Santa Clara County
Total Economic Value of Agriculture

Study initiated by the Santa Clara County Division of Agriculture
Joe Deviney, Agricultural Commissioner

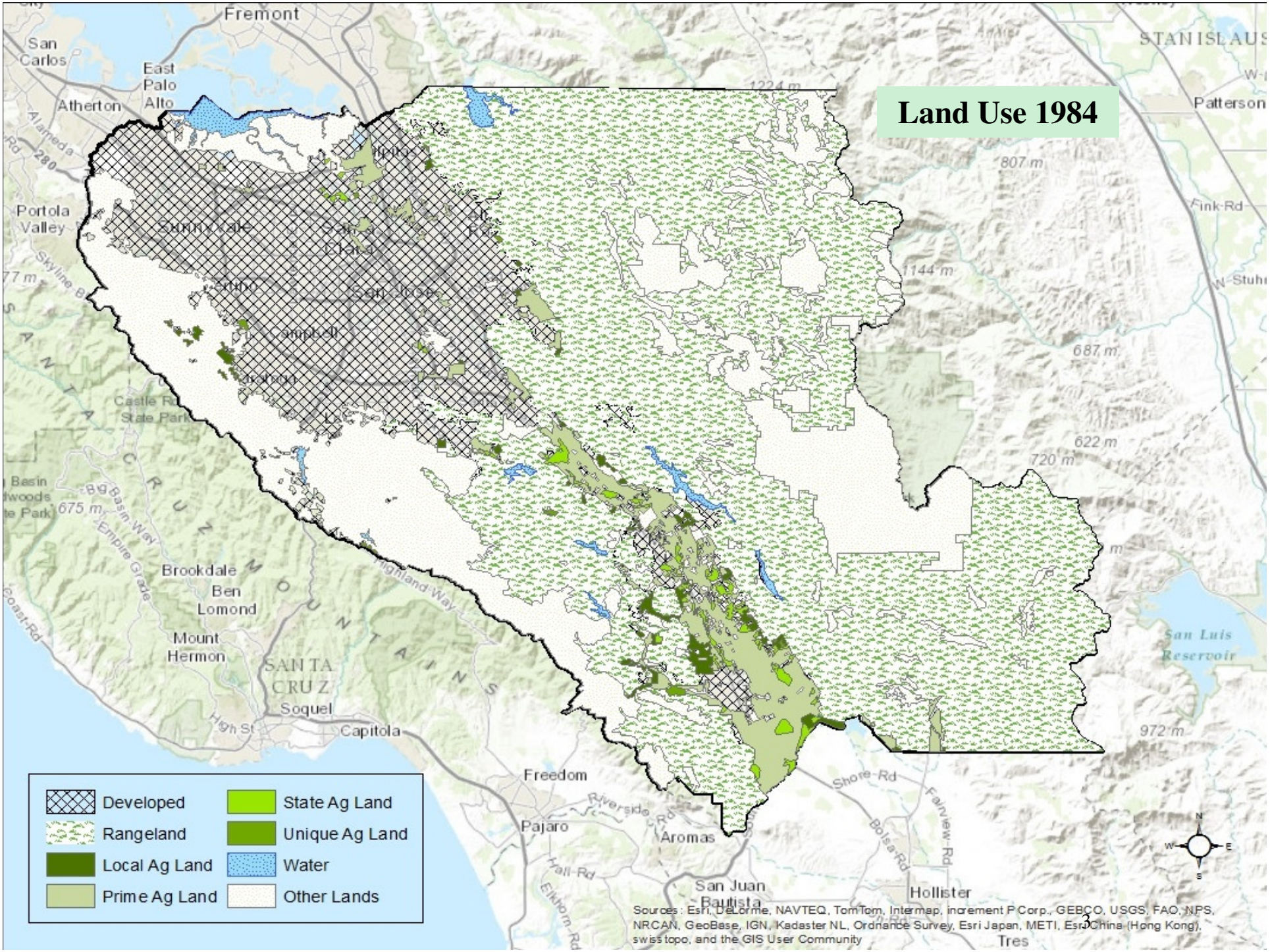
ERA Economics

LAFCO Presentation
February 3, 2016

ERA Economics
Environment • Resources • Agriculture

Topics

