Review of Scope for Task 5. Develop Crop Sensitivity Tools

Technical Advisory Committee Meeting

November 9, 2012

John Dickey, LWA Team

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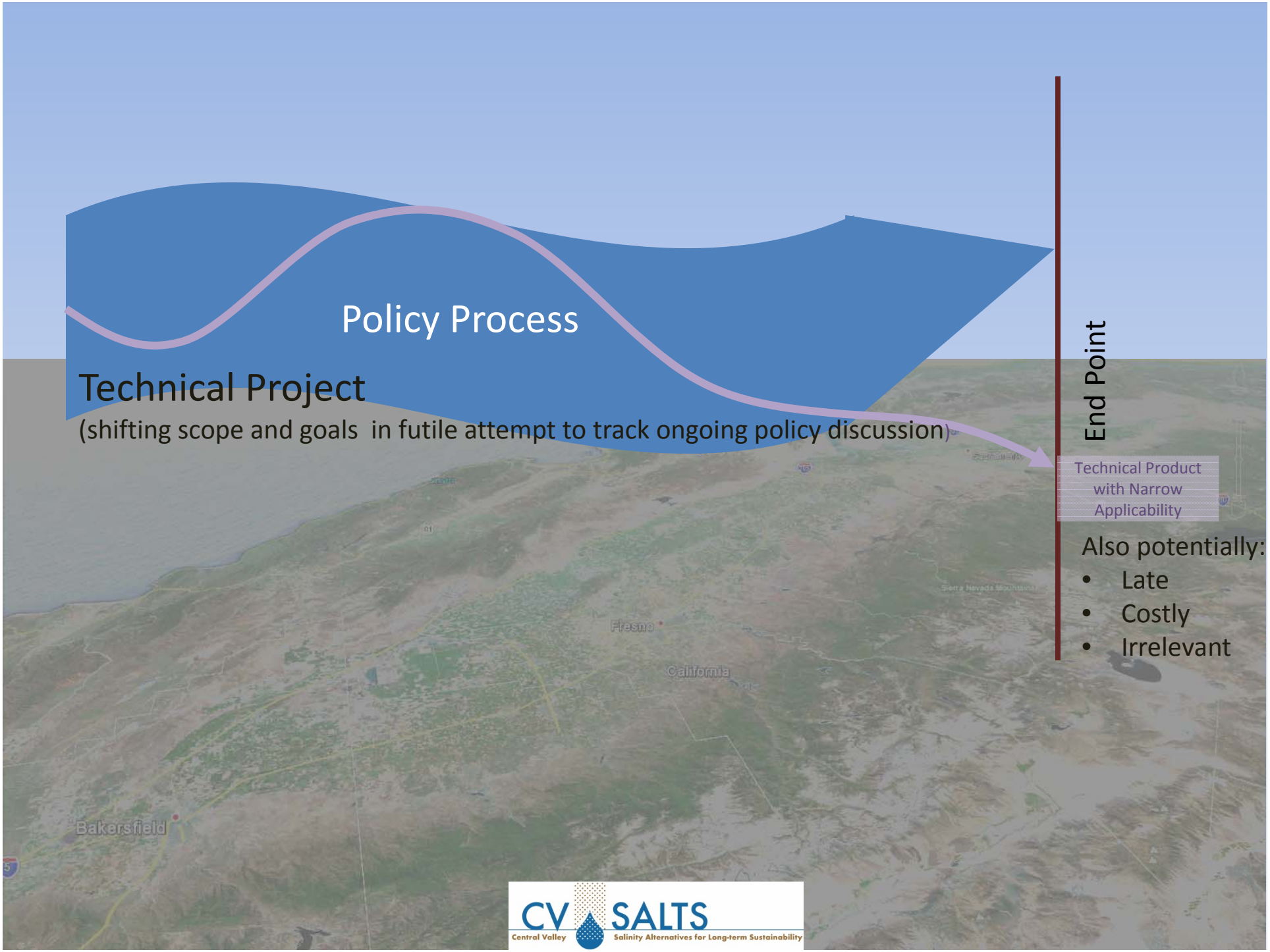
Policy Process
Technical Project
(shifting scope and goals in futile attempt to track ongoing policy discussion)
End Point
Technical Product with Narrow Applicability
Also potentially:
• Late
• Costly
• Irrelevant
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California
Bakersfield
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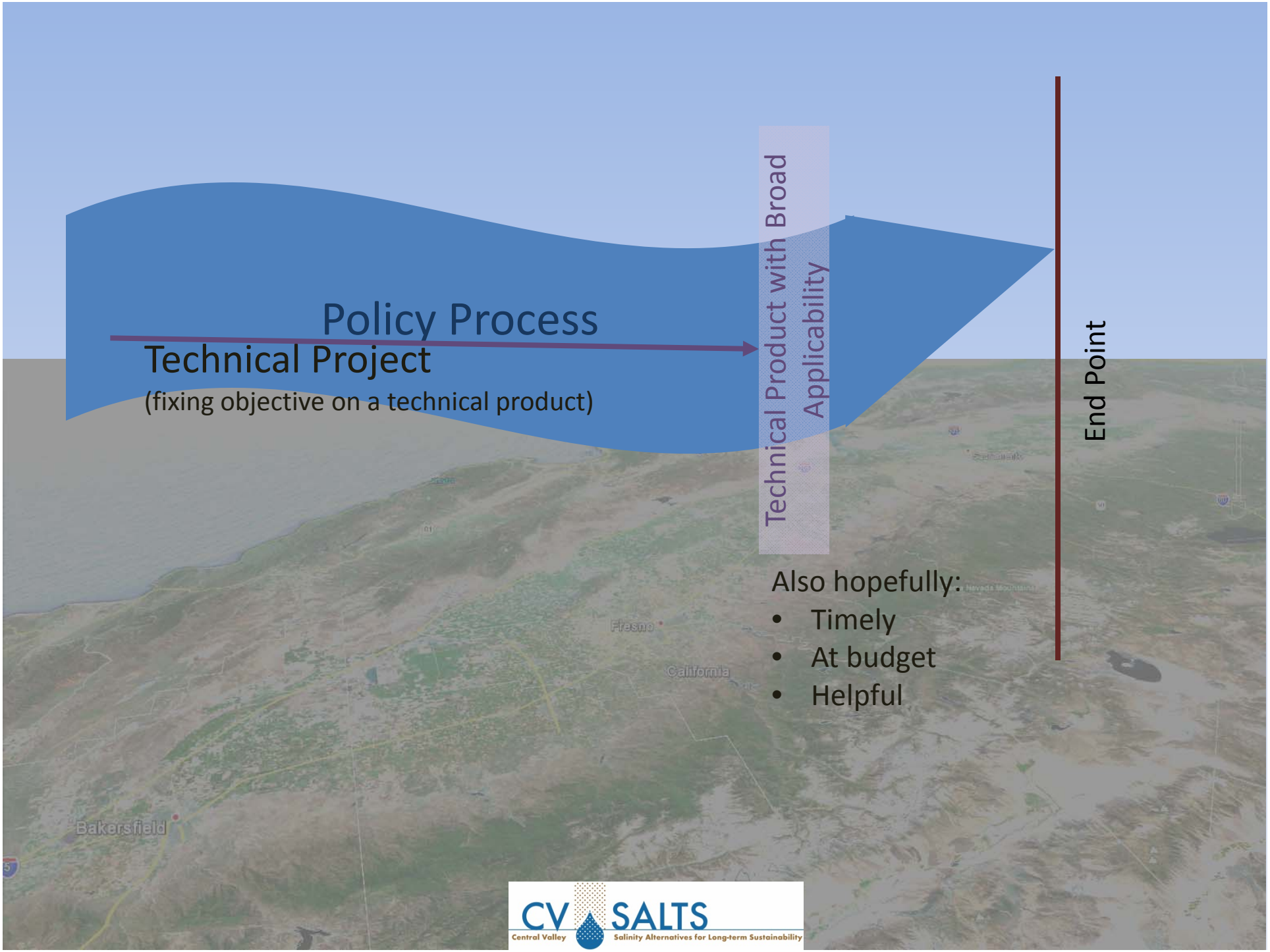
Policy Process
Technical Project
(fixing objective on a technical product)
Technical Product with Broad Applicability
