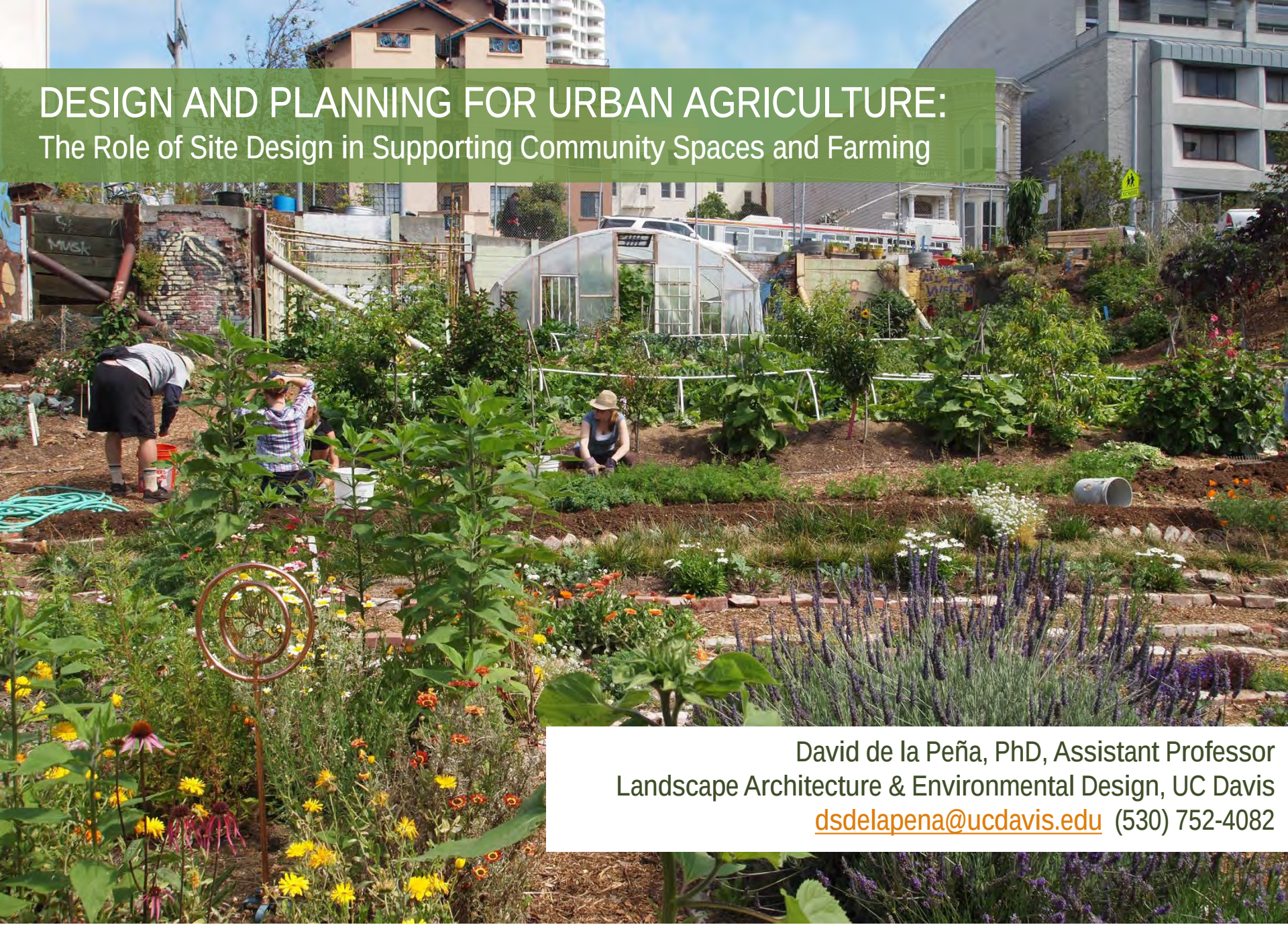
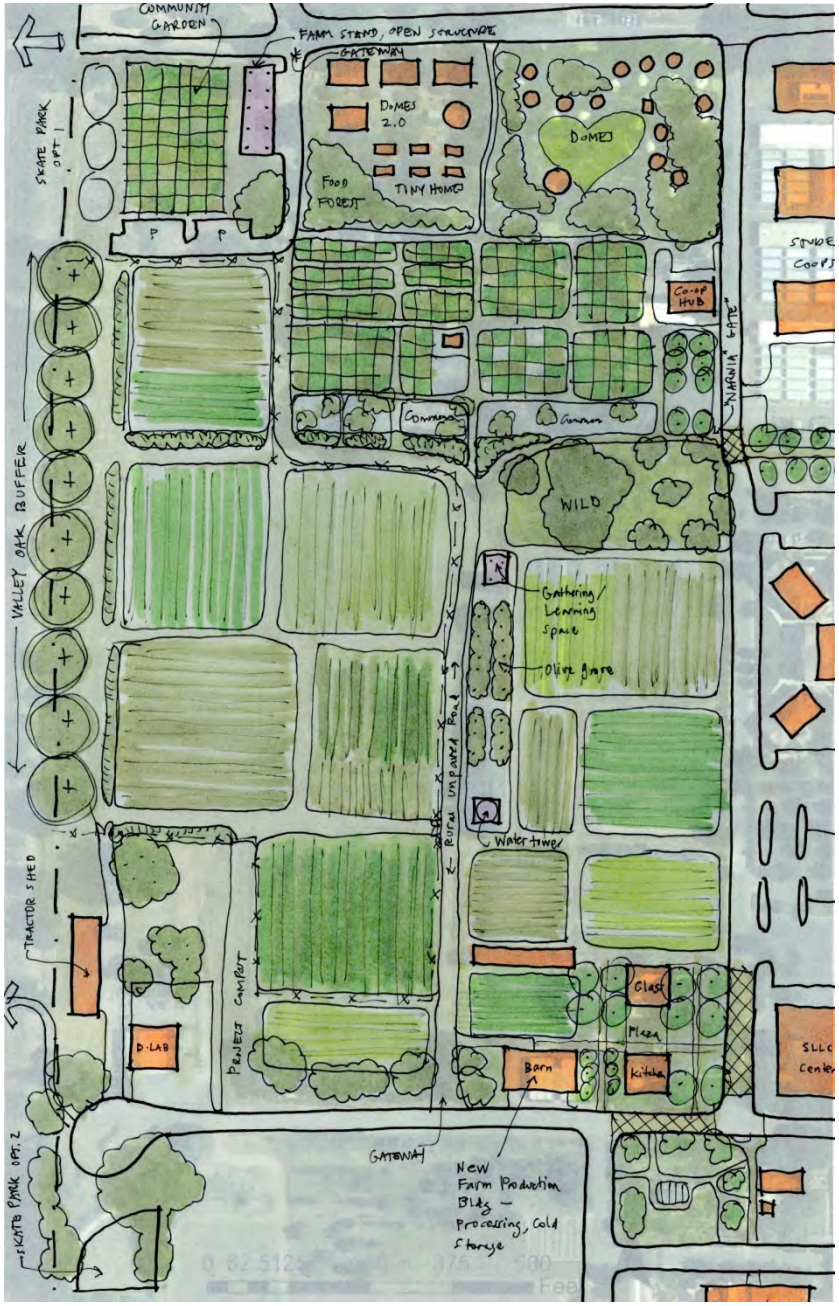
DESIGN AND PLANNING FOR URBAN AGRICULTURE:

The Role of Site Design in Supporting Community Spaces and Farming



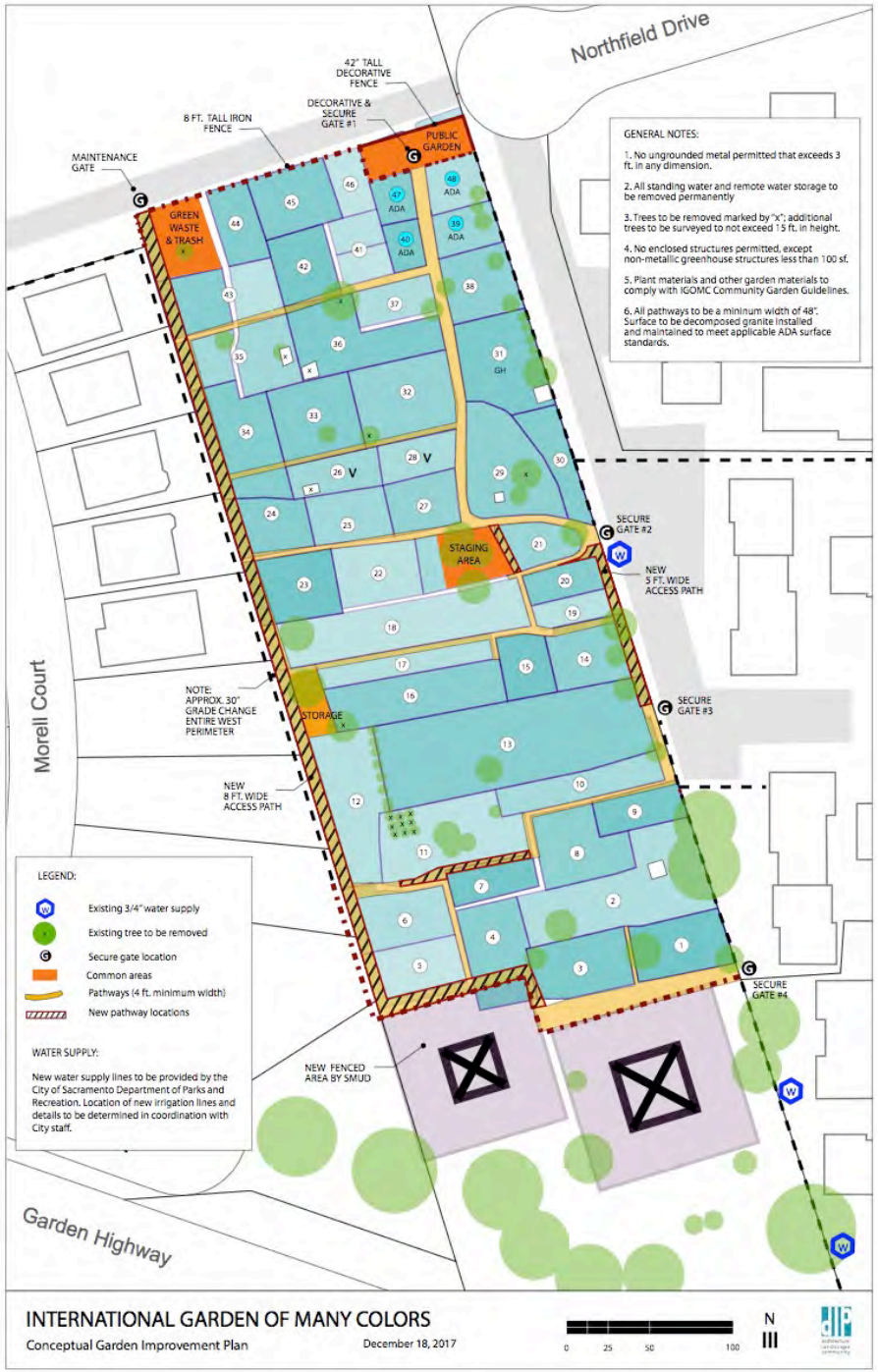
David de la Peña, PhD, Assistant Professor
Landscape Architecture & Environmental Design, UC Davis
dsdelapena@ucdavis.edu (530) 752-4082