- Context and historical setting
- Drivers of change in agricultural industries
- Total value of agriculture in Santa Clara County
- Ecosystem service values
- Next steps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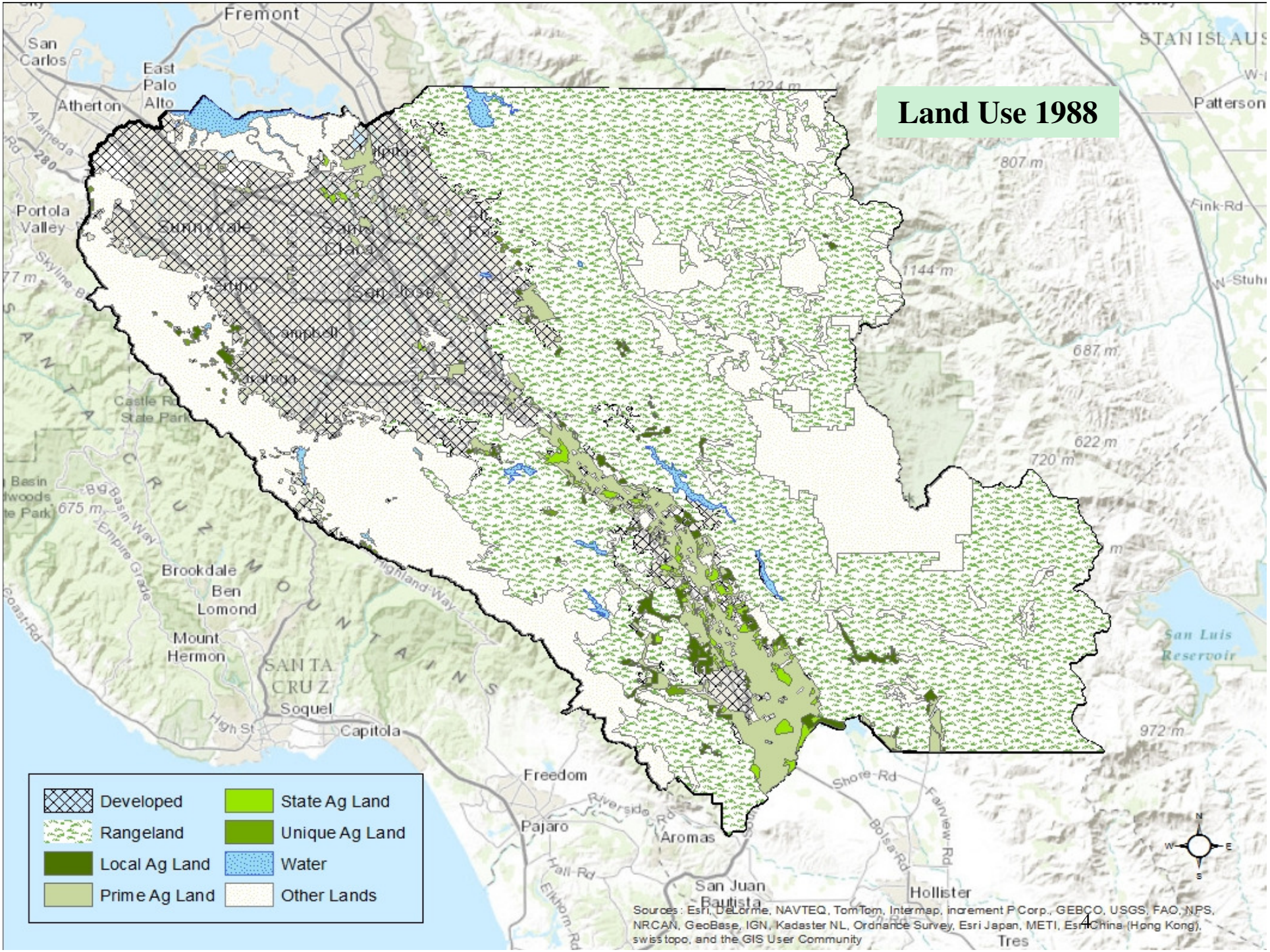
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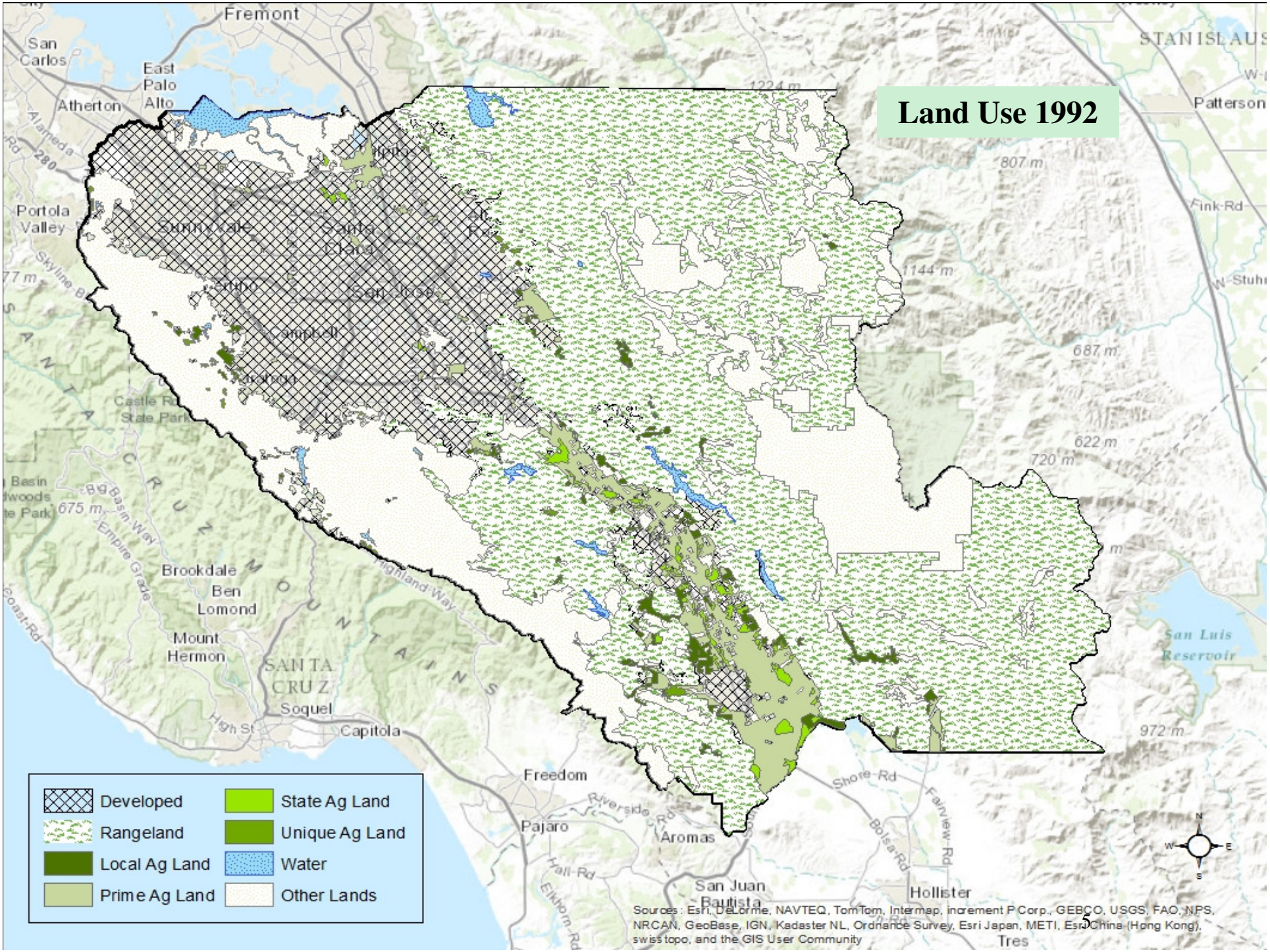