End Point
Also hopefully:
• Timely
• At budget
• Helpful
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Fresno
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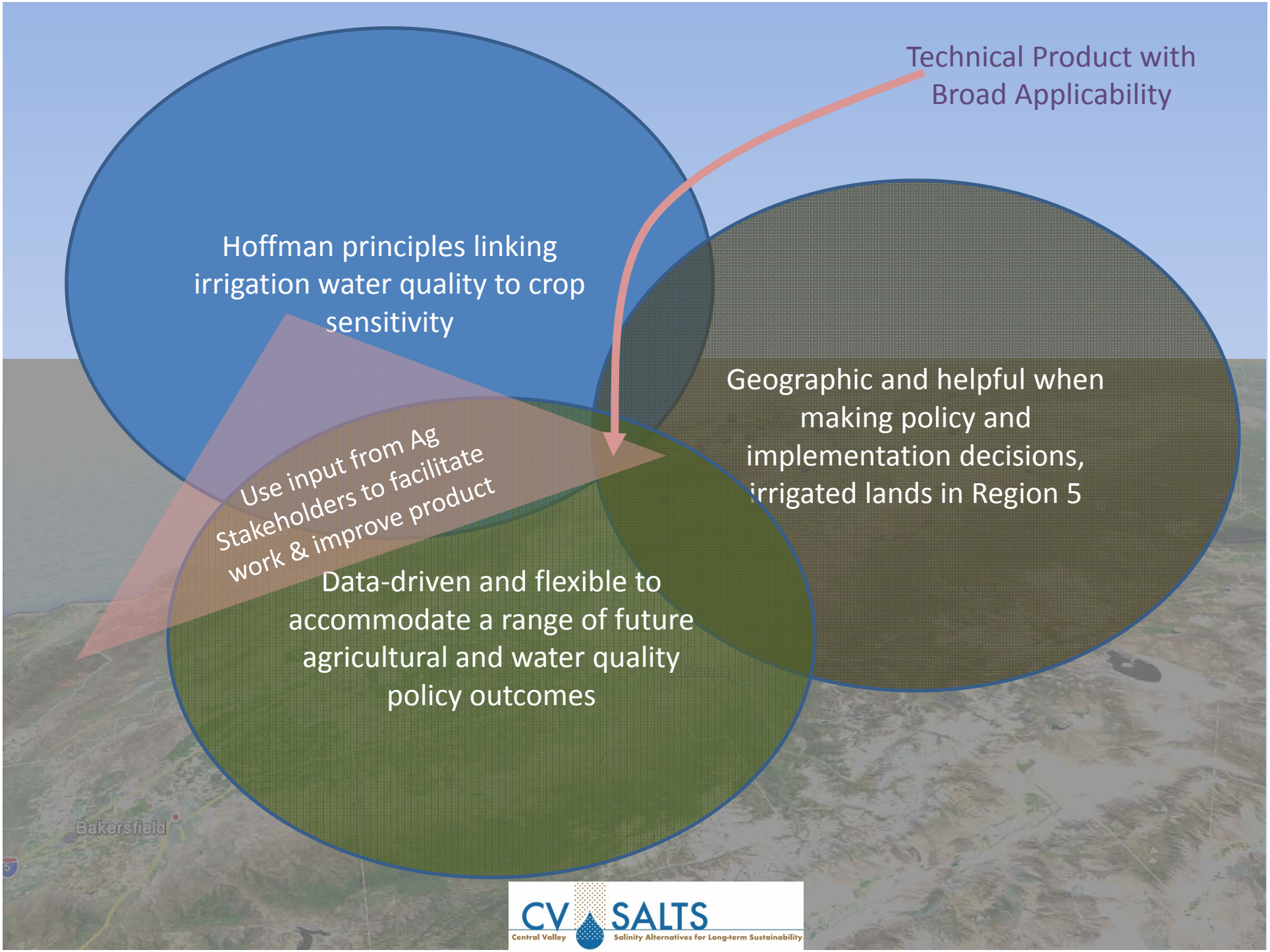
Technical Product with Broad Applicability
Hoffman principles linking irrigation water quality to crop sensitivity
Geographic and helpful when making policy and implementation decisions, irrigated lands in Region 5
Use input from Ag Stakeholders to facilitate work & improve product
Data-driven and flexible to accommodate a range of future agricultural and water quality policy outcomes
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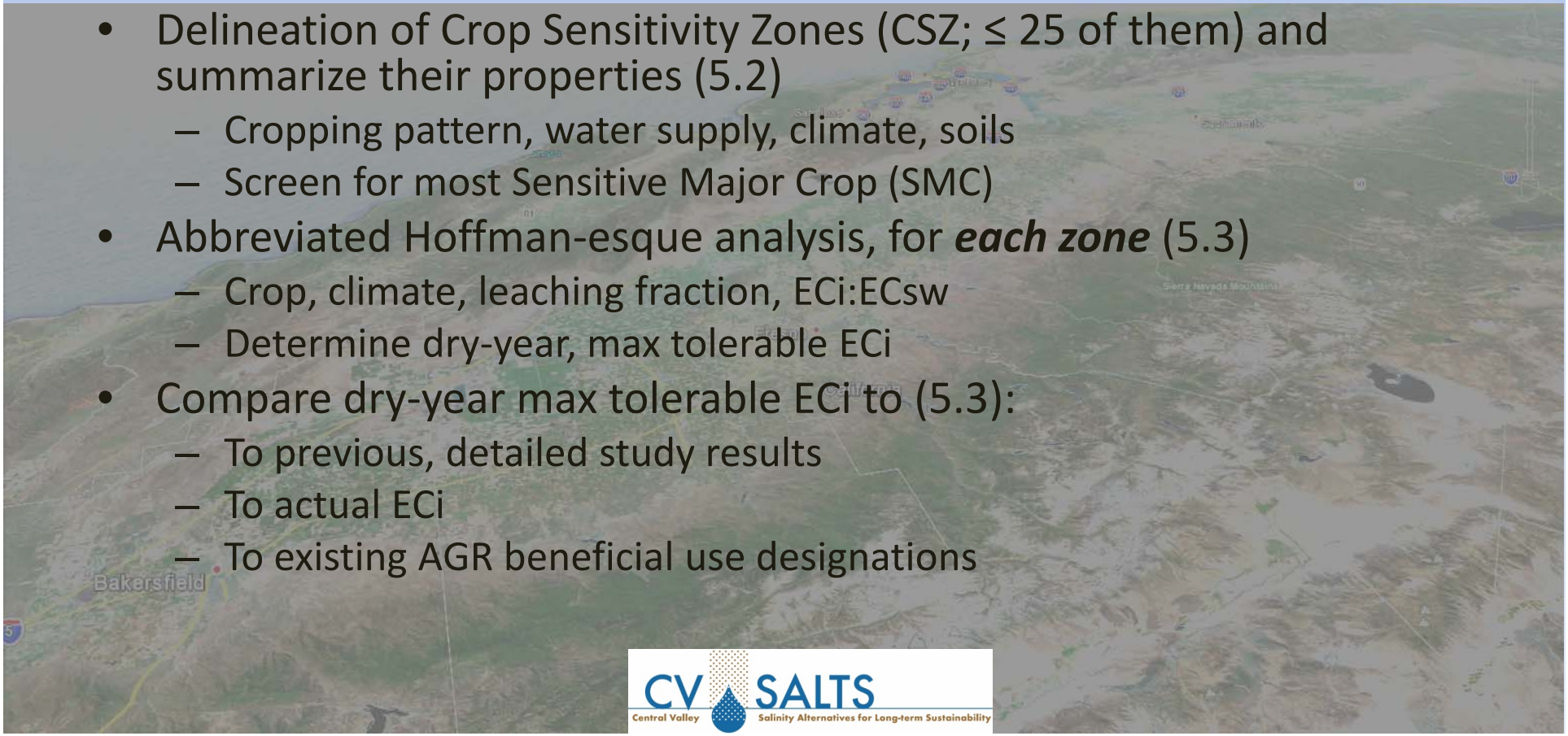
Scope Elements