Free Farm in San Francisco, Image by C. Napawan

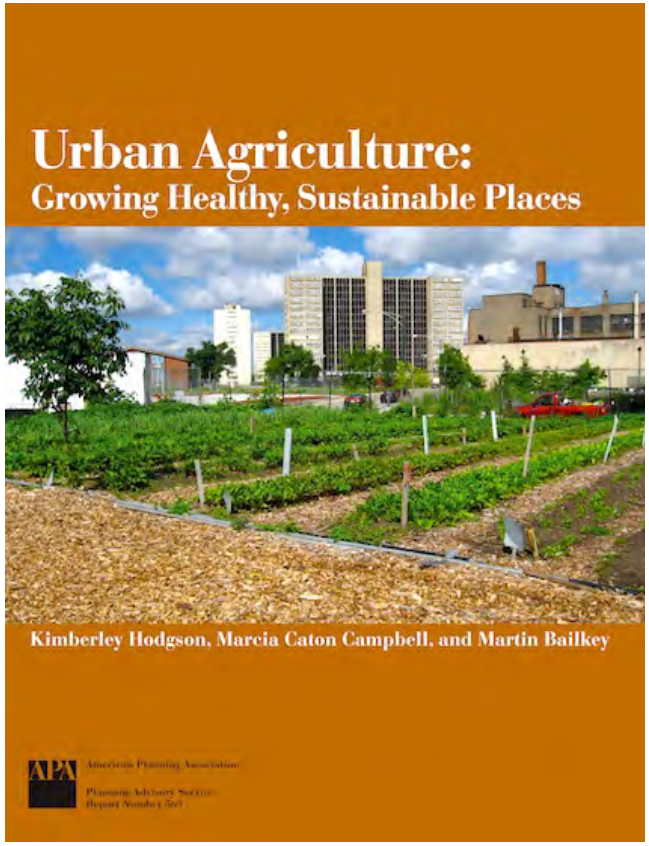


SUSTAINABLE LIVING AND LEARNING COMMUNITIES – UC DAVIS

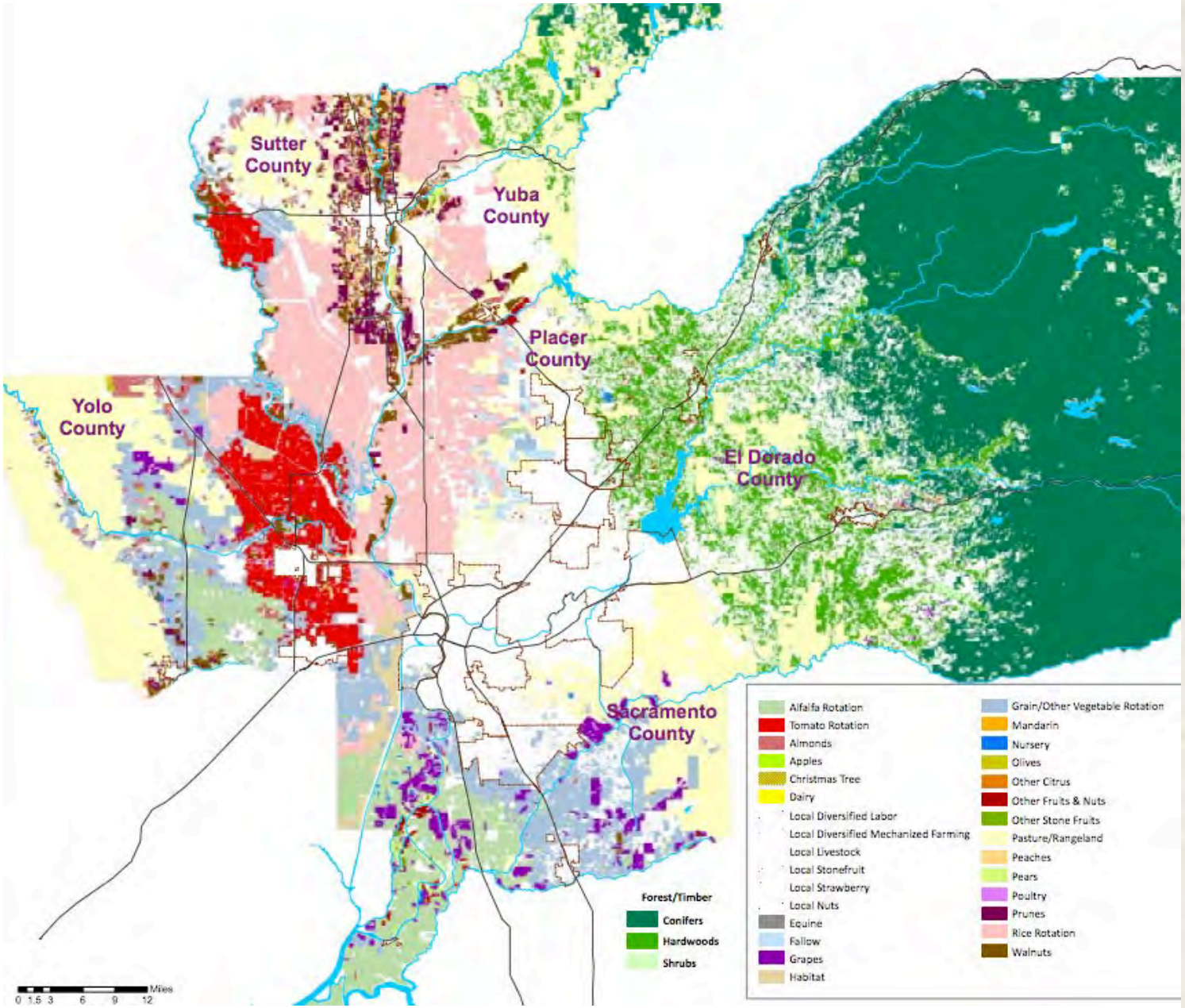
Draft Vision Plan, April 13 2018



AMERICAN PLANNING ASSOCIATION LISTED BENEFITS ASSOCIATED WITH URAN AG



Health benefits:
1. Increase accessibility to fruits & vegetables 2. Provide opportunities for public health programming 3. Therapeuatic benefits of recreational gardening 4. Food security
Social benefits:
1. Opportunity for community involvement 2. Social interaction between ethnically and age-diverse communities 3. Connection between farmers and consumers 4. Community economic security 5. Vacant property reuse strategy and catalyst for community development
Economic benefits:
1. Provides volunteer maintenance 2. Increase local employment opportunity or training 3. Generates income 4. Capitalizes on underused resources 5. Increases property values 6. Reduces food expenditures to free larger portion of household income
Environmental benefits:
1. Contribution to environmental management & productive reuse of contaminated land 2. Decreased storm-water run-off 3. Improved air quality 4. Increase urban biodiversity & species preservation