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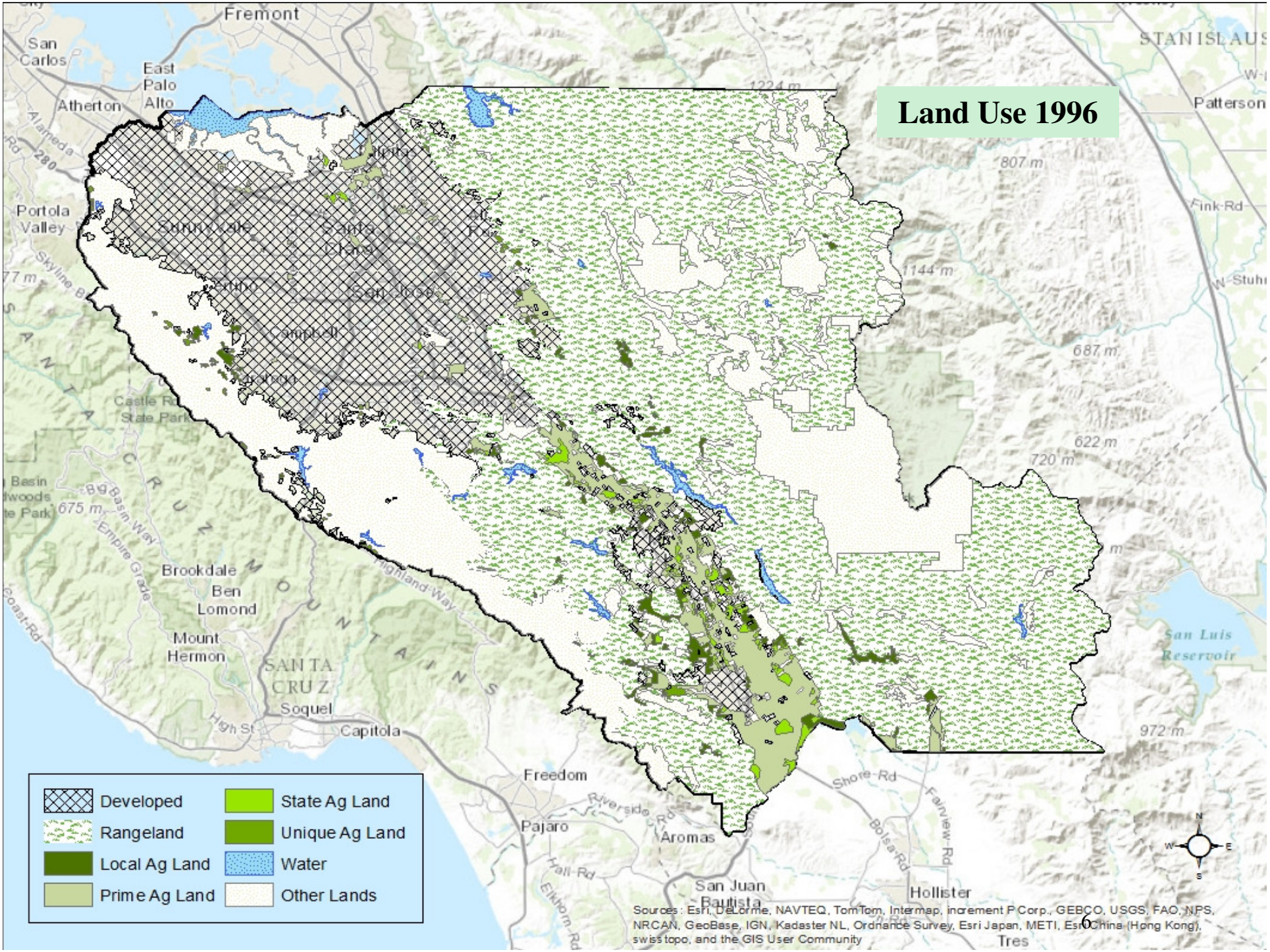
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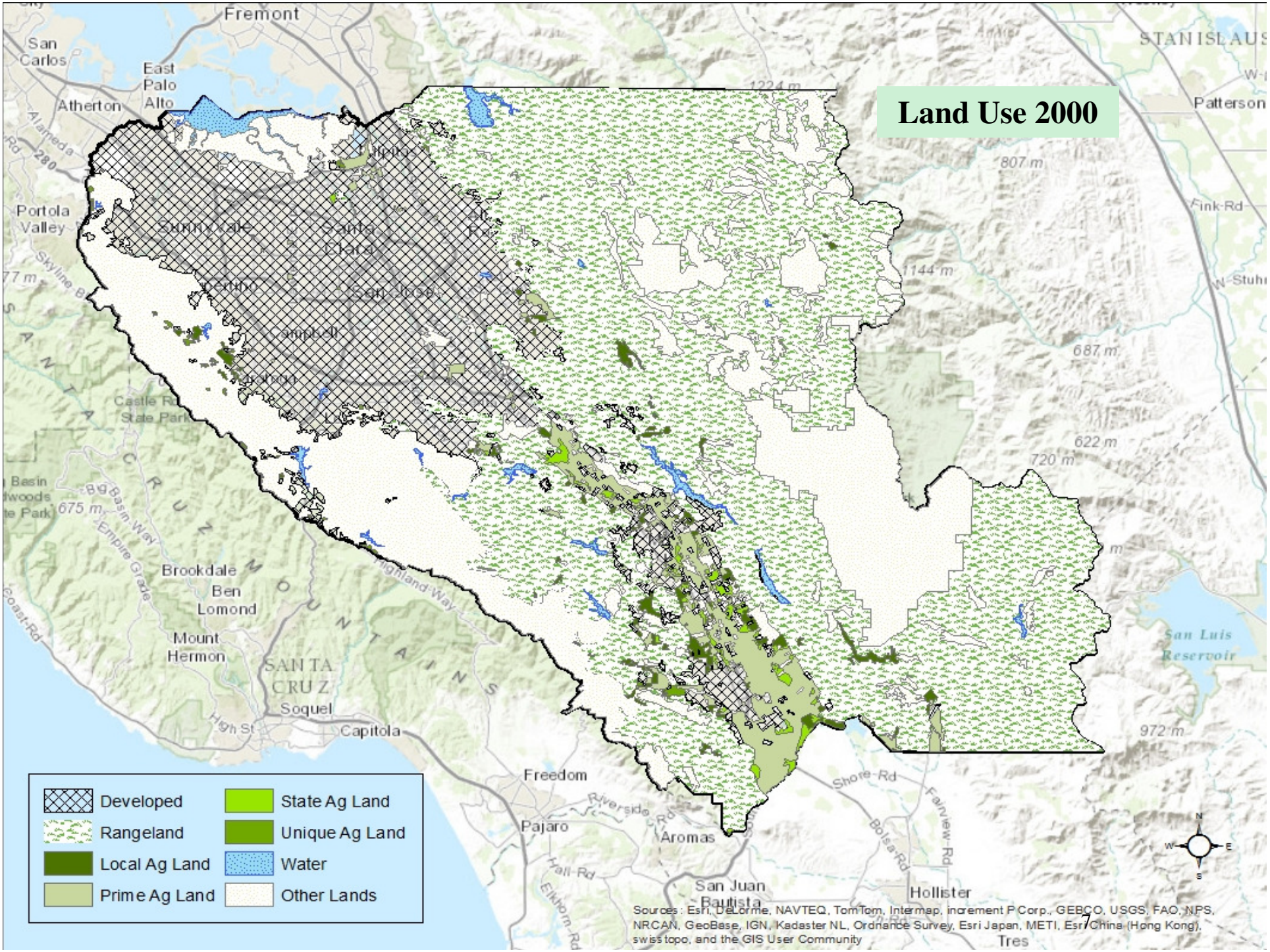
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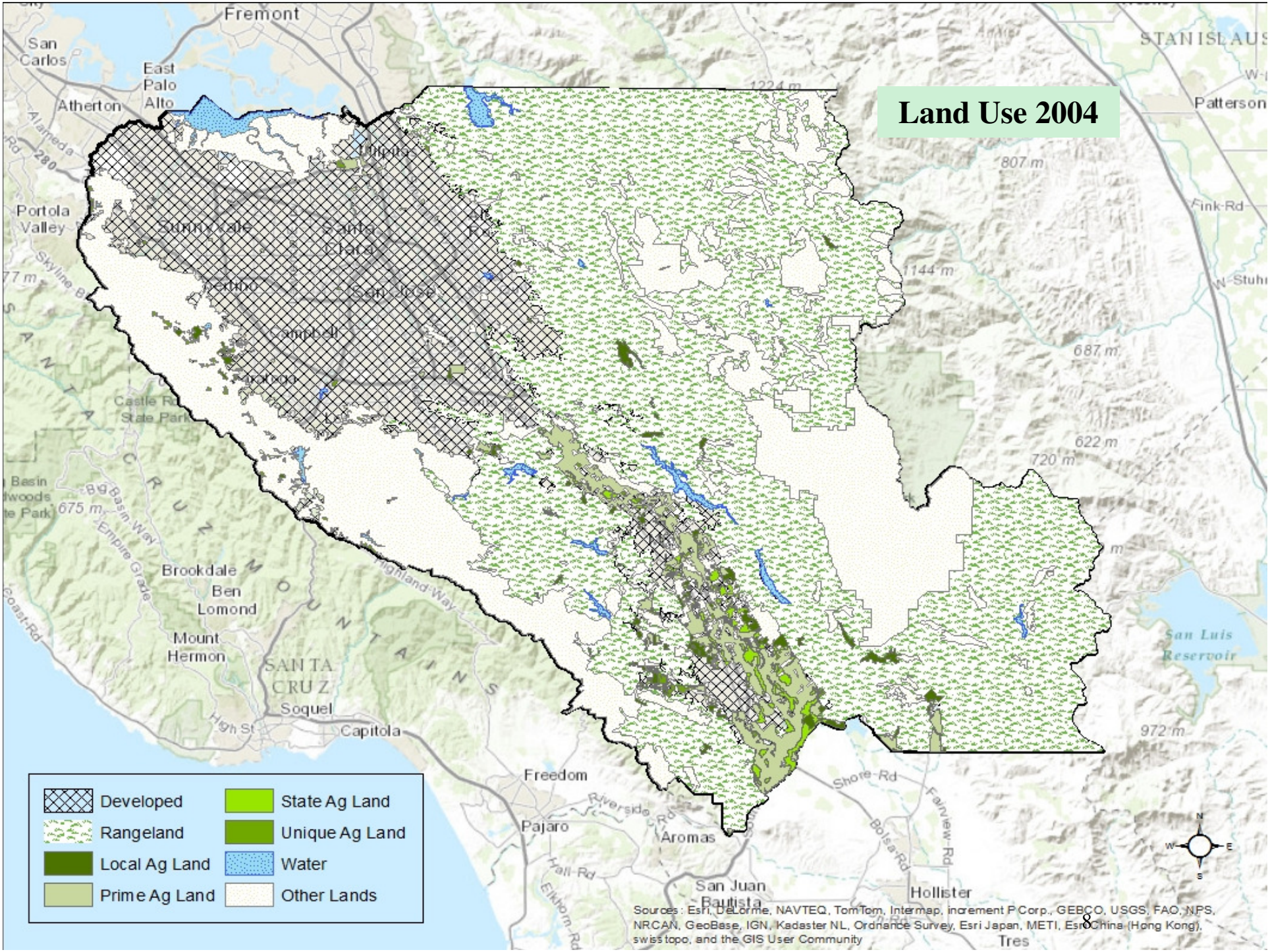