- Development of Crop Sensitivity Tool Set
- Development of underlying GIS data (5.1)
  - Cropping pattern, water supply, climate, soils
- Delineation of Crop Sensitivity Zones (CSZ; ≤ 25 of them) and summarize their properties (5.2)
  - Cropping pattern, water supply, climate, soils
  - Screen for most Sensitive Major Crop (SMC)
- Abbreviated Hoffman-esque analysis, for ***each zone*** (5.3)
  - Crop, climate, leaching fraction, ECi:ECsw
  - Determine dry-year, max tolerable ECi
- Compare dry-year max tolerable ECi to (5.3):
  - To previous, detailed study results
  - To actual ECi
  - To existing AGR beneficial use designations



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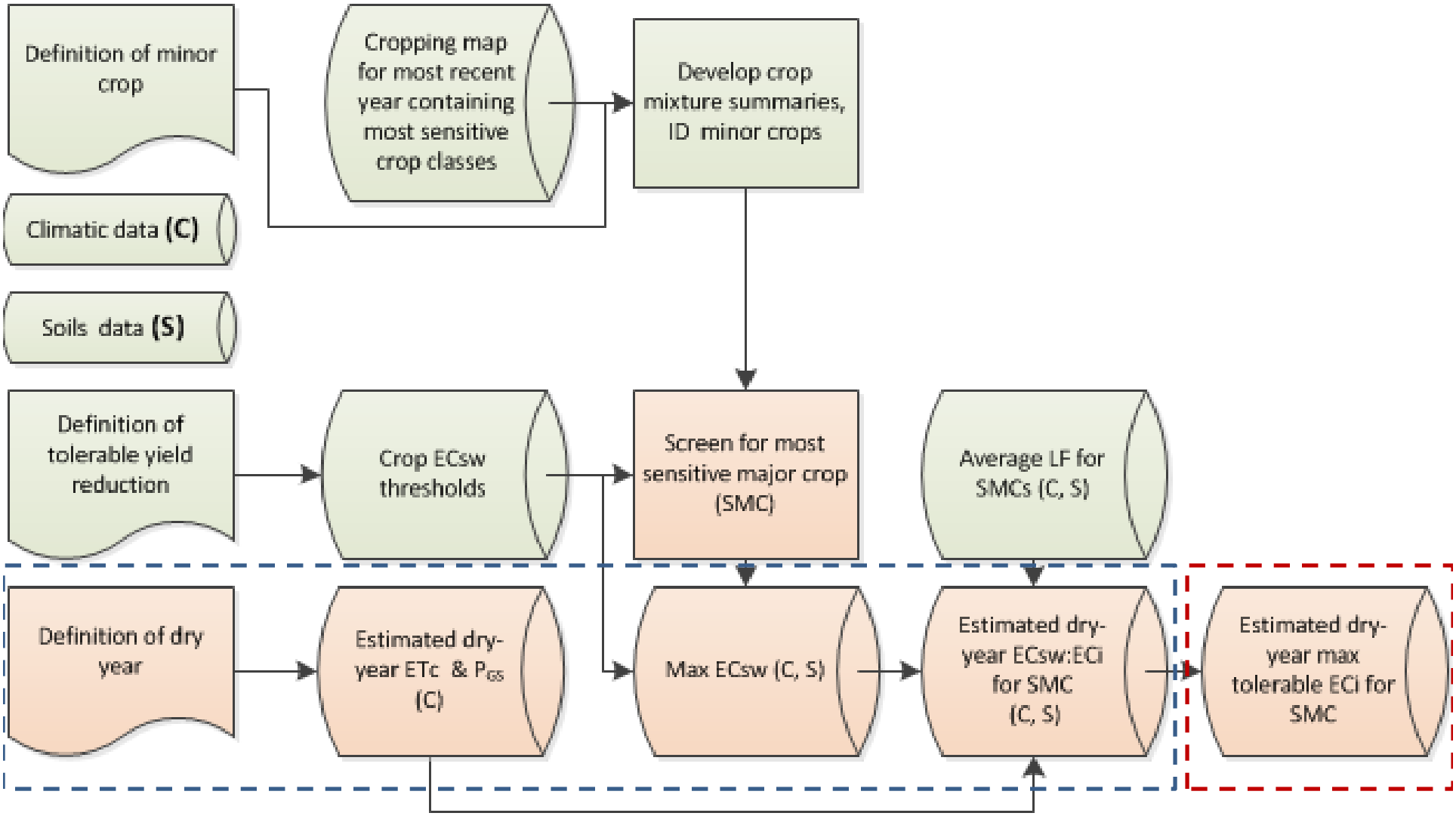
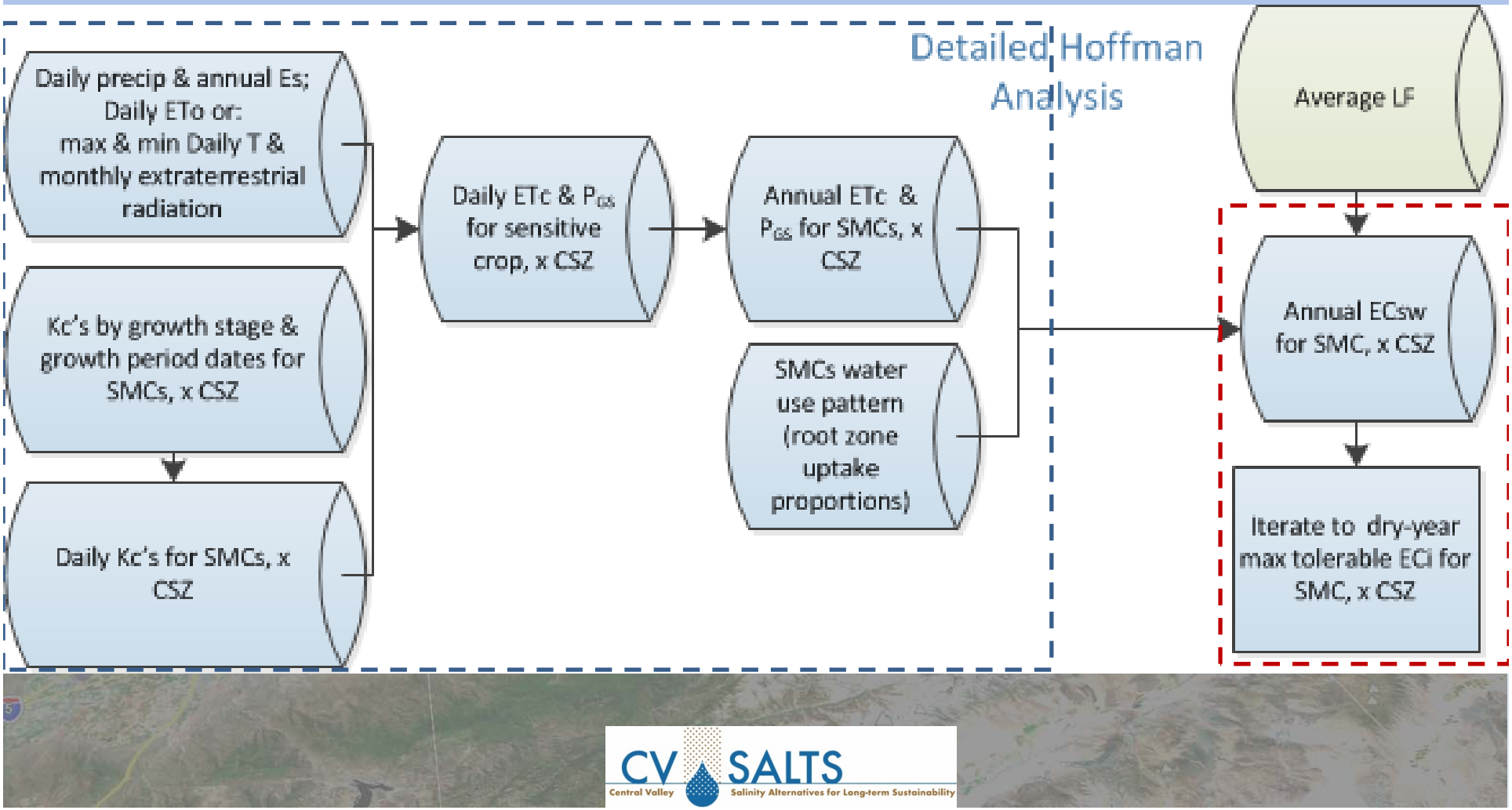
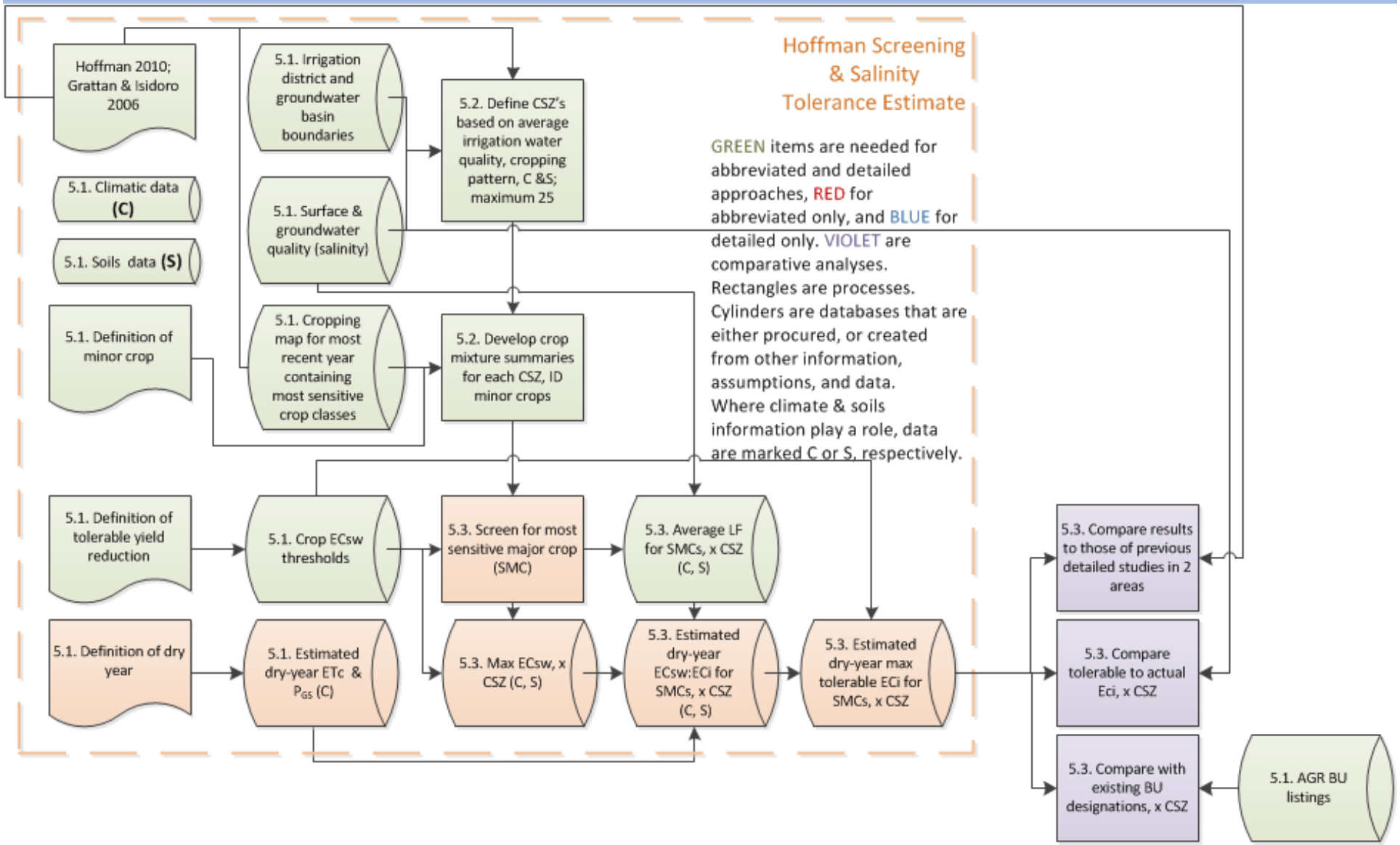
Hoffman Model Summary