$1.6B
AGRICULTURE INDUSTRY

18%
VALUE INCREASE IN AGRICULTURAL PRODUCTION 2005–2009

CREATES JOBS
ON AND OFF THE FARM

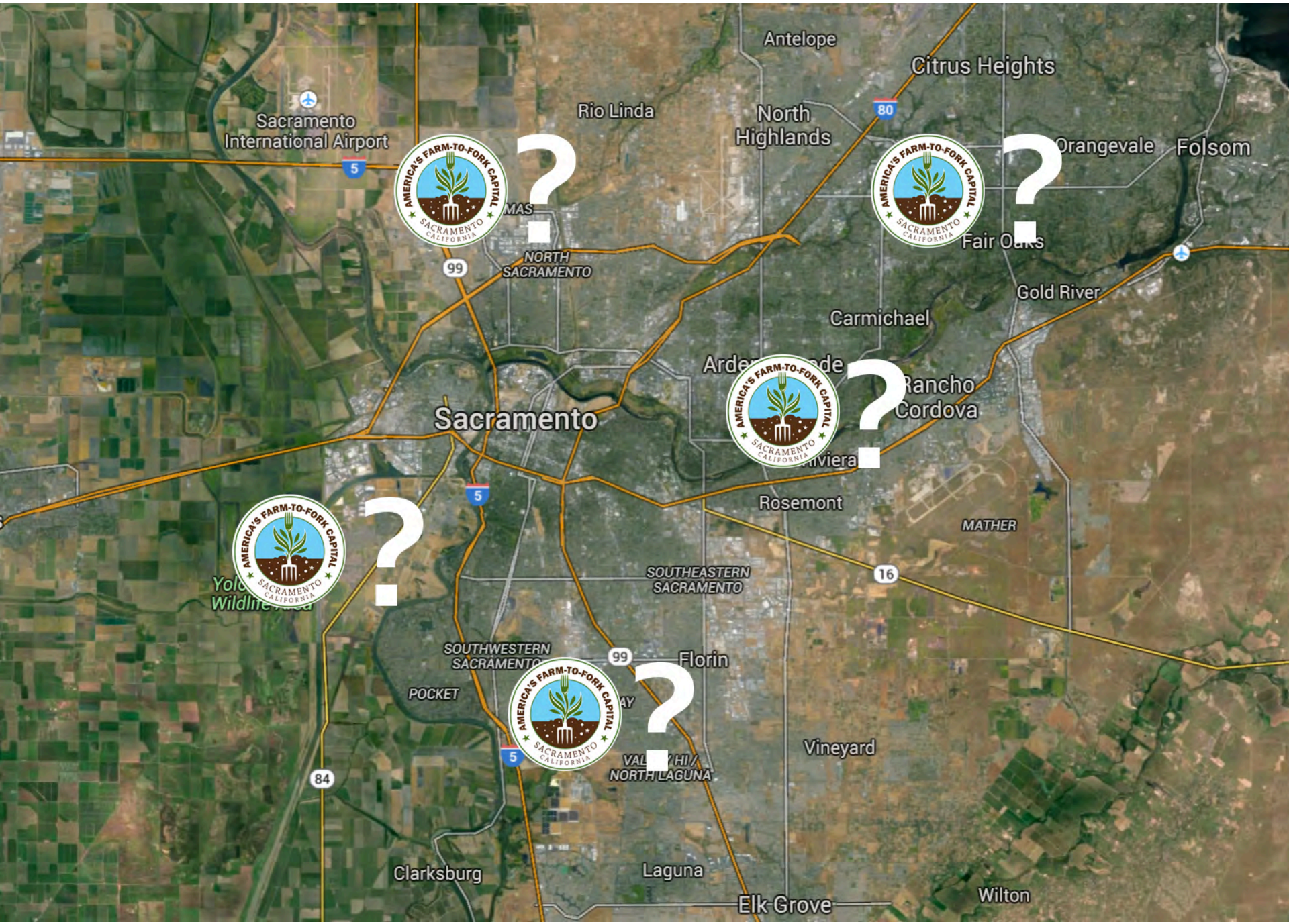
3.4M
TONS OF FOOD PRODUCED EACH YEAR

2.2M CONSUMED

2%
COMES DIRECTLY FROM **LOCAL FARMERS AND RANCHERS**

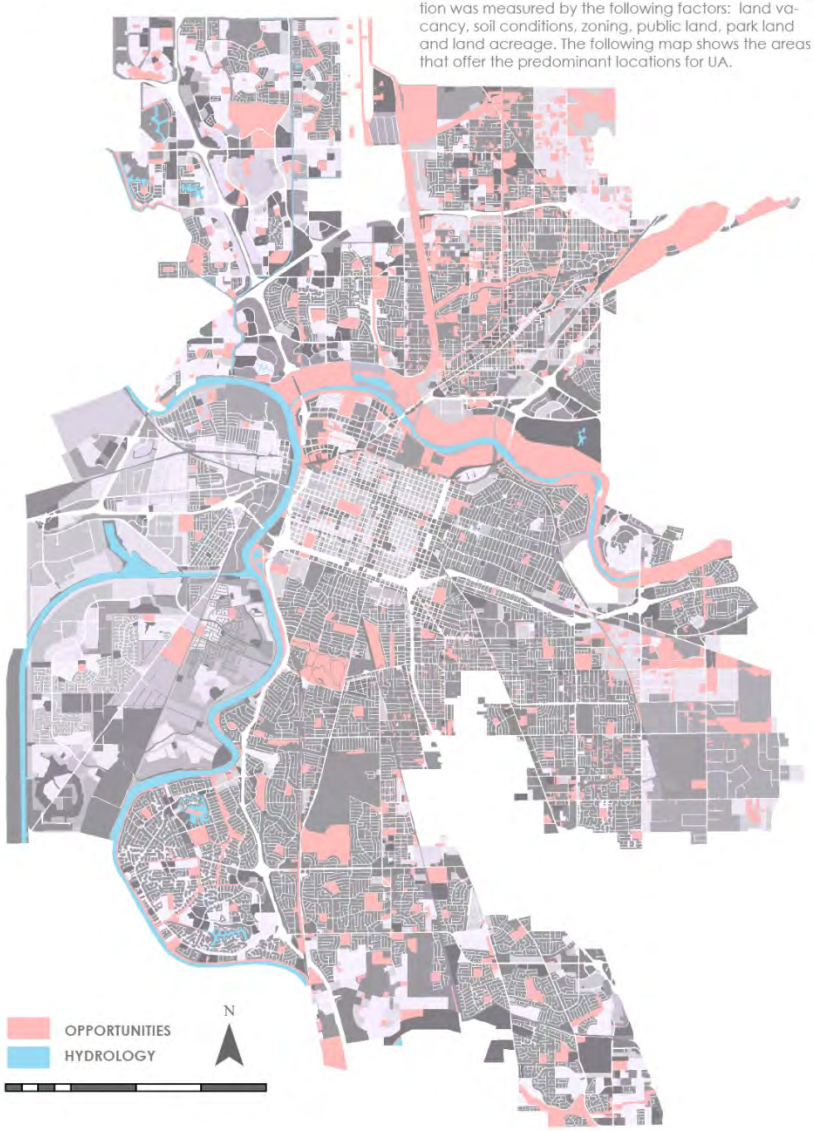
85 PERCENT
LAND IS AGRICULTURAL, FOREST OR OPEN SPACE

IMPORTANT WILDLIFE HABITAT

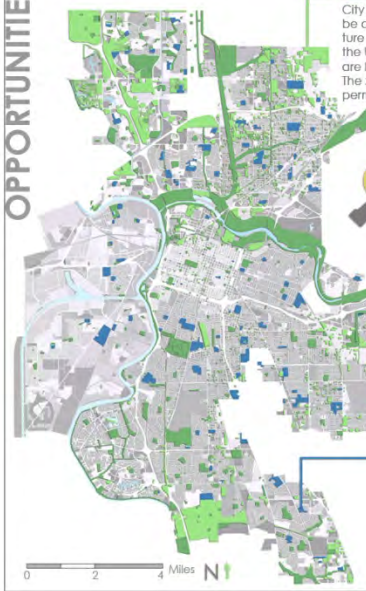

Antelope
Citrus Heights
Sacramento International Airport
Rio Linda
North Highlands
Orangevale
Folsom
Fair Oaks
NORTH SACRAMENTO
Gold River
Carmichael
Rancho Cordova
Sacramento
Rosemont
MATHER
SOUTHEASTERN SACRAMENTO
SOUTHWESTERN SACRAMENTO
Florin
POCKET
Vineyard
Clarksburg
Laguna
Elk Grove
Wilton
AMERICA'S FARM-TO-FORK CAPITAL
SACRAMENTO
CALIFORNIA
?

OPPORTUNITIES & VACANT LAND

This project demonstrates the locations in the Sacramento City area where additional Urban Agriculture can be introduced. The data that was collected is used to show the predominant locations where different types of UA can be introduced. The predominance of a location was measured by the following factors: land vacancy, soil conditions, zoning, public land, park land and land acreage. The following map shows the areas that offer the predominant locations for UA.



OPPORTUNITIES



VACANT

City of Sacramento vacant lots that can be aquired for additional Urban Agriculture Sites. These locations are included in the UA Sacramento Ordinance which are located in the tax incentive zone. The zoning limitations for the type of UA permitted in the area are on the right.

RESIDENTIAL ZONES
COMMERCIAL ZONES
INDUSTRIAL ZONES

URBAN AGRICULTURE ORDINANCE

- MARKET GARDEN, COMMUNITY GARDEN, AQUACULTURE, PRIVATE GARDEN < 1 ACRE
- MARKET GARDEN, COMMUNITY GARDEN, AQUACULTURE, PRIVATE GARDEN < 3 ACRES
- MARKET GARDEN, COMMUNITY GARDEN, AQUACULTURE, PRIVATE GARDEN NO LIMIT

TAX INCENTIVE ZONE

Urban Agriculture Incentive Zone is a contract between the City and a property owner of vacant, unimproved, or blighted property whereby the property owner agrees to keep the property in active agricultural use for a period of five years in exchange for a property tax benefit.

PARK LAND

City of Sacramento Parks, public land, open green land that can be used for Urban Agriculture. The types of UA are: Community Gardens, Market Garden, Community Orchard and Demonstration Garden.

SCHOOLS

Schools can also serve as opportunities for UA. They can introduce: School Gardens, Community Gardens, Aquaculture, Market Gardens, Demonstration Gardens and Research Farms.