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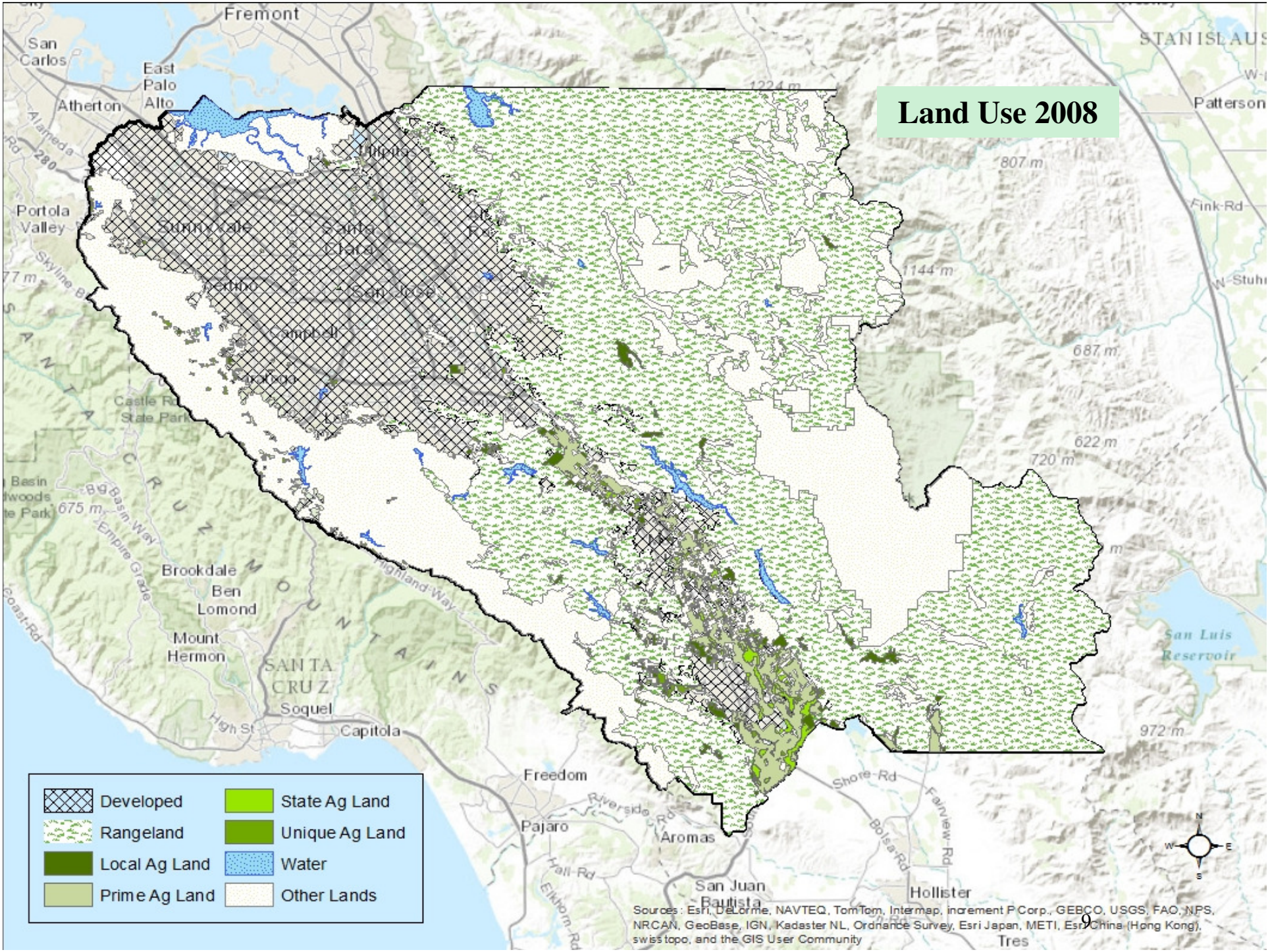
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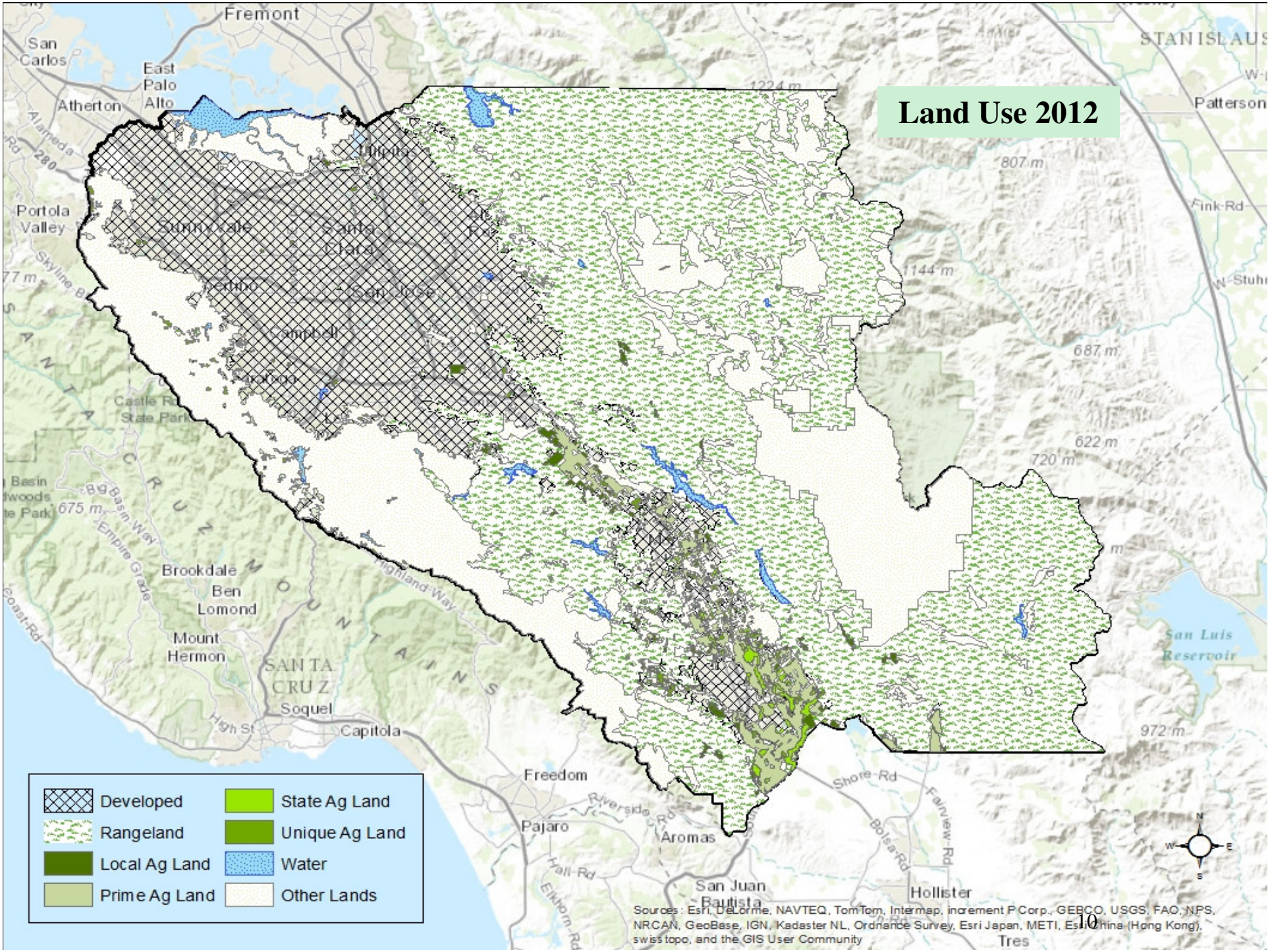
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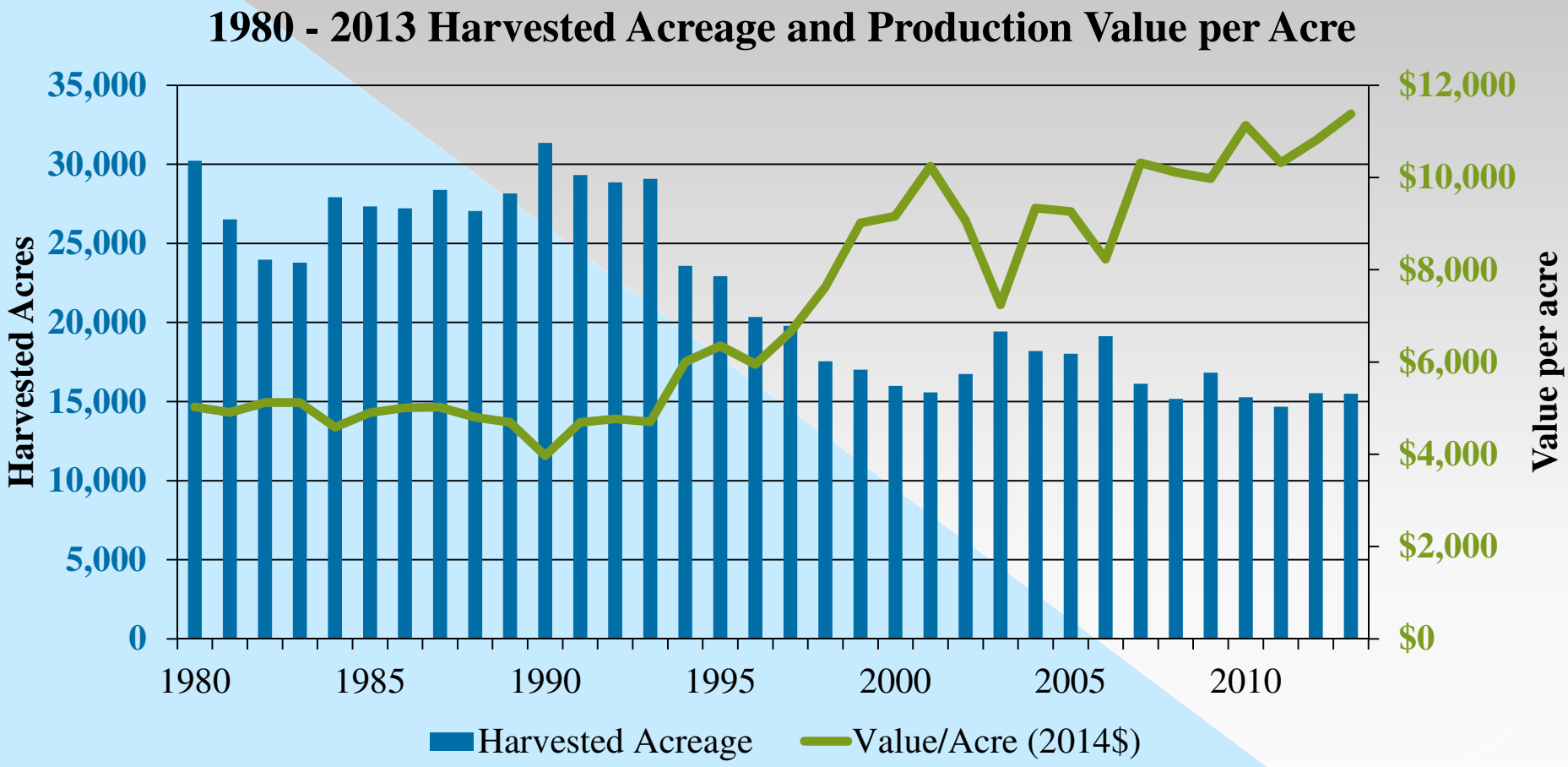
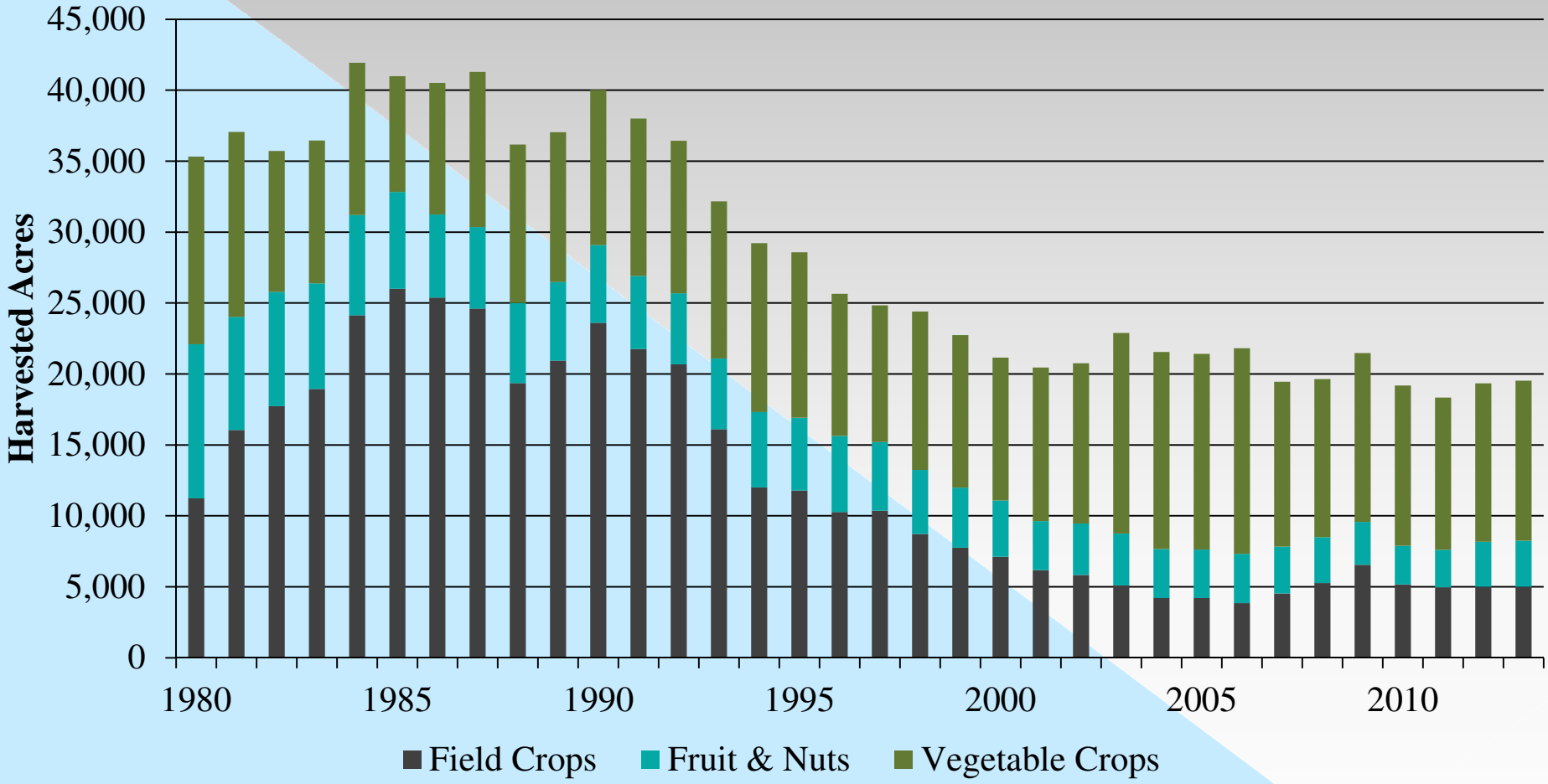
Santa Clara County Trends



