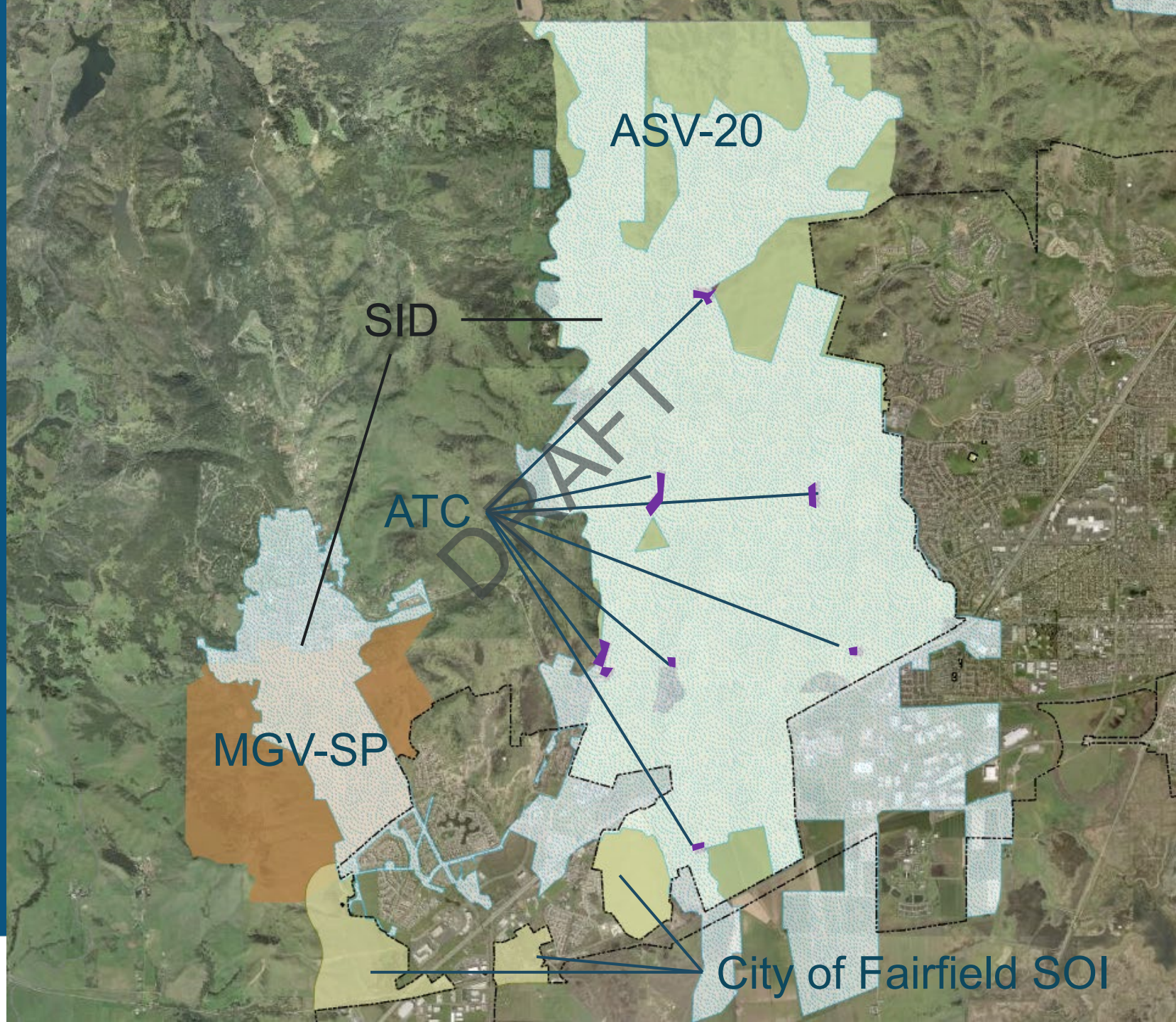
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