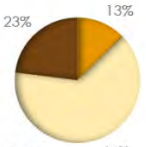
0 2 4 Miles N

VACANT

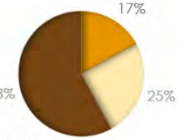
PARK LAND

Sources: http://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Urban-Agriculture/Tax%20Incentives%20For%20Urban%20Agriculture
http://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Urban-Agriculture/Urban%20Agriculture%20Regulations
http://www.sacgis.org/GISDataPub/Pages/default.aspx
Maps created with GIS data from the City of Sacramento and West Sacramento

SOIL SUITABILITY



SACRAMENTO



WEST SACRAMENTO

NOT PRIME FARMLAND

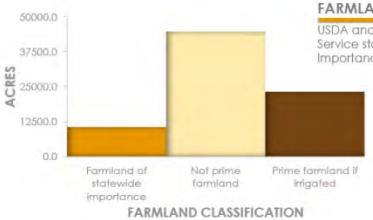
USDA and the Natural Resources Conservation Service states that Not Prime Farmland is not suitable for

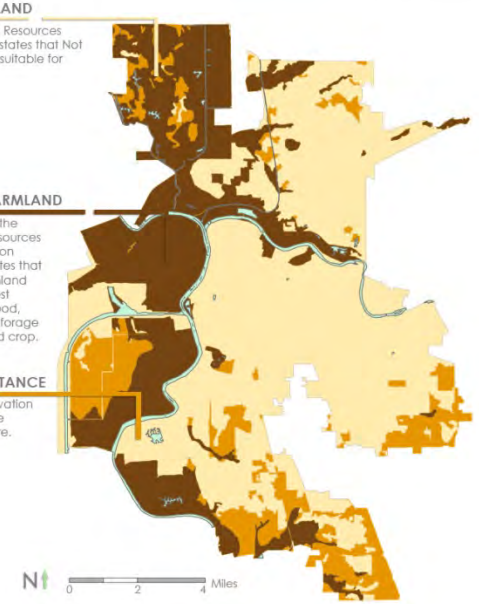
PRIME FARMLAND

USDA and the Natural Resources Conservation Service states that Prime Farmland are soils best suited to food, feed fiber, forage and oilseed crop.

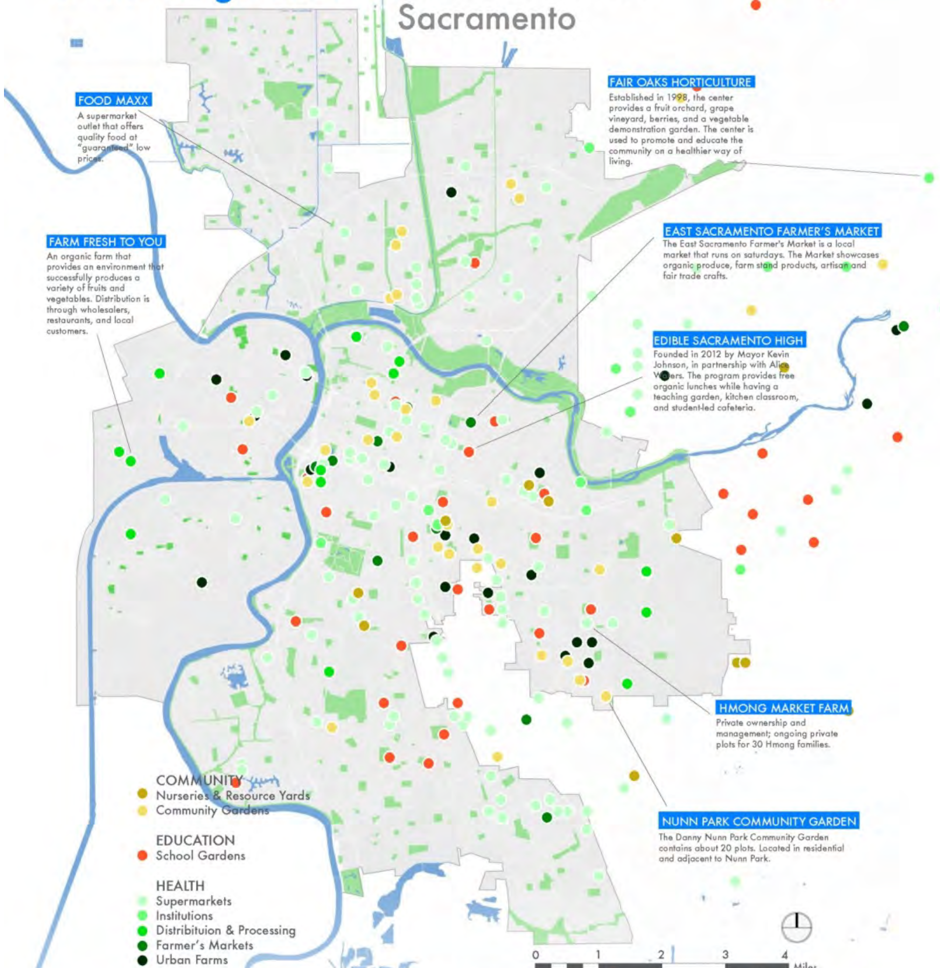
FARMLAND OF STATEWIDE IMPORTANCE

USDA and the Natural Resources Conservation Service states that Farmland of Statewide Importance are unique soils for agriculture.





Urban Agriculture Social Influences Sacramento



DRIVING SOCIAL FACTORS OF SACRAMENTO'S URBAN AGRICULTURE

In Sacramento, the **high cost of living** has contributed to the prevalence of **"food desert"** areas, or urban neighborhoods without ready access to fresh, healthy, and affordable food. This has led many to adopt new principles and mindsets in rethinking the food system.

HOUSING

HEALTH CARE

TRANSPORT

FOOD

18% of Sacramento residents suffer from **FOOD INSECURITY**

12% of Sacramento residents are **UNEMPLOYED**

17% of Sacramento residents live in **POVERTY**

GRASSROOTS EFFORTS

organized around...

COMMUNITY

empowering and inspiring communities with a sense of purpose and pride through urban agriculture.

HEALTH

working with local goverment and associations to lessen the strain on urban agriculture and increasing food accessibility.

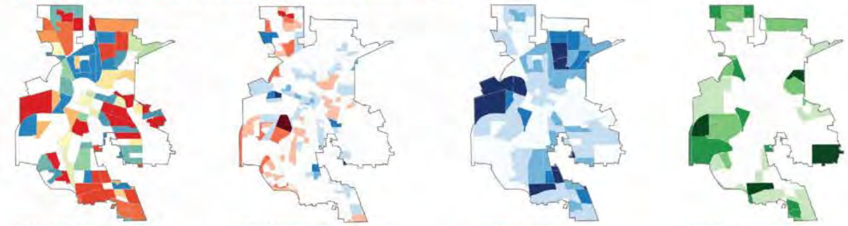
EDUCATION

teaching individuals the importance of a balanced, wholesome diet, and the cooking and gardening skills necessary for self-sufficiency.

SOURCES AND MORE INFORMATION
United States Census Data: https://www.census.gov
Sacramento Immigrant Populations: http://dornsife.usc.edu/
USDA Food Access: http://www.ers.usda.gov
Community Gardens: http://www.lgc.org

M. Ma | J. Perez | J. Rabago
LDA 191 Fall | Assignment II

DEMOGRAPHIC BREAKDOWN OF SACRAMENTO



SACRAMENTO ANCESTRY

Mexican, Irish, Chinese, French, Russian, Dutch, Polish, German, Hmong, Filipino, Ukrainian, Portuguese, Puerto Rican, Swedish

Represents a comparison between the most dominant immigrant populations and ancestral origins per census tract.

HIGH VERSUS LOW INCOME

0 - 70, 70 - 135, 135 - 205, 205 - 275, 275 - 340
0 - 80, 80 - 160, 160 - 240, 240 - 320, 320- 735

Represents a comparison between the number of people per block group with low income versus those with high income. Low and high incomes are determined by established federal guidelines.

SNAPS ENROLLMENT

0 - 145, 145 - 295, 295 - 440, 440 - 590, 590 - 735

Represents the number of househoulds per census tract that receive food stamps as a part of the SNAP Program enrollment.

FOOD ACCESSIBILITY

0 - 2.5%, 2.5 - 8.5%, 8.5 - 17%, 17 - 35.5%, 35.5 - 54.8%

Represents the percentage of people per census tract that are low income and have low access (further than 1 mile) to supermarkets, local grocers, and fresh produce.

URBAN AGRICULTURE COLLABORATORS

Yisrael — The mission of the Yisrael Family Urban Farm is **to educate, inspire and demonstrate** the benefits of growing your own food to the local community and beyond.

Soil Born Farms — Soil Born Farms focuses on promoting **health and providing experiential learning opportunities** for youth and adults, producing healthy food, improving access to healthy food for all and modeling land and environmental stewardship.

The HUB, Building Healthy Communities — The Building Healthy Communities mission is to **make healthier, livable areas for people**. They strive to do this by improving employment opportunities, education, housing, neighborhood safety, unhealthy environmental conditions, and access to healthy foods.

City of Sacramento — The City of Sacramento has taken a few steps to **support locally grown foods; build community; improve public health** and well-being; and **provide economic opportunity**, particularly in areas that have vacant or underutilized land.

Sacramento Urban Agriculture Coalition — The Sacramento Urban Agriculture Coalition **fights for laws** that recognize and embrace the potential of food production and sales to impact our region's food system.