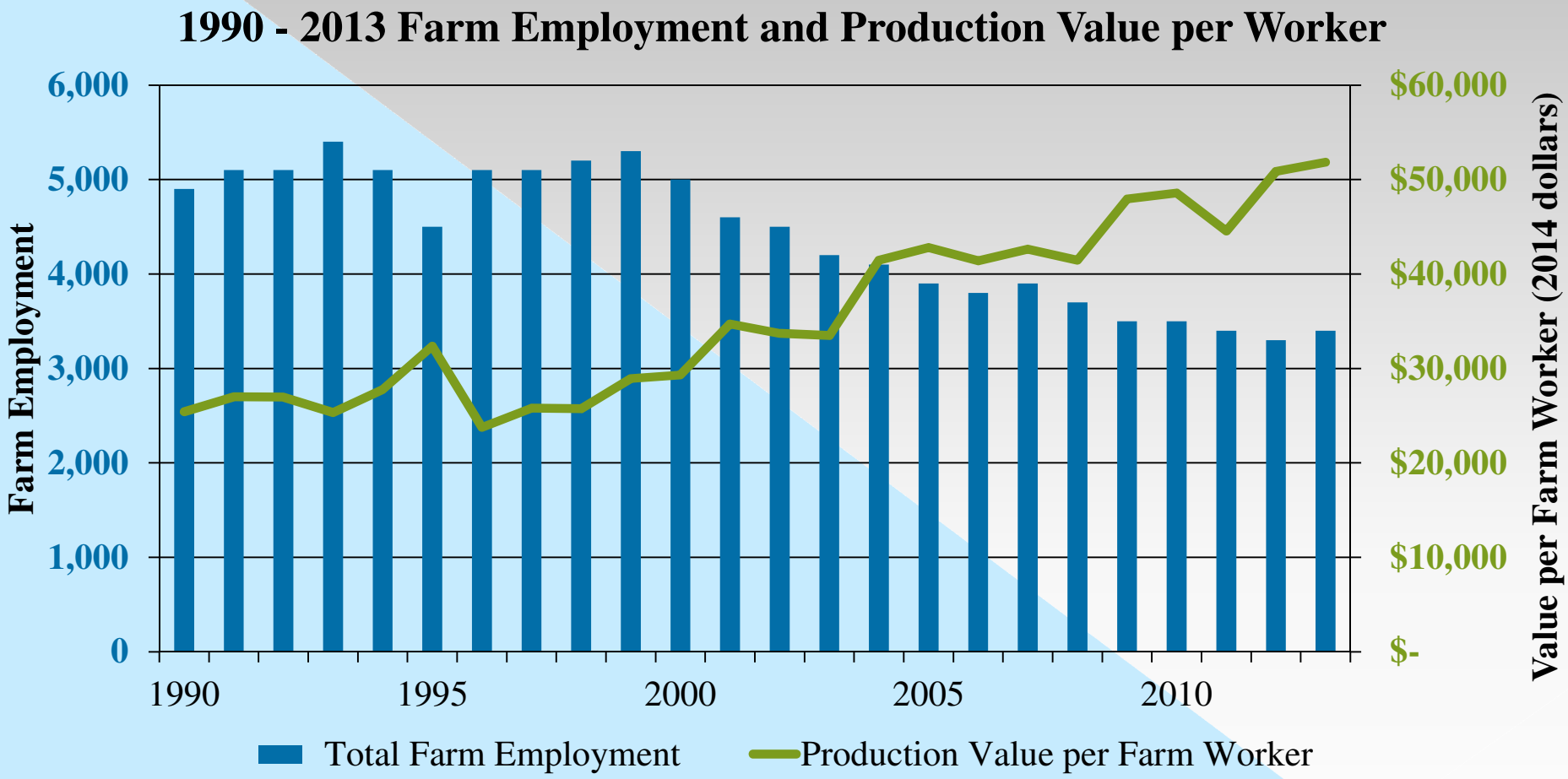
- After a substantial drop, acreage has stabilized in the last 15 years (since ~1998)
- Production value per acre has continued to trend upward