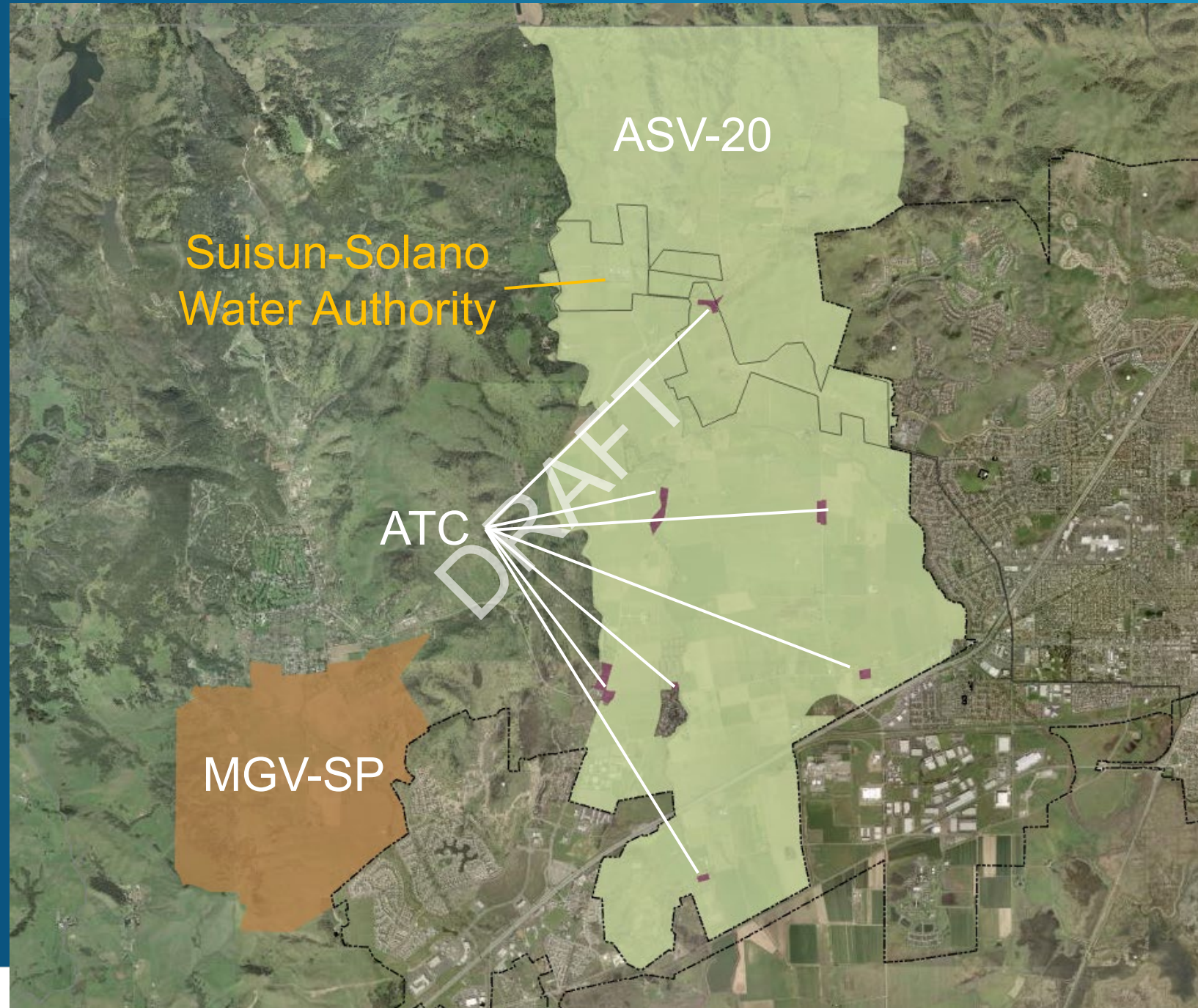
# Ag Tourism Areas with SID boundary and Fairfield SOI