BENEFITS OF URBAN AGRICULTURE PROJECTS AND PROGRAMS

	URBAN AGRICULTURE ORDINANCE		URBAN AGRICULTURE INVENCTIVE ZONE	HARVEST SACRAMENTO		WE DIGGIT		PROJECT GOOD!	
	Zoning Includes Urban Ag Areas	Permits Sale of Home-Produced Foods	Property Tax Breaks for Urban Ag Lots	Communal Meals	Grow, Cook, & Preserve Food	Build No Cost Gardens for Neighbors	Gardening Classes & Workshops	Plan & Construct Backyard Gardens	Meet Community Leaders & Organizers
COMMUNITY									
Empowerment & Mobilitzation		●		●	●	●	●	●	●
Youth Engagement				●	●	●	●	●	●
Food Security	●	●	●	●	●	●	●	●	
Safety/Crime Prevention					●	●		●	●
Promotion of Diversity & Integration				●		●		●	
Local Economic Growth & Stability	●	●	●		●	●	●	●	
HEALTH									
Food Accessibility	●	●	●	●	●	●	●	●	
Insight of Food- Health Relation		●		●	●	●	●		
Physical Exercise		●			●	●	●	●	
Therapeutic Activity		●		●	●	●	●	●	
EDUCATION									
Awareness of Food System & Processes		●		●	●		●		●
Beneficial Trade/Vocational Skillset		●		●	●	●	●	●	●
Management & Organizational Skills		●	●	●	●	●	●	●	
Knowledge of Ecological Processes					●		●		●
Self- Reliance and Sufficiency		●		●	●	●	●	●	

SOURCES AND MORE INFORMATION
yisraelfamilyfarm.net | soilborn.org | calendow.org | cityofsacramento.org | sacurbanag.org | sacfoodbank.org

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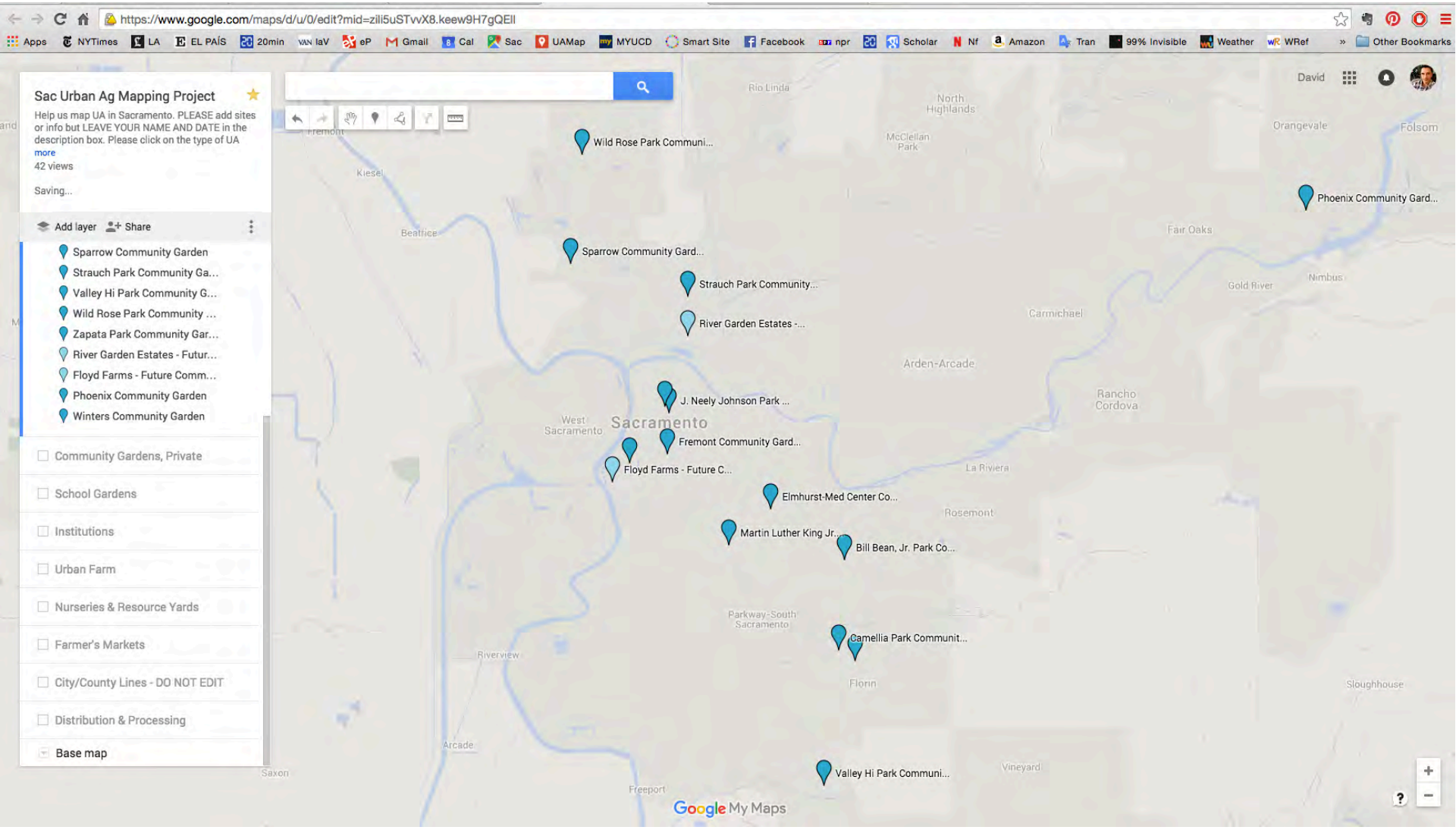
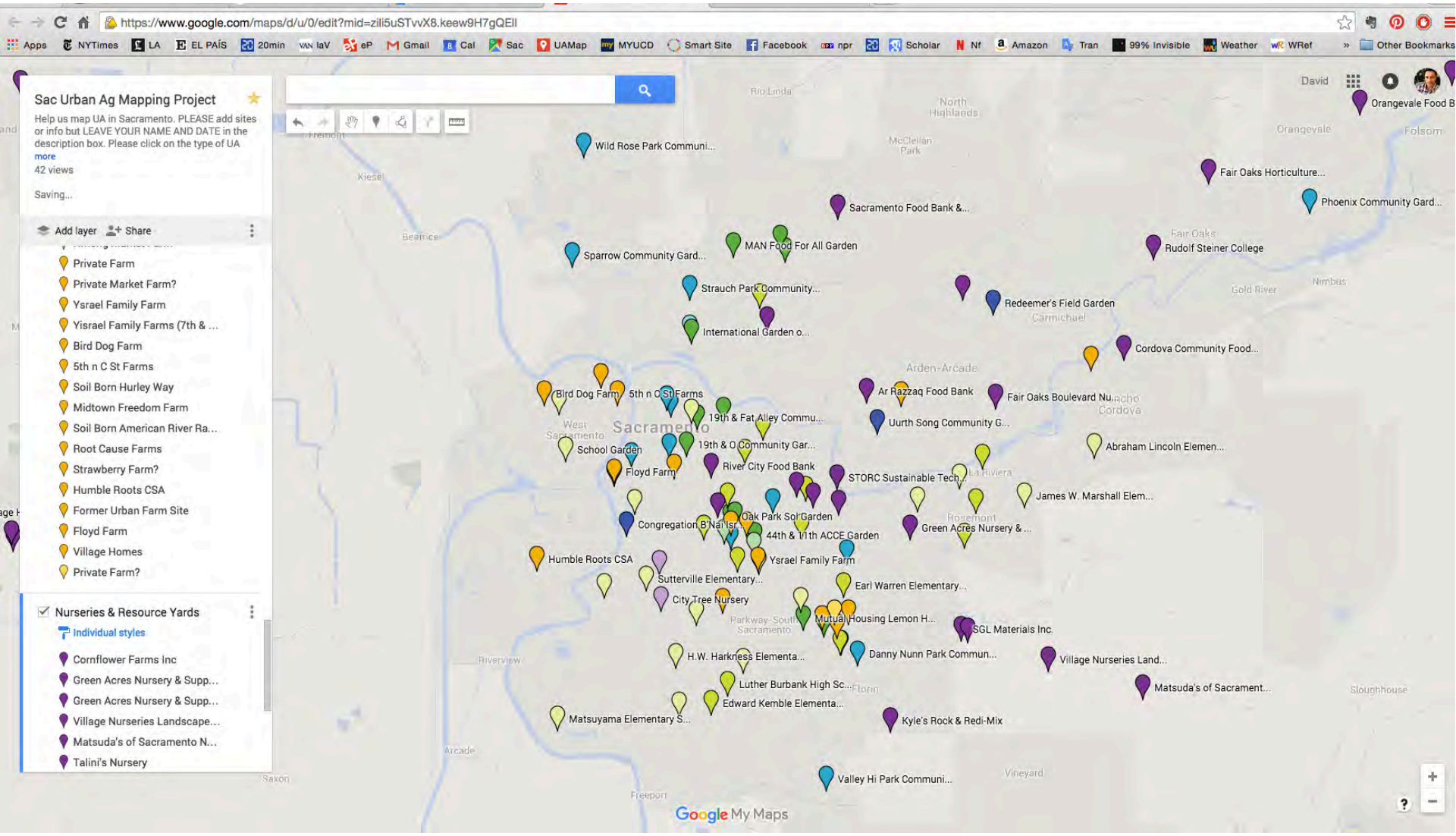
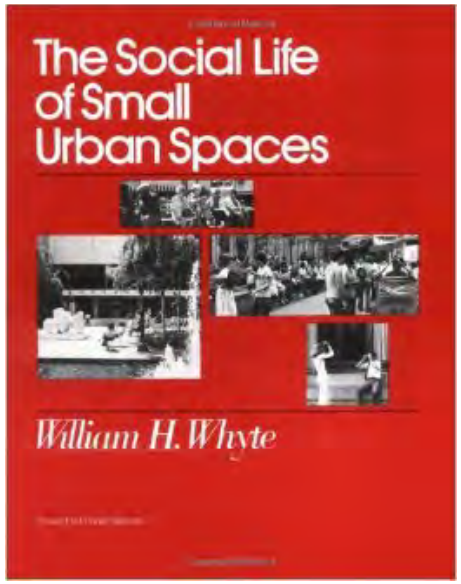
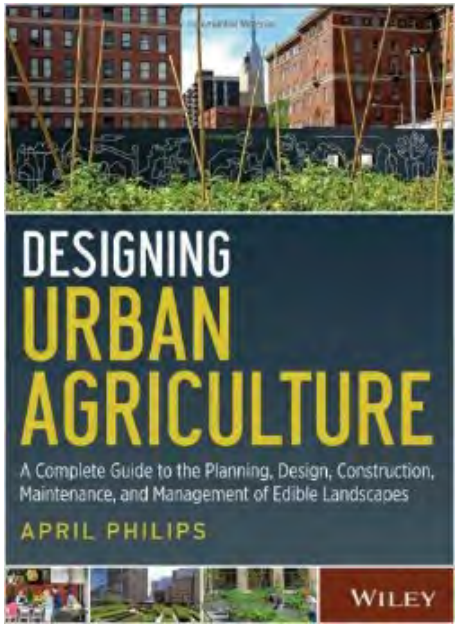
LDA 191 Fall | Assignment II