Santa Clara County Trends



- The crop mix has shifted in response to factors including market conditions (prices), land conversion, and county policies

Santa Clara County Trends



- Farm employment has stabilized and the production value per farm worker has continued to trend upward

Santa Clara County Summary

- Over the last 15 years harvested acreage has stabilized and, due to shifts into higher value crops, production value has increased

- In 2013, the value of Santa Clara County's production was $265 million (30th out of 58 counties)
  - $11,000 production value per acre (6th)
  - Between 1998 and 2013, production value increased by 24 percent
  - Between 1998 and 2013, production value per acre increased by 32 percent

- Primary production by Santa Clara County agriculture creates 3,400 full time equivalent farm jobs
  - Between 1998 and 2013, production value per farm worker has more than doubled

Santa Clara County Summary

County	Production Value per acre*	Ranking
Orange	$30,500	1
Santa Cruz	$28,500	2
Ventura	$18,500	3
Napa	$15,000	4
San Diego	$13,500	5
Santa Clara	**$11,000**	**6**
Monterey	$10,900	7
Santa Barbara	$10,500	8
San Mateo	$9,500	9
Sonoma	$8,900	10

** Excludes rangeland and non-irrigated acreage; 2014 dollars*

Drivers of Change in the Agricultural Sector

- Shifts in market demands for high value crops
- Land, water, and labor availability
- Agri-tourism
- Growth in associated processing and food manufacturing industries (more on this later)
- Agri-environmental policies
  - Pesticides
  - Air quality
  - Open Space
  - Current considerations: Sustainable Groundwater Management Act (SGMA), severe drought, and the Bay Delta Conservation Plan

Measuring Economic Value

1. Survey major industries
   - Contact stakeholders to discuss business operations: costs, returns, employment, and input purchases

2. Analyze the direct value of primary crop production industries
   - Using an economic model of agricultural production in Santa Clara County

3. Combine the data in (1) and analysis in (2) to quantify the direct economic contributions
   - Using the IMPLAN regional input-output model

Components

- Direct: gross sales and output value
  - Example: Crop production
- Indirect: value created through purchases of inputs by agricultural businesses
  - Example: fertilizer, trucking, other farm supplies
- Induced: value created through expenditures by agriculture industry employees
  - Example: food, housing, entertainment, other living expenses
- Direct + Indirect + Induced = Total Economic Contribution of Agriculture

Measures of Economic Value

- **Production Value.** Gross value of agricultural production
  - In processing and manufacturing industries this is the gross sales value
- **Employment.** Annual full-time equivalent (FTE) jobs in an industry, including seasonal jobs
- **Net Production Value.** The net value of agricultural production, or net contribution of an industry to the county economy.
  - Also called "value-added"
  - Analogous to the measure of "GDP"

Total Economic Contribution

- Sectors included: Agricultural production (crops, mushrooms, nurseries, livestock), support industries, processing, manufacturing, wineries and agritourism
- Production value: $1.6 billion
- Net production value: $832 million
  - Employee salaries: $596 million
- Full-Time-Equivalent jobs: 8,150
- Comparison to the 2013 Crop Report
  - 2013 output value (Crop Report) $263m
  - 2013 output value (Economic Contributions Analysis) $410m
    - Net contribution to the economy of $300m

Crop Production

- The crop production sector includes
  - Field crops
  - Vegetables
  - Seed production
  - Fruits
  - Nuts

image: sccgov.org

Measure	Direct	Indirect	Induced	Total
Production value	$126 million	$14 million	$35 million	**$175 million**
Net production value	$101 million	$10 million	$23 million	**$135 million**
FTE employment	1,151 FTE jobs	150 FTE jobs	246 FTE jobs	**1,547 FTE jobs**

Total Value: Mushrooms

- The mushroom production sector includes
  - Mushroom production

image: Aziz Baameur, UCCE, field tour 3/3/15

Measure	Direct	Indirect	Induced	Total
Production value	$71 million	$11 million	$18 million	**$100 million**
Net production value	$49 million	$10 million	$15 million	**$74 million**
FTE employment	574 FTE jobs	86 FTE jobs	105 FTE jobs	**765 FTE jobs**

Total Value: Livestock

- The livestock sector includes
  - Steers, heifers, cows
  - Chickens, goats, llamas, pigs, sheep, other misc.

image: Aziz Baameur, UCCE, field tour 3/3/15

Measure	Direct	Indirect	Induced	Total
Production value	$14 million	$2 million	$2 million	**$18 million**
Net production value	$6.5 million	$1.5 million	$1.4 million	**$9.5 million**
FTE employment	54 FTE jobs	17 FTE jobs	15 FTE jobs	**86 FTE jobs**

Total Value: Nurseries

- The nursery sector includes
  - Transplants
  - Cut flowers
  - Bedding plants
  - Turf, trees, indoor decoratives, etc.

source: Aziz Baameur, UCCE; Kabir Tumber, ERA, field tour 3/25/15

Measure	Direct	Indirect	Induced	Total
Production value	$83 million	$9 million	$24 million	**$116 million**
Net production value	$57.5 million	$6.5 million	$16 million	**$80 million**
FTE employment	667 FTE jobs	82 FTE jobs	170 FTE jobs	**919 FTE jobs**

Total Value: Support Industries

- The support industry sector includes
  - Custom farming operations
  - Contract labor
  - Management services
  - Other contractor services

source: Aziz Baameur, UCCE, field tour 3/3/15

Measure	Direct	Indirect	Induced	Total
Production value	$56 million	$2.7 million	$17.5 million	**$76 million**
Net production value	$52 million	$2 million	$13 million	**$67 million**
FTE employment	1,039 FTE jobs	15 FTE jobs	133 FTE jobs	**1,187 FTE jobs**

Total Value: Primary Processing

- The primary processing sector includes
  - Processing of raw product
  - Dehydrated vegetables
  - Spices and purees
  - IQF and diced vegetables
  - Seed processing

source: Vicki Thompson, Silicon Valley Business Journal

Measure	Direct	Indirect	Induced	Total
Production value	$334 million	$74 million	$50 million	**$457 million**
Net production value	$133 million	$45.5 million	$33 million	**$211 million**
FTE employment	867 FTE jobs	338 FTE jobs	346 FTE jobs	**1,551 FTE jobs**

Total Value: Food Manufacturing

- The food manufacturing sector includes
  - Food manufacturing of raw and finished product
  - Cheese manufacturing
  - Frozen and canned specialties
  - Misc. food manufacturing

source: Laura Schraft, The Morgan Hill Times

Measure	Direct	Indirect	Induced	Total
Production value	$212 million	$40 million	$20 million	**$272 million**
Net production value	$38 million	$26 million	$13 million	**$77 million**
FTE employment	526 FTE jobs	178 FTE jobs	138 FTE jobs	**842 FTE jobs**

Total Value: Wine and Agritourism

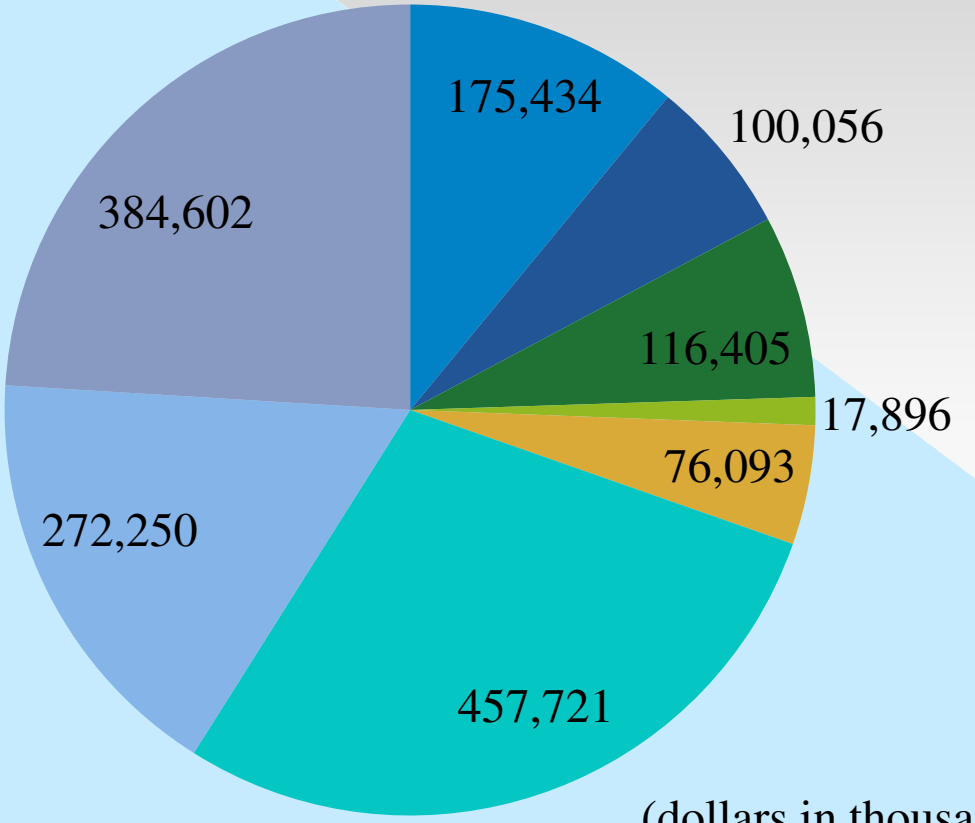
- The wine and agritourism sector includes
  - Commercial wine sales
  - Farmers markets
  - Weddings
  - Events

source: Kabir Tumber, ERA, field tour 3/25/15

Measure	Direct	Indirect	Induced	Total
Production value	$269.5 million	$69 million	$46 million	**$385 million**
Net production value	$108 million	$42 million	$30 million	**$180 million**
FTE employment	655 FTE jobs	272 FTE jobs	317 FTE jobs	**1,244 FTE jobs**