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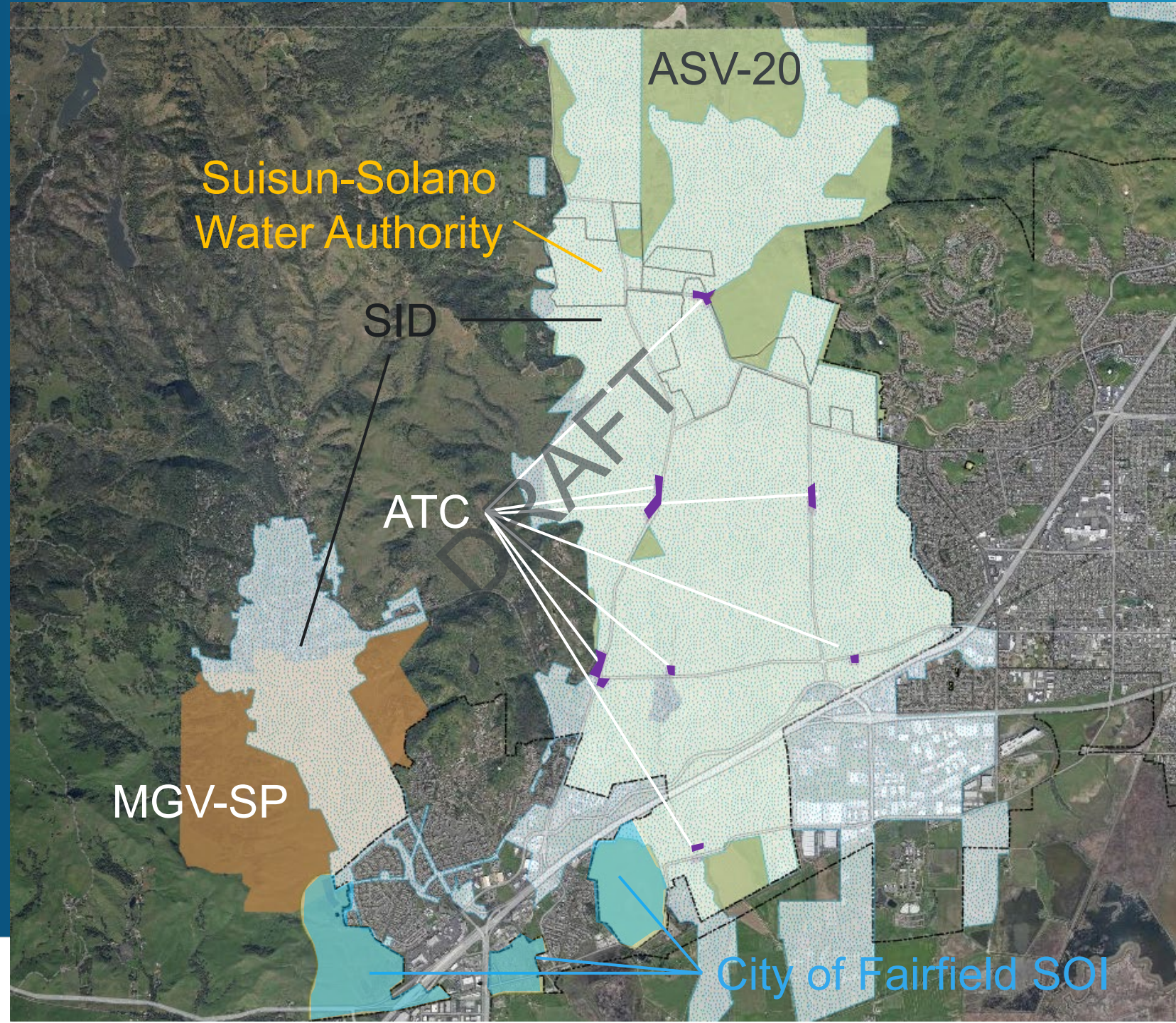
# Ag Tourism Areas with SSWA

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- MGV-SP: Middle Green Valley Specific Plan



# Ag Tourism Areas and Combined Water Boundaries

- ASV-20: Suisun Valley Agriculture
- ATC: Agricultural Tourist Center
- MGV-SP: Middle Green Valley Specific Plan



# Summary of Initial Needs/Challenges: Attracting and Maintaining Ag Supporting Services

- Lack of housing/water/wastewater systems limiting agricultural serving businesses & Ag-worker housing

# Discussion: Attracting and Maintaining Ag Supporting Services Needs and Challenges

- To what degree is providing water-related support to ag a challenge in this part of the County?
- Does lack of service limit ag development?

# Existing Water Challenges: Others?



# Discussion: Other Challenges?

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- Steering Committee Meeting #4 – Issues Wrap-up, Identify Key Data Gaps, and Opportunities to Address Challenges – July 26, 2023, 10:30 am - 12:15 pm
- Draft Framework Section: Summary of findings of Needs and Challenges – Under Preparation – late summer
- Draft Bulletin: Fall 2023
- Steering Committee Meeting #5 – Framework Objectives and Criteria – September