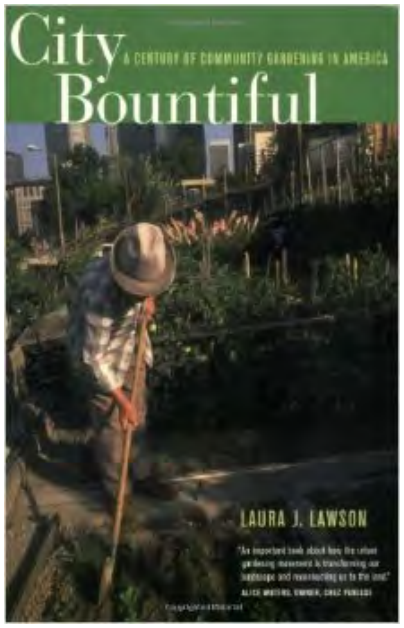

https://www.google.com/maps/d/u/0/edit?mid=zili5uSTvvX8.keew9H7gQEII
Apps NYTimes LA EL PAÍS 20min laV eP Gmail Cal Sac UAMap MYUCD Smart Site Facebook npr Scholar Nf Amazon Tran 99% Invisible Weather WRef Other Bookmarks
David
Sac Urban Ag Mapping Project
Help us map UA in Sacramento. PLEASE add sites or info but LEAVE YOUR NAME AND DATE in the description box. Please click on the type of UA
more
42 views
Saving...
Add layer Share
Sparrow Community Garden
Strauch Park Community Ga...
Valley Hi Park Community G...
Wild Rose Park Community ...
Zapata Park Community Gar...
River Garden Estates - Futur...
Floyd Farms - Future Comm...
Phoenix Community Garden
Winters Community Garden
Community Gardens, Private
School Gardens
Institutions
Urban Farm
Nurseries & Resource Yards
Farmer's Markets
City/County Lines - DO NOT EDIT
Distribution & Processing
Base map
Wild Rose Park Communi...
Sparrow Community Gard...
Strauch Park Community...
River Garden Estates -...
J. Neely Johnson Park ...
Fremont Community Gard...
Floyd Farms - Future C...
Elmhurst-Med Center Co...
Martin Luther King Jr...
Bill Bean, Jr. Park Co...
Camellia Park Communit...
Valley Hi Park Communi...
Phoenix Community Gard...
Rio Linda
North Highlands
Orangevale
Folsom
McClellan Park
Kiesel
Beatrice
Fair Oaks
Gold River
Nimbus
Carmichael
Arden-Arcade
Rancho Cordova
West Sacramento
Sacramento
La Riviera
Rosemont
Parkway-South Sacramento
Riverview
Florin
Sloughhouse
Arcade
Saxon
Freeport
Vineyard
Google My Maps


https://www.google.com/maps/d/u/0/edit?mid=zili5uSTvvX8.keew9H7gQEII
Sac Urban Ag Mapping Project
Help us map UA in Sacramento. PLEASE add sites or info but LEAVE YOUR NAME AND DATE in the description box. Please click on the type of UA
more
42 views
Saving...
Add layer
Share
Private Farm
Private Market Farm?
Ysrael Family Farm
Yisrael Family Farms (7th & ...
Bird Dog Farm
5th n C St Farms
Soil Born Hurley Way
Midtown Freedom Farm
Soil Born American River Ra...
Root Cause Farms
Strawberry Farm?
Humble Roots CSA
Former Urban Farm Site
Floyd Farm
Village Homes
Private Farm?
Nurseries & Resource Yards
Individual styles
Cornflower Farms Inc
Green Acres Nursery & Supp...
Green Acres Nursery & Supp...
Village Nurseries Landscape...
Matsuda's of Sacramento N...
Talini's Nursery
Wild Rose Park Communi...
Sacramento Food Bank &...
Fair Oaks Horticulture...
Phoenix Community Gard...
Sparrow Community Gard...
MAN Food For All Garden
Rudolf Steiner College
Strauch Park Community...
Redeemer's Field Garden
International Garden o...
Cordova Community Food...
Bird Dog Farm
5th n C St Farms
Ar Razzaq Food Bank
Fair Oaks Boulevard Nu...
19th & Fat Alley Commu...
Uurth Song Community G...
School Garden
19th & O Community Gar...
Abraham Lincoln Elemen...
Floyd Farm
River City Food Bank
STORC Sustainable Tech...
James W. Marshall Elem...
Congregation B'Nai Isr...
Oak Park Soil Garden
Green Acres Nursery & ...
44th & 11th ACCE Garden
Humble Roots CSA
Ysrael Family Farm
Sutterville Elementary...
Earl Warren Elementary...
City Tree Nursery
Mutual Housing Lemon H...
SGL Materials Inc
H.W. Harkness Elementa...
Danny Nunn Park Commun...
Village Nurseries Land...
Luther Burbank High Sc...
Matsuda's of Sacrament...
Edward Kemble Elementa...
Matsuyama Elementary S...
Kyle's Rock & Redi-Mix
Valley Hi Park Communi...
Google My Maps



EXISTING LITERATURE ON DESIGNING PUBLIC OPEN SPACE





EXISTING LITERATURE ON DESIGNING URBAN AGRICULTURE

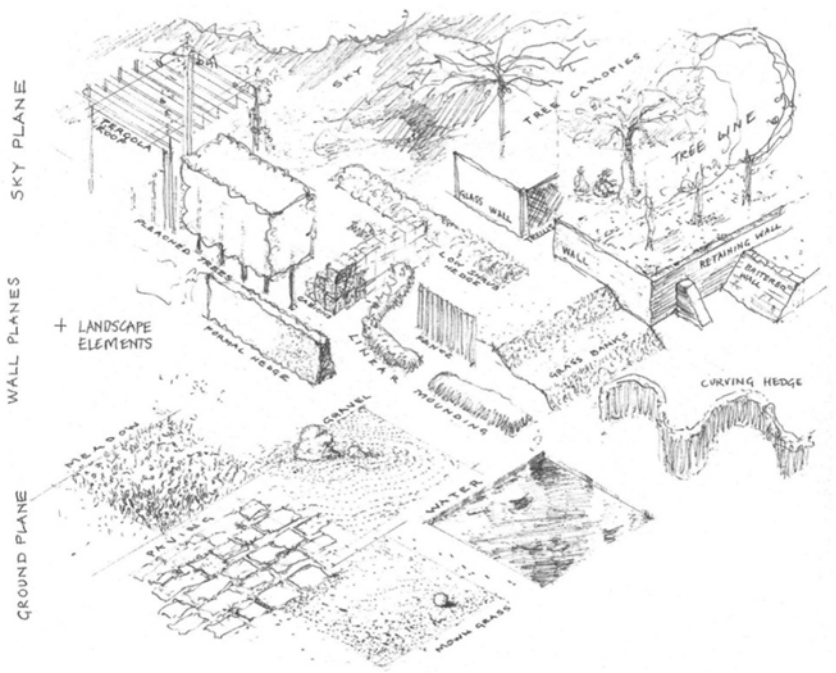
LITERATURE REVIEW OF SPATIAL CONSIDERATIONS FOR SUCCESSFUL PUBLIC SPACE

Sources:	Spatial Considerations for successful urban public space:
Marcus, C. (1976). “Mini Parks” in People Places	site selection with ease of pedestrian access and visibility; appropriate programming which includes community involvement; clear entrances and boundaries; and appropriate site materials use
Whyte, W. (1980). The Social Life of Small Urban Spaces	varied and abundant seating opportunities, the presence of water feature and/or food vending, a sense of enclosure, and proximity to active pedestrian corridors
Francis, M., Cashdon, L., Paxson, L. (1984). Community Open Spaces	site selection and programming relevant to neighborhood context; clear signage and integration with community on site development; site design may employ design professionals, but community input and volunteer efforts play a role in design and construction, and design has adaptability; community responsible for site maintenance and management
Project for Public Space (2000). “What Makes a Successful Place?”	sites are accessible; many and diverse users on site engaged in a range of activities; site is comfortable and has good image; site is a sociable place
Francis, M. (2003). Urban Open Spaces	site supports user needs & user diversity, program diversity, safety/security, and accessibility