Total Production Value

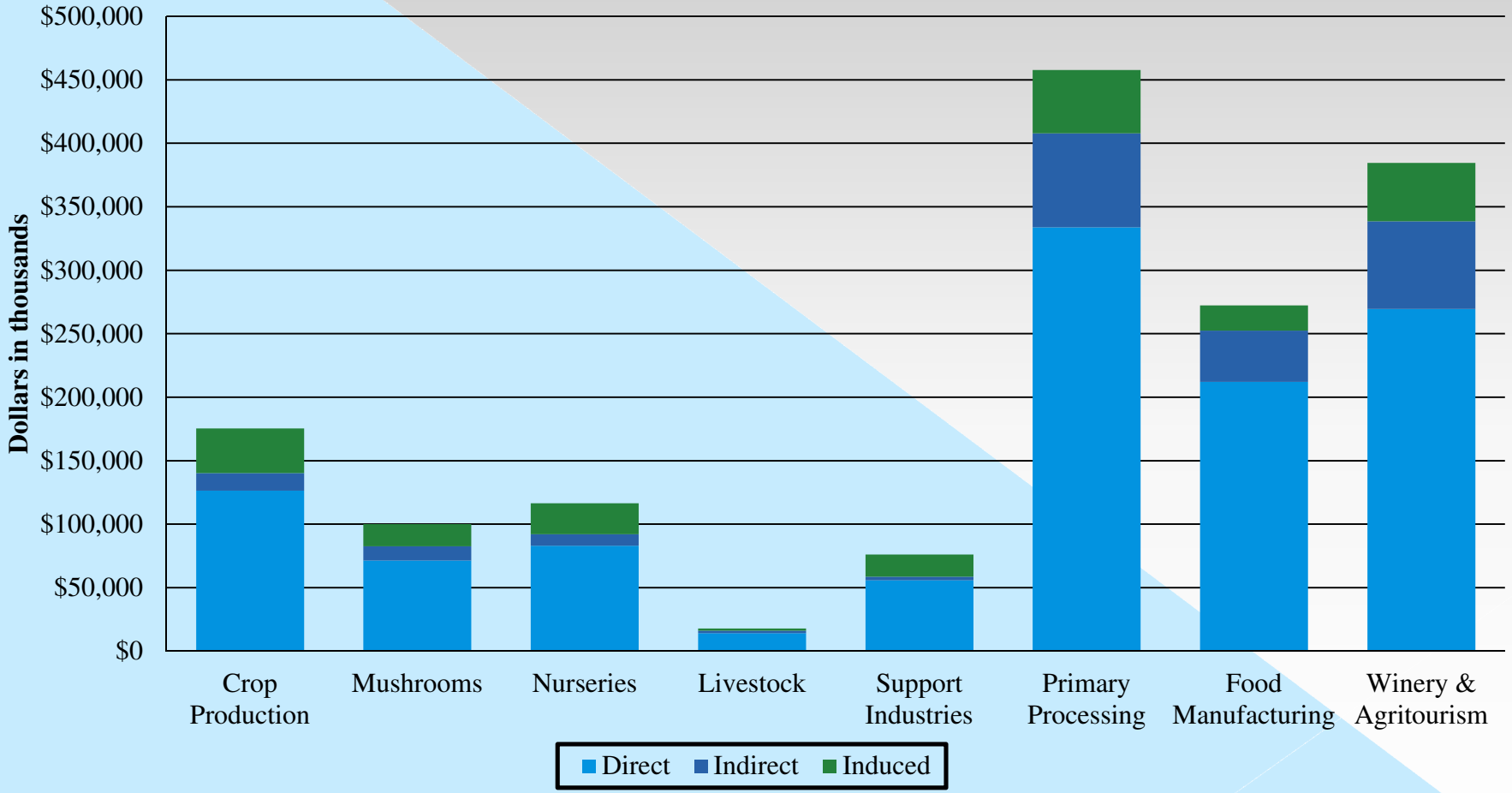
- Production value: $1.6 billion



(dollars in thousands)