Hoffman Detailed Agroclimatology



GIS Task 5


Hoffman 2010; Grattan & Isidoro 2006
5.1. Irrigation district and groundwater basin boundaries
5.2. Define CSZ's based on average irrigation water quality, cropping pattern, C &S; maximum 25
5.1. Climatic data (C)
5.1. Surface & groundwater quality (salinity)
5.1. Soils data (S)
5.1. Definition of minor crop
5.1. Cropping map for most recent year containing most sensitive crop classes
5.2. Develop crop mixture summaries for each CSZ, ID minor crops
Hoffman Screening & Salinity Tolerance Estimate
GREEN items are needed for abbreviated and detailed approaches, RED for abbreviated only, and BLUE for detailed only. VIOLET are comparative analyses. Rectangles are processes. Cylinders are databases that are either procured, or created from other information, assumptions, and data. Where climate & soils information play a role, data are marked C or S, respectively.
5.1. Definition of tolerable yield reduction
5.1. Crop ECsw thresholds
5.3. Screen for most sensitive major crop (SMC)
5.3. Average LF for SMCs, x CSZ (C, S)
5.1. Definition of dry year
5.1. Estimated dry-year ETc & PGS (C)
5.3. Max ECsw, x CSZ (C, S)
5.3. Estimated dry-year ECsw:ECi for SMCs, x CSZ (C, S)
5.3. Estimated dry-year max tolerable ECi for SMCs, x CSZ
5.3. Compare results to those of previous detailed studies in 2 areas
5.3. Compare tolerable to actual Eci, x CSZ
5.3. Compare with existing BU designations, x CSZ
5.1. AGR BU listings