LITERATURE REVIEW ON SPATIAL CONSIDERATIONS FOR SUCCESSFUL UA PROJECTS

Sources:	Spatial considerations for successful urban agriculture projects:
Lawson, L. (2005). City Bountiful	design to engage a broader range of public participation, including youth and non-gardening/farming programs
Hou, J., Johnson, J., Lawson, L. (2009). Greening Cities, Growing Communities	ability for incremental change, adjustments, and improvements over time; sensitivity to existing context and user needs; multi-use, including non-gardening programs; diversity and artistic expression
Milburn, L. and Vail, B. (2010) “Sowing the Seeds of Success” from Landscape Journal	site selection/proximity to users, physical characteristics that support growing (solar gain, access to water & soil), compact site (as opposed to long, linear sites), high visibility from street and within garden, accessibility, inclusion of appropriate site elements for growing (including composting, storage, perimeter fencing, and bulletin/message board)

PLACEMAKING: DESIGNING URBAN FARMS AS PLACES



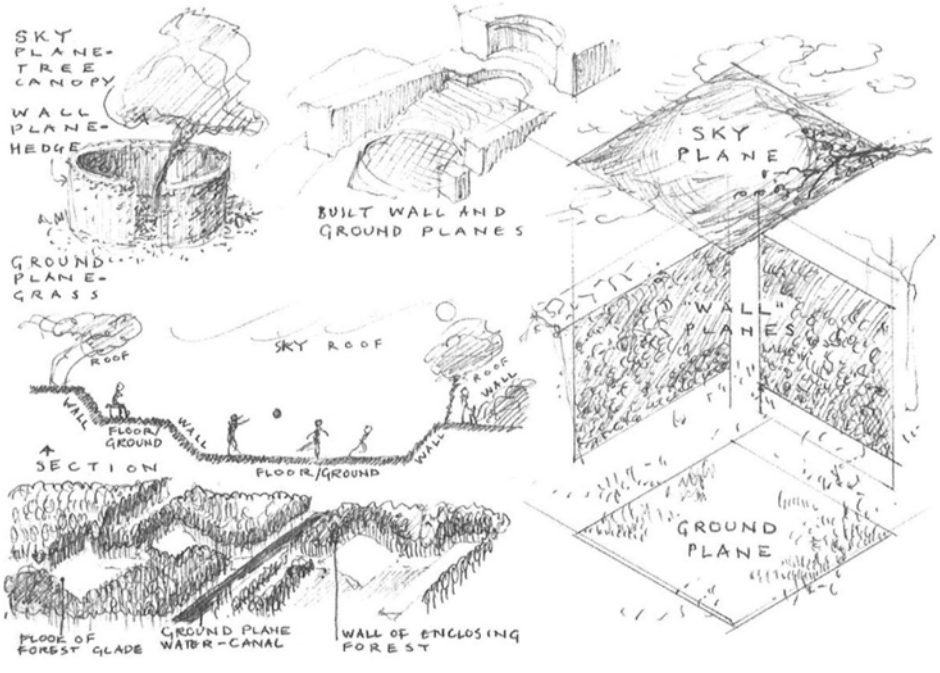


Image source: “Form and Fabric in Landscape Architecture” by C. Dee

SITE ASSESSMENT: SITE SCALE

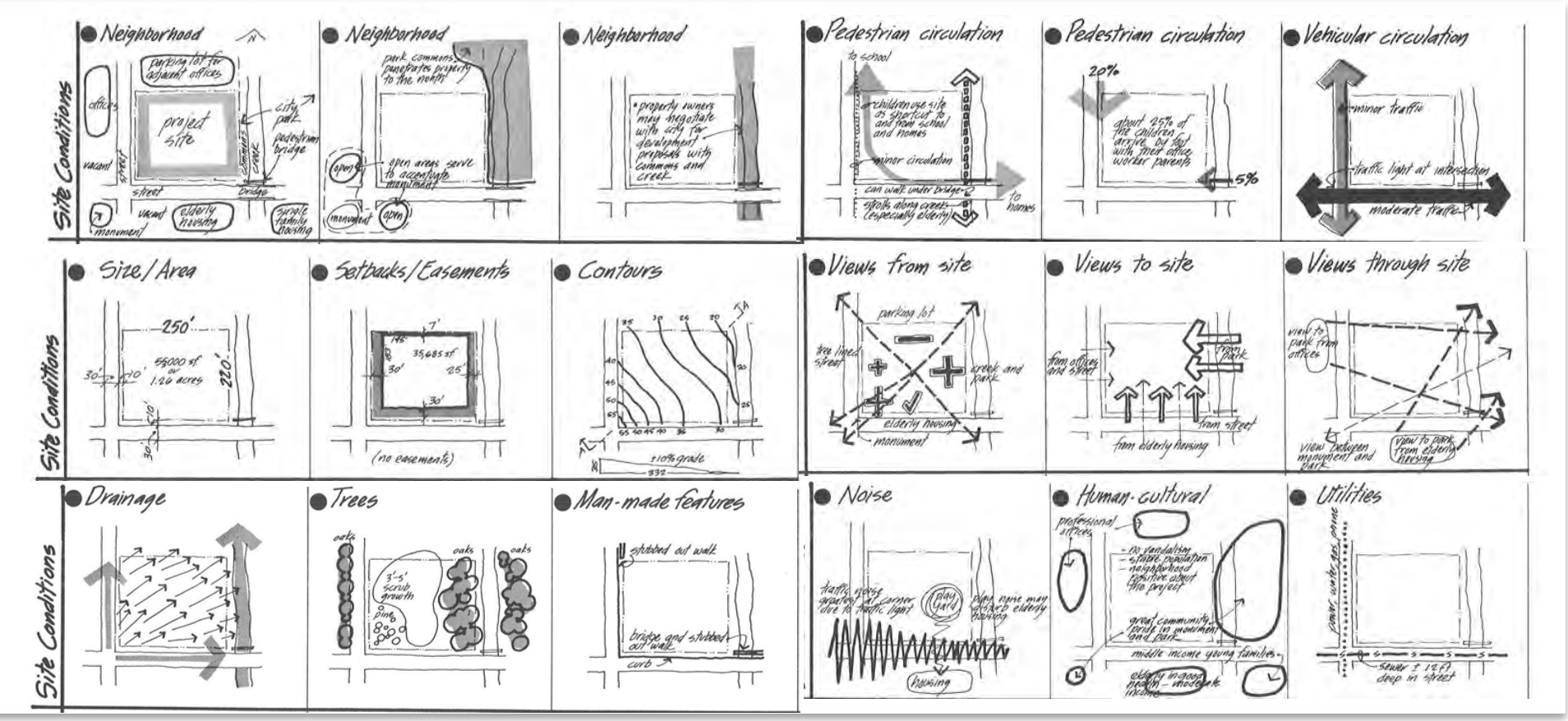


Image source: “Site Analysis” by E. T. White

PHYSICAL ELEMENTS ON AN URBAN FARM / GARDEN

Original source (adapted): Carpenter and Rosenthal (2011). The Essential Urban Farmer

Crop planting beds (In-ground or raised beds) – 3 ft to 5 ft wide
Children's' garden beds – 1 ft – 2 ft wide
Accessible garden beds – Raised to max height of 24 in. with width of 18 inches or 36 inches if accessible on both sides
Vertical growing structures (Trellises, arbors) – consider 2 ft wide beds next to fences
Hoop house or cold frames
Greenhouse
Composting areas (compost bins, worm binds, manure aging bins, brush piles) – must be 20 ft from residential buildings (Sac)

Fruit trees
Fruiting shrubs and vines
Seedling propagation area
Pollinator patches – use native plants, 3x3ft, 5x5 ft, or 10x10ft

Animal housing and yards
Beehives and native pollinator nests (not on property line unless solid fence; maintain 10 ft flight path; orient away from paths)
Bat houses
Aquaculture (check local regulations)

Space for waste, green waste and recycling
Bulk materials storage
Tool storage
Produce washing and packing stations
Shaded group seating/work/hanging out areas
Outdoor cooking areas or cooking demonstration areas
Children's play areas
Farm stand location (120 sf stand is allowable, temporary use daytime hours only, requires permit in Sac county)

Greywater system for diverting household water
Water storage cistern / barrels
Irrigation system
Perimeter fence
Signage
Parking

DESIGN CONSIDERATIONS AND PRINCIPLES

SITE PREREQUISITES

Solar access – understand the daily and seasonal path of the sun
Available water source
Good soil free of hazards (get your soil tested!)
Adequate site drainage (does water pond or flow too quickly off the site?)
Appropriate visual and physical access
Legal rights
Community support (talk to neighbors, have an open house, design it together!)