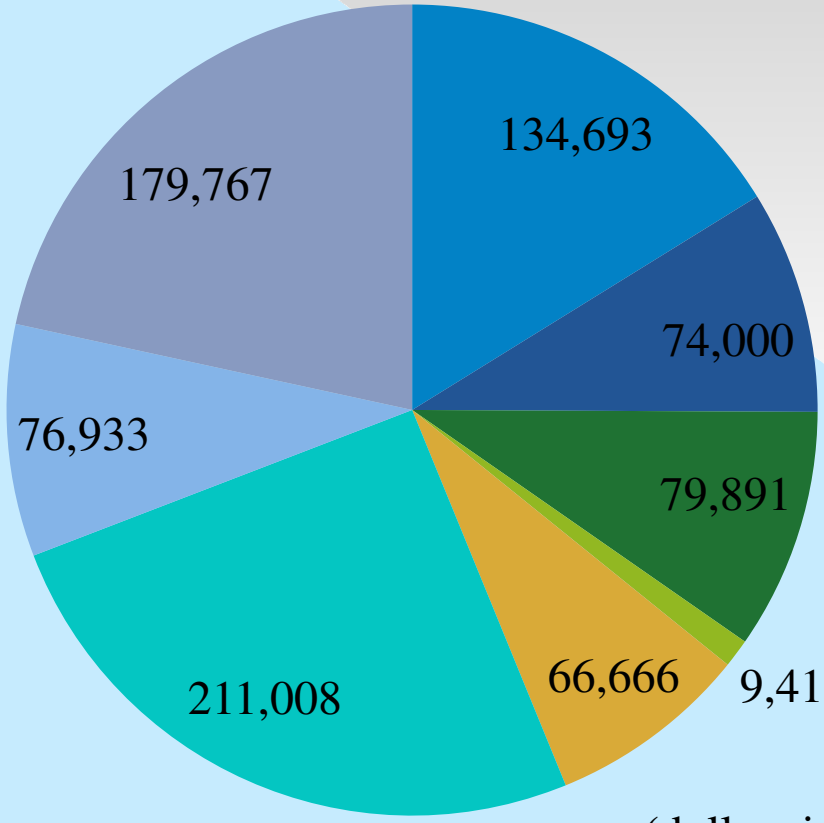
Production Value Summary

- Production value: $1.6 billion



Total Net Production Value

- Net production value: $832 million



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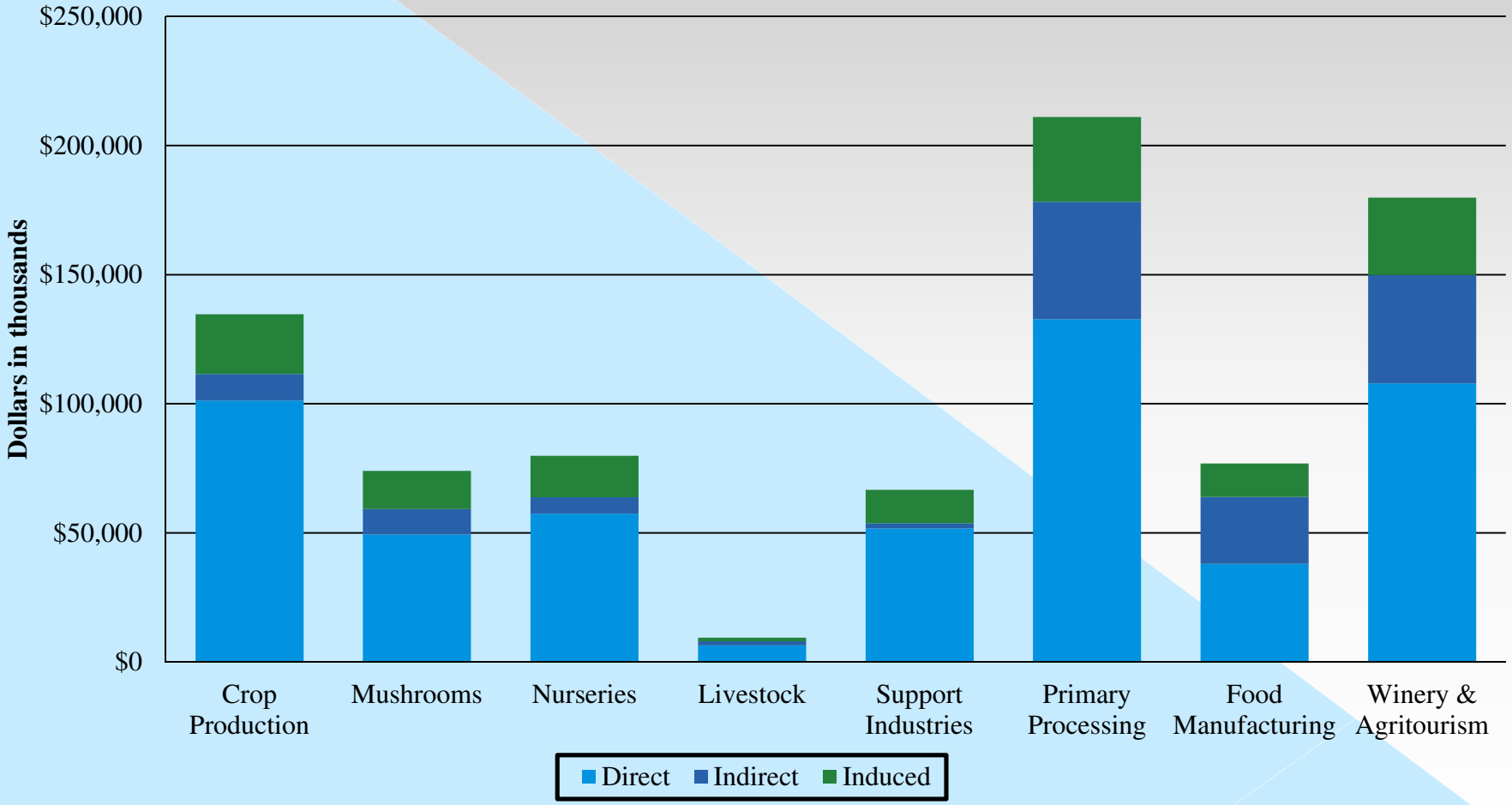
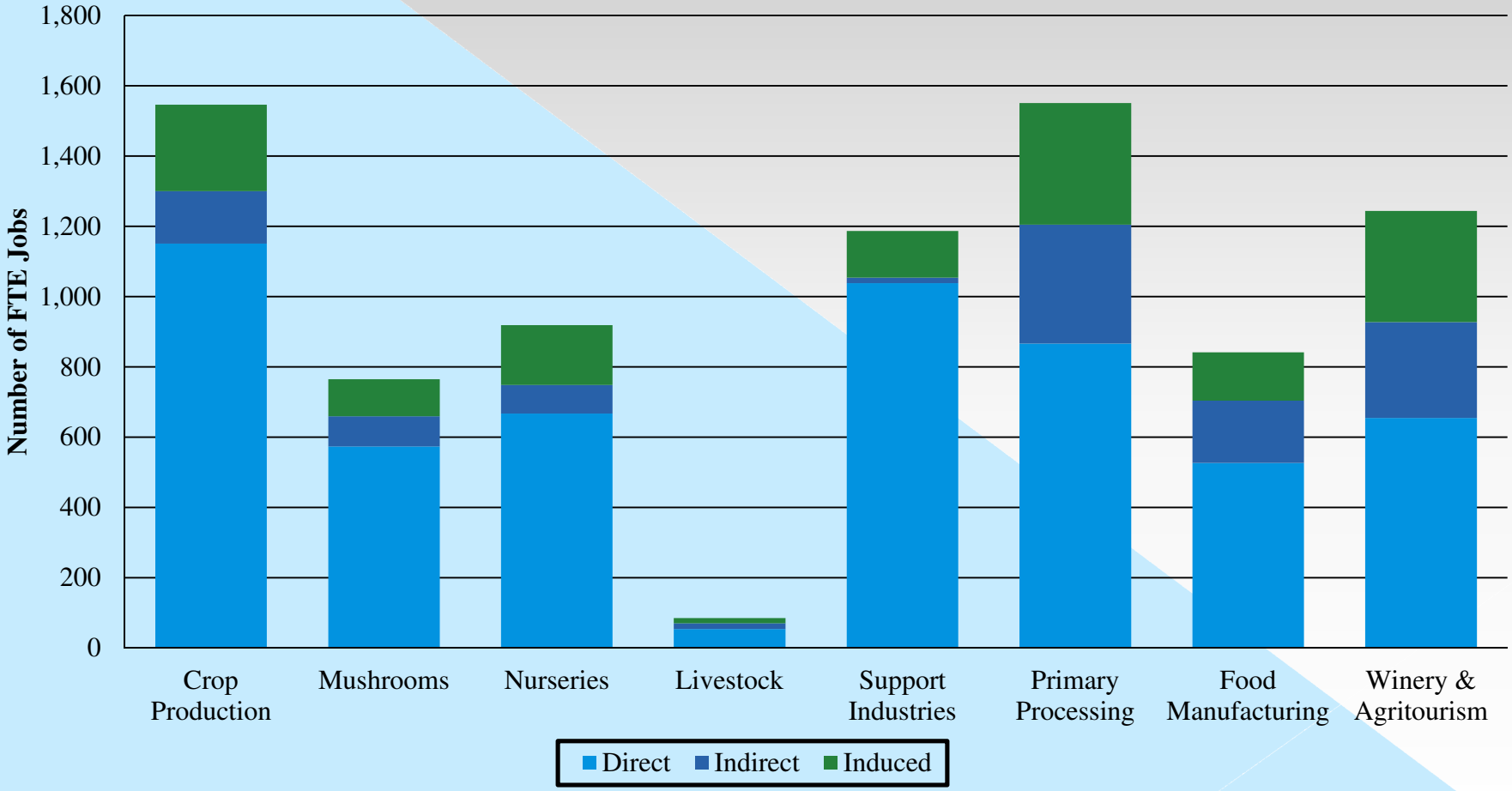
Net Production Value Summary

- Net production value: $832 million



Employment Summary

- Employment: 8,150 FTE jobs



Ecosystem Services

- The 2014 "Nature's Value in Santa Clara County" Study by the Open Space Authority attributed $1.6 - $3.9 billion in economic benefits to natural capital in Santa Clara County
  - Ecosystem services are part of natural capital and some are directly linked with agriculture
- Ecosystem services are not (directly) bought and sold in a market
- Primary methods to estimate the value of ecosystem services include:
  - Avoided cost
  - Contingent valuation
  - Stated preferences

Selected Ecosystem Services

- Flood control value — $40 - $85 per acre
  - Avoided cost of flood control investments
- Groundwater recharge value — $55 - $70 per acre
  - Direct irrigation recharge, excluding natural recharge
- Water quality value — $25 - $30 per acre
  - Avoided cost of water treatment
- Pollination value — $20 - $65 per acre
  - Stated preference and avoided cost of pollination services
- Biodiversity value — ~$30 per acre
  - Stated preference

Ecosystem Services – Groundwater Recharge

- Santa Clara Valley Basin includes the Santa Clara and Llagas Subbasins and is currently classified as "Medium Priority"
  - Approximate safe yield is 130 – 170 thousand acre-feet per year
  - Average annual pumping 2002-2010 was 152 thousand acre-feet
- SGMA will increase the value of water
  - Groundwater recharge ecosystem service values will also increase

Ecosystem Services – Open Space

- We can infer the value of open space by avoided costs (public infrastructure, parks and green space) or contingent valuation
  - The value of open space can be estimated by analyzing the sale price of homes located near open agricultural space

- Open space values in Santa Clara County (meta-analysis):
  - Rangeland: $700 - $1,000 per acre/yr
  - Cropland: up to $450 per acre/yr

Ecosystem Services Summary

- The ecosystem service value for a given parcel of agricultural land varies widely
  - Location, rotation system, technology, etc.
  - A primary study is the only way to accurately estimate the value of specific ecosystem services

- Other important ecosystem services not considered in this study
  - Erosion Control
    - San Diego County - $400-$600 per acre/yr
  - Air quality
    - SO_2 ,PM_{10} ,O_3 ,CO, NO_2 – up to $1,600 per acre/yr in San Diego County
  - Carbon sequestration
    - CA market is currently around $12 per tonne of CO_2 equivalent

Questions?

- Thank you