Key Data Sources

- Most recent, readily-available, geospatial land cover
- DWR monthly climate, by DAU
  - 1998-2001
  - ETc, ETAW, AW, Precip, & Acreage for 21 crop classes
  - Statistical relationships from CIMIS
- Applied water quality and sources
  - Ag Coalitions and, through them, their network
  - Data request in preparation

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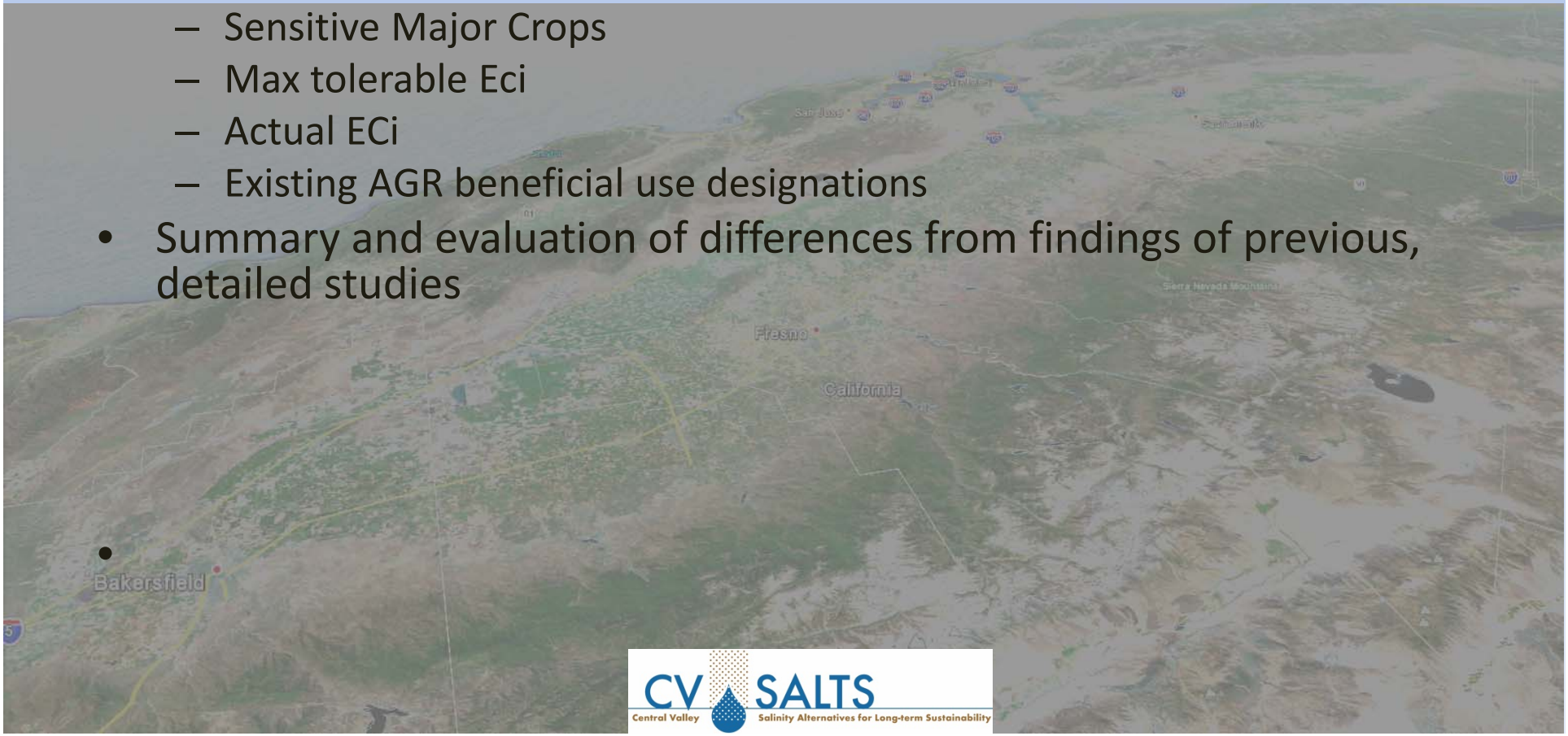
(Mostly Geospatial) Outputs

- Tool set
- Crop Sensitivity Zones & their properties
  - Cropping pattern, water supply, climate, soils
  - Sensitive Major Crops
  - Max tolerable Eci
  - Actual ECi
  - Existing AGR beneficial use designations
- Summary and evaluation of differences from findings of previous, detailed studies