MATCH THE PROJECT PURPOSE

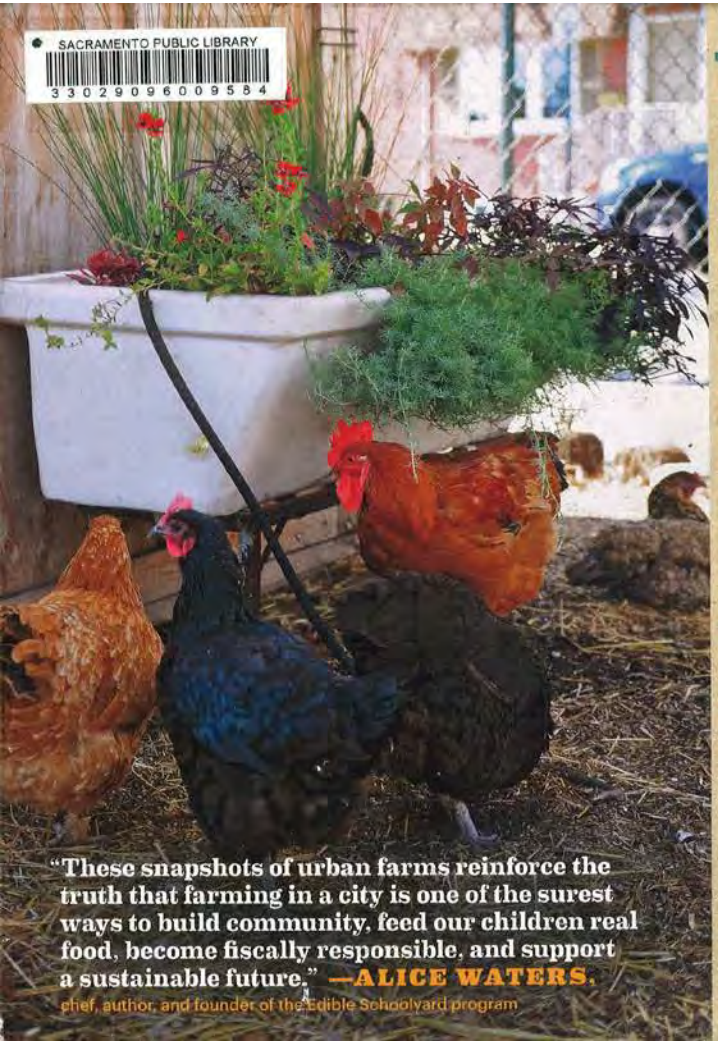
Production food production
Community empowerment
Recreation and mental health
Food literacy education
Job training / local capacity-building

MATERIALS

Use renewable resources
Wood – rot resistant redwood is best, avoid pressure treated for beds, avoid RR ties, avoid plywood, beware of pallets
Carpets – they work but they also leach chemicals and possibly synthetic fibers into the soil
Cardboard – free and good weed abatement, soil building
Straw (not hay)
Metal – Galvanized or stainless steel or coated to avoid rust, restrict if farming under power lines
Pathway surfaces – decomposed granite, properly installed, can be an ADA accessible (4 ft min pathway for access route)

AESTHETICS

Don’t overlook the importance of appearance!
Create beauty and integrate art
Celebrate the hand-made
Create experiences – How do people arrive? What do they see along the way?



"These snapshots of urban farms reinforce the truth that farming in a city is one of the surest ways to build community, feed our children real food, become fiscally responsible, and support a sustainable future." —ALICE WATERS,
chief, author, and founder of the Edible Schoolyard program

Urban Farms takes readers on a journey across the country to sixteen established and emerging urban farm leaders, from Edible Schoolyard NYC in New York to Novella Carpenter's Ghost Town Farm in California. Sarah C. Rich's profiles about each farm, as well as her basic how-to tips on such activities as kitchen composting and beekeeping, offer insight and inspiration while Matthew Benson's photographs reveal the quirky individuality that is innate in these green spaces tucked among city buildings and empty lots. In addition, five essays by experts in the field examine the variety of roles that urban farms can play in our lives today.

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RICH

URBAN FARMS

SARAH C. RICH
PHOTOGRAPHY BY
Matthew Benson


Welcome to

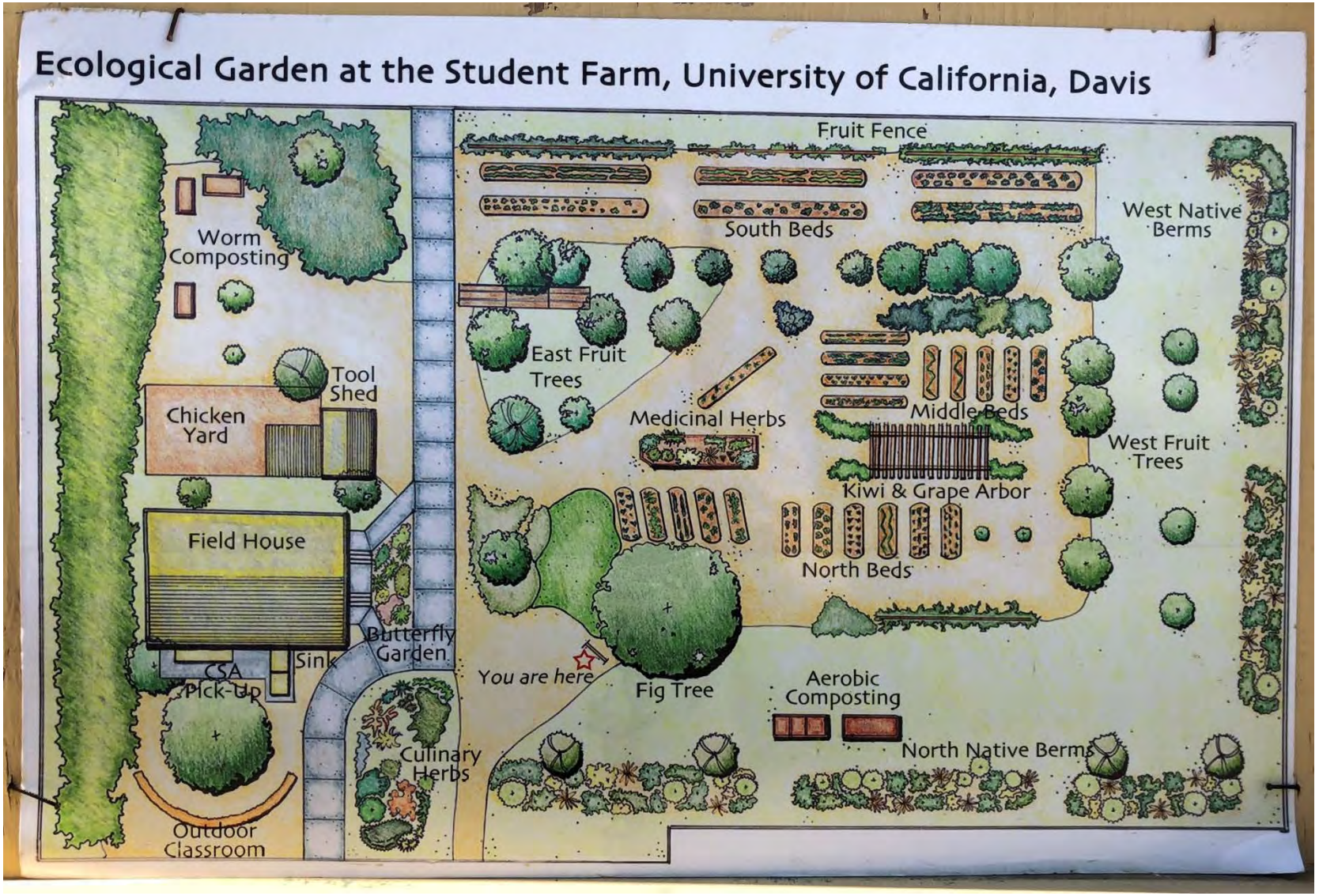
Beacon Food Forest Schematic Site Plan

N

Scale: 1" = 20'

harrison design
landscape architecture
911 western ave suite 406
seattle wa 98104
206.840.2540

Ecological Garden at the Student Farm, University of California, Davis



DESIGN EXERCISE

Start with a little context (5 minutes)

Include:

- Your property and buildings and significant trees
- Surrounding properties and buildings
- Include the street and any properties across the street
- Note the land uses (residential, commercial, office, park, etc)

Your site map (5 minutes)

Include:

- Property lines, with some approximate dimensions
- All structures
- Driveways, sidewalks, pathways
- Trees and other plants
- Fences
- Other site features
- Note: MAKE SURE NORTH IS FACING UP,

Design! (5 minutes)

- What is the purpose of your project?
- What elements should be included?
- Start with general use areas – how are they related?
- Work toward details, checking dimensions and technical requirements
- Don’t forget the beauty, the art, and the experience

Share and get feedback (10 minutes)

PHYSICAL ELEMENTS ON AN URBAN FARM / GARDEN

Original source (adapted): Carpenter and Rosenthal (2011). The Essential Urban Farmer

Crop planting beds (In-ground or raised beds) – 3 ft to 5 ft wide
Children's' garden beds – 1 ft – 2 ft wide
Accessible garden beds – Raised to max height of 24 in. with width of 18 inches or 36 inches if accessible on both sides
Vertical growing structures (Trellises, arbors) – consider 2 ft wide beds next to fences
Hoop house or cold frames
Greenhouse
Composting areas (compost bins, worm binds, manure aging bins, brush piles) – must be 20 ft from residential buildings (Sac)

Fruit trees
Fruiting shrubs and vines
Seedling propagation area
Pollinator patches – use native plants, 3x3ft, 5x5 ft, or 10x10ft

Animal housing and yards
Beehives and native pollinator nests (not on property line unless solid fence; maintain 10 ft flight path; orient away from paths)
Bat houses
Aquaculture (check local regulations)

Space for waste, green waste and recycling
Bulk materials storage
Tool storage
Produce washing and packing stations
Shaded group seating/work/hanging out areas
Outdoor cooking areas or cooking demonstration areas
Children's play areas
Farm stand location (120 sf stand is allowable, temporary use daytime hours only, requires permit in Sac county)

Greywater system for diverting household water
Water storage cistern / barrels
Irrigation system
Perimeter fence
Signage
Parking