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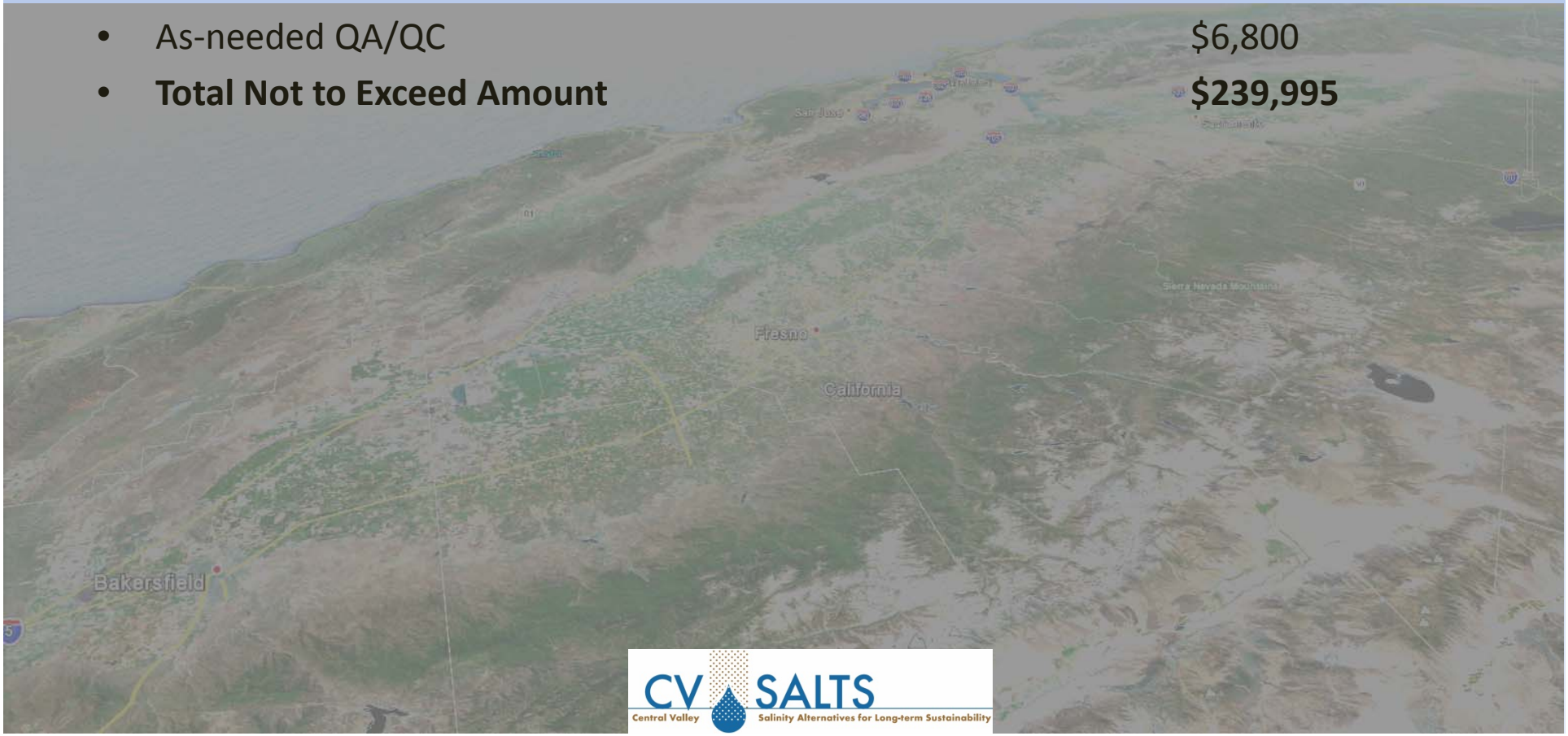
Budget

- Subtask 5.1 Research and Develop Map Layers $50,082
- Subtask 5.2 Identify Crop Sensitivity Zones $70,520
- Subtask 5.3 Determine Applied Water Sensitivity Thresholds $112,593
- As-needed QA/QC $6,800
- **Total Not to Exceed Amount** **$239,995**



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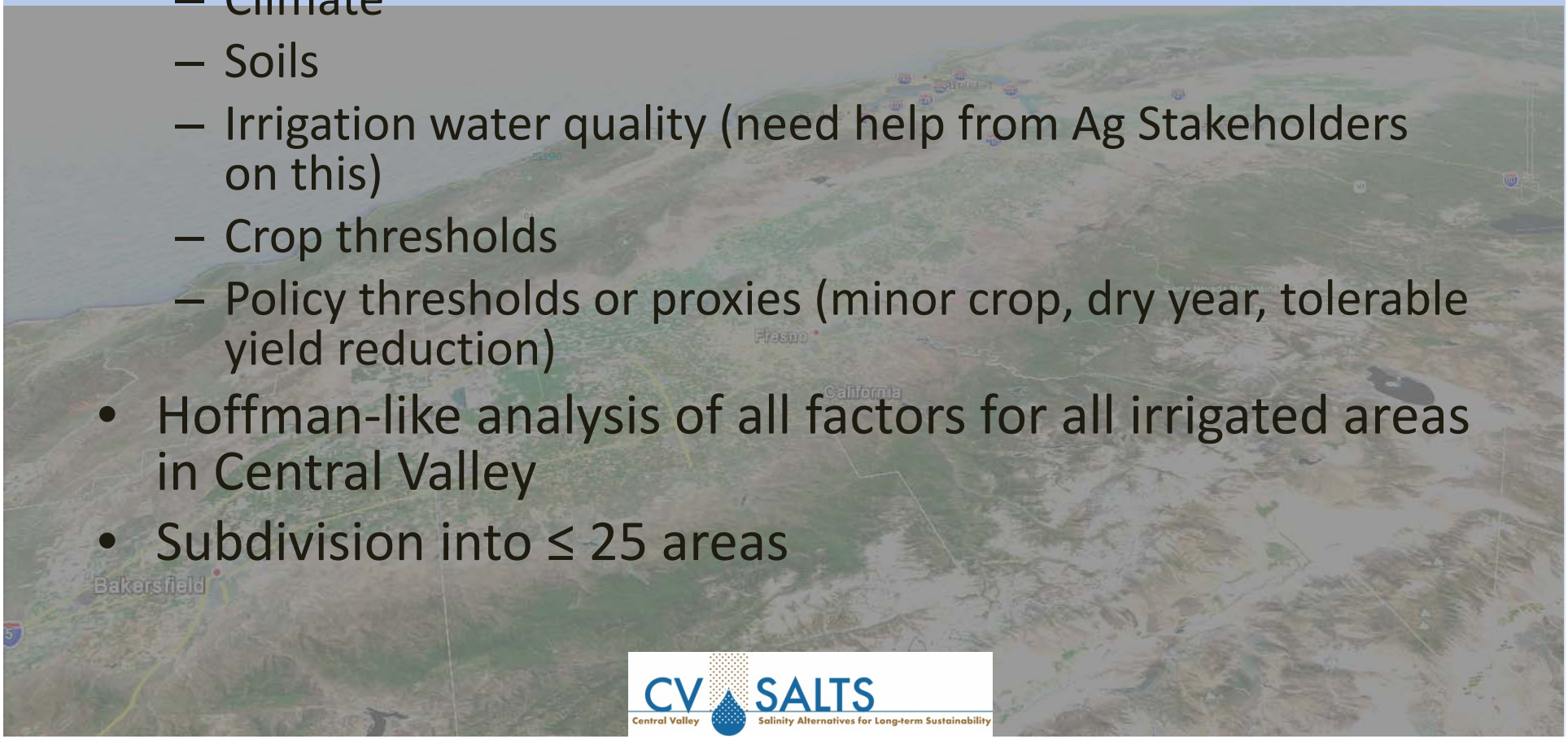
Budget Drivers

- Development of underlying data
  - Land cover
  - Climate
  - Soils
  - Irrigation water quality (need help from Ag Stakeholders on this)
  - Crop thresholds
  - Policy thresholds or proxies (minor crop, dry year, tolerable yield reduction)
- Hoffman-like analysis of all factors for all irrigated areas in Central Valley
- Subdivision into ≤ 25 areas



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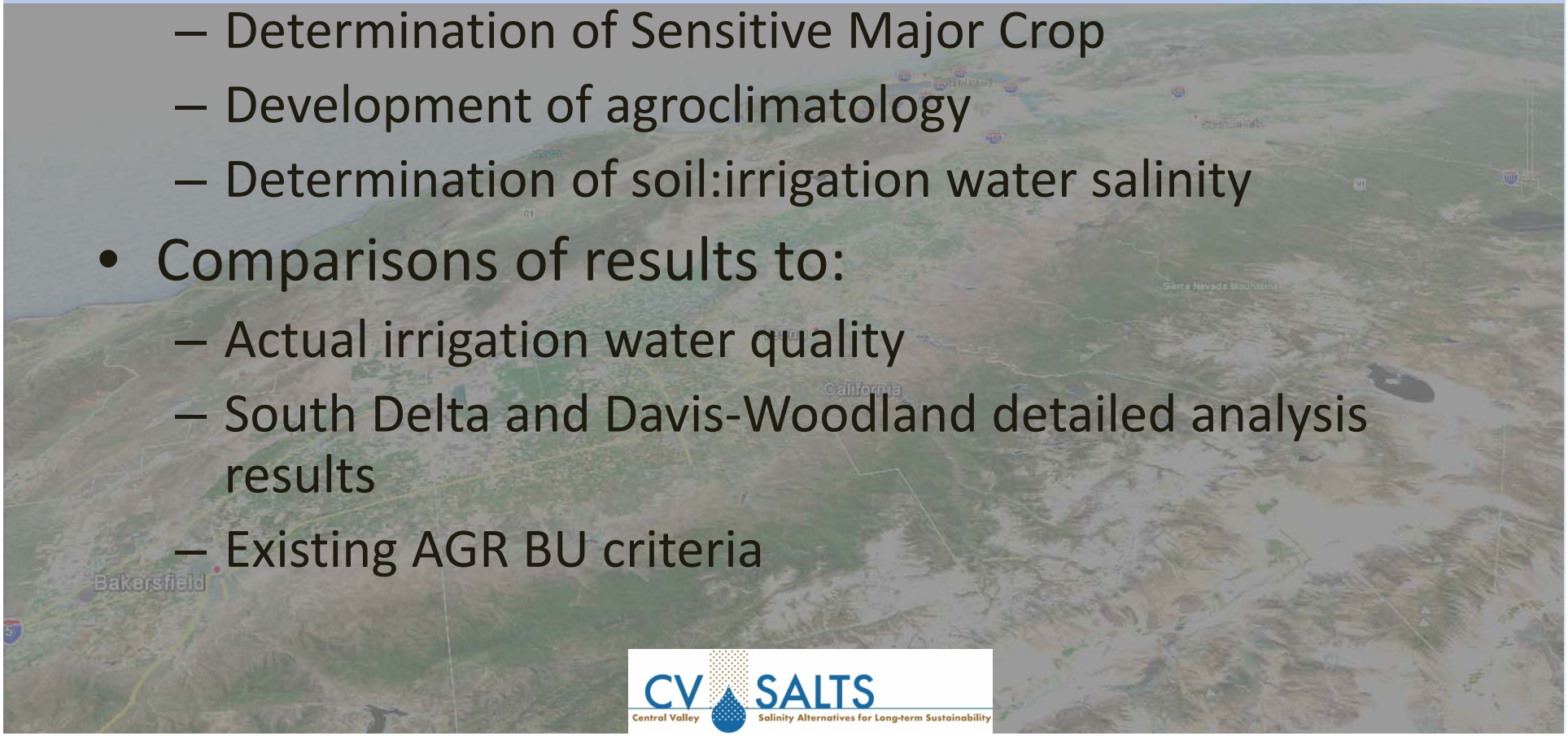
Budget Drivers

- For each area:
  - Analysis of crop patterns
  - Determination of Sensitive Major Crop
  - Development of agroclimatology
  - Determination of soil:irrigation water salinity
- Comparisons of results to:
  - Actual irrigation water quality
  - South Delta and Davis-Woodland detailed analysis results
  - Existing AGR BU criteria



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Irrigation Water Quality Data Needs in ICM and GIS Projects

- Team can prioritize data request to Ag Stakeholders
- What would be helpful
  - Applied surface and groundwater quality
  - Proportions of each applied
- Ultimate sources in Ag Community
  - Irrigation, drainage, & water districts

